

Report to:

ONTARIO ENERGY BOARD



**PUC Distribution Inc.
RP-2004-0203\EB-2004-0458
Conservation and Demand Annual Report**

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PUC DISTRIBUTION INC. RP-2004-0203 \ EB-2004-0458 2006 CONSERVATION AND DEMAND MANAGEMENT ANNUAL REPORT

1.0 INTRODUCTION

This report represents the submission of PUC Distribution Inc. (ED-2002-0546) for the year 2006. This represents the second year of a three year plan that was approved by the Ontario Energy Board in its Final Order in proceeding RP-2004-0203/EB-2004-0458. The amount of \$886,854 was approved as the three year budget for this program.

As a requirement of the Final Order, PUC Distribution Inc. is required to apply to the Board for approval if cumulative fund transfers between programs exceed 20% of the approved budget.

No transfers between programs in 2006 exceeded 20% of the budget but a single transfer was made to the Utility Asset Conversion program that was significant but less than 20%.

2.0 EVALUATION OF THE C&DM PLAN

N-Sci Technologies Inc. has undertaken an evaluation of the PUC Distribution Inc. C&DM Plan as part of its responsibilities in preparing this report. As required by the Board, a hard copy of the Board's spreadsheet is attached.

See Section 6 for the appendices containing the spreadsheets that were provided by the Ontario Energy Board.



3.0 DISCUSSION OF THE PROGRAMS

3.1 UTILITY ASSET CONSERVATION PROGRAM

The Utility Asset Conservation Program is a broad network based initiative to drive greater efficiencies within the distribution grid. The program will identify and implement opportunities for system enhancements. Engineering analysis and feasibility studies will be conducted in order that projects can be prioritized and selected based on the most attractive investment to results ratio.

Voltage conversion was a specific focus of the overall program. A considerable amount of the overall program spending occurred in this one initiative. An estimate was previously prepared that outlined the overall savings to the LDC from voltage conversion. The savings for this initiative, which is a portion of the total, were calculated using a ratio of converted line to total line that required conversion. In order to keep the benefit calculation conservative and to reduce the overall cost of analysis, only energy savings were considered. While the physical work to convert the facilities was completed in 2005, the higher voltage will not be in operation until 2006. Therefore, the benefits outlined in the Appendix are the expected savings that will result when the higher voltage was put into operation in 2006.

3.2 CUSTOMER CONSERVATION PROGRAM

This program is intended to provide demand side management and demand response programs for residential and small commercial customers. It includes pilot projects that are designed to assess the benefits of a specific DSM measure before a significant investment is made to introduce the measure on a large scale. Specific programs directed at low income and senior residential customers will also be initiated.

Two pilot projects were identified for 2006. One involves the assessment of heat storage units for electrically heated residences and small commercial facilities. The other pilot project will assess the benefits of using broadband over powerline technology to collect and provide market prices and consumption information for customers and the integration of smart meters with the network, and allow for remote management of electrical appliances and equipment to reduce or shift electrical demand.

The second year of the program dealt with the evaluation of these two pilots with some results reported in 2006.



3.3 EDUCATION AND INFORMATION:

Programs will be developed that focus on community and specific customer information to foster an energy conservation culture.

Programs and initiatives could include the following:

- The ability for customers to access their usage information by consumption and cost on an up to date basis as smart meters are implemented. This will require changes to customer information systems and hardware to allow access to information at a host site or the customer site.
- Tools could be developed such as energy calculators, energy profiling, timely customer communication based on established consumption or cost parameters and conservation tips.
- Energy conservation forums will be presented for specific customer categories.
- School programs will be implemented building on the successful "Caution and Chance" safety program.

Some specific initiatives under this program are still being designed, while others are being implemented.

3.4 PARTNERSHIP PROGRAMS:

Alliances will be formed with other organizations delivering or promoting energy efficient services and products. This will allow leveraging energy conservation resources for program delivery.

Partnership opportunities will be developed with organizations such as:

- Other local distribution companies for development of energy tools, common marketing and communication initiatives and information.
- Government and non profit sectors for funding, research, and delivery or promoting of their specific programs.
- Suppliers of DSM products and services to take advantage of joint marketing programs.

