

**Turn it Off**  
**Turn it Down**  
**Trade it In**



Chatham Kent Hydro TRC Analysis of the Conservation and Demand Management Programs for the 2007 IRM

## Social Housing

In order to assist customers of Chatham-Kent Hydro (CK H) in reducing their electricity consumption it is necessary to provide them with the tools to conserve. The maintenance staff at the social housing complex will perform the duties of replacing the lights, refrigerators etc. The program that CK H is proposing is the following;

### Light bulb replacement

| Unit Type                 | Units | Light / Unit | CFL - 13 W | CFL - 23 W | Cost / Light | Total Cost.      |
|---------------------------|-------|--------------|------------|------------|--------------|------------------|
| Senior / adult apartments | 550   | 7            | 1,925      | 1,925      | \$ 3.25      | \$ 12,500        |
| Family town homes         | 150   | 14           | 1,050      | 1,050      | \$ 4.25      | \$ 8,900         |
| Total Costs               |       |              |            |            |              | <u>\$ 21,400</u> |

### Light bulb replacement in common areas

| Replacement | Number | Cost / Item | Toal Costs      |
|-------------|--------|-------------|-----------------|
| Balists     | 200    | \$ 25       | \$ 5,000        |
| Lights      | 400    | \$ 2.50     | <u>\$ 1,000</u> |
| Total Costs |        |             | <u>\$ 6,000</u> |

### Refrigerator replacement

| Unit Type                | Refridgeratos | Contribution | Cost             |
|--------------------------|---------------|--------------|------------------|
| Adult / senior apartment | 50            | \$ 250       | \$ 12,500        |
| Family town homes        | 25            | \$ 250       | <u>\$ 6,300</u>  |
|                          |               |              | <u>\$ 18,800</u> |

### WH heat loss reduction

| Unit Type         | Units | Cost / Unit | Total Costs |
|-------------------|-------|-------------|-------------|
| Family town homes | 150   | \$ 200      | \$ 30,000   |

### Summary

| Project                 | Cost              |
|-------------------------|-------------------|
| Replace lights in units | \$ 21,400         |
| Replace common lighting | \$ 6,000          |
| Refrigerator swap       | \$ 18,800         |
| WH Heat loss reduction  | \$ 30,000         |
| Maintenance staff time  | \$ 18,800         |
| Administration          | \$ 5,000          |
|                         | <u>\$ 100,000</u> |

## **Commercial Industrial**

CK H will provide funds for customers to have energy audits performed and will also provide funding for light replacements.

| Project        | Number | Cost   | Total Cost       |
|----------------|--------|--------|------------------|
| Audits         | 15     | \$ 250 | \$ 3,750         |
| Lights         | 150    | \$ 100 | \$ 15,000        |
| Administration | 15     | \$ 417 | \$ 6,250         |
| Total Costs    |        |        | <u>\$ 25,000</u> |

## **Sub-metering**

In promoting a conservation culture CK H believes it is important to have customers know how much electricity they are consuming. When customers or users of electricity have information and their consumption is measured they can then make changes in how they use electricity and then reduce their overall consumption.

In providing customers with information, CK H would like to install sub-metering in two bulk metered apartment buildings. Summary of the project follows;

| Buildings | Units | Consumption / Unit | Conservation % | Annual Coservation |
|-----------|-------|--------------------|----------------|--------------------|
| 2         | 30    | 700                | 5%             | 25,200             |

The cost to provide sub-metering is estimated to be;

| Buildings      | Units | Total Units | Cost / Unit | Total Costs      |
|----------------|-------|-------------|-------------|------------------|
| 2              | 30    | 60          | \$ 400      | \$ 24,000        |
| Administration |       |             |             | <u>\$ 10,000</u> |
|                |       |             |             | <u>\$ 34,000</u> |

## **Load control**

CK H is a leader in smart meter technology, as they have been named in Ontario Regulation 428/06, which approves CK H for full deployment of smart meters. Some of the benefits of the communication system used in the smart meter program is two-way communication and web presentment for customers to view their consumption patterns.

CK H will leverage the two way communication system and the customers' information to provide an additional service of load control devices. The program will e on a pilot / trial basis and the costs will be as follows;

| Item Controlled  | Units | Cost / Unit | Total Cost       |
|------------------|-------|-------------|------------------|
| Water heaters    | 80    | \$ 200      | \$ 16,000        |
| Air conditioners | 80    | \$ 200      | \$ 16,000        |
| Administration   |       |             | <u>\$ 9,000</u>  |
| Total Costs      |       |             | <u>\$ 41,000</u> |

**CHATHAM-KENT HYDRO  
SUMMARY OF TRC ANALYSIS FOR 2007 CDM FUNDING**

see attached Schedule "A"

|                                  | Cost Assumption | Utility Costs  | TRC Costs      | TRC Benefits   | Net TRC Benefits | Benefits / Costs |
|----------------------------------|-----------------|----------------|----------------|----------------|------------------|------------------|
| <b>Social Housing</b>            |                 |                |                |                |                  |                  |
| Refrigerators                    | 75@250          | 18,800         | 5,250          | 5,157          | (93)             | 0.98             |
| Common Area Lighting             | 200@30          | 6,000          | 15,000         | 15,597         | 597              | 1.04             |
| CFLs - apts                      | 550*7@3.25      | 12,500         | 12,513         | 104,608        | 92,095           | 8.36             |
| CFLs - townhomes                 | 150*14@4.25     | 8,900          | 8,925          | 57,059         | 48,134           | 6.39             |
| WH Heat Loss Reduction           | 150@200         | 30,000         | 29,759         | 73,435         | 43,676           | 2.47             |
| Maintenance Labour               | 18,800          | 18,800         | 0              | 0              | (18,800)         | 0.00             |
| Administration                   | 5,000           | 5,000          | 0              | 0              | (5,000)          | 0.00             |
| <b>TOTAL</b>                     |                 | <b>100,000</b> | <b>95,247</b>  | <b>255,856</b> | <b>160,609</b>   | <b>2.69</b>      |
| <b>Commercial and Industrial</b> |                 |                |                |                |                  |                  |
| Audits                           | 15@250          | 3,750          | 3,750          | 0              | (3,750)          | 0.00             |
| Fluorescent lighting             | 150@100         | 15,000         | 7,950          | 21,718         | 13,768           | 2.73             |
| Administration                   | 6,250           | 6,250          | 6,250          | 0              | (6,250)          | 0.00             |
| <b>TOTAL</b>                     |                 | <b>25,000</b>  | <b>17,950</b>  | <b>21,718</b>  | <b>3,768</b>     | <b>1.21</b>      |
| <b>Sub-metering</b>              |                 |                |                |                |                  |                  |
| 2 buildings @ 30 units           | 60@400          | 24,000         | 24,000         | 23,743         | (257)            | 0.99             |
| Administration                   | 10,000          | 10,000         | 10,000         | 0              | (10,000)         | 0.00             |
| <b>TOTAL</b>                     |                 | <b>34,000</b>  | <b>34,000</b>  | <b>23,743</b>  | <b>(10,257)</b>  | <b>0.70</b>      |
| <b>Load control / timers</b>     |                 |                |                |                |                  |                  |
| Control water heaters            | 80@200          | 16,000         | 16,000         | 120,936        | 104,936          | 7.56             |
| Control air conditioners         | 80@200          | 16,000         | 16,000         | 74,529         | 58,529           | 4.66             |
| Administration                   | 9,000           | 9,000          | 9,000          | 0              | (9,000)          | 0.00             |
| <b>TOTAL</b>                     |                 | <b>41,000</b>  | <b>41,000</b>  | <b>195,465</b> | <b>154,465</b>   | <b>4.77</b>      |
| <b>GRAND TOTAL</b>               |                 | <b>200,000</b> | <b>188,197</b> | <b>496,782</b> | <b>308,586</b>   | <b>2.64</b>      |

