

# ECO-SHIFT



# POWER CORP.

Life Cycle

Analysis

PROJECT SUMMARY

Client Name: LED Highway Lighting Legislation

Address:

Contact Name:

Date: April 19, 2011

| Lighting System Cost/Performance Comparison                                      | Street Lights            | Option B                 | #REF!                    | Option D                 | Option E    | Option F    | Option G    | Option H    | Option I    | Option J    | Option K    | Option L    | Option M    | Option N    | Option O    |
|--|--------------------------|--------------------------|--------------------------|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|  | LED Replacement for 400W | LED Replacement for 250W | LED Replacement for 150W | LED Replacement for 100W |             |             |             |             |             |             |             |             |             |             |             |
| <b>Initial Costs</b>   |                          |                          |                          |                          |             |             |             |             |             |             |             |             |             |             |             |
| Total Luminaire Package Cost   | \$21,875,000             | \$39,375,000             | \$30,625,000             | \$21,875,000             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Total Lamp Cost  | \$0                      | \$0                      | \$0                      | \$0                      | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Total Estimated Installation Cost  | \$12,900,000             | \$23,220,000             | \$18,060,000             | \$12,900,000             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Sub Total  | \$35,112,500             | \$62,595,000             | \$48,685,000             | \$35,112,500             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Total of Rentals and Incidentals   | \$0                      | \$0                      | \$0                      | \$0                      | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Recycling  | \$337,500                | \$621,000                | \$484,750                | \$337,500                | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Rebates and other adjustments  | \$0                      | \$0                      | \$0                      | \$0                      | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| <b>TOTAL INITIAL COST</b>  | <b>\$35,112,500</b>      | <b>\$63,216,000</b>      | <b>\$49,169,750</b>      | <b>\$35,121,250</b>      | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>Operating Costs</b>   |                          |                          |                          |                          |             |             |             |             |             |             |             |             |             |             |             |
| ENERGY COST per Year (@ Full Load)   | \$1,551,815              | \$2,113,898              | \$747,338                | \$405,698                | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Total Possible Annual Load (KWhrs)   | 23,871,001               | 32,521,502               | 11,497,501               | 6,241,500                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Total Proposed Load with Dimming   | 23,871,001               | 32,521,502               | 11,497,501               | 6,241,500                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Load Reduction Due to Dimming (KWhrs)  | 0                        | 0                        | 0                        | 0                        | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Energy Savings Due to Dimming  | \$0                      | \$0                      | \$0                      | \$0                      | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| ENERGY COST WITH DIMMING   | \$1,551,815              | \$2,113,898              | \$747,338                | \$405,698                | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| RELAMPING COSTS per Year   | \$678,024                | \$1,220,443              | \$949,234                | \$678,024                | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Cleaning Costs per Year  | \$0                      | \$0                      | \$0                      | \$0                      | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| HVAC Factor Estimate   | \$0                      | \$0                      | \$0                      | \$0                      | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| <b>TOTAL MAINTENANCE &amp; OPERATING COSTS PER YEAR</b>                          | <b>\$2,229,839</b>       | <b>\$3,334,341</b>       | <b>\$1,696,571</b>       | <b>\$1,083,722</b>       | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>TOTAL SYSTEM COSTS for 10 YEAR PERIOD</b>                                     | <b>\$57,408,891</b>      | <b>\$96,559,409</b>      | <b>\$66,135,462</b>      | <b>\$45,958,466</b>      | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>The Savings</b>   |                          |                          |                          |                          |             |             |             |             |             |             |             |             |             |             |             |
| <b>TOTAL ANNUAL OPERATING COST SAVINGS</b>                                       | <b>\$3,869,911</b>       | <b>\$5,856,347</b>       | <b>\$4,032,260</b>       | <b>\$2,631,066</b>       | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>TOTAL COST SAVINGS OVER 10 YEAR PERIOD</b>                                    | <b>\$38,699,111</b>      | <b>\$58,563,477</b>      | <b>\$40,322,600</b>      | <b>\$26,310,666</b>      | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>SAVINGS as a %</b>  | <b>5.9%</b>              | <b>7.4%</b>              | <b>16.4%</b>             | <b>23.7%</b>             | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> | <b>0.0%</b> |
| Payback period (years)   | 9.1                      | 11.2                     | 12.2                     | 13.3                     | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         |
| Payback period (months)  | 109                      | 134                      | 146                      | 160                      | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| ROI (yearly savings on capital investment)                                       | 11%                      | 9%                       | 8%                       | 7%                       | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          | 0%          |
| Net Present Value @ Weighted Cost of Capital                                     | \$112,502,724            | \$176,362,942            | \$129,814,752            | \$87,742,573             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| NET CASH FLOW (month)  | \$322,459                | \$471,529                | \$336,021                | \$219,256                | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Financing Lease (ESP in House Financing calculated net of rebates)               | \$1,534,709              | \$2,763,066              | \$2,149,128              | \$1,535,091              | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| <b>NET CASH FLOW (month including lease through term)</b>                        | <b>-\$1,212,250</b>      | <b>-\$2,291,537</b>      | <b>-\$1,813,107</b>      | <b>-\$1,315,835</b>      | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                       |                          |                          |                          |                          |             |             |             |             |             |             |             |             |             |             |             |
| Energy cost savings over 10 years (including non-discounted rising energy costs) | \$47,314,953             | \$54,251,778             | \$26,421,256             | \$12,992,176             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Maintenance cost savings over 10 years   | \$21,470,761             | \$36,647,370             | \$30,059,066             | \$21,470,761             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Initial investment difference  | -\$35,112,500            | -\$63,216,000            | -\$49,169,750            | -\$35,121,250            | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| <b>Total Cost Savings over 10 Year Period</b>                                    | <b>\$33,673,214</b>      | <b>\$27,683,148</b>      | <b>\$7,310,572</b>       | <b>-\$658,313</b>        | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b>  |
| <b>Net Present Value of Investment</b>   |                          |                          |                          |                          |             |             |             |             |             |             |             |             |             |             |             |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)         | \$10,955,342             | \$11,408,042             | \$6,527,935              | \$3,075,381              | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Maintenance cost savings (discounted cash flows)                                 | \$42,941,522             | \$77,294,740             | \$60,118,131             | \$42,941,522             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| NPV of cost savings  | \$53,896,884             | \$88,702,782             | \$66,646,066             | \$46,916,903             | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| <b>Environmental Impact</b>  |                          |                          |                          |                          |             |             |             |             |             |             |             |             |             |             |             |
| <b>Annual Emissions REDUCTION</b>  | <b>7,234</b>             | <b>7,533</b>             | <b>4,311</b>             | <b>2,033</b>             | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    |
|  | <b>1,975</b>             | <b>2,057</b>             | <b>1,177</b>             | <b>555</b>               | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    | <b>0</b>    |



# POWER CORP.

## Life Cycle Analysis

Client Name: LED Highway Lighting Legislation

Address:

Contact Name:

Date: April 19, 2011

[illegible]

### Initial Costs

|   |     |               |
|---|-----|---------------|
| Total Luminaire Package Cost                                      | n/a | \$113,750,000 |
| Total Lamp Cost   | \$0 | \$0           |
| Total Estimated Installation Cost                                 | \$0 | \$67,060,000  |
| Sub Total   | \$0 | \$182,619,500 |
| Rentals and incidental Costs                                      | n/a | \$0           |
| Recycling Costs   | n/a | \$1,789,500   |
| Total Project Costs including Rentals, incidentals, and Recycling | n/a | \$184,409,000 |
| Total Rebates   | n/a | \$0           |
| TOTAL INITIAL COST  | \$0 | \$184,409,000 |

**Operating Costs**

|  |               |               |
|--|---------------|---------------|
| ENERGY COST per Year (@ Full Load)           | \$9,844,927   | \$4,818,548   |
| Total Possible Annual Load (KWhrs)           | 151460408.299 | 74131504.062  |
| Total Proposed Load with Dimming             | 151460408.299 | 74131504.062  |
| Load Reduction Due to Dimming (KWhrs)        | \$0           | 0             |
| Energy Savings Due to Dimming                | \$0           | \$0           |
| ENERGY COST WITH DIMMING                     | \$9,844,927   | \$4,818,548   |
| RELAMPING COSTS per Year                     | \$14,690,621  | \$3,525,725   |
| Cleaning Costs per Year                      | \$0           | \$0           |
| HVAC Factor Estimate                         | \$0           | \$0           |
| TOTAL MAINTENANCE & OPERATING COSTS PER YEAR | \$24,535,447  | \$8,344,273   |
| TOTAL SYSTEM COSTS for 10 YEAR PERIOD        | \$245,354,473 | \$266,062,228 |

### *The Savings*

|  |               |
|--|---------------|
| TOTAL ANNUAL OPERATING COST SAVINGS                                | \$15,191,175  |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD                             | \$20,707,784  |
| SAVINGS as a %   | 8.4%          |
| Payback period (years)   | 11.3          |
| Payback period (months)  | 135           |
| ROI (yearly savings on capital investment)                         | 0%            |
| Net Present Value @ Weighted Cost of Capital                       | \$506,442,992 |
| NET CASH FLOW /month   | \$1,349,265   |
| Financing Lease (ESP In House Financing calculated net of rebates) | \$7,981,994   |
| NET CASH FLOW /month (including lease through term)                | \$8,432,729   |

### Scenario B Investment Returns - Rising Energy Costs

|  |                     |
|--|---------------------|
| Energy cost savings over 10 years (including non-discounted rising energy costs) | \$140,980,163       |
| Maintenance cost savings over 10 years   | \$111,647,958       |
| Initial investment difference  | -\$182,619,600      |
| <b>Total Cost Savings over 10 Year Period</b>                                    | <b>\$70,008,621</b> |

**Net Present Value of Investment**

|  |               |
|--|---------------|
| Energy cost savings over 10 years @ rising costs (discounted cash flows) | \$31,969,681  |
| Maintenance cost savings (discounted cash flows)                         | \$223,295,916 |
| NPV of cost savings  | \$437,885,097 |