In order to ensure these opportunities realized the largest benefit for the LDC's expenditures, 2005 and 2006 were used to investigate many options prior to entering into alliances or agreements.

3.5 PLANNING AND COORDINATION:

Monitoring and evaluation of the Conservation and DM plan are necessary to ensure that the programs proceed according to plan, that standard evaluation mechanisms are in place and that the plan is refined or modified as required to meet stated objectives.



Coordination is required amongst distribution companies that file jointly and share resources as well as with partnerships that are developed.

Tracking and reporting of the various programs will be required to support prudence review of expenditures by the Ontario Energy Board.

Program research will be conducted to prioritize energy conservation programs, program benefit measurement, benchmarks and return, and the documentation of the findings. Research opportunities in the short term will focus on technologies in the areas of broadband over powerline, load control devices, reducing distribution system losses, and energy conservation tools.

4.0 LESSONS LEARNED

Given the vast array of options for program design and delivery that are available to LDCs, it has become clear that focusing on the specific needs and demographics of the LDC's customers will create the best advantages for all involved.

The need to partner with other organizations providing energy efficient services and products is evident and this approach will leverage the LDC's funds to the greatest extent possible. The main benefits from this approach are: reduced development costs, increased delivery timing, lack of duplication through information sharing and increased buying power.

5.0 CONCLUSIONS

After reviewing the various program documents, N-Sci Technologies Inc. is confident that the objectives of the original plan that was filed with the Ontario Energy Board are being followed. The prudent review of numerous alternatives has lead to a good mix of initiatives that will benefit both the LDC and its customers.

This report represents the second year of a three year program. The overall level and prioritization of spending is in line with standard utility practices in the areas of conservation and demand management.

To the best of our knowledge, the reporting requirements have been met as outlined in the Ontario Energy Board's "Guideline for Annual Reporting of CDM Initiatives".



6.0 APPENDICES



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6.1 APPENDIX A – EVALUATION OF THE C&DM PLAN



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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 |
|--|---|----------------|-------------|------------|---------------|------------|--------------|------------|---------------------------|-------------|----------|
| <i>Net TRC value (\$):</i> | | \$ 959,937 | \$ - | \$ (6,461) | \$ 683,250 | \$ - | \$ - | \$ 313,435 | | \$ (13,845) | \$ - |
| <i>Benefit to cost ratio:</i> | | 4.59 | 0.00 | 0.06 | 32.20 | 0.00 | 0.00 | 2.51 | | 0.00 | 0.00 |
| <i>Number of participants or units delivered:</i> | | | | | | | | | | | |
| <i>Lifecycle (kWh) Savings:</i> | | 13,699,700 | 0 | 0 | 1,328,000 | 0 | 0 | 12,371,700 | | 0 | 0 |
| <i>Report Year Total kWh saved (kWh):</i> | | 1,149,785 | 0 | 0 | 531,200 | 0 | 0 | 618,585 | | 0 | 0 |
| <i>Total peak demand saved (kW):</i> | | 131 | 0 | 0 | 131 | 0 | 0 | 0 | | 0 | 0 |
| <i>Total kWh saved as a percentage of total kWh delivered (%):</i> | | 0.16% | | | | | | | | | |
| <i>Peak kW saved as a percentage of LDC peak kW load (%):</i> | | 0.12% | | | | | | | | | |
| ¹ <i>Report Year Gross C&DM expenditures (\$):</i> | | \$ 303,906 | \$ - | \$ 6,872 | \$ 21,902 | \$ - | \$ - | \$ 208,085 | \$ 36,760 | \$ 13,845 | \$ - |
| ² <i>Expenditures per kWh saved (\$/kWh):</i> | | \$ 0.02 | \$ - | \$ - | \$ 0.02 | \$ - | \$ - | \$ 0.02 | | \$ - | \$ - |
| ³ <i>Expenditures per kW saved (\$/kW):</i> | | \$ 2,316.36 | \$ - | \$ - | \$ 166.94 | \$ - | \$ - | \$ - | | \$ - | \$ - |
| <i>Utility discount rate (%):</i> | | 7.67% | | | | | | | | | |

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).



