PASCOAG
UTILITY DISTRICT

:oag Electric • Pascoag Water

253 Pascoag Main Street
P.O. Box 107
Pascoag, RI 02859
Phone: 401-568-6222
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www.pud-ri.org

RIPUC Docket 4452

Pascoag Utility District's Demand Side Management Program 2014

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November 1, 2013

Ms. Luly Massaro
Clerk of the Commission
Rhode Island Public Utilities Commission
89 Jefferson Blvd.
Warwick RI 02888

Re: RIPUC Docket No. 4452

Dear Ms. Massaro:

On behalf of Pascoag Utility District ("Pascoag" or the "District"), we herewith file an original and nine copies of Pascoag's proposed Demand Side Management Program for 2014. This submission includes Pascoag's Executive Summary, Program Details for 2014, reconciliation of 2013 DSM activities and budget, and other schedules that support this docket.

If you have any questions please do not hesitate to contact me.

Very truly yours,

Harle J. Round

Harle J. Round
Customer Service Supervisor/DSM Coordinator

Cc: Ms. Karen Lyons, Esquire
Mr. William Bernstein, Esquire

Pascoag Utility District
Demand Side Management Programs - 2014 Proposed Budget

Estimated carry over from 2013	$	34,000
Estimated sales for 2014	$	109,500
Net 2014 budget	$	143,500

			2014 Proposed Budget	
	Residential Program			
DR1401	ENE Residential Conservation (ECHO)	$	2,400	12 month @ $200
DR1402	Home Energy Audits with Incentives	$	3,600	10 Audits @ $220, with 10% rebates up to $100, 5 free cfl's & smart power strip
DR1403	Energy Star Appliance Rebates	$	9,000	Up to 106 incentives
DR1404	Refrigerators/Freezer Buy Back	$	1,020	$50 incentive & $18 removal fee for a Refrigerator or Freezer; up to 15 rebates
DR1405	Energy Efficient Windows/Doors	$	2,500	up to 166 window at $15 or up to 62 doors at $40
DR1406	Heating System Incentive	$	3,000	12 Rebates at $250
DR1407	ENERGY STAR qualified Water Heaters	$	900	6 Rebates at $150
DR1408	Energy Star Lighting fixtures& ceiling/ventilation fans	$	1,000	up to 20 rebates at $50 maximum
DR1409	Home Office Equipment/Home Electronics	$	2,500	50 Rebates at $50
DR1410	Electric Heat Conversion/Geothermal System:	$	100	To keep the line item open
DR1411	Central Air Conditioner Incentive	$	1,500	5 rebates at $300 maximum rebate
DR1412	New Construction	$	2,080	4 Rebates up to $520 maximum
DR1413	Central Air Conditioner Incentive	$	1,500	5 Rebatesup to $300 maximum
DR1414	Change a Light Campaign	$	750	15 Rebates up to $50 maximum
DR1415	Energy Conservation Calendars	$	2,730	700 Energy Saving Calendars
DR1416	Smart Power Strips	$	200	25% rebate (average cost is between $27-$37)
DR1417	ENERGY STAR Pool Pumps	$	500	10% of cost up to $100 maximum; 5 Rebates
DR1418	Committed for 2013 Programs	$	2,000	To accommodate programs with depleted funds from 2013
	Net Residential	**$**	**37,280**	
	Industrial/Commercial			
DI1401	Energy Star Incentive - Office Equipment	$	500	10 Rebates up to $50 maximum
DI1402	Burrillville Municipal Buildings	$	26,000	Burrillville Municipal Building Incentives
DI1403	Exotic Nails & Star Tans Incentive	$	2,462	Retrofit Lighting & Lighting Controls Rebate
DI1404	Committed Funds- Lighting & EE Projects	$	10,000	Money to be available for Commercial & Industrial Energy Efficiency Projects.
DI1405	Consultation Fees	$	1,000	To consult with Rise, National Grid, & ENE
DI1406	Energy Star Commercial Appliance	$	700	2 Appliances up to a maximum of $350
DI1407	LED Street Light Incentive	$	17,068	Incentive to purchase 87 LED Street Lights
	Net Industrial/Commercial	**$**	**57,730**	
	Administrative/Ad/Education			
DA1401	Administrative	$	21,000	Administrative labor, mileage, supplies, training session with a luncheon for the CSR's
DA1402	Funds for Follow-up to Successful Programs	$	1,490	To be used on more successful programs
DA1403	Outreach/Education	$	9,000	Billing inserts, Energy Saving Coloring books, Culver conservation items, and the DEED membership.
DA1404	Jesse Smith Library Partnership	$	2,000	To partner with the Jesse Smith Library on an Energy Efficiency Project.
DA1405	Community Events	$	10,000	To promote Energy Efficient @ Community Events(Green Festival, Family fair, ...)
DA1406	Energy Efficiency Management continuing education	$	4,500	Tuition, fight,hotel, meals, books, NEEP 2 day conference, and webinars
DA1407	Program Research and Development	$	500	Funds for future development of programs
	Net Administrative/Ad/Education	**$**	**48,490**	
	Estimated DSM 2013 Budget/ Expenses/ Balance	**$**	**143,500**	

Pascoag's 2014 Demand Side Management Program
Executive Summary: Submitted by Harle J. Round

Residential Programs:

The Residential Programs proposed by Pascoag Utility District for 2014 will mirror our 2013 programs, with adjustments to some of the line items based on activity in the programs over the past year and the fact that we continue to service Daniele Prosciutto, a large industrial customer.

Products that earn the ENERGY STAR trademark prevent gas emissions and pollutants by meeting strict energy efficiency guidelines set by the U.S. Environmental Protection Agency and the U.S. Department of Energy. Most consumers realize that by purchasing ENERGY STAR qualified products they can reduce their own energy consumption. It is the District's goal to encourage our customers to continue to buy ENERGY STAR compliant products to help control consumption, demand, and reduce greenhouse gas emissions that are contributing to global warming. ENERGY STAR compliant appliances and electronics are being positioned as part of the solution to rising energy costs, and the need for energy efficiency to reduce greenhouse gas emissions. The ENERGY STAR programs that we have in place continue to experience a high customer demand.

However, The District will continue to monitor its programs and will seek permission to reallocate funds should certain programs not perform to expectations. The District is pleased with the activity in the programs for 2013. The District will be adjusting the 2014 line item budget according to this year's activity.

Energy New England ('ENE') - The energy hot line continues to be a very good resource for the residential customer. Customers with questions about high energy demand can call the toll free number for assistance. Many questions can be answered over the phone. The customer is also offered a home energy audit. Pascoag Utility District is a member of the Energy Advisory committee that meets three to four times a year and discusses the latest information on energy conservation issues. ENE also attended our Green Public Power Festival to discuss energy conservation and home energy audits with interested customers. The ENE fee will remain at $200 per month in 2014.

ENERGY STAR Audits are a very educational tool for homeowners. ENE performed five audits as of October 2013. Each home owner was given a report on ways to save energy. Many of the upgrades that are suggested in the audits correspond with programs set up for rebates by the District. It is our finding that the customers will take the report and over several years replace things like the boiler, windows, doors, appliances, light fixtures, and light bulbs, thereby taking advantage of the applicable rebates. The phone surveys that were given this year showed that the customers were very satisfied with the audits they received, they were made aware that there is incentive money available for implementing the suggested improvements on their audits.

The District would like to continue to offer the home energy audits in 2014. The District would like to keep the number of audits at ten at a cost of $220 each and have $100 for each

we have a request to convert from electric heat to another source or if we receive a request for a geothermal system.

New Construction rebates remain slow as a direct result of the economy. The District has not received any request for rebates in 2013. The District is requesting to fund this program at the same level in 2014. When the economy recovers and the construction of new homes continues, this line item will hopefully entice the contractors to install ENERGY STAR qualified equipment, which will result in more efficient homes. The $2,080 request will allow the District to process four rebates.

Central Air Conditioning had a budget of $1,200 in 2013 and the District processed two rebates. The temperatures this summer were above average and may have contributed the continued request for central air conditioning rebates. The District would like to offer a tiered rebate for central air conditioning. The rebates would range from $200 - $300 and is detailed on page 9 of Schedule C. The District believes that a customer purchasing a unit with a higher SEER and EER rating should receive a larger rebate. The ductless mini-spit heat pumps are becoming more popular. They are being used to replace air conditioners and heating in older homes. These units are 30% more efficient, give more comfort and control, and can deliver both cooling in the summer and heating in the winter with high efficiency. They are a great solution for additions to homes. In the cold climates, consumers are advised to retain a supplemental heating system in case back-up heat is needed on very cold days. The District will rebate based on the cooling seasonal energy efficiency rating (SEER) and energy efficiency ratio (EER).

The District would like to continue the Change a Light Campaign. The program remains very active. The District processed $526.04 in rebates, depleting the funds by October of 2013. The Districts will request to reallocate funds to continue with incentives in 2013. The District would like to increase the fund for this program next year to $750.

In 2013, the District purchased five-hundred Energy Conservation Calendars. These calendars highlight an energy efficiency tip each month, and the District was able to customize the calendar with a page dedicated to promoting the DSM programs and incentives that are offered. The calendars were distributed to the walk in customer and disappeared rather quickly, leaving many people very disappointed when we ran out. The District would like to purchase these calendars again this year and increase the amount to 700 calendars.

In 2013, the District continued the Smart Power Strip incentive because today's electronics continue to draw electricity that we pay for but do not use. The "Smart" power strip prevents this waste by plugging the main device (computer, TV, etc.) into the primary outlet and its peripherals (printer/scanner or VCR/cable box, etc.) into the other outlets. When the main device is shut down the high-tech sensors detect this and shut everything else down. The Smart power strips can save up to 72% of the energy a system uses, eliminating 640 lbs. of CO2 per year and also offers state-of-the-art surge protection. The District would like to continue to offer an incentive of 25% up to a maximum of $25 with a budget of $200, in 2014.

in 2014. The District would like to set aside $26,000 for the Burrillville municipal buildings in 2014.

Exotic Nails and Star Tans- Rise conducted an audit for the owner of Exotic Nails and Star Tans. The incentive for retrofit lighting and sensors at Exotic nails is $711 and the incentive for retrofit lighting and sensors for Stars Tan is $1,751. The District would like to set aside a total of $2,462 for both projects.

Committed Funds for Lighting Projects and Energy Efficiency Measures - The District was able to accommodate the Pascoag Fire District and the Pascoag Utility District Water Department. The District would like to continue to fund this line item with $10,000 to accommodate lighting projects and energy efficiency projects that have not been identified. This would allow us to have funds available and give us some flexibility should a commercial or industrial customer want to go forward with a new or retrofit lighting project or other energy efficiency measure on a first come first serve basis.

If the requests for incentives for these measure do not pick up by mid-year in 2014, the District would like to use some of these funds to hold a business breakfast with the commercial and industrial customers to discuss the types of incentive that are available to help improve their energy efficiencies.

The Consultation fees line item is funded at $1,000 to provide assistance from National Grid, RISE Engineering, or Energy New England with the calculation of energy savings on commercial and industrial projects. In 2014, we would like to fund this line item at $1,000.

ENERGY STAR Commercial Appliances has not had any activity in 2013. The District continues to visit the local businesses and made them aware of the commercial rebates. The District is requesting a budget of $700 for commercial appliance with rebates of 10 % up to $350 and residential appliances using the same amounts from the residential program and making them available under this line item for the commercial customers.

The Administration/Ad/Education

The District staff spends many hours reconciling the budgets, processing rebates, working with potential rebate customers, reporting to the State of Rhode Island Public Utility Commission, and researching new programs. The budget for the Administration line item was $20,500 which covers the time spent to oversee this most worthwhile endeavor. The District would like to increase the funds by $500, in 2014 due to an estimated 3% increase in wages. The District will continue the training session for the customer service representatives to ensure they are able to discuss the criteria for the various programs with the customers; this training session would also include a luncheon.

Funds for Follow-Up to Successful Programs- this program has allowed the District to move funds to the more successful programs as needed. The District has several programs with depleted funds and will be submitting a request to reallocate the entire balance of $1,869 to the more successful programs. The District would like to keep this line item open in 2014 with $1,490.

Conference in Connecticut for an Electronics Workshop. She also attended A MEAM Energy Education Summit in October and several ENERGY STAR webinars related to the energy efficiency field.

The District would like to fund the Energy Efficiency Management Education line item at $4,500 in 2014. This would allow her to participate in one of the APPA Educational Conferences offering courses on energy efficiency, and give her the opportunity to attend the NEEP and NECA conferences in 2014. Twenty hours of continuing education in the energy efficiency field is required every two years to maintain the Energy Efficiency Certificate.

Program Research and Development was created when the District wanted to research LED Street lights. The line item gives the District the ability to research products for possible incentives. The District would like to fund this line item with $500 in 2014.

LED Street Light Pilot Program- the pilot program was completed in 2013. The District installed a total fifty-six LED street lights in the villages of Pascoag and Harrisville. Both the HPS and LED street lights were tested to determine the actual kWh saving. A customer survey was conducted and the majority of the comments were very positive. The LED Pilot Program yielded substantial energy savings, improved lighting and a decrease in revenue by installing the more efficient LED's. The District will also see a decrease in street light maintenance.

LED Street Light Incentive Program- an incentive of fifty percent of the cost of each LED Street light/photo eye and installation cost was approved by Commission on November 25, 2013. The District has purchased an additional 70 LED street lights and will receive a rebate of $13,499.50, the District will use these funds to purchase additional LED's. In 2014, the District would like to fund this incentive program with $17,068.

The funding for the 2013 Demand Side Management Program is based on the 2.0 mils per kilowatt-hour assessment established by legislation. A residential customer using 500 kWh pays $1.00 on their monthly electric bill for these conservation programs or $12.00 per year. The customer has seen the DSM assessment since its inception, and there is a separate line item on the monthly unbundled electric bill identifying this conservation cost.

Pascoag's proposed budget is based on a forecast of Sales for 2014 of 57,771,000 kWhr. The estimated budget is rounded up to $109,500 for 2014. The District anticipates a $34,000 carryover fund from 2013 which would bring the total 2014 budget to $143,500.

2014 Program Details- Residential, Commercial and Industrial, Administrative/Ad and Customer Education and Outreach

Residential Programs

In 2014, Pascoag plans to continue all of the current Residential Programs from 2013. The customer demand still continues and the District believes these programs will continue to be successful in 2014. The District will modify the budget amounts based two factors: the program activity in 2013 and the continuing activity from a large industrial customer in 2014 that will impact the funds that are collected for the DSM program. This Summary will detail the programs proposed for 2014 and will review the success of the 2013 programs. New this year, the Utility District would like to offer a rebate for pool pumps, and offer tiered based rebates on central air conditioners.

Energy New England – Residential Conservation Services $2,400:

Pascoag will continue its relationship with Energy New England ("ENE") in 2014. The Residential Conservation Service ("RCS") provides invaluable technical support to the District staff as well as its customers.

In addition to this support, ENE supplies fulfillment materials to the customers of the District. The materials include energy smart CD's, conservation booklets, and reference materials and resources. ENE sponsors a toll free energy hot line that is available to customers during normal business hours. Pascoag refers customers with high consumption complaints to this hot line after performing a meter test to rule out a faulty meter. If the customers' questions can not be resolved over the phone, ENE schedules a home energy audit which goes into greater detail as to how the customer can conserve energy. This year Pascoag tested over 5 meters[1] and sent letters to each customer referring these customers to the toll free energy hot line. ENE attended the 7th Annual Green Festival and answered energy related questions and handed out flyers on energy efficiency.

ENE also sponsors an Advisory Group. The Advisory Group includes people from several municipal utilities from the entire New England area. This group meets quarterly to share ideas on all aspects of energy conservation. Pascoag is a member of the Advisory Group.

The cost for this service will remain at $200 month in 2014.

Audits with Follow-Up Incentives-$3,600:

Pascoag would like to provide ten audits in 2014, along with a maximum rebate of $100 for incentive follow-up. This would allow the following:

[1] Meters were proven to be within acceptable accuracy limits.

A residential customer purchasing an ENERGY STAR compliant appliance will receive a rebate of up to 10% not to exceed the following for each appliance; refrigerator, freezer, and clothes washer up to $75. A customer purchasing an ENERGY STAR compliant dishwasher or air purifier will receive an incentive up to $50; an ENERGY STAR air conditioner will receive an incentive up to $25; an ENERGY STAR dehumidifier will receive incentive up to $20.

Refrigerator/Freezer Buyback Program: $1,020

The District would like to continue a refrigerator/freezer buyback program in 2014. This program will encourage our customers to reduce their power bills by giving up an old inefficient refrigerator or freezers. An average 14 year old spare refrigerator or freezer uses between 1,250 and 2,225 kWh per year and can amount to 25% of the annual electricity used in a typical household. The Energy Star web site estimates there are 16.9 million inefficient freezers and 12.7 million inefficient refrigerators, all over 10 years old, in use across America. The District increased the incentive from $50 to $68 to offset the recycle charge in 2013 which increased the activity for this program The District would like to increase the budget in 2014 to allow the removal of 15 refrigerators or freezers and ensure that they don't end up back on the grid in someone else's home. A second refrigerator/freezer removal program will cut demand and reduce the residential energy consumption.

The customer must contact the District office so we can verify the following requirements for a second refrigerator or freezer:

- They must be between 10 to 30 cubic feet using inside measurements.
- The refrigerator or freezer must be in working order.
- The customer will fill out a form with the model and make of the refrigerator/freezer and give the approximate age.

Once this criteria is verified the customer will be instructed to call Waste Management at1-800-972-4545 to schedule an appointment to pick up the appliance. Once the pickup is verified, the customer will receive a $68 rebate which will be applied to their electric account.

The District would like to increase the funds to this line item to $1,020; a rebate of $50 and a removal fee of $18 will remain the same which will allow us to process 15 incentives.

ENERGY STAR Windows/Skylights and Doors Incentive: $2,500

The budget for 2013 was $2,500 and by October the District has processed $1,905 in rebates. The District would like to keep the funding at the same level in 2014. When

standard boiler, they achieve greater efficiency with improved features like electronic ignition that eliminates the need to have a pilot light burning all the time; new combustion technologies that extract more heat from the same amount of fuel; and sealed combustion that uses outside air to fuel the burner, reducing drafts and improving safety.

The District would like to keep the incentive at $250 in 2014. This will allow twelve customers to take advantage of this program.

ENERGY STAR Solar and Electric Heat Pump Water Heaters: $900

The District would like to offer an incentive on ENERGY STAR qualified solar hot water heaters and ENERGY STAR heat pump water heaters. The potential for savings are listed below:

ENERGY STAR Solar Water Heaters can be used in combination with another back-up system. Using the sunshine to heat or preheat the water in combination with an electric tank water heater as backup will save $250 a year on the electric bill, and reduce the load on the electric water heater by 2,500 kWh per year.

ENERGY STAR Heat Pump Water Heaters can save the average household $300 per year compared to a standard electric hot water heater. A General Electric GeoSpring hybrid electric heat pump water heater uses 1,856 kWh per year compared to the standard electric tank water heater that uses $4,881 kWh per year, a savings of 3,025 kWh or $423 at 14 cents per kWh.

The District processed one rebate in 2013 for a heat pump water heater.

An incentive of 10% of the cost, not to exceed $150 will allow us to process six incentives in 2014.

ENERGY STAR Lighting Fixtures/Ceiling and Ventilation Fans: $1,000

The District would like to fund this program at the same level in 2014. We would like to continue the fifty percent rebate on lighting fixtures and ENERGY STAR ceiling and ventilation fans. The District processed 13 rebates totaling $375.10, as of October 2013.

ENERGY STAR qualified lighting fixtures use one-quarter less energy than traditional lighting. They distribute light more efficiently and more evenly than the standard fixture. They come in hundreds of decorative styles including portable fixtures like table, desk and floor lamps, and hard-wired fixture options like front porch, dinning room, kitchen ceiling and under-cabinet, hallway ceiling and wall bathroom vanity fixtures and ceiling fan lighting fixtures. Many fixtures have convenient features such as dimming on some indoor models and automatic daylight

with downloading program guide data. A Set-top box is a cable, satellite, internet protocol or other device that is used to receive a television signal from a specific source that delivers them to a consumers' display and or recording device, such as a television or DVR; these set-top boxes are getting more energy intensive. In fact, a home using two set-top boxes is using significantly more electricity than it takes to run a new refrigerator – roughly 500 kWh every year. ENERGY STAR qualified set-top boxes are at least 40 % more efficient than conventional models.

The products that fall under home electronics are audio/video such as Home-Theater-in-a-box systems, audio amplifiers, AV receivers, shelf systems, DVD players, Blu-ray disc players, docking stations for audio amplification or optical disc drive functions, battery charging systems such as cordless power tools, cordless yard care tools, hand held vacuums, personal care products, digital-to-analog converter boxes, cordless phones, and combination units, external power adapters, televisions and set-top boxes imaging equipment.

The District would like to fund this line item at $2,500 with a rebate of 15% not to exceed $50.

Incentives for Electric Heat Conversion/ Geothermal Systems or a Ground Source Heat Pump (GHP): $100

Although the District has no firm commitments for this line item, we would like to continue to keep the line item open because of the potential savings. Pascoag had several customers that converted from electric heat to oil heat in the past and one customer who installed a geothermal system in 2010. The District has many other electric heat customers that may decide at a future date to convert.

The geothermal heat pumps are similar to ordinary heat pumps, but they use the ground instead of the outside air to provide heating, air conditioning and hot water. By using the earth's natural heat they are among the most efficient and comfortable heating and cooling technologies currently available. They use about 45% less energy than a standard heat pump, and they are quieter than a conventional system. ENERGY STAR certified heat pumps must meet the following specifications:

Product Type	EER[2]	COP[3]
Water to air		
Closed Loop water-to-water	17.1	3.6
Open loop water-to-air	21.1	4.1
Water to Water		
Closed Loop water-to-water	16.1	3.1
Open Loop water-to-water	20.1	3.5
Direct Ground Expansion		
DGX	16.0	3.6

[2] Energy Efficiency Rating (EER)
[3] Coefficient of performance (COP)

Central AC / Air Source Heat Pump	**SEER**	**EER**	**HSPF**	**Proposed Incentive Amount**
Single package	≥14.0	≥11		$200
Split System	≥14.5	≥12	≥8.2	$200
	≥15	≥12.5	≥8.5	$250
	≥16	≥13	≥8.5	$300
Ductless Mini-split Heat Pump	**SEER**	**EER**	**HSPF**	**Proposed Incentive Amount**
	≥16	≥12	≥8.2	$200
	≥19	≥12.5	≥10	$250
	≥20	≥13	≥10	$300

The District is proposing a tiered incentive based on the efficiency of the cooling unit. This would allow up to 5 rebates.