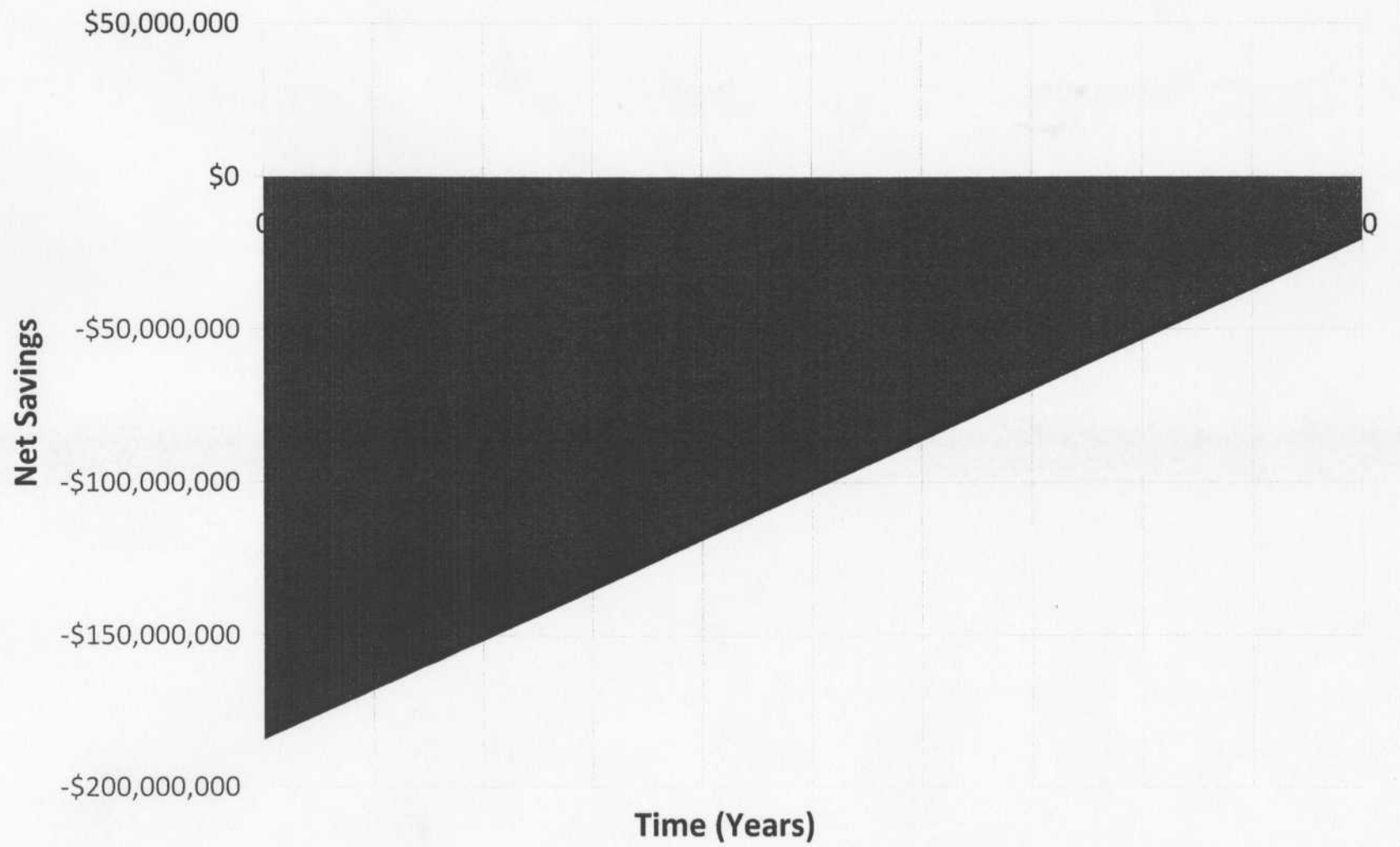
### *Environmental Impact*

|                            |   |        |
|----------------------------|---|--------|
| Annual Emissions REDUCTION | metric tonnes (1000 kg) CO <sub>2</sub> | 21,111 |
|                            | metric tonnes (1000 kg) Carbon          | 5,763  |

**\*\* Disclaimer**

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided. The customer/reader is solely responsible to ensure the accuracy and applicability of this projection to the part.

## Savings Over 10 Years



## Life Cycle Analysis

Client Name: LED Highway Lighting Legislation

Location Description: Street Lights

Contact Name:

### Lighting System Cost/Performance Comparison

|  | Existing                                | Proposed                 |
|--|---|--------------------------|
| <b>Parameters</b>  |   |                          |
| System Type  | 400W MH Core On Coil                    | LED Replacement for 400W |
| System lumens per watt   | 55                                      | 85                       |
| Bulb wattage (total unit)  | 400                                     | 200                      |
| Number of Luminaires   | 25000                                   | 25000                    |
| Footcandles on the ground  | 0                                       | 0                        |
| (Retrieved from data obtained on the Lighting Assessment Form)                                 |   |                          |
| <b>Initial Costs</b>   |   |                          |
| Cost per Luminaire   | n/a                                     | \$875                    |
| <b>Net Cost per Luminaire</b>  | n/a                                     | \$875                    |
| Accessories  | n/a                                     | \$0                      |
| <b>Total Luminaire Package Cost</b>  | n/a                                     | <b>\$21,875,000</b>      |
| Lamp Cost  | \$0                                     | \$0                      |
| Number of Lamps  | 25000                                   | 25000                    |
| <b>Total Lamp Cost</b>   | <b>\$0</b>                              | <b>\$0</b>               |
| <b>Sub Total</b>   | <b>\$0</b>                              | <b>\$21,875,000</b>      |
| Installation Time in hours   | 0.00                                    | 2.00                     |
| Labour Rate ( \$/hour)   | \$128.00                                | \$258.00                 |
| <b>Total Estimated Installation Cost</b>   | <b>\$0</b>                              | <b>\$12,900,000</b>      |
| <b>Total Estimated Recycling/Disposal Fees</b>   | <b>n/a</b>                              | <b>\$337,500</b>         |
| <b>Sub Total</b>   | <b>\$0</b>                              | <b>\$35,112,500</b>      |
| Rebates and other adjustments  | \$0                                     | \$0                      |
| <b>TOTAL INITIAL COST</b>  | <b>\$0</b>                              | <b>\$35,112,500</b>      |
| <b>Operating Costs</b>   |   |                          |
| Input Power (Watts)  | 460                                     | 218                      |
| Redundant Emergency Lighting Annual Load (Watts)   | 0                                       | n/a                      |
| Energy Rate (\$/kW)  | \$0.065                                 | \$0.065                  |
| Operating Time per Year, in Hours  | 4,380                                   | 4,380                    |
| <b>ENERGY COST per Year (@ Full Load)</b>  | <b>\$3,274,050</b>                      | <b>\$1,551,615</b>       |
| Total Possible Annual Load (KWhrs)   | 50,370,003                              | 23,871,001               |
| Total Proposed Load with Dimming   | 50,370,003                              | 23,871,001               |
| Load Reduction Due to Dimming (KWhrs)  | 0                                       | 0                        |
| <b>Energy Savings Due to Dimming</b>   | <b>\$0</b>                              | <b>\$0</b>               |
| <b>ENERGY COST WITH DIMMING</b>  | <b>\$3,274,050</b>                      | <b>\$1,551,615</b>       |
| Relamping Method   | Spot                                    | Spot                     |
| Lamp/LEDs Life Expectancy  | 12000                                   | 50000                    |
| # Lamps/LED Replaced per Year averaged over 10 years   | 7,300                                   | 1,752                    |
| # Hours per Lamp/LED Change  | 1.5                                     | 1.5                      |
| Labour Rate to Replace Lamps/LED, per Hour   | \$258.00                                | \$258.00                 |
| <b>RELAMPING/Driver COSTS per Year</b>   | <b>\$2,825,100</b>                      | <b>\$678,024</b>         |
| Led Driver Replacement cost per hour   | 0                                       | 0                        |
| Labour rate to replace LED Driver, per Hour  | \$45.00                                 | \$258.00                 |
| <b>Total Driver replacement cost per Year</b>  | <b>\$0</b>                              | <b>\$0</b>               |
| HVAC Factor Estimate   |   | \$0                      |
| <b>TOTAL MAINTENANCE &amp; OPERATING COSTS PER YEAR</b>  | <b>\$6,099,150</b>                      | <b>\$2,229,639</b>       |
| <b>TOTAL SYSTEM COSTS for 10 YEAR PERIOD (incl. initial costs)</b>                             | <b>\$60,991,503</b>                     | <b>\$57,408,891</b>      |
| <b>The Savings</b>   |   |                          |
| TOTAL ANNUAL OPERATING COST SAVINGS (based on operational savings only)                        |   | \$3,889,511              |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD (includes initial costs)                                |   | \$3,582,612              |
| SAVINGS as a %   |   | 5.9%                     |
| <b>Payback period (years)</b>  |   | <b>9.1</b>               |
| <b>Payback period (months)</b>   |   | <b>109</b>               |
| ROI (yearly savings on capital investment excluding rentals, incidentals, and recycling costs) |   | 11%                      |
| Net Present Value @ Weighted Cost of Capital   |   | \$112,502,724            |
| <b>NET CASH FLOW /month</b>  |   | <b>\$322,459</b>         |
| Financing Lease (ESP In House Financing calculated net of rebates)                             |   | \$1,534,709              |
| <b>NET CASH FLOW /month (including lease through term)</b>                                     |   | <b>-\$1,212,250</b>      |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                                     |   |                          |
| Energy cost savings over 10 years (Including non-discounted rising energy costs)               |   | \$47,314,953             |
| Maintenance cost savings over 10 years   |   | \$21,470,761             |
| Initial Investment difference  |   | -\$35,112,500            |
| <b>Total Cost Savings over 10 Year Period</b>  |   | <b>\$33,673,214</b>      |
| <b>Net Present Value of Investment</b>   |   |                          |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)                       |   | \$10,955,342             |
| Maintenance cost savings (discounted cash flows)   |   | \$42,941,522             |
| <b>NPV of cost savings</b>   |   | <b>\$89,009,365</b>      |
| <b>Environmental Impact</b>  |   |                          |
| Annual Emissions REDUCTION   | metric tonnes (1000 kg) CO <sub>2</sub> | 7,234                    |
|  | metric tonnes (1000 kg) Carbon          | 1,975                    |

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# O-SHIFT POWER CO

## NOTES & ASSUMPTIONS

The price of the LED driver is not included in the replacement price.