# CHATHAM-KENT HYDRO SUMMARY OF TRC ANALYSIS FOR 2007 CDM FUNDING

## SCHEDULE "A"

|                               | Cost Assumption | Utility Costs | TRC Costs     | TRC Benefits  | Net TRC Benefits | Benefits / Costs |
|-------------------------------|-----------------|---------------|---------------|---------------|------------------|------------------|
| <b>WH Heat Loss Reduction</b> |                 |               |               |               |                  |                  |
| Showerheads                   | 150@7           | 1,050         | 1,050         | 48,006        | 46,956           | 45.72            |
| Faucet Aerators               | 300@6           | 1,800         | 1,800         | 5,966         | 4,166            | 3.31             |
| Faucet Washers                | 300@0.28        | 84            | 84            | 1,935         | 1,851            | 23.04            |
| Tank Wrap                     | 150@25          | 3,750         | 3,750         | 13,804        | 10,054           | 3.68             |
| Pipe Insulation               | 150@0.50        | 75            | 75            | 3,724         | 3,649            | 49.65            |
| Procurement & Delivery        |                 | 23,000        | 23,000        | 0             | (23,000)         | 0.00             |
| <b>TOTAL</b>                  |                 | <b>29,759</b> | <b>29,759</b> | <b>73,435</b> | <b>43,676</b>    | <b>2.47</b>      |

Based on 150 townhomes

2 per household

2 per household

## NOTES

TRC benefits do not include water savings (as allowed per OEB guidelines)

**SOCIAL HOUSING: REFRIGERATORS**

Units: 75  
 Unit Cost \$ 70.00  
 Years 19

| Energy Savings per unit (KWh) |          |          |         |          |          |         |          |          |          | Total          |                       |
|-------------------------------|----------|----------|---------|----------|----------|---------|----------|----------|----------|----------------|-----------------------|
| Winter                        |          | Summer   |         | Shoulder |          | Summer  |          | Shoulder |          | Energy Savings | Demand Reduction (KW) |
| On-Peak                       | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | Off-Peak | Winter         | Summer                |
| 5                             | 6        | 14       | 4       | 7        | 14       | 14      | 11       | 14       | 75       | 0.018          | 0.017                 |

|         | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                |                 | Avoided Capacity |        | Total Avoided Cost |
|---------|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|----------------|-----------------|------------------|--------|--------------------|
|         | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak  | Non-DR |                    |
| 1 2008  | 43.28               | 39.06           | 51.35           | 33.18          | 43.89           | 52.61           | 74.58             | 47.15             | 102.34         |                 |                  |        | 487.42             |
| 2 2009  | 41.96               | 34.70           | 51.35           | 31.35          | 41.74           | 49.98           | 70.79             | 45.57             | 123.04         |                 |                  |        | 490.46             |
| 3 2010  | 42.56               | 34.83           | 54.71           | 32.10          | 42.26           | 50.61           | 68.89             | 45.57             | 108.04         |                 |                  |        | 479.57             |
| 4 2011  | 41.33               | 34.79           | 55.34           | 30.96          | 42.68           | 50.93           | 69.47             | 45.15             | 126.24         |                 |                  |        | 496.87             |
| 5 2012  | 42.15               | 35.51           | 55.97           | 33.93          | 44.42           | 53.76           | 73.01             | 50.19             | 121.29         |                 |                  |        | 510.22             |
| 6 2013  | 46.95               | 38.88           | 62.90           | 35.07          | 47.93           | 56.70           | 76.31             | 54.50             | 96.75          |                 |                  |        | 515.98             |
| 7 2014  | 47.14               | 41.58           | 65.94           | 38.37          | 50.82           | 59.54           | 81.59             | 57.12             | 78.12          |                 |                  |        | 520.21             |
| 8 2015  | 47.78               | 42.62           | 73.08           | 45.48          | 56.02           | 65.63           | 84.81             | 62.90             | 48.65          |                 |                  |        | 526.95             |
| 9 2016  | 49.39               | 43.79           | 74.45           | 45.75          | 56.75           | 67.10           | 86.21             | 64.47             | 53.88          |                 |                  |        | 541.78             |
| 10 2017 | 51.00               | 45.00           | 75.71           | 46.05          | 57.49           | 68.57           | 87.62             | 65.94             | 58.27          |                 |                  |        | 555.63             |
| 11 2018 | 52.61               | 46.22           | 77.07           | 46.32          | 58.22           | 70.14           | 89.10             | 67.52             | 60.96          |                 |                  |        | 568.15             |
| 12 2019 | 54.23               | 47.43           | 78.33           | 46.59          | 58.96           | 71.61           | 90.50             | 68.99             | 62.42          |                 |                  |        | 579.05             |
| 13 2020 | 55.84               | 48.65           | 79.70           | 46.89          | 59.64           | 73.08           | 91.91             | 70.56             | 62.25          |                 |                  |        | 588.50             |
| 14 2021 | 57.15               | 49.68           | 81.90           | 47.13          | 61.16           | 75.08           | 94.63             | 72.56             | 70.97          |                 |                  |        | 610.25             |
| 15 2022 | 58.43               | 50.72           | 84.00           | 47.37          | 62.69           | 77.07           | 97.27             | 74.55             | 76.25          |                 |                  |        | 628.33             |
| 16 2023 | 59.74               | 51.75           | 86.21           | 47.61          | 64.26           | 79.07           | 99.91             | 76.55             | 79.69          |                 |                  |        | 644.77             |
| 17 2024 | 61.01               | 52.79           | 88.41           | 47.85          | 65.78           | 81.06           | 102.55            | 78.54             | 80.69          |                 |                  |        | 658.68             |
| 18 2025 | 62.29               | 53.87           | 90.62           | 48.09          | 67.31           | 83.06           | 105.19            | 80.54             | 78.06          |                 |                  |        | 669.00             |
| 19 2026 | 62.29               | 53.87           | 90.62           | 48.09          | 67.31           | 83.06           | 105.19            | 80.54             | 78.06          |                 |                  |        | 669.00             |

**TRC ANALYSIS RESULTS**

|                      |       |
|----------------------|-------|
| PV of Gross Benefits | 5,730 |
| Free Ridership       | 10%   |
| Attribution Rate     | 100%  |
| PV of TRC benefits   | 5,157 |
| TRC costs            | 5,250 |
| Net TRC benefit      | (93)  |
| TRC benefit/cost     | 0.98  |

**NOTES**

TRC costs reflect incremental equipment cost  
 Labour costs included under Maintenance

**SOCIAL HOUSING: COMMON AREA LIGHTING**

Units: 200  
 Unit Cost \$ 75.00  
 Years 3

| Energy Savings per unit (KWh) |          |          |         |          |          |                |        |                       |        |
|-------------------------------|----------|----------|---------|----------|----------|----------------|--------|-----------------------|--------|
| Winter                        |          | Summer   |         | Shoulder |          | Total          |        | Demand Reduction (kW) |        |
| On-Peak                       | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | Energy Savings | Non-DR | Winter                | Summer |
| 46                            | 50       | 37       | 42      | 54       | 37       | 400            |        | 0.084                 | 0.080  |

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |        |                 | Total        |              |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|--------|-----------------|--------------|--------------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR | Demand Response | Avoided Cost | Avoided Cost |
| 1  | 2008                | 1,061.68        | 868.00          | 361.86         | 929.04          | 902.88          | 370.74            | 1,753.76          | 332.26 | 1,284.32        |              | 7,864.54     |
| 2  | 2009                | 1,029.48        | 771.00          | 361.86         | 877.80          | 858.60          | 352.24            | 1,664.52          | 321.16 | 1,544.00        |              | 7,780.66     |
| 3  | 2010                | 1,044.20        | 774.00          | 385.54         | 898.80          | 869.40          | 356.68            | 1,619.90          | 321.16 | 1,355.84        |              | 3,812.76     |
| 4  | 2011                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 5  | 2012                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 6  | 2013                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 7  | 2014                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 8  | 2015                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 9  | 2016                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 10 | 2017                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 11 | 2018                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 12 | 2019                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 13 | 2020                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 14 | 2021                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 15 | 2022                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 16 | 2023                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 17 | 2024                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 18 | 2025                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |
| 19 | 2026                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   | 0.00            |              | 0.00         |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 17,330 |
| Free Ridership       | 10%    |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 15,597 |
| TRC costs            | 15,000 |
| Net TRC benefit      | 597    |
| TRC benefit/cost     | 1.04   |