Energy Star Light Bulbs: $750

The ENERGY STAR label on lighting means you are getting a product that is superior in energy efficiency. ENERGY STAR qualified compact fluorescent light bulbs (CFLs) use seventy-five percent less energy than incandescent bulbs and last six to ten times longer. ENERGY STAR decorative light strings use 70% less energy than conventional incandescent light strings, last ten times longer, and are cool to the touch. The ENERGY STAR qualified decorative light strings that feature LED technology are 90% more efficient. The electricity consumed by just one 7-watt incandescent bulb, can power 140 LEDs or enough to light a 25 foot string of LEDs.

The District purchased CFL's in 2012 with DSM funds and continues to sell the bulbs with an instant rebate of 50%. This continues to be very popular with our customers. The District would like to purchase more light bulbs in 2014 to sell for half price when our current supply is depleted.

The District proposes a rebate of 50% of the cost of the LED & CFL light bulbs with a cap of $50 per customer.

The District is proposing a rebate of 10 percent, not to exceed $100, this would allow for 5 rebates in 2014.

Committed for 2013 Programs: $2,000

In 2013 the Public Utilities Commission allowed the District to create a line item called "Committed for 2012 Programs" and fund it with money that was carried over from the 2012 DSM budget. This allowed us to use $2,678.75 from of the carry over funds from 2012 and rebate 15 customers who had submitted qualified rebates for programs in which the funds had been depleted and two invoice that were received after the books for 2012 were closed.

The District is estimating a carryover of funds from 2013 at $34,000. The District will use $32,000 of these funds in the 2014 budget and use $2,000 to satisfy 2013 qualified rebates for customers who do not receive a rebate because the funds for a particular program had been depleted in 2013 or for rebates that are turned in after the books are closed for 2013; the cutoff date for 2013 rebates would be February 15, 2014.

Commercial and Industrial Programs

ENERGY STAR Incentive – Office Equipment/Electronics: $500

The District issued six incentives totaling $220 through October of 2013. The District continues to promote this program. The District would like to continue this program at the same level of funding in 2014.

The office equipment and electronics have the same savings that are mentioned in the Home Office Equipment/Home Electronics program. The incentive will remain at 25% of the cost, with a cap not to exceed $50.

Industrial and Commercial Projects 2013:

2013 Pascoag Fire District Lighting Project:
The Pascoag Fire District qualified for a 60% rebate on a retrofit lighting project totaling $3,540. *Please see Schedule J for a detailed report.*

2013 Pascoag Utility District Well #5 Variable Speed Drive (VSD) Incentive:

The Pascoag Utility Water Department installed a VSD on the well pump for well #5 and received an incentive of $3,150. *Please see Schedule J for the rebate information.*

In 2013, the District was able to accommodate the Pascoag Fire District Lighting Project and Pascoag Utility District's Water Department with an incentive for a Variable Speed Drive. This allows us to be proactive and have the ability to work with our customers when they are ready to go forward with a project.

The District would like to allocate $10,000 to this line item and make the funds available on a first come first serve basis.

Consultation fees: $1,000

National Grid, RISE Engineering and Energy New England continue to provide verification of savings on the commercial and industrial projects on an as needed basis. This line item will remain at $1,000.

ENERGY STAR Commercial Appliances: $700

Although the District has not had any requests for ENERGY STAR commercial appliances, discussions with the restaurants, nursing homes, and small business owners has made them aware of the availability of commercial appliance rebates. The District offered the businesses the same rebate criteria as seen under the residential appliance program

The following appliance would qualify for rebates:

Commercial Dishwashers that earn the ENERGY STAR rating on average are 25 % more energy efficient and twenty-five percent more water efficient than standard models.

Commercial Fryers that earn the ENERGY STAR rating are up to 25% more energy efficient than standard models. They also offer shorter cook times and higher production rates through advanced burner and heat exchanger designs.

Commercial Ice Machines that earn the ENERGY STAR rating are on average 15% percent more energy efficient and ten percent more water efficient than standard models.

Commercial Hot Food Holding Cabinets that have earned the ENERGY STAR rating are 60% more efficient than standard models. Models that meet the requirements incorporate better insulation, reducing heat loss, and may also offer additional energy saving devices such as magnetic door gaskets, auto-door closures, or Dutch doors.

Commercial Griddles that earn the ENERGY STAR rating are about 10% more energy-efficient than standard models. A qualified grill can save 2,270 kWh annually.

helping the District become more energy efficient. The District would like to purchase 87 LED street lights in 2014 with a budget of $17,068.

Administrative/Ad/ Education

Administrative Expenses: $21,000

The funds will be used to pay for staff time, schools and seminars related to DSM, and reimbursement of mileage when employees use their private vehicles for DSM related activities.

Pascoag has two Customer Service Representatives who devote many hours to the DSM programs by working with the customers, taking the applications for rebates on the various programs and answering questions over the phone and in person. The DSM Coordinator spends many hours researching the compliance of the various rebates that are submitted, reconciling the DSM programs, and updating existing programs as well as creating new programs for the next year and requesting reallocation of funds. In addition, the Assistant General Manager works with the commercial and industrial customers on various C & I projects and performs site visits.

The District would also like to perform a training session with the Customer Service Representatives and include a luncheon again this year to train them on the latest criteria regarding DSM rebates for 2014.

The District would like to fund this line item at $21,000, a slight increase based on an estimated 3% increase in wages.

Follow-Up to Successful Programs: $1,490

The District is requesting a line item to allow some flexibility in transferring funds up to ten percent to other programs with a high customer demand. If the carry over funds exceed our estimate, the District is proposing to move these funds to the Funds for Follow-up to Successful Programs line item in the 2014 budget. Any transfer would only be done with the Division's approval.

Education/Outreach Program: $9,000

The District worked with a new website designer this year to create a new website that is user friendly. It allows us to promote the DSM program with ease; the District is very happy with the results and encourages the Districts customers to visit the site at www.pud-ri.org . The web site allows customers to go on line and view the

The District meet with teaches from the Burrillville High School in October 2012. They had secured grant money to run an Environmental Study program starting in 2013. One of the modules was on energy efficiency. They were looking to partner with the District to show the students the importance of this subject. I am very sad to report that we meet with the teachers and the students and discussed opportunities for them to be involved in our community events, discussed with them that we would be willing to sponsor a field trip with DSM money in exchange for help with our customer outreach program. We were also willing to go into the class room and talk to them about the importance of the energy efficiency. The students and the teachers were going to discuss this further and contact the District; unfortunately they have not made any further contact.

The District would like to discontinue this line item in 2014.

Jesse Smith Library Partnership - $2,000

The District was approached by Peggy Dudley, a Burrillville Town Council member in 2013. She helped to organize a partnership between the Jesse Smith Library and Town's Department of Public Works (DPW). They ran an essay contest in 2012 on why recycling was important. There were two age groups with each division receiving a $50 prize. This year, they did a poster contest and had quite a few entries. They held an awards ceremony for the best posters at the library and each participant received a certificate issued by the town council. The District would like to partner with the Jesse Smith Library and the DPW; this would allow us to gear the contest toward both energy efficiency and recycling. A budget of $2, 000 is requested and would be used to help fund prices, materials, labor, and refreshments for the awards ceremony.

Community Events: $10, 500

In 2013, funds were used to purchase supplies, place advertisements in the Bargin Buyer, and to pay for staff time at the 7th Annual Green Festival. Many hours were dedicated to the preparation of the event. This year, Pascoag Utility District partnered with the Town of Burrillville's Parks & Recreation Department and moved the event to the Stillwater Mill Center at 100 Tinkham Lane. This partnership worked out very well. The Festival had something for everyone. Festival goers learned about the local products and ideas to help them conserve energy and create a new sustainable lifestyle. There were free crafts, face painting, games, and bucket truck rides for the children. The event was very successful raising funds from a raffle for a local nonprofit agency called the Backpack Project. The weather for this event was beautiful and the attendance was very high. A survey that was given to the vendors came back with most rating the event as excellent.

The District would like to continue the line item for Community Events. The District will continue the partnership with the Town of Burrillville Parks and Recreation Department in hosting the Green Festival again next year. This will allow us to

D

E

70 Additional Lights

Pre-Finance Results Summary

# of Fixtures Installed	**70**
Implementation Period (years)	**1**

Analysis Period	**15**

Simple Payback (years)		**5.1**
15-Year Unlevered IRR		**22.81%**
15-Year Unlevered NPV ($)	**$**	**53,200**
15-Year Capital Expenditure ($)	**$**	**27,714**
15-Year Cap. Ex. $/kWh Saved	**$**	**0.0674**
15-Year Cap. Ex. $/ton CO2e Saved	**$**	**122.1039**

Annual kWh Savings		**27,432**
Annual Energy Cost Savings ($)	**$**	**2,515**
Annual GHG Savings (tCO_2e)		**15**
Old Baseline Annual kWh Use		39,127
Old Baseline Annual Energy Cost ($)	$	3,587
Old Baseline Annual GHGs (tCO_2e)		22
New Baseline Annual kWh Use		11,696
New Baseline Annual Energy Cost ($)	$	1,072
New Baseline Annual GHGs (tCO_2e)		6

First-Year Avg. Capital Expend. per Unit ($)	$	396
First-Year Avg. Material Cost per Unit ($)	$	255
First-Year Avg. Labor Cost per Unit ($)	$	98
First-Year Avg. Vehicle Cost per Unit ($)	$	40
First-Year Avg. Disposal Cost per Unit ($)	$	-
First-Year Avg. Overhead Cost per Unit ($)	$	4

Calculations of Energy Savings for Energy Star Incentives(1)

Appliance	Specifications	Monthly hours Operation	Monthly kwhr use	Annual kwhr use		Units w/ Incentives	Total annual
Air Conditioner							
	6000 BTU	165	83	990	Stamdard		
	500 watts		74	892	EnergyStar	29	2842
Clothes Washer	Large Capacity	23	12	144	Stamdard		
			11	132	EnergyStar	29	348
Dishwasher	13,000 Watts	24	31	372	Stamdard		
			25	300	EnergyStar	29	2088
Refrigerator	6-15 years old	245	147	1764	Stamdard	55	29040
	17CF, frost free		103	1236	EnergyStar		
Freezer	Upright 6-10 year	300	79.45	953.4	Stamdard		
	11 - 15.9 upright		61.2	734.4	EnergyStar	1	219
Dehumidifier	Large capacity	340	221	2652	Stamdard	7	4620
	650 Watts		166	1992	EnergyStar		
Total Average kwhrs Savings						150	39,157

(1) From www.pud-ri.org "Energy Calculator"

2013 Appliance savings

Residencial

Savings Estimate for ENERGY STAR Qualified Office Equipment

LEARN MORE AT energystar.gov

Results Overview

The ENERGY STAR models of your selected equipment will save approximately 38%. Each year you will save approximately 1,848 kWh of electricity and $240, or $1,294 over the life of the equipment. By choosing ENERGY STAR you will reduce emissions by approximately 2,846 pounds of carbon dioxide annually. This is equivalent to the emissions reduction of not driving your car for 92 days.

Results Detail

	Quantity	Annual					% Savings with ENERGY STAR	Total additional purchase price for ENERGY STAR unit(s)	Simple payback period for additional initial cost (years)	Assumed equipment lifetime (years)	Life Cycle		
		Electricity cost savings	Electricity savings (kWh)	Electricity cost	Electricity consumption by ENERGY STAR unit(s) (kWh)	Emissions reduction (pounds of CO2)					Electricity cost savings	Electricity savings (kWh)	Net cost savings
Desktop Computer	0												
Laptop Computer	10	$52	403	$111	852	621	32%	$0	immediate	4	$210	1,614	$210
Computer Monitor	0												
Scanner	0												
Copier													
- Laser - Monochrome	0												
- Laser - Color	0												
FAX Machine													
- Ink Jet	0												
- Laser	0												
Multifunction Device													
- Ink Jet	0												
- Laser - Monochrome	0												
- Laser - Color	5	$145	1,115	$213	1,640	1,717	40%	$0	immediate	6	$870	6,690	$870
Printer													
- Ink Jet	0												
- Laser - Monochrome	0												
- Laser - Color	2	$43	330	$75	574	507	36%	$0	immediate	5	$214	1,648	$214
Total	17	$240	1,848	$399	3,065	2,846	38%	$0	immediate	-	$1,294	9,952	$1,294

Notes: Life cycle cost savings are given in terms of present value based on a real discount rate of 4%. See General Assumptions tab to adjust the discount rate.
Net life cycle cost savings = life cycle cost savings - additional purchase price

If every business replaced all of their office equipment with ENERGY STAR qualified equipment, it would remove approximately 29 billion pounds of CO2 from the atmosphere every year, which is equivalent to the emissions of 2.6 million cars or planting 2.8 million acres of trees.

This calculator was developed by U.S. EPA and DOE to estimate the energy consumption and operating costs of office equipment and the savings with ENERGY STAR.
New ENERGY STAR qualified products are compared to the average available non-qualified new products. Actual savings may vary based on use and other factors.
See www.energystar.gov for information on other ENERGY STAR products.

Savings Calculator for ENERGY STAR Qualified Lighting

LEARN MORE AT energystar.gov

This calculator was developed by U.S. EPA and DOE to estimate the energy consumption and operating costs of lighting and the savings with ENERGY STAR. New ENERGY STAR qualified compact fluorescent lighting is compared to the average available new conventional lighting. Actual savings may vary based on use and other factors.

See www.energystar.gov for information on other ENERGY STAR products.

NOTE: This calculator is in the process of being updated for the revised ENERGY STAR luminaire specification that went into effect on April 1, 2012. For more information on the new specification, visit http://www.energystar.gov/ia/partners/prod_development/new_specs/downloads/luminaires/Final_Luminaires_Program_Requirements.pdf

Where will your lighting be used?

Commercial or residential use	Residential
Location	Rhode Island
Electric Rate ($/kWh)	$0.130

Average Rhode Island residential electric rate is $0.16/kWh. If you know your own rate, enter it below.

What lighting equipment are you planning to purchase? Enter quantities below, then either fill in product information or use the defaults.

Compact fluorescent light bulb (CFL)

	Quantity	Wattage of comparable incandescent bulb (watts)	Wattage of ENERGY STAR bulb (watts)	Average daily use (hours)	Additional cost per unit for ENERGY STAR bulb	Rated lifetime of ENERGY STAR bulb (hours)	Optional: Labor cost per bulb replacement	Optional: Incentive or discount amount per bulb
Bulb/wattage type 1	58	40	9	4.5	$1.00	8,000	$0.00	$1.00
Bulb/wattage type 2	56	60	13	4.5	$1.00	8,000	$0.00	$1.00
Bulb/wattage type 3	44	60	14	4.5	$2.80	8,000	$0.00	$0.00
Bulb/wattage type 4	10	75	19	4.5	$2.80	8,000	$0.00	$0.00

Light fixture

Indoor

	Quantity	Total wattage of incandescent bulbs in comparable fixture (watts)	Total wattage of bulbs in ENERGY STAR fixture (watts)	Average daily use (hours)	Additional cost per unit for ENERGY STAR fixture	Rated lifetime of ENERGY STAR bulb (hours)	Optional: Labor cost per bulb replacement	Optional: Incentive or discount amount per bulb
Fixture/wattage type 1	7	80	18	4.5	$32.00	10,000	$0.00	$0.00
Fixture/wattage type 2	0							
Fixture/wattage type 3	0							
Fixture/wattage type 4	0							

Outdoor

Fixture/wattage type 1	18	80	22	5.0	$17.00	10,000	$0.00	$0.00
Fixture/wattage type 2	2	120	30	5.0	$17.00		$0.00	$0.00
Fixture/wattage type 3	0							
Fixture/wattage type 4	0							

Click here to go to the RESULTS tab and see your savings.

See the ENERGY STAR website for more information:

- Lighting purchasing tips
- The difference between an ENERGY STAR fixture and a standard fixture with a CFL
- List of incentive programs for consumers
- Warranty for ENERGY STAR qualified CFLs
- Warranty for ENERGY STAR qualified light fixtures
- Other Frequently Asked Questions about lighting

To see detail on the formulas and values used in this calculator or to modify assumptions, click on the grey tabs at bottom of the page.

	A	B	C	D
1	REFRIGERATOR BUY BACK			
2	MODEL	AGE	$ SAVINGS	kWh SAVINGS PER YEAR
3	ET8FTE*K*0*	12	$ 61.00	505
4	LTF2112AR	11	$ 69.00	571
5	CTF19GB	25	$ 204.00	1696
6	106.97586	17	$ 83.00	694
7	253.24041	20	$ 68.00	1133
8	FRIGIDARE 19 CF	15	$ 154.00	1285
9	GTH18KBX*	12	$ 50.00	414
10	TFX20PLP	15	$ 181.00	1507
11	TFU09M4EWO	22	$ 62.00	513
12	7890.89*	16	$ 81.00	675
13	TOTAL $ /kWh SAVINGS		$ 1,013.00	8993

F

G

RISE

ECM: Lighting & Sensors

Facility Name	Exotic Nails
Facility Address	64 Main St
City, State, Zip	Burrillville RI
Contact	Roy Fonseca

LOCATION					EXISTING CONDITIONS						PROPOSED CONDITIONS							SENSOR DETAIL		ENERGY SAVINGS	
Line Item	Floor	Room Number / Description	Room Name	Fixture Type	Existing Device Code	Existing Fixture Type	Fixt. Qty	Existing Hours	Watts	kW	kWh	Proposed Device Code	Proposed Fixture Type	Fixt Qty	Proposed Hours	Watts	kW	kWh	Sensor Model #	Sensor Qty	kW Saved	kWh Saved
1	1st	Exotic Nails	Rear Room	C1	4F40SEM	4 LAMP 2X4	1	3,500	140	0.14	490	2F28EEL	NF 2 LAMP T8 28W 2X4 ERGO	1	3,500	42	0.04	147			0.10	343
2	1st	Exotic Nails	Rear Room	I1	1I0060	60W INC	1	2,000	60	0.06	120	1L011	RL 11W A19 SCREW IN	1	2,000	11	0.01	22			0.05	98
3	1st	Exotic Nails	Bathroom	I1	1I0060	60W INC	3	2,000	60	0.18	360	1L011	RL 11W A19 SCREW IN	3	1,200	11	0.03	40	WS250	1	0.15	320
4	1st	Exotic Nails	Retail Area	H1	1R0035	35W HALOGEN TRACK LIGHT	8	3,500	45	0.36	1,260	1L006	RL 6W LED GU-10	8	3,500	6	0.05	168			0.31	1,092
			TOTALS				13			0.74	2,230			13			0.13	377		1	0.61	1,853

Prepared: 9/29/2013

RISE

ECM: Lighting & Sensors

Facility Name: Star Tan
Facility Address: 66 Main St
City, State, Zip: Burrillville RI
Contact: Roy Fonseca

LOCATION					EXISTING CONDITIONS						PROPOSED CONDITIONS							SENSOR DETAIL		ENERGY SAVINGS	
Line Item	Floor	Room Number / Description	Room Name	Fixture Type	Existing Device Code	Existing Fixture Type	Fixt. Qty	Existing Hours	Watts	kW	kWh	Proposed Device Code	Proposed Fixture Type	Fixt Qty	Proposed Hours	Watts	kW	kWh	Sensor Model #	Sensor Qty	kW Saved	kWh Saved
1	1st	Star Tan	Retail Area	H1	1R0035	35W HALOGEN TRACK LIGHT	4	3,500	45	0.18	630	1L010	RL 7W LED GU-10	4	3,500	10	0.04	140			0.14	490
2	1st	Star Tan	Storage Room	D1	2F40SEM	2 LAMP U/6" 2X2	1	2,000	70	0.07	140	2F17ESL	NF 2 LAMP T8 17W 2X2 ERGO	1	2,000	27	0.03	54			0.04	86
3	1st	Star Tan	Waxing Room	D1	2F40SEM	2 LAMP U/6" 2X2	1	3,500	70	0.07	245	2F17ESL	NF 2 LAMP T8 17W 2X2 ERGO	1	3,500	27	0.03	95			0.04	151
4	1st	Star Tan	Rooms 1,2,3,4,5	H2	1R0035	35W HALOGEN RECESSED 4" CAN	16	3,500	45	0.72	2,520	1L010	RL 7W LED GU-10	16	3,500	10	0.16	560			0.56	1,960
5	1st	Star Tan	Common Area	H2	1R0035	35W HALOGEN RECESSED 4" CAN	20	3,500	45	0.90	3,150	1L010	RL 7W LED GU-10	20	3,500	10	0.20	700			0.70	2,450
6	1st	Star Tan	Hall	I2	1I0040	40W INC CANDLEABRA	6	3,500	40	0.24	840	1L004	RL 4W LED SCREW IN	6	3,500	4	0.02	84			0.22	756
7	1st	Star Tan	Restroom	I1	1I0060	60W INC	1	2,000	60	0.06	120	1L011	RL 11W A19 SCREW IN	1	1,200	11	0.01	13	WS250	1	0.05	107
8	1st	Star Tan	Tanning Booth	D1	2F40SEM	2 LAMP U/6" 2X2	2	3,500	70	0.14	490	2F17ESL	NF 2 LAMP T8 17W 2X2 ERGO	2	2,100	27	0.05	113	WS250	2	0.09	377
			TOTALS				51			2.38	8,135			51			0.54	1759		3	1.84	6,376

Prepared 10/30/2013

RISE ENGINEERING
Division of Thielsch Engineering, Inc
1341 Elmwood Avenue
Cranston, Rhode Island 02910

Burrillville School District - High School Café
2300 Bronco Highway
Harrisville, RI 02830
Dave Fontes
-

Proposal Summary

Estimated Current Lighting Load (Wattage)		10,920	Watts
Estimated Proposed Lighting Load (Wattage)		5,376	Watts
Estimated Lighting Load Savings (Wattage)		**5,544**	Watts
Estimated Current Lighting Usage (kWh)		13,104	kWh
Estimated Proposed Lighting Usage (kWh)		4,193	kWh
Estimated Lighting Usage Savings (kWh)		**8,911**	kWh
Estimated Current Annual Lighting Bill:	kWh * 0.15	$ 1,966	
Estimated Proposed Annual Lighting Bill:	kWh * 0.15	$ 629	
Estimated Proposed Annual Lighting Bill Savings:		**$ 1,337**	
Estimated Total Job Cost		**$ 12,575.00**	
Estimated Utility Incentive		$ (5,030.00)	
Estimated Customer Net Cost		**$ 7,545.00**	
Maintenance Savings		**$ 360**	
Net Heating and AC Savings		**$ 750**	
Simple Payback (Customer Share/Bill Savings):	Years =	**3.1**	

Category: ECS
Energy Conservation Series

Prefix:
ECO

Fixture Series (Name):
EcoLyte

RENOVA™
Innovative Lighting Ideas
Energy Efficient Solutions

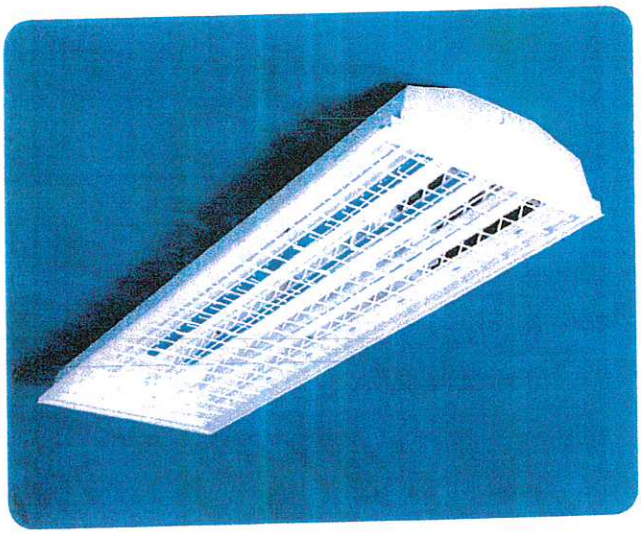
EcoLyte Series high performance fluorescent high/low bay luminaire

GENERAL DESCRIPTION

The EcoLyte (ECO) Series has been developed as an energy efficient alternative to HID lighting systems. This series utilizes "High Intensity Fluorescent" technology to dramatically reduce energy consumption, improve quality of light and provide instant-on operation. It also offers many switching and sensor options.