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6.2 APPENDIX B – DISCUSSION OF THE PROGRAM



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Appendix B - Discussion of the Program

A. **Name of the Program:** LDC System - Utility Asset Conversion (6.0 LDC System Programs)

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

This program focused on line loss reduction on the feeders from substation #5. The main actions taken were to replace old, small conductor with larger conductor and increase the supply voltage for the feeder. This results in a distribution system with a standard conductor size and a standard voltage. The estimated losses on all of the feeders for a particular substation can be calculated. The actual savings are very difficult to calculate as the losses on a piece of a feeder that is upgraded is very difficult to calculate. In order to find a balance between accuracy and effort, the loss savings have been limited to energy only impacts while using a ratio method of total meters of line upgraded to total line in need of upgrade.

Measure(s):

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|------------------------|---------------------------|---------------------------|
| Base case technology: | Existing voltage level | | |
| Efficient technology: | Higher Voltage level | | |
| Number of participants or units delivered for reporting year: | | | |
| Measure life (years): | 20 | | |
| Number of Participants or units delivered life to date | | | |

| B. TRC Results: | Reporting Year | Life-to-date TRC Results: |
|--|----------------------|---------------------------|
| ¹ TRC Benefits (\$): | \$ 521,520.00 | \$ 521,520.00 |
| ² TRC Costs (\$): | | |
| Utility program cost (excluding incentives): | \$ 208,085.00 | \$ 477,371.00 |
| Incremental Measure Costs (Equipment Costs) | \$ - | \$ - |
| Total TRC costs: | \$ 208,085.00 | \$ 477,371.00 |
| Net TRC (in year CDN \$): | \$ 313,435.00 | \$ 44,149.00 |
| Benefit to Cost Ratio (TRC Benefits/TRC Costs): | \$ 2.51 | \$ 1.09 |

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

Line Loss Reduction Programs:

| | | |
|-------------------------|------------------|----------------|
| Peak load savings (kW): | | |
| | <i>lifecycle</i> | <i>in year</i> |
| Energy savings (kWh): | 12,371,700.00 | 618,585.00 |

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. <u>Actual Program Costs:</u> | | <u>Reporting Year</u> | <u>Cumulative Life to Date</u> |
|--|-----------------------------|------------------------------|---------------------------------------|
| Utility direct costs (\$): | <i>Incremental capital:</i> | \$ 208,085.00 | \$ 477,371.00 |
| | <i>Incremental O&M:</i> | | |
| | <i>Incentive:</i> | | |
| | <i>Total:</i> | \$ 208,085.00 | \$ 477,371.00 |
| Utility indirect costs (\$): | <i>Incremental capital:</i> | | |
| | <i>Incremental O&M:</i> | | |
| | <i>Total:</i> | | |

E. Assumptions & Comments:

The facilities that were converted in 2005 will not be energized at the higher voltage until 2006. The savings indicated are the expected savings that will result from the conversion. The savings are conservative as the demand savings have not been included in the total. Only avoided energy costs have been used in the NPV model.

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 number of units times the net present value per unit benefit specified in the TRC Guide.

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 to a third party service provider to run an incentives program are program costs, and are to be included as TRC costs under the "Utility Program Costs" line.

Appendix B - Discussion of the Program

A. **Name of the Program:** Other 2 - Customer Conservation Program (Commercial)

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

This program included a smart meter pilot utilizing Broadband over Powerline technology to collect customer information and an assessment of heat storage units for retrofit into electrically heated residences and small commercial establishments has been initiated. The ETS technology is being evaluated but the program has not be fully delivered and evaluated.

