Norfolk Power

IN BUSINESS TO SERVE.

March 31, 2007

Board Secretary
Ontario Energy Board
PO Box 2319,
2300 Yonge St., Suite 2700
Toronto, ON M4P 1E4

2006 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. Refrigerator Pick Up Program
4. Bulk purchasing of product such as LED Seasonal Lights
5. LED Traffic Lights

***How Did We Do?***

Collectively our NEPPA 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.

[1] NEPPA 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 Corp., and Welland Hydro-Electric System Corp., Brant County Power, Brantford Power

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***Opportunities***

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. 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 2006. 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, 2006.[1]

| Project | Target Customers | Approved Expenditures | Actual Expenditures 2006 |
|---|---|---|---|
| Co-branded Mass Market Program | All Users | $110,000 | $74,066 |
| Smart Metering / Prepaid Metering Program | Residential and small commercial (<50 KW) | $90,000 | $25,186 |
| Energy Audits / Feasibility Audits/Seminars | Large user, Industrial/General Service & Institution Facilities | $50,000 | $43,578 |
| Load Management Programs/Load Control Programs | Residential | $221,000 | $25,700 |
| Distribution Loss Reduction | All Users | $100,000 | $0 |
| Distributed Generation | All Users | $10,000 | $0 |
| **Total** | | **$581,000** | **$168,530** |

As shown in the table, some of the planned projects are well underway and others have yet to be implemented in a significant way and further some projects are finished and funding has been moved over to 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 2006 Every Kilowatt Counts (EKC) coupon program in partnership with the Ontario Power Authority (OPA). It was well received by our customers.

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 to all customers 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 3500 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. Although London 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:

- Educational Programs:
    - Seminars were run in the first half of the year. The seminars targeted our large commercial, institutional, agricultural and industrial customers. In a breakfast style format, topics on energy efficiency/conservation were covered. This was done in conjunction with the Energy Audits for Large Customers.
- Compact Fluorescent Giveaway Program:
    - NPDI instituted a program where compact fluorescent lights 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.
- 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 2006 we completed 9 energy audits for customers. Those audits identified a total of 262 KW demand and 878,673 kWh in customer savings opportunities in electricity requirements. Program to end of 2006 includes 12 customer audits.
- Load Control
    - 2006 saw a lot of time and effort putting together a program to implement a residential load control program for NPDI. Unfortunately, the announcement from the Minister of Energy, re: the OPA's summer 2007 Residential Load Control Program, put a halt to the impending NPDI program. The program is set up and ready to go if it becomes necessary/practical in the future.

# 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
- 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.

Execution of our 2006 plan shows a NPV based on the Total Resource Cost analysis of the individual programs of $176,308. Total costs to achieve this energy saving were $168,530.

# 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 2006 | Residential | Commercial | Institutional | Industrial | Agricultural | LDC System | [4] Smart Meters | Other #1 | Other #2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Net TRC value ($):* | *$ 305,245* | **$ 176,308** | **$ 49,286** | **$ -** | **$ -** | **$ 127,022** | **$ -** | **$ -** | | **$ -** | **$ -** |
| *Benefit to cost ratio:* | *3.32* | 3.65 | 3.15 | 0.00 | 0.00 | 3.91 | 0.00 | 0.00 | | 0.00 | 0.00 |
| *Number of participants or units delivered:* | *83,433* | *41,728* | 41,418 | | | 310 | | | | | |
| *Lifecycle (kWh) Savings:* | *10,688,946* | 6,699,975 | 2,306,600 | 0 | 0 | 4,393,375 | 0 | 0 | | 0 | 0 |
| *Report Year Total kWh saved (kWh):* | *642,260* | 327,376 | 151,641 | 0 | 0 | 175,735 | 0 | 0 | | 0 | 0 |
| *Total peak demand saved (kW):* | | 75 | 48 | 0 | 0 | 27 | 0 | 0 | | 0 | 0 |
| *Total kWh saved as a percentage of total kWh delivered (%):* | 0.10% | 0.09% | 0.10% | | | 0.12% | | | | | |
| *Peak kW saved as a percentage of LDC peak kW load (%):* | | 0.10% | 0.06% | | | 0.04% | | | | | |
| [1] *Report Year Gross C&DM expenditures ($):* | *$ 404,940* | $ 168,530 | $ 99,766 | $ - | $ - | $ 43,578 | $ - | $ - | $ 25,186 | $ - | $ - |
| [2] *Expenditures per KWh saved ($/kWh):* | *$ 0.63* | $ 0.51 | $ 0.66 | $ - | $ - | $ 0.25 | $ - | $ - | | $ - | $ - |
| [3] *Expenditures per KW saved ($/kW):* | | $ 2,247.07 | $ 2,078.46 | $ - | $ - | $ 1,614.00 | $ - | $ - | | $ - | $ - |

| | |
|---|---|
| *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*

This program includes all costs relating to activities to promote and accomplish energy audits for major customers. In 2006 nine audits were completed with total electrical savings identified of 262 kW and 878,673 kWh. In addition 123,708 cubic metres of natural gas saving opportunities were identified for these 9 customers.

Total expenditures in 2005 for this program were $25,192. Total expenditures for 2006 for this program were $43,578 for a total 2005 - 2006 period expenditure of $68,770. 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 2005/2006 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 12 audits in total to year end 2006. The TRC calculation for 2005 included and expected portion for 2006 I have updated the 2006 results to reflect actual numbers. This information is in the following Appendix B 2005.
- Natural gas savings were not calculated in our TRC for the program.
- Our utility costs include the costs for technology seminars for these customers where we educate them on energy efficient technology opportunities and promote our audit program. Attendance at seminars has averaged 22 customers with a total of 5 seminars held in 2006.

NPV based on the TRC calculation for the updated 2006 numbers is $170,600.