### INPUT TABLE

#### A) Existing Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

#### B) Proposed Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1431.9228          | 100%        | 1431.923    |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

#### C) HVAC Annual Cost Savings Calculations

|                               |     |                        |             |   |
|-------------------------------|-----|------------------------|-------------|---|
| 101 Existing Heat Loss        | 78% | Old Ballast Efficiency | Months Used | 0 |
| 7 Proposed Heat loss          | 97% | New Ballast Efficiency | Annually    |   |
| 95 Heat Loss savings          | 92% | AC Efficiency          |             |   |
| - Total Kilo/Watt hours Saved | \$  | - Savings              |             |   |

#### D) Capital Cost (WACC) rate: 5.0% (Weighted Average Cost of Capital)

Leasing Information rate: 4.9% Buyout % 0.0% Term (months): 24

| E) Rising Energy Costs | Year | \$/KWh | costs           | disc   |
|------------------------|------|--------|-----------------|--------|
|                        | 1    | \$0.01 | \$ 264,990.01   | 0.0100 |
|                        | 2    | \$0.02 | \$ 529,980.03   | 0.0190 |
|                        | 3    | \$0.03 | \$ 794,970.04   | 0.0272 |
|                        | 4    | \$0.04 | \$ 1,059,960.06 | 0.0346 |
|                        | 5    | \$0.05 | \$ 1,324,950.07 | 0.0411 |
|                        | 6    | \$0.06 | \$ 1,589,940.09 | 0.0470 |
|                        | 7    | \$0.07 | \$ 1,854,930.10 | 0.0522 |
|                        | 8    | \$0.08 | \$ 2,119,920.12 | 0.0569 |
|                        | 9    | \$0.09 | \$ 2,384,910.13 | 0.0609 |
|                        | 10   | \$0.10 | \$ 2,649,900.15 | 0.0645 |
|                        |      | \$     | 14,574,450.80   | 0.4134 |

#### F) Accessories

| Product Description                     | Quantity | Unit Price   | Discount | Total Cost |
|---|----------|--------------|----------|------------|
| Emergency Lighting Control & Lamp       | 0        | \$ 128.00    | 0%       | \$ -       |
| Fixture Mounted Occupancy Motion/Sensor | 0        | \$ 89.00     | 0%       | \$ -       |
| Step Down Transformer (700va)           | 0        | \$ 89.00     | 0%       | \$ -       |
| Lenses (Glass/Acrylic/Silicone)         | 0        | \$ 34.00     | 0%       | \$ -       |
| Wire Guard                              | 0        | \$ 33.00     | 0%       | \$ -       |
| Lens Clamp Band                         | 0        | \$ 21.00     | 0%       | \$ -       |
| SenzaFil Wireless Communication Package | 0        | \$ 15,000.00 | 0%       | \$ -       |
| <b>TOTAL ACCESSORIES</b>                |          |              |          | \$ -       |

#### G) Client Internal Project Costs (For Rebate Applications ONLY)

| Details                               | Type            | Quantity/Hrs | Rate/Price | Total Cost |
|---------------------------------------|-----------------|--------------|------------|------------|
| Client Employee supervising/assisting | Labor Costs     | 0            | \$ -       | \$ -       |
| Scissor Lift                          | Rental          | 0            | \$ -       | \$ -       |
| Electrical Engineering Review         | Contractor Fees | 0            | \$ -       | \$ -       |
| Electrical Permit (ESA)               | Permits, etc    | 0            | \$ -       | \$ -       |
| <b>TOTAL CLIENT PROJECT COSTS</b>     |                 |              |            | \$ -       |

#### H) Rebate Calculations (Use only applicable)

|          |  |      |   |
|----------|--|------|---|
| \$0.00   | <- 1. Rebate per luminaire (Enter \$ amount)               | \$ - |   |
| \$0.00   | <- 2. Rebate rate on investment (enter %)                  | \$ - |   |
| \$0.00   | <- 3. Rebate on kWatts saved (Change in luminaire wattage) | \$ - |   |
| \$0.00   | <- 4. Rebate on kWatts saved (per kW without Dimming)      | \$ - |   |
| \$0.00   | <- 5. Rebate on kWatts saved (including Dimming)           | \$ - |   |
| \$0.00   | <- 6. Rebate on GJ/yr saved (including Dimming)            | \$ - |   |
| \$150.00 | X QTY  | \$ - | Total Estimated Project Cost (incl. labour & recycling) |
| \$0.00   | <- 8. Flat Amount  | \$ - |   |
|          | <b>Total Calculated Rebate</b>                             | \$ - | \$ 35,450,000.00  |
|          | <b>Total Allowable Rebate (max of 40%)</b>                 | \$ - |   |

#### I) Recycling/Disposal Fees (For Rebate Applications ONLY)

|                                      |          |            |       |               |
|--------------------------------------|----------|------------|-------|---------------|
| Unit Disposal Rate for Fixture       | \$ 10.00 | # of Units | 25000 | \$ 250,000.00 |
| Unit Disposal Rate for Lamp          | \$ 3.50  | # of Lamps | 25000 | \$ 87,500.00  |
| <b>Total Estimated Disposal Fees</b> |          |            |       | \$ 337,500.00 |

Select a System Type 0 0 # Units 0 # hours Lit/day 0 # days lit/week



## Life Cycle Analysis

Client Name: LED Highway Lighting Legislation

Location Description:

Contact Name:

### Lighting System Cost/Performance Comparison

|  | Existing                                | Proposed                 |
|--|---|--------------------------|
| <b>Parameters</b>  |   |                          |
| System Type  | 250W MH Core On Coil                    | LED Replacement for 250W |
| System lumens per watt   | 52                                      | 63                       |
| Bulb wattage (total unit)  | 250                                     | 140                      |
| Number of Luminaires   | 45000                                   | 45000                    |
| Footcandles on the ground  | 0                                       | 0                        |
| (Retrieved from data obtained on the Lighting Assessment Form)                                 |   |                          |
| <b>Initial Costs</b>   |   |                          |
| Cost per Luminaire   | n/a                                     | \$875                    |
| Net Cost per Luminaire   | n/a                                     | \$875                    |
| Accessories  | n/a                                     | \$0                      |
| Total Luminaire Package Cost   | n/a                                     | \$39,375,000             |
| Cost per Lamp  | \$0                                     | \$0                      |
| Number of Lamps  | 45000                                   | 45000                    |
| Total Lamp Cost  | \$0                                     | \$0                      |
| Sub Total  | \$0                                     | \$39,375,000             |
| Installation Time in hours   | 0.00                                    | 2.00                     |
| Labour Rate ( \$/hour)   | \$258.00                                | \$258.00                 |
| Total Estimated Installation Cost  | \$0                                     | \$23,220,000             |
| Total Estimated Recycling/Disposal Fees  | n/a                                     | \$621,000                |
| Sub Total  | \$0                                     | \$63,216,000             |
| Rebates and other adjustments  | \$0                                     | \$0                      |
| TOTAL INITIAL COST   | \$0                                     | \$63,216,000             |
| <b>Operating Costs</b>   |   |                          |
| Input Power (Watts)  | 305                                     | 165                      |
| Redundant Emergency Lighting Annual Load (Watts)   | 0                                       | n/a                      |
| Energy Rate (\$/kW)  | \$0.065                                 | \$0.065                  |
| Operating Time per Year, in Hours  | 4,380                                   | 4,380                    |
| ENERGY COST per Year (@ Full Load)   | \$3,907,508                             | \$2,113,898              |
| Total Possible Annual Load (KWhrs)   | 60,115,503                              | 32,521,502               |
| Total Proposed Load with Dimming   | 60,115,503                              | 32,521,502               |
| Load Reduction Due to Dimming (KWhrs)  | 0                                       | 0                        |
| Energy Savings Due to Dimming  | \$0                                     | \$0                      |
| ENERGY COST WITH DIMMING   | \$3,907,508                             | \$2,113,898              |
| Relamping Method   | Spot                                    | Spot                     |
| Lamp/LED Life (Hours)  | 12000                                   | 50000                    |
| # Lamps/LEDs Replaced per Year averaged over 10 years  | 13,140                                  | 3,154                    |
| # Hours per Lamp Change  | 1.5                                     | 1.5                      |
| Labour Rate to Replace Lamps, per Hour   | \$258.00                                | \$258.00                 |
| RELAMPING/Driver COSTS per Year  | \$5,085,180                             | \$1,220,443              |
| LED Driver Replacement Cost per Hour   | 0                                       | 0                        |
| Labour rate to replace LED Driver, per Hour  | \$45.00                                 | \$258.00                 |
| Total Driver replacement cost per Year   | \$0                                     | \$0                      |
| HVAC Factor Estimate   |   | \$0                      |
| TOTAL MAINTENANCE & OPERATING COSTS PER YEAR   | \$8,992,688                             | \$3,334,341              |
| TOTAL SYSTEM COSTS for 10 YEAR PERIOD (incl. initial costs)                                    | \$89,926,880                            | \$96,559,409             |
| <b>The Savings</b>   |   |                          |
| TOTAL ANNUAL OPERATING COST SAVINGS (based on operational savings only)                        |   |                          |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD (includes initial costs)                                |   |                          |
| SAVINGS as a %   |   | 7.1%                     |
| Payback period (years)   |   | 11.2                     |
| Payback period (months)  |   | 134                      |
| ROI (yearly savings on capital investment excluding rentals, incidentals, and recycling costs) |   | 9%                       |
| Net Present Value @ Weighted Cost of Capital   |   | \$176,382,942            |
| NET CASH FLOW /month   |   | \$471,529                |
| Financing Lease (ESP In House Financing calculated net of rebates)                             |   | \$2,763,066              |
| NET CASH FLOW /month (including lease through term)  |   | -\$2,291,537             |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                                     |   |                          |
| Energy cost savings over 10 years (Including non-discounted rising energy costs)               |   | \$54,251,778             |
| Maintenance cost savings over 10 years   |   | \$38,647,370             |
| Initial Investment difference  |   | -\$63,216,000            |
| Total Cost Savings over 10 Year Period   |   | \$29,683,148             |
| <b>Net Present Value of Investment</b>   |   |                          |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)                       |   | \$11,408,042             |
| Maintenance cost savings (discounted cash flows)   |   | \$77,294,740             |
| NPV of cost savings  |   | \$151,918,783            |
| <b>Environmental Impact</b>  |   |                          |
| Annual Emissions REDUCTION   | metric tonnes (1000 kg) CO <sub>2</sub> | 7,533                    |
|  |   | 2.057                    |

#### \*\* Disclaimer

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided. The customer/reader is solely responsible to ensure the accuracy and applicability of this projection to the part

# O-SHIFT POWER CO

## NOTES & ASSUMPTIONS

The price of the LED driver is not included in the replacement price.

### INPUT TABLE

#### A) Existing Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

#### B) Proposed Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1431.9228          | 100%        | 1431.923    |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

#### C) HVAC Annual Cost Savings Calculations

|                                    |           |                        |
|------------------------------------|-----------|------------------------|
| 67 Existing Heat Loss              | 78%       | Old Ballast Efficiency |
| 5 Proposed Heat loss               | 97%       | New Ballast Efficiency |
| 62 Heat Loss savings               | 92%       | AC Efficiency          |
| <b>Total Kilo/Watt hours Saved</b> | <b>\$</b> | <b>Savings</b>         |

Months Used Annually 0

#### D) Capital Cost (WACC) rate: 5.0% (Weighted Average Cost of Capital)

Leasing Information rate: 4.9% Buyout % 0.0% Term (months): 24

#### E) Rising Energy Costs

| Year | \$/KWh | costs            | disc   |
|------|--------|------------------|--------|
| 1    | \$0.01 | \$ 275,940.02    | 0.0100 |
| 2    | \$0.02 | \$ 551,880.03    | 0.0190 |
| 3    | \$0.03 | \$ 827,820.05    | 0.0272 |
| 4    | \$0.04 | \$ 1,103,760.06  | 0.0346 |
| 5    | \$0.05 | \$ 1,379,700.08  | 0.0411 |
| 6    | \$0.06 | \$ 1,655,640.09  | 0.0470 |
| 7    | \$0.07 | \$ 1,931,580.11  | 0.0522 |
| 8    | \$0.08 | \$ 2,207,520.12  | 0.0569 |
| 9    | \$0.09 | \$ 2,483,460.14  | 0.0609 |
| 10   | \$0.10 | \$ 2,759,400.15  | 0.0645 |
|      |        | \$ 15,176,700.83 | 0.4134 |