Measure(s):

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|----------------------------|---------------------------|---------------------------|
| Base case technology: | Electric Baseboard heating | | |
| Efficient technology: | ETS heater | | |
| Number of participants or units delivered for reporting year: | 4 | | |
| Measure life (years): | 15 | | |
| Number of Participants or units delivered life to date | 4 | | |

B. TRC Results:

| | Reporting Year | Life-to-date TRC Results: |
|--|---------------------|---------------------------|
| ¹ TRC Benefits (\$): | \$ 410.85 | 410.85 |
| ² TRC Costs (\$): | | |
| Utility program cost (excluding incentives): | \$ 6,872.00 | \$ 21,844.00 |
| Incremental Measure Costs (Equipment Costs) | \$ - | 0 |
| Total TRC costs: | \$ 6,872.00 | \$ 21,844.00 |
| Net TRC (in year CDN \$): | -\$ 6,461.15 | -\$ 21,433.15 |
| Benefit to Cost Ratio (TRC Benefits/TRC Costs): | \$ 0.06 | \$ 0.02 |

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): | 0 | 0 | 0 | 0 |

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

Line Loss Reduction Programs:

| | | | |
|-------------------------|------------------|----------------|--|
| Peak load savings (kW): | | | |
| | <i>lifecycle</i> | <i>in year</i> | |
| Energy savings (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): | | |
|-------------------|--|--|

| <u>Actual Program Costs:</u> | | <u>Reporting Year</u> | <u>Cumulative Life to Date</u> |
|-------------------------------------|----------------------|------------------------------|---------------------------------------|
| Utility direct costs (\$): | Incremental capital: | \$ 6,872.00 | \$ 21,844.00 |
| | Incremental O&M: | | |
| | Incentive: | | |
| | Total: | \$ 6,872.00 | \$ 21,844.00 |
| Utility indirect costs (\$): | Incremental capital: | | |
| | Incremental O&M: | | |
| | Total: | | |

E. Assumptions & Comments:

The ETS test did result in dollar savings due to shifting load to cheaper rate periods. However, there is no anticipated energy savings. The potential demand savings have not been estimated due to a lack of metering information. The ETS savings were not significant enough to pass the TRC test and will not be pursued further. The Broadband over Powerline program is reported in Appendix C as a Smart Meter project.

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 number of units times the net present value per unit benefit specified in the TRC Guide.
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 to a third party service provider to run an incentives program are program costs, and are to be included as TRC costs under the "Utility Program Costs" line.

Appendix B - Discussion of the Program

A. **Name of the Program:** Other 3 - Education and Information

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

This program is intended to provide information to consumers to foster a conservation culture. Several small initiatives have been completed and the program is still being utilized.

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 Participants or units delivered life to date | | | |

B. TRC Results:

| | Reporting Year | Life-to-date TRC Results: |
|---|----------------------|---------------------------|
| ¹ TRC Benefits (\$): | \$ - | 0 |
| ² TRC Costs (\$): | | |
| Utility program cost (excluding incentives): | \$ 13,845.00 | \$ 19,721.00 |
| Incremental Measure Costs (Equipment Costs) | | |
| Total TRC costs: | \$ 13,845.00 | \$ 19,721.00 |
| Net TRC (in year CDN \$): | -\$ 13,845.00 | -\$ 19,721.00 |
| 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 beginning of year (%): | | |
| Distribution system power factor at end of year (%): | | |

Line Loss Reduction Programs:

| | | | |
|-------------------------|------------------|----------------|--|
| Peak load savings (kW): | | | |
| | <i>lifecycle</i> | <i>in year</i> | |
| Energy savings (kWh): | | | |

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

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

D. Actual Program Costs:

| | | <u>Reporting Year</u> | <u>Cumulative Life to Date</u> |
|------------------------------|-----------------------------|-----------------------|--------------------------------|
| Utility direct costs (\$): | <i>Incremental capital:</i> | | |
| | <i>Incremental O&M:</i> | \$ 13,845.00 | \$ 19,721.00 |
| | <i>Incentive:</i> | | |
| | <i>Total:</i> | \$ 13,845.00 | \$ 19,721.00 |
| Utility indirect costs (\$): | <i>Incremental capital:</i> | | |
| | <i>Incremental O&M:</i> | | |
| | <i>Total:</i> | | |

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 number of units times the net present value per unit benefit specified in the TRC Guide.

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 to a third party service provider to run an incentives program are program costs, and are to be included as TRC costs under the "Utility Program Costs" line.

