# 2007 Annual Report
# CDM Third Tranche Funding
# Norfolk Power Distribution Inc.

For:

Board Secretary

Ontario Energy Board

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Norfolk Power

IN BUSINESS TO SERVE.

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March 31, 2008

Board Secretary
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2007 Annual Report, CDM Third Tranche Funding, Norfolk Power Distribution Inc.

On December 9, 2004 Niagara Erie Power Alliance (NEPA) Coalition[1] members filed their plans to implement a conservation and demand management program. During plan preparations there was a concerted effort amongst the group to organize and share initiatives whenever possible and to share costs and improve the overall consistency of programming.

***Some key joint initiatives have included***

1. Conserver Joe – Family Education Package
    a. Handbook
    b. Bill Inserts
    c. Newsletters
    d. Print Ads
    e. Website
2. Training and Development
3. Bulk purchasing of product such as LED Seasonal Lights

***How Did We Do?***

Collectively our NEPA members contributed to significant annual energy and demand savings.

Energy reductions occurred from a variety of programming both through joint initiatives and localized community programming.

***Opportunities***

[1] NEPA comprising Canadian Niagara Power Inc. Grimsby Power Inc., Haldimand County Hydro Inc. Niagara Peninsula Energy Inc., Niagara On The Lake Hydro Inc. , Norfolk Power Distribution Inc., Horizon Utilities Corp., Welland Hydro Corp., Brant County Power, and Brantford Power

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As we develop a conservation culture in Ontario we must continue to balance the need for short-term results while fostering a long-term conservation attitude among the citizens and businesses in the province. The industry must continue to coordinate its efforts to ensure that program delivery is efficient and available to all customers. Our goal should be rapid program deployment and using the LDC's clear channel to market. Clarity regarding the roles of the LDC's, OPA, IESO, etc. would be beneficial in this regard.

Further, clarity on the topics of LDC cost recovery, lost revenues, and criteria for assessing prudence of CDM spending is critical. At all times, we must strive to minimize bureaucracy wherever possible. For example, the opportunity to determine and agree on effective conservation programs up front should minimize the measurement and verification efforts required to substantiate these same programs at their conclusion.

Our commitment remains firm of remaining an active participant and advocacy of developing and promoting a conservation culture in Ontario.

Regards,

Tim D. Roberts
Manager of Energy Services
Norfolk Power Distribution Inc.

# Table of Contents

# 1. Introduction

On December 9, 2004 the Ontario Energy Board ("Board") issued its Notice of Application and Written Hearing in the RP-2004-0203 proceeding, with respect to Niagara Erie Power Alliance (NEPA) Coalition nine (9) applications filed by NEPA comprising Canadian Niagara Power Inc. Grimsby Power Inc., Haldimand County Hydro Inc. Niagara Falls Hydro Inc., Niagara On The Lake Hydro Inc. , Norfolk Power Distribution Inc., Peninsula West Utilities Limited Inc., Horizon Utilities Inc., and Welland Hydro-Electric System Corp. This report is a requirement of that decision. In respect of the application filed by Norfolk Power Distribution Inc. the Board issued its Final Order under docket number RP-2004-0203 / EB 2005-0056.

The Board's decision indicated that annual reporting "should be done on a calendar year and should be filed with the Board no later than March 31st of the following year" and would be subject to a public review. On December 21, 2005 the Board issued a Guideline for Annual Reporting of CDM Initiatives that explained more fully the requirements. This report has been prepared in accordance with those guidelines and subsequent revisions. Schedule 6 of the plan documents the NPDI projects and customers associated with the various initiatives.

The following report is the Norfolk Power Distribution Inc. (NPDI) results and activities relating to Conservation and Demand Management (CDM) during the calendar year 2007. In this introductory section we will provide some of the approval background for the plan and then an overview of the activities and results of those activities.

The following table shows the approved plan expenditures by project as well as actual expenditures to December 31, 2007.[1] For 2007, funding from programs that did not make a significant impact with Norfolk Power customers were moved over to other more successful programs.

| Project | Target Customers | Approved Expenditures | Actual Expenditures 2007 |
|---|---|---|---|
| Co-branded Mass Market Program | All Users | $110,000 | $68,799 |
| Smart Metering / Prepaid Metering Program | Residential and small commercial (<50 KW) | $90,000 | $20,431 |
| Energy Audits / Feasibility Audits/Seminars | Large user, Industrial/General Service & Institution Facilities | $50,000 | $24,690 |
| Load Management Programs/Load Control Programs | Residential | $221,000 | $43,568 |
| Distribution Loss Reduction | All Users | $100,000 | $0 |
| Distributed Generation | All Users | $10,000 | $0 |
| **Total** | | **$581,000** | **$157,488** |

As shown in the table, some of the planned projects have been completed and others have been implemented in a significant way and further some funding from projects that were not successful have been used for other more successful programs.

To make our initiatives as cost effective and beneficial for our customers as possible, we have shared in programs with other utilities as well as implementing local programs specifically designed for our customers and their needs. In the following information we provide an overview of each of these shared and local programs.

Program final results as shown in Appendices B for each program have been verified with the best information currently available.

[1] In Section 3 – Discussion of Programs we include the appropriate Appendices (A & C for all programs and B for each program). Appendix B for each program includes the actual results for the program and the cumulative results to date where applicable. In order to accurately reflect expenditures compared to results we have included total program costs in the Gross C&DM expenditures of Appendix A.

## *Shared Provincial Initiatives*

NPDI took part in the Spring and Fall 2007 Every Kilowatt Counts (EKC) coupon program in partnership with the Ontario Power Authority (OPA). It was well received by our customers.

NPDI also supported the Ontario Power Authority (OPA) in delivering the Great Refrigerator Roundup, Electricity Retrofit Incentive Program, Summer Savings Program, and the Peaksaver Program. All programs were well received by our customers and targets were exceeded due to the overwhelming response.

NPDI is a member of the Ontario Utility Smart Metering working group (OUSM) and have shared costs and the results of that group initiative.

## *Shared NEPA Activities*

As an active participant with the NEPA group we helped to develop the "Conserver Family" customer education and information program. This program includes (at this time) an introductory booklet, energy saving bill inserts, radio scripts and a web site for "Conserver Family" energy saving tips (http://www.conserverjoe.com/np/). NPDI has distributed the booklets at customer events including trade shows and fairs and has participated in maintaining and updating the web site.

NEPA has also banded together to take advantage of buying power in our LED Seasonal Lights Exchange program. For NPDI's portion of the program more than 5000 strings of old incandescent lights were turned in and recycled to take them out of service.

Compact Fluorescent Lights (CFL) were purchased jointly with London Hydro. NPDI took advantage of the Energy Action Kit campaign that London Hydro was delivering and we were able to use marketing material and packaging material to reduce costs. Although London Hydro is not a member of the NEPA group, it shows NPDI's desire to partner with other like entities to reduce program costs.

## *NPDI/Local Activities*

The following is a listing and an overview of local programs initiated by NPDI specifically for our customers:

- Environmental Action Kit – CFL Giveaway Program:
    - NPDI instituted a program where Environmental Action Kits including compact fluorescent lights, toilette testing dye tablets, water flow measurement bag, and conservation material were given away to customers in our service territory for various reasons, in conjunction with community events such as home shows and local fairs or in relation to other CDM programs such as conservation for low income housing.

- Staff training:
    - Continued presenting training sessions for all customer contact office staff on energy efficiency information and current programs.

- Energy Audits for large customers.
    - In 2007 we completed 3 energy audits for customers. Program to end of 2007 includes 15 customer audits. The 15 audits identified a total of 267 KW demand savings and 918, 457 kwh in customer savings opportunities in electricity requirements.

- Measure the Energy - Watt Reader Program
    - In partnership with the Norfolk County Public Library, Norfolk Power was able to introduce a customer education program to increase knowledge on appliance energy consumption. The watt readers enable customer to monitor the consumption of indoor appliances.

- Energy Star Appliance Rebate Program
    - Norfolk Power took advantage of the point of sale PST rebate offered by the Province of Ontario to introduce the Energy Star appliance rebate program which gave customers an additional 10% off the purchase of their Energy Star appliances.

# 2. Evaluation of the CDM Plan

As shown in Appendix A, the NPDI plan has some very effective components with program results being very positive. Examples of this type of program include:

- Energy Audits for Large Customers,
- LED Seasonal Lights Exchange and
- Environmental Action Kits - CFL Giveaways

Some programs are not designed to have specific quantifiable energy savings but are nevertheless effective and important in our view. Examples of this second category of program include:

- Educational components like the "Conserver Family" information and
- Residential Education Program.
- Measure the Energy - Watt Reader Program
- Energy Star Appliance Rebate Program

Execution of our 2007 plan shows a NPV based on the Total Resource Cost analysis of the individual programs of $212,906. Total costs to achieve this energy saving were $157,484.

# 3. Discussion of Programs

Detailed information about our CDM plan is attached to this report in the Appendix B for each program. In the following information we provide an overview of each of the various programs (including the appropriate Appendix B for the program), current status and information about projections for savings etc that are a part of each Appendix B. Summary data for all program components is found in Appendix A following this brief introduction in this section.

# Appendix A - Evaluation of the CDM Plan

**Highlighted boxes are to be completed manually, white boxes are linked to Appendix C and will be brought forward automatically.**

| | [5] Cumulative Totals Life-to-date | Total for 2007 | Residential | Commercial | Institutional | Industrial | Agricultural | LDC System | [4] Smart Meters | Other #1 | Other #2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Net TRC value ($):* | *$ 518,151* | **$ 212,906** | **$ 152,329** | **$ -** | **$ -** | **$ 60,577** | **$ -** | **$ -** | | **$ -** | **$ -** |
| *Benefit to cost ratio:* | *2.95* | 2.56 | 2.77 | 0.00 | 0.00 | 2.21 | 0.00 | 0.00 | | 0.00 | 0.00 |
| *Number of participants or units delivered:* | *132,349* | *48,916* | 48,863 | | | 53 | | | | | |
| *Lifecycle (kWh) Savings:* | *17,390,776* | 6,701,830 | 5,056,710 | 0 | 0 | 1,645,120 | 0 | 0 | | 0 | 0 |
| *Report Year Total kWh saved (kWh):* | *1,632,161* | 989,901 | 820,013 | 0 | 0 | 169,888 | 0 | 0 | | 0 | 0 |
| *Total peak demand saved (kW):* | | 141 | 73 | 0 | 0 | 68 | 0 | 0 | | 0 | 0 |
| *Total kWh saved as a percentage of total kWh delivered (%):* | 0.15% | 0.25% | 0.50% | | | 0.11% | | | | | |
| *Peak kW saved as a percentage of LDC peak kW load (%):* | | 0.18% | 0.09% | | | 0.09% | | | | | |
| [1] *Report Year Gross C&DM expenditures ($):* | *$ 562,424* | $ 157,484 | $ 86,979 | $ - | $ - | $ 50,075 | $ - | $ - | $ 20,431 | $ - | $ - |
| [2] *Expenditures per KWh saved ($/kWh):* | *$ 0.34* | $ 0.16 | $ 0.11 | $ - | $ - | $ 0.29 | $ - | $ - | | $ - | $ - |
| [3] *Expenditures per KW saved ($/kW):* | | $ 1,116.91 | $ 1,191.49 | $ - | $ - | $ 736.40 | $ - | $ - | | $ - | $ - |

| | |
|---|---|
| *Utility discount rate (%):* | 6.51 |

[1] Expenditures are reported on accrual basis.
[2] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.
[3] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.
[4] Please report spending related to 3rd tranche of MARR funding only. TRC calculations are not required for Smart Meters. Only actual expenditures for the year need to be reported.
[5] Includes total for the reporting year, plus prior year, if any (for example, 2006 CDM Annual report for third tranche will include 2005 and 2004 numbers, if any.