# 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 2006 nine audits were completed with total electrical savings identified of 262 kW and 878,673 kWh. In addition 123,708 cubic metres of natural gas saving opportunities were identified for these 9 customers.

Total expenditures in 2005 for this program were $25,192. Total expenditures for 2006 for this program were $43,578 for a total 2005 - 2006 period expenditure of $68,770. 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:* | 260 | | |
| *Measure life (years):* | 25 | | |
| *Number of Partipants or unites delievered lfe to date* | 520 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | *$ 170,600.00* | $ 242,400.00 |
| [2] *TRC Costs ($):* | *$ 43,578.00* | *$ 69,269.00* |
| *Utility program cost (excluding incentives):* | $ 10,336.81 | |
| *Incremental Measure Costs (Equipment Costs)* | $ 33,241.19 | |
| *Total TRC costs:* | $ 43,578.00 | |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 3.91 | $ 3.50 |

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

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):*

| | |
|---|---|
| *Summer* | 7 |
| *Winter* | 20 |

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *4393375* | 175735 | 6470000 | 258800 |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | *618550* | 24742 | | 490242 |
| *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:* | $ 10,336.81 | |
| | *Incentive:* | $ 33,241.19 | |
| | *Total:* | $ 43,578.00 | $ 69,269.00 |
| *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 ae actual for 2006.

[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 | 6 | |
| Free Ridership Rate | | |

**Output**

| | |
|---|---|
| NPV ($k) | 170.6 |

| $k LDC Avoided Costs | Present | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 |
| Avoided Generation Capacity | | - | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| Avoided Transmission Capacity | | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distribution Capacity | | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distribution Losses | | - | - | - | - | - | - | - | - |
| Other Avoided Costs | | | | | | | | | |
| Other Benefits | | | | | | | | | |
| Total (undiscounted) Avoided Costs | - | 7 | 9 | 9 | 9 | 9 | 10 | 10 | 10 |
| $k LDC Program Costs | | | | | | | | | |
| LDC OM&A Costs | 44 | | | | | | | | |
| LDC Capital Costs | | | | | | | | | |
| Incremental Equipment Costs | | | | | | | | | |
| Participant Costs | | | | | | | | | |
| Total Program Costs | 44 | - | - | - | - | - | - | - | - |
| Total Avoided Costs less Program Costs | 44 | 7 | 9 | 9 | 9 | 9 | 10 | 10 | 10 |

| | | | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 | 0.707 | 0.664 | 0.623 |
| Present value of cash flows | | 43.6 | 6.5 | 8.3 | 7.8 | 7.2 | 7.0 | 6.8 | 6.4 | 6.0 |
| Accumulated present value of cash flows | | 43.6 | 50.1 | 58.4 | 66.2 | 73.4 | 80.4 | 87.2 | 93.6 | 99.6 |

| $k NPV TRC | 170.6 |
|---|---|

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| $k LDC Avoided Co | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 10 | 11 | 11 | 11 | 11 | 11 |
| Avoided Generatio | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Avoided Transmiss | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distributio | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | | | | | |
| Other Benefits | | | | | | | | | | | | | | |
| Total (undiscounte | 10 | 10 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| $k LDC Program C | | | | | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | | | | | |
| Participant Costs | | | | | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 10 | 10 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.585 | 0.549 | 0.516 | 0.484 | 0.455 | 0.427 | 0.401 | 0.376 | 0.353 | 0.332 | 0.311 | 0.292 | 0.274 | 0.258 |
| Present value of cash fl | 5.8 | 5.6 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.4 | 4.2 | 4.0 | 3.8 | 3.6 | 3.4 | 3.2 |
| Accumulated present v | 105.4 | 111.0 | 116.3 | 121.5 | 126.4 | 131.0 | 135.6 | 140.0 | 144.2 | 148.2 | 152.0 | 155.6 | 159.0 | 162.2 |

**$k NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| $k LDC Avoided Co | 2029 | 2030 | 2031 |
|---|---|---|---|
| Avoided Energy | 11 | 11 | 11 |
| Avoided Generatio | 1 | 1 | 1 |
| Avoided Transmiss | 0 | 0 | 0 |
| Avoided Distributio | 0 | 0 | 0 |
| Avoided Distributio | - | - | - |
| Other Avoided Cos | | | |
| Other Benefits | | | |
| Total (undiscounte | 12 | 12 | 12 |
| $k LDC Program C | | | |
| LDC OM&A Costs | | | |
| LDC Capital Costs | | | |
| Incremental Equipr | | | |
| Participant Costs | | | |
| | | | |
| | | | |
| Total Program Cos | - | - | - |
| Total Avoided Cost | 12 | 12 | 12 |

| | 2029 | 2030 | 2031 |
|---|---|---|---|
| Present value factor | 0.242 | 0.227 | 0.213 |
| Present value of cash fl | 3.0 | 2.8 | 2.6 |
| Accumulated present v | 165.1 | 167.9 | 170.6 |