Typical applications for this type of product are interior spaces with high mounting heights where high lumen output is required. Applications include:

- Retail – "Big Box" – Distribution Centers and Warehouses
- Industrial, Commercial and Manufacturing Areas
- School Gymnasiums, Auditoriums and Convention Centers
- Ice Rinks, Indoor Courts and Sports Arenas



DESIGN FEATURES / SPECIFICATIONS

CONSTRUCTION
- Precision die formed from 22 ga. cold rolled steel.
- Mechanically fastened or resistance welded depending on model.
- Heavy gauge steel (CRS) or aluminum alloy may be custom ordered.
- Finish to be pre-painted gloss white polyester powder coat.
- Post-painted polyester powder coat finishes are available. Consult factory for all special colors and finishes.
- Heavy guage steel (NYC) and heavy guage aluminum are available as alternate materials.

REFLECTOR
- Precision die formed optics which has been designed for maximum efficiency and photometric properties using the latest CAD software.
- Choice of optics includes focused, normal and spread beam distribution. Consult factory for custom optics design and spacing criteria options.
- Choice of materials include:
  - Alanod Miro4® Enhanced Specular Aluminum, 95% total reflectance, 25 year warranty.
  - Enhanced Specular Aluminum, 92% total (min.) reflectance, 25 year warranty.
  - High Reflectance White Powder Coated Aluminum, 91% total reflectance, 10 year warranty.
  - Polished Aluminum, 87% total (min.) reflectance, 25 year warranty.
  - Consult factory for availability of all other material choices.

LAMPHOLDERS
- Vossloh-Schwabe® premium type featuring:
  - Anti-vibration internal lamp locking design
  - High temperature resistant ("T" marking).
  - Heat and UV blocking shield to prevent degradation of material.
  - Multi-point contact design for optimum lamp pin contact.
  - Produced in accordance with DIN ISO 9001 and IEC standards.

BALLASTS
- All standard ballasts are electronic, energy saving, thermally protected, Class-P, non-PCB, Sound Rated "A", 0 degree (Type 1 Outdoor). Verify with factory for latest information regarding High Temperature (HT) or Extreme Low Temperature (XLT) rated ballast options.
- UL/CSA certified, where applicable. Compliant with Federal Ballast Law (Public Law 100-357, 1988).
- Choice of ballast factors. L=Low, N=Normal, H=High.
- Choice of dedicated, universal or special voltage - Consult factory for available options.
- Warranted by ballast manufacturer. Typical ballast warranty is for 5 years (120-277v) and 3-years (347-480v). Consult factory for latest warranty information.

LAMPS
- Supplied by others unless otherwise specified.
- Factory installed if required - Consult factory.
- Lamp type, CRI ratings, temperature colors, lamp life ratings are all viable options which can be supplied - Consult factory for information.

LAMP SHIELDING
- Lamp shielding options include:
  - Heavy duty painted or zinc-plated wire guards.
  - Flat or drop dish lenses, clear acrylic, clear polycarbonate, high light transmission white, prismatic and linear prism lenses.
  - Louvers and cross-blade baffles - Consult factory.

MOUNTING
- The luminaire may be surface mounted or may be suspended by pendant, threaded rod, hook, chain or cable. (Mounting hardware supplied by others unless otherwise specified).
- Custom mounting options / accessories.

ELECTRICAL
- Luminaire is bi-national listed and labeled (UL 1598 and CSA C22.2 No. 250.0-00) and is suitable for damp locations.
- Product includes luminaire disconnect as specified in NEC 410.73(G), 2005 Edition, and CEC part I, rule 30-308(4), 2006 Edition.

QUALITY CONTROL
- All fixtures and retrofit kits are designed, fabricated, assembled and tested at RENOVA's manufacturing facility. All fixtures are 100% lamp tested, inspected and labeled prior to shipment.

GUARANTEE
- RENOVA warrants all fixtures to be free of defects in manufacturing and workmanship for a period of (1) year from date of purchase. This warranty excludes damage of any kind resulting from improper installation, misuse, abuse, accidents, mis-application, or natural disasters. Please refer to the "Terms and Conditions" section of the RENOVA website for additional information.

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

RENOVA Lighting Systems, Inc. • **15 Wellstown Road** • **Ashaway, RI 02804** • **(800) 635-6682** • **www.renova.com**

RISE ENGINEERING
Division of Thielsch Engineering, Inc
1341 Elmwood Avenue
Cranston, Rhode Island 02910

Burrillville School District - High School PE Gym
2300 Bronco Highway
Harrisville, RI 02830
Dave Fontes
-

Proposal Summary

Estimated Current Lighting Load (Wattage)			9,828	Watts
Estimated Proposed Lighting Load (Wattage)			6,552	Watts
Estimated Lighting Load Savings (Wattage)			**3,276**	Watts
Estimated Current Lighting Usage (kWh)			29,484	kWh
Estimated Proposed Lighting Usage (kWh)			12,383	kWh
Estimated Lighting Usage Savings (kWh)			**17,101**	kWh
Estimated Current Annual Lighting Bill:	kWh * 0.15	$	4,423	
Estimated Proposed Annual Lighting Bill:	kWh * 0.15	$	1,857	
Estimated Proposed Annual Lighting Bill Savings:		**$**	**2,565**	
Estimated Total Job Cost		**$**	**12,340.00**	
Estimated Utility Incentive		$	(4,936.00)	
Estimated Customer Net Cost		**$**	**7,404.00**	
Maintenance Savings		**$**	**420**	
Net Heating and AC Savings		**$**	**500**	
Simple Payback (Customer Share/Bill Savings):		Years =	**2.1**	

Category: ECS	Prefix:	Fixture Series (Name):
Energy Conservation Series	ECO	EcoLyte

RENOVA™
Innovative Lighting Ideas
Energy Efficient Solutions

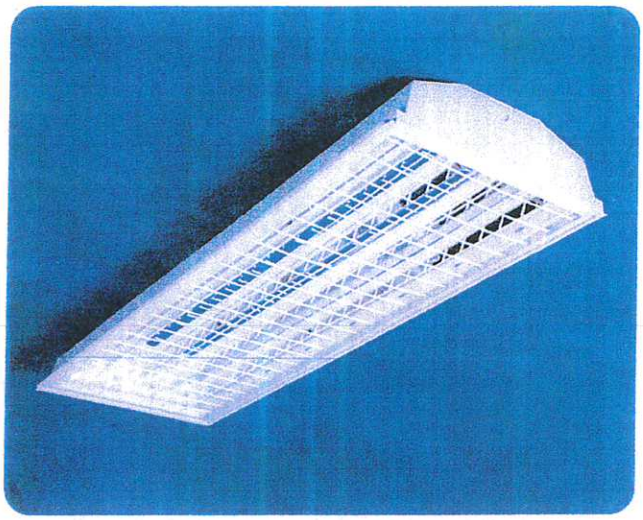
EcoLyte Series high performance fluorescent high/low bay luminaire

GENERAL DESCRIPTION

The EcoLyte (ECO) Series has been developed as an energy efficient alternative to HID lighting systems. This series utilizes "High Intensity Fluorescent" technology to dramatically reduce energy consumption, improve quality of light and provide instant-on operation. It also offers many switching and sensor options.

Typical applications for this type of product are interior spaces with high mounting heights where high lumen output is required. Applications include:

- Retail – "Big Box" – Distribution Centers and Warehouses
- Industrial, Commercial and Manufacturing Areas
- School Gymnasiums, Auditoriums and Convention Centers
- Ice Rinks, Indoor Courts and Sports Arenas



DESIGN FEATURES / SPECIFICATIONS

CONSTRUCTION
- Precision die formed from 22 ga. cold rolled steel.
- Mechanically fastened or resistance welded depending on model.
- Heavy gauge steel (CRS) or aluminum alloy may be custom ordered.
- Finish to be pre-painted gloss white polyester powder coat.
- Post-painted polyester powder coat finishes are available. Consult factory for all special colors and finishes.
- Heavy guage steel (NYC) and heavy guage aluminum are available as alternate materials.

REFLECTOR
- Precision die formed optics which has been designed for maximum efficiency and photometric properties using the latest CAD software.
- Choice of optics includes focused, normal and spread beam distribution. Consult factory for custom optics design and spacing criteria options.
- Choice of materials include:
  - Alanod Miro4® Enhanced Specular Aluminum, 95% total reflectance, 25 year warranty.
  - Enhanced Specular Aluminum, 92% total (min.) reflectance, 25 year warranty.
  - High Reflectance White Powder Coated Aluminum, 91% total reflectance, 10 year warranty.
  - Polished Aluminum, 87% total (min.) reflectance, 25 year warranty.
  - Consult factory for availability of all other material choices.

LAMPHOLDERS
- Vossloh-Schwabe® premium type featuring:
  - Anti-vibration internal lamp locking design
  - High temperature resistant ("T" marking).
  - Heat and UV blocking shield to prevent degradation of material.
  - Multi-point contact design for optimum lamp pin contact.
  - Produced in accordance with DIN ISO 9001 and IEC standards.

BALLASTS
- All standard ballasts are electronic, energy saving, thermally protected, Class-P, non-PCB, Sound Rated "A", 0 degree (Type 1 Outdoor). Verify with factory for latest information regarding High Temperature (HT) or Extreme Low Temperature (XLT) rated ballast options.
- UL/CSA certified, where applicable. Compliant with Federal Ballast Law (Public Law 100-357, 1988).
- Choice of ballast factors. L=Low, N=Normal, H=High.
- Choice of dedicated, universal or special voltage - Consult factory for available options.
- Warranted by ballast manufacturer. Typical ballast warranty is for 5 years (120-277v) and 3-years (347-480v). Consult factory for latest warranty information.

LAMPS
- Supplied by others unless otherwise specified.
- Factory installed if required - Consult factory.
- Lamp type, CRI ratings, temperature colors, lamp life ratings are all viable options which can be supplied - Consult factory for information.

LAMP SHIELDING
- Lamp shielding options include:
  - Heavy duty painted or zinc-plated wire guards.
  - Flat or drop dish lenses, clear acrylic, clear polycarbonate, high light transmission white, prismatic and linear prism lenses.
  - Louvers and cross-blade baffles - Consult factory.

MOUNTING
- The luminaire may be surface mounted or may be suspended by pendant, threaded rod, hook, chain or cable. (Mounting hardware supplied by others unless otherwise specified).
- Custom mounting options / accessories.

ELECTRICAL
- Luminaire is bi-national listed and labeled (UL 1598 and CSA C22.2 No. 250.0-00) and is suitable for damp locations.
- Product includes luminaire disconnect as specified in NEC 410.73(G), 2005 Edition, and CEC part I, rule 30-308(4), 2006 Edition.

QUALITY CONTROL
- All fixtures and retrofit kits are designed, fabricated, assembled and tested at RENOVA's manufacturing facility. All fixtures are 100% lamp tested, inspected and labeled prior to shipment.

GUARANTEE
- RENOVA warrants all fixtures to be free of defects in manufacturing and workmanship for a period of (1) year from date of purchase. This warranty excludes damage of any kind resulting from improper installation, misuse, abuse, accidents, mis-application, or natural disasters. Please refer to the "Terms and Conditions" section of the RENOVA website for additional information.

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

RENOVA Lighting Systems, Inc. • 15 Wellstown Road • Ashaway, RI 02804 • (800) 635-6682 • www.renova.com

RISE ENGINEERING
Division of Thielsch Engineering, Inc
1341 Elmwood Avenue
Cranston, Rhode Island 02910

Burrillville School District - High School Band & Chorus
2300 Bronco Highway
Harrisville, RI 02830
Dave Fontes
-

Proposal Summary

Estimated Current Lighting Load (Wattage)			2,950	Watts
Estimated Proposed Lighting Load (Wattage)			2,180	Watts
Estimated Lighting Load Savings (Wattage)			**770**	Watts
Estimated Current Lighting Usage (kWh)			3,540	kWh
Estimated Proposed Lighting Usage (kWh)			2,616	kWh
Estimated Lighting Usage Savings (kWh)			**924**	kWh
Estimated Current Annual Lighting Bill:	kWh * 0.15	$	531	
Estimated Proposed Annual Lighting Bill:	kWh * 0.15	$	392	
Estimated Proposed Annual Lighting Bill Savings:		**$**	**139**	
Estimated Total Job Cost		**$**	**3,995.00**	
Estimated Utility Incentive		$	(1,598.00)	
Estimated Customer Net Cost		**$**	**2,397.00**	
Maintenance Savings		**$**	**150**	
Net Heating and AC Savings		**$**	**550**	
Simple Payback (Customer Share/Bill Savings):		Years =	**2.9**	

200 Watt Pulse Start Lamp

UNI-FORM PULSE START METAL HALIDE LIGHTING SYSTEMS

60375
DATA SHEET

VENTURE LIGHTING

UNI-FORM
PULSE START METAL HALIDE LIGHTING SYSTEMS

SUPER PULSE START
Long Life (SPL)
Extended Life Lamps

MHL 200W/H75/ED28/PS/740

GENERAL Characteristics

Lamp Type	MH Pulse Start Single Ended
ANSI Code	M136/E
Bulb Shape	ED28
Base Type	Mogul (E39)
Bulb Finish	Clear
Rated Life	40000 hours
Operating Position	Horizontal ±75°
Dimming	50% Rated Power

PHOTOMETRIC

Initial Lumens	19000
Scotopic Lumens (S/P 1.7)	32300
Lumens Per Watt	95
Lamp Lumen Depreciation (LLD)	.86 (86%) @ 16000 hours
Correlated Color Temperature	4000K
Chromaticity Coordinates (CIE-x,y)	.385 .390
Color Rendering Index (CRI)	68

PHYSICAL

Bulb Diameter	3.5" (90mm)
Max. Overall Length (MOL)	8.3" (211mm)
Light Center Length (LCL)	5.0" (127mm)
Effective Arc Length	27.9mm
Max. Base Temperature (°C)	210
Max. Bulb Temperature (°C)	400
Socket Pulse Rating (KV)	4
Luminaire Type	Enclosed Rated

ELECTRICAL

Lamp Watts	200
Lamp Oper. Voltage (Nom.)	132

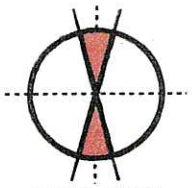
SUSTAINABILITY

Recycling Program	Smartpac® 800-451-2606
Picograms Hg per Mean Lumen Hour	45
MR-Credit 4 Reduced Mercury in Lamps	1 LEED point
EISA 2007 Compliant	Yes

NOTES

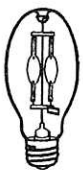
Lamp performance ratings published in this data sheet are based on operation with approved electronic ballasts. Performance of position-rated lamps outside of their tolerances will result in poor performance. Minimum Starting Temperature: -40°C/°F. To calculate nighttime Scotopic lumens, multiply the lumen rating by the S/P ratio. **LEED V3, MR CREDIT 4: Sustainable Purchasing - Reduced Mercury in Lamps is awarded 1 point for projects which at least 90% of all mercury-containing lamps purchased during the performance period comply and meet the target for mercury content of 90 picograms per lumen-hour or less.

Patent Pending

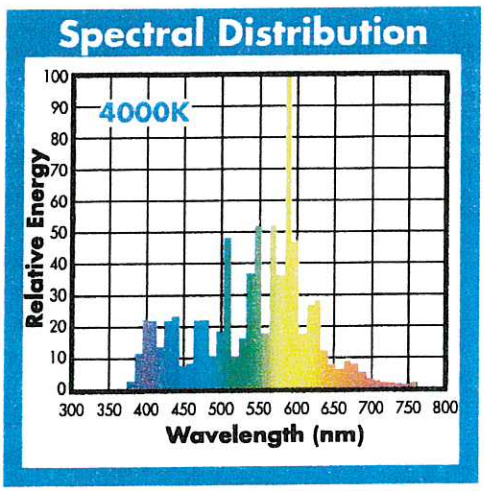


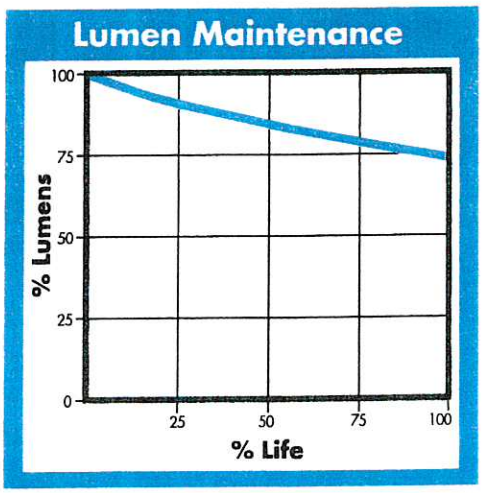
HOR ±75°
Horizontal

ED28



Dia. = 3.5" (90mm)
MOL = 8.3" (211mm)
LCL = 5.0" (127mm)
Base = Mogul (E39)





(800) 451-2606
or (440) 248-3510
Fax: (800) 451-2605
10295 Philipp Parkway
Streetsboro, Ohio 44241 USA
E-mail: venture@adlt.com
VentureLighting.com

THIS LAMP CONFORMS TO FEDERAL STANDARD 21 CFR 1040.30

Warning: This lamp can cause skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when outer envelope is broken or punctured are commercially available.

This Product is Recyclable Through Smartpac

Revision: 10/27/2011 # 2995-1

VLI-0992SS11-0411

RISE ENGINEERING
Division of Thielsch Engineering, Inc
1341 Elmwood Avenue
Cranston, Rhode Island 02910

Burrillville School District - High School Auditorium
2300 Bronco Highway
Harrisville, RI 02830
Dave Fontes
-

Proposal Summary

Estimated Current Lighting Load (Wattage)		10,000	Watts
Estimated Proposed Lighting Load (Wattage)		2,500	Watts
Estimated Lighting Load Savings (Wattage)		**7,500**	Watts
Estimated Current Lighting Usage (kWh)		12,000	kWh
Estimated Proposed Lighting Usage (kWh)		3,000	kWh
Estimated Lighting Usage Savings (kWh)		**9,000**	kWh
Estimated Current Annual Lighting Bill:	kWh * 0.15	$ 1,800	
Estimated Proposed Annual Lighting Bill:	kWh * 0.15	$ 450	
Estimated Proposed Annual Lighting Bill Savings:		**$ 1,350**	
Estimated Total Job Cost		**$ 55,995.00**	
Estimated Utility Incentive		$ (22,398.00)	
Estimated Customer Net Cost		**$ 33,597.00**	
Maintenance Savings		**$ 750**	
Net Heating and AC Savings		**$ 1,250**	
Simple Payback (Customer Share/Bill Savings):	Years =	**10.0**	

RISE ENGINEERING
Division of Thielsch Engineering, Inc
1341 Elmwood Avenue
Cranston, Rhode Island 02910

Burrillville School District - High School Exterior
2300 Bronco Highway
Harrisville, RI 02830
Dave Fontes
-

Proposal Summary

Estimated Current Lighting Load (Wattage)			6,050	Watts
Estimated Proposed Lighting Load (Wattage)			1,050	Watts
Estimated Lighting Load Savings (Wattage)			**5,000**	Watts
Estimated Current Lighting Usage (kWh)			26,499	kWh
Estimated Proposed Lighting Usage (kWh)			4,599	kWh
Estimated Lighting Usage Savings (kWh)			**21,900**	kWh
Estimated Current Annual Lighting Bill:	kWh * 0.15	$	3,975	
Estimated Proposed Annual Lighting Bill:	kWh * 0.15	$	690	
Estimated Proposed Annual Lighting Bill Savings:		**$**	**3,285**	
Estimated Total Job Cost		**$**	**22,725.00**	
Estimated Utility Incentive		$	(9,000.00)	
Estimated Customer Net Cost		**$**	**13,635.00**	
Maintenance Savings		**$**	**900**	
Net Heating and AC Savings		**$**	-	
Simple Payback (Customer Share/Bill Savings):	Years =		**3.3**	

RAB LIGHTING

WPLED13DC

JOB NAME: _____

DATE: _____

TYPE: _____

DESCRIPTION

LED 13 Watt Wallpacks

SPECIFICATIONS

Starting Amps/Operating Amps
12V DC/3.5A, 24V DC/3.5A

Country of Origin
Designed by RAB in New Jersey and assembled in Taiwan

Trade Agreements Act Compliant
This product is a product of Taiwan and a "designated country" end product that complies with the Trade Agreements Act.