## *Energy Audits for Major Customers*

Combined with the Electricity Retrofit Incentive Program, this program turned out to be a big success with our large customers. This program includes all costs relating to activities to promote and accomplish energy audits for major customers. In 2007 three audits were completed for a total of 15 for the program with total electrical savings identified of 267 kW and 918,457 kWh. In addition 143,008 cubic metres of natural gas saving opportunities were identified for these 15 customers.

Total expenditures in 2006 for this program were $43,578. Total expenditures for 2007 for this program were $24,690 for a total 2006 - 2007 period expenditure of $68,268. The original budget in the NPDI plan was $50,000. Budget money from other less successful programs was moved over to this program due to its customer satisfaction and cost effectiveness.

Assumptions used for program analysis:

- Saving estimates for 2006/2007 are based on an implementation rate for audit recommendations of 10% and implemented opportunities were assumed to be in maintenance related recommendations with no/low capital costs. We believe this to be conservative since there is little or no additional investment needed to implement significant savings.
- We have completed 15 audits in total to year end 2007.
- Natural gas savings were not calculated in our TRC for the program.

NPV based on the TRC calculation for the updated 2007 numbers is $106,249.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Energy Audits for Major Customers

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program includes all costs relating to activities to promote and accomplish energy audits for major customers. In 2007 three audits were completed with total electrical savings identified of 39,784 kWh. In addition 20,200 cubic metres of natural gas saving opportunities were identified for these 3 customers.

Total expenditures in 2006 for this program were $43,578. Total expenditures for 2007 for this program were $24,689 for a total 2005 - 2007 period expenditure of $93,460. The original budget in the NPDI plan was $50,000. Budget money from other loess successful programs was moved over to this program due to it's high profile and cost effectiveness.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | No changes to plant operations | | |
| *Efficient technology:* | Various changes based on audit recommendations. | | |
| *Number of participants or units delivered for reporting year:* | 3 | | |
| *Measure life (years):* | 25 | | |
| *Number of Partipants or unites delievered lfe to date* | 15 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | *$ 106,248.70* | $ 178,048.70 |
| [2] *TRC Costs ($):* | *$ 24,689.99* | *$ 93,958.99* |
| *Utility program cost (excluding incentives):* | $ 24,689.99 | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 24,689.99 | |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 4.30 | $ 1.89 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):*

| | |
|---|---|
| *Summer* | 7 |
| *Winter* | 26 |

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *994600* | 39784 | 5387975 | 298584 |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | *505000* | 20200 | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*
*Energy shifted On-peak to Mid-peak (kWh):*
*Energy shifted On-peak to Off-peak (kWh):*
*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*
*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |
| *Distribution system power factor at end of year (%):* | |

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 24,689.99 | |
| | *Incentive:* | $ - | |
| | *Total:* | $ 24,689.99 | $ 93,958.99 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

As noted in the program description, natural gas savings identified through the audit program (and shown in the Conservation Results section of part C) were not used in the TRC calculation. The results are actual for 2007.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power Distribution Inc. |
| Number of years in study: | 25 |

**Project Description**

| | |
|---|---|
| Name of Project: | Energy Audits for Large Customers |
| Description: | Perform Professional Audits for Large ICI Customers |

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 3 | |
| Free Ridership Rate | | |

**Output**

| | |
|---|---|
| NPV ($) | 106,248.70 |

| LDC Avoided Costs | Present | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| Avoided Energy | | 7,020.11 | 6,680.06 | 6,776.19 | 6,743.06 | 7,116.62 |
| Avoided Generation Capacity | | 1,940.90 | 2,172.82 | 1,858.74 | 2,220.92 | 2,111.20 |
| Avoided Transmission Capacity | | 146.12 | 149.76 | 153.40 | 157.30 | 161.20 |
| Avoided Distribution Capacity | | - | 186.54 | 191.21 | 195.99 | 200.89 |
| Avoided Distribution Losses | | - | - | - | - | - |
| Other Avoided Costs | | | | | | |
| Other Benefits | | | | | | |
| **Total (undiscounted) Avoided Costs** | - | 9,107.13 | 9,189.18 | 8,979.54 | 9,317.27 | 9,589.91 |
| **LDC Program Costs** | | | | | | |
| LDC OM&A Costs | - 24,689.99 | | | | | |
| LDC Capital Costs | | | | | | |
| Incremental Equipment Costs | | | | | | |
| Participant Costs | | | | | | |
| | | | | | | |
| | | | | | | |
| **Total Program Costs** | - 24,689.99 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | - 24,689.99 | 9,107.13 | 9,189.18 | 8,979.54 | 9,317.27 | 9,589.91 |

| | | | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 |
| Present value of cash flows | | - 24,689.99 | 8,824.43 | 8,359.71 | 7,669.69 | 7,471.75 | 7,220.34 |
| Accumulated present value of cash flows | | - 24,689.99 | - 15,865.56 | - 7,505.85 | 163.84 | 7,635.60 | 14,855.94 |

| | |
|---|---|
| **NPV TRC** | **106,248.70** |

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| LDC Avoided Costs | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 7,602.10 | 8,066.03 | 8,915.90 | 9,064.69 | 9,213.32 | 9,366.17 | 9,513.44 | 9,662.10 | 9,872.42 | 10,080.53 |
| Avoided Generatio | 1,601.60 | 1,212.38 | 602.16 | 698.88 | 778.44 | 823.16 | 842.66 | 828.10 | 995.02 | 1,091.22 |
| Avoided Transmiss | 165.36 | 169.52 | 173.68 | 178.10 | 182.52 | 186.94 | 191.62 | 196.56 | 201.24 | 206.44 |
| Avoided Distributio | 205.91 | 211.06 | 216.33 | 221.74 | 227.29 | 232.97 | 238.79 | 244.76 | 250.88 | 257.15 |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 9,574.97 | 9,658.99 | 9,908.08 | 10,163.42 | 10,401.57 | 10,609.24 | 10,786.51 | 10,931.52 | 11,319.56 | 11,635.35 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 9,574.97 | 9,658.99 | 9,908.08 | 10,163.42 | 10,401.57 | 10,609.24 | 10,786.51 | 10,931.52 | 11,319.56 | 11,635.35 |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.707 | 0.664 | 0.623 | 0.585 | 0.549 | 0.516 | 0.484 | 0.455 | 0.427 | 0.401 |
| Present value of cash fl | 6,768.47 | 6,410.54 | 6,173.93 | 5,945.95 | 5,713.34 | 5,471.23 | 5,222.66 | 4,969.36 | 4,831.25 | 4,662.50 |
| Accumulated present v | 21,624.41 | 28,034.94 | 34,208.87 | 40,154.82 | 45,868.16 | 51,339.39 | 56,562.05 | 61,531.42 | 66,362.67 | 71,025.16 |

**NPV TRC**

| Saving Identified Through Industrial Audit Program | | | | | | |
|---|---|---|---|---|---|---|
| | Electricity | | | | Natural gas | |
| Customer | System | Peak | Energy | Hours of use | System | Energy (Cu M) |
| Eigenbrook Farms | Lighting Retrofit | 1 | 1790 | | | |
| | Fans | 1 | 1360 | | | |
| | Infrared Heating | 1 | 904 | | | |
| Total | | 3 | 4054 | | | 0 |
| Clare-Mar Farms | Grain Elevator | 2 | 6000 | | High Efficiency Drye | 101000 |
| Total | | 2 | 6000 | | | 101000 |
| Violia Delhi Plant | A/C Optimization | 3 | 4540 | Summer only | | |
| | Blower Control/Optimization | 15 | 65664 | | | |
| Violia Norfolk Plant | A/C Optimization | 6 | 12120 | Summer only | | |
| | Lighting Retrofit | 2 | 15488 | | | |
| | HWH Reduced Digester Flaring | 42 | 91657 | | | |
| Violia Port Dover Plant | A/C Optimization | 4 | 4850 | Summer only | | |
| | Sewage Pump Optimization | 15 | 65664 | Summer only | | |
| Total | | 87 | 259983 | | | |
| Grand Total | | 92 | 270,037 | | | 101,000 |
| Summer only | | 28 | 87,174 | | | |
| All year | | 64 | 182,863 | | | 101,000 |

| Assuming 10 % implementation rate | | | | | |
|---|---|---|---|---|---|
| Summer only | 3 | 17,435 | | | |
| All year | 6 | 36,573 | | | 20,200 |
| Total (Peak in summer) | 9 | 54,007 | | | 20,200 |

## *Smart Meter Pilot Program*

This program includes all costs expended to date on Smart Metering. Norfolk Power does not have a smart metering pilot program in place. Costs are of an administrative nature relating to smart metering activities including the costs of participation/membership in the OUSM group initiative.

Norfolk Power has been working collectively with the NEPA members and Util-Assist on their Smart Meter Initiative. The goals of this concerted effort are to cost effectively plan for this deployment, and ensure due diligence is accommodated. We are examining the benefits of a collaborative approach to planning, as well as procurement of AMI and Installation services

At this point we have not completed a TRC analysis for Smart Metering. Costs are shown on Appendix C in the Gross C&DM expenditures total.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Smart Meter Pilot Program

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program includes all costs expended to date on Smart metering. Norfolk Power does not have a smart metering pilot program in place. Costs are of an administrative nature relating to smart metering activities including the costs of participation/membership in the OUSM group initiative.

Norfolk Power has been working collectively with the NEPA members and Util-Assist on their Smart Meter Initiative. The goals of this concerted effort are to cost effectively plan for this deployment, and ensure due diligence is accommodated. We are examining the benefits of a collaborative approach to planning, as well as procurement of AMI and Installation services.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 20,430.80 | 52174.05 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 20,430.80 | $ 52,174.05 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | |
| | *Winter* | | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | | | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |

| | | |
|---|---|---|
| *Distribution system power factor at begining of year (%):* | | |
| *Distribution system power factor at end of year (%):* | | |

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 20,430.80 | $ 52,174.05 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 20,430.80 | $ 52,174.05 |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

## *Water Heater Replacement Program*

This program includes all costs expended to date on replacement of older (more than 10 years) water heaters. These water heaters are electric tanks rented by the Norfolk Power Distribution Inc. affiliate company, Norfolk Energy Inc. During 2007 a bill insert promotion was done for the customers in Norfolk and Haldimand Counties.