**$k NPV TRC**

| Saving Identified Through Industrial Audit Program | | | | | | |
|---|---|---|---|---|---|---|
| | Electricity | | | | Natural gas | |
| Customer | System | Peak | Energy | Hours of use | System | Energy (Cu M) |
| Unilever Breyers | Compressed air leakage | 30 | 238255 | | Blow Down HR | 38208 |
| | HVAC Programmable Operatior | 38 | 80000 | Summer only | HVAC Prog Op | 4500 |
| | Suction Pressue Modification | 65 | 237120 | | | |
| **Total** | | **133** | **555375** | | | **42708** |
| **Calvalry** | Lighting Retrofit | 17 | 16700 | | | |
| **Total** | | **17** | **16700** | | | **0** |
| **Pharmazave** | Lighting Retrofit | 10 | 6500 | | | |
| **Total** | | **10** | **6500** | | | **0** |
| **Norfolk General Hospital** | Lighting Retrofit | 10 | 28755 | | Boiler Con. Upgrade | 81000 |
| | | | | | Reduce Blr Blowdw | 1543 |
| **Total** | | **10** | **28755** | | | **81000** |
| **Del Bac Sales** | Lighting Retrofit | 2 | 4400 | | | |
| **Total** | | **2** | **4400** | | | **0** |
| **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** | | | |
| **Simceo Opthemetric** | Lighting Retrofit | 3 | 6960 | | | |
| **Total** | | **3** | **6960** | | | **0** |
| **Grand Total** | | **262** | **878,673** | | | **42,708** |
| **Summer only** | | **66** | **167,174** | | | |
| **All year** | | **196** | **711,499** | | | **123,708** |

| Assuming 10 % implementation rate | | | | | |
|---|---|---|---|---|---|
| **Summer only** | **7** | **33,435** | | | |
| **All year** | **20** | **142,300** | | | **24,742** |
| **Total (Peak in summer)** | **26** | **175,735** | | | **24,742** |

## *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.

## *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 2006 a bill insert promotion was done for the customers in Norfolk and Haldimand Counties.

The program was not tracked in 2006 but a firm structure was set up to aggressively move forward with water heater replacements for 2007. Costs were incurred for 2007 program set up which amounted to $10,154.

# 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 2006 a bill insert promotion was done for the customers in Norfolk and Haldimand Counties. This program although it provides a negative TRC, is still the right thing for energy conservation and long lasting sustainability. When coupled with a load control/response program the results will have an even greater impact.
The program was not tracked in 2006 but a firm structure was set up to aggressively move forward with water heater replacements for 2007. Costs were incurred for 2007 program set up which amounted to $10,154.

**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:* | 0 | | |
| *Measure life (years):* | 18 | | |
| *Number of Participants or unites delivered life to date* | 128 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | $ - | -66500 |
| [2] *TRC Costs ($):* | $ - | 59591 |
| *Utility program cost (excluding incentives):* | | 59591 |
| *Incremental Measure Costs (Equipment Costs)* | | 31968 |
| *Total TRC costs:* | | $ 91,559.00 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | -1.12 |

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):* | | | | 500688 | 27816 |
| *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:* | | $ 31,968.00 |
| | *Incremental O&M:* | $ 10,154.00 | $ 59,591.00 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 10,154.00 | $ 91,559.00 |

**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 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 | 104 | 219 | 22,776 | 0.025 | | 2.6 |
| 31-Dec-07 | 60 | 24 | 210.24 | 5,046 | | 0.024 | 0.576 |
| | | | **Totals** | **27,822** | | | **3.18** |

**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 Revised 2005 |
| 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 | 128 | |
| Free Ridership Rate | | |

**Output**

| | |
|---|---|
| NPV ($k) | 116.6 |

| $k LDC Avoided Costs | Present | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Avoided Generation Capacity | | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Transmission Capacity | | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distribution Capacity | | - | - | - | 0 | 0 | 0 | 0 | 0 |
| Avoided Distribution Losses | | - | - | - | - | - | - | - | - |
| Other Avoided Costs | | | | | | | | | |
| Other Benefits | | | | | | | | | |
| Total (undiscounted) Avoided Costs | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| $k LDC Program Costs | | | | | | | | | |
| LDC OM&A Costs | 60 | | | | | | | | |
| LDC Capital Costs | 32 | | | | | | | | |
| Incremental Equipment Costs | | | | | | | | | |
| Participant Costs | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Total Program Costs | 92 | - | - | - | - | - | - | - | - |
| Total Avoided Costs less Program Costs | 92 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

| | | | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 | 0.707 | 0.664 | 0.623 |
| Present value of cash flows | | 91.6 | 1.8 | 1.7 | 1.9 | 1.7 | 1.6 | 1.5 | 1.5 | 1.5 |
| Accumulated present value of cash flows | | 91.6 | 93.4 | 95.0 | 96.9 | 98.6 | 100.2 | 101.7 | 103.2 | 104.6 |

| $k NPV TRC | 116.6 |
|---|---|

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| $k LDC Avoided Co | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| Avoided Generatio | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Transmiss | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distributio | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| $k LDC Program C | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Present value factor | 0.585 | 0.549 | 0.516 | 0.484 | 0.455 | 0.427 | 0.401 | 0.376 | 0.353 | 0.332 |
| Present value of cash fl | 1.4 | 1.4 | 1.3 | 1.3 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 |
| Accumulated present v | 106.0 | 107.4 | 108.7 | 110.0 | 111.2 | 112.4 | 113.5 | 114.6 | 115.6 | 116.6 |

**$k NPV TRC**

## *Load Control Pilot Program*

2006 saw a lot of time and effort putting together a program to implement a residential load control program for NPDI. Unfortunately, the announcement from the Minister of Energy re: the OPA's summer 2007 Residential Load Control program put a halt to the impending NPDI program.

The costs associated with this program are the costs NPDI spent setting up the infrastructure to run their own pilot. As the OPA's Residential Load Control Program comes into being there may be an opportunity to use these funds effectively to control load not targeted in the OPA program.

Total Expenditure for this program in 2006 was $8,490.

