

Life Cycle Analysis

Client Name: ABC Company
 Location Description: Quality Control Area
 Contact Name: Mary Rogers (QA Manager)

Lighting System Cost/Performance Comparison

Existing

Proposed

Parameters

| System Type | 400W MH Core On Coil | 250W Electronic Ballast - Acrylic |
|---|----------------------|-----------------------------------|
| System lumens per watt | 55 | 99 |
| Bulb wattage (total unit) | 400 | 250 |
| Number of Luminaires | 30 | 30 |
| Total Lumens emitted per unit | 22,000 | 24,750 |
| Total Lumens emitted (including dimming) | 660,000 | 594,000 |
| Footcandles at the workplane <small>(Retrieved from data obtained on the Lighting Assessment Form)</small> | 20 | 25 |

Initial Costs

| | | |
|--|---------|----------|
| Cost per Luminaire | n/a | \$394 |
| Net Cost per Luminaire | n/a | \$394 |
| Accessories | n/a | \$2,420 |
| Total Luminaire Package Cost | n/a | \$14,240 |
| Cost per Lamp | \$50 | \$49 |
| Number of Lamps | 30 | 30 |
| Total Lamp Cost | \$1,500 | \$1,470 |
| Sub Total | \$1,500 | \$15,710 |
| Installation Time in hours | 0.50 | 1.00 |
| Labour Rate (\$/hour) | \$69 | \$69 |
| Total Estimated Installation Cost | \$1,035 | \$2,070 |
| Total Estimated Recycling/Disposal Fees | | |
| Sub Total | \$2,535 | \$17,780 |
| Rebates and other adjustments | \$0 | -\$7,290 |
| TOTAL INITIAL COST | \$2,535 | \$10,490 |

Operating Costs

| | | |
|--|----------|----------|
| Input Power (Watts) | 460 | 265 |
| Redundant Emergency Lighting Annual Load (Watts) | 0 | |
| Energy Rate (\$/kW) | \$0.10 | \$0.10 |
| Operating Time per Year, in Hours | 4,693 | 4,693 |
| ENERGY COST per Year (@ Full Load) | \$6,476 | \$3,731 |
| Total Possible Annual Load (KWhrs) | 64,761 | 37,308 |
| Total Proposed Load with Dimming | 64,761 | 29,847 |
| Load Reduction Due to Dimming (KWhrs) | 0 | 7,462 |
| Energy Savings Due to Dimming | \$0 | \$746 |
| ENERGY COST WITH DIMMING | \$6,476 | \$2,985 |
| Relamping Method | Spot | Spot |
| Lamp Life (Hours) | 8800 | 30000 |
| # Lamps Replaced per Year averaged over 10 years | 13 | 4 |
| # Hours per Lamp Change | 0.5 | 0.5 |
| Labour Rate to Replace Lamps, per Hour | \$45.00 | \$45.00 |
| RELAMPING COSTS per Year | \$928 | \$268 |
| Luminaire Cleaning Time (hours) | 0 | 0 |
| Labour Rate to Clean Luminaires, per Hour | \$0 | \$0 |
| Cleaning Costs per Year | \$0 | \$0 |
| HVAC Factor Estimate | | \$0 |
| TOTAL MAINTENANCE & OPERATING COSTS PER YEAR | \$7,404 | \$3,253 |
| TOTAL SYSTEM COSTS for 10 YEAR PERIOD (incl. initial costs) | \$76,575 | \$43,021 |

The Savings

| | |
|--|----------|
| TOTAL ANNUAL OPERATING COST SAVINGS (based on operational savings only) | \$4,151 |
| TOTAL COST SAVINGS OVER 10 YEAR PERIOD (includes initial costs) | \$33,555 |
| SAVINGS as a % | 43.8% |
| Payback period (years) | 1.9 |
| Payback period (months) | 23 |
| ROI (yearly savings on capital investment) | 40% |
| Net Present Value @ Weighted Cost of Capital | \$59,842 |
| NET CASH FLOW /month | \$346 |
| Financing Lease (ESP In House Financing calculated net of rebates) | \$459 |
| NET CASH FLOW /month (including lease through term) | -\$113 |

Scenario B Investment Returns - Rising Energy Costs

| | |
|--|----------|
| Energy cost savings over 10 years (Including non-discounted rising energy costs) | \$83,965 |
| Maintenance cost savings over 10 years | \$6,595 |
| Initial Investment difference | -\$7,955 |
| Total Cost Savings over 10 Year Period | \$82,604 |

Net Present Value of Investment

| | |
|--|----------|
| Energy cost savings over 10 years @ rising costs (discounted cash flows) | \$12,326 |
| Maintenance cost savings (discounted cash flows) | \$8,243 |
| NPV of cost savings | \$28,524 |

Environmental Impact

| | | |
|-----------------------------------|---|----|
| Annual Emissions REDUCTION | metric tonnes (1000 kg) CO ₂ | 10 |
| | metric tonnes (1000 kg) Carbon | 3 |

** Disclaimer

While every attempt has been made to ensure accuracy, the information provided here is for example only and is based on information provided.