NPV based on TRC calculations, for this program for 2007 was $8,467 at a cost of $18,183.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Water Heater Replacement Program

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program includes all costs expended to date on replacement of older (more than 10 years) water heaters. These water heaters are electric tanks rented by the Norfolk Power Distribution Inc. affiliate company, Norfolk Energy Inc. During 2007, we worked with our customer database for water heaters and contractors to identify potential candidates and promte program through contractors to reduce promotion costs. This program although it provides a negative TRC, is in the right direction for energy conservation and long lasting sustainablility. When coupled with a load control/response program the results will have an even greater impact.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Leave old tanks in place | | |
| *Efficient technology:* | Install new energy efficient tanks | | |
| *Number of participants or units delivered for reporting year:* | 103 | | |
| *Measure life (years):* | 18 | | |
| *Number of Participants or unites delivered life to date* | 231 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] | *TRC Benefits ($):* | *$ 8,467.40* | |
| [2] | *TRC Costs ($):* | *$ 18,182.96* | 91565 |
| | *Utility program cost (excluding incentives):* | $ 18,182.96 | 59597 |
| | *Incremental Measure Costs (Equipment Costs)* | | 31968 |
| | *Total TRC costs:* | $ 18,182.96 | $ 91,565.00 |
| | *Net TRC (in year CDN $):* | | |
| | *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 0.47 | 0.00 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):* *Summer*

*Winter*

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | | | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*

*Energy shifted On-peak to Mid-peak (kWh):*

*Energy shifted On-peak to Off-peak (kWh):*

*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*

*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 18,182.96 | |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 18,182.96 | |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power Distribution Inc. |
| Number of years in study: | 18 |

**Project Description**

| | |
|---|---|
| Name of Project: | Water Heater Replacements |
| Description: | Replacing tanks older than 10 years with energy efficient models |

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ○ OEB Industrial Table
- ◉ Direct Input

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 103 | |
| Free Ridership Rate | | |

**Output**

| | |
|---|---|
| NPV ($) | 8,467.40 |

| LDC Avoided Costs | Present | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| Avoided Energy | | 1,919.01 | 1,831.02 | 1,851.36 | 1,845.97 | 1,937.97 |
| Avoided Generation Capacity | | 237.39 | 265.75 | 227.34 | 271.64 | 258.22 |
| Avoided Transmission Capacity | | 17.87 | 18.32 | 18.76 | 19.24 | 19.72 |
| Avoided Distribution Capacity | | - | 22.82 | 23.39 | 23.97 | 24.57 |
| Avoided Distribution Losses | | - | - | - | - | - |
| Other Avoided Costs | | | | | | |
| Other Benefits | | | | | | |
| **Total (undiscounted) Avoided Costs** | - | 2,174.27 | 2,137.91 | 2,120.84 | 2,160.82 | 2,240.47 |
| **LDC Program Costs** | | | | | | |
| LDC OM&A Costs | - 18,182.96 | | | | | |
| LDC Capital Costs | | | | | | |
| Incremental Equipment Costs | | | | | | |
| Participant Costs | | | | | | |
| **Total Program Costs** | - 18,182.96 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | - 18,182.96 | 2,174.27 | 2,137.91 | 2,120.84 | 2,160.82 | 2,240.47 |

| | | | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 |
| Present value of cash flows | | - 18,182.96 | 2,106.78 | 1,944.93 | 1,811.48 | 1,732.81 | 1,686.87 |
| Accumulated present value of cash flows | | - 18,182.96 | - 16,076.18 | - 14,131.26 | - 12,319.78 | - 10,586.97 | - 8,900.10 |

| | |
|---|---|
| **NPV TRC** | **8,467.40** |

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| LDC Avoided Costs | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 2,087.96 | 2,202.28 | 2,383.96 | 2,431.56 | 2,478.51 | 2,527.25 | 2,574.03 | 2,621.76 | 2,686.13 | 2,749.38 |
| Avoided Generatio | 195.89 | 148.28 | 73.65 | 85.48 | 95.21 | 100.68 | 103.06 | 101.28 | 121.70 | 133.46 |
| Avoided Transmiss | 20.22 | 20.73 | 21.24 | 21.78 | 22.32 | 22.86 | 23.44 | 24.04 | 24.61 | 25.25 |
| Avoided Distributio | 25.18 | 25.81 | 26.46 | 27.12 | 27.80 | 28.49 | 29.21 | 29.94 | 30.68 | 31.45 |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 2,329.25 | 2,397.11 | 2,505.31 | 2,565.94 | 2,623.84 | 2,679.29 | 2,729.74 | 2,777.02 | 2,863.13 | 2,939.54 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 2,329.25 | 2,397.11 | 2,505.31 | 2,565.94 | 2,623.84 | 2,679.29 | 2,729.74 | 2,777.02 | 2,863.13 | 2,939.54 |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.707 | 0.664 | 0.623 | 0.585 | 0.549 | 0.516 | 0.484 | 0.455 | 0.427 | 0.401 |
| Present value of cash fl | 1,646.53 | 1,590.93 | 1,561.11 | 1,501.16 | 1,441.21 | 1,381.72 | 1,321.70 | 1,262.41 | 1,222.00 | 1,177.93 |
| Accumulated present v | - 7,253.57 | - 5,662.64 | - 4,101.53 | - 2,600.37 | - 1,159.15 | 222.57 | 1,544.26 | 2,806.67 | 4,028.67 | 5,206.60 |

**NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2023 | 2024 | 2025 |
|---|---|---|---|
| Avoided Energy | 2,813.58 | 2,877.34 | 2,941.32 |
| Avoided Generatio | 140.62 | 141.70 | 133.62 |
| Avoided Transmiss | 25.89 | 26.52 | 27.19 |
| Avoided Distributio | 32.24 | 33.04 | 33.87 |
| Avoided Distributio | - | - | - |
| Other Avoided Cos | | | |
| Other Benefits | | | |
| Total (undiscounte | 3,012.32 | 3,078.60 | 3,136.00 |
| LDC Program Cost | | | |
| LDC OM&A Costs | | | |
| LDC Capital Costs | | | |
| Incremental Equipr | | | |
| Participant Costs | | | |
| | | | |
| | | | |
| Total Program Cos | - | - | - |
| Total Avoided Cost | 3,012.32 | 3,078.60 | 3,136.00 |

| | 2023 | 2024 | 2025 |
|---|---|---|---|
| Present value factor | 0.376 | 0.353 | 0.332 |
| Present value of cash fl | 1,133.31 | 1,087.46 | 1,040.03 |
| Accumulated present v | 6,339.91 | 7,427.37 | 8,467.40 |

**NPV TRC**

## Water heater loss reduction analysis

| Current tanks purchased from John Wood | | | | | Demand component (assumes 24 hour operation) | | |
|---|---|---|---|---|---|---|---|
| | For a 40 gallon tank maximum standby losses = | | 71 | | | | |
| | For a 60 gallon tank maximum standby losses = | | | 91 | **40 gallon** | **60 gallon** | |
| | | Daily losses (in kWh) | 1.704 | 2.184 | 0.071 | 0.091 | |
| | | Annual losses (in kWh) | 621.96 | 797.16 | | | |
| | | | | | | | |
| **Old tanks (pre 1996)** | | | | | | | |
| | For a 40 gallon tank maximum standby losses = | | 96 | | | | |
| | For a 60 gallon tank maximum standby losses = | | | 115 | | | |
| | | Daily losses (in kWh) | 2.304 | 2.76 | 0.096 | 0.115 | |
| | | Annual losses (in kWh) | 840.96 | 1007.4 | | | |
| | | | | | | | |
| **Annual kWh savings between pre 1996 tank and new energy efficient tank =** | | | **219** | **210.24** | | | |

| OEB Reporting information | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Reporting Date** | **Tank size** | **Number of tanks in report period** | **kWh per tank** | **Total annual kWh reported** | **Demand saving per tank** | | **Total demand saved** |
| 31-Dec-07 | 40 | 84 | 219 | 18,396 | 0.025 | | 2.1 |
| 31-Dec-07 | 60 | 19 | 210.24 | 3,995 | | 0.024 | 0.456 |
| | | | **Totals** | **22,391** | | | **2.56** |

## *Norfolk Power Facility Lighting Retrofit Program*

This program includes an upgrade to the lighting systems in entire facility at the Norfolk Power facility in Simcoe, Ontario. T12 fluorescent lighting fixtures were replaced with more energy efficient T8 fixtures.

NPV based on TRC calculations, for this program for 2007 was $4,403 at a cost of $25, 385.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Norfolk Power Facility Lighting Retrofit.

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

Update lighting at the Norfolk Power facility in the entire facility to more efficient technology, T12's to T8's.

Total expenditures for 2007 for this program were $25, 385.02.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | T12 Fluorescent Lights | | |
| *Efficient technology:* | T8 Surface Mount Lights | | |
| *Number of participants or units delivered for reporting year:* | 260 | | |
| *Measure life (years):* | 5 | | |
| *Number of Partipants or unites delievered lfe to date* | 260 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] *TRC Benefits ($):* | *$* | *4,402.81* | |
| [2] *TRC Costs ($):* | *$* | *25,385.02* | |
| *Utility program cost (excluding incentives):* | $ | 1,820.01 | |
| *Incremental Measure Costs (Equipment Costs)* | $ | 23,565.01 | |
| *Total TRC costs:* | $ | 25,385.02 | |
| *Net TRC (in year CDN $):* | | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ | 0.17 | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | 17 | | |
| | *Winter* | 18 | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | *650520* | 130104 | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |

| | | | |
|---|---|---|---|
| *Distribution system power factor at end of year (%):* | | | |
| **Line Loss Reduction Programs:** | | | |
| *Peak load savings (kW):* | | | |
| | *lifecycle* | *in year* | |
| *Energy savngs (kWh):* | | | |
| **Distributed Generation and Load Displacement Programs:** | | | |
| *Amount of DG installed (kW):* | | | |
| *Energy generated (kWh):* | | | |
| *Peak energy generated (kWh):* | | | |
| *Fuel type:* | | | |
| **Other Programs (specify):** | | | |
| *Metric (specify):* | | | |

| D. | **Actual Program Costs:** | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|---|
| | *Utility direct costs ($):* | *Incremental capital:* | $ 23,565.01 | $ 23,565.01 |
| | | *Incremental O&M:* | $ 1,820.01 | $ 1,820.01 |
| | | *Incentive:* | | |
| | | *Total:* | $ 25,385.02 | $ 25,385.02 |
| | *Utility indirect costs ($):* | *Incremental capital:* | | |
| | | *Incremental O&M:* | | |
| | | *Total:* | | |

**E. Assumptions & Comments:**

Program and technology set up to take advantage of OPA Residential Load control program if possible. Otherwise money will be redirected to more effective programs with OEB approval.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power Distribution Inc. |
| Number of years in study: | 5 |

**Project Description**

| | |
|---|---|
| Name of Project: | Norfolk Power Facility Lighting Retrofit |
| Description: | Replacing inefficient lighting in entire facility |