# Appendix B - Discussion of the Program

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

A. **Name of the Program:** Load Control Pilot

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

2006 saw a lot of time and effort putting together a program to implement a residential load control program for NPDI. Unfortunately, the announcement from the Minister of Energy re: the OPA's summer 2007 Residential Load Control program put a halt to the impending NPDI program.
The costs associated with this program are the costs NPDI spent setting up the infrastructure to run their own pilot. As the OPA's Residential Load Control Program comes into being there may be an opportunity to use these funds effectively to control load not targeted in the OPA program.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Existing uncontrolled water heaters | | |
| *Efficient technology:* | Controlled tanks | | |
| *Number of participants or units delivered for reporting year:* | 0 | | |
| *Measure life (years):* | 12 | | |
| *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):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

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

**Conservation Programs:**

| | | | Cumulative Results: | |
|---|---|---|---|---|
| | | *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:* | $ 8,490.39 | $ 15,417.87 |
| | *Incentive:* | | |
| | *Total:* | $ 8,490.39 | $ 15,417.87 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 8,490.39 | $ 15,417.87 |

**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

## *Distribution Loss Reduction*

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

## *Compact Fluorescent Education and Giveaway*

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, high quality CFL's 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 2006 was $12,814 at a cost of $6787.45.

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# Appendix B - Discussion of the Program

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

A. **Name of the Program:** Compact Fluorescent 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 gave away to the public within Norfolk, high quality CFL's and 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:* | 918 | | |
| *Measure life (years):* | 4 | | |
| *Number of Partipants or unites delievered lfe to date* | 918 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] *TRC Benefits ($):* | | *$ 29,789.28* | |
| [2] *TRC Costs ($):* | | *$ 6,787.45* | |
| | *Utility program cost (excluding incentives):* | $ 3,372.49 | |
| | *Incremental Measure Costs (Equipment Costs)* | $ 3,414.96 | |
| | *Total TRC costs:* | $ 6,787.45 | |
| *Net TRC (in year CDN $):* | | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ 4.39 | |

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

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | |
| | *Winter* | 19 | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | *345020* | 86255 | | |
| *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:* | $ 3,372.49 | |
| | *Incentive:* | $ 3,414.96 | |
| | *Total:* | $ 6,787.45 | |
| *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: | Compact Fluorescent Education and Giveaway |
| Description: | Educate and provide CFL information and product 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 | 918 | |
| Free Ridership Rate | 10% | |

**Output**

| | |
|---|---|
| NPV ($) | 12,814.39 |

| LDC Avoided Costs | | Present | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Avoided Energy | | | 5,964.05 | 6,201.51 | 5,937.85 | 5,997.44 |
| Avoided Generation Capacity | | | - | - | - | - |
| Avoided Transmission Capacity | | | - | - | - | - |
| Avoided Distribution Capacity | | | - | - | - | - |
| Avoided Distribution Losses | | | - | - | - | - |
| Other Avoided Costs | | | | | | |
| Other Benefits | | | | | | |
| **Total (undiscounted) Avoided Costs** | | - | 5,964.05 | 6,201.51 | 5,937.85 | 5,997.44 |
| **LDC Program Costs** | | | | | | |
| LDC OM&A Costs | | - 3,372.49 | | | | |
| LDC Capital Costs | | - 3,414.96 | | | | |
| Incremental Equipment Costs | (1.7) | - 1,700.00 | | | | |
| Participant Costs | | | | | | |
| | | | | | | |
| | | | | | | |
| **Total Program Costs** | | - 8,487.45 | - | - | - | - |
| **Total Avoided Costs less Program Costs** | | - 8,487.45 | 5,964.05 | 6,201.51 | 5,937.85 | 5,997.44 |

| | | | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 |
| Present value of cash flows | | - 8,487.45 | 5,778.92 | 5,641.73 | 5,071.69 | 4,809.50 |
| Accumulated present value of cash flows | | - 8,487.45 | - 2,708.53 | 2,933.20 | 8,004.89 | 12,814.39 |

| | |
|---|---|
| **NPV TRC** | **12,814.39** |

## *LED Seasonal Light Exchange Program*

This Program was designed to coincide with the OPA's launch of their similar style program. During the months of November and December of 2006, 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 3650 strings of old style lights in exchange that were then decommissioned and recycled.

NPV based on TRC calculations, for this program for 2006 was $59,383 at a cost of $16,125.

# 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):**

This Program was designed to coincide with the OPA's launch of their similar style program. During the months of November and December of 2006, 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 3650 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* | 2500 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] | *TRC Benefits ($):* | $ *91,635.82* | $ 91,635.82 |
| [2] | *TRC Costs ($):* | $ *16,125.00* | $ 16,125.00 |
| | *Utility program cost (excluding incentives):* | $ 1,103.00 | $ 1,103.00 |
| | *Incremental Measure Costs (Equipment Costs)* | $ 15,022.92 | $ 15,022.92 |
| | *Total TRC costs:* | $ 16,125.92 | $ 16,125.92 |
| | *Net TRC (in year CDN $):* | | |
| | *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 5.68 | |

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:* | $ 1,103.00 | |
| | *Incentive:* | $ 15,022.92 | |
| | *Total:* | $ 16,125.92 | |
| *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: | LED Seasonal Lights Exchange 2006 |
| Description: | Replace Existing strings of incandescent lights with LED Christmas 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 | 3650 | Took in 1.5 avg for every LED given away. |
| Free Ridership Rate | 5% | |