#### F) Accessories

| Product Description                     | Quantity | Unit Price   | Discount | Total Cost  |
|---|----------|--------------|----------|-------------|
| Emergency Lighting Control & Lamp       | 0        | \$ 128.00    | 0%       | \$ -        |
| Fixture Mounted Occupancy Motion/Sensor | 0        | \$ 89.00     | 0%       | \$ -        |
| Step Down Transformer (700va)           | 0        | \$ 89.00     | 0%       | \$ -        |
| Lenses (Glass/Acrylic/Silicone)         | 0        | \$ 34.00     | 0%       | \$ -        |
| Wire Guard                              | 0        | \$ 33.00     | 0%       | \$ -        |
| Lens Clamp Band                         | 0        | \$ 21.00     | 0%       | \$ -        |
| SenzaFil Wireless Communication Package | 0        | \$ 15,000.00 | 0%       | \$ -        |
| <b>TOTAL ACCESSORIES</b>                |          |              |          | <b>\$ -</b> |

#### G) Client Internal Project Costs (For Rebate Applications ONLY)

| Details                               | Type            | Quantity/Hrs | Rate/Price | Total Cost  |
|---------------------------------------|-----------------|--------------|------------|-------------|
| Client Employee supervising/assisting | Labor Costs     | 0            | \$ -       | \$ -        |
| Scissor Lift                          | Rental          | 0            | \$ -       | \$ -        |
| Electrical Engineering Review         | Contractor Fees | 0            | \$ -       | \$ -        |
| Electrical Permit (ESA)               | Permits, etc    | 0            | \$ -       | \$ -        |
| <b>TOTAL CLIENT PROJECT COSTS</b>     |                 |              |            | <b>\$ -</b> |

#### H) Rebate Calculations (Use only applicable)

|  |  |                         |
|--|--|-------------------------|
| \$0.00                                     | <- 1. Rebate per luminaire (Enter \$ amount)               | \$ -                    |
| \$0.00                                     | <- 2. Rebate rate on investment (enter %)                  | \$ -                    |
| \$0.00                                     | <- 3. Rebate on kWatts saved (Change in luminaire wattage) | \$ -                    |
| \$0.00                                     | <- 4. Rebate on kWatts saved (per kW without Dimming)      | \$ -                    |
| \$0.00                                     | <- 5. Rebate on kWatts saved (including Dimming)           | \$ -                    |
| \$0.00                                     | <- 6. Rebate on GJ/yr saved (including Dimming)            | \$ -                    |
| \$150.00                                   | X QTY <- 7. Occupancy Sensor Rebate (Box 1 X Box 2)        | \$ -                    |
| \$0.00                                     | <- 8. Flat Amount  | \$ -                    |
| <b>Total Calculated Rebate</b>             |  | <b>\$ 63,837,000.00</b> |
| <b>Total Allowable Rebate (max of 40%)</b> |  | <b>\$ -</b>             |

Total Estimated Project Cost (incl. labour & recycling)

#### I) Recycling/Disposal Fees (For Rebate Applications ONLY)

|                                      |          |            |       |                      |
|--------------------------------------|----------|------------|-------|----------------------|
| Unit Disposal Rate for Fixture       | \$ 10.00 | # of Units | 45000 | \$ 450,000.00        |
| Unit Disposal Rate for Lamp          | \$ 3.80  | # of Lamps | 45000 | \$ 171,000.00        |
| <b>Total Estimated Disposal Fees</b> |          |            |       | <b>\$ 621,000.00</b> |

Select a System Type 0 0 # Units 0 # hours Lit/day 0 # days lit/week

## Life Cycle Analysis

Client Name: LED Highway Lighting Legislation

Location Description:

Contact Name:

### Lighting System Cost/Performance Comparison

|  | Existing                                | Proposed                 |
|--|---|--------------------------|
| <b>Parameters</b>  |   |                          |
| System Type  | 150W MH Core On Coil                    | LED Replacement for 150W |
| System lumens per watt   | 50                                      | 60                       |
| Bulb wattage (total unit)  | 150                                     | 70                       |
| Number of Luminaires   | 35000                                   | 35000                    |
| Footcandles on the ground  | 0                                       | 0                        |
| (Retrieved from data obtained on the Lighting Assessment Form)                                 |   |                          |
| <b>Initial Costs</b>   |   |                          |
| Cost per Luminaire   | n/a                                     | \$875                    |
| Net Cost per Luminaire   | n/a                                     | \$875                    |
| Accessories  | n/a                                     | \$0                      |
| Total Luminaire Package Cost   | n/a                                     | \$30,625,000             |
| Cost per Lamp  | \$0                                     | \$0                      |
| Number of Lamps  | 35000                                   | 35000                    |
| Total Lamp Cost  | \$0                                     | \$0                      |
| Sub Total  | \$0                                     | \$30,625,000             |
| Installation Time in hours   | 0.00                                    | 2.00                     |
| Labour Rate ( \$/hour)   | \$258.00                                | \$258.00                 |
| Total Estimated Installation Cost  | \$0                                     | \$18,060,000             |
| Total Estimated Recycling/Disposal Fees  | n/a                                     | \$484,750                |
| Sub Total  | \$0                                     | \$49,169,750             |
| Rebates and other adjustments  | \$0                                     | \$0                      |
| <b>TOTAL INITIAL COST</b>  | <b>\$0</b>                              | <b>\$49,169,750</b>      |
| <b>Operating Costs</b>   |   |                          |
| Input Power (Watts)  | 178                                     | 75                       |
| Redundant Emergency Lighting Annual Load (Watts)   | 0                                       | n/a                      |
| Energy Rate (\$/kW)  | \$0.065                                 | \$0.065                  |
| Operating Time per Year, in Hours  | 4,380                                   | 4,380                    |
| ENERGY COST per Year (@ Full Load)   | \$1,773,681                             | \$747,338                |
| Total Possible Annual Load (KWhrs)   | 27,287,401                              | 11,497,501               |
| Total Proposed Load with Dimming   | 27,287,401                              | 11,497,501               |
| Load Reduction Due to Dimming (KWhrs)  | 0                                       | 0                        |
| Energy Savings Due to Dimming  | \$0                                     | \$0                      |
| ENERGY COST WITH DIMMING   | \$1,773,681                             | \$747,338                |
| Relamping Method   | Spot                                    | Spot                     |
| Lamp/LED Life (Hours)  | 12000                                   | 50000                    |
| # Lamps/LEDs Replaced per Year averaged over 10 years  | 10,220                                  | 2,453                    |
| # Hours per Lamp Change  | 1.5                                     | 1.5                      |
| Labour Rate to Replace Lamps, per Hour   | \$258.00                                | \$258.00                 |
| RELAMPING/Driver COSTS per Year  | \$3,955,140                             | \$949,234                |
| LED Driver Replacement Cost per Hour   | 0                                       | 0                        |
| Labour rate to replace LED Driver, per Hour  | \$258.00                                | \$258.00                 |
| Total Driver replacement cost per Year   | \$0                                     | \$0                      |
| HVAC Factor Estimate   |   | \$0                      |
| <b>TOTAL MAINTENANCE &amp; OPERATING COSTS PER YEAR</b>  | <b>\$5,728,821</b>                      | <b>\$1,696,571</b>       |
| <b>TOTAL SYSTEM COSTS FOR 10 YEAR PERIOD (incl. initial costs)</b>                             | <b>\$57,288,213</b>                     | <b>\$66,135,462</b>      |
| <b>The Savings</b>   |   |                          |
| Payback period (years)   |   | 12.2                     |
| Payback period (months)  |   | 146                      |
| ROI (yearly savings on capital investment excluding rentals, incidentals, and recycling costs) |   | 8%                       |
| Net Present Value @ Weighted Cost of Capital   |   | \$129,814,752            |
| NET CASH FLOW /month   |   | \$336,021                |
| Financing Lease (ESP In House Financing calculated net of rebates)                             |   | \$2,149,128              |
| NET CASH FLOW /month (including lease through term)  |   | -\$1,813,107             |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                                     |   |                          |
| Energy cost savings over 10 years (Including non-discounted rising energy costs)               |   | \$26,421,256             |
| Maintenance cost savings over 10 years   |   | \$30,059,066             |
| Initial Investment difference  |   | -\$49,169,750            |
| <b>Total Cost Savings over 10 Year Period</b>  |   | <b>\$7,310,572</b>       |
| <b>Net Present Value of Investment</b>   |   |                          |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)                       |   | \$6,527,935              |
| Maintenance cost savings (discounted cash flows)   |   | \$80,118,131             |
| <b>NPV of cost savings</b>   |   | <b>\$115,815,817</b>     |
| <b>Environmental Impact</b>  |   |                          |
| Annual Emissions REDUCTION   | metric tonnes (1000 kg) CO <sub>2</sub> | 4,311                    |

#### \*\* Disclaimer

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided. The customer/reader is solely responsible to ensure the accuracy and applicability of this projection to the part.



# O-SHIFT POWER CO

## NOTES & ASSUMPTIONS

The price of the LED driver is not included in the replacement price.

### INPUT TABLE

#### A) Existing Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

#### B) Proposed Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1431.9228          | 100%        | 1431.923    |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

#### C) HVAC Annual Cost Savings Calculations

|                                   |           |                        |
|-----------------------------------|-----------|------------------------|
| 39 Existing Heat Loss             | 78%       | Old Ballast Efficiency |
| 2 Proposed Heat loss              | 97%       | New Ballast Efficiency |
| 37 Heat Loss savings              | 92%       | AC Efficiency          |
| <b>Total KiloWatt hours Saved</b> | <b>\$</b> | <b>Savings</b>         |

Months Used  
Annually

0

#### D) Capital Cost (WACC)

rate: 5.0% (Weighted Average Cost of Capital)  
Leasing Information rate: 4.9% Buyout % 0.0% Term (months): 24

#### E) Rising Energy Costs

| Year | \$/KWh | costs           | disc   |
|------|--------|-----------------|--------|
| 1    | \$0.01 | \$ 157,899.01   | 0.0100 |
| 2    | \$0.02 | \$ 315,798.02   | 0.0190 |
| 3    | \$0.03 | \$ 473,697.03   | 0.0272 |
| 4    | \$0.04 | \$ 631,596.03   | 0.0346 |
| 5    | \$0.05 | \$ 789,495.04   | 0.0411 |
| 6    | \$0.06 | \$ 947,394.05   | 0.0470 |
| 7    | \$0.07 | \$ 1,105,293.06 | 0.0522 |
| 8    | \$0.08 | \$ 1,263,192.07 | 0.0569 |
| 9    | \$0.09 | \$ 1,421,091.08 | 0.0609 |
| 10   | \$0.10 | \$ 1,578,990.09 | 0.0645 |
|      |        | \$ 8,684,445.48 | 0.4134 |