- ○ OEB Residential Table
- ○ OEB Commercial Table
- ◉ OEB Industrial Table
- ○ Direct Input

- ○ k$
- ◉ $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 260 | |
| Free Ridership Rate | 10% | |

**Output**

| | |
|---|---|
| NPV ($) | 4,402.81 |

| LDC Avoided Costs | | Present | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Avoided Energy | | | 10,911.07 | 10,341.45 | 10,396.65 | 10,334.31 | 10,829.98 |
| Avoided Generation Capacity | | | 1,302.35 | 1,457.97 | 1,247.22 | 1,490.25 | 1,416.62 |
| Avoided Transmission Capacity | | | 98.05 | 100.49 | 102.93 | 105.55 | 108.17 |
| Avoided Distribution Capacity | | | - | 125.17 | 128.30 | 131.51 | 134.80 |
| Avoided Distribution Losses | | | - | - | - | - | - |
| Other Avoided Costs | | | | | | | |
| Other Benefits | | | | | | | |
| **Total (undiscounted) Avoided Costs** | | - | 12,311.46 | 12,025.08 | 11,875.10 | 12,061.62 | 12,489.56 |
| **LDC Program Costs** | | | | | | | |
| LDC OM&A Costs | | - 1,820.01 | | | | | |
| LDC Capital Costs | | - 23,565.01 | | | | | |
| Incremental Equipment Costs | (22.3) | - 22,300.00 | | | | | |
| Participant Costs | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **Total Program Costs** | | - 47,685.02 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | | - 47,685.02 | 12,311.46 | 12,025.08 | 11,875.10 | 12,061.62 | 12,489.56 |

| | | | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 |
| Present value of cash flows | | - 47,685.02 | 11,929.29 | 10,939.63 | 10,142.88 | 9,672.51 | 9,403.52 |
| Accumulated present value of cash flows | | - 47,685.02 | - 35,755.73 | - 24,816.11 | - 14,673.22 | - 5,000.71 | 4,402.81 |

| | |
|---|---|
| **NPV TRC** | **4,402.81** |

## *Distribution Loss Reduction*

This program has been terminated in favour of more effective, applicable programs. Funds will be redirected at a future date.

## *Environmental Action Kits – CFL Education Giveaway*

In cooperation with London Hydro, Norfolk Power was able to utilize the existing development and marketing material from this program to reduce costs. This program was designed to promote the awareness and understanding of compact fluorescent lights within the NPDI community. As we all know, compact fluorescent lighting is a fantastic method of providing energy efficient lighting within the home. However, a misapplied CFL can become problematic for the customer and leave a bad taste in their mouth for this highly efficient source of lighting.

Using Fairs, trade shows and other conservation events, NPDI gave away to the public within Norfolk, kits containing high quality CFL's, toilette testing dye tablets, water flow measurement bags and provided educational pieces to help the customer understand what to buy and where to use them.

NPV based on TRC calculations, for this program for 2007 was $143,483 at a cost of $27,991.

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# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Environmental Action Kits - CFL Education and Giveaway

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program was designed to promote the awareness and understanding of compact fluorescent lights within the NPDI community. As we all know, compact fluorescent lighting is a fantastic method of providing energy efficient lighting within the home. However, a misapplied CFL can become problematic for the customer and leave a bad taste in their mouth for this highly efficient source of lighting. Using Fairs, trade shows and other conservation events, NPDI in cooperation with London Hydro, launched the Environmental Action Kit Education and Giveaway which included 4 high quality CFL's, toilette testing dye tablets, water flow measurement bags, adn provided educational pieces to help the customer understand what to buy and were to use them.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | 60W Incandescent | | |
| *Efficient technology:* | CFL Screw-In 15W | | |
| *Number of participants or units delivered for reporting year:* | 8000 | | |
| *Measure life (years):* | 4 | | |
| *Number of Partipants or unites delievered lfe to date* | 8919 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] *TRC Benefits ($):* | | *$ 143,483.16* | $ 156,297.55 |
| [2] *TRC Costs ($):* | | *$ 27,991.34* | 34778.79 |
| | *Utility program cost (excluding incentives):* | $ 25,747.20 | 29119.69 |
| | *Incremental Measure Costs (Equipment Costs)* | $ 2,244.14 | 5659.1 |
| | *Total TRC costs:* | $ 27,991.34 | $ 34,778.79 |
| *Net TRC (in year CDN $):* | | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ 5.13 | $ 4.49 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):* *Summer* | *Winter* 15

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *3006720* | 751680 | 3351740 | 837935 |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*

*Energy shifted On-peak to Mid-peak (kWh):*

*Energy shifted On-peak to Off-peak (kWh):*

*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*

*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ 25,747.20 | $ 29,162.00 |
| | *Incremental O&M:* | $ 2,244.14 | $ 5,616.63 |
| | *Incentive:* | | |
| | *Total:* | $ 27,991.34 | $ 34,778.63 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power Distribution Inc. |
| Number of years in study: | 4 |

**Project Description**

| | |
|---|---|
| Name of Project: | Environmental Action Kits - CFL Education and Giveaway |
| Description: | Educate and provide CFL information and produce to customers |

- (•) OEB Residential Table
- ( ) OEB Commercial Table
- ( ) OEB Industrial Table
- ( ) Direct Input

- ( ) k$
- (•) $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 8000 | |
| Free Ridership Rate | 10% | |

**Output**

| | |
|---|---|
| NPV ($) | 143,483.16 |

| LDC Avoided Costs | | Present | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|
| Avoided Energy | | | 54,043.69 | 51,745.94 | 52,265.31 | 52,114.65 |
| Avoided Generation Capacity | | | - | - | - | - |
| Avoided Transmission Capacity | | | - | - | - | - |
| Avoided Distribution Capacity | | | - | - | - | - |
| Avoided Distribution Losses | | | - | - | - | - |
| Other Avoided Costs | | | | | | |
| Other Benefits | | | | | | |
| **Total (undiscounted) Avoided Costs** | | - | 54,043.69 | 51,745.94 | 52,265.31 | 52,114.65 |
| **LDC Program Costs** | | | | | | |
| LDC OM&A Costs | | - 2,244.14 | | | | |
| LDC Capital Costs | | - 25,747.20 | | | | |
| Incremental Equipment Costs | (14.4) | - 14,400.00 | | | | |
| Participant Costs | | | | | | |
| | | | | | | |
| | | | | | | |
| **Total Program Costs** | | - 42,391.34 | - | - | - | - |
| **Total Avoided Costs less Program Costs** | | - 42,391.34 | 54,043.69 | 51,745.94 | 52,265.31 | 52,114.65 |

| | | | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 |
| Present value of cash flows | | - 42,391.34 | 52,366.04 | 47,075.04 | 44,641.38 | 41,792.04 |
| Accumulated present value of cash flows | | - 42,391.34 | 9,974.70 | 57,049.75 | 101,691.13 | 143,483.16 |

| | |
|---|---|
| **NPV TRC** | **143,483.16** |

## *LED Seasonal Light Exchange Program*

During the months of November and December of 2007, NPDI gave out one string of LED seasonal lights for every conventional string that was turned in for destruction and recycling. The program was even more successful than first anticipated. Not only were all 2500 strings exchanged but we received 5000 strings of old style lights in exchange that were then decommissioned and recycled.

NPV based on TRC calculations, for this program for 2007 was $88,146 at a cost of $17,120.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** LED Seasonl Lights Exchange

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

During the months of November and December of 2007, NPDI gave out one string of LED seasonal lights for every conventional string that was turned in for destruction and recycling. The program was even more successful than the 2006 program. Not only were all 2500 strings exchanged but we received 5000 strings of old style lights in exchange that were then decommissioned and recycled.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | 5 WATT Christmas lights C-7(64 lights) | | |
| *Efficient technology:* | LED Christmas Lights (indoor or outdoor) | | |
| *Number of participants or units delivered for reporting year:* | 2500 | | |
| *Measure life (years):* | 30 | | |
| *Number of Partipants or unites delievered lfe to date* | 5000 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | $ *88,146.14* | $ 147,530.12 |
| [2] *TRC Costs ($):* | $ *16,125.00* | $ 75,508.98 |
| *Utility program cost (excluding incentives):* | $ 1,113.56 | $ 60,497.54 |
| *Incremental Measure Costs (Equipment Costs)* | $ 16,006.12 | $ 75,390.10 |
| *Total TRC costs:* | $ 17,119.68 | $ 76,503.66 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | 5.47 | 1.95 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):*

| | |
|---|---|
| *Summer* | |
| *Winter* | 29 |

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *1961580* | 65386 | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |
| *Distribution system power factor at end of year (%):* | |

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 1,113.56 | |
| | *Incentive:* | $ 16,006.12 | |
| | *Total:* | $ 17,119.68 | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

TRC was based on number of old style lights taken out of service. Concept being that they will be avoided energy.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power Distribution Inc. |
| Number of years in study: | 30 |

**Project Description**

| | |
|---|---|
| Name of Project: | 2007 LED Seasonal Light Exchange |
| Description: | Replace Existing strings of incandescent lights with LED lights |

(•) OEB Residential Table
( ) OEB Commercial Table
( ) OEB Industrial Table
( ) Direct Input

( ) k$
(•) $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 5000 | Took in 2.0 avg for every LED given away |
| Free Ridership Rate | 5% | |

**Output**

| | |
|---|---|
| NPV ($) | 88,146.14 |

| LDC Avoided Costs | | Present | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Avoided Energy | | | 6,845.82 | 6,578.01 | 6,769.69 | 6,706.09 | 6,820.74 |
| Avoided Generation Capacity | | | - | - | - | - | - |
| Avoided Transmission Capacity | | | - | - | - | - | - |
| Avoided Distribution Capacity | | | - | - | - | - | - |
| Avoided Distribution Losses | | | - | - | - | - | - |
| Other Avoided Costs | | | | | | | |
| Other Benefits | | | | | | | |
| **Total (undiscounted) Avoided Costs** | | - | 6,845.82 | 6,578.01 | 6,769.69 | 6,706.09 | 6,820.74 |
| **LDC Program Costs** | | | | | | | |
| LDC OM&A Costs | | - 1,113.56 | | | | | |
| LDC Capital Costs | | - 16,006.12 | | | | | |
| Incremental Equipment Costs | (9.5) | - 9,500.00 | | | | | |
| Participant Costs | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **Total Program Costs** | | - 26,619.68 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | | - 26,619.68 | 6,845.82 | 6,578.01 | 6,769.69 | 6,706.09 | 6,820.74 |

| | | | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 |
| Present value of cash flows | | - 26,619.68 | 6,633.31 | 5,984.24 | 5,782.19 | 5,377.78 | 5,135.41 |
| Accumulated present value of cash flows | | - 26,619.68 | - 19,986.37 | - 14,002.13 | - 8,219.94 | - 2,842.16 | 2,293.24 |

| | |
|---|---|
| **NPV TRC** | **88,146.14** |

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 7,594.62 | 7,845.42 | 8,236.84 | 8,457.18 | 8,674.84 | 8,896.97 | 9,114.62 | 9,336.76 | 9,566.05 | 9,788.19 |
| Avoided Generatio | - | - | - | - | - | - | - | - | - | - |
| Avoided Transmiss | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 7,594.62 | 7,845.42 | 8,236.84 | 8,457.18 | 8,674.84 | 8,896.97 | 9,114.62 | 9,336.76 | 9,566.05 | 9,788.19 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 7,594.62 | 7,845.42 | 8,236.84 | 8,457.18 | 8,674.84 | 8,896.97 | 9,114.62 | 9,336.76 | 9,566.05 | 9,788.19 |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.707 | 0.664 | 0.623 | 0.585 | 0.549 | 0.516 | 0.484 | 0.455 | 0.427 | 0.401 |
| Present value of cash fl | 5,368.58 | 5,206.89 | 5,132.54 | 4,947.75 | 4,764.89 | 4,588.21 | 4,413.16 | 4,244.40 | 4,082.84 | 3,922.31 |
| Accumulated present v | 7,661.82 | 12,868.71 | 18,001.26 | 22,949.00 | 27,713.89 | 32,302.10 | 36,715.25 | 40,959.65 | 45,042.49 | 48,964.80 |

**NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 10,017.49 | 10,244.10 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 |
| Avoided Generatio | - | - | - | - | - | - | - | - | - | - |
| Avoided Transmiss | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 10,017.49 | 10,244.10 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 10,017.49 | 10,244.10 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 |

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.376 | 0.353 | 0.332 | 0.311 | 0.292 | 0.274 | 0.258 | 0.242 | 0.227 | 0.213 |
| Present value of cash fl | 3,768.84 | 3,618.53 | 3,473.11 | 3,260.83 | 3,061.53 | 2,874.40 | 2,698.72 | 2,533.77 | 2,378.90 | 2,233.50 |
| Accumulated present v | 52,733.64 | 56,352.17 | 59,825.29 | 63,086.12 | 66,147.64 | 69,022.04 | 71,720.76 | 74,254.53 | 76,633.43 | 78,866.93 |

**NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|
| Avoided Energy | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 |
| Avoided Generatio | - | - | - | - | - |
| Avoided Transmiss | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - |
| Other Avoided Cos | | | | | |
| Other Benefits | | | | | |
| Total (undiscounte | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 |
| LDC Program Cost | | | | | |
| LDC OM&A Costs | | | | | |
| LDC Capital Costs | | | | | |
| Incremental Equipr | | | | | |
| Participant Costs | | | | | |
| Total Program Cos | - | - | - | - | - |
| Total Avoided Cost | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 | 10,472.50 |

| | 2033 | 2034 | 2035 | 2036 | 2037 |
|---|---|---|---|---|---|
| Present value factor | 0.200 | 0.188 | 0.177 | 0.166 | 0.156 |
| Present value of cash fl | 2,096.99 | 1,968.82 | 1,848.48 | 1,735.50 | 1,629.42 |
| Accumulated present v | 80,963.92 | 82,932.73 | 84,781.21 | 86,516.71 | 88,146.14 |

**NPV TRC**

## *Every Kilowatt Counts Coupon Program*

NPDI participated in both the spring and fall 2007 Every Kilowatt Counts (EKC) coupon program run by the OPA. Although our direct monetary investment was minimal, the time spent with customers and advertising was significant. Results for 2007 were great due to the participation of the local retailers in delivering this program. To date, only the 2007 Spring Campaign results were available and noted in the chart below.

| Product | Annual kWh Saving / Unit | Peak Demand Reductions KW / Unit | Total Coupons | Estimated Useful Life | Free Ridership |
|---|---|---|---|---|---|
| **SPRING CAMPAIGN** | | | | | |
| Energy Star CFL 15W | 281634 | 1080.76 | 1647 | 6 | 30% |
| Energy Star Ceiling Fan | 2560 | 0.10 | 25 | 10 | 30% |
| Outdoor Motion Sensor | 15143 | 0.00 | 94 | 10 | 30% |
| Dimmer Switch | 901 | 0.04 | 38 | 10 | 30% |
| Outdoor Solar Lights | 15523 | 0.00 | 1584 | 5 | 30% |
| Furnace / AC Filter | 11280 | 5.35 | 107 | 1 | 30% |
| Electric Furnace | 4548 | 0.00 | 5 | | |
| Natural Gas Furnace | 3696 | 5.43 | 54 | | |
| Central AC | 3371 | 0.00 | 48 | | |
| **TOTAL** | **327041** | **1086** | **3495** | | |

## *Energy Star Qualified Appliance Rebate Program*

To encourage customers to purchase Energy Star Qualified appliances, a 10% rebate was offered on the purchase of washing machines, refrigerators, dishwashers, and freezers. Customers were limited to a maximum rebate of $200 per household. Norfolk Power took advantage of the point of sale PST rebate offered by the Province of Ontario to increase participation and retailer involvement. Minimal marketing was done for this program keeping costs down as this was meant to be a retailer driven program.

NPV based on TRC calculations, for this program for 2007 was -$1,784 at a cost of $2,357. This does not reflect the true TRC of this program as the program period was from December 1/07 to February 15/08.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Energy Star Appliance Rebate Program

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This Program was designed to coincide with the Provincial Governments PST exemption on energy star qualified appliances. During the months December 2007 to February 2008, NPDI gave a 10% rebate to customers who purchased an energy star qualified appliance. The program was even more successful than first anticipated. Over 250 rebates were credited to customers. The OPA Great Refrigerator Roundup program was an additional incentive for customers who were replacing their old refrigerator.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Less efficient appliances | | |
| *Efficient technology:* | Energy Star Qualified Appliances | | |
| *Number of participants or units delivered for reporting year:* | | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | -$ *1,783.63* | -$ 1,783.63 |
| [2] *TRC Costs ($):* | $ *2,353.84* | $ 2,353.84 |
| *Utility program cost (excluding incentives):* | $ 2,356.84 | $ 2,356.84 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 2,353.84 | $ 2,353.84 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | -$ 0.76 | -$ 0.76 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | |
| | *Winter* | 29 | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | *88410* | 2947 | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 2,356.84 | $ 2,356.84 |
| | *Incentive:* | | |
| | *Total:* | $ 2,356.84 | $ 2,356.84 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

TRC was calculated using average number of years for combined appliances. December portion of program only consisted of 13 appliances which was too small an amount to calculate TRC values for each individual appliance.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

**Net Present Value$_{TRC}$**

**Utility**

| | |
|---|---|
| Name of Utility: | Norfolk Power Distribution Inc. |
| Number of years in study: | 17 |

**Project Description**

| | |
|---|---|
| Name of Project: | Energy Star Appliance Rebates |
| Description: | 10% rebate for Energy Star qualified appliance purchases |

(•) OEB Residential Table
( ) OEB Commercial Table
( ) OEB Industrial Table
( ) Direct Input

( ) k$
(•) $

**User Inputs**

| | | |
|---|---|---|
| Discount rate | 6.51% | |
| Unit Annual Energy Savings | 0 | kW/unit |
| Number of Units Delivered | 13 | Took in 2.0 avg for every LED given away |
| Free Ridership Rate | 10% | |

**Output**

NPV ($) - 1,783.63

| LDC Avoided Costs | | Present | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Avoided Energy | | | 203.06 | 193.75 | 195.90 | 195.33 | 205.07 |
| Avoided Generation Capacity | | | 10.96 | 12.27 | 10.50 | 12.54 | 11.92 |
| Avoided Transmission Capacity | | | 0.83 | 0.85 | 0.87 | 0.89 | 0.91 |
| Avoided Distribution Capacity | | | - | 1.05 | 1.08 | 1.11 | 1.13 |
| Avoided Distribution Losses | | | - | - | - | - | - |
| Other Avoided Costs | | | | | | | |
| Other Benefits | | | | | | | |
| **Total (undiscounted) Avoided Costs** | | - | 214.85 | 207.92 | 208.34 | 209.87 | 219.03 |
| **LDC Program Costs** | | | | | | | |
| LDC OM&A Costs | | - 2,356.84 | | | | | |
| LDC Capital Costs | | | | | | | |
| Incremental Equipment Costs | (2.0) | - 2,000.00 | | | | | |
| Participant Costs | | | | | | | |
| **Total Program Costs** | | - 4,356.84 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | | - 4,356.84 | 214.85 | 207.92 | 208.34 | 209.87 | 219.03 |

| | | | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 |
| Present value of cash flows | | - 4,356.84 | 208.18 | 189.15 | 177.95 | 168.30 | 164.91 |
| Accumulated present value of cash flows | | - 4,356.84 | - 4,148.66 | - 3,959.51 | - 3,781.56 | - 3,613.26 | - 3,448.34 |

**NPV TRC** - **1,783.63**

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 220.94 | 233.03 | 252.26 | 257.30 | 262.26 | 267.42 | 272.37 | 277.42 | 284.23 | 290.93 |
| Avoided Generatio | 9.04 | 6.85 | 3.40 | 3.95 | 4.40 | 4.65 | 4.76 | 4.68 | 5.62 | 6.16 |
| Avoided Transmiss | 0.93 | 0.96 | 0.98 | 1.01 | 1.03 | 1.06 | 1.08 | 1.11 | 1.14 | 1.17 |
| Avoided Distributio | 1.16 | 1.19 | 1.22 | 1.25 | 1.28 | 1.32 | 1.35 | 1.38 | 1.42 | 1.45 |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 232.08 | 242.03 | 257.86 | 263.50 | 268.97 | 274.44 | 279.56 | 284.59 | 292.41 | 299.71 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 232.08 | 242.03 | 257.86 | 263.50 | 268.97 | 274.44 | 279.56 | 284.59 | 292.41 | 299.71 |

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.707 | 0.664 | 0.623 | 0.585 | 0.549 | 0.516 | 0.484 | 0.455 | 0.427 | 0.401 |
| Present value of cash fl | 164.05 | 160.63 | 160.68 | 154.16 | 147.74 | 141.53 | 135.36 | 129.37 | 124.80 | 120.10 |
| Accumulated present v | - 3,284.29 | - 3,123.66 | - 2,962.98 | - 2,808.82 | - 2,661.08 | - 2,519.55 | - 2,384.19 | - 2,254.82 | - 2,130.02 | - 2,009.92 |

**NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2023 | 2024 |
|---|---|---|
| Avoided Energy | 297.72 | 304.47 |
| Avoided Generatio | 6.49 | 6.54 |
| Avoided Transmiss | 1.20 | 1.22 |
| Avoided Distributio | 1.49 | 1.53 |
| Avoided Distributio | - | - |
| Other Avoided Cos | | |
| Other Benefits | | |
| Total (undiscounte | 306.90 | 313.76 |
| LDC Program Cost | | |
| LDC OM&A Costs | | |
| LDC Capital Costs | | |
| Incremental Equipr | | |
| Participant Costs | | |
| Total Program Cos | - | - |
| Total Avoided Cost | 306.90 | 313.76 |

| | 2023 | 2024 |
|---|---|---|
| Present value factor | 0.376 | 0.353 |
| Present value of cash fl | 115.46 | 110.83 |
| Accumulated present v. | - 1,894.46 | - 1,783.63 |

**NPV TRC**

## *Conserver Family*

In 2007 we participated again with the NEPA utility group in maintaining of the "Conserver Family" energy information website and literature. Development costs were shared among the NEPA group during 2005. The Conserver Family is used to promote energy conservation and environmental awareness in ads, presentations to community groups and many other standard media.