**NOTES**

TRC cost based on incremental cost of 2 - 26W CFL fixture w/ EM ballast  
 Total Avoided Cost for 2010 reduced by 50%, as TRC guide specifies 2.5 (not 3) years as incremental equipment life  
 Labour costs included under maintenance

**SOCIAL HOUSING: CFLs**

Units: 3850  
 Unit Cost \$ 3.25  
 Years 4

| Energy Savings per unit (KWh) |    |                 |   |                 |    |                |   |                 |    |                 |    |                   |    |                   |    |                      |     |       |       |       |       |
|-------------------------------|----|-----------------|---|-----------------|----|----------------|---|-----------------|----|-----------------|----|-------------------|----|-------------------|----|----------------------|-----|-------|-------|-------|-------|
| Winter On-Peak                |    | Winter Mid-Peak |   | Winter Off-Peak |    | Summer On-Peak |   | Summer Mid-Peak |    | Summer Off-Peak |    | Shoulder Mid-Peak |    | Shoulder Off-Peak |    | Total Energy Savings |     |       |       |       |       |
| 19                            | 19 | 9               | 9 | 25              | 25 | 0              | 0 | 14              | 14 | 17              | 17 | 21                | 21 | 22                | 22 | 127                  | 127 | 0.028 | 0.028 | 0.000 | 0.000 |

|    | Avoided Energy Cost |          |                 |          |                 |      |                |          |                 |          |                 |      |                   |      |                   |      |        |      |                    |           |
|----|---------------------|----------|-----------------|----------|-----------------|------|----------------|----------|-----------------|----------|-----------------|------|-------------------|------|-------------------|------|--------|------|--------------------|-----------|
|    | Winter On-Peak      |          | Winter Mid-Peak |          | Winter Off-Peak |      | Summer On-Peak |          | Summer Mid-Peak |          | Summer Off-Peak |      | Shoulder Mid-Peak |      | Shoulder Off-Peak |      | Non-DR |      | Total Avoided Cost |           |
| 1  | 2008                | 8,441.51 | 3,007.62        | 4,706.63 | 4,706.63        | 0.00 | 4,506.04       | 3,279.05 | 7,308.84        | 3,803.03 | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 35,052.71 |
| 2  | 2009                | 8,185.49 | 2,671.52        | 4,706.63 | 4,706.63        | 0.00 | 4,285.05       | 3,115.42 | 6,936.93        | 3,675.98 | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 33,577.01 |
| 3  | 2010                | 8,302.53 | 2,681.91        | 5,014.63 | 5,014.63        | 0.00 | 4,338.95       | 3,154.69 | 6,750.98        | 3,675.98 | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 33,919.66 |
| 4  | 2011                | 8,061.13 | 2,678.45        | 5,072.38 | 5,072.38        | 0.00 | 4,382.07       | 3,174.33 | 6,807.57        | 3,642.10 | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 33,818.02 |
| 5  | 2012                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 6  | 2013                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 7  | 2014                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 8  | 2015                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 9  | 2016                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 10 | 2017                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 11 | 2018                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 12 | 2019                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 13 | 2020                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 14 | 2021                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 15 | 2022                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 16 | 2023                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 17 | 2024                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 18 | 2025                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |
| 19 | 2026                | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00           | 0.00     | 0.00            | 0.00     | 0.00            | 0.00 | 0.00              | 0.00 | 0.00              | 0.00 | 0.00   | 0.00 | 0.00               | 0.00      |

**TRC ANALYSIS RESULTS**

|                      |         |
|----------------------|---------|
| PV of Gross Benefits | 116,231 |
| Free Ridership       | 10%     |
| Attribution Rate     | 100%    |
| PV of TRC benefits   | 104,608 |
| TRC costs            | 12,513  |
| Net TRC benefit      | 92,095  |
| TRC benefit/cost     | 8.36    |

**NOTES**

Savings based on average CFL bulb of 20W (= 75W incandescent)  
 Labour cost included under maintenance



**SOCIAL HOUSING: CFLs**

Units: 2100  
 Unit Cost \$ 4.25  
 Years 4

| Energy Savings per unit (KWh) |    |                 |   |                 |    |                |    |                 |       | Total           |  |                |                       |
|-------------------------------|----|-----------------|---|-----------------|----|----------------|----|-----------------|-------|-----------------|--|----------------|-----------------------|
| Winter On-Peak                |    | Winter Mid-Peak |   | Winter Off-Peak |    | Summer On-Peak |    | Summer Mid-Peak |       | Summer Off-Peak |  | Energy Savings | Demand Reduction (kW) |
| 19                            | 25 | 9               | 0 | 14              | 17 | 21             | 22 | 127             | 0.028 | 0.000           |  |                |                       |

|         | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |        |                 |  |           | Avoided Capacity |  | Total Avoided Cost |
|---------|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|--------|-----------------|--|-----------|------------------|--|--------------------|
|         | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR | Demand Response |  |           |                  |  |                    |
| 1 2008  | 4,604.46            | 1,640.52        | 2,567.25        | 0.00           | 2,457.84        | 1,788.57        | 3,986.64          | 2,074.38          | 0.00   |                 |  | 19,119.66 |                  |  |                    |
| 2 2009  | 4,464.81            | 1,457.19        | 2,567.25        | 0.00           | 2,337.30        | 1,699.32        | 3,783.78          | 2,005.08          | 0.00   |                 |  | 18,314.73 |                  |  |                    |
| 3 2010  | 4,528.65            | 1,462.86        | 2,735.25        | 0.00           | 2,366.70        | 1,720.74        | 3,682.35          | 2,005.08          | 0.00   |                 |  | 18,501.63 |                  |  |                    |
| 4 2011  | 4,396.98            | 1,460.97        | 2,766.75        | 0.00           | 2,390.22        | 1,731.45        | 3,713.22          | 1,986.60          | 0.00   |                 |  | 18,446.19 |                  |  |                    |
| 5 2012  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 6 2013  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 7 2014  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 8 2015  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 9 2016  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 10 2017 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 11 2018 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 12 2019 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 13 2020 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 14 2021 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 15 2022 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 16 2023 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 17 2024 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 18 2025 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |
| 19 2026 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |  | 0.00      |                  |  |                    |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 63,399 |
| Free Ridership       | 10%    |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 57,059 |
| TRC costs            | 8,925  |
| Net TRC benefit      | 48,134 |
| TRC benefit/cost     | 6.39   |

**NOTES**

Savings based on average CFL bulb of 20W (= 75W incandescent)  
 Labour cost included under maintenance

**SOCIAL HOUSING: SHOWERHEADS**

Units: 150  
 Unit Cost \$ 7.00  
 Years 12

| Energy Savings per unit (KWh) |          |          |         |          |          |          |          |          |                      |        |        | Total Energy Savings |  | Demand Reduction (KW) |  |
|-------------------------------|----------|----------|---------|----------|----------|----------|----------|----------|----------------------|--------|--------|----------------------|--|-----------------------|--|
| Winter                        |          |          | Summer  |          |          | Shoulder |          |          | Total Energy Savings | Winter | Summer |                      |  |                       |  |
| On-Peak                       | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | Mid-Peak | Off-Peak | Off-Peak |                      |        |        |                      |  |                       |  |
| 37                            | 43       | 100      | 33      | 49       | 101      | 81       | 101      | 101      | 545                  | 0.096  | 0.039  |                      |  |                       |  |