#### F) Accessories

| Product Description                     | Quantity | Unit Price   | Discount | Total Cost  |
|---|----------|--------------|----------|-------------|
| Emergency Lighting Control & Lamp       | 0        | \$ 128.00    | 0%       | \$ -        |
| Fixture Mounted Occupancy Motion/Sensor | 0        | \$ 89.00     | 0%       | \$ -        |
| Step Down Transformer (700va)           | 0        | \$ 89.00     | 0%       | \$ -        |
| Lenses (Glass/Acrylic/Silicone)         | 0        | \$ 34.00     | 0%       | \$ -        |
| Wire Guard                              | 0        | \$ 33.00     | 0%       | \$ -        |
| Lens Clamp Band                         | 0        | \$ 21.00     | 0%       | \$ -        |
| SenzaFil Wireless Communication Package | 0        | \$ 15,000.00 | 0%       | \$ -        |
| <b>TOTAL ACCESSORIES</b>                |          |              |          | <b>\$ -</b> |

#### G) Client Internal Project Costs (For Rebate Applications ONLY)

| Details                               | Type            | Quantity/Hrs | Rate/Price | Total Cost  |
|---------------------------------------|-----------------|--------------|------------|-------------|
| Client Employee supervising/assisting | Labor Costs     | 0            | \$ -       | \$ -        |
| Scissor Lift                          | Rental          | 0            | \$ -       | \$ -        |
| Electrical Engineering Review         | Contractor Fees | 0            | \$ -       | \$ -        |
| Electrical Permit (ESA)               | Permits, etc    | 0            | \$ -       | \$ -        |
| <b>TOTAL CLIENT PROJECT COSTS</b>     |                 |              |            | <b>\$ -</b> |

#### H) Rebate Calculations (Use only applicable)

|  |  |                         |
|--|--|-------------------------|
| \$0.00                                     | <- 1. Rebate per luminaire (Enter \$ amount)               | \$ -                    |
| \$0.00                                     | <- 2. Rebate rate on investment (enter %)                  | \$ -                    |
| \$0.00                                     | <- 3. Rebate on kWatts saved (Change in luminaire wattage) | \$ -                    |
| \$0.00                                     | <- 4. Rebate on kWatts saved (per kW without Dimming)      | \$ -                    |
| \$0.00                                     | <- 5. Rebate on kWatts saved (including Dimming)           | \$ -                    |
| \$0.00                                     | <- 6. Rebate on GJ/yr saved (including Dimming)            | \$ -                    |
| \$150.00                                   | X QTY <- 7. Occupancy Sensor Rebate (Box 1 X Box 2)        | \$ -                    |
| \$0.00                                     | <- 8. Flat Amount  | \$ -                    |
| <b>Total Calculated Rebate</b>             |  | <b>\$ -</b>             |
| <b>Total Allowable Rebate (max of 40%)</b> |  | <b>\$ -</b>             |
|  |  | <b>\$ 49,654,500.00</b> |

Total Estimated Project  
Cost (incl. labour &  
recycling)

#### I) Recycling/Disposal Fees (For Rebate Applications ONLY)

|                                      |          |            |       |                      |
|--------------------------------------|----------|------------|-------|----------------------|
| Unit Disposal Rate for Fixture       | \$ 10.00 | # of Units | 35000 | \$ 350,000.00        |
| Unit Disposal Rate for Lamp          | \$ 3.85  | # of Lamps | 35000 | \$ 134,750.00        |
| <b>Total Estimated Disposal Fees</b> |          |            |       | <b>\$ 484,750.00</b> |

Select a System Type 0 0 # Units 0 # hours lit/day 0 # days lit/week

# ECO-SHIFT



# POWER CORP.

Life Cycle

Client Name: LED Highway Lighting Legislation

Address: Nova Scotia

Analysis

PROJECT SUMMARY

Contact Name:

Date: April 19, 2011

| Lighting System Cost/Performance Comparison                                      | treet Light         | treet Light    | treet Light    | treet Light    | Option E | Option F | Option G | Option H | Option I | Option J | Option K | Option L | Option M | Option N | Option O |
|--|---------------------|----------------|----------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|  | 250W Electronic B/V | Electronic B/V | Electronic B/V | Electronic B/V |          |          |          |          |          |          |          |          |          |          |          |
| <b>Initial Costs</b>   |                     |                |                |                |          |          |          |          |          |          |          |          |          |          |          |
| Total Luminaire Package Cost   | \$6,700,000         | \$9,900,000    | \$4,900,000    | \$3,000,000    | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Total Lamp Cost  | \$1,225,000         | \$1,800,000    | \$945,000      | \$600,000      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Total Estimated Installation Cost  | \$6,450,000         | \$11,610,000   | \$9,030,000    | \$6,450,000    | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Sub Total  | \$14,675,000        | \$23,827,500   | \$15,295,000   | \$10,350,000   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Total of Rentals and Incidentals   | \$0                 | \$0            | \$0            | \$0            | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Recycling  | \$300,000           | \$517,500      | \$420,000      | \$300,000      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Rebates and other adjustments  | \$0                 | \$0            | \$0            | \$0            | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| TOTAL INITIAL COST   | \$14,675,000        | \$23,827,500   | \$15,295,000   | \$10,350,000   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>Operating Costs</b>   |                     |                |                |                |          |          |          |          |          |          |          |          |          |          |          |
| ENERGY COST per Year (@ Full Load)   | \$1,992,900         | \$2,024,217    | \$777,231      | \$405,698      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Total Possible Annual Load (KWhrs)   | 30,660,002          | 31,141,802     | 11,957,401     | 6,241,500      | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |
| Total Proposed Load with Dimming   | 30,660,002          | 31,141,802     | 11,957,401     | 6,241,500      | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |
| Load Reduction Due to Dimming (KWhrs)  | 0                   | 0              | 0              | 0              | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |
| Energy Savings Due to Dimming  | \$0                 | \$0            | \$0            | \$0            | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| ENERGY COST WITH DIMMING   | \$1,992,900         | \$2,024,217    | \$777,231      | \$405,698      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| RELAMPING COSTS per Year   | \$1,273,120         | \$2,244,312    | \$1,692,432    | \$1,200,120    | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Cleaning Costs per Year  | \$0                 | \$0            | \$0            | \$0            | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| HVAC Factor Estimate   | \$0                 | \$0            | \$0            | \$0            | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| TOTAL MAINTENANCE & OPERATING COSTS PER YEAR                                     | \$3,266,020         | \$4,268,529    | \$2,469,663    | \$1,605,818    | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| TOTAL SYSTEM COSTS for 10 YEAR PERIOD  | \$47,335,202        | \$66,512,792   | \$39,991,631   | \$26,408,176   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>The Savings</b>   |                     |                |                |                |          |          |          |          |          |          |          |          |          |          |          |
| TOTAL ANNUAL OPERATING COST SAVINGS  | \$2,833,130         | \$4,724,159    | \$3,259,158    | \$2,108,970    | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD   | \$13,656,302        | \$23,414,068   | \$17,296,582   | \$10,739,701   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| SAVINGS as a %   | 22.4%               | 26.0%          | 30.2%          | 28.9%          | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     | 0.0%     |
| Payback period (years)   | 5.2                 | 5.0            | 4.7            | 4.9            | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      |
| Payback period (months)  | 62                  | 61             | 56             | 59             | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |
| ROI (yearly savings on capital investment)                                       | 19%                 | 20%            | 21%            | 20%            | 0%       | 0%       | 0%       | 0%       | 0%       | 0%       | 0%       | 0%       | 0%       | 0%       | 0%       |
| Net Present Value @ Weighted Cost of Capital                                     | \$71,337,603        | \$116,310,675  | \$80,478,164   | \$52,529,402   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| NET CASH FLOW /month   | \$236,094           | \$393,680      | \$271,597      | \$175,748      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Financing Lease (ESP In House Financing calculated net of rebates)               | \$641,420           | \$1,041,460    | \$668,519      | \$452,381      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| NET CASH FLOW /month (including lease through term)                              | -\$405,326          | -\$647,780     | -\$396,922     | -\$276,634     | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                       |                     |                |                |                |          |          |          |          |          |          |          |          |          |          |          |
| Energy cost savings over 10 years (including non-discounted rising energy costs) | \$43,581,002        | \$55,010,613   | \$26,168,311   | \$12,992,176   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Maintenance cost savings over 10 years   | \$15,519,801        | \$28,408,682   | \$22,627,081   | \$16,249,801   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Initial Investment difference  | -\$14,675,000       | -\$23,827,500  | -\$15,295,000  | -\$10,350,000  | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Total Cost Savings over 10 Year Period   | \$44,425,803        | \$59,591,795   | \$33,500,393   | \$18,891,977   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>Net Present Value of Investment</b>   |                     |                |                |                |          |          |          |          |          |          |          |          |          |          |          |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)         | \$8,148,602         | \$11,978,444   | \$6,337,801    | \$3,078,361    | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| Maintenance cost savings (discounted cash flows)                                 | \$31,039,602        | \$56,817,363   | \$45,254,182   | \$32,499,602   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| NPV of cost savings  | \$53,863,203        | \$92,623,308   | \$66,886,964   | \$45,927,962   | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      | \$0      |
| <b>Environmental Impact</b>  |                     |                |                |                |          |          |          |          |          |          |          |          |          |          |          |
| Annual Emissions REDUCTION   | 5,381               | 7,910          | 4,185          | 2,033          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |
|  | 1,469               | 2,159          | 1,143          | 555            | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |



# POWER CORP.

## Life Cycle Analysis

Client Name: CED Highway Lighting Legislation

Address:  Scott's

Contact Name:

Date: April 19, 2011

[illegible]

## Initial Costs

|   |                                   |     |              |
|---|-----------------------------------|-----|--------------|
|   | Total Luminaire Package Cost      | n/a | \$24,500,000 |
|   | Total Lamp Cost                   | \$0 | \$4,570,000  |
|   | Total Estimated Installation Cost | \$0 | \$33,540,000 |
|   | Sub Total                         | \$0 | \$64,147,500 |
|   | Rentals and incidental Costs      | n/a | \$0          |
|   | Recycling Costs                   | n/a | \$1,537,500  |
| Total Project Costs including Rentals, Incidentals, and Recycling |                                   | n/a | \$65,685,000 |
|   | Total Rebates                     | n/a | \$0          |
|   | TOTAL INITIAL COST                | \$0 | \$65,685,000 |

Operating Costs

|  |               |               |
|--|---------------|---------------|
| ENERGY COST per Year (@ Full Load)           | \$9,844,927   | \$5,200,046   |
| Total Possible Annual Load (KWhrs)           | 151460408.299 | 80007704.384  |
| Total Proposed Load with Dimming             | 151460408.299 | 80007704.384  |
| Load Reduction Due to Dimming (KWhrs)        | \$0           | \$0           |
| Energy Savings Due to Dimming                | \$0           | \$0           |
| ENERGY COST WITH DIMMING                     | \$9,844,927   | \$5,200,046   |
| RELAMPING COSTS per Year                     | \$14,690,521  | \$6,409,984   |
| Cleaning Costs per Year                      | \$0           | \$0           |
| HVAC Factor Estimate                         | \$0           | \$0           |
| TOTAL MAINTENANCE & OPERATING COSTS PER YEAR | \$24,535,447  | \$11,610,030  |
| TOTAL SYSTEM COSTS for 10 YEAR PERIOD        | \$245,354,473 | \$180,247,801 |