Appendix B - Discussion of the Program

A. **Name of the Program:** Other 4 - Partnership Programs

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

This program was intended to leverage programs and services being developed or offered by other LDCs, government agencies, technology vendors and C&DM service providers. Numerous opportunities are being investigated. One specific project implemented in 2006 dealt with the replacement of incandescent light bulbs with 13W compact fluorescent.

Measure(s):

| | Measure 1 | Measure 2 (if applicable) | Measure 3 (if applicable) |
|---|-------------------|---------------------------|---------------------------|
| Base case technology: | 60 W Incandescent | | |
| Efficient technology: | 13W CFL | | |
| Number of participants or units delivered for reporting year: | 3200 | | |
| Measure life (years): | 2.5 | | |
| Number of Participants or units delivered life to date | 3200 | | |

B. TRC Results:

| | Reporting Year | Life-to-date TRC Results: |
|---|----------------|---------------------------|
| ¹ TRC Benefits (\$): | \$ 705,152.00 | \$ 705,152.00 |
| ² TRC Costs (\$): | | |
| Utility program cost (excluding incentives): | \$ 21,902.00 | \$ 25,542.00 |
| Incremental Measure Costs (Equipment Costs) | | |
| Total TRC costs: | \$ 21,902.00 | \$ 25,542.00 |
| Net TRC (in year CDN \$): | \$ 683,250.00 | \$ 679,610.00 |
| Benefit to Cost Ratio (TRC Benefits/TRC Costs): | \$ 32.20 | 27.61 |

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

Cumulative Results:

Conservation Programs:

| | | | |
|----------------------|--------|-------|-------|
| Demand savings (kW): | Summer | 124.8 | 124.8 |
| | Winter | 131.2 | 131.2 |

| | lifecycle | in year | Cumulative Lifecycle | Cumulative Annual Savings |
|---------------------|-----------|---------|----------------------|---------------------------|
| Energy saved (kWh): | 1328000 | 531200 | 531200 | 531200 |

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

Line Loss Reduction Programs:

| | | | |
|-------------------------|------------------|----------------|--|
| Peak load savings (kW): | | | |
| | <i>lifecycle</i> | <i>in year</i> | |
| Energy savings (kWh): | | | |

Distributed Generation and Load Displacement Programs:

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

Other Programs (specify):

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

D. Actual Program Costs:

| | | <u>Reporting Year</u> | <u>Cumulative Life to Date</u> |
|------------------------------|----------------------|-----------------------|--------------------------------|
| Utility direct costs (\$): | Incremental capital: | | |
| | Incremental O&M: | \$ 21,902.00 | \$ 25,542.00 |
| | Incentive: | | |
| | Total: | \$ 21,902.00 | \$ 25,542.00 |
| 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 number of units times the net present value per unit benefit specified in the TRC Guide.

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 to a third party service provider to run an incentives program are program costs, and are to be included as TRC costs under the "Utility Program Costs" line.



6.3 APPENDIX C –PROGRAM & PORTFOLIO TOTALS



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Appendix C - Program and Portfolio Totals

Report Year:

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 (\$) |
|--|-------------------|----------------|---------------------|--------------------|-----------------------------|-------------------------|------------------------------|--|
| <i>Name of Program A</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program B</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program C</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program D</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program E</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program F</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program G</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program H</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program I</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program J</i> | | | \$ - | 0.00 | | | | |
| *Totals App. B - Residential | \$ - | \$ - | \$ - | 0.00 | 0 | 0 | 0 | \$ - |
| <i>Residential Indirect Costs not attributable to any specific program</i> | → | | | | | | | |
| Total Residential TRC Costs | | \$ - | | | | | | |
| **Totals TRC - Residential | \$ - | \$ - | \$ - | 0.00 | | | | |