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                |                 |                 |                   | Avoided Capacity  |        | Total Avoided Cost |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|----------------|-----------------|-----------------|-------------------|-------------------|--------|--------------------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR |                    |
| 1  | 2008                | 640.47          | 559.86          | 733.50         | 547.47          | 614.46          | 759.02            | 1,098.36          | 680.24         | 469.58          |                 |                   |                   |        | 6,102.95           |
| 2  | 2009                | 621.05          | 497.30          | 733.50         | 517.28          | 584.33          | 721.14            | 1,042.47          | 657.51         | 564.53          |                 |                   |                   |        | 5,939.09           |
| 3  | 2010                | 629.93          | 499.23          | 781.50         | 529.65          | 591.68          | 730.23            | 1,014.53          | 657.51         | 495.73          |                 |                   |                   |        | 5,929.97           |
| 4  | 2011                | 611.61          | 498.59          | 790.50         | 510.84          | 597.56          | 734.78            | 1,023.03          | 651.45         | 579.21          |                 |                   |                   |        | 5,997.55           |
| 5  | 2012                | 623.82          | 508.91          | 799.50         | 559.85          | 621.81          | 775.68            | 1,075.28          | 724.17         | 556.51          |                 |                   |                   |        | 6,245.52           |
| 6  | 2013                | 694.86          | 557.28          | 898.50         | 578.66          | 671.06          | 818.10            | 1,123.88          | 786.29         | 443.90          |                 |                   |                   |        | 6,572.51           |
| 7  | 2014                | 697.64          | 595.98          | 942.00         | 633.11          | 711.48          | 859.01            | 1,201.64          | 824.16         | 358.43          |                 |                   |                   |        | 6,823.43           |
| 8  | 2015                | 707.07          | 610.82          | 1,044.00       | 750.42          | 784.25          | 946.88            | 1,249.02          | 907.49         | 223.24          |                 |                   |                   |        | 7,223.17           |
| 9  | 2016                | 730.94          | 627.59          | 1,063.50       | 754.88          | 794.54          | 968.09            | 1,269.68          | 930.21         | 247.22          |                 |                   |                   |        | 7,386.62           |
| 10 | 2017                | 754.80          | 645.00          | 1,081.50       | 759.83          | 804.83          | 989.30            | 1,290.33          | 951.42         | 267.35          |                 |                   |                   |        | 7,544.34           |
| 11 | 2018                | 778.67          | 662.42          | 1,101.00       | 764.28          | 815.12          | 1,012.02          | 1,312.20          | 974.15         | 279.69          |                 |                   |                   |        | 7,699.53           |
| 12 | 2019                | 802.53          | 679.83          | 1,119.00       | 768.74          | 825.41          | 1,033.23          | 1,332.86          | 995.36         | 286.42          |                 |                   |                   |        | 7,843.36           |
| 13 | 2020                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |
| 14 | 2021                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |
| 15 | 2022                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |
| 16 | 2023                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |
| 17 | 2024                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |
| 18 | 2025                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |
| 19 | 2026                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00           | 0.00            |                 |                   |                   |        | 0.00               |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 53,340 |
| Free Ridership       | 10%    |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 48,006 |
| TRC costs            | 1,050  |
| Net TRC benefit      | 46,956 |
| TRC benefit/cost     | 45.72  |

**NOTES**

Per Schedule "A"

**SOCIAL HOUSING: FAUCET AERATORS**

Units: 300  
 Unit Cost \$ 6.00  
 Years 12

| Energy Savings per unit (KWh) |          |          |         |          |          |                |        |                       |        |
|-------------------------------|----------|----------|---------|----------|----------|----------------|--------|-----------------------|--------|
| Winter                        |          | Summer   |         | Shoulder |          | Total          |        | Demand Reduction (kW) |        |
| On-Peak                       | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | Energy Savings | Non-DR | Winter                | Summer |
| 2                             | 3        | 6        | 2       | 3        | 6        | 34             |        | 0.006                 | 0.002  |

|         | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |        |                 | Avoided Capacity |        | Total Avoided Cost |
|---------|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|--------|-----------------|------------------|--------|--------------------|
|         | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR | Demand Response |                  |        |                    |
| 1 2008  | 69.24               | 78.12           | 88.02           | 66.36          | 75.24           | 90.18           | 162.72            | 80.82             | 48.16  |                 |                  | 758.86 |                    |
| 2 2009  | 67.14               | 69.39           | 88.02           | 62.70          | 71.55           | 85.68           | 154.44            | 78.12             | 57.90  |                 |                  | 734.94 |                    |
| 3 2010  | 68.10               | 69.66           | 93.78           | 64.20          | 72.45           | 86.76           | 150.30            | 78.12             | 50.84  |                 |                  | 734.21 |                    |
| 4 2011  | 66.12               | 69.57           | 94.86           | 61.92          | 73.17           | 87.30           | 151.56            | 77.40             | 59.41  |                 |                  | 741.31 |                    |
| 5 2012  | 67.44               | 71.01           | 95.94           | 67.86          | 76.14           | 92.16           | 159.30            | 86.04             | 57.08  |                 |                  | 772.97 |                    |
| 6 2013  | 75.12               | 77.76           | 107.82          | 70.14          | 82.17           | 97.20           | 166.50            | 93.42             | 45.53  |                 |                  | 815.66 |                    |
| 7 2014  | 75.42               | 83.16           | 113.04          | 76.74          | 87.12           | 102.06          | 178.02            | 97.92             | 36.76  |                 |                  | 850.24 |                    |
| 8 2015  | 76.44               | 85.23           | 125.28          | 90.96          | 96.03           | 112.50          | 185.04            | 107.82            | 22.90  |                 |                  | 902.20 |                    |
| 9 2016  | 79.02               | 87.57           | 127.62          | 91.50          | 97.29           | 115.02          | 188.10            | 110.52            | 25.36  |                 |                  | 922.00 |                    |
| 10 2017 | 81.60               | 90.00           | 129.78          | 92.10          | 98.55           | 117.54          | 191.16            | 113.04            | 27.42  |                 |                  | 941.19 |                    |
| 11 2018 | 84.18               | 92.43           | 132.12          | 92.64          | 99.81           | 120.24          | 194.40            | 115.74            | 28.69  |                 |                  | 960.25 |                    |
| 12 2019 | 86.76               | 94.86           | 134.28          | 93.18          | 101.07          | 122.76          | 197.46            | 118.26            | 29.38  |                 |                  | 978.01 |                    |
| 13 2020 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |
| 14 2021 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |
| 15 2022 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |
| 16 2023 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |
| 17 2024 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |
| 18 2025 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |
| 19 2026 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00   |                 |                  | 0.00   |                    |

**TRC ANALYSIS RESULTS**

|                      |       |
|----------------------|-------|
| PV of Gross Benefits | 6,629 |
| Free Ridership       | 10%   |
| Attribution Rate     | 100%  |
| PV of TRC benefits   | 5,966 |
| TRC costs            | 1,800 |
| Net TRC benefit      | 4,166 |
| TRC benefit/cost     | 3.31  |

**NOTES**

Per Schedule "A"

**SOCIAL HOUSING: FAUCET WASHERS**

Units: 300  
 Unit Cost \$ 0.28  
 Years 6

| Energy Savings per unit (KWh) |                 |                 |                |                 |                 |                   |                   |                  |                   | Total Energy Savings |    | Demand Reduction (KW) |        |
|-------------------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|------------------|-------------------|----------------------|----|-----------------------|--------|
| Winter On-Peak                | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder On-Peak | Shoulder Off-Peak | Energy Savings       | DR | Winter                | Summer |
| 1                             | 2               | 4               | 1              | 2               | 4               | 3                 | 4                 | 4                | 4                 | 21                   | 21 | 0.004                 | 0.001  |