### *The Savings*

|  |               |
|--|---------------|
| TOTAL ANNUAL OPERATING COST SAVINGS                                | \$12,858,417  |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD                             | \$96,108,672  |
| SAVINGS as a %   | 26.8%         |
| Payback period (years)   | 5.0           |
| Payback period (months)  | 60            |
| ROI (yearly savings on capital investment)                         | 20%           |
| Net Present Value @ Weighted Cost of Capital                       | \$322,655,844 |
| NET CASH FLOW /month   | \$1,077,118   |
| Financing Lease (ESP in House Financing calculated net of rebates) | \$2,803,780   |
| NET CASH FLOW /month (including lease through term)                | \$1,726,660   |

## Scenario B Investment Returns - Rising Energy Costs

|  |               |
|--|---------------|
| Energy cost savings over 10 years (including non-discounted rising energy costs) | \$137,762,103 |
| Maintenance cost savings over 10 years   | \$82,806,365  |
| Initial investment difference  | -\$84,147,500 |
| Total Cost Savings over 10 Year Period   | \$156,409,967 |

**Net Present Value of Investment**

|  |               |
|--|---------------|
| Energy cost savings over 10 years @ rising costs (discounted cash flows) | \$29,543,208  |
| Maintenance cost savings (discounted cash flows)                         | \$165,610,729 |
| NPV of cost savings  | \$259,301,437 |

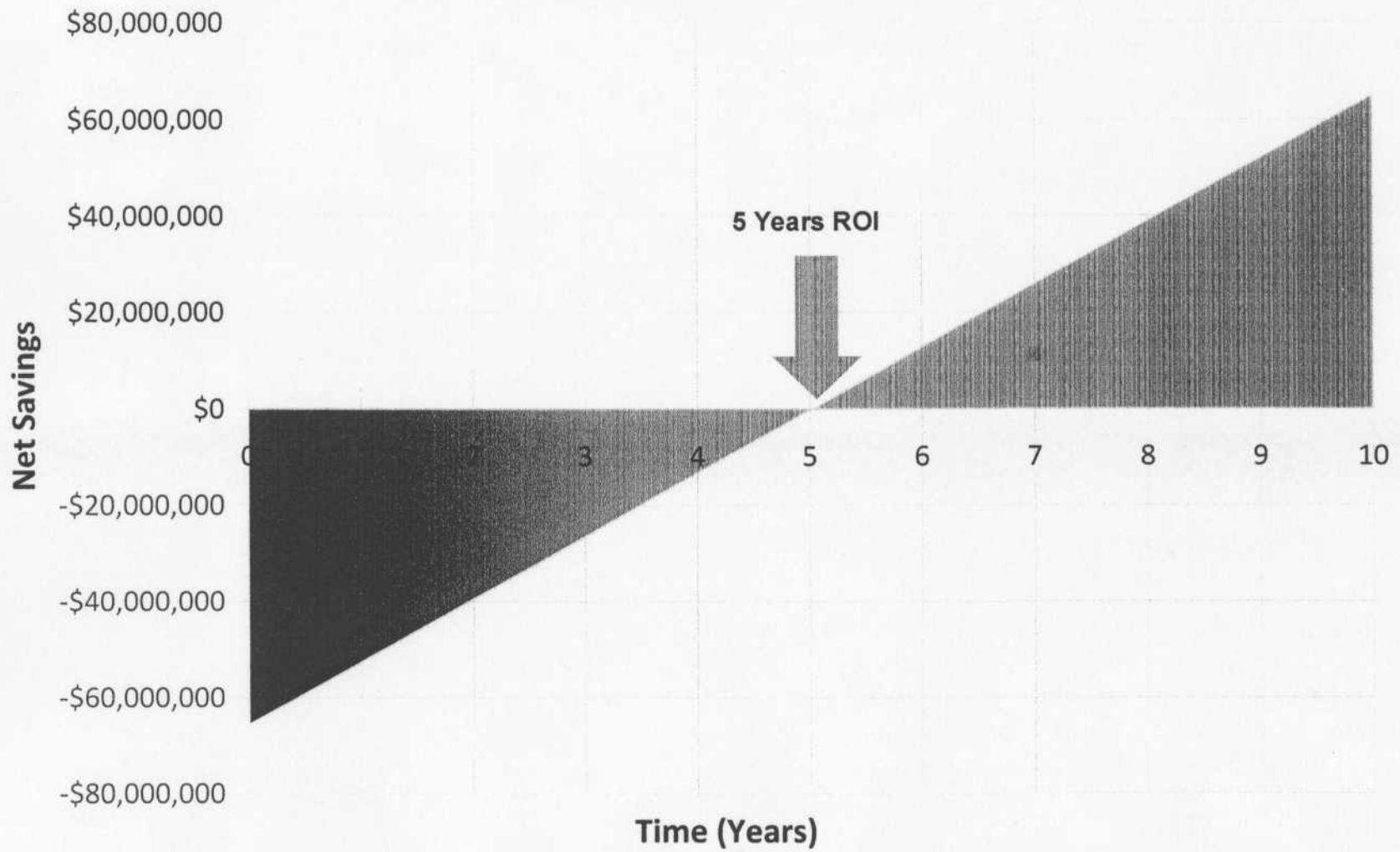
### *Environmental Impact*

|                            |   |        |
|----------------------------|---|--------|
| Annual Emissions REDUCTION | metric tonnes (1000 kg) CO <sub>2</sub> | 19,508 |
|                            | metric tonnes (1000 kg) Carbon          | 5,326  |

**\*\* Disclaimer**

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided. The customer/reader is solely responsible to ensure the accuracy and applicability of this projection to the part.

## Savings Over 10 Years





## Life Cycle Analysis

Client Name: LED Highway Lighting Legislation

Location Description: Street Lights

Contact Name:

### Lighting System Cost/Performance Comparison

|  | Existing                                | Proposed                |
|--|---|-------------------------|
| <b>Parameters</b>  |   |                         |
| System Type  | 250W MH Core On Coil                    | 150W Electronic Ballast |
| System lumens per watt   | 52                                      | 92                      |
| Bulb wattage (total unit)  | 250                                     | 150                     |
| Number of Luminaires   | 45000                                   | 45000                   |
| Footcandles on the ground  | 0                                       | 0                       |
| (Retrieved from data obtained on the Lighting Assessment Form)                                 |   |                         |
| <b>Initial Costs</b>   |   |                         |
| Cost per Luminaire   | n/a                                     | \$220                   |
| Net Cost per Luminaire   | n/a                                     | \$220                   |
| Accessories  | n/a                                     | \$0                     |
| Total Luminaire Package Cost   | n/a                                     | \$9,900,000             |
| Cost per Lamp  | \$0                                     | \$40                    |
| Number of Lamps  | 45000                                   | 45000                   |
| Total Lamp Cost  | \$0                                     | \$1,800,000             |
| Sub Total  | \$0                                     | \$11,700,000            |
| Installation Time in hours   | 0.00                                    | 1.00                    |
| Labour Rate ( \$/hour)   | \$128.00                                | \$258.00                |
| Total Estimated Installation Cost  | \$0                                     | \$11,810,000            |
| Total Estimated Recycling/Disposal Fees  | n/a                                     | \$517,500               |
| Sub Total  | \$0                                     | \$23,827,500            |
| Rebates and other adjustments  | \$0                                     | \$0                     |
| TOTAL INITIAL COST   | \$0                                     | \$23,827,500            |
| <b>Operating Costs</b>   |   |                         |
| Input Power (Watts)  | 305                                     | 158                     |
| Redundant Emergency Lighting Annual Load (Watts)   | 0                                       | n/a                     |
| Energy Rate (\$/kW)  | \$0.065                                 | \$0.065                 |
| Operating Time per Year, in Hours  | 4,380                                   | 4,380                   |
| ENERGY COST per Year (@ Full Load)   | \$3,907,508                             | \$2,024,217             |
| Total Possible Annual Load (KWhrs)   | 60,115,503                              | 31,141,802              |
| Total Proposed Load with Dimming   | 60,115,503                              | 31,141,802              |
| Load Reduction Due to Dimming (KWhrs)  | 0                                       | 0                       |
| Energy Savings Due to Dimming  | \$0                                     | \$0                     |
| ENERGY COST WITH DIMMING   | \$3,907,508                             | \$2,024,217             |
| Relamping Method   | Spot                                    | Spot                    |
| Lamp Life (Hours)  | 12000                                   | 30000                   |
| # Lamps Replaced per Year averaged over 10 years   | 13,140                                  | 5,256                   |
| # Hours per Lamp Change  | 1.5                                     | 1.5                     |
| Labour Rate to Replace Lamps, per Hour   | \$258.00                                | \$258.00                |
| RELAMPING COSTS per Year   | \$5,085,180                             | \$2,244,312             |
| Luminaire Cleaning Time (hours)  | 0                                       | 0                       |
| Labour Rate to Clean Luminaires, per Hour  | \$45.00                                 | \$45.00                 |
| Cleaning Costs per Year  | \$0                                     | \$0                     |
| HVAC Factor Estimate   |   | \$0                     |
| TOTAL MAINTENANCE & OPERATING COSTS PER YEAR   | \$8,992,688                             | \$4,268,529             |
| TOTAL SYSTEM COSTS for 10 YEAR PERIOD (incl. initial costs)                                    | \$89,926,880                            | \$66,512,792            |
| <b>The Savings</b>   |   |                         |
| Payback period (years)   |   | 5.0                     |
| Payback period (months)  |   | 61                      |
| ROI (yearly savings on capital investment excluding rentals, incidentals, and recycling costs) |   | 20%                     |
| Net Present Value @ Weighted Cost of Capital   |   | \$118,310,675           |
| NET CASH FLOW /month   |   | \$393,680               |
| Financing Lease (ESP In House Financing calculated net of rebates)                             |   | \$1,041,460             |
| NET CASH FLOW /month (including lease through term)  |   | -\$647,780              |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                                     |   |                         |
| Energy cost savings over 10 years (Including non-discounted rising energy costs)               |   | \$55,010,613            |
| Maintenance cost savings over 10 years   |   | \$28,408,682            |
| Initial Investment difference  |   | -\$23,827,500           |
| Total Cost Savings over 10 Year Period   |   | \$59,591,795            |
| <b>Net Present Value of Investment</b>   |   |                         |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)                       |   | \$11,976,444            |
| Maintenance cost savings (discounted cash flows)   |   | \$56,817,363            |
| NPV of cost savings  |   | \$92,623,308            |
| <b>Environmental Impact</b>  |   |                         |
| Annual Emissions REDUCTION   | metric tonnes (1000 kg) CO <sub>2</sub> | 7,910                   |
|  | metric tonnes (1000 kg) Carbon          | 2,168                   |

#### \*\* Disclaimer

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided. The customer/reader is solely responsible to ensure the accuracy and applicability of this projection to the part

## INPUT TABLE

### A) Existing Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

### B) Proposed Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1431.9228          | 100%        | 1431.923    |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