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 | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 17 | 1534 | 100% | 1534 |
| Fall | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 9 | 812 | 100% | 812 |
| Winter | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 17 | 1534 | 100% | 1534 |
| Spring | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 9 | 812 | 100% | 812 |
| Totals | | | | | | | | 360 | 52 | 4693 | 100% | 4693 |

B) Proposed Operating Hours

| | M | T | W | T | F | S | S | Ttl Hrs/Week | Wks/Yr | Total Hours/Season | Load | Load/Hrs |
|---------------|----|----|----|----|----|---|---|--------------|-----------|--------------------|------------|-------------|
| Summer | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 17 | 1534.203 | 80% | 1227.362 |
| Fall | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 9 | 812 | 80% | 650 |
| Winter | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 17 | 1534 | 80% | 1227 |
| Spring | 18 | 18 | 18 | 18 | 18 | 0 | 0 | 90 | 9 | 812 | 80% | 650 |
| Totals | | | | | | | | 360 | 52 | 4693 | 80% | 3754 |

C) HVAC Annual Cost Savings Calculations

| | | | | |
|--------------------------------------|-------------|------------------------|-----------------------------|----------|
| 101 Existing Heat Loss | 78% | Old Ballast Efficiency | Months Used Annually | 0 |
| 8 Proposed Heat loss | 97% | New Ballast Efficiency | | |
| 93 Heat Loss savings | 92% | AC Efficiency | | |
| - Total Kilo/Watt hours Saved | \$ - | Savings | | |

D) Capital Cost (WACC) rate: 8.0% (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 | \$ 349.15 | 0.0100 |
| 2 | \$0.02 | \$ 698.30 | 0.0185 |
| 3 | \$0.03 | \$ 1,047.45 | 0.0257 |
| 4 | \$0.04 | \$ 1,396.59 | 0.0318 |
| 5 | \$0.05 | \$ 1,745.74 | 0.0368 |
| 6 | \$0.06 | \$ 2,094.89 | 0.0408 |
| 7 | \$0.07 | \$ 2,444.04 | 0.0441 |
| 8 | \$0.08 | \$ 2,793.19 | 0.0467 |
| 9 | \$0.09 | \$ 3,142.34 | 0.0486 |
| 10 | \$0.10 | \$ 3,491.49 | 0.0500 |
| | | \$ 19,203.17 | 0.3530 |

F) Accessories

| Product Description | Quantity | Unit Price | Discount | Total Cost |
|--|----------|------------|----------|--------------------|
| Emergency Lighting Control & Lamp | 5 | \$ 128.00 | 0% | \$ 640.00 |
| Occupancy Motion/Sensor | 20 | \$ 89.00 | 0% | \$ 1,780.00 |
| Isolated Step Down Transformer (700va) | 0 | \$ 98.00 | 0% | \$ - |
| Lenses (Glass/Acrylic/Silicone) | 0 | \$ 61.00 | 0% | \$ - |
| Wire Guard | 0 | \$ 36.00 | 0% | \$ - |
| Lens Clamp | 0 | \$ 39.00 | 0% | \$ - |
| | 0 | \$ - | 0% | \$ - |
| TOTAL ACCESSORIES | | | | \$ 2,420.00 |

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

| Details | Type | Quantity/Hrs | Rate/Price | Total Cost |
|---------------------------------------|-----------------|--------------|------------|-------------|
| Client Employee supervising/assisting | Labor Costs | 10 | \$ - | \$ - |
| Consulting Fees | Consulting Fees | 0 | \$ - | \$ - |
| Electrical Engineering Review | Contractor Fees | 0 | \$ - | \$ - |
| | Permits, etc | 0 | \$ - | \$ - |
| TOTAL CLIENT PROJECT COSTS | | | | \$ - |

H) Rebate Calculations (Use only applicable)

| | | | |
|--|---|--------------------|--|
| \$143.00 | <- 1. Rebate per luminaire (Enter \$ amount) | \$ 4,290.00 | |
| \$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 20 <- 7. Occupancy Sensor Rebate (Box 1 X Box 2) | \$ 3,000.00 | <i>Total Estimated Project Cost (incl. labour & recycling)</i> |
| \$0.00 | <- 8. Flat Amount | \$ - | |
| Total Calculated Rebate | | \$ 7,290.00 | \$ 18,125.00 |
| Total Allowable Rebate (max of 40%) | | \$ 7,250.00 | |

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

| | | | | |
|--------------------------------------|----------|------------|----|------------------|
| Unit Disposal Rate for Fixture | \$ 10.00 | # of Units | 30 | \$ 300.00 |
| Unit Disposal Rate for Lamp | 1.5 | # of Lamps | 30 | \$ 45.00 |
| Total Estimated Disposal Fees | | | | \$ 345.00 |

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