**Output**

| | |
|---|---|
| NPV ($) | 59,383.98 |

| LDC Avoided Costs | | Present | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Avoided Energy | | | 5,024.26 | 4,997.45 | 4,801.94 | 4,941.87 | 4,895.45 |
| Avoided Generation Capacity | | | - | - | - | - | - |
| Avoided Transmission Capacity | | | - | - | - | - | - |
| Avoided Distribution Capacity | | | - | - | - | - | - |
| Avoided Distribution Losses | | | - | - | - | - | - |
| Other Avoided Costs | | | | | | | |
| Other Benefits | | | | | | | |
| **Total (undiscounted) Avoided Costs** | | - | 5,024.26 | 4,997.45 | 4,801.94 | 4,941.87 | 4,895.45 |
| **LDC Program Costs** | | | | | | | |
| LDC OM&A Costs | | - 1,103.00 | | | | | |
| LDC Capital Costs | | - 15,022.92 | | | | | |
| Incremental Equipment Costs | (6.9) | - 6,900.00 | | | | | |
| Participant Costs | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **Total Program Costs** | | - 23,025.92 | - | - | - | - | - |
| **Total Avoided Costs less Program Costs** | | - 23,025.92 | 5,024.26 | 4,997.45 | 4,801.94 | 4,941.87 | 4,895.45 |

| | | | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| Present value factor | 6.5% | 1.000 | 0.969 | 0.910 | 0.854 | 0.802 | 0.753 |
| Present value of cash flows | | - 23,025.92 | 4,868.29 | 4,546.35 | 4,101.49 | 3,963.01 | 3,685.83 |
| Accumulated present value of cash flows | | - 23,025.92 | - 18,157.63 | - 13,611.28 | - 9,509.79 | - 5,546.79 | - 1,860.95 |

| | |
|---|---|
| **NPV TRC** | **59,383.98** |

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| LDC Avoided Costs | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 4,979.14 | 5,544.08 | 5,727.16 | 6,012.89 | 6,173.74 | 6,332.63 | 6,494.79 | 6,653.67 | 6,815.83 | 6,983.22 |
| Avoided Generatio | - | - | - | - | - | - | - | - | - | - |
| Avoided Transmiss | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 4,979.14 | 5,544.08 | 5,727.16 | 6,012.89 | 6,173.74 | 6,332.63 | 6,494.79 | 6,653.67 | 6,815.83 | 6,983.22 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 4,979.14 | 5,544.08 | 5,727.16 | 6,012.89 | 6,173.74 | 6,332.63 | 6,494.79 | 6,653.67 | 6,815.83 | 6,983.22 |

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 3,519.71 | 3,679.52 | 3,568.71 | 3,517.75 | 3,391.09 | 3,265.77 | 3,144.67 | 3,024.70 | 2,909.03 | 2,798.31 |
| Accumulated present v | 1,658.76 | 5,338.28 | 8,906.99 | 12,424.74 | 15,815.84 | 19,081.60 | 22,226.28 | 25,250.97 | 28,160.01 | 30,958.31 |

**NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

OEB
OEB
OEB
Direc

**User Inputs**

| LDC Avoided Costs | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|
| Avoided Energy | 7,145.38 | 7,312.77 | 7,478.19 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 |
| Avoided Generatio | - | - | - | - | - | - | - | - | - | - |
| Avoided Transmiss | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - | - | - | - | - | - |
| Other Avoided Cos | | | | | | | | | | |
| Other Benefits | | | | | | | | | | |
| Total (undiscounte | 7,145.38 | 7,312.77 | 7,478.19 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 |
| LDC Program Cost | | | | | | | | | | |
| LDC OM&A Costs | | | | | | | | | | |
| LDC Capital Costs | | | | | | | | | | |
| Incremental Equipr | | | | | | | | | | |
| Participant Costs | | | | | | | | | | |
| Total Program Cos | - | - | - | - | - | - | - | - | - | - |
| Total Avoided Cost | 7,145.38 | 7,312.77 | 7,478.19 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 |

| | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2,688.28 | 2,583.09 | 2,480.08 | 2,380.41 | 2,234.91 | 2,098.31 | 1,970.06 | 1,849.65 | 1,736.60 | 1,630.46 |
| Accumulated present v | 33,646.59 | 36,229.68 | 38,709.76 | 41,090.17 | 43,325.08 | 45,423.39 | 47,393.46 | 49,243.11 | 50,979.70 | 52,610.16 |

**NPV TRC**

**Net Present Value**

**Utility**

**Project Description**

- OEB
- OEB
- OEB
- Direc

**User Inputs**

| LDC Avoided Costs | 2032 | 2033 | 2034 | 2035 | 2036 |
|---|---|---|---|---|---|
| Avoided Energy | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 |
| Avoided Generatio | - | - | - | - | - |
| Avoided Transmiss | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - |
| Avoided Distributio | - | - | - | - | - |
| Other Avoided Cos | | | | | |
| Other Benefits | | | | | |
| Total (undiscounte | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 |
| LDC Program Cost | | | | | |
| LDC OM&A Costs | | | | | |
| LDC Capital Costs | | | | | |
| Incremental Equipr | | | | | |
| Participant Costs | | | | | |
| Total Program Cos | - | - | - | - | - |
| Total Avoided Cost | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 | 7,644.93 |

| | 2032 | 2033 | 2034 | 2035 | 2036 |
|---|---|---|---|---|---|
| Present value factor | 0.200 | 0.188 | 0.177 | 0.166 | 0.156 |
| Present value of cash fl | 1,530.80 | 1,437.24 | 1,349.39 | 1,266.91 | 1,189.48 |
| Accumulated present v | 54,140.96 | 55,578.19 | 56,927.59 | 58,194.50 | 59,383.98 |

**NPV TRC**

## *Every Kilowatt Counts Coupon Program*

NPDI participated in both the spring and fall 2006 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 these two efforts were not as brisk as was hoped but with the lessons learned in 2006, we expect the 2007 campaigns to be much more successful.