### C) HVAC Annual Cost Savings Calculations

|                                    |           |                        |                      |   |
|------------------------------------|-----------|------------------------|----------------------|---|
| 67 Existing Heat Loss              | 78%       | Old Ballast Efficiency | Months Used Annually | 0 |
| 5 Proposed Heat loss               | 97%       | New Ballast Efficiency |                      |   |
| 62 Heat Loss savings               | 92%       | AC Efficiency          |                      |   |
| <b>Total Kilo/Watt hours Saved</b> | <b>\$</b> | <b>Savings</b>         |                      |   |

### D) Capital Cost (WACC) rate: 5.0% (Weighted Average Cost of Capital)

Leasing Information rate: 4.9% Buyout % 0.0% Term (months): 24

### E) Rising Energy Costs

| Year | \$/KWh | costs            | disc   |
|------|--------|------------------|--------|
| 1    | \$0.01 | \$ 289,737.02    | 0.0100 |
| 2    | \$0.02 | \$ 579,474.03    | 0.0190 |
| 3    | \$0.03 | \$ 869,211.05    | 0.0272 |
| 4    | \$0.04 | \$ 1,158,948.06  | 0.0346 |
| 5    | \$0.05 | \$ 1,448,685.08  | 0.0411 |
| 6    | \$0.06 | \$ 1,738,422.10  | 0.0470 |
| 7    | \$0.07 | \$ 2,028,159.11  | 0.0522 |
| 8    | \$0.08 | \$ 2,317,896.13  | 0.0569 |
| 9    | \$0.09 | \$ 2,607,633.14  | 0.0609 |
| 10   | \$0.10 | \$ 2,897,370.16  | 0.0645 |
|      |        | \$ 15,935,535.87 | 0.4134 |

### F) Accessories

| Product Description                     | Quantity | Unit Price   | Discount | Total Cost  |
|---|----------|--------------|----------|-------------|
| Emergency Lighting Control & Lamp       | 0        | \$ 128.00    | 0%       | \$ -        |
| Fixture Mounted Occupancy Motion/Sensor | 0        | \$ 89.00     | 0%       | \$ -        |
| Step Down Transformer (700va)           | 0        | \$ 89.00     | 0%       | \$ -        |
| Lenses (Glass/Acrylic/Silicone)         | 0        | \$ 34.00     | 0%       | \$ -        |
| Wire Guard                              | 0        | \$ 33.00     | 0%       | \$ -        |
| Lens Clamp Band                         | 0        | \$ 21.00     | 0%       | \$ -        |
| SenzaFil Wireless Communication Package | 0        | \$ 15,000.00 | 0%       | \$ -        |
| <b>TOTAL ACCESSORIES</b>                |          |              |          | <b>\$ -</b> |

### G) Client Internal Project Costs (For Rebate Applications ONLY)

| Details                               | Type            | Quantity/Hrs | Rate/Price | Total Cost  |
|---------------------------------------|-----------------|--------------|------------|-------------|
| Client Employee supervising/assisting | Labor Costs     | 0            | \$ -       | \$ -        |
| Scissor Lift                          | Rental          | 0            | \$ -       | \$ -        |
| Electrical Engineering Review         | Contractor Fees | 0            | \$ -       | \$ -        |
| Electrical Permit (ESA)               | Permits, etc    | 0            | \$ -       | \$ -        |
| <b>TOTAL CLIENT PROJECT COSTS</b>     |                 |              |            | <b>\$ -</b> |

### H) Rebate Calculations (Use only applicable)

|  |  |                         |
|--|--|-------------------------|
| \$0.00                                     | <- 1. Rebate per luminaire (Enter \$ amount)               | \$ -                    |
| \$0.00                                     | <- 2. Rebate rate on investment (enter %)                  | \$ -                    |
| \$0.00                                     | <- 3. Rebate on kWatts saved (Change in luminaire wattage) | \$ -                    |
| \$0.00                                     | <- 4. Rebate on kWatts saved (per kW without Dimming)      | \$ -                    |
| \$0.00                                     | <- 5. Rebate on kWatts saved (including Dimming)           | \$ -                    |
| \$0.00                                     | <- 6. Rebate on GJ/yr saved (including Dimming)            | \$ -                    |
| \$150.00                                   | X QTY <- 7. Occupancy Sensor Rebate (Box 1 X Box 2)        | \$ -                    |
| \$0.00                                     | <- 8. Flat Amount  | \$ -                    |
| <b>Total Calculated Rebate</b>             |  | <b>\$ 24,345,000.00</b> |
| <b>Total Allowable Rebate (max of 40%)</b> |  | <b>\$ -</b>             |

*Total Estimated Project Cost (incl. labour & recycling)*

### I) Recycling/Disposal Fees (For Rebate Applications ONLY)

|                                      |          |            |       |                      |
|--------------------------------------|----------|------------|-------|----------------------|
| Unit Disposal Rate for Fixture       | \$ 10.00 | # of Units | 45000 | \$ 450,000.00        |
| Unit Disposal Rate for Lamp          | \$ 1.50  | # of Lamps | 45000 | \$ 67,500.00         |
| <b>Total Estimated Disposal Fees</b> |          |            |       | <b>\$ 517,500.00</b> |

Select a System Type 0 0 # Units 0 # hours Lit/day 0 # days lit/week

## Life Cycle Analysis

Client Name: LED Highway Lighting Legislation  
Location Description: Street Lights  
Contact Name:

### Lighting System Cost/Performance Comparison

|  | Existing             | Proposed               |
|--|----------------------|------------------------|
| <b>Parameters</b>  |                      |                        |
| System Type  | 150W MH Core On Coil | 70W Electronic Ballast |
| System lumens per watt   | 50                   | 90                     |
| Bulb wattage (total unit)  | 150                  | 70                     |
| Number of Luminaires   | 35000                | 35000                  |
| Footcandles on the ground  | 0                    | 0                      |
| (Retrieved from data obtained on the Lighting Assessment Form)                                 |                      |                        |
| <b>Initial Costs</b>   |                      |                        |
| Cost per Luminaire   | n/a                  | \$140                  |
| Net Cost per Luminaire   | n/a                  | \$140                  |
| Accessories  | n/a                  | \$0                    |
| Total Luminaire Package Cost   | n/a                  | \$4,900,000            |
| Cost per Lamp  | \$0                  | \$27                   |
| Number of Lamps  | 35000                | 35000                  |
| Total Lamp Cost  | \$0                  | \$945,000              |
| Sub Total  | \$0                  | \$5,845,000            |
| Installation Time in hours   | 0.00                 | 1.00                   |
| Labour Rate (\$/hour)  | \$128.00             | \$258.00               |
| Total Estimated Installation Cost  | \$0                  | \$9,030,000            |
| Total Estimated Recycling/Disposal Fees  | n/a                  | \$420,000              |
| Sub Total  | \$0                  | \$15,295,000           |
| Rebates and other adjustments  | \$0                  | \$0                    |
| <b>TOTAL INITIAL COST</b>  | <b>\$0</b>           | <b>\$15,295,000</b>    |
| <b>Operating Costs</b>   |                      |                        |
| Input Power (Watts)  | 178                  | 78                     |
| Redundant Emergency Lighting Annual Load (Watts)   | 0                    | n/a                    |
| Energy Rate (\$/kW)  | \$0.065              | \$0.065                |
| Operating Time per Year, in Hours  | 4,380                | 4,380                  |
| ENERGY COST per Year (@ Full Load)   | \$1,773,681          | \$777,231              |
| Total Possible Annual Load (KWhrs)   | 27,287,401           | 11,957,401             |
| Total Proposed Load with Dimming   | 27,287,401           | 11,957,401             |
| Load Reduction Due to Dimming (KWhrs)  | 0                    | 0                      |
| Energy Savings Due to Dimming  | \$0                  | \$0                    |
| ENERGY COST WITH DIMMING   | \$1,773,681          | \$777,231              |
| Relamping Method   | Spot                 | Spot                   |
| Lamp Life (Hours)  | 12000                | 30000                  |
| # Lamps Replaced per Year averaged over 10 years   | 10,220               | 4,088                  |
| # Hours per Lamp Change  | 1.5                  | 1.5                    |
| Labour Rate to Replace Lamps, per Hour   | \$258.00             | \$258.00               |
| RELAMPING COSTS per Year   | \$3,955,140          | \$1,692,432            |
| Luminaire Cleaning Time (hours)  | 0                    | 0                      |
| Labour Rate to Clean Luminaires, per Hour  | \$45.00              | \$45.00                |
| Cleaning Costs per Year  | \$0                  | \$0                    |
| HVAC Factor Estimate   |                      | \$0                    |
| <b>TOTAL MAINTENANCE &amp; OPERATING COSTS PER YEAR</b>  | <b>\$5,728,821</b>   | <b>\$2,469,663</b>     |
| <b>TOTAL SYSTEM COSTS for 10 YEAR PERIOD (incl. initial costs)</b>                             | <b>\$57,288,213</b>  | <b>\$39,991,631</b>    |
| <b>The Savings</b>   |                      |                        |
| TOTAL ANNUAL OPERATING COST SAVINGS (based on operating savings only)                          |                      |                        |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD (incl. initial costs)                                   |                      |                        |
| SAVINGS as a %   |                      |                        |
| Payback period (years)   |                      | 4.7                    |
| Payback period (months)  |                      | 56                     |
| ROI (yearly savings on capital investment excluding rentals, incidentals, and recycling costs) |                      | 21%                    |
| Net Present Value @ Weighted Cost of Capital   |                      | \$80,478,164           |
| NET CASH FLOW /month   |                      | \$271,597              |
| Financing Lease (ESP In House Financing calculated net of rebates)                             |                      | \$668,519              |
| NET CASH FLOW /month (including lease through term)  |                      | -\$398,922             |
| <b>Scenario B Investment Returns - Rising Energy Costs</b>                                     |                      |                        |
| Energy cost savings over 10 years (Including non-discounted rising energy costs)               |                      | \$26,168,311           |
| Maintenance cost savings over 10 years   |                      | \$22,627,081           |
| Initial Investment difference  |                      | -\$15,295,000          |
| Total Cost Savings over 10 Year Period   |                      | \$33,500,393           |
| <b>Net Present Value of Investment</b>   |                      |                        |
| Energy cost savings over 10 years @ rising costs (discounted cash flows)                       |                      | \$6,337,801            |
| Maintenance cost savings (discounted cash flows)   |                      | \$45,254,162           |
| NPV of cost savings  |                      | \$66,886,964           |
| <b>Environmental Impact</b>  |                      |                        |
| Annual Emissions REDUCTION   |                      |                        |
| metric tonnes (1000 kg) CO <sub>2</sub>  |                      | 4,185                  |
| metric tonnes (1000 kg) CO <sub>2</sub> eq   |                      | 4,185                  |

#### \*\* Disclaimer

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided. The customer/reader is solely responsible to ensure the accuracy and applicability of this projection to the part.