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                  |                   | Avoided Capacity |                 | Total Avoided Cost |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|------------------|-------------------|------------------|-----------------|--------------------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder On-Peak | Shoulder Off-Peak | Non-DR           | Demand Response |                    |
| 1  | 2008                | 34.62           | 52.08           | 58.68          | 33.18           | 50.16           | 60.12             | 81.36             | 53.88            | 24.08             | 24.08            |                 | 448.16             |
| 2  | 2009                | 33.57           | 46.26           | 58.68          | 31.35           | 47.70           | 57.12             | 77.22             | 52.08            | 28.95             | 28.95            |                 | 432.93             |
| 3  | 2010                | 34.05           | 46.44           | 62.52          | 32.10           | 48.30           | 57.84             | 75.15             | 52.08            | 25.42             | 25.42            |                 | 433.90             |
| 4  | 2011                | 33.06           | 46.38           | 63.24          | 30.96           | 48.78           | 58.20             | 75.78             | 51.60            | 29.70             | 29.70            |                 | 437.70             |
| 5  | 2012                | 33.72           | 47.34           | 63.96          | 33.93           | 50.76           | 61.44             | 79.65             | 57.36            | 28.54             | 28.54            |                 | 456.70             |
| 6  | 2013                | 37.56           | 51.84           | 71.88          | 35.07           | 54.78           | 64.80             | 83.25             | 62.28            | 22.76             | 22.76            |                 | 484.22             |
| 7  | 2014                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 8  | 2015                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 9  | 2016                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 10 | 2017                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 11 | 2018                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 12 | 2019                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 13 | 2020                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 14 | 2021                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 15 | 2022                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 16 | 2023                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 17 | 2024                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 18 | 2025                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |
| 19 | 2026                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              | 0.00             |                 | 0.00               |

**TRC ANALYSIS RESULTS**

|                      |       |
|----------------------|-------|
| PV of Gross Benefits | 2,150 |
| Free Ridership       | 10%   |
| Attribution Rate     | 100%  |
| PV of TRC benefits   | 1,935 |
| TRC costs            | 84    |
| Net TRC benefit      | 1,851 |
| TRC benefit/cost     | 23.04 |

**NOTES**

Per Schedule "A"

**SOCIAL HOUSING: TANK WRAP**

Units: 150  
 Unit Cost \$ 25.00  
 Years 6

| Energy Savings per unit (KWh) |    |                 |    |                 |    |                |    |                 |    |                 |    |                   |    |                   |    |                  |     |                      |       |                       |       |
|-------------------------------|----|-----------------|----|-----------------|----|----------------|----|-----------------|----|-----------------|----|-------------------|----|-------------------|----|------------------|-----|----------------------|-------|-----------------------|-------|
| Winter On-Peak                |    | Winter Mid-Peak |    | Winter Off-Peak |    | Summer On-Peak |    | Summer Mid-Peak |    | Summer Off-Peak |    | Shoulder Mid-Peak |    | Shoulder Off-Peak |    | Shoulder On-Peak |     | Total Energy Savings |       | Demand Reduction (kW) |       |
| 19                            | 19 | 21              | 21 | 50              | 50 | 16             | 16 | 24              | 24 | 50              | 50 | 40                | 40 | 50                | 50 | 270              | 270 | 0.047                | 0.047 | 0.019                 | 0.019 |

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                  |        |                  |  |                  |  |                  |  |  |  | Total Avoided Cost |  |          |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|------------------|--------|------------------|--|------------------|--|------------------|--|--|--|--------------------|--|----------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder On-Peak | Non-DR | Avoided Capacity |  | Avoided Capacity |  | Avoided Capacity |  |  |  |                    |  |          |
| 1  | 2008                | 328.89          | 273.42          | 366.75         | 265.44          | 300.96          | 375.75            | 542.40            | 336.75           | 228.77 |                  |  |                  |  |                  |  |  |  |                    |  | 3,019.13 |
| 2  | 2009                | 318.92          | 242.87          | 366.75         | 250.80          | 286.20          | 357.00            | 514.80            | 325.50           | 275.03 |                  |  |                  |  |                  |  |  |  |                    |  | 2,937.86 |
| 3  | 2010                | 323.48          | 243.81          | 390.75         | 256.80          | 289.80          | 361.50            | 501.00            | 325.50           | 241.51 |                  |  |                  |  |                  |  |  |  |                    |  | 2,934.14 |
| 4  | 2011                | 314.07          | 243.50          | 395.25         | 247.68          | 292.68          | 363.75            | 505.20            | 322.50           | 282.18 |                  |  |                  |  |                  |  |  |  |                    |  | 2,966.80 |
| 5  | 2012                | 320.34          | 248.54          | 399.75         | 271.44          | 304.56          | 384.00            | 531.00            | 358.50           | 271.12 |                  |  |                  |  |                  |  |  |  |                    |  | 3,089.25 |
| 6  | 2013                | 356.82          | 272.16          | 449.25         | 280.56          | 328.68          | 405.00            | 555.00            | 389.25           | 216.26 |                  |  |                  |  |                  |  |  |  |                    |  | 3,252.98 |
| 7  | 2014                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 8  | 2015                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 9  | 2016                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 10 | 2017                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 11 | 2018                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 12 | 2019                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 13 | 2020                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 14 | 2021                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 15 | 2022                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 16 | 2023                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 17 | 2024                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 18 | 2025                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |
| 19 | 2026                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00   |                  |  |                  |  |                  |  |  |  |                    |  | 0.00     |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 14,530 |
| Free Ridership       | 5%     |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 13,804 |
| TRC costs            | 3,750  |
| Net TRC benefit      | 10,054 |
| TRC benefit/cost     | 3.68   |

**NOTES**

Per Schedule "A"

**SOCIAL HOUSING: PIPE INSULATION**

Units: 150  
 Unit Cost \$ 0.50  
 Years 6

| Energy Savings per unit (KWh) |                 |                 |                |                 |                 |                   |                   |                  |                   | Total Energy Savings |    | Demand Reduction (KW) |        |
|-------------------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|------------------|-------------------|----------------------|----|-----------------------|--------|
| Winter On-Peak                | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder On-Peak | Shoulder Off-Peak | Energy Savings       | DR | Winter                | Summer |
| 5                             | 6               | 14              | 5              | 7               | 14              | 11                | 14                | 14               | 14                | 76                   | 76 | 0.013                 | 0.006  |

|         | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                  |                   | Avoided Capacity |                 | Total Avoided Cost |
|---------|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|------------------|-------------------|------------------|-----------------|--------------------|
|         | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder On-Peak | Shoulder Off-Peak | Non-DR           | Demand Response |                    |
| 1 2008  | 86.55               | 78.12           | 102.69          | 82.95          | 87.78           | 105.21          | 149.16            | 94.29             | 94.29            | 72.24             |                  |                 | 858.99             |
| 2 2009  | 83.93               | 69.39           | 102.69          | 78.38          | 83.48           | 99.96           | 141.57            | 91.14             | 91.14            | 86.85             |                  |                 | 837.38             |
| 3 2010  | 85.13               | 69.66           | 109.41          | 80.25          | 84.53           | 101.22          | 137.78            | 91.14             | 91.14            | 76.27             |                  |                 | 835.37             |
| 4 2011  | 82.65               | 69.57           | 110.67          | 77.40          | 85.37           | 101.85          | 138.93            | 90.30             | 90.30            | 89.11             |                  |                 | 845.84             |
| 5 2012  | 84.30               | 71.01           | 111.93          | 84.83          | 88.83           | 107.52          | 146.03            | 100.38            | 100.38           | 85.62             |                  |                 | 880.44             |
| 6 2013  | 93.90               | 77.76           | 125.79          | 87.68          | 95.87           | 113.40          | 152.63            | 108.99            | 108.99           | 68.29             |                  |                 | 924.30             |
| 7 2014  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 8 2015  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 9 2016  | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 10 2017 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 11 2018 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 12 2019 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 13 2020 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 14 2021 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 15 2022 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 16 2023 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 17 2024 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 18 2025 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |
| 19 2026 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00             | 0.00              |                  |                 | 0.00               |