GSA Schedule
This product is suitable for listing on the GSA Schedule of the US General Services in accordance with FAR Subpart 25.4

Cold Weather Starting
The minimum starting temperature is -22F/-30C

Ambient Temperature
Suitable for use in 50C (122F) ambient temperatures

LED Light Engine
Multi-chip 13W high output long life LED DC Driver 12-24V DC

Surge Protection
N/A

Color Temperature (Nominal CCT)
5000 K

Fixture Efficacy
71 Lumens per Watt

Color Accuracy
66 CRI

Lumen Maintenance
The LED will deliver 70% of its initial lumens at 50,000 hours of operation.

Finish
Chip and fade resistant polyester powder coat finish.

Color Stability
RAB LEDs exceed industry standards for chromatic stability.

Color Uniformity
RAB•s range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2008.

Green Technology
RAB LEDs are Mercury and UV free.

Dark Sky Approved
The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire.

For use on LEED Buildings
IDA Dark Sky Approval means that this fixture can be used to achieve LEED Credits for Light Pollution Reduction.

Patents
The design of the LPACK is protected by U.S. Pat. D604,004 and patents pending in Canada, China and Taiwan.

IESNA LM-79 & IESNA LM-80 Testing
RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label.

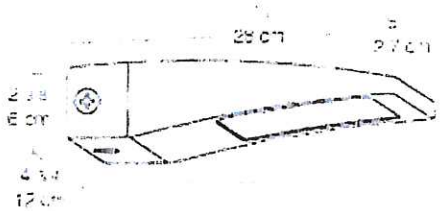
Gaskets
High Temperature Silicone

Warranty
RAB LED fixtures give you peace of mind because both the fixture and light engine components are backed by RAB's 5 Year Warranty. For more information,

Equivalency
The WPLED13 is Equivalent in delivered lumens to a 100W Metal Halide Wallpack.

HID Replacement Range
The WPLED13 can be used to replace 70-150W Metal Halide Wallpacks based on delivered lumens.

DIMENSIONS



ORDERING INFORMATION

LED Lamp supplied with fixture	Total Watts	Lamp Type	Lamp Base	Ballast	Starting Amps/ Operating Amps 120V	208V	240V	277V	Input Watts	LAMP ANSI	Initial Lumens	Lamp Hours
	13	LED	Heat-sink	DC Driver 12-24V DC					15.0	N/A	1064	50000
Factory Installed Options Add suffix to Catalog Number	Photocontrol for 277V (/PC2)				Photocontrol for 120V (/PC)							

Note: Specifications may change without notice

RAB Lighting, Inc. • 170 Ludlow Ave• Northvale, NJ 07647 • Tel: 888 RAB-1000 • Fax: 888 RAB-1232 • www.rabweb.com

RISE
ENGINEERING

Financial Summary

Location: Burrillville Schools	Total Project Cost	Estimated PUD Incentive	Customer's Net Cost	Estimated Annual Electrical Savings	Estimated Annual Maintenance Savings	Estimated Annual HVAC Savings	Return on Investment	Years to Payback
High School	$107,630	$43,052	$64,578	$8,676	$2,580	$3,050	22%	4.5
Levy Café	$11,995	$4,798	$7,197	$1,808	$475	$275	36%	2.8
Steere Farm Gym	$4,435	$1,774	$2,661	$784	$135	$100	38%	2.6
Callahan Gym	$11,285	$4,514	$6,771	$2,437	$315	$350	46%	2.2
Total	$135,345	$54,138	$81,207	$13,705	$3,505	$3,775	26%	3.9

PASCOAG UTILITY REBATES

It's important to note that the PUD incentives provided in this report, while they are consistent with the current available programs, should be considered estimated until written approval is granted by PUD. RISE Engineering will prepare and submit all necessary applications and documentation on your behalf.

RISE
ENGINEERING

Burrillville School District - Levy Café
2300 Bronco Hywy
Harrisville, RI 02830
Dave Fontes

Line Item	Room Name	Fixture Type	Existing Fixture Type	Fixt. Qty	Existing Hours	Watts	kW	kWh	Proposed Fixture Type	Fixt Qty	Proposed Hours	Watts	kW	kWh	Sensor Model #	Sensor Qty	kW Saved	kWh Saved
1	Café	H1	250w MH 2x2	20	2,500	295	5.90	14,750	4L4 28W T8/LP 8' IND w/Tube Guard & CMRB-6	20	1,625	83	1.66	2,698	CMRB-9	9	4.24	12,053
TOTALS				**20**			**5.90**	**14,750**		**20**		**83**	**1.66**	**2,698**		**9**	**4.24**	**12,053**

Category: ECS	Prefix:	Fixture Series (Name):
Energy Conservation Series	EGI	Economy Grade Ind.

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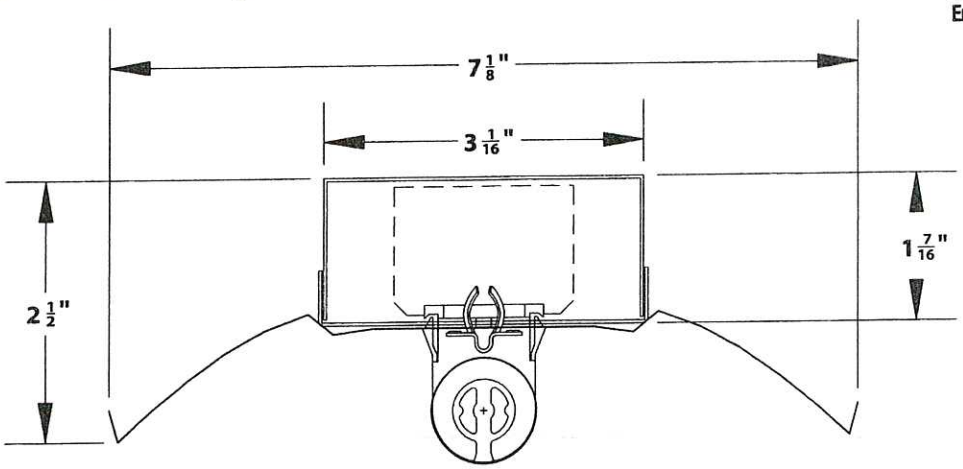
RENOVA™

Innovative Lighting Ideas
Energy Efficient Solutions

2-Lamp T8 Economy Grade Ind. Cross Section Shown



ORDERING GUIDE

CATEGORY	SERIES	SIZE	REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY	NUMBER OF LAMPS	LAMP TYPE (WATTAGE)	BALLAST VOLTAGE	NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR	OPTIONS
ECS	EGI	4	M	N	2	32	UNV	1	2	N	

CATEGORY: ECS - Energy Conservation Series

SERIES: EGI - ECONOMY GRADE INDUSTRIAL

SIZE: 2 - 24" | 3 - 36" | 4 - 48" | 6 - 72" | 8 - 96"

REFLECTOR MATERIAL: M - MIRO4 (95% TR) | E - ENHANCED ALUMINUM (92% TR min.) | W - WHITE (91% TR) | A - ALUMINUM (87% TR min.) | R - MIRO4 MICRO-MATT (95% TR)

REFLECTOR PHOTOMETRY: F - FOCUSED | N - NORMAL | S - SPREAD | C - CUSTOM OPTICS | *N - NORMAL IS STANDARD *(BLANK)=N | *C - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX

NUMBER OF LAMPS: 1 - 1L | 2 - 2L | 2 - 2L | 4 - 4L

LAMP TYPE (WATTAGE): 2' - 4' HSG: 17 17w T8 | 25 25w T8 | 32 32w T8 | 14 14w T5 | 21 21w T5 | 28 28w T5 — 6' & 8' HSG: 24 24w T5HO | 39 39w T5HO | 54 54w T5HO

BALLAST VOLTAGE: 120 - 120v, 60 Hz | 277 - 277v, 60 Hz | 347 - 347v, 60 Hz | UNV - 120v - 277v, 60 Hz | 480 - 480v, 60 Hz | xxx - Less Ballast

NUMBER OF BALLASTS: (BLANK) - 1 | 2 - 2 | 3 - 3 | 4 - 4

LAMPS PER BALLAST: 1 - 1 | 2 - 2 | 3 - 3 | 4 - 4

BALLAST FACTOR: L - Low | N - Normal | H - High

OPTIONS: *ADDITIONAL OPTIONS (See "Options" sheet for all available options)

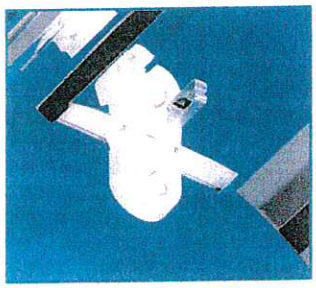
IES SUSTAINING MEMBER

MADE IN THE USA

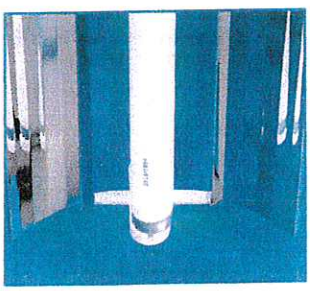
c UL us LISTED

Photometric data, IES files and all other information is available upon request.

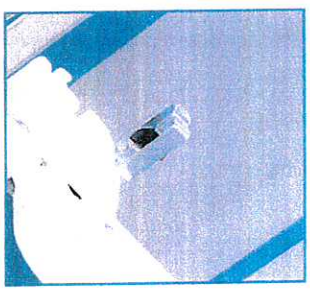
Veteran OWNED AND OPERATED



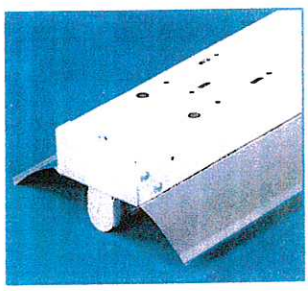
Vossloh Locking Lampholders (Standard)



Multi-Faceted Reflector (Designed for Maximum Efficiency)



Captive Quarter-Turn Fastener (Allows Toolless Access to Ballast Compartment)



Mounting Details (Included in all Housings)

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

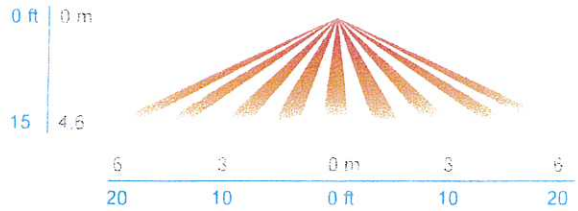
RENOVA Lighting Systems, Inc. • **15 Wellstown Road** • **Ashaway, RI 02804** • **(800) 635-6682** • **www.renova.com**

COVERAGE PATTERN

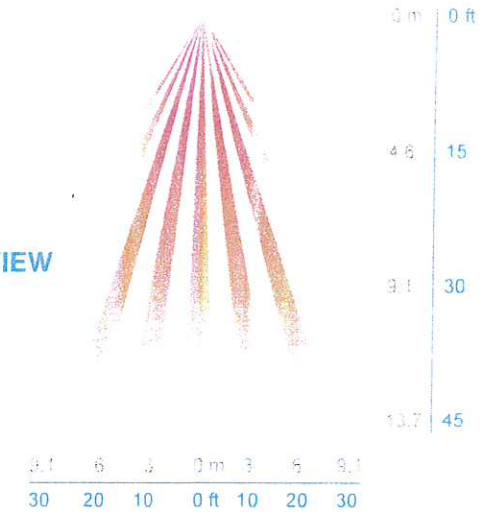
6 HIGH BAY 360° LENS

- Best choice for 15 to 45 ft (4.57 to 13.72 m) mounting heights
- 15 to 20 ft (4.57 to 6.10 m) radial coverage overlaps area lit by a typical high bay fixture
- Excellent detection of large motion (e.g. **walking**) up to a 35 ft (10.76 m) mounting height
- Excellent detection of extra large motion (e.g. **forklifts**) up to a 45 ft (13.72 m) mounting height

LOW VIEW



HIGH VIEW



WIRING (DO NOT WIRE HOT)

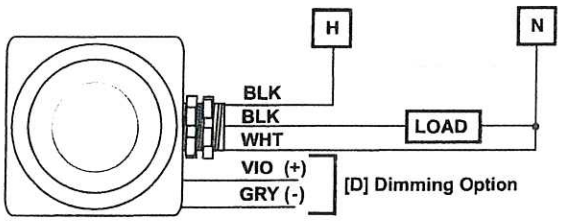
STANDARD WIRING

BLACK* - Line Input
BLACK* - Load Output
WHITE - Neutral

} *BLACK wires can be reversed

347 VAC OPTION (347)

Black wires are replaced w/ Red wires



INITIAL POWER UP

The sensor's relay is shipped in a latched closed position so the lights will come on upon initial power-up. If the lights do not immediately turn on (initial installation only) the latching relay opened during shipment and will close within 30 secs.

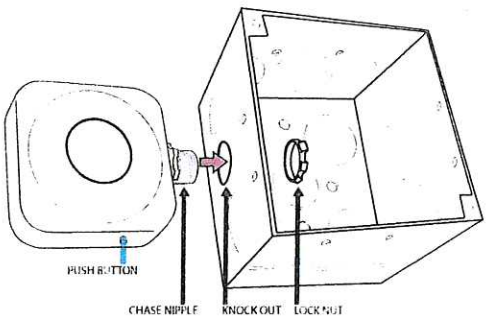
Note: If the sensor loses power, the internal relay will latch to on.

DIMMING OPTION (D)

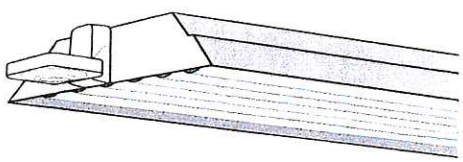
VIOLET - Connect to Violet control wire from 0-10 VDC dimmable ballast
GRAY - Connect to Gray common wire from ballast

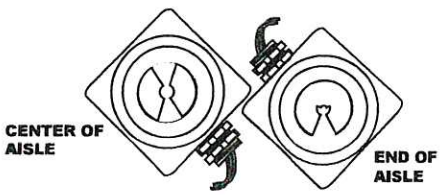
INSTALLATION

- Sensor mounts through a 1/2" knockout hole to a fixture or junction box.
- A label kit is included to mask off half of the sensor's coverage pattern for end of aisle, or trim the side viewing to create a rectangular pattern for center of aisle.
- If the sensor's field-of-view is partially blocked by the fixture housing, the FB3 Fixture Bracket (not included) can be used to lower the sensor down to a level where its view is not impaired.



FB3





PROGRAMMING

Refer to instruction card IC7.001 for default settings and directions on programming the sensor via the push-button.

sensorswitch

An AcuityBrands Company

900 Northrop Road, Wallingford, CT 06492 • 1 800 PASSIVE • [illegible] • www.sensorswitch.com

RISE
ENGINEERING

Burrillville School District - Steere Farm Gym
2300 Bronco Hywy
Harrisville, RI 02830
Dave Fontes

Line Item	Room Name	Fixture Type	Existing Fixture Type	Fixt. Qty	Existing Hours	Watts	kW	kWh	Proposed Fixture Type	Fixt Qty	Proposed Hours	Watts	kW	kWh	Sensor Model #	Sensor Qty	kW Saved	kWh Saved
1	Gym	H1	250w MH 2x2	9	3,000	295	2.66	7,965	NF 4L4' T8/HL 2x4 w/wire guard & occupancy sensor	9	1,950	156	1.40	2,738	CMRB-9	9	1.25	5,227
TOTALS				9			2.66	7,965		9		156	1.40	2,738		9	1.25	5,227

Category: ECS
Energy Conservation Series

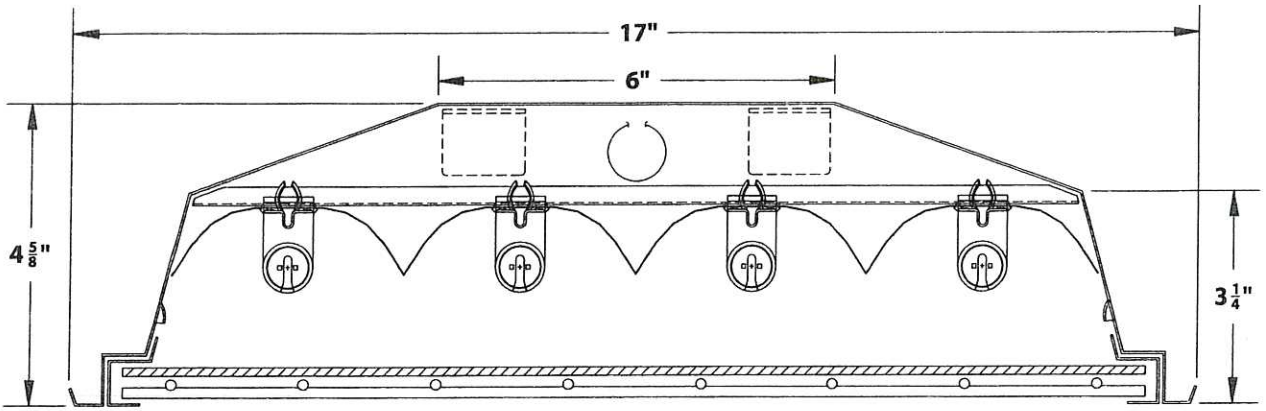
Prefix:
ECO

Fixture Series (Name):
EcoLyte

Universal Lighting Technologies | GE Lighting North America | ADVANCE | PHILIPS sense and simplicity | SYLVANIA | alanod | VS VOSSLOH SCHWABE

RENOVA™
Innovative Lighting Ideas
Energy Efficient Solutions

4-Lamp T5 HO EcoLyte Cross Section Shown



ORDERING GUIDE

CATEGORY	SERIES	SIZE	REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY	NUMBER OF LAMPS	LAMP TYPE (WATTAGE)	BALLAST VOLTAGE	NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR	OPTIONS
ECS	- ECO	4	- M	N	- 4	54	- UNV	- 2	2	H	- AWW

CATEGORY — Energy Conservation Series

SERIES — ECO - ECOLYTE

SIZE — 4 - 48" ; 8 - 96"

REFLECTOR MATERIAL
- M - MIRO4 (95% TR)
- E - ENHANCED ALUMINUM (92% TR min.)
- W - WHITE (91% TR)
- A - ALUMINUM (87% TR min.)
- R - MIRO4 MICRO-MATT (95% TR)

REFLECTOR PHOTOMETRY
- F - FOCUSED
- N - NORMAL
- S - SPREAD
- C - CUSTOM OPTICS

*N - NORMAL IS STANDARD *(BLANK)=N

*C - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX

NUMBER OF LAMPS
- 4' ECOLYTE: 2 - 2L; 3 - 3L; 4 - 4L; 5 - 5L; 6 - 6L
- 8' ECOLYTE: 4 - 4L; 6 - 6L; 8 - 8L; 10 - 10L; 12 - 12L

LAMP TYPE (WATTAGE)
- 32 32w T8
- 54 54w T5HO

BALLAST VOLTAGE
- 120 - 120v, 60 Hz
- 277 - 277v, 60 Hz
- 347 - 347v, 60 Hz
- UNV - 120v - 277v, 60 Hz
- 480 - 480v, 60 Hz
- xxx - Less Ballast

NUMBER OF BALLASTS
- (BLANK) - 1
- 2 - 2
- 3 - 3
- 4 - 4

LAMPS PER BALLAST
- 1 - 1
- 2 - 2
- 3 - 3
- 4 - 4

BALLAST FACTOR
- L - Low
- N - Normal
- H - High

OPTIONS
- OOW - Open Style
- OWW - White Wire-Guard
- AOW - Clear Acrylic Lens
- AWW - White Wire-Guard & Clear Acrylic Lens

***ADDITIONAL OPTIONS**
(See "Options" sheet for all available options)

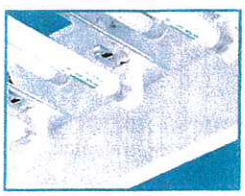
IES SUSTAINING MEMBER

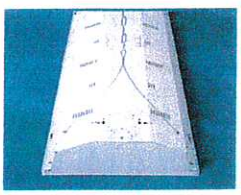
MADE IN THE USA

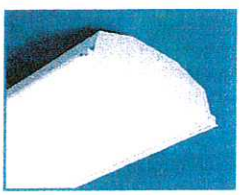
c UL us LISTED

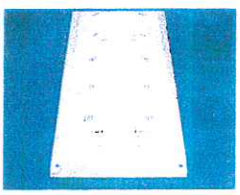
Photometric data, IES files and all other information is available upon request.

Veteran OWNED AND OPERATED

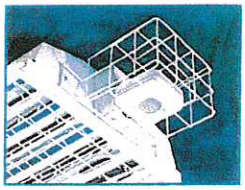

Vossloh Locking Lampholders (Standard)


Custom V-Cables (Optional) (Installed or Separate)

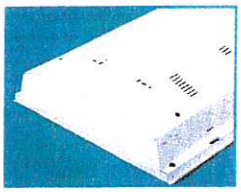

White Cross-Blade Louver (Optional)


10%-20% Uplight (Optional)


Center Mounting Detail (Standard) (Accepts Optional J-Box)


Sensor & Guard (Optional)


Center-Mount J-Box & Heavy-Duty Hanging Hook (Optional)


Dual Vented Housing (To Control Lamp/Ballast Temp.)