Although not included in NPDI TRC results, the next page shows the results in our service territory.

| Fall EKC | | | | | |
|---|---|---|---|---|---|
| **Technology** | **TRC Benefits** | **Incremental Equipment Costs** | **Program Costs** | **TRC Net Benefits** | **TRC B/C Ratio** |
| Compact Fluorescent Bulbs | $35,461.10 | $2,664.09 | | $32,797 | 13.31 |
| LED Christmas Lights (indoor or outdoor) Replacing 5w Christmas Lights C-7 (25 Lights) | $12,985 | $455 | | $12,530 | 28.53 |
| LED Christmas Lights (indoor or outdoor) Replacing Incandescent Mini Lights | $4,948 | $455 | | $4,493 | 10.87 |
| Programmable Thermostat - Space Heating, Existing Single Family Detached | $17,734 | $841 | | $16,893 | 21.09 |
| Programmable Thermostat - Space Cooling, Existing Single Family Detached | $8,897 | $2,187 | | $6,710 | 4.07 |
| pStat Baseboard | $1,859 | $81 | | $1,778 | 22.95 |
| Dimmer | $2,658 | $684 | | $1,974 | 3.89 |
| Motion Sensor | $2,588 | $126 | | $2,462 | 20.54 |
| | | | | | |
| Utility Program Costs | | | $ 615.00 | | |
| **Total** | **$87,131** | **$7,493** | **$615** | **$79,023** | **141.68** |

| ***Total Resource Cost Test Results for Program (2007 $'s)*** | |
|---|---|
| **TRC Benefits** | $12,983 |
| **TRC Costs** | $2,658 |
| **TRC Net Benefits** | $10,325 |
| **Benefit Cost Ratio** | 4.88 |
| **Total Summer Peak kW Savings** | 1.03 |
| **Total Annual kWh Savings** | 27,958 |
| **Total Lifecycle kWh Savings** | 237,042 |

## *Conserver Family*

In 2006 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. The web site is being considered to link up to the OPA Summer Programs for the NEPA group of utilities.

As an educational program, the TRC value of this program has not been calculated. Program total costs in 2006 were $ 1,751.

# 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 2006 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. The web site is being considered to link up to the OPA Summer Programs for the NEPA group of utilities.

As an educational program, the TRC value of this program has not been calculated. Program total costs in 2006 were $ 1,751.

**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* | 37435 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *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:* | $ 1,751.00 | $ 25,465.20 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 1,751.00 | $ 25,465.20 |

**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

## *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 coupon programs. In 2006 NPDI promoted energy conservation at the Norfolk Fair, Norfolk County for a Sustainable Community, 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 2006 were $45,153.27.

# 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 coupon programs. In 2006 NPDI promoted energy conservation at the Norfolk Fair, Norfolk County for a Sustainable Community, 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. In 2005, this program was called the "2005 C&DM General Administration Costs.
Because this is an education component and difficult to quantify, the TRC was not calculated. Expenditures for this program in 2006 were $45,153.27.

**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* | 19000 | | |

B. **TRC Results:**

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

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

**Conservation Programs:**

| | | | Cumulative Results: | |
|---|---|---|---|---|
| | | *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:* | $ 45,153.27 | $ 86,292.84 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 45,153.27 | $ 86,292.84 |

**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

## *Training*

Training in 2006 included the continuation of work to train customer service staff on energy efficient equipment and programs.

Costs for this work in 2006 were $6,805.83. 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 2006 included the continuation of work to train customer service staff on energy efficient equipment and programs.

Costs for this work in 2006 were $6,805.83. 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* | 100 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *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:**

| | lifecycle | in year |
|---|---|---|
| *Peak load savings (kW):* | | |
| *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:* | $ 11,305.17 | $ 15,589.06 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 11,305.17 | $ 15,589.06 |

**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.

- Two examples of this type of effective initiative in 2006 were the "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).

- **Our Compact Fluorescent 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, the local library gave away compact fluorescent 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 to some extent and will continue to improve in 2006. Based on past experience (from the DSM days of the 1980's) 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. With the coming of the Business Incentive Program through the OPA, there is even further opportunity for both past and present audits to be utilized.

## *Customer Education Programs*

Customer education is important. It helps ensure that energy efficiency becomes more of a focus for future consumers of electricity. Certainly one of the lessons learned during 2006 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. (See the first paragraph in this section). The result of this issue with customer education and the validation of results is that this type of CDM component may be stopped in future unless some type of reduction in the requirements for TRC analysis is made for customer educational initiatives.

# 5. Conclusion

In 2006 CDM programs from NPDI were well received by 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. 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 2006 | Residential | Commercial | Institutional | Industrial | Agricultural | LDC System | [4] Smart Meters | Other #1 | Other #2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Net TRC value ($):* | *$ 305,245* | **$ 176,308** | **$ 49,286** | **$ -** | **$ -** | **$ 127,022** | **$ -** | **$ -** | | **$ -** | **$ -** |
| *Benefit to cost ratio:* | *3.32* | 3.65 | 3.15 | 0.00 | 0.00 | 3.91 | 0.00 | 0.00 | | 0.00 | 0.00 |
| *Number of participants or units delivered:* | *83,433* | *41,728* | 41,418 | | | 310 | | | | | |
| *Lifecycle (kWh) Savings:* | *10,688,946* | 6,699,975 | 2,306,600 | 0 | 0 | 4,393,375 | 0 | 0 | | 0 | 0 |
| *Report Year Total kWh saved (kWh):* | *642,260* | 327,376 | 151,641 | 0 | 0 | 175,735 | 0 | 0 | | 0 | 0 |
| *Total peak demand saved (kW):* | | 75 | 48 | 0 | 0 | 27 | 0 | 0 | | 0 | 0 |
| *Total kWh saved as a percentage of total kWh delivered (%):* | 0.10% | 0.09% | 0.10% | | | 0.12% | | | | | |
| *Peak kW saved as a percentage of LDC peak kW load (%):* | | 0.10% | 0.06% | | | 0.04% | | | | | |
| [1] *Report Year Gross C&DM expenditures ($):* | *$ 404,940* | $ 168,530 | $ 99,766 | $ - | $ - | $ 43,578 | $ - | $ - | $ 25,186 | $ - | $ - |
| [2] *Expenditures per KWh saved ($/kWh):* | *$ 0.63* | $ 0.51 | $ 0.66 | $ - | $ - | $ 0.25 | $ - | $ - | | $ - | $ - |
| [3] *Expenditures per KW saved ($/kW):* | | $ 2,247.07 | $ 2,078.46 | $ - | $ - | $ 1,614.00 | $ - | $ - | | $ - | $ - |

| | |
|---|---|
| *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 2006 nine audits were completed with total electrical savings identified of 262 kW and 878,673 kWh. In addition 123,708 cubic metres of natural gas saving opportunities were identified for these 9 customers.