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 (\$) |
|---|----------------------|----------------|---------------------|-----------------------|--------------------------------|----------------------------|------------------------------------|--|
| <i>ETS Thermal Storage</i> | \$ 411 | \$ 6,872 | -\$ 6,461 | 0.06 | 0 | 0 | 0 | \$ 6,872 |
| <i>Name of Program B</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program C</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program D</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program E</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program F</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program G</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program H</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program I</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program J</i> | | | \$ - | 0.00 | | | | |
| *Totals App. B - Commercial | \$ 411 | \$ 6,872 | -\$ 6,461 | 0.06 | 0 | 0 | 0 | \$ 6,872 |
| <i>Commercial Indirect Costs not attributable to any specific program</i> | | | | | | | | |
| Total TRC Costs | | \$ 6,872 | | | | | | |
| **Totals TRC - Commercial | \$ 411 | \$ 6,872 | -\$ 6,461 | 0.06 | | | | |

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 (\$) |
|---|-------------------|------------------|---------------------|--------------------|-----------------------------|-------------------------|------------------------------|--|
| 13W CFL | \$ 705,152 | \$ 21,902 | \$ 683,250 | 32.20 | 531,200 | 1,328,000 | 131 | \$ 21,902 |
| 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 | \$ 705,152 | \$ 21,902 | \$ 683,250 | 32.20 | 531,200 | 1,328,000 | 131 | \$ 21,902 |
| Institutional Indirect Costs not attributable to any specific program | | | | | | | | |
| Total TRC Costs | | \$ 21,902 | | | | | | |
| **Totals TRC - Institutional | \$ 705,152 | \$ 21,902 | \$ 683,250 | 32.20 | | | | |

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 (\$) |
|--|-------------------|----------------|---------------------|--------------------|-----------------------------|-------------------------|------------------------------|--|
| 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 - Industrial | \$ - | \$ - | \$ - | 0.00 | 0 | 0 | 0 | \$ - |
| Industrial Indirect Costs not attributable to any specific program | | | | | | | | |
| Total TRC Costs | | \$ - | | | | | | |
| **Totals TRC - Industrial | \$ - | \$ - | \$ - | 0.00 | | | | |

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 (\$) |
|--|-------------------|-------------------|---------------------|--------------------|-----------------------------|-------------------------|------------------------------|--|
| Utility Asset Conversion | \$ 521,520 | \$ 208,085 | \$ 313,435 | 2.51 | 618,585 | 12,371,700 | 0 | \$ 208,085 |
| 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 | \$ 521,520 | \$ 208,085 | \$ 313,435 | 2.51 | 618,585 | 12,371,700 | 0 | \$ 208,085 |
| LDC System Indirect Costs not attributable to any specific program | | | | | | | | |
| Total TRC Costs | | \$ 208,085 | | | | | | |
| **Totals TRC - LDC System | \$ 521,520 | \$ 208,085 | \$ 313,435 | 2.51 | | | | |

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 (\$) → 36,760

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 (\$) |
|---|----------------------|----------------|---------------------|-----------------------|--------------------------------|----------------------------|------------------------------------|--|
| <i>Education and Information</i> | \$ - | \$ 13,845 | -\$ 13,845 | 0.00 | 0 | 0 | 0 | \$ 13,845 |
| <i>Name of Program B</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program C</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program D</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program E</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program F</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program G</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program H</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program I</i> | | | \$ - | 0.00 | | | | |
| <i>Name of Program J</i> | | | \$ - | 0.00 | | | | |
| *Totals App. B - Other #1 | \$ - | \$ 13,845 | -\$ 13,845 | 0.00 | 0 | 0 | 0 | \$ 13,845 |
| <i>Other #1 Indirect Costs not attributable to any specific program</i> | | | | | | | | |
| Total TRC Costs | | \$ 13,845 | | | | | | |
| **Totals TRC - Other #1 | \$ - | \$ 13,845 | -\$ 13,845 | 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 | \$ 1,227,083 | \$ 250,704 | \$ 976,379 | 4.89 | \$ 1,149,785 | \$ 13,699,700 | \$ 131 | \$ 303,906 |
| <i>Any <u>other</u> Indirect Costs not attributable to any specific program</i> | | \$ 16,442 | | | | | | |
| TOTAL ALL LDC COSTS | | \$ 267,146 | | | | | | |
| **LDC' PORTFOLIO TRC | \$ 1,227,083 | \$ 267,146 | \$ 959,937 | 4.59 | | | | |

* 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.