Quick Wire Access Plate (Standard)


Frame Door (Optional) (Cam Latch Provides Quick Access)

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

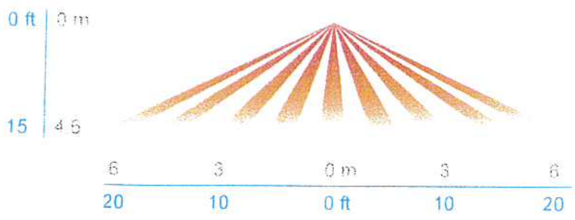
RENOVA Lighting Systems, Inc. • 15 Wellstown Road • Ashaway, RI 02804 • (800) 635-6682 • www.renova.com

COVERAGE PATTERN

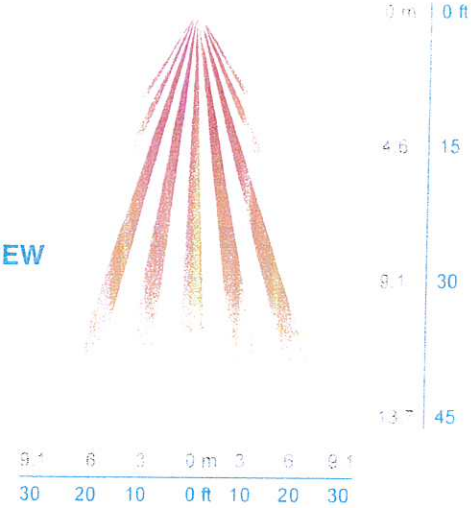
6 HIGH BAY 360° LENS

- Best choice for 15 to 45 ft (4.57 to 13.72 m) mounting heights
- 15 to 20 ft (4.57 to 6.10 m) radial coverage overlaps area lit by a typical high bay fixture
- Excellent detection of large motion (e.g. **walking**) up to a 35 ft (10.76 m) mounting height
- Excellent detection of extra large motion (e.g. **forklifts**) up to a 45 ft (13.72 m) mounting height

LOW VIEW



HIGH VIEW

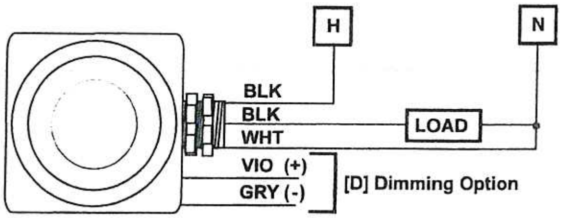


WIRING (DO NOT WIRE HOT)

STANDARD WIRING

BLACK* - Line Input
BLACK* - Load Output
WHITE - Neutral

*BLACK wires can be reversed



347 VAC OPTION (347)

Black wires are replaced w/ Red wires

INITIAL POWER UP

The sensor's relay is shipped in a latched closed position so the lights will come on upon initial power-up. If the lights do not immediately turn on (initial installation only) the latching relay opened during shipment and will close within 30 secs.

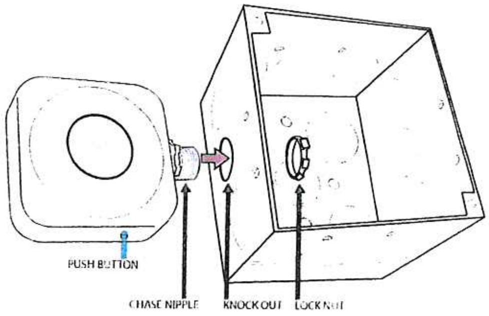
Note: If the sensor loses power, the internal relay will latch to on.

DIMMING OPTION (D)

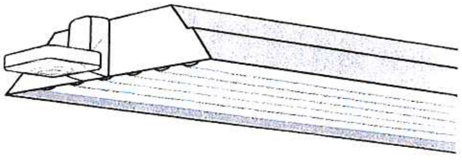
VIOLET - Connect to Violet control wire from 0-10 VDC dimmable ballast
GRAY - Connect to Gray common wire from ballast

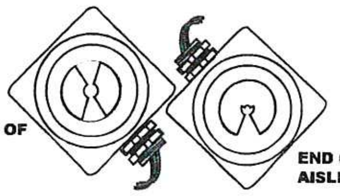
INSTALLATION

- Sensor mounts through a 1/2" knockout hole to a fixture or junction box.
- A label kit is included to mask off half of the sensor's coverage pattern for end of aisle, or trim the side viewing to create a rectangular pattern for center of aisle.
- If the sensor's field-of-view is partially blocked by the fixture housing, the FB3 Fixture Bracket (not included) can be used to lower the sensor down to a level where its view is not impaired.



FB3





PROGRAMMING

Refer to instruction card IC7.001 for default settings and directions on programming the sensor via the push-button.

900 Northrop Road, Wallingford, CT 06492 • 1-800-PASSIVE

RISE
ENGINEERING

Burrillville School District - WLC Gym
2300 Bronco Hwy
Harrisville, RI 02830
Dave Fontes

Line Item	Room Name	Fixture Type	Existing Fixture Type	Fixt. Qty	Existing Hours	Watts	kW	kWh	Proposed Fixture Type	Fixt Qty	Proposed Hours	Watts	kW	kWh	Sensor Model #	Sensor Qty	kW Saved	kWh Saved
1	GYM	H1	400w MH /HB	21	2,500	455	9.56	23,888	NF 6L 4' T8/HL ECOLYTE (2)3 Lamp Ballast	21	1,625	224	4.70	7,644	CMRB-6	21	4.85	16,244
TOTALS				**21**			**9.56**	**23,888**		**21**		**224**	**4.70**	**7,644**		**21**	**4.85**	**16,244**

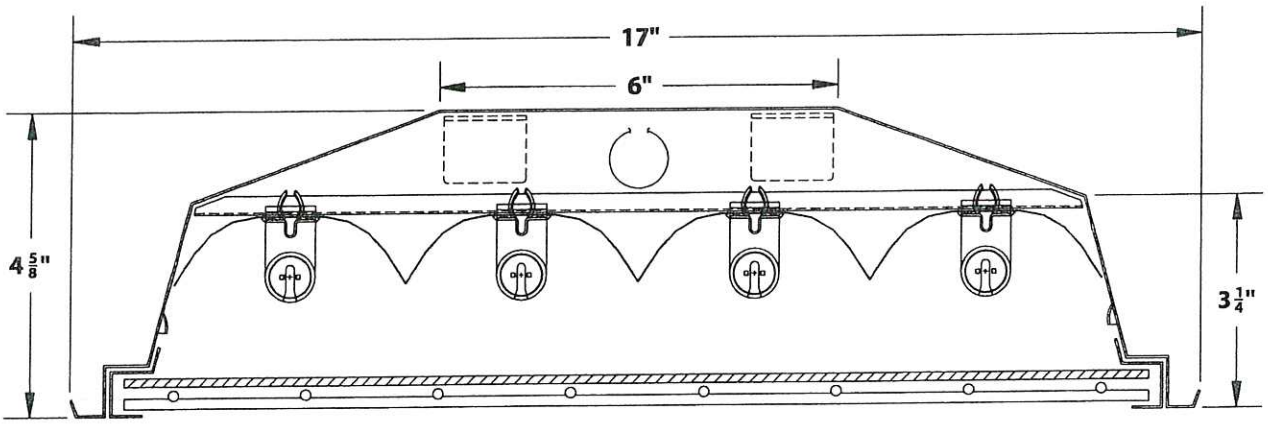
Category: ECS
Energy Conservation Series

Prefix:
ECO

Fixture Series (Name):
EcoLyte

RENOVA™
Innovative Lighting Ideas
Energy Efficient Solutions

4-Lamp T5 HO EcoLyte Cross Section Shown



ORDERING GUIDE

CATEGORY	SERIES	SIZE	REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY		NUMBER OF LAMPS		LAMP TYPE (WATTAGE)	BALLAST VOLTAGE	NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR	OPTIONS
ECS	ECO	4	M	N		4		54	UNV	2	2	H	AWW
Energy Conservation Series	ECO - ECOLYTE	4 - 48" 8 - 96"	M - MIRO4 (95% TR) E - ENHANCED ALUMINUM (92% TR min.) W - WHITE (91% TR) A - ALUMINUM (87% TR min.) R - MIRO4 MICRO-MATT (95% TR)	F - FOCUSED N - NORMAL S - SPREAD C - CUSTOM OPTICS *N - NORMAL IS STANDARD *(BLANK)=N *C - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX		2 - 2L 3 - 3L 4 - 4L 5 - 5L 6 - 6L	4' ECOLYTE	32 32w T8 54 54w T5HO	120 - 120v, 60 Hz 277 - 277v, 60 Hz 347 - 347v, 60 Hz UNV - 120v - 277v, 60 Hz 480 - 480v, 60 Hz xxx - Less Ballast	(BLANK) - 1 2 - 2 3 - 3 4 - 4	1 - 1 2 - 2 3 - 3 4 - 4	L - Low N - Normal H - High	OOW - Open Style OWW - White Wire-Guard AOW - Clear Acrylic Lens AWW - White Wire-Guard & Clear Acrylic Lens
						4 - 4L 6 - 6L 8 - 8L 10 - 10L 12 - 12L	8' ECOLYTE						

IES SUSTAINING MEMBER

MADE IN THE USA

c UL us LISTED

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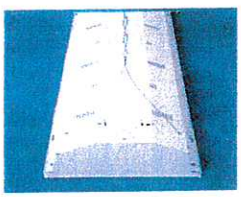
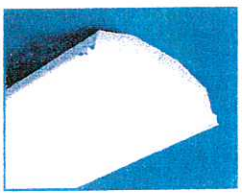
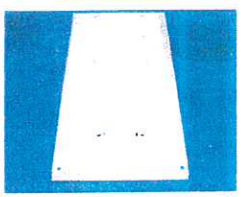
Veteran OWNED AND OPERATED

***ADDITIONAL OPTIONS**
(See "Options" sheet for all available options)

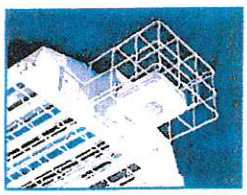

Vossloh Locking Lampholders (Standard)


Custom V-Cables (Optional) (Installed or Separate)


White Cross-Blade Louver (Optional)


10%-20% Uplight (Optional)


Center Mounting Detail (Standard) (Accepts Optional J-Box)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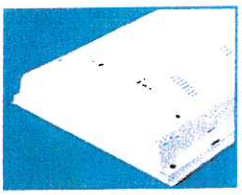
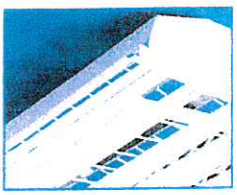

Dual Vented Housing (To Control Lamp/Ballast Temp.)


Quick Wire Access Plate (Standard)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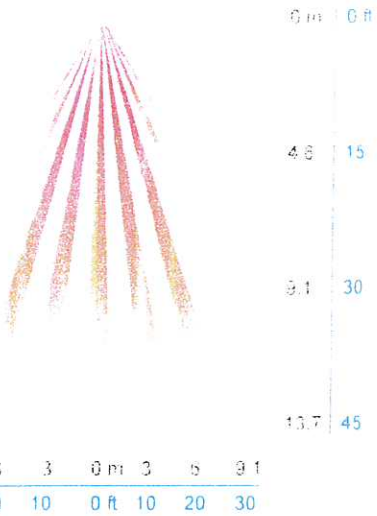
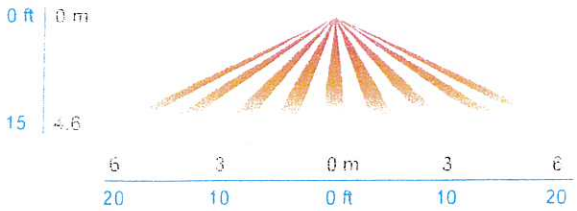
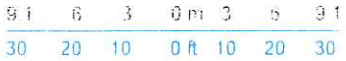


LOW VIEW



HIGH VIEW



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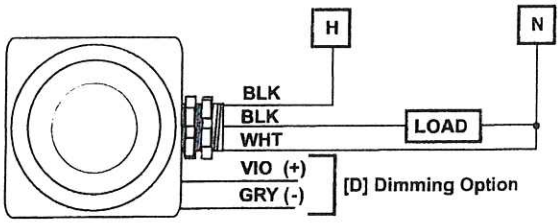

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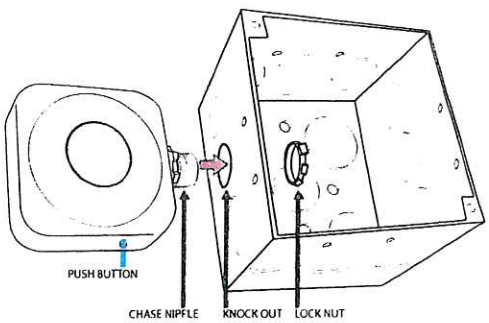
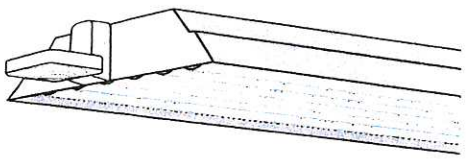
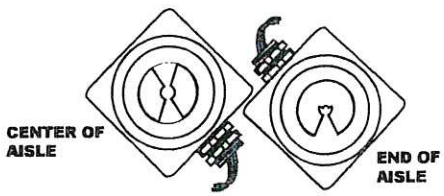


FB3





PROGRAMMING

Refer to instruction card IC7.001 for default settings and directions on programming the sensor via the push-button.

sensorswitch

Sensor Switch, Inc. warrants these products to be free of defects in manufacture and workmanship for a period of 60 months. Sensor Switch, Inc., upon prompt notice of such defect, will, at its option, provide a Returned Material Authorization number and repair or replace returned product.

This Warranty is in full lieu of all other representation and expressed and implied warranties (including the implied warranties of merchantability and fitness for use) and under no circumstances shall Sensor Switch, Inc. be liable for any incidental or consequential property damages or losses.

Green Festival Vendors

1. Energy Star
2. URI Outreach Center
3. Northeast Solar and Wind
4. Pascoag Utility District
5. Energy New England
6. RI Water Lady
7. Klinkmann Solar
8. Fortress Green Building Supply
9. Clocktower Apartments
10. RIRRC
11. Worm Ladies of Charleston
12. Ava Anderson
13. Goodwill
14. RI Envirothon
15. NE Computer Recycling
16. The Greene School
17. Burrillville Recycling
18. Keep Blackstone Valley Beautiful
19. Laughter Yoga
20. Berean Baptist
21. Toxic Information Project
22. Natural Awakenings
23. Master Gardeners
24. Burrillville Conservation Committee
25. Save the Lakes
26. Buy Local RI/RI It's in Your Backyard
27. Pascoag Library
28. Town of Burrillville-Tom Kravitz
29. Well-Tended Gardens
30. Burrillville Land Trust
31. 4-H Club
32. Burrillville Youth Coalition
33. RI Forest Conservator's Organization
34. Celadon Road
35. Greenmari
36. RIPTA
37. Burrillville Farmers Market

F. .val Schedule

9:00-1:00	Farmer's Market (Market Pavilion)
9:00-1:00	Rock Painting (Market Pavilion)
9:00-1:00	Jay Parker (Market Pavilion)
10:00-12:00	Face Painting (behind Main Info Booth)
10:00-12:00	Recycled Make-It Take-It Craft (Jesse Smith Library Community Room)

Food!

The Noble Knots Food Truck from Providence will be onsite!
They specialize in delicious sandwiches served on Artisan Pretzel Rolls.
Noble Knots focuses on fresh, local, and seasonal ingredients in everything they make.
Stop by their truck and pick up lunch.

Support Our Community:

RAFFLE ITEMS!

Tickets will be available—3 for $1. Raffle items donated by local businesses and vendors. All proceeds benefit **Project Backpack Inc.** a non-profit organization that provides at risk elementary school children in Burrillville with food and basic hygiene articles.

PA COAG UTILITY DISTRICT

253 Pascoag Main Street
Pascoag, RI 02859
401-568-6222
www.burrillville.org

Parks & Recreation Department
92 North Main Street
Pascoag, RI 02859
401-568-9470

Burrillville Farmers' Market

Tinkham Lane
Harrisville, RI 02830
burrillvillefma@gmail.com

Cornerstone of the Community
JESSE M. SMITH MEMORIAL LIBRARY

100 Tinkham Lane
Harrisville, RI 02830
401-710-7800
www.jmslibrary.org

RE:discover *a local gathering*

180 Tinkham Lane
Harrisville, RI 02830
401-568-4689
www.rediscoveralocalgathering.com

Keep Burrillville Beautiful!
Recycle & Pick Up Litter

The Pascoag [illegible]lity District & Department of Parks & Recreation's 7th Annual

Green Festival

2013

Organized by:

The Pascoag Utility District and
The Department of Parks and Recreation in collaboration with...
Jesse Smith Library,
Farmer's Market,
and RE:discover Gifts

Information about Energy Conservation & Recycling!

Green vendors, kids activities, food and fun!

September 14th, 9am –1pm
(Rain date, September 21st)


E-Z UP
BURRILLVILLE
PARKS & RECREATION
AND
DEPARTMENT OF PUBLIC WORKS


PASCOAG


NAVY'S FINEST


START WITH ENERGY STAR
ENERGY STAR


MAX
Like Us on
& get a coupon for a
$25 Earth Machine
compost bin.
We Sell
Organic Compost
& Compost Bins
to RI
Residents!
GLASS BOTTLES
PLASTIC CONTAINERS
recycle
together RI


COOPERATIVE EXTENSION
MASTER GARDENERS
RainPerfect
RE WATER LADY
RAIN BARREL
$85
DIVERTER -$25
Payment can be made by cash, check, or charge


The Worm Ladies
of Charlestown, Inc.
www.wormladies.com
Got Worms?
Worm Poop!
Excellent Organic
Fertilizer
Small bag $5 +tax
Makes your plants
grow like weeds!!!!!!!!

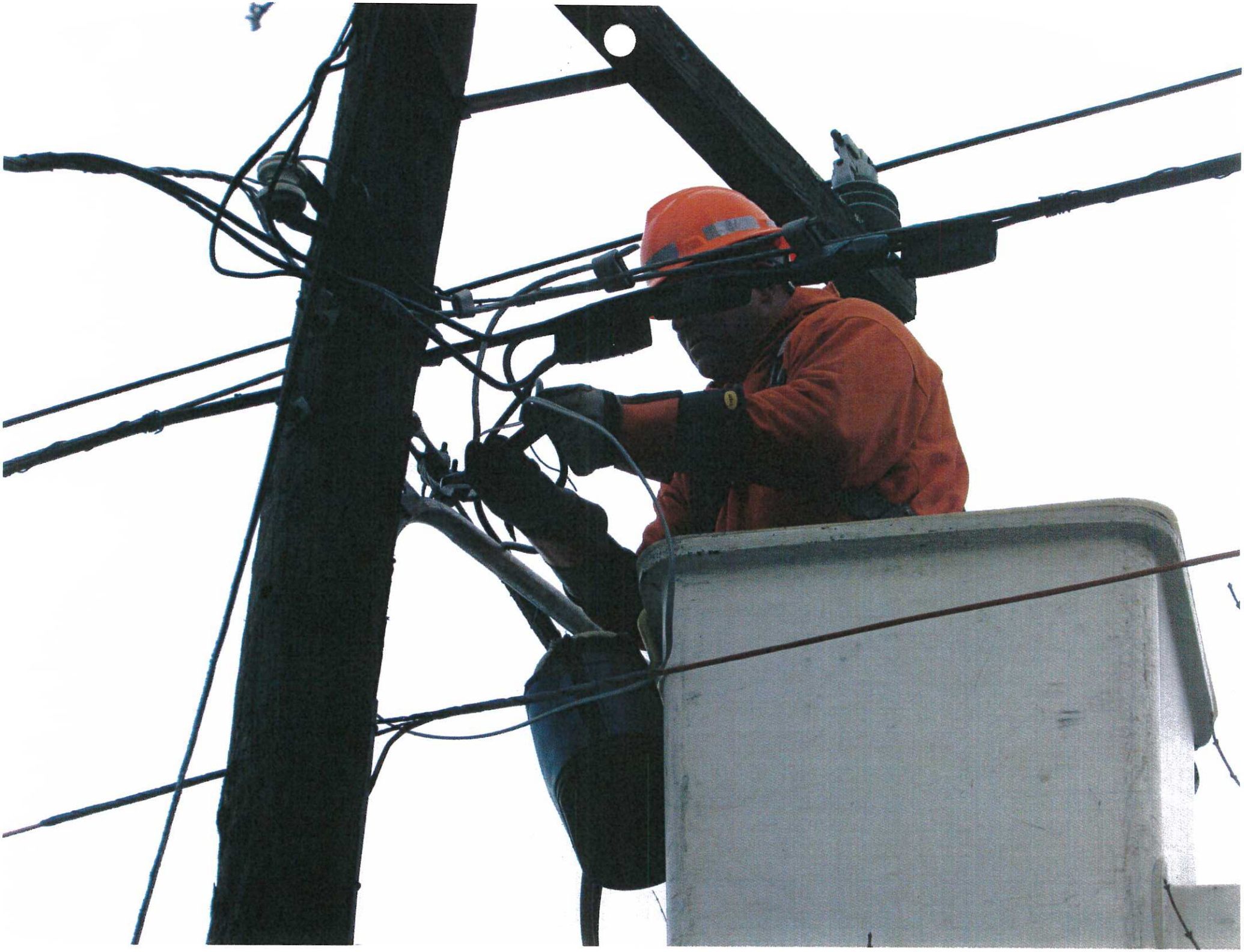

SNAPPER
NASHVILLE
MEDIC
24


Rescom
Replacement Windows and Doors
Improving New England's Homes,
One Window at a Time.
$36,000
Door Sweep
FREE
$500
$1000
$1500
Improving New England's Homes
One Window at a Time.