Total expenditures in 2005 for this program were $25,192. Total expenditures for 2006 for this program were $43,578 for a total 2005 - 2006 period expenditure of $68,770. 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:* | 260 | | |
| *Measure life (years):* | 25 | | |
| *Number of Partipants or unites delievered lfe to date* | 520 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | *$ 170,600.00* | $ 242,400.00 |
| [2] *TRC Costs ($):* | *$ 43,578.00* | *$ 69,269.00* |
| *Utility program cost (excluding incentives):* | $ 10,336.81 | |
| *Incremental Measure Costs (Equipment Costs)* | $ 33,241.19 | |
| *Total TRC costs:* | $ 43,578.00 | |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 3.91 | $ 3.50 |

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

**Cumulative Results:**

**Conservation Programs:**

*Demand savings (kW):*

| | |
|---|---|
| *Summer* | 7 |
| *Winter* | 20 |

| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
|---|---|---|---|---|
| *Energy saved (kWh):* | *4393375* | 175735 | 6470000 | 258800 |
| *Other resources saved :* | | | | |
| *Natural Gas (m3):* | *618550* | 24742 | | 490242 |
| *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:* | $ 10,336.81 | |
| | *Incentive:* | $ 33,241.19 | |
| | *Total:* | $ 43,578.00 | $ 69,269.00 |
| *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 ae actual for 2006.

[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):* | $ 25,185.16 | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *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:* | $ 25,186.16 | $ 31,743.25 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 25,186.16 | $ 31,743.25 |

**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 2006 a bill insert promotion was done for the customers in Norfolk and Haldimand Counties. This program although it provides a negative TRC, is still the right thing for energy conservation and long lasting sustainability. When coupled with a load control/response program the results will have an even greater impact.
The program was not tracked in 2006 but a firm structure was set up to aggressively move forward with water heater replacements for 2007. Costs were incurred for 2007 program set up which amounted to $10,154.

**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:* | 0 | | |
| *Measure life (years):* | 18 | | |
| *Number of Participants or unites delivered life to date* | 128 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | $ - | -66500 |
| [2] *TRC Costs ($):* | $ - | 59591 |
| *Utility program cost (excluding incentives):* | | 59591 |
| *Incremental Measure Costs (Equipment Costs)* | | 31968 |
| *Total TRC costs:* | | $ 91,559.00 |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | -1.12 |

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):* | | | | 500688 | 27816 |
| *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:* | | $ 31,968.00 |
| | *Incremental O&M:* | $ 10,154.00 | $ 59,591.00 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 10,154.00 | $ 91,559.00 |

**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:** Load Control Pilot

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

2006 saw a lot of time and effort putting together a program to implement a residential load control program for NPDI. Unfortunately, the announcement from the Minister of Energy re: the OPA's summer 2007 Residential Load Control program put a halt to the impending NPDI program.
The costs associated with this program are the costs NPDI spent setting up the infrastructure to run their own pilot. As the OPA's Residential Load Control Program comes into being there may be an opportunity to use these funds effectively to control load not targeted in the OPA program.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Existing uncontrolled water heaters | | |
| *Efficient technology:* | Controlled tanks | | |
| *Number of participants or units delivered for reporting year:* | 0 | | |
| *Measure life (years):* | 12 | | |
| *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):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *Net TRC (in year CDN $):* | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | |

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

**Conservation Programs:**

| | | | Cumulative Results: | |
|---|---|---|---|---|
| | | *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:* | $ 8,490.39 | $ 15,417.87 |
| | *Incentive:* | | |
| | *Total:* | $ 8,490.39 | $ 15,417.87 |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 8,490.39 | $ 15,417.87 |

**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:** Compact Fluorescent 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 gave away to the public within Norfolk, high quality CFL's and 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:* | 918 | | |
| *Measure life (years):* | 4 | | |
| *Number of Partipants or unites delievered lfe to date* | 918 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] *TRC Benefits ($):* | | *$ 29,789.28* | |
| [2] *TRC Costs ($):* | | *$ 6,787.45* | |
| | *Utility program cost (excluding incentives):* | $ 3,372.49 | |
| | *Incremental Measure Costs (Equipment Costs)* | $ 3,414.96 | |
| | *Total TRC costs:* | $ 6,787.45 | |
| *Net TRC (in year CDN $):* | | | |
| *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | | $ 4.39 | |

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

**Conservation Programs:**

| | | | | |
|---|---|---|---|---|
| *Demand savings (kW):* | *Summer* | | | |
| | *Winter* | 19 | | |
| | *lifecycle* | *in year* | *Cumulative Lifecycle* | Cumulative Annual Savings |
| *Energy saved (kWh):* | *345020* | 86255 | | |
| *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:* | $ 3,372.49 | |
| | *Incentive:* | $ 3,414.96 | |
| | *Total:* | $ 6,787.45 | |
| *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):**

This Program was designed to coincide with the OPA's launch of their similar style program. During the months of November and December of 2006, 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 3650 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* | 2500 | | |

B. **TRC Results:**

| | | Reporting Year | Life-to-date TRC Results: |
|---|---|---|---|
| [1] | *TRC Benefits ($):* | $ *91,635.82* | $ 91,635.82 |
| [2] | *TRC Costs ($):* | $ *16,125.00* | $ 16,125.00 |
| | *Utility program cost (excluding incentives):* | $ 1,103.00 | $ 1,103.00 |
| | *Incremental Measure Costs (Equipment Costs)* | $ 15,022.92 | $ 15,022.92 |
| | *Total TRC costs:* | $ 16,125.92 | $ 16,125.92 |
| | *Net TRC (in year CDN $):* | | |
| | *Benefit to Cost Ratio (TRC Benefits/TRC Costs):* | $ 5.68 | |

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:* | $ 1,103.00 | |
| | *Incentive:* | $ 15,022.92 | |
| | *Total:* | $ 16,125.92 | |
| *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:** Conserver Family

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

In 2006 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. The web site is being considered to link up to the OPA Summer Programs for the NEPA group of utilities.