As an educational program, the TRC value of this program has not been calculated. Program total costs in 2007 were $ 2,105.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Conserver Family

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

In 2007 we participated again with the NEPA utility group in maintaining of the "Conserver Family" energy information website and literature. Development costs were shared among the NEPA group during 2005. The Conserver Family is used to promote energy conservation and environmental awareness in ads, presentations to community groups and many other standard media.

As an educational program, the TRC value of this program has not been calculated. Program total costs in 2007 were $ 2,105.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | 19000 | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | 56435 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 2,104.75 | $ 27,569.95 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 2,104.75 | $ 27,569.95 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | lifecycle | in year | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | | |
| | *Winter* | | | | |
| *Energy saved (kWh):* | | | | | |
| *Other resources saved :* | | | | | |
| *Natural Gas (m3):* | | | | | |
| *Other (specify):* | | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 2,104.75 | $ 27,569.95 |
| | *Incentive:* | | |
| | *Total:* | $ 2,104.75 | $ 27,569.95 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

Expenses incurred in 2007 are for web hosting and newspaper ads.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

## *Residential Customer Educational*

We continue to further the cause of energy conservation for our residential customers through advocacy, participation in local events and fairs, training sessions and participation in the OPA's Every Kilowatt Counts programs. In 2007 NPDI promoted energy conservation at the Norfolk Fair, Simcoe Friendship Festival, Norfolk County Conservation Day, the Haldimand Norfolk home Builders Association and through periodic newspaper advertisements. Also, as noted above, the Conserver Joe web site continues to be a useful tool of reference for residential customers wishing to learn more about energy conservation.

Because this is an education component and difficult to quantify, the TRC was not calculated. Expenditures for this program in 2007 were $15,414.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Residential Education

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

We continue to further the cause of energy conservation for out residential customers through advocacy, participation in local events and fairs, training sessions and participation in the OPA's Every Kilowatt Counts programs. In 2007 NPDI promoted energy conservation at the Norfolk Fair, Simcoe Friendship Festival, the Haldimand Norfolk home Builders Association and through periodic newspaper advertisements. Also, as noted above, the Conserver Joe web site continues to be a useful tool of reference for residential customers wishing to learn more about energy conservation.
The TRC was not calculated for this program because this is an education component and difficult to quantify. Expenditures for this program in 2007 were $15,414.21

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | 19000 | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | 38000 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 15,414.21 | 101707.05 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 15,414.21 | $ 101,707.05 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | lifecycle | in year | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | | |
| | *Winter* | | | | |
| *Energy saved (kWh):* | | | | | |
| *Other resources saved :* | | | | | |
| *Natural Gas (m3):* | | | | | |
| *Other (specify):* | | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*

*Energy generated (kWh):*

*Peak energy generated (kWh):*

*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 15,414.21 | $ 101,707.05 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 15,414.21 | $ 101,707.05 |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

## *Measure the Energy - Watt Reader Awareness Program*

In partnership with the Norfolk County Libraries, 10 watt readers were made available to the public for a loan period of three weeks. The watt readers would enable customers to monitor the consumption of indoor appliances. In addition, the first 50 individuals who took advantage of the program received a CFL bulb as a bonus.

TRC was not calculated for this program as it was included under the Customer Residential Education and being an educational component, difficult to quantify. Expenditures for this program for 2007 were a minimal portion of the $68,799 needed for the Customer Residential Education program.

## *Training*

Training in 2007 included the continuation of work to train customer service staff on energy efficient equipment and programs.

Costs for this work in 2007 were $3,812. Some training carried out was for commercial/industrial energy efficiency as well as residential.

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Training

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

Training in 2007 included the continuation of work to train customer service staff on energy efficient equipment and programs.

Costs for this work in 2007 were $3,811.76. Some training carried out was for commercial/industrial energy efficiency as well as residential.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | 50 | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | 150 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 3,811.76 | $ 19,400.82 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 3,811.76 | $ 19,400.82 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):* *Summer*

*Winter*

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | | | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*

*Energy shifted On-peak to Mid-peak (kWh):*

*Energy shifted On-peak to Off-peak (kWh):*

*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*

*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 3,811.76 | $ 19,400.82 |
| | *Incentive:* | | |
| | *Total:* | $ 3,811.76 | $ 19,400.82 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# 4. Lessons Learned

## *Utility Size Challenges*

As a relatively small utility (approximately 20,000 customers) we face challenges that larger utilities do not share. Costs to initiate and operate CDM programs are generally not dependent on utility size. This makes program development and administration cost control difficult. In addition, meeting regulatory and reporting requirements, while important, become a high cost when compared to the overall program budget. These regulatory costs are typically independent of utility size. A regulatory cost of $20,000 may be a relatively insignificant in a budget of $2.5 million but significantly reduces the funds available for customer programs when a total CDM budget is $580,000.

## *Shared Initiatives*

Without question shared initiatives reduce the administrative cost component in delivery of CDM programs. Where they apply to our customer groups, they are a very effective way of implementing CDM.

- Three examples of this type of effective initiative in 2007 were the "Environmental Action Kit Giveaways", "LED Seasonal Light Exchange" program and the "Conserver Family" customer education and information program.

## *Local Initiatives*

Our own local programs can be effective as long as we can minimize administration (i.e. keep them simple and partner with others who are willing/able to provide administrative support and management of the initiative).

- **Environmental Action Kit CFL Giveaway** is a good example of this type of program. Compact Fluorescent lights were given out directly to the public but also given out indirectly by the use of other organizations. For instance, Norfolk County gave away CFL's on our behalf in conjunction with their own conservation education initiative as well as the local library gave away CFL's lights on our behalf in conjunction with some of their own conservation education initiatives. This lends further credibility to the compact fluorescent as the 'good news' is coming from more than one trusted source.
- **Our large customer audit program** has been successful as a result of the OPA's Electricity Retrofit Incentive Program (ERIP). Based on past experience an audit alone does not produce the type of results we want to see. It is critical to make it really easy for the customer to implement change. Audit recommendations need to come with an offer to provide turn key implementation of energy efficiency improvements and firm pricing for those changes. "Partnered" firms that can implement the changes for the customer need to be easily available. Make it simple to do it and not take the customer's resources away from the customer's core business. Combining ERIP with the customer audit program allows for customers to implement the changes recommended in the audits provided by Norfolk Power.

## *Customer Education Programs*

Customer education is important. It helps ensure that energy efficiency becomes more of a focus for future consumers of electricity. One of the lessons learned during 2007 is that, while education is important, it is very difficult and can be expensive to quantify the results of customer education. Statistically accurate survey information is expensive and this expense is of particular concern when the CDM budget is relatively small. To be successful in delivering conservation programs, it is important to educate our customers. Education is key to program success.

# 5. Conclusion

In 2007 CDM programs from NPDI were well received by all our customers. The customers understand that we want to help. This includes both LDC initiated and OPA initiated programs.

Norfolk Power Distribution Inc. is committed to CDM and working hard to bring our customers into a conservation culture. It makes sense for everyone and we will continue to offer programs that benefit our customers (in both the short and long term).

Sharing costs and ideas only makes sense where it is possible, and we will continue to look for those types of opportunities.

# 6. Appendix A

# Appendix A - Evaluation of the CDM Plan

**Highlighted boxes are to be completed manually, white boxes are linked to Appendix C and will be brought forward automatically.**

| | [5] Cumulative Totals Life-to-date | Total for 2007 | Residential | Commercial | Institutional | Industrial | Agricultural | LDC System | [4] Smart Meters | Other #1 | Other #2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Net TRC value ($):* | *$ 518,151* | **$ 212,906** | **$ 152,329** | **$ -** | **$ -** | **$ 60,577** | **$ -** | **$ -** | | **$ -** | **$ -** |
| *Benefit to cost ratio:* | *2.95* | 2.56 | 2.77 | 0.00 | 0.00 | 2.21 | 0.00 | 0.00 | | 0.00 | 0.00 |
| *Number of participants or units delivered:* | *132,349* | *48,916* | 48,863 | | | 53 | | | | | |
| *Lifecycle (kWh) Savings:* | *17,390,776* | 6,701,830 | 5,056,710 | 0 | 0 | 1,645,120 | 0 | 0 | | 0 | 0 |
| *Report Year Total kWh saved (kWh):* | *1,632,161* | 989,901 | 820,013 | 0 | 0 | 169,888 | 0 | 0 | | 0 | 0 |
| *Total peak demand saved (kW):* | | 141 | 73 | 0 | 0 | 68 | 0 | 0 | | 0 | 0 |
| *Total kWh saved as a percentage of total kWh delivered (%):* | 0.15% | 0.25% | 0.50% | | | 0.11% | | | | | |
| *Peak kW saved as a percentage of LDC peak kW load (%):* | | 0.18% | 0.09% | | | 0.09% | | | | | |
| [1] *Report Year Gross C&DM expenditures ($):* | *$ 562,424* | $ 157,484 | $ 86,979 | $ - | $ - | $ 50,075 | $ - | $ - | $ 20,431 | $ - | $ - |
| [2] *Expenditures per KWh saved ($/kWh):* | *$ 0.34* | $ 0.16 | $ 0.11 | $ - | $ - | $ 0.29 | $ - | $ - | | $ - | $ - |
| [3] *Expenditures per KW saved ($/kW):* | | $ 1,116.91 | $ 1,191.49 | $ - | $ - | $ 736.40 | $ - | $ - | | $ - | $ - |

| | |
|---|---|
| *Utility discount rate (%):* | 6.51 |

[1] Expenditures are reported on accrual basis.
[2] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate energy savings.
[3] Expenditures include all utility program costs (direct and indirect) for all programs which primarily generate capacity savings.
[4] Please report spending related to 3rd tranche of MARR funding only. TRC calculations are not required for Smart Meters. Only actual expenditures for the year need to be reported.
[5] Includes total for the reporting year, plus prior year, if any (for example, 2006 CDM Annual report for third tranche will include 2005 and 2004 numbers, if any.

# 7. Appendix B

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Energy Audits for Major Customers

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program includes all costs relating to activities to promote and accomplish energy audits for major customers. In 2007 three audits were completed with total electrical savings identified of 39,784 kWh. In addition 20,200 cubic metres of natural gas saving opportunities were identified for these 3 customers.