The
Environment
Council of
Rhode Island
Education Fund


Senator John H. Chafee
Conservation Project 2013
Passaic Utility District


Pascoag Fire District Lighting Rebate



Pascoag Utility District Commercial Incentives 2013

Product:	Rebate:
ENERGY STAR office equipment:	25%, up to a maximum $50
ENERGY STAR Standard Appliances:	
ENERGY STAR refrigerator/freezers/ clothes washer:	10% of the cost, $75 maximum
ENERGY STAR dishwasher / air purifier:	10% of the cost, $50 maximum
ENERGY STAR air conditioner:	10% of the cost, $25 maximum
ENERGY STAR dehumidifier:	10% of the cost, $20 maximum
ENERGY STAR Commercial Appliances: (Commercial Dishwashers, Commercial Fryers, Commercial Ice machines, Commercial Hot Food Holders, Commercial Griddles, Commercial Ovens, Commercial Steam Cookers, Commercial Clothes Washers, Vending Machines).	10%, up to a max rebate of $350

Lighting and Lighting control rebates are available on commercial and industrial accounts - please call the District office for approval and to check on the availability of funds before starting a lighting project. The rebates are 60% on a retrofit lighting project and 40% on a new lighting project.

The District also offers Incentives on the following:

- HVAC Systems
- High Efficiency Motors
- Compressed Air
- Variable Speed Drives

***All rebates are subject to funds availability. Please contact the District office before starting a project. All rebates will be applied to your active electric account.

Why Electric Heaters Won't Slash Bills -- *just some facts.....*

With the prices of natural gas, heating oil, and propane ... how folks are going to afford to heat their homes during the winter season is of real concern for everyone.

Winter is also the time when companies run full page ads promising that their "*special heaters"* will help save big bucks on energy bills. No matter what the catchy name is (*and there are many*), basically these are all just glorified electric space heaters ... and they work the same way. They plug into an outlet and shoot hot air in one direction. And with the claims they make, those heaters can cost hundreds of dollars yet give off as much heat as ceramic heaters which can be purchased at hardware stores ... usually for a lot less. The real deal is that many companies are charging hundreds of dollars for something that can be purchased for much less.

There is *no magic* to Electric Space Heaters. If they plug into a house electrical circuit, they all have several things in common:

- They are all 100 - percent efficient at turning electricity into heat
- They all convert one watt of electricity into 3.413 British thermal units of heat
- Higher wattage heaters produce more heat
- Plug-in space heaters are limited to 1,500 watts, or 5,120 BTUs

Regardless of the claims a manufacturer makes about their plug-in electric space heater, they are all limited to the facts above.

Try to avoid using supplemental space heaters, including, electric, kerosene or propane models. Not only are they expensive to operate, they can also be very dangerous.

Electric space heaters are generally inexpensive to buy but can increase your electric bill dramatically if you don't watch it. Nearly all electric space heaters produce the same amount of heat, so the differences lie in safety features, convenience features, reliability, and the way the heat is directed. Space heaters are a fairly inefficient way to convert electricity to heat, and they can also run up the electric bill.

Basically, they're good for keeping <u>one</u> room warm at a time, but that means you still have to keep the heat up for the rest of the house...and don't forget to factor in the cost of electricity to run the heater.

It does not matter whether the heater uses electric resistance coils or quartz lights shining on a "cured copper element" or "ceramic quartz tubes" to produce the heat. The wattage consumed by an electric space heater determines how much heat it can produce.

Refrigerators & Freezers – Tips and Facts

Two major appliances with a voracious appetite for power are the refrigerator and the freezer. Refrigerators can be power pigs, scarfing up to 7% of your electric bill and freezers are among the most significant energy-consuming appliances in the average home. In most cases only space conditioning (heating and cooling) and water heating use more energy. While most people are aware of the importance of saving energy on heating, cooling, and water heating, the energy consumed by refrigerators and freezers is often overlooked.

How much is that 6-Pack Costing you? If you have a second refrigerator in your garage or basement it's probably costing more than you think...as much as $100 per year! That's a stiff price to pay to keep a few beverages cool.

The temperature of the air around a refrigerator significantly affects its energy usage. *Don't* keep a refrigerator in the garage, near heat sources such as ranges, stoves or dishwashers or in direct sunlight. A refrigerator or freezer located in a garage or area where temperatures reach 90° F or higher can use a significant amount of energy – as much as 45-50% more. Give a refrigerator space and allow for good air circulation around the coils.

Likewise, if ambient air temperature drops below about 40 degrees Fahrenheit, the thermostat on the refrigerator may not run its cooling and defrost cycles for the appropriate amount of time. And refrigerators are not designed to heat their interiors, so placing a refrigerator in an environment that is below freezing may result in the freezing of your foods.

As with refrigerators, the garage is a bad place to keep a freezer because they use a significant amount of energy in rooms with temperatures at or above 90° F. Because of less thermal spillage and better insulation, chest freezers do use less energy than upright models.

Refrigerator Maintenance - Because these appliances run every day, small steps taken to improve their efficiency can leap into giant savings over the course of a year.

- **Prolong the life of the refrigerator gasket seal by wiping it regularly with warm water. Once the gasket starts deteriorating, you're in for a big waste of energy and money. Test the quality of the seal by closing the door on a sheet of paper. The sheet should be firmly anchored. Repeat the test along the length of the gasket. Adjust the door hinges or replace the gasket if the seal is bad.**

- **A dusty condenser coil reduces a refrigerator's efficiency and shortens it's life. Clean it several times a year with a coil brush or a soft bristle attachment on a canister-style vacuum cleaner. Unplug the refrigerator first. Cleaning coils regularly will help your refrigerator run more smoothly, which means lower energy usage.**

- **Always follow the manufacturer's recommendations, and disconnect the power before performing *ANY* maintenance on your refrigerator.**

Facts to Consider - A ten year-old refrigerator or freezer can cost considerably more to operate than a new energy-efficient model of the same size. Improvements in the design of compressors and cooling coils, better insulation, tighter door seals, and other design improvements all contribute to the higher efficiencies of newer models.

Energy Star qualified refrigerators and freezers provide energy savings without sacrificing the features you want. When considering the purchase of a new refrigerator or freezer, look for the **Energy Star** label. It looks like this:

The **Energy Star** label is designed to help consumers identify appliances that have been rated by the federal government as the most energy-efficient products on the market. Appliances with an **Energy Star** label exceed existing federal efficiency standards, typically by 13% to 20%, and as much as 110% for some appliances.

For more information call the ECHO/Energy New England Hotline at 888-772-4242

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GREENING YOUR LIFESTYLE

Here are some useful steps than may help you take a more proactive approach to going Green. And that means protecting our environment and sustaining its natural resources for current and future generations. The time is now and.....*Everyone Can Help Out!*

Reducing, Reusing and Recycling

- Recycling is important, but first and foremost: *USE LESS.....*
- Set aside bins in your home to separate and collect recyclable materials, including newspapers, white paper, clear and colored glass, plastic water and milk bottles, aluminum, cardboard, batteries and fluorescent light bulbs. Check with your local trash-collection company, municipal government or business directory to find out what recycling services are available.
- Packing peanuts and other loose fill will sit in a landfill for centuries, but there are lots of places you can bring them for recycling. Check with your local trash-collection company, municipal government or business directory to find out what recycling services are available.
- Many computers, monitors, cell phones and other electronics include toxic materials that should not sit in landfills, and you'd be surprised how many retailers and other companies will take your old gadgets for recycling. Check with your local trash-collection company, municipal government or business directory to find out what recycling services are available.
- Use a composter; it can reduce the volume of your garbage by 20% or more.

Cleaning

- Use non-toxic, environmentally safe, biodegradable cleaning products, including laundry products, which you can find at any natural grocery and even many mainstream stores. Just read the labels carefully.
- Don't pollute your indoor air or mask odors that could alert you to a problem. Choose fragrance-free products.
- Consider using "old-fashioned" cleaning products like vinegar, baking soda, borax and lemon juice.

Lawn Care and Gardening

- Use nontoxic gardening techniques. Many gardeners over-apply or improperly apply pesticides, putting themselves, their families and pets at increased health risk. Nearly half of all households have pesticides stored within reach of children. About 230,000 people each year are treated in hospital emergency rooms for injuries related to various lawn and garden tools. Our clean air and drinking water are affected by pesticides and garden equipment emissions.
- Set your mower to cut the grass no shorter than 3 inches. Leave the clippings where they fall; their nutrient payload equals the best fertilizer. A mulching mower helps.
- Water early in the day and only when needed. If you use a timed sprinkler system, consider using a rain or soil moisture meter that interrupts the watering cycle when it is raining or when the soil is wet enough.
- Put up a bird feeder to reduce pests.
- Grow the right type of grass for your region.

ENERGY SAVING TIPS FOR USING HUMIDIFIERS AND DEHUMIDIFIERS

Typically humidifiers are run during colder months when various types of heating systems have a tendency to dry out the air in a home.

Dehumidifiers remove excess moisture from the air and are usually run during the warmer, more humid months. Basements are prime areas for dehumidifiers.

Here are a few ways to save energy and stay comfortable when using these appliances:

- ☑ Purchase a low wattage unit. If your comparing dehumidifiers with the same capacity, check the wattages on the nameplates. A lower wattage unit that does the same job is a better value.
- ☑ Look for a humidifier with adjustable humidistat to maintain desired humidity and set so the appliance does not run continuously.
- ☑ It's estimated that a 175-watt humidifier running 240 hrs. per month (approx. 8 hrs. per day) uses 42 Kwh per month. At a rate of .14 cents per Kwh, that equates to roughly $5.88 per month to run the appliance.
- ☑ When using a dehumidifier adjust to lowest setting that still provides adequate dehumidification.
- ☑ Clean the unit. Dust or vacuum the dehumidifier at least once a year before you plug it in. If the unit is difficult to clean, check the owner's manual. Most portable humidifiers on the other hand, require cleaning or sanitizing on a very frequent and regular basis. Check owner's manual.
- ☑ Keep in mind that a 700-watt dehumidifier running 240 hrs. per month (approx. 8 hrs. per day) uses 168 Kwh per month. Based on .14 cents per Kwh, it costs approximately $23.50 per month to run this appliance.
- ☑ Both humidifiers and dehumidifiers work best when air can circulate freely through the appliance. Place away from walls and bulky furniture.
- ☑ When shopping for appliances look for the Energy Star label. Energy Star appliances have been identified as being significantly more energy efficient than average comparable models.

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ECHO/Energy New England

Ways to make your Carbon Footprint a Little Smaller

By now most of us know that a carbon footprint is the amount of carbon dioxide emissions from an individual during a specific time frame. Some of the most effective ways to reduce your carbon footprint start at home, don't cost a penny, and in fact, can save you money.

Here are just a few examples. When trying to reduce your carbon footprint you need to be able to quantify it remember.... "What gets measured gets done."

Unplug

- Unplug seldom-used appliances, like an extra refrigerator in the basement or garage that contains just a few items. You could save up to $10 every month on your utility bill.

- Unplug your chargers when you're not charging. Every house is full of little plastic power supplies to charge cell phones, PDA's, digital cameras, cordless tools and other personal gadgets. Keep them unplugged until you need them.

Take Control.....of your energy use

- A programmable thermostat is a smart way to control the temperature.

- In warmer months, set the thermostat to 78 degrees when the house is occupied and turn the cooling system off when you are away. During the heating season consider that for every one degree you can turn down your thermostat, up to as much as 3% could be saved on heating costs.

Set Computers to Sleep and Hibernate

- Enable the "sleep mode" feature on your computer, allowing it to use less power during periods of inactivity. In Windows, the power management settings are found on your control panel. Mac users, look for energy saving settings under system preferences in the apple menu.

- Configure your computer to "hibernate" automatically after 30 minutes or so of inactivity. The "hibernate mode" turns the computer off in a way that doesn't require you to reload everything when you switch it back on. Allowing your computer to hibernate saves energy and is more time-efficient than shutting down and restarting your computer from scratch. When you're done for the day, shut down.

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ECHO/Energy New England

A 1,500 watt heater will produce the same amount of heat regardless of its cost or other features. A $40 heater will be as efficient and effective as a $400 heater. Some ideas seem to stretch the amount of heat an electric heater can produce -- like including a high mass ceramic disk or tubes filled with water or oil in the heater. Some of the electricity consumed by the heater is used to heat this higher mass so that after the heating element shuts off, heat from the now heated mass continues to radiate from the heater. This does not make the heater more efficient, since electricity was used initially to heat the mass, but it does make the heat feel like it lasts longer.

Some heaters bury the heating element deep in the heater and include a fan that blows air across the element so that heated air comes out one part of the heater while the rest of the heater remains cool to the touch. Others place the heating elements behind a metal screen for more direct transfer of the heat. In this last case, the metal screen can get quite hot.

New plug-in electric space heaters are equipped with a sensor that shuts off the heating element in the event the heater is tipped over onto its back or side. The bottom line with any electric heater is that the less wattage the heater consumes, the less it will cost to operate. But also keep in mind, the less wattage it consumes, the less heat it will produce as well.

A pretty good rule of thumb is - if the manufacturer's advertising claim sounds just too good to be true, *it probably is!*

Finally, and *most* importantly ... be safe if using a space heater. Electric space heaters cause an average of 3,000 fires each year in the U.S., often because of improper use, according to the National Fire Protection Association.

If using an electric space heater, please remember the following:

Operate heater away from combustible materials. Do not place heaters where towels or the like could fall on the appliance and trigger a fire.

Avoid using extension cords unless absolutely necessary. If you must use an extension cord with your electric heater, make sure it is marked with a power rating at least as high as that of the heater itself. Keep the cord stretched out.

Do not permit the cord to become buried under carpeting or rugs. Do not place anything on top of the cord.

Never place heaters on cabinets, tables, furniture or other like objects. Never use heaters to dry wearing apparel or shoes.

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For more information on Energy Conservation, call the Energy New England Hotline at: 1-888-772-4242

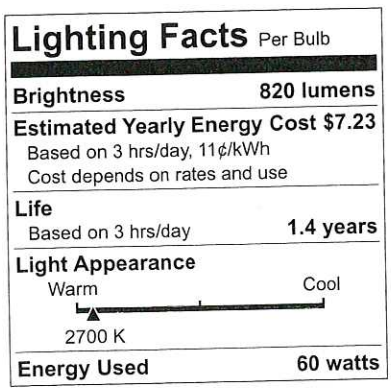
halogen incandescent, CFL or LED. Using lumens helps you compare "apples to apples" when you shop for light bulbs. Once you know how bright a bulb you want, you can compare other factors, like the yearly energy cost.

A Label to Help You Shop

When you shop for light bulbs, you'll also want to think about light appearance, or color temperature. Light appearance ranges from warm to cool. Warmer light looks more yellow, like the light from a traditional incandescent bulb, cooler light appears more blue.

To find out the light appearance of a light bulb, look at the Lighting Facts label on the package. The Lighting Facts label gives you information you need to compare different bulbs. It tells you:

- Brightness (in lumens)
- Yearly estimated energy cost
- Expected bulb life (in years)
- Light appearance (how warm or cool the light will look)
- Wattage (the energy used)
- If the bulb contains mercury



The label may include the Energy Star logo if the bulb meets the energy efficiency and performance standards of the Environmental Protection Agency and the Department of Energy's Energy Star program. For more on Energy Star standards, visit **energystar.gov**.

Lighting Facts labels will be on most everyday household light bulbs starting in 2012.

On the Bulb

The number of lumens will be printed on the bulb. If the bulb is a CFL, it may be on the bulb's base. CFLs also will include a web address, **epa.gov/cfl**, for information on safe recycling and disposal. CFLs contain mercury, so cleanup and disposal require some care and attention.

For More Information

Learn more about shopping for light bulbs at **energysavers.gov/lighting**.

To get free information on consumer issues, visit **ftc.gov** or call toll-free, 1-877-FTC-HELP (1-877-382-4357); TTY: 1-866-653-4261.

ftc.gov

Federal Trade Commission

Fall into Energy Efficiency

Summer is winding down, and the seasons aren't the only thing in transition. Your energy bills are about to change too. Soon the leaves will be falling, there will be frost on the pumpkin, and nights will get downright chilly.....and behind that another cold winter and higher energy bills.

When the cool weather hits, remove your portable air conditioners and window units. Chances are you won't need them anymore for the remainder of the year. Take care, store them carefully, and clean them well. Be careful not to damage internal components or bend the coils when you take the unit out. Also, please don't drop them – they not only hurt if you drop them on your feet (ouch*!*), the compressor can be damaged or jarred. If you can remove the unit, make sure any gaps, cracks, or holes are sealed when you close the window. If you are not able to remove the A/C from the window, make sure it is well insulated and covered.

Remove screens from windows. For double insulated windows, or gas filled windows this may not be necessary. For older homes, take down the screen window or slide it out of the way, and replace it with the "storm" windows. Make sure the storm windows are in good working order.

Now is the time for a furnace tune up. Call or check around, this is the season when there may be tuning specials. Get a deal on a tune up today.

Reverse the direction of your ceiling fans. This circulates warmer air downwards and helps warm the rooms.

Service or clean fireplaces. Make sure they are in working order, including gas or electric fireplaces

Adjust the thermostat for winter or colder weather usage when the time is right. Don't turn on your furnace until all the windows in your home are closed and locked/sealed!

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For more information on energy efficiency, please call the Energy Hotline at: 888-772-4242

J

Metro Electric
10 Essex Street
Douglas, MA 01516

Voice: 508-476-9719
Fax: 508-476-9719

INVOICE

Invoice Number: 3657
Invoice Date: May 30, 2013
Page: 1
Duplicate

Bill To:
PASCOAG FIRE DEPT. 141 HOWARD AVE. STATION 2 PASCOAG, RI 02859

Ship to:
PASCOAG FIRE DEPT. 141 HOWARD AVE. STATION 2 PASCOAG, RI 02859

Customer ID	Customer PO	Payment Terms	
PASCOAG FIRE DEPT.		Net Due	
Sales Rep ID	**Shipping Method**	**Ship Date**	**Due Date**
	Airborne		5/30/13

Quantity	Item	Description	Unit Price	Amount
		HOSE 2 GARAGE HALL AND OFFICERS ROOM REMOVE EXISTING OUTDATED 4FT T12 FLUORESCENT LIGHT FIXTURES IN GARAGE AND REPLACE WITH (17) 8 FT T5 WRAP AROUND FIXTURES AND LAMPS HALLWAY - REPLACE 2 LIGHT FIXTURES WITH NEW (2) 4 FT T5 WRAP AROUND LIGHT FIXTURES AND LAMPS OFFICERS ROOM - REPLACE BULBS AND BALLASTS IN LIGHT FIXTURES SPARE CASE OF T5 LAMPS 40 PER CASE LABOR MATERIAL		1,500.00 4,400.00

5,900 x
0.60 =
3,540.00

Subtotal	5,900.00
Sales Tax	
Total Invoice Amount	5,900.00
Payment/Credit Applied	
TOTAL	**5,900.00**

Check/Credit Memo No:

Harle Round

From: John DeFusco <emt9854@yahoo.com>
Sent: Thursday, July 11, 2013 2:42 PM
To: Harle Round
Subject: Re: PASCOAG FIRE DISTRICT REBATE

Harle, A rough estimate would be 4 to 8 hours Monday through Friday, Possibly 8 to 10 hours Sat. & Sun.
JOHN

60 hrs week
× 52
3120 run time

"THIS INSTITUTION IS AN EQUAL OPPORTUNITY PROVIDER AND EMPLOYER"

30
16
46
×52 = 1664 run time

From: Harle Round <hround@pud-ri.org>
To: John DeFusco <emt9854@yahoo.com>
Sent: Thursday, July 11, 2013 2:31 PM
Subject: RE: PASCOAG FIRE DISTRICT REBATE

How many hours a day are the lights on ?

From: John DeFusco [mailto:emt9854@yahoo.com]
Sent: Thursday, July 11, 2013 2:31 PM
To: Harle Round
Subject: Re: PASCOAG FIRE DISTRICT REBATE

I don't have any idea lighting hours, I have a call into Metro he is going to try his distributor for a spec sheet?
JOHN

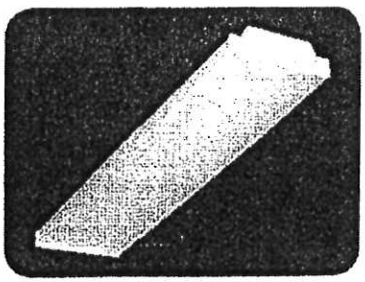
"THIS INSTITUTION IS AN EQUAL OPPORTUNITY PROVIDER AND EMPLOYER"

From: Harle Round <hround@pud-ri.org>
To: John DeFusco <emt9854@yahoo.com>
Cc: Bill Guertin <bguertin@pud-ri.org>
Sent: Thursday, July 11, 2013 1:45 PM
Subject: RE: PASCOAG FIRE DISTRICT REBATE

TEXAS FLUORESCENTS

209 Series

Shallow Economy Wraparound



FEATURES & SPECIFICATIONS

INTENDED USE
A shallow economy designed wrap around fluorescent luminaire available for the use with two lamps in either two or four foot lengths. Low initial cost, maintenance free, this series also delivers excellent brightness control.

SIZE W x L x H in inches (mm)
2 Lamp - 9.375W x 48L x 3.1Dp (4ft.)

LAMP
2 or 4 lamp positions

CONSTRUCTION
Completely die formed from heavy gauge cold rolled steel. Design embossed ends are locked and secures to the housing. Wireway cover snaps on or off without tools.

ELECTRICAL
Unless otherwise specified, ballasts are rapid start class "P" thermally protected, H.P.F., CBM-ETL. Optional ballasts available include: energy saving (ESB), electronic (ELB), dimming (DIM), low temperature (LW). Standard voltage on all fixtures is 120V 60Hz AC, or as specified. Sufficient knockouts are provided on the back and ends for all connections and through wiring. All fixtures bear U.L. labels.

MOUNTING
Suitable for individual or continuous run installations. May be surface or pendant mounted.