As an educational program, the TRC value of this program has not been calculated. Program total costs in 2006 were $ 1,751.

**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* | 37435 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *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:* | $ 1,751.00 | $ 25,465.20 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 1,751.00 | $ 25,465.20 |

**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:** 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 coupon programs. In 2006 NPDI promoted energy conservation at the Norfolk Fair, Norfolk County for a Sustainable Community, 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. In 2005, this program was called the "2005 C&DM General Administration Costs.
Because this is an education component and difficult to quantify, the TRC was not calculated. Expenditures for this program in 2006 were $45,153.27.

**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* | 19000 | | |

B. **TRC Results:**

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

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

**Conservation Programs:**

| | | | Cumulative Results: | |
|---|---|---|---|---|
| | | *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:* | $ 45,153.27 | $ 86,292.84 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 45,153.27 | $ 86,292.84 |

**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 2006 included the continuation of work to train customer service staff on energy efficient equipment and programs.

Costs for this work in 2006 were $6,805.83. 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* | 100 | | |

B. **TRC Results:**

| | Reporting Year | Life-to-date TRC Results: |
|---|---|---|
| [1] *TRC Benefits ($):* | | |
| [2] *TRC Costs ($):* | | |
| *Utility program cost (excluding incentives):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *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:**

| | lifecycle | in year |
|---|---|---|
| *Peak load savings (kW):* | | |
| *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:* | $ 11,305.17 | $ 15,589.06 |
| | *Incentive:* | | |
| | *Total:* | | |
| *Utility indirect costs ($):* | *Incremental capital:* | | |
| | *Incremental O&M:* | | |
| | *Total:* | $ 11,305.17 | $ 15,589.06 |

**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:** Distributed Generarion Wind Power Study

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

**2005 program Only**. This program includes all costs expended to date on analysis and investigation of the wind power opportunity for Norfolk Power and for our customer's information. Information for customers on various technologies in this area as well as incentives available has been gathered and is available. In addition a business case model has been developed to assist customers with their decision making concerning the viability of a small wind generation project.

**Measure(s):**

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|---|---|---|
| *Base case technology:* | Do Nothing | | |
| *Efficient technology:* | Wind power installations and information | | |
| *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):* | | |
| *Incremental Measure Costs (Equipment Costs)* | | |
| *Total TRC costs:* | | |
| *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:* | $ - | $ 11,968.36 |
| | *Incentive:* | | |
| | *Total:* | | |
| *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:** 2006

## 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 ($) |
|---|---|---|---|---|---|---|---|---|
| *Compact Fluorescent Education and* | $ 12,814 | $ 6,787 | | 1.89 | 86,255 | 345,020 | 19 | $ 6,787 |
| *LED Seasonl Lights Exchange* | $ 59,384 | $ 16,125 | | 3.68 | 65,386 | 1,961,580 | 29 | $ 16,125 |
| *Water Heater Replacement Program* | | | | 0.00 | | | | $ 10,154 |
| *Load Control Pilot* | | | | 0.00 | | | | $ 8,490 |
| *Conserver Family* | | | | 0.00 | | | | $ 1,751 |
| *Residential Education* | | | | 0.00 | | | | $ 45,153 |
| *Training* | | | | 0.00 | | | | $ 11,305 |
| *Name of Program H* | | | $ - | 0.00 | | | | |
| *Name of Program I* | | | $ - | 0.00 | | | | |
| *Name of Program J* | | | $ - | 0.00 | | | | |
| ***Totals App. B - Residential** | $ 72,198 | $ 22,912 | $ 49,286 | 3.15 | 151,641 | 2,306,600 | 48 | $ 99,766 |
| *Residential Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total Residential TRC Costs** | | $ 22,912 | | | | | | |
| ****Totals TRC - Residential** | **$ 72,198** | **$ 22,912** | **$ 49,286** | **3.15** | | | | |

## 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* | $ 170,600 | $ 43,578 | | 3.91 | 175,735 | 4,393,375 | 27 | $ 43,578 |
| *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 - Industrial** | $ 170,600 | $ 43,578 | $ 127,022 | 3.91 | 175,735 | 4,393,375 | 27 | $ 43,578 |
| *Industrial Indirect Costs not attributable to any specific program* | → | | | | | | | |
| **Total TRC Costs** | | $ 43,578 | | | | | | |
| ****Totals TRC - Industrial** | **$ 170,600** | **$ 43,578** | **$ 127,022** | **3.91** | | | | |

## 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 ($)** → | 25,186 |

## 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** | $ 242,798 | $ 66,490 | $ 176,308 | 3.65 | $ 327,376 | $ 6,699,975 | $ 75 | $ 168,530 |
| *Any **other** Indirect Costs not attributable to any specific program* → | | | | | | | | |
| **TOTAL ALL LDC COSTS** | | $ 66,490 | | | | | | |
| ****LDC' PORTFOLIO TRC** | $ 242,798 | $ 66,490 | $ 176,308 | 3.65 | | | | |

* 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.