**TRC ANALYSIS RESULTS**

|                      |       |
|----------------------|-------|
| PV of Gross Benefits | 4,137 |
| Free Ridership       | 10%   |
| Attribution Rate     | 100%  |
| PV of TRC benefits   | 3,724 |
| TRC costs            | 75    |
| Net TRC benefit      | 3,649 |
| TRC benefit/cost     | 49.65 |

**NOTES**

Per Schedule "A"

**COMMERCIAL & INDUSTRIAL LIGHTING**

Units: 150  
 Unit Cost \$ 53.00  
 Years 5

| Energy Savings per unit (KWh) |          |          |         |          |          |                |        |                       |        |
|-------------------------------|----------|----------|---------|----------|----------|----------------|--------|-----------------------|--------|
| Winter                        |          | Summer   |         | Shoulder |          | Total          |        | Demand Reduction (kW) |        |
| On-Peak                       | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | Energy Savings | Non-DR | Winter                | Summer |
| 45                            | 49       | 36       | 42      | 53       | 36       | 393            |        | 0.088                 | 0.084  |

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                   |                   | Avoided Capacity |                 | Total Avoided Cost |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|------------------|-----------------|--------------------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR           | Demand Response |                    |
| 1  | 2008                | 778.95          | 637.98          | 264.06         | 696.78          | 664.62          | 270.54            | 1,301.76          | 242.46            | 1,011.40          |                  |                 | 5,868.55           |
| 2  | 2009                | 755.33          | 566.69          | 264.06         | 658.35          | 632.03          | 257.04            | 1,235.52          | 234.36            | 1,215.90          |                  |                 | 5,819.27           |
| 3  | 2010                | 766.13          | 568.89          | 281.34         | 674.10          | 639.98          | 260.28            | 1,202.40          | 234.36            | 1,067.72          |                  |                 | 5,695.19           |
| 4  | 2011                | 743.85          | 568.16          | 284.58         | 650.16          | 646.34          | 261.90            | 1,212.48          | 232.20            | 1,247.53          |                  |                 | 5,847.19           |
| 5  | 2012                | 758.70          | 579.92          | 287.82         | 712.53          | 672.57          | 276.48            | 1,274.40          | 258.12            | 1,198.64          |                  |                 | 6,019.17           |
| 6  | 2013                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 7  | 2014                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 8  | 2015                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 9  | 2016                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 10 | 2017                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 11 | 2018                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 12 | 2019                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 13 | 2020                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 14 | 2021                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 15 | 2022                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 16 | 2023                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 17 | 2024                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 18 | 2025                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |
| 19 | 2026                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              | 0.00              | 0.00              |                  |                 | 0.00               |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 24,132 |
| Free Ridership       | 10%    |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 21,718 |
| TRC costs            | 7,950  |
| Net TRC benefit      | 13,768 |
| TRC benefit/cost     | 2.73   |

**NOTES**

TRC costs based on incremental cost to replace 4 T12 34W 4' lamps with 2 T8 32W reflectorized w/ EL ballast

**SUB-METERING**

Units: 60  
 Unit Cost \$ 400.00  
 Years 19

| Energy Savings per unit (KWh) |          |          |         |          |          |         |          |          |          | Total          |                  |
|-------------------------------|----------|----------|---------|----------|----------|---------|----------|----------|----------|----------------|------------------|
| Winter                        |          | Summer   |         | Shoulder |          | Summer  |          | Shoulder |          | Energy Savings | Demand Reduction |
| On-Peak                       | Mid-Peak | Off-Peak | On-Peak | Mid-Peak | Off-Peak | On-Peak | Off-Peak | Mid-Peak | Off-Peak | Winter         | Summer           |
| 29                            | 33       | 77       | 25      | 38       | 78       | 63      | 78       | 63       | 78       | 420            | 0.048            |
| 602                           | 688      | 1614     | 522     | 783      | 1623     | 1305    | 1623     | 1305     | 1623     | 8,760          | 0.048            |

Hours

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |                   |                   | Avoided Capacity |                 | Total Avoided Cost |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|------------------|-----------------|--------------------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR           | Demand Response |                    |
| 1  | 199.85              | 171.79          | 227.04          | 166.08         | 188.31          | 233.91          | 339.37            | 209.63            | 209.63            | 230.91            |                  |                 | 1,966.90           |
| 2  | 193.79              | 152.59          | 227.04          | 156.92         | 179.07          | 222.24          | 322.10            | 202.63            | 202.63            | 277.60            |                  |                 | 1,933.99           |
| 3  | 196.56              | 153.19          | 241.90          | 160.68         | 181.32          | 225.04          | 313.47            | 202.63            | 202.63            | 243.77            |                  |                 | 1,918.56           |
| 4  | 190.84              | 152.99          | 244.69          | 154.97         | 183.13          | 226.44          | 316.10            | 200.76            | 200.76            | 284.82            |                  |                 | 1,954.74           |
| 5  | 194.65              | 156.16          | 247.47          | 169.84         | 190.56          | 239.05          | 332.24            | 223.17            | 223.17            | 273.66            |                  |                 | 2,026.80           |
| 6  | 216.82              | 171.00          | 278.12          | 175.54         | 205.65          | 252.12          | 347.26            | 242.32            | 242.32            | 218.28            |                  |                 | 2,107.11           |
| 7  | 217.68              | 182.88          | 291.58          | 192.06         | 218.04          | 264.73          | 371.28            | 253.99            | 253.99            | 176.26            |                  |                 | 2,168.49           |
| 8  | 220.63              | 187.43          | 323.15          | 227.65         | 240.34          | 291.81          | 385.92            | 279.67            | 279.67            | 109.78            |                  |                 | 2,266.37           |
| 9  | 228.08              | 192.57          | 329.19          | 229.00         | 243.49          | 298.34          | 392.30            | 286.67            | 286.67            | 121.57            |                  |                 | 2,321.22           |
| 10 | 235.52              | 197.92          | 334.76          | 230.50         | 246.65          | 304.88          | 398.69            | 293.21            | 293.21            | 131.47            |                  |                 | 2,373.59           |
| 11 | 242.97              | 203.26          | 340.80          | 231.85         | 249.80          | 311.88          | 405.44            | 300.21            | 300.21            | 137.54            |                  |                 | 2,423.75           |
| 12 | 250.42              | 208.61          | 346.37          | 233.21         | 252.95          | 318.42          | 411.83            | 306.75            | 306.75            | 140.84            |                  |                 | 2,469.38           |
| 13 | 257.86              | 213.95          | 352.40          | 234.71         | 255.88          | 324.96          | 418.21            | 313.75            | 313.75            | 140.44            |                  |                 | 2,512.16           |
| 14 | 263.92              | 218.50          | 362.16          | 235.91         | 262.41          | 333.83          | 430.60            | 322.62            | 322.62            | 160.12            |                  |                 | 2,590.06           |
| 15 | 269.81              | 223.05          | 371.44          | 237.11         | 268.94          | 342.70          | 442.61            | 331.49            | 331.49            | 172.03            |                  |                 | 2,659.19           |
| 16 | 275.87              | 227.61          | 381.19          | 238.31         | 275.70          | 351.57          | 454.62            | 340.36            | 340.36            | 179.79            |                  |                 | 2,725.03           |
| 17 | 281.76              | 232.16          | 390.94          | 239.51         | 282.23          | 360.44          | 466.64            | 349.23            | 349.23            | 182.07            |                  |                 | 2,784.98           |
| 18 | 287.65              | 236.91          | 400.69          | 240.71         | 288.77          | 369.31          | 478.65            | 358.10            | 358.10            | 176.11            |                  |                 | 2,836.90           |
| 19 | 287.65              | 236.91          | 400.69          | 240.71         | 288.77          | 369.31          | 478.65            | 358.10            | 358.10            | 176.11            |                  |                 | 2,836.90           |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 23,743 |
| Free Ridership       | 0%     |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 23,743 |
| TRC costs            | 24,000 |
| Net TRC benefit      | (257)  |
| TRC benefit/cost     | 0.99   |