DIFFUSERS
A crystal clear diffuser extruded from 100% virgin acrylic that will maintain its color under normal conditions, indefinitely. Linear prisms on the interior side walls direct the light ceilingwards, which can then refract back down, The bottom is composed of an evenly spaced pattern of conical prisms yeilding low brightness, glarefree diffused light. Diffuser is lift and shift for ease of relamping and cleaning and is capable of hanging down from either side of the housing.

LISTING
Fixture & Ballast: UL Listed Ballast: Thermally protected, class P, HPF, Non PCB

ORDERING INFORMATION

Example: 209A432MV

209 | A | 4 | 32 | MV

Series
209 Specification Grade Wraparound

Lamp Count
2 or 4 Lamps Not included

Lamp Type [1]

32	48 in. T8
54	46 in. T5HO
40	48 in. T12 [5]

Ballast & Voltage [1]

S	Residential 120V Ballast
E120	Electronic, 120V
E277	Electronic, 277V
MV	Electronic, Multivolt (120-277)
H120	Electronic, 120V, Hi-Lume [3]
H277	Electronic, 277V, Hi-Lume [3]

Lens Material [2]

A	Prismatic Acrylic #12 Pattern

Tandem Code [4]

Blank	No Tandem
8	8 ft. Tandem (Double Lamp Count)

Options [1]

EM	Emergency ballast, 500 lumens
EM14	Emergency ballast, 1400 lumens

Note: EM14 required for T5HO lamps

Notes
[1] See end of T02SURF for many additional lamps, ballasts, finishes, and options.
[2] Custom louvers available in any cell configuration. Consult factory for additional information.
[3] HiLume and LoLume ballasts available for T8 lamps only.
[4] Consult factory for custom finishes.
[5] Magnetic & Electronic T12 ballasts drive a 34W energy saver lamp.

Texas Fluorescents
2055 Luna Rd. Suite 142 Carrollton, TX 75006
Phone: 972-247-3171 Fax: 972-247-0200
www.texasfluorescents.com emaiil: sales@texasfluorescents.com

Catalog Number:
Notes:

Pascoag Fire District Retrofit Lighting Project

		Watts per Fixture							
Existing fixtures	T-12	160							
Proposed	T-5	117							
		43	x	19 fixtures	x	1664 hours =	1359488	divided by 1000	1359.49 kWh savings per year
									176.73 Savings at 13 Cents per kWh

PROPOSED LIGHTING SYSTEMS		
Device Code	**Device Description**	**Rated Watts**
LED Exit Signs		
1E0002	2.0 WATT LED	2
1E0003	3.0 WATT LED	3
1E0005	5.0 WLED	5
1E0005C	0.5 WATT LEC	0.5
1E0008	8.0 WLED	8
1E0015	1.5 WATT LED	1.5
1E0105	10.5 WATT LED	10.5
Compact Fluorescents (CFL's)		
1C0005S	5W COMPACT HW	7
1C0007S	7W COMPACT HW	9
1C0009S	9W COMPACT HW	11
1C0011S	11W COMPACT HW	13
1C0013S	13W COMPACT HW	15
1C0018E	18W COMPACT HW ELIG	20
1C0018S	18W COMPACT HW	20
1C0022S	22W COMPACT HW	24
1C0023E	1/23W COMPACT HW ELIG	25
1C0026E	26W COMPACT HW ELIG	28
1C0026S	26W COMPACT HW	28
1C0028S	28W COMPACT HW	30
1C0032E	32W COMPACT HW ELIG	34
1C0032S	32W CIRCLINE HW	34
1C0042E	1/42W COMPACT HW ELIG	48
1C0044S	44W CIRCLINE HW	46
1C0057E	1/57W COMPACT HW ELIG	65
1C2232S	22/32W CIRCLINE HW	58
1C2D10E	10W 2D COMPACT HW ELIG	12
1C2D16E	16W 2D COMPACT HW ELIG	18
1C2D21E	21W 2D COMPACT HW ELIG	22
1C2D28E	28W 2D COMPACT HW ELIG	28
1C2D38E	38W 2D COMP.HW ELIG	36
1C3240S	32/40W CIRCLINE HW	80
2C0005S	2/5W COMPACT HW	14
2C0007S	2/7W COMPACT HW	18
2C0009S	2/9W COMPACT HW	22
2C0011S	2/11W COMPACT HW	26
2C0013E	2/13W COMPACT HW ELIG	28
2C0013S	2/13W COMPACT HW	30
2C0018E	2/18W COMP. HW ELIG	40
2C0026E	2/26W COMP. HW ELIG	54
2C0032E	2/32W COMPACT HW ELIG	68
2C0042E	2/42W COMPACT HW ELIG	100
2C0057E	2/57W COMPACT HW ELIG	130
3C0009S	3/9W COMPACT HW	33
3C0013S	3/13W COMPACT HW	45
3C0018E	3/18W COMPACT HW ELIG	60
3C0026E	3/26W COMPACT HW ELIG	82
3C0032E	3/32W COMPACT HW ELIG	114
3C0042E	3/42W COMPACT HW ELIG	141
4C0018E	4/18W COMPACT HW ELIG	80
4C0026E	4/26W COMPACT HW ELIG	108
4C0032E	4/32W COMPACT HW ELIG	152
4C0042E	4/42W COMPACT HW ELIG	188
6C0026E	6/26W COMPACT HW ELIG	162
6C0032E	6/32W COMPACT HW ELIG	228

PROPOSED LIGHTING SYSTEMS		
Device Code	**Device Description**	**Rated Watts**
Compact Fluorescents (CFL's) (cont)		
6C0042E	6/42W COMPACT HW ELIG	282
8C0026E	8/26W COMPACT HW ELIG	216
8C0032E	8/32W COMPACT HW ELIG	304
8C0042E	8/42W COMPACT HW ELIG	376
T5 Systems		
1F14SSE	1L2' 14W T5/ELIG	16
1F21SSE	1L3' 21W T5/ELIG	24
1F24HSE	1L2' 24W T5HO/ELIG	29
1F28SSE	1L4' 28W T5/ELIG	32
1F39HSE	1L3' 39W T5HO/ELIG	42
1F47HSE	1L4' 47W T5HO/ELIG	53
1F50HSE	1L4' 50W T5HO/ELIG	58
1F54HSE	1L4' 54W T5HO/ELIG	59
2F14SSE	2L2' 14W T5/ELIG	32
2F21SSE	2L3' 21W T5/ELIG	47
2F24HSE	2L2' 24W T5HO/ELIG	52
2F28SSE	2L4' 28W T5/ELIG	63
2F39HSE	2L3' 39W T5HO/ELIG	85
2F47HSE	2L4' 47W T5HO/ELIG	103
2F50HSE	2L4' 50W T5HO/ELIG	110
2F54HSE	2L4' 54W T5HO/ELIG	117
3F14SSE	3L2' 14W T5/ELIG	50
3F24HSE	3L4' T5HO/ELIG	80
3F28SSE	3L4' 28W T5/ELIG	95
3F47HSE	3L4' 47W T5HO/ELIG	157
3F50HSE	3L4' 50W T5HO/ELIG	168
3F54HSE	3L4' 54W T5HO/ELIG	177
4F14SSE	4L2' 14W T5/ELIG	68
4F28SSE	4L4' 28W T5/ELIG	126
4F47HSE	4L4' 47W T5HO/ELIG	200
4F50HSE	4L4' 50W T5HO/ELIG	215
4F54ESH	4L4' 54W T5HO/ELEE	218
4F54HSE	4L4' 54W T5HO/ELIG	234
5F47HSE	5L4' 47W T5HO/ELIG	260
5F50HSE	5L4' 50W T5HO/ELIG	278
5F54HSE	5L4' 54W T5HO/ELIG	294
6F28SSE	6L4' 28W T5/ELIG	189
6F47HSE	6L4' 47W T5HO/ELIG	303
6F50HSE	6L4' 50W T5HO/ELIG	325
6F54HSE	6L4' 54W T5HO/ELIG	351
8F54HSE	8L4' 54W T5HO/ELIG	468
10F54HSE	10L4' 54W T5HO/ELIG	585
Two Foot High Efficient T8 Systems		
1F17ESL	1L2' 17W T8EE/ELEE LOW PWR	14
1F17ESN	1L2' 17W T8EE/ELEE	17
1F17ESH	1L2' 17W T8EE/ELEE HIGH PWR	20
1F28BXE	1L2' F28BX/ELIG	32
2F17ESL	2L2' 17W T8EE/ELEE LOW PWR	27
2F17ESN	2L2' 17W T8EE/ELEE	32
2F17ESH	2L2' 17W T8EE/ELEE HIGH PWR	40
2F28BXE	2L2' F28BX/ELIG	63
3F17ESL	3L2' 17W T8EE/ELEE LOW PWR	39
3F17ESN	3L2' 17W T8EE/ELEE	46
3F17ESH	3L2' 17W T8EE/ELEE HIGH PWR	61
3F28BXE	3L2' F28BX/ELIG	94

Measure Information

Please review the eligibility requirements on page 5. Attach invoices, product specification sheets and other relevant documentation to this application. Variable Speed Drives (VSDs) installed in process applications, waste water or municipal water supply applications may use the Custom Application process, which requires detailed energy savings calculations.

Table 1: Select VSD Installation Type

BDF	Boiler Draft Fan	FWP	Boiler Feed Water Pump	PE	Process Exhaust and Make-up Fan
BEF	Building Exhaust Fan	HWP	Hot Water Circ Pump	RFA	HVAC Return Air Fan
CTF	Cooling Tower Fan (Single Speed only)	MAF	Make-up Air Fan	SFA	HVAC Supply Air Fan
CWP	Chilled / Cond Water Pump	PCP	Process Cooling Pump	WHP	WS Heat Pump Circ Loop

Table 2: Select VSD Size

Horsepower	Incentive	Horsepower	Incentive	Horsepower	Incentive	Horsepower	Incentive
1	$600	5	$1,500	20	$2,100	50	$3,550
1.5	$600	7.5	$1,500	25	$2,450		
2	$600	10	$1,650	30	$2,800		
3	$600	15	$1,850	40	$3,150		

≥7.5hp not eligible
CTF Cooling Tower Fan (Single Speed only)
≥10hp not eligible
BEF Building Exhaust Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan

≥25hp not eligible
BDF Boiler Draft Fan
MAF Make-up Air Fan
PE Process Exhaust and Make-up Fan
Pumps up to 50hp are eligible.

Table 3: Controlling Parameters

DP	Pressure Differential	DT	Temperature Differential	OTH	Other Specify _____

Table 4: From Tables 1, 2 & 3 above, fill in using one line for each VSD.
Attach specification sheets and invoice copies to this application

Installation Type (Table 1)	VSD & Motor Horsepower (Table 2)	Controlling Parameter (Table 3)	Annual Hours of Operation	Alternate or Back up?	Location/Designation	Requested Incentive per VSD (Table 2)
FWP	40		8736	☐ Alt.	Boiler #5	$3150
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		
				☐ Alt.		

Attach a separate list for additional unit(s) **Total Requested Incentive** (this page) $ $3150

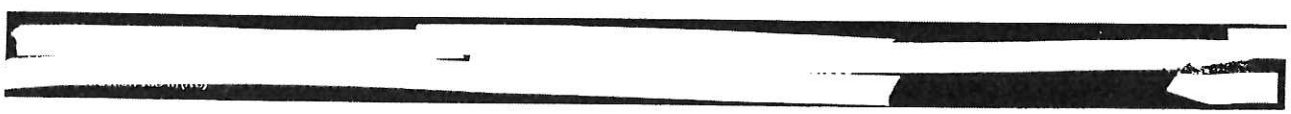
Important VSD Information

VSDs can be sensitive to over-voltages that occur when power factor correcting capacitor banks on the utility power system are switched on. To qualify for an incentive payment, each VSD must include a series reactor (inductor, choke) in its AC input connections. Your VSD supplier should assist in the sizing of the reactor. Minimum requirement is a 3% impedance reactor, based on the horsepower of the VSD to be installed.

In some instances your supplier may find it necessary to install 5% reactors and, rarely, additional filtering devices to meet acceptable current and voltage harmonic distortion requirements.

If your power factor is less than 0.8 (80%), we recommend that you consider power factor correction concurrent with the installation of drives.

The use of VSDs which incorporate pulse width modulation (PWM) may produce over-voltages which may cause premature failure of AC induction motors not rated for use with an inverter. We recommend that when installing PWM drives, you consider utilizing inverter rated motors.



PASCOAG UTILITY DISTRICT
ELECTRIC DEPARTMENT
VENDOR # 47 PASCOAG UTILITY DISTRICT - WATER CHECK # 422083

INVOICE #	DESCRIPTION	DATE	AMOUNT
VSD REBATE	305-9950	10/11/2013	3,150.00

3,150.00

PASCOAG UTILITY DISTRICT
ELECTRIC DEPARTMENT
P.O. BOX 107
PASCOAG, RI 02859

FREEDOM BANK
GREENVILLE OFFICE
GREENVILLE, RI

422083

DATE	CHECK NUMBER	AMOUNT
10/11/2013	422083	$****3,150.00

THREE THOUSAND ONE HUNDRED FIFTY AND 00/100 DOLLARS **********

NOT VALID AFTER 90 DAYS

Helen F. Mahoney MP

MP

PAY TO THE ORDER OF
PASCOAG UTILITY DISTRICT - WATER
PO BOX 107
253 PASCOAG MAIN STREET
PASCOAG RI 02859

⑈422083⑈ ⑆011501705⑆ 0000101966⑈

Eligibility Requirements

Prescriptive Incentives will be provided for the installation of Variable Speed Drives (VSD) from 1–50hp for ONLY the installation types outlined in Table 1:

a. Supply Fan on constant volume supply air handler and VAV packaged HVAC unit [SFA]
b. Return Fan on constant volume return air handler and VAV packaged HVAC unit [RFA]
c. Boiler Draft Fan [BDF]
d. Cooling Tower Fan [CTF]
e. Chilled and Condenser Water Distribution Pump [CWP]
f. Boiler Feed Water Pump [FWP]
g. Water Source Heat Pump Circulation Pump [WHP]
h. Heating Hot Water Pump [HWP]
i. Process Cooling Pump [PCP]
j. Process Exhaust and Make-up Fan [PE] (non VAV system)
k. Water Supply or Waste Water Pump [WSP]

All other New Construction VSD applications MUST file a custom application.

VSDs must be controlled by an automatic signal in response to modulating air/water flows. The VSD speed must be automatically controlled by differential pressure, flow or temperature. Applicants must demonstrate significant load diversity that will result in savings through motor speed variation. **Motors must operate a minimum of 2,000 hours annually.**

NOTE: The following VSD applications are NOT eligible for prescriptive incentives under this application:

1. Forward curve fans with inlet guide vanes,
2. Variable pitch vane-axial fans,
3. Replacement of previously failed VSD,
4. VSD used for balancing,
5. Two-speed cooling tower fans,
6. VSD used as two-speed control of fan or pump,
7. VSD used to mitigate over-sized motor installation.
8. Installations required by the current Building Code.

NorthEast Electrical DISTRIBUTORS

Ship Ticket

NORTHEAST ELECTRICAL DISTRIBUTORS
225 CUMBERLAND HILL RD
WOONSOCKET,RI 02895-5611
401-762-3871 *Fax* 401-765-6239

ken.mcgee@needco.com

S016449969.001

SHIP VIA
WC WILL-CALL
PAGE
1 of 1

SOLD TO:
PASCOAG UTILITY DISTRICT
PO BOX 107
PASCOAG, RI 02859-0107
401-568-6222 Fax: 401-568-0066

SHIP TO:
PASCOAG UTILITY DISTRICT
PO BOX 107
PASCOAG, RI 02859-0107
401-568-6222 Fax: 401-568-0066

CUSTOMER NUMBER	CUSTOMER ORDER NUMBER	JOB NAME	ORDERED BY
77375	VERBAL		BILL

WRITER	SALES ORDER#	SHIP BRANCH	SHIP DATE
KENNETH MCGEE	S016449969.001	NWOO	07/25/13

ORDER QTY	SHIP QTY	UM	DESCRIPTION	UNIT PRICE	U	EXT PRICE
			********* Shipping Instructions **********			
			* PLUS OVERNITE FRT CHARGES *			
			* ********** *			
			**********			
1	1	ea	AB-S 22C-B120A103 PowerFlex 400 30 kW (40 Hp) AC Drive *Procured Item* <<** 1 Tagged to P001926918 **>>	3922.500	e	3922.50
1	1	ea	AB-S 22-HIM-C2S PF COMPONENT CLASS IP66EMA 4X/12)REMOTE *Procured Item* <<** 1 Tagged to T002544416 **>>	230.400	e	230.40

Subtotal	4152.90
S&H CHGS	0.00
Sales Tax	0.00
Amount Due	4152.90

7/25/2013 2:34:56 PM S016449969.001

S e Loc:
Totals: CTNS_____ COIL_____ BUND_____ REEL_____

TERMS & CONDITIONS

Merchandise listed on this order has been produced in accordance with the Fair Labor Standards Act of 1938 as amended. Material not returnable without permission. This order is subject to Company Terms and Conditions of Sale, which provisions shall govern in the event of any conflict with any terms or conditions of Purchaser's proposal, purchase order or other documents. If you make a tax-free purchase that is later determined by a Department of Revenue to be a taxable purchase, you are responsible for all applicable taxes, interest, and penalties. 1.50% PER MONTH FINANCE CHARGE WILL BE ADDED TO ALL PAST DUE INVOICES. THIS IS AN ANNUAL RATE OF 18.00%

	A	B	C	D	E	F
1	LED Energy Savings					
2	**Led Street Light**	**Replacing a HPS**	**Number of fixtures**	**kwh savings per fixture/per year**	**Total kwh savings per year (# of fixtures x kwh savings per fixture)**	**Total kwh savings over 20 years (kWh savings per year x 20years)**
3	25 W LED	50 watt HPS	35	172.92	6,052.20	121,044.00
4	50 W LED	70 Watt HPS	35	158.65	5,552.75	111,055.00
5			70		11,604.95	232,099.00
6						
7						
8						
9						
10	Total kWh Savings Per Year	11,604.95				
11	Total kWh Savings 20 Year	232,099.00				
12	Energy $ Savings per Year @$0.09167	$ 1,063.83				
13	Energy $ Savings 20 years	$ 21,276.52				
14						
15						
16						
17						
18						
19						
20	Cost of LED Street lights/Photo eyes	$17,360.00				
21	Labor/Transportation	$ 9,639.00				
22		$26,999.00	Total Cost			
23		$13,499.50	Rebate to PUD at 50%			

Project Inputs

Scenario Description (optional)	

Describe scenario characteristics.

Tax, Electricity, and Labor Costs

Sales Tax (%)	0.00%
Electricity Rate ($/kWh)	0.092
Annual Change in Electricity Cost (%)	
Installation Vehicle Rate ($/hr)	40.00
Annual Change in Vehicle Rate (%)	0.0%
Installation Labor Rate ($/hr)	97.70
Annual Change in Labor Rate (%)	3.0%
Finance Nominal Discount Rate (%)	0.0%

Set the tax rate applied to equipment purchased for new installation.
Set the local cost of electricity per kilowatt-hour for lighting system.
Set the annual rate of change for local Electricity Cost. For assistance, see link: Energy Escalation Rate Calc
*Set the total hourly cost of **all** vehicles used for installation of new lighting equipment.*
Set the annual rate of change for Vehicle Rate. For assistance, see link: CBO Consumer Price Index f
*Set the total hourly cost of **all** labor used for installation of new lighting equipment.*
Set the annual rate of change for Installation Labor Rate. For assistance, see link: CBO Employment Cost Index
Set the nominal rate at which future cash flows are discounted to the Present Value. This should reflect the cost of capi

Greenhouse Gas Emissions

Emissions Factor (kg CO_2e/kWh)	0.552

Set the local emissions factor for electricity. For assistance, see link: EPA eGRID Power Profiler

Project Overhead and Implementation

Project Overhead Labor (persons)	1.0
Project Overhead Labor Rate ($/hr)	25.00
Project Overhead Work Year (hrs/person/yr)	10
First Year of Implementation	1
Last Year of Implementation	1

Set the number of staff needed to plan and manage a lighting retrofit project.
Set the average hourly cost of labor for Project Overhead Labor.
Set the average number of hours per staff member that Project Overhead Labor will work on the project during each prc
Indicates the first year in which new equipment is installed (currently fixed at 1).
Indicate the last year in which new equipment is installed (enter integer value from 1 to 30).

Technology Types

Technology Types
50 W LED SL
25 W LED SL
50 W HPS SL
70 W HPS SL
100 W HPS SL
150 W HPS SL

List the names of all technologies (up to 9 in total), old and new, to be evaluated.

Section Two

Old Technologies Removed	New Technologies Installed	# Of Fixtures Removed	# Of Fixtures Installed	# of Old Techno 1
50 W HPS SL: 50W	25 W LED SL: 25W	35	35	35
100 W HPS SL: 100W	25 W LED SL: 25W	0	0	0
50 W HPS SL: 50W	50 W LED SL: 50W	0	0	0
100 W HPS SL: 100W	50 W LED SL: 50W	0	0	0
150 W HPS SL: 150W	25 W LED SL: 25W	0	0	0
150 W HPS SL: 150W	50 W LED SL: 50W	35	35	35
70 W HPS SL: 70W	50 W LED SL: 50W		0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0
			0	0

Pre-Finance Results Summary

# of Fixtures Installed		**70**
Implementation Period (years)		**1**
Analysis Period		**15**
Simple Payback (years)		**7.0**
15-Year Unlevered IRR		**13.91%**
15-Year Unlevered NPV ($)	**$**	**31,438**
15-Year Capital Expenditure ($)	**$**	**27,714**
15-Year Cap. Ex. $/kWh Saved	**$**	**0.1592**
15-Year Cap. Ex. $/ton CO2e Saved	**$**	**288.6237**
Annual kWh Savings		**11,605**
Annual Energy Cost Savings ($)	**$**	**1,064**
Annual GHG Savings (tCO_2e)		**6**
Old Baseline Annual kWh Use		23,301
Old Baseline Annual Energy Cost ($)	$	2,136
Old Baseline Annual GHGs (tCO_2e)		13
New Baseline Annual kWh Use		11,696
New Baseline Annual Energy Cost ($)	$	1,072
New Baseline Annual GHGs (tCO_2e)		6
First-Year Avg. Capital Expend. per Unit ($)	$	396
First-Year Avg. Material Cost per Unit ($)	$	255
First-Year Avg. Labor Cost per Unit ($)	$	98
First-Year Avg. Vehicle Cost per Unit ($)	$	40
First-Year Avg. Disposal Cost per Unit ($)	$	-
First-Year Avg. Overhead Cost per Unit ($)	$	4

Environmental Savings Summary		
Annual Energy Savings ($)	Annual Energy Savings (kWh)	Annual CO_2e Avoided (Tonnes/Yr)
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6
$ 1,064	11,605	6

Capital Expenditure Components				
Material	Labor	Vehicle	Disposal	Overhead
$ 17,825	$ 6,839	$ 2,800	$ -	$ 250
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -

56 LED Street Light Project - Pilot Program

Introduction

PNNL-85179 1.1

Street and Parking Facility Lighting Retrofit Financial Analysis Tool

Developed by the DOE Municipal Solid-State Street Lighting Consortium and the Federal Energy Management Program in collaboration with the Clinton Climate Initiative (CCI)/C40.