Total expenditures in 2006 for this program were $43,578. Total expenditures for 2007 for this program were $24,689 for a total 2005 - 2007 period expenditure of $93,460. The original budget in the NPDI plan was $50,000. Budget money from other loess successful programs was moved over to this program due to it's high profile and cost effectiveness.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | No changes to plant operations | | |
| *Efficient technology:* | Various changes based on audit recommendations. | | |
| *Number of participants or units delivered for reporting year:* | 3 | | |
| *Measure life (years):* | 25 | | |
| *Number of Partipants or unites delievered lfe to date* | 15 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | *$ 106,248.70* | $ 178,048.70 |
| [2] *TRC Costs ($):* | *$ 24,689.99* | *$ 93,958.99* |
| *Utility program cost (excluding incentives):* | $ 24,689.99 | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 24,689.99 | |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 4.30 | $ 1.89 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):*

| | |
|---|---|
| *Summer* | 7 |
| *Winter* | 26 |

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *994600* | 39784 | 5387975 | 298584 |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | *505000* | 20200 | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*
*Energy shifted On-peak to Mid-peak (kWh):*
*Energy shifted On-peak to Off-peak (kWh):*
*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*
*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |
| *Distribution system power factor at end of year (%):* | |

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 24,689.99 | |
| | *Incentive:* | $ - | |
| | *Total:* | $ 24,689.99 | $ 93,958.99 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

As noted in the program description, natural gas savings identified through the audit program (and shown in the Conservation Results section of part C) were not used in the TRC calculation. The results are actual for 2007.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Smart Meter Pilot Program

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program includes all costs expended to date on Smart metering. Norfolk Power does not have a smart metering pilot program in place. Costs are of an administrative nature relating to smart metering activities including the costs of participation/membership in the OUSM group initiative.

Norfolk Power has been working collectively with the NEPA members and Util-Assist on their Smart Meter Initiative. The goals of this concerted effort are to cost effectively plan for this deployment, and ensure due diligence is accommodated. We are examining the benefits of a collaborative approach to planning, as well as procurement of AMI and Installation services.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 20,430.80 | 52174.05 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 20,430.80 | $ 52,174.05 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | |
| | *Winter* | | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | | | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |

| | | |
|---|---|---|
| *Distribution system power factor at begining of year (%):* | | |
| *Distribution system power factor at end of year (%):* | | |

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 20,430.80 | $ 52,174.05 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 20,430.80 | $ 52,174.05 |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Water Heater Replacement Program

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program includes all costs expended to date on replacement of older (more than 10 years) water heaters. These water heaters are electric tanks rented by the Norfolk Power Distribution Inc. affiliate company, Norfolk Energy Inc. During 2007, we worked with our customer database for water heaters and contractors to identify potential candidates and promte program through contractors to reduce promotion costs. This program although it provides a negative TRC, is in the right direction for energy conservation and long lasting sustainablility. When coupled with a load control/response program the results will have an even greater impact.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Leave old tanks in place | | |
| *Efficient technology:* | Install new energy efficient tanks | | |
| *Number of participants or units delivered for reporting year:* | 103 | | |
| *Measure life (years):* | 18 | | |
| *Number of Participants or unites delivered life to date* | 231 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] | *TRC Benefits ($):* | *$ 8,467.40* | |
| [2] | *TRC Costs ($):* | *$ 18,182.96* | 91565 |
| | *Utility program cost (excluding incentives):* | $ 18,182.96 | 59597 |
| | *Incremental Measure Costs (Equipment Costs)* | | 31968 |
| | *Total TRC costs:* | $ 18,182.96 | $ 91,565.00 |
| | *Net TRC (in year CDN $):* | | |
| | *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 0.47 | 0.00 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):* *Summer*

*Winter*

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | | | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*

*Energy shifted On-peak to Mid-peak (kWh):*

*Energy shifted On-peak to Off-peak (kWh):*

*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*

*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 18,182.96 | |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 18,182.96 | |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Norfolk Power Facility Lighting Retrofit.

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

Update lighting at the Norfolk Power facility in the entire facility to more efficient technology, T12's to T8's.

Total expenditures for 2007 for this program were $25, 385.02.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | T12 Fluorescent Lights | | |
| *Efficient technology:* | T8 Surface Mount Lights | | |
| *Number of participants or units delivered for reporting year:* | 260 | | |
| *Measure life (years):* | 5 | | |
| *Number of Partipants or unites delievered lfe to date* | 260 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] *TRC Benefits ($):* | *$* | *4,402.81* | |
| [2] *TRC Costs ($):* | *$* | *25,385.02* | |
| *Utility program cost (excluding incentives):* | $ | 1,820.01 | |
| *Incremental Measure Costs (Equipment Costs)* | $ | 23,565.01 | |
| *Total TRC costs:* | $ | 25,385.02 | |
| *Net TRC (in year CDN $):* | | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ | 0.17 | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | 17 | | |
| | *Winter* | 18 | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | *650520* | 130104 | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ 23,565.01 | $ 23,565.01 |
| | *Incremental O&M:* | $ 1,820.01 | $ 1,820.01 |
| | *Incentive:* | | |
| | *Total:* | $ 25,385.02 | $ 25,385.02 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

Program and technology set up to take advantage of OPA Residential Load control program if possible. Otherwise money will be redirected to more effective programs with OEB approval.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Environmental Action Kits - CFL Education and Giveaway

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This program was designed to promote the awareness and understanding of compact fluorescent lights within the NPDI community. As we all know, compact fluorescent lighting is a fantastic method of providing energy efficient lighting within the home. However, a misapplied CFL can become problematic for the customer and leave a bad taste in their mouth for this highly efficient source of lighting. Using Fairs, trade shows and other conservation events, NPDI in cooperation with London Hydro, launched the Environmental Action Kit Education and Giveaway which included 4 high quality CFL's, toilette testing dye tablets, water flow measurement bags, adn provided educational pieces to help the customer understand what to buy and were to use them.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | 60W Incandescent | | |
| *Efficient technology:* | CFL Screw-In 15W | | |
| *Number of participants or units delivered for reporting year:* | 8000 | | |
| *Measure life (years):* | 4 | | |
| *Number of Partipants or unites delievered lfe to date* | 8919 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] *TRC Benefits ($):* | | *$ 143,483.16* | $ 156,297.55 |
| [2] *TRC Costs ($):* | | *$ 27,991.34* | 34778.79 |
| | *Utility program cost (excluding incentives):* | $ 25,747.20 | 29119.69 |
| | *Incremental Measure Costs (Equipment Costs)* | $ 2,244.14 | 5659.1 |
| | *Total TRC costs:* | $ 27,991.34 | $ 34,778.79 |
| *Net TRC (in year CDN $):* | | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ 5.13 | $ 4.49 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):* *Summer* | *Winter* 15

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *3006720* | 751680 | 3351740 | 837935 |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*

*Energy shifted On-peak to Mid-peak (kWh):*

*Energy shifted On-peak to Off-peak (kWh):*

*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*

*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | $ 25,747.20 | $ 29,162.00 |
| | *Incremental O&M:* | $ 2,244.14 | $ 5,616.63 |
| | *Incentive:* | | |
| | *Total:* | $ 27,991.34 | $ 34,778.63 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** LED Seasonl Lights Exchange

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

During the months of November and December of 2007, NPDI gave out one string of LED seasonal lights for every conventional string that was turned in for destruction and recycling. The program was even more successful than the 2006 program. Not only were all 2500 strings exchanged but we received 5000 strings of old style lights in exchange that were then decommissioned and recycled.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | 5 WATT Christmas lights C-7(64 lights) | | |
| *Efficient technology:* | LED Christmas Lights (indoor or outdoor) | | |
| *Number of participants or units delivered for reporting year:* | 2500 | | |
| *Measure life (years):* | 30 | | |
| *Number of Partipants or unites delievered lfe to date* | 5000 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | $ *88,146.14* | $ 147,530.12 |
| [2] *TRC Costs ($):* | $ *16,125.00* | $ 75,508.98 |
| *Utility program cost (excluding incentives):* | $ 1,113.56 | $ 60,497.54 |
| *Incremental Measure Costs (Equipment Costs)* | $ 16,006.12 | $ 75,390.10 |
| *Total TRC costs:* | $ 17,119.68 | $ 76,503.66 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | 5.47 | 1.95 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):*

| | |
|---|---|
| *Summer* | |
| *Winter* | 29 |

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *1961580* | 65386 | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |
| *Distribution system power factor at end of year (%):* | |

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 1,113.56 | |
| | *Incentive:* | $ 16,006.12 | |
| | *Total:* | $ 17,119.68 | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

TRC was based on number of old style lights taken out of service. Concept being that they will be avoided energy.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Energy Star Appliance Rebate Program

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

This Program was designed to coincide with the Provincial Governments PST exemption on energy star qualified appliances. During the months December 2007 to February 2008, NPDI gave a 10% rebate to customers who purchased an energy star qualified appliance. The program was even more successful than first anticipated. Over 250 rebates were credited to customers. The OPA Great Refrigerator Roundup program was an additional incentive for customers who were replacing their old refrigerator.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Less efficient appliances | | |
| *Efficient technology:* | Energy Star Qualified Appliances | | |
| *Number of participants or units delivered for reporting year:* | | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | -$ *1,783.63* | -$ 1,783.63 |
| [2] *TRC Costs ($):* | $ *2,353.84* | $ 2,353.84 |
| *Utility program cost (excluding incentives):* | $ 2,356.84 | $ 2,356.84 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 2,353.84 | $ 2,353.84 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | -$ 0.76 | -$ 0.76 |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | |
| | *Winter* | 29 | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | *88410* | 2947 | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 2,356.84 | $ 2,356.84 |
| | *Incentive:* | | |
| | *Total:* | $ 2,356.84 | $ 2,356.84 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

TRC was calculated using average number of years for combined appliances. December portion of program only consisted of 13 appliances which was too small an amount to calculate TRC values for each individual appliance.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Conserver Family

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

In 2007 we participated again with the NEPA utility group in maintaining of the "Conserver Family" energy information website and literature. Development costs were shared among the NEPA group during 2005. The Conserver Family is used to promote energy conservation and environmental awareness in ads, presentations to community groups and many other standard media.

As an educational program, the TRC value of this program has not been calculated. Program total costs in 2007 were $ 2,105.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | 19000 | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | 56435 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 2,104.75 | $ 27,569.95 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 2,104.75 | $ 27,569.95 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | lifecycle | in year | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | | |
| | *Winter* | | | | |
| *Energy saved (kWh):* | | | | | |
| *Other resources saved :* | | | | | |
| *Natural Gas (m3):* | | | | | |
| *Other (specify):* | | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

| | |
|---|---|
| *Amount of KVar installed (KVar):* | |
| *Distribution system power factor at begining of year (%):* | |

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*
*Energy generated (kWh):*
*Peak energy generated (kWh):*
*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 2,104.75 | $ 27,569.95 |
| | *Incentive:* | | |
| | *Total:* | $ 2,104.75 | $ 27,569.95 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

Expenses incurred in 2007 are for web hosting and newspaper ads.