**NOTES**

Total Energy Savings per unit based on average monthly consumption of 700 kWh x 12 x 5% = 420 kWh annually  
 Energy savings by period pro-rated based on hours in each period  
 Demand reductions based on peak period energy savings divided by number of hours in peak period



**WATER HEATER LOAD CONTROL**

Units: 80  
 Unit Cost \$ 200.00  
 Years 12

| Energy Savings per unit (KWh) |                 |                 |                |                 |                 |                   |                   |                  |                   | Total          |                       |
|-------------------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|------------------|-------------------|----------------|-----------------------|
| Winter On-Peak                | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Shoulder On-Peak | Shoulder Off-Peak | Energy Savings | Demand Reduction (KW) |
| 1,134                         | -1,134          | 0               | 648            | -427            | -220            | 0                 | 0                 | 0                | 0                 | 1              | 2.892                 |
|                               |                 |                 |                |                 |                 |                   |                   |                  |                   |                | 0.777                 |

|    | Avoided Energy Cost |                 |                 |                |                 |                 |                   |                   |        |                 | Avoided Capacity |                 |           | Total Avoided Cost |
|----|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|--------|-----------------|------------------|-----------------|-----------|--------------------|
|    | Winter On-Peak      | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR | Demand Response | DR               | Demand Response |           |                    |
| 1  | 10,469.09           | (7,874.50)      | 0.00            | 5,733.50       | (2,855.78)      | (881.76)        | 0.00              | 0.00              |        |                 |                  | 9,003.25        | 13,593.81 |                    |
| 2  | 10,151.57           | (6,994.51)      | 0.00            | 5,417.28       | (2,715.72)      | (837.76)        | 0.00              | 0.00              |        |                 |                  | 9,127.57        | 14,148.43 |                    |
| 3  | 10,296.72           | (7,021.73)      | 0.00            | 5,546.88       | (2,749.88)      | (848.32)        | 0.00              | 0.00              |        |                 |                  | 9,233.87        | 14,457.54 |                    |
| 4  | 9,997.34            | (7,012.66)      | 0.00            | 5,349.89       | (2,777.21)      | (853.60)        | 0.00              | 0.00              |        |                 |                  | 9,349.49        | 14,053.25 |                    |
| 5  | 10,196.93           | (7,157.81)      | 0.00            | 5,863.10       | (2,889.94)      | (901.12)        | 0.00              | 0.00              |        |                 |                  | 9,465.10        | 14,576.27 |                    |
| 6  | 11,358.14           | (7,838.21)      | 0.00            | 6,060.10       | (3,118.81)      | (950.40)        | 0.00              | 0.00              |        |                 |                  | 9,588.18        | 15,099.00 |                    |
| 7  | 11,403.50           | (8,382.53)      | 0.00            | 6,630.34       | (3,306.69)      | (997.92)        | 0.00              | 0.00              |        |                 |                  | 9,711.26        | 15,057.96 |                    |
| 8  | 11,557.73           | (8,591.18)      | 0.00            | 7,858.94       | (3,644.87)      | (1,100.00)      | 0.00              | 0.00              |        |                 |                  | 9,834.96        | 15,915.57 |                    |
| 9  | 11,947.82           | (8,827.06)      | 0.00            | 7,905.60       | (3,692.70)      | (1,124.64)      | 0.00              | 0.00              |        |                 |                  | 9,958.65        | 16,167.69 |                    |
| 10 | 12,337.92           | (9,072.00)      | 0.00            | 7,957.44       | (3,740.52)      | (1,149.28)      | 0.00              | 0.00              |        |                 |                  | 10,090.43       | 16,423.99 |                    |
| 11 | 12,728.02           | (9,316.94)      | 0.00            | 8,004.10       | (3,788.34)      | (1,175.68)      | 0.00              | 0.00              |        |                 |                  | 10,214.13       | 16,665.28 |                    |
| 12 | 13,118.11           | (9,561.89)      | 0.00            | 8,050.75       | (3,836.17)      | (1,200.32)      | 0.00              | 0.00              |        |                 |                  | 10,355.23       | 16,925.72 |                    |
| 13 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |
| 14 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |
| 15 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |
| 16 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |
| 17 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |
| 18 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |
| 19 | 0.00                | 0.00            | 0.00            | 0.00           | 0.00            | 0.00            | 0.00              | 0.00              |        |                 |                  | 0.00            | 0.00      |                    |

**TRC ANALYSIS RESULTS**

|                      |         |
|----------------------|---------|
| PV of Gross Benefits | 120,936 |
| Free Ridership       | 0%      |
| Attribution Rate     | 100%    |
| PV of TRC benefits   | 120,936 |
| TRC costs            | 16,000  |
| Net TRC benefit      | 104,936 |
| TRC benefit/cost     | 7.56    |

**NOTES**

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**AIR CONDITIONER LOAD CONTROL**

Units: 80  
Unit Cost \$ 200.00  
Years 18

| Energy Savings per unit (KWh) |   |                 |   |                 |   |                |      |                 |   | Total Energy Savings |   | Demand Reduction (KW) |       |                 |  |
|-------------------------------|---|-----------------|---|-----------------|---|----------------|------|-----------------|---|----------------------|---|-----------------------|-------|-----------------|--|
| Winter On-Peak                |   | Winter Mid-Peak |   | Winter Off-Peak |   | Summer On-Peak |      | Summer Mid-Peak |   | Summer Off-Peak      |   | Non-DR                |       | Demand Response |  |
| 0                             | 0 | 0               | 0 | 0               | 0 | 255            | -170 | -85             | 0 | 0                    | 0 | 0                     | 0.000 | 0.500           |  |

|   | Avoided Energy Cost |      |                 |      |                 |          |                |          |                 |      |                 |      | Avoided Capacity  |                   | Total Avoided Cost |          |                 |      |      |      |      |          |            |          |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---|---------------------|------|-----------------|------|-----------------|----------|----------------|----------|-----------------|------|-----------------|------|-------------------|-------------------|--------------------|----------|-----------------|------|------|------|------|----------|------------|----------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|---|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|----------|------------|----------|------|------|------|------|------|------|----------|----------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|   | Winter On-Peak      |      | Winter Mid-Peak |      | Winter Off-Peak |          | Summer On-Peak |          | Summer Mid-Peak |      | Summer Off-Peak |      | Shoulder Mid-Peak | Shoulder Off-Peak |                    | Non-DR   | Demand Response |      |      |      |      |          |            |          |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|   | 2008                | 2009 | 2010            | 2011 | 2012            | 2013     | 2014           | 2015     | 2016            | 2017 | 2018            | 2019 |                   |                   |                    |          |                 | 2020 | 2021 | 2022 | 2023 | 2024     | 2025       | 2026     |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |   |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |          |            |          |      |      |      |      |      |      |          |          |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1 | 0.00                | 0.00 | 0.00            | 0.00 | 0.00            | 2,256.24 | (1,136.96)     | (340.68) | 0.00            | 0.00 | 0.00            | 0.00 | 0.00              | 0.00              | 5,793.60           | 6,572.20 | 2               | 0.00 | 0.00 | 0.00 | 0.00 | 2,131.80 | (1,081.20) | (323.68) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5,873.60 | 6,600.52 | 3 | 0.00 | 0.00 | 0.00 | 0.00 | 2,182.80 | (1,094.80) | (327.76) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5,942.00 | 6,702.24 | 4 | 0.00 | 0.00 | 0.00 | 0.00 | 2,105.28 | (1,105.68) | (329.80) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,016.40 | 6,686.20 | 5 | 0.00 | 0.00 | 0.00 | 0.00 | 2,307.24 | (1,150.56) | (348.16) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,090.80 | 6,899.32 | 6 | 0.00 | 0.00 | 0.00 | 0.00 | 2,384.76 | (1,241.68) | (367.20) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,170.00 | 6,945.88 | 7 | 0.00 | 0.00 | 0.00 | 0.00 | 2,609.16 | (1,316.48) | (385.56) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,249.20 | 7,156.32 | 8 | 0.00 | 0.00 | 0.00 | 0.00 | 3,092.64 | (1,451.12) | (425.00) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,328.80 | 7,545.32 | 9 | 0.00 | 0.00 | 0.00 | 0.00 | 3,111.00 | (1,470.16) | (434.52) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,408.40 | 7,614.72 | 10 | 0.00 | 0.00 | 0.00 | 0.00 | 3,131.40 | (1,489.20) | (444.04) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,493.20 | 7,691.36 | 11 | 0.00 | 0.00 | 0.00 | 0.00 | 3,149.76 | (1,508.24) | (454.24) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,572.80 | 7,760.08 | 12 | 0.00 | 0.00 | 0.00 | 0.00 | 3,168.12 | (1,527.28) | (463.76) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,663.60 | 7,840.68 | 13 | 0.00 | 0.00 | 0.00 | 0.00 | 3,188.52 | (1,544.96) | (473.28) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,749.20 | 7,919.48 | 14 | 0.00 | 0.00 | 0.00 | 0.00 | 3,204.84 | (1,584.40) | (486.20) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,834.80 | 7,969.04 | 15 | 0.00 | 0.00 | 0.00 | 0.00 | 3,221.16 | (1,623.84) | (499.12) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6,926.40 | 8,024.60 | 16 | 0.00 | 0.00 | 0.00 | 0.00 | 3,237.48 | (1,664.64) | (512.04) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7,018.40 | 8,079.20 | 17 | 0.00 | 0.00 | 0.00 | 0.00 | 3,253.80 | (1,704.08) | (524.96) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7,110.80 | 8,135.56 | 18 | 0.00 | 0.00 | 0.00 | 0.00 | 3,270.12 | (1,743.52) | (537.88) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7,203.20 | 8,191.92 | 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**TRC ANALYSIS RESULTS**