## INPUT TABLE

### A) Existing Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

### B) Proposed Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1431.9228          | 100%        | 1431.923    |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

### C) HVAC Annual Cost Savings Calculations

|                                    |           |                        |                      |   |
|------------------------------------|-----------|------------------------|----------------------|---|
| 39 Existing Heat Loss              | 78%       | Old Ballast Efficiency | Months Used Annually | 0 |
| 2 Proposed Heat loss               | 97%       | New Ballast Efficiency |                      |   |
| 37 Heat Loss savings               | 92%       | AC Efficiency          |                      |   |
| <b>Total Kilo/Watt hours Saved</b> | <b>\$</b> | <b>Savings</b>         |                      |   |

### D) Capital Cost (WACC)

rate: 5.0% (Weighted Average Cost of Capital)  
Leasing Information rate: 4.9% Buyout %: 0.0% Term (months): 24

| E) Rising Energy Costs | Year | \$/KWh | costs           | disc   |
|------------------------|------|--------|-----------------|--------|
|                        | 1    | \$0.01 | \$ 153,300.01   | 0.0100 |
|                        | 2    | \$0.02 | \$ 306,600.02   | 0.0190 |
|                        | 3    | \$0.03 | \$ 459,900.03   | 0.0272 |
|                        | 4    | \$0.04 | \$ 613,200.03   | 0.0346 |
|                        | 5    | \$0.05 | \$ 766,500.04   | 0.0411 |
|                        | 6    | \$0.06 | \$ 919,800.05   | 0.0470 |
|                        | 7    | \$0.07 | \$ 1,073,100.06 | 0.0522 |
|                        | 8    | \$0.08 | \$ 1,226,400.07 | 0.0569 |
|                        | 9    | \$0.09 | \$ 1,379,700.08 | 0.0609 |
|                        | 10   | \$0.10 | \$ 1,533,000.08 | 0.0645 |
|                        |      | \$     | 8,431,500.46    | 0.4134 |

### F) Accessories

| Product Description                     | Quantity | Unit Price   | Discount | Total Cost  |
|---|----------|--------------|----------|-------------|
| Emergency Lighting Control & Lamp       | 0        | \$ 128.00    | 0%       | \$ -        |
| Fixture Mounted Occupancy Motion/Sensor | 0        | \$ 89.00     | 0%       | \$ -        |
| Step Down Transformer (700va)           | 0        | \$ 89.00     | 0%       | \$ -        |
| Lenses (Glass/Acrylic/Silicone)         | 0        | \$ 34.00     | 0%       | \$ -        |
| Wire Guard                              | 0        | \$ 33.00     | 0%       | \$ -        |
| Lens Clamp Band                         | 0        | \$ 21.00     | 0%       | \$ -        |
| SenzaFil Wireless Communication Package | 0        | \$ 15,000.00 | 0%       | \$ -        |
| <b>TOTAL ACCESSORIES</b>                |          |              |          | <b>\$ -</b> |

### G) Client Internal Project Costs (For Rebate Applications ONLY)

| Details                               | Type            | Quantity/Hrs | Rate/Price | Total Cost  |
|---------------------------------------|-----------------|--------------|------------|-------------|
| Client Employee supervising/assisting | Labor Costs     | 0            | \$ -       | \$ -        |
| Scissor Lift                          | Rental          | 0            | \$ -       | \$ -        |
| Electrical Engineering Review         | Contractor Fees | 0            | \$ -       | \$ -        |
| Electrical Permit (ESA)               | Permits, etc    | 0            | \$ -       | \$ -        |
| <b>TOTAL CLIENT PROJECT COSTS</b>     |                 |              |            | <b>\$ -</b> |

### H) Rebate Calculations (Use only applicable)

|  |  |                         |
|--|--|-------------------------|
| \$0.00                                     | <- 1. Rebate per luminaire (Enter \$ amount)               | \$ -                    |
| \$0.00                                     | <- 2. Rebate rate on investment (enter %)                  | \$ -                    |
| \$0.00                                     | <- 3. Rebate on kWatts saved (Change in luminaire wattage) | \$ -                    |
| \$0.00                                     | <- 4. Rebate on kWatts saved (per kW without Dimming)      | \$ -                    |
| \$0.00                                     | <- 5. Rebate on kWatts saved (including Dimming)           | \$ -                    |
| \$0.00                                     | <- 6. Rebate on GJ/yr saved (including Dimming)            | \$ -                    |
| \$150.00                                   | X QTY <- 7. Occupancy Sensor Rebate (Box 1 X Box 2)        | \$ -                    |
| \$0.00                                     | <- 8. Flat Amount  | \$ -                    |
| <b>Total Calculated Rebate</b>             |  | <b>\$ -</b>             |
| <b>Total Allowable Rebate (max of 40%)</b> |  | <b>\$ -</b>             |
|  |  | <b>\$ 15,715,000.00</b> |

Total Estimated Project Cost (incl. labour & recycling)

### I) Recycling/Disposal Fees (For Rebate Applications ONLY)

|                                      |          |            |       |                      |
|--------------------------------------|----------|------------|-------|----------------------|
| Unit Disposal Rate for Fixture       | \$ 10.00 | # of Units | 35000 | \$ 350,000.00        |
| Unit Disposal Rate for Lamp          | \$ 2.00  | # of Lamps | 35000 | \$ 70,000.00         |
| <b>Total Estimated Disposal Fees</b> |          |            |       | <b>\$ 420,000.00</b> |

Select a System Type      0   0   # Units      0   # hours Lit/day      0   # days lit/week



# O-SHIFT POWER CO

NOTES & ASSUMPTIONS

## INPUT TABLE

### A) Existing Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

### B) Proposed Operating Hours

|               | M  | T  | W  | T  | F  | S  | S  | Ttl Hrs/Week | Wks/Yr    | Total Hours/Season | Load        | Load/Hrs    |
|---------------|----|----|----|----|----|----|----|--------------|-----------|--------------------|-------------|-------------|
| Summer        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1431.9228          | 100%        | 1431.923    |
| Fall          | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| Winter        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 17        | 1432               | 100%        | 1432        |
| Spring        | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 84           | 9         | 758                | 100%        | 758         |
| <b>Totals</b> |    |    |    |    |    |    |    | <b>336</b>   | <b>52</b> | <b>4380</b>        | <b>100%</b> | <b>4380</b> |

### C) HVAC Annual Cost Savings Calculations

|                                    |           |                        |
|------------------------------------|-----------|------------------------|
| 28 Existing Heat Loss              | 78%       | Old Ballast Efficiency |
| 2 Proposed Heat loss               | 97%       | New Ballast Efficiency |
| 26 Heat Loss savings               | 92%       | AC Efficiency          |
| <b>Total Kilo/Watt hours Saved</b> | <b>\$</b> | <b>Savings</b>         |

Months Used Annually 0

### D) Capital Cost (WACC)

Leasing Information rate: 5.0% (Weighted Average Cost of Capital)  
rate: 4.9% Buyout % 0.0% Term (months): 24

### E) Rising Energy Costs

| Year | \$/KWh | costs           | disc   |
|------|--------|-----------------|--------|
| 1    | \$0.01 | \$ 74,460.00    | 0.0100 |
| 2    | \$0.02 | \$ 148,920.01   | 0.0190 |
| 3    | \$0.03 | \$ 223,380.01   | 0.0272 |
| 4    | \$0.04 | \$ 297,840.02   | 0.0346 |
| 5    | \$0.05 | \$ 372,300.02   | 0.0411 |
| 6    | \$0.06 | \$ 446,760.02   | 0.0470 |
| 7    | \$0.07 | \$ 521,220.03   | 0.0522 |
| 8    | \$0.08 | \$ 595,680.03   | 0.0569 |
| 9    | \$0.09 | \$ 670,140.04   | 0.0609 |
| 10   | \$0.10 | \$ 744,600.04   | 0.0645 |
|      |        | \$ 4,095,300.22 | 0.4134 |

### F) Accessories

| Product Description                     | Quantity | Unit Price   | Discount | Total Cost  |
|---|----------|--------------|----------|-------------|
| Emergency Lighting Control & Lamp       | 0        | \$ 128.00    | 0%       | \$ -        |
| Fixture Mounted Occupancy Motion/Sensor | 0        | \$ 89.00     | 0%       | \$ -        |
| Step Down Transformer (700va)           | 0        | \$ 89.00     | 0%       | \$ -        |
| Lenses (Glass/Acrylic/Silicone)         | 0        | \$ 34.00     | 0%       | \$ -        |
| Wire Guard                              | 0        | \$ 33.00     | 0%       | \$ -        |
| Lens Clamp Band                         | 0        | \$ 21.00     | 0%       | \$ -        |
| SenzaFil Wireless Communication Package | 0        | \$ 15,000.00 | 0%       | \$ -        |
| <b>TOTAL ACCESSORIES</b>                |          |              |          | <b>\$ -</b> |

### G) Client Internal Project Costs (For Rebate Applications ONLY)

| Details                               | Type            | Quantity/Hrs | Rate/Price | Total Cost  |
|---------------------------------------|-----------------|--------------|------------|-------------|
| Client Employee supervising/assisting | Labor Costs     | 0            | \$ -       | \$ -        |
| Scissor Lift                          | Rental          | 0            | \$ -       | \$ -        |
| Electrical Engineering Review         | Contractor Fees | 0            | \$ -       | \$ -        |
| Electrical Permit (ESA)               | Permits, etc    | 0            | \$ -       | \$ -        |
| <b>TOTAL CLIENT PROJECT COSTS</b>     |                 |              |            | <b>\$ -</b> |

### H) Rebate Calculations (Use only applicable)

|  |  |                         |
|--|--|-------------------------|
| \$0.00                                     | <- 1. Rebate per luminaire (Enter \$ amount)               | \$ -                    |
| \$0.00                                     | <- 2. Rebate rate on investment (enter %)                  | \$ -                    |
| \$0.00                                     | <- 3. Rebate on kWatts saved (Change in luminaire wattage) | \$ -                    |
| \$0.00                                     | <- 4. Rebate on kWatts saved (per kW without Dimming)      | \$ -                    |
| \$0.00                                     | <- 5. Rebate on kWatts saved (including Dimming)           | \$ -                    |
| \$0.00                                     | <- 6. Rebate on GJ/yr saved (including Dimming)            | \$ -                    |
| \$150.00                                   | X QTY <- 7. Occupancy Sensor Rebate (Box 1 X Box 2)        | \$ -                    |
| \$0.00                                     | <- 8. Flat Amount  | \$ -                    |
| <b>Total Calculated Rebate</b>             |  | <b>\$ -</b>             |
| <b>Total Allowable Rebate (max of 40%)</b> |  | <b>\$ -</b>             |
|  |  | <b>\$ 10,650,000.00</b> |

### I) Recycling/Disposal Fees (For Rebate Applications ONLY)

|                                      |          |            |       |                      |
|--------------------------------------|----------|------------|-------|----------------------|
| Unit Disposal Rate for Fixture       | \$ 10.00 | # of Units | 25000 | \$ 250,000.00        |
| Unit Disposal Rate for Lamp          | \$ 2.00  | # of Lamps | 25000 | \$ 50,000.00         |
| <b>Total Estimated Disposal Fees</b> |          |            |       | <b>\$ 300,000.00</b> |

Select a System Type 0 0 # Units 0 # hours Lit/day 0 # days lit/week