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Residential Education

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

We continue to further the cause of energy conservation for out residential customers through advocacy, participation in local events and fairs, training sessions and participation in the OPA's Every Kilowatt Counts programs. In 2007 NPDI promoted energy conservation at the Norfolk Fair, Simcoe Friendship Festival, the Haldimand Norfolk home Builders Association and through periodic newspaper advertisements. Also, as noted above, the Conserver Joe web site continues to be a useful tool of reference for residential customers wishing to learn more about energy conservation.
The TRC was not calculated for this program because this is an education component and difficult to quantify. Expenditures for this program in 2007 were $15,414.21

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | 19000 | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | 38000 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 15,414.21 | 101707.05 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 15,414.21 | $ 101,707.05 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

| | | lifecycle | in year | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | | |
| | *Winter* | | | | |
| *Energy saved (kWh):* | | | | | |
| *Other resources saved :* | | | | | |
| *Natural Gas (m3):* | | | | | |
| *Other (specify):* | | | | | |

**Demand Management Programs:**

| | |
|---|---|
| *Controlled load (kW)* | |
| *Energy shifted On-peak to Mid-peak (kWh):* | |
| *Energy shifted On-peak to Off-peak (kWh):* | |
| *Energy shifted Mid-peak to Off-peak (kWh):* | |

**Demand Response Programs:**

| | |
|---|---|
| *Dispatchable load (kW):* | |
| *Peak hours dispatched in year (hours):* | |

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

*Peak load savings (kW):*

| | *lifecycle* | *in year* |
|---|---|---|
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

*Amount of DG installed (kW):*

*Energy generated (kWh):*

*Peak energy generated (kWh):*

*Fuel type:*

**Other Programs (specify):**

*Metric (specify):*

D. **Actual Program Costs:**

| | | **Reporting Year** | **Cumlative Life to Date** |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 15,414.21 | $ 101,707.05 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 15,414.21 | $ 101,707.05 |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# Appendix B - Discussion of the Program

**(complete this Appendix for each program)**

A. **Name of the Program:** Training

**Description of the program (including intent, design, delivery, partnerships and evaluation):**

Training in 2007 included the continuation of work to train customer service staff on energy efficient equipment and programs.

Costs for this work in 2007 were $3,811.76. Some training carried out was for commercial/industrial energy efficiency as well as residential.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | | | |
| *Efficient technology:* | | | |
| *Number of participants or units delivered for reporting year:* | 50 | | |
| *Measure life (years):* | | | |
| *Number of Partipants or unites delievered lfe to date* | 150 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | $ 3,811.76 | $ 19,400.82 |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | $ 3,811.76 | $ 19,400.82 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

C. **Results:** (one or more category may apply)

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):* *Summer*

*Winter*

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | | | | |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | | | | |
| *Other (specify):* | | | | |

**Demand Management Programs:**

*Controlled load (kW)*

*Energy shifted On-peak to Mid-peak (kWh):*

*Energy shifted On-peak to Off-peak (kWh):*

*Energy shifted Mid-peak to Off-peak (kWh):*

**Demand Response Programs:**

*Dispatchable load (kW):*

*Peak hours dispatched in year (hours):*

**Power Factor Correction Programs:**

*Amount of KVar installed (KVar):*

*Distribution system power factor at begining of year (%):*

*Distribution system power factor at end of year (%):*

**Line Loss Reduction Programs:**

| | | |
|---|---|---|
| *Peak load savings (kW):* | | |
| | *lifecycle* | *in year* |
| *Energy savngs (kWh):* | | |

**Distributed Generation and Load Displacement Programs:**

| | |
|---|---|
| *Amount of DG installed (kW):* | |
| *Energy generated (kWh):* | |
| *Peak energy generated (kWh):* | |
| *Fuel type:* | |

**Other Programs (specify):**

| | |
|---|---|
| *Metric (specify):* | |

D. **Actual Program Costs:**

| | | Reporting Year | Cumlative Life to Date |
|---|---|---|---|
| *Utility direct costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | $ 3,811.76 | $ 19,400.82 |
| | *Incentive:* | | |
| | *Total:* | $ 3,811.76 | $ 19,400.82 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | | |

**E. Assumptions & Comments:**

[1] Benefits should be estimated if costs have been incurred and the technology has been deployed. Benefits reflect the present value of the measure for the number of units deployed in the year, i.e. the numebr of units times the net present value per unit b

[2] For technologies which have not been deployed but for which the LDC has incurred costs, report only the TRC costs on a present value basis. Incentives (e.g. rebates) from the LDC to a customer are not a component of the TRC costs. However, payments made

# 8. Appendix C

# Appendix C - Program and Portfolio Totals

**Report Year:** 2007

## 1. Residential Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Environmental Action Kits* | $ 143,483 | $ 27,991 | | 5.13 | 751,680 | 3,006,720 | 15 | $ 27,991 |
| *LED Seasonl Lights Exchange* | $ 88,146 | $ 16,125 | | 5.47 | 65,386 | 1,961,580 | 29 | $ 17,120 |
| *Water Heater Replacement Program* | $ 8,467 | $ 18,183 | | 0.47 | 0 | 0 | 0 | $ 18,183 |
| *ES Appliance Rebate* | -$ 1,784 | $ 2,354 | | -0.76 | 2,947 | 88,410 | 29 | $ 2,354 |
| *Conserver Family* | $ - | $ 2,105 | | 0.00 | 0 | 0 | | $ 2,105 |
| *Residential Education* | $ - | $ 15,414 | | 0.00 | 0 | 0 | | $ 15,414 |
| *Training* | $ - | $ 3,812 | | 0.00 | 0 | 0 | | $ 3,812 |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Residential** | $ 238,313 | $ 85,984 | $ 152,329 | 2.77 | 820,013 | 5,056,710 | 73 | $ 86,979 |
| *Residential Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total Residential TRC Costs** | | $ 85,984 | | | | | | |
| ****Totals TRC - Residential** | **$ 238,313** | **$ 85,984** | **$ 152,329** | **2.77** | | | | |

## 2. Commercial Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Name of Program A* | | | $ - | 0.00 | | | | |
| *Name of Program B* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program F* | | | $ - | 0.00 | | | | |
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Commercial** | $ - | $ - | $ - | 0.00 | 0 | 0 | 0 | $ - |

| | | | | |
|---|---|---|---|---|
| *Commercial Indirect Costs not attributable to any specific program* → | | | | |
| **Total TRC Costs** | | $ - | | |
| ****Totals TRC - Commercial** | **$ -** | **$ -** | **$ -** | **0.00** |

## 3. Institutional Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Name of Program A* | | | $ - | 0.00 | | | | |
| *Name of Program B* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Institutional** | $ - | $ - | $ - | 0.00 | 0 | 0 | 0 | $ - |
| *Institutional Indirect Costs not attributable to any specific program* → | | | | | | | | |
| **Total TRC Costs** | | $ - | | | | | | |
| ****Totals TRC - Institutional** | **$ -** | **$ -** | **$ -** | **0.00** | | | | |

## 4. Industrial Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Energy Audits for Major Customers* | $ 106,249 | $ 24,690 | | 4.30 | 39,784 | 994,600 | 33 | $ 24,690 |
| *NP Facility Lighting* | $ 4,403 | $ 25,385 | -$ 20,982 | 0.17 | 130,104 | 650,520 | 35 | $ 25,385 |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program F* | | | $ - | 0.00 | | | | |
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Industrial** | $ 110,652 | $ 50,075 | $ 60,577 | 2.21 | 169,888 | 1,645,120 | 68 | $ 50,075 |
| *Industrial Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total TRC Costs** | | $ 50,075 | | | | | | |
| ****Totals TRC - Industrial** | **$ 110,652** | **$ 50,075** | **$ 60,577** | **2.21** | | | | |

## 5. Agricultural Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Name of Program A* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program F* | | | $ - | 0.00 | | | | |
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Agricultural** | $ - | $ - | $ - | 0.00 | 0 | 0 | 0 | $ - |
| *Agricultural Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total TRC Costs** | | $ - | | | | | | |
| ****Totals TRC - Agricultural** | **$ -** | **$ -** | **$ -** | **0.00** | | | | |

## 6. LDC System Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Name of Program A* | | | $ - | 0.00 | | | | |
| *Name of Program B* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program F* | | | $ - | 0.00 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| ***Totals App. B - LDC System** | $ - | $ - | $ - | 0.00 | 0 | 0 | 0 | $ - |
| *LDC System Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total TRC Costs** | | $ - | | | | | | |
| ****Totals TRC - LDC System** | **$ -** | **$ -** | **$ -** | **0.00** | | | | |

## 7. Smart Meters Program

**Only spending information that was authorized under the 3rd tranche of MARR is required to be reported for Smart Meters.**

| | | |
|---|---|---|
| **Report Year Gross C&DM Expenditures ($)** | → | 20,431 |

## 8. Other #1 Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Name of Program A* | | | $ - | 0.00 | | | | |
| *Name of Program B* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program F* | | | $ - | 0.00 | | | | |
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Other #1** | $ - | $ - | $ - | 0.00 | 0 | 0 | 0 | $ - |
| *Other #1 Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total TRC Costs** | | $ - | | | | | | |
| ****Totals TRC - Other #1** | **$ -** | **$ -** | **$ -** | **0.00** | | | | |

## 9. Other #2 Programs

**List each Appendix B in the cells below; Insert additional rows as required.**

**Note: To ensure the integrity of the formulas, please insert the additional rows in the middle of the list below.**

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| *Name of Program A* | | | $ - | 0.00 | | | | |
| *Name of Program B* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program D* | | | $ - | 0.00 | | | | |
| *Name of Program E* | | | $ - | 0.00 | | | | |
| *Name of Program C* | | | $ - | 0.00 | | | | |
| *Name of Program G* | | | $ - | 0.00 | | | | |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Other #2** | $ - | $ - | $ - | 0.00 | 0 | 0 | 0 | $ - |
| *Other #2 Indirect Costs not attributable to any specific program* → | | | | | | | | |
| **Total TRC Costs** | | $ - | | | | | | |
| ****Totals TRC - Other #2** | **$ -** | **$ -** | **$ -** | **0.00** | | | | |

## LDC's CDM PORTFOLIO TOTALS

| | TRC Benefits (PV) | TRC Costs (PV) | $ Net TRC Benefits | Benefit/Cost Ratio | Report Year Total kWh Saved | Lifecycle (kWh) Savings | Total Peak Demand (kW) Saved | Report Year Gross C&DM Expenditures ($) |
|---|---|---|---|---|---|---|---|---|
| ***TOTALS FOR ALL APPENDIX B** | $ 348,965 | $ 136,059 | $ 212,906 | 2.56 | $ 989,901 | $ 6,701,830 | $ 141 | $ 157,484 |
| *Any **other** Indirect Costs not attributable to any specific program* → | | | | | | | | |
| **TOTAL ALL LDC COSTS** | | $ 136,059 | | | | | | |
| ****LDC' PORTFOLIO TRC** | $ 348,965 | $ 136,059 | $ 212,906 | 2.56 | | | | |

* The savings and spending information from this row is to be carried forward to Appendix A.

** The TRC information from this row is to be carried forward to Appendix A.