|                      |        |
|----------------------|--------|
| PV of Gross Benefits | 74,529 |
| Free Ridership       | 0%     |
| Attribution Rate     | 100%   |
| PV of TRC benefits   | 74,529 |
| TRC costs            | 16,000 |
| Net TRC benefit      | 58,529 |
| TRC benefit/cost     | 4.66   |

**NOTES**

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OEB GUIDELINE DATA FOR AVOIDED ELECTRICITY COSTS

|      | Avoided Energy Cost (\$ / MWh) |                 |                 |                |                 |                 |                   |                   |        |                 | Capacity (\$ / KW) |                 |  |
|------|--------------------------------|-----------------|-----------------|----------------|-----------------|-----------------|-------------------|-------------------|--------|-----------------|--------------------|-----------------|--|
|      | Winter On-Peak                 | Winter Mid-Peak | Winter Off-Peak | Summer On-Peak | Summer Mid-Peak | Summer Off-Peak | Shoulder Mid-Peak | Shoulder Off-Peak | Non-DR | Demand Response | Non-DR             | Demand Response |  |
| 2006 | 120.6                          | 83.9            | 45.4            | 112.9          | 81.4            | 47.5            | 84.2              | 42.3              | 0.00   | 0.00            | 0.00               | 0.00            |  |
| 2007 | 124.6                          | 84.3            | 45.2            | 111.5          | 79.6            | 45.9            | 81.4              | 40.8              | 0.00   | 0.00            | 0.00               | 0.00            |  |
| 2008 | 115.4                          | 86.8            | 48.9            | 110.6          | 83.6            | 50.1            | 90.4              | 44.9              | 80.27  | 80.27           | 144.84             | 144.84          |  |
| 2009 | 111.9                          | 77.1            | 48.9            | 104.5          | 79.5            | 47.6            | 85.8              | 43.4              | 96.50  | 96.50           | 146.84             | 146.84          |  |
| 2010 | 113.5                          | 77.4            | 52.1            | 107.0          | 80.5            | 48.2            | 83.5              | 43.4              | 84.74  | 84.74           | 148.55             | 148.55          |  |
| 2011 | 110.2                          | 77.3            | 52.7            | 103.2          | 81.3            | 48.5            | 84.2              | 43.0              | 99.01  | 99.01           | 150.41             | 150.41          |  |
| 2012 | 112.4                          | 78.9            | 53.3            | 113.1          | 84.6            | 51.2            | 88.5              | 47.8              | 95.13  | 95.13           | 152.27             | 152.27          |  |
| 2013 | 125.2                          | 86.4            | 59.9            | 116.9          | 91.3            | 54.0            | 92.5              | 51.9              | 75.88  | 75.88           | 154.25             | 154.25          |  |
| 2014 | 125.7                          | 92.4            | 62.8            | 127.9          | 96.8            | 56.7            | 98.9              | 54.4              | 61.27  | 61.27           | 156.23             | 156.23          |  |
| 2015 | 127.4                          | 94.7            | 69.6            | 151.6          | 106.7           | 62.5            | 102.8             | 59.9              | 38.16  | 38.16           | 158.22             | 158.22          |  |
| 2016 | 131.7                          | 97.3            | 70.9            | 152.5          | 108.1           | 63.9            | 104.5             | 61.4              | 42.26  | 42.26           | 160.21             | 160.21          |  |
| 2017 | 136.0                          | 100.0           | 72.1            | 153.5          | 109.5           | 65.3            | 106.2             | 62.8              | 45.70  | 45.70           | 162.33             | 162.33          |  |
| 2018 | 140.3                          | 102.7           | 73.4            | 154.4          | 110.9           | 66.8            | 108.0             | 64.3              | 47.81  | 47.81           | 164.32             | 164.32          |  |
| 2019 | 144.6                          | 105.4           | 74.6            | 155.3          | 112.3           | 68.2            | 109.7             | 65.7              | 48.96  | 48.96           | 166.59             | 166.59          |  |
| 2020 | 148.9                          | 108.1           | 75.9            | 156.3          | 113.6           | 69.6            | 111.4             | 67.2              | 48.82  | 48.82           | 168.73             | 168.73          |  |
| 2021 | 152.4                          | 110.4           | 78.0            | 157.1          | 116.5           | 71.5            | 114.7             | 69.1              | 55.66  | 55.66           | 170.87             | 170.87          |  |
| 2022 | 155.8                          | 112.7           | 80.0            | 157.9          | 119.4           | 73.4            | 117.9             | 71.0              | 59.80  | 59.80           | 173.16             | 173.16          |  |
| 2023 | 159.3                          | 115.0           | 82.1            | 158.7          | 122.4           | 75.3            | 121.1             | 72.9              | 62.50  | 62.50           | 175.46             | 175.46          |  |
| 2024 | 162.7                          | 117.3           | 84.2            | 159.5          | 125.3           | 77.2            | 124.3             | 74.8              | 63.29  | 63.29           | 177.77             | 177.77          |  |
| 2025 | 166.1                          | 119.7           | 86.3            | 160.3          | 128.2           | 79.1            | 127.5             | 76.7              | 61.22  | 61.22           | 180.08             | 180.08          |  |
| 2026 | 166.1                          | 119.7           | 86.3            | 160.3          | 128.2           | 79.1            | 127.5             | 76.7              | 61.22  | 61.22           | 180.08             | 180.08          |  |
| 2027 | 166.1                          | 119.7           | 86.3            | 160.3          | 128.2           | 79.1            | 127.5             | 76.7              | 61.22  | 61.22           | 180.08             | 180.08          |  |

2025 values used for years not shown in OEB's guide

## CHATHAM-KENT HYDRO

Weighted Average Cost of Capital

Combined marginal income tax rate: 36.12%

|                         | <b>Capital Structure</b> | <b>Pre-tax Rate</b> | <b>After-tax Rate</b> |
|-------------------------|--------------------------|---------------------|-----------------------|
| Equity                  | 50%                      | 14.09%              | 9.00%                 |
| Debt                    | 50%                      | 7.04%               | 4.50%                 |
| <b>Weighted Average</b> | <b>100%</b>              | <b>10.56%</b>       | <b>6.75%</b>          |