Version: 1.1.01
Last Update: 8.20.2013

Municipal Solid-State STREET LIGHTING CONSORTIUM — C40 CITIES — CLINTON CLIMATE INITIATIVE — FEMP Federal Energy Management Program

Introduction

This tool is provided to parties seeking to analyze the cost and return-on-investment from street and parking facility lighting efficiency projects. The tool offers the following functionality:

- Project Cost Analysis - Non-discounted
- Project Environmental Impact Analysis
- Project Finance Analysis

DISCLAIMER: This tool generates precise estimates of the cost and return-on-investment for lighting retrofit projects. Outputs from this tool should be used only as an initial indication of project economics; outputs should not be used to grant final approval to a project without intensive review of all assumptions. The MSSLC, FEMP and CCI/C40 bear no responsibility for the misuse of this tool.

Webinar and other educational materials

Slides, video, and a transcript from an April 2012 webinar on version 1.0 of the tool are available at:
http://www1.eere.energy.gov/buildings/ssl/msslc-tool_webcast_04-03-2012.html

Other materials, including a "Tips" document and an overview video tutorial (demonstrating a pre-1.0 version of the tool, condensed from the 2011 MSSLC SW Regional Workshop in San Jose), are available at:
http://www1.eere.energy.gov/buildings/ssl/financial-tool.html

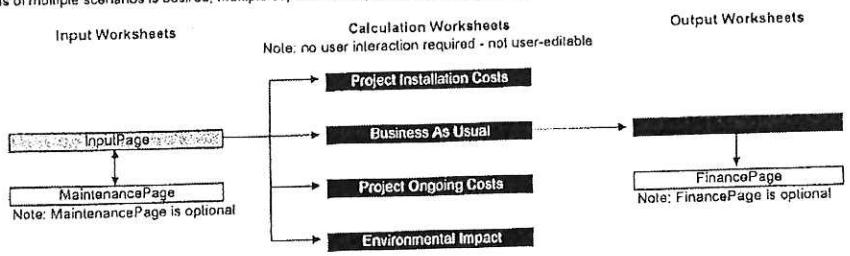
Tool Architecture

In addition to the Intro and Definitions worksheets, the tool contains a main input worksheet (input page), four calculation worksheets, a main output worksheet (results summary), and two optional worksheets (finance page and maintenance page):

Type:	Name	Description
Input Worksheets	InputPage	Contains all assumptions for project, except project finance and detailed maintenance cost assumptions.
	MaintenancePage	Contains base assumptions for maintenance cost structure.
Calculation Worksheets	Project Installation Costs	Calculates installation cost of a retrofit project.
	Business As Usual	Calculates baseline costs for existing equipment assuming no retrofit.
	Project Ongoing Costs	Calculates new baseline costs for upgraded equipment.
	Environmental Impact	Calculates electricity savings and CO_2e savings from a retrofit project.
Output Worksheets	ResultsSummary	Provides non-discounted project cashflow, environmental impacts, and other financial metrics.
	FinancePage	Contains finance assumptions and, based on those assumptions, generates finance cashflows.

Flow: Start on InputPage, then proceed to MaintenancePage if you do not know the cost of maintenance per fixture on a $/unit/month basis (otherwise, enter cost of maintenance per fixture on $/unit/month basis on InputPage and leave MaintenancePage blank). Once you have input values on these page(s), the ResultsSummary page will populate with information on the project. You may then proceed to FinancePage if you would like to examine how the cost of various financing options affects the project.

Note: If analysis of multiple scenarios is desired, multiple copies of this spreadsheet may be used, with one scenario per file.



This worksheet contains explanations of all inputs and operations in the workbook, listed by worksheet in order of vertical then horizontal appearance.

InputPage

TERM	DEFINITION
Scenario Description (optional)	Provides opportunity to describe or label analysis or scenario characteristics associated with this file. Particularly useful if using multiple spreadsheets, in order to analyze multiple scenarios.
Sales Tax (%)	Indicates the tax rate applied to equipment purchased for new installation and maintenance
Electricity Rate ($/kWh)	Indicates the local cost of electricity per kilowatt-hour for lighting system
Annual Change in Electricity Cost (%)	Indicates the annual rate of change for local Electricity Cost
Installation Vehicle Rate ($/hr)	Indicates the total hourly cost of all vehicles used for installation of new lighting equipment. ***Note that throughout the tool, "vehicles" may include other equipment, such as scissor lifts.***
Annual Change in Vehicle Rate (%)	Indicates the annual rate of change for Vehicle Rate. In the case of single-year installations, a value for this escalator may be omitted. This escalator only applies to vehicle costs associated with the initial installation of equipment (and thus only has an impact in multi-year installations). Changes in vehicle costs associated with ongoing maintenance during the analysis period are handled via the Annual Change in Maint. Cost field.
Installation Labor Rate ($/hr)	Indicates the total hourly cost of all labor used for installation of new lighting equipment
Annual Change in Labor Rate (%)	Indicates the annual rate of change for Installation Labor Rate. In the case of single-year installations, a value for this escalator may be omitted. This escalator only applies to labor costs associated with the initial installation of equipment (and thus only has an impact in multi-year installations). Changes in labor costs associated with ongoing maintenance during the analysis period are handled via the Annual Change in Maint. Cost field.
Finance Nominal Discount Rate (%)	Set the nominal rate at which future cash flows are discounted to the Present Value. This should reflect the cost of capital.
Emissions Factor (kg CO_2e/kWh)	Indicates the local emissions factor for baseload electricity
Project Overhead Labor (persons)	Indicates the number of staff needed to plan and manage a lighting retrofit project.
Project Overhead Labor Rate ($/hr)	Indicates the average hourly cost of labor for Project Overhead Labor.
Project Overhead Work Year (hrs/person/yr)	Indicates the average number of hours per staff member that Project Overhead Labor will work on the project during each project year.
First Year of Implementation	Indicates the first year in which new equipment is installed. This value determines the first year in which a Project Overhead Cost appears in the analysis; the cost is set by Project Overhead Labor, Project Overhead Labor Rate and Project Overhead Work Year. Currently fixed at 1.
Last Year of Implementation	Indicates the last year in which new equipment is installed. This value determines the last year in which a Project Overhead Cost appears in the analysis. The value entered should be an integer from 1 to 30.
Technology Types	Indicates the names of all technologies, old and new, to be evaluated in the analysis. All technologies to be assessed in the analysis must be input listed here.
Specific Technology Names	Indicates the unique name to a particular fixture, based on values entered for Technology Names and Lamp Watts. NOTE: this is not an input cell, name is based on input values for Technology Type and Lamp Watts
Technology Names	Indicates the technology of the fixture being detailed. Drop-down is based on Technology Types input. To add or delete options, add them in the "Technology Types" section of the InputPage
Additional Description (optional)	Provides opportunity to add additional details about or differentiation of technologies (e.g. 120V vs. 240V).
Lamp Watts (per unit)	Indicates the rated wattage of the lamp used in the fixture; for fixtures without a "lamp" feature, such as LED, lamp wattage will be equal to system wattage
System Watts (per unit)	Indicates the rated wattage of the lamp plus ballast/driver installed in the specific fixture.
Dimmed Output Level (% of Full Output)	Indicates the level of original lumen output delivered in a "Dimmed" state. Entering 70% would indicate that the light source provided 70% of full output, or 30% less than full output.
Annual Operating Hours - 100% Output	Indicates the number of hours per year during which the fixture operates at 100%, or full, output
Annual Operating Hours - Dimmed Output	Indicates the number of hours per year during which the fixture operates at a dimmed level
Net Annual Operating Hours - 100% Output	Indicates the equivalent number of hours of operation at 100%, or full, output based on Annual Operating Hours - 100% Output and Annual Operating Hours - Dimmed Output
Current Fixture Cost ($/unit)	Indicates the cost of a new fixture (plus controls, if project includes controls). This cost applies to both Project Installation cost as well as fixture maintenance costs on MaintenancePage
Annual Change in Fixture Cost (%)	Indicates the annual rate at which the cost of a new fixture is changing. In the case of single-year installations, a value for this escalator may be omitted. This escalator only applies to fixture costs associated with the initial installation of equipment (and thus only has an impact in multi-year installations). The rate does not apply to routine maintenance performed in the future; maintenance cost is adjusted annually with Annual Change in Maint. Cost field
Install Time (min/unit)	Indicates the amount of time (in minutes) required to install a new fixture. Install time is also used to estimate vehicular emissions associated with utility trucks that carry out the installation work.
Disposal Cost ($/unit)	Indicates the cost to properly dispose of hazardous materials, including lamps and fixtures, when removing a light fixture in a simple retrofit
Rebate Value ($/unit)	Indicates the size of incentive provided for converting to new lighting equipment. Rebates in this tool are fixture specific, and are associated with converting to a given technology
Electricity Cost ($/unit/mo)	Indicates the monthly cost of electricity per fixture based on Net Annual Operating Hours - 100% Output, Electricity Rate ($/kWh), and System Watts. NOTE: this is not an input cell
Maintenance Cost (User-entered or from Maintenance Page?)	Select from drop-down list whether the Maintenance Cost will be entered by the user or calculated using the Maintenance Page.
User-entered Maintenance Cost ($/unit/month)	If "User-entered" is selected from drop-down list then enter the monthly cost of fixture maintenance here, otherwise leave cell blank.

Unplanned Maintenance Cost:	Encompasses all unscheduled, unplanned maintenance of lighting equipment. This can include knock-downs, lightning strikes, vandalism, or other damage that is not covered under Scheduled Maintenance Cost. Scheduled maintenance cost is calculated using the values below.
Lamp Rated Life (hrs; for reference only)	Indicates the rated life (in hours) of the lamp; if no lamp is used, as in LED technology, the value should be zero.
Annual Lamp Premature Failure Rate (%)	Indicates the percentage of lamps that will fail unexpectedly each year; if no lamp is used, as in LED technology, the value should be zero.
Lamp Unit Cost ($/unit)	Indicates the unit cost ($ per unit) of new lamps
Lamp Disposal Cost ($/unit)	Indicates the unit cost ($ per unit) for disposal of old lamp
Lamp Replacement Time (min/unit)	Indicates the amount of time (in minutes) required to install a new lamp
Lamp Replacement Labor and Vehicle Cost ($/unit)	Indicates the labor and vehicle cost (in $) for the replacement of a failed lamp. NOTE: this is not an input cell; this is a calculated value based on Vehicle Rate plus Labor Rate multiplied by the Lamp Replacement Time (min) (divided by 60 minutes).
Annual Unplanned Lamp Cost ($/unit)	Indicates the annualized cost per fixture of replacing lamps that fail unexpectedly in the lighting system. NOTE: this is not an input cell; this is a calculated value based on Lamp Unit Cost (including Sales Tax) plus Lamp Disposal Cost plus Lamp Replacement Labor and Vehicle Cost all multiplied by Lamp Premature Failure Rate.
Controls Rated Life (hrs; for reference only)	Indicates the rated life (in hours) of the control equipment
Annual Controls Premature Failure Rate (%)	Indicates the percentage of control units that will fail unexpectedly each year.
Controls Unit Cost ($/unit)	Indicates the unit cost ($ per unit) of new controls
Controls Disposal Cost ($/unit)	Indicates the unit cost ($ per unit) for disposal of old controls
Controls Replacement Time (min/unit)	Indicates the amount of time (in minutes) required to install new controls
Controls Replacement Labor and Vehicle Cost ($/unit)	Indicates the labor and vehicle cost (in $) for the replacement of a broken control unit. NOTE: this is not an input cell; this is a calculated value based on Vehicle Rate plus Labor Rate multiplied by the Controls Reolacement Time (min) (divided by 60 minutes).
Annual Unplanned Controls Cost ($/unit)	Indicates the annualized cost per fixture of replacing control units that fail unexpectedly in the lighting system. NOTE: this is not an input cell; this is a calculated value based on Controls Unit Cost (including Sales Tax) plus Controls Disposal Cost plus Controls Reolacement Labor and Vehicle Cost all multiplied by Controls Premature Failure Rate.
Fixture Rated Life (hrs; for reference only)	Indicates the rated life (in hours) of the fixture
Annual Fixture Premature Failure Rate (%)	Indicates the percentage of fixtures that will fail unexpectedly each year.
Fixture Unit Cost ($/unit)	Indicates the unit cost ($ per unit) of new fixtures. NOTE: this is not an input cell, Fixture Unit Cost ($/unit) is based on Input Page data or on data entered by the user elsewhere on the Maintenance Page.
Fixture Disposal Cost ($/unit)	Indicates the unit cost ($ per unit) for disposal of old fixtures
Fixture Replacement Time (min/unit)	Indicates the amount of time (in minutes) required to install a new fixture
Fixture Replacement Labor and Vehicle Cost ($/unit)	Indicates the labor and vehicle cost (in $) for the installation of a new fixture. NOTE: this is not an input cell; this is a calculated value based on Vehicle Rate plus Labor Rate multiplied by the Fixture Replacement Time (min) (divided by 60 minutes).
Annual Unplanned Fixture Cost ($/unit)	Indicates the annualized cost per fixture of replacing fixtures that fail unexpectedly in the lighting system. NOTE: this is not an input cell; this is a calculated value based on Fixture Unit Cost (including Sales Tax) plus Fixture Disposal Cost plus Fixture Replacement Labor and Vehicle Cost all multiplied by Fixture Premature Failure Rate.
Total Annual Unplanned Maintenance Cost ($/unit)	Indicates the annualized cost of delivering unplanned maintenance for each fixture in the lighting system. NOTE: this is not an input cell; this is a calculated value based on Annual Unplanned Lamp Cost plus Annual Unplanned Controls Cost plus Annual Unplanned Fixture Cost.

Input Page

Key

White Cell, Bold Text: Value Title	Orange Cell: Input Value
	White Cell: Calculation or Constant
	Dark Grey Cell: Disabled Feature

Advanced Options: Disabled

Project Inputs

Scenario Description (optional)	

Describe scenario characteristics.

Tax, Electricity, and Labor Costs

Sales Tax (%)	0.00%	*Set the tax rate applied to equipment purchased for new installation.*
Electricity Rate ($/kWh)	0.092	*Set the local cost of electricity per kilowatt-hour for lighting system.*
Annual Change in Electricity Cost (%)		*Set the annual rate of change for local Electricity Cost. For assistance, see link:* Energy Escalation Rate Calculator
Installation Vehicle Rate ($/hr)	40.00	*Set the total hourly cost of **all** vehicles used for installation of new lighting equipment.*
Annual Change in Vehicle Rate (%)	0.0%	*Set the annual rate of change for Vehicle Rate. For assistance, see link:* CBO Consumer Price Index forecast
Installation Labor Rate ($/hr)	97.70	*Set the total hourly cost of **all** labor used for installation of new lighting equipment.*
Annual Change in Labor Rate (%)	3.0%	*Set the annual rate of change for Installation Labor Rate. For assistance, see link:* CBO Employment Cost Index forecast
Finance Nominal Discount Rate (%)	0.0%	*Set the nominal rate at which future cash flows are discounted to the Present Value. This should reflect the cost of capital.*

Greenhouse Gas Emissions

Emissions Factor (kg CO_2e/kWh)	0.552	*Set the local emissions factor for electricity. For assistance, see link:* EPA eGRID Power Profiler

Project Overhead and Implementation

Project Overhead Labor (persons)	1.0	*Set the number of staff needed to plan and manage a lighting retrofit project.*
Project Overhead Labor Rate ($/hr)	25.00	*Set the average hourly cost of labor for Project Overhead Labor.*
Project Overhead Work Year (hrs/person/yr)	10	*Set the average number of hours per staff member that Project Overhead Labor will work on the project during each project year.*
First Year of Implementation	1	*Indicates the first year in which new equipment is installed (currently fixed at 1).*
Last Year of Implementation	1	*Indicate the last year in which new equipment is installed (enter integer value from 1 to 30).*

Technology Types

Technology Types	50 W LED SL	*List the names of all technologies (up to 9 in total), old and new, to be evaluated.*
	25 W LED SL	
	50 W HPS SL	
	70 W HPS SL	
	100 W HPS SL	
	150 W HPS SL	

Old Technologies Removed	New Technologies Installed	# Of Fixtures Removed	# Of Fixtures Installed	# of Old Technology Fixtures Removed Each Year 1	2	3	4	5	6	7	8
50 W HPS SL: 50W	25 W LED SL: 25W	24	24	24	0	0	0	0	0	0	0
100 W HPS SL: 100W	25 W LED SL: 25W	7	7	7	0	0	0	0	0	0	0
50 W HPS SL: 50W	50 W LED SL: 50W	1	1	1	0	0	0	0	0	0	0
100 W HPS SL: 100W	50 W LED SL: 50W	18	18	18	0	0	0	0	0	0	0
150 W HPS SL: 150W	25 W LED SL: 25W	1	1	1	0	0	0	0	0	0	0
150 W HPS SL: 150W	50 W LED SL: 50W	5	5	5	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
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			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
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			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0
			0	0	0	0	0	0	0	0	0

# of Fixtures Installed	**56**
Implementation Period (years)	**1**

Analysis Period	**15**

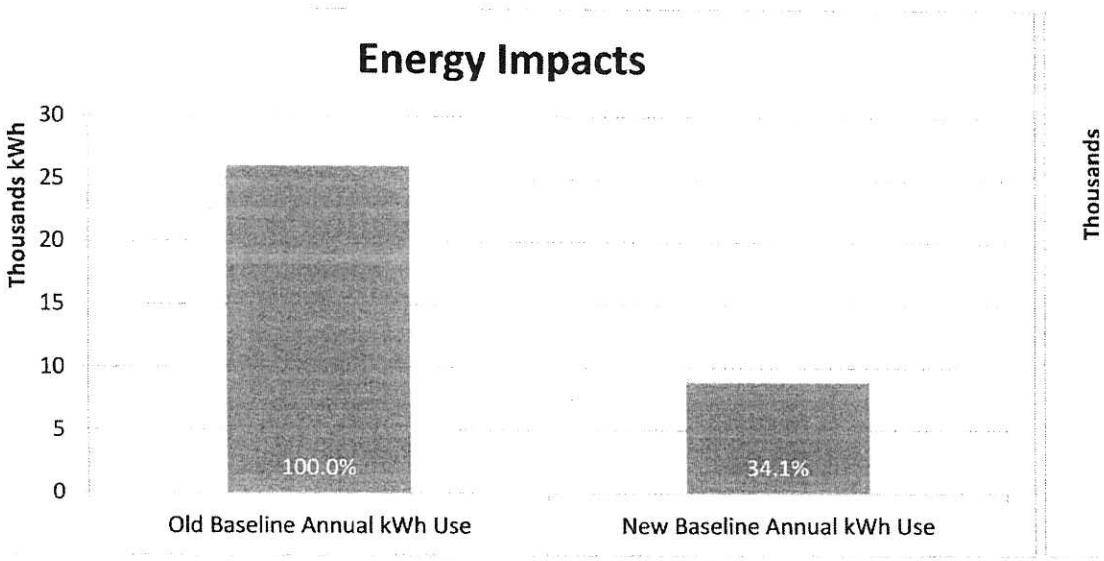
Simple Payback (years)		**5.7**
15-Year Unlevered IRR		**19.43%**
15-Year Unlevered NPV ($)	**$**	**36,066**
15-Year Capital Expenditure ($)	**$**	**22,221**
15-Year Cap. Ex. $/kWh Saved	**$**	**0.0858**
15-Year Cap. Ex. $/ton CO2e Saved	**$**	**155.6072**

Annual kWh Savings		**17,259**
Annual Energy Cost Savings ($)	**$**	**1,582**
Annual GHG Savings (tCO_2e)		**10**
Old Baseline Annual kWh Use		26,178
Old Baseline Annual Energy Cost ($)	$	2,400
Old Baseline Annual GHGs (tCO_2e)		14
New Baseline Annual kWh Use		8,919
New Baseline Annual Energy Cost ($)	$	818
New Baseline Annual GHGs (tCO_2e)		5

First-Year Avg. Capital Expend. per Unit ($)	$	397
First-Year Avg. Material Cost per Unit ($)	$	255
First-Year Avg. Labor Cost per Unit ($)	$	98
First-Year Avg. Vehicle Cost per Unit ($)	$	40
First-Year Avg. Disposal Cost per Unit ($)	$	-
First-Year Avg. Overhead Cost per Unit ($)	$	4

Environmental Savings Summary		
Annual Energy Savings ($)	Annual Energy Savings (kWh)	Annual CO_2e Avoided (Tonnes/Yr)
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10
$ 1,582	17,259	10

Capital Expenditure Components				
Material	Labor	Vehicle	Disposal	Overhead
$ 14,260	$ 5,471	$ 2,240	$ -	$ 250
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -


Energy Impacts
Thousands kWh
30
25
20
15
10
5
0
100.0%
34.1%
Old Baseline Annual kWh Use
New Baseline Annual kWh Use
Thousands