

ESCO presentation 2011



Retrofitting

Howard Lighting offers many options to retrofitting. Retrofitting offers many benefits whether you are wanting to...

- Energy savings
- Light improvement
- Utility rebates
- Improved reliability



HID Highbay → Fluorescent Highbay

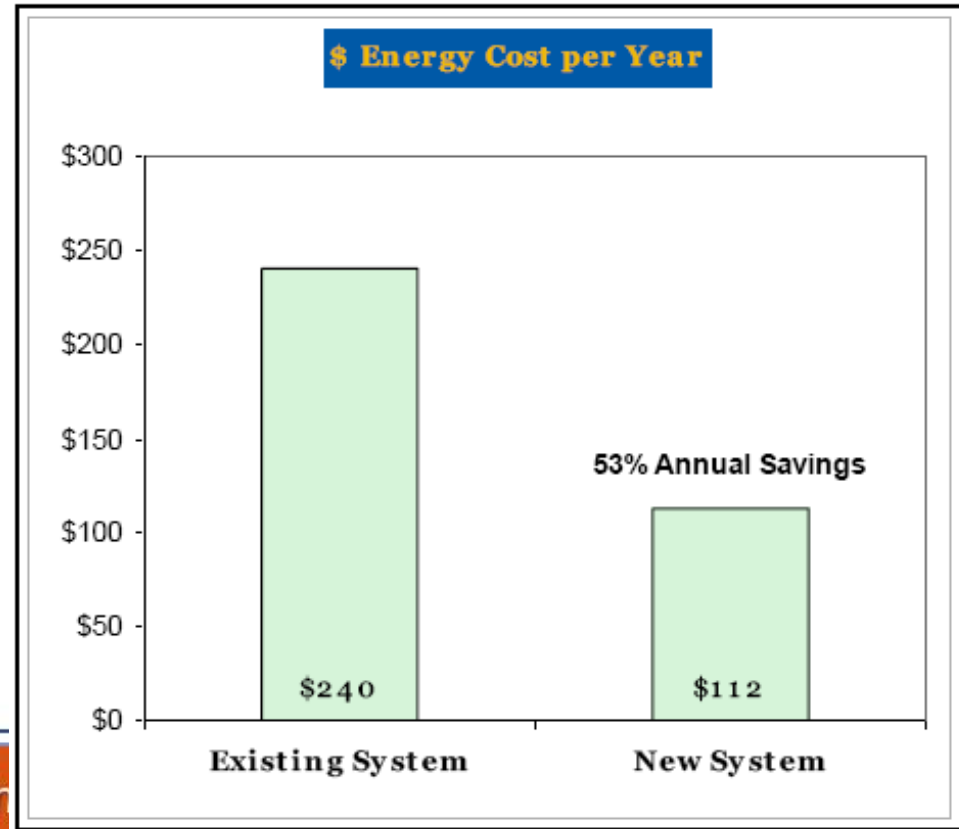


- Benefits of fluorescent high-bay luminaires include:

- Energy Saving Compared to HID systems
- Exceptional Color Rendering
- High System Efficacy
- Long Lamp Life
- Instant On/Re-strike Capability
- Howard Ballast and Howard Lamp as a system is covered by Howard Industries Warranty
- Quality Lamp holders
- System Tested, Designed, Approved, and Manufactured by Howard Industries in Mendenhall, Mississippi.
- Compliant with Safety and performance standards.

You can potentially save up to \$128 in energy cost per year by switching from a 400 watt HID Highbay to a F32T8 Fluorescent Highbay

Energy Cost					
		Existing System		New System	
		400 Watt MH High Bay		HFA1E632AHI High Ballast Factor Fluorescent Highbay	
Hours burned per year	4368	Number of Fixtures	1	Number of Fixtures	1
Cost per kWh \$	0.12	Watts per Fixture (existing system)	458	Watts per Fixture (new system)	214
		(ballast input watts)		(ballast input watts)	
Energy Cost Estimation		Energy used per yr. (existing system)	\$240	Energy used per yr. (new system)	\$112
Potential Yearly Savings:				\$128	



HFA1

6 lamp flat profile design



HFA2

4 lamp flat profile design



HFA3

6 lamp curved profile design



HFB3

4 lamp curved profile design



HFC1

8 lamp flat profile design



HFC7

8 lamp curved profile design
Tandem mount



HFE3

12 lamp curved profile design
Tandem mount



HFB9

2 or 3 lamp Architectural louvered



T12 Lighting System → T8 Lighting System

- Benefits of upgrading a T12 system to a T8 system:
 - Energy savings
 - Better lumen maintenance
 - Better light output
 - High, Low, & Standard Ballast Factor
 - High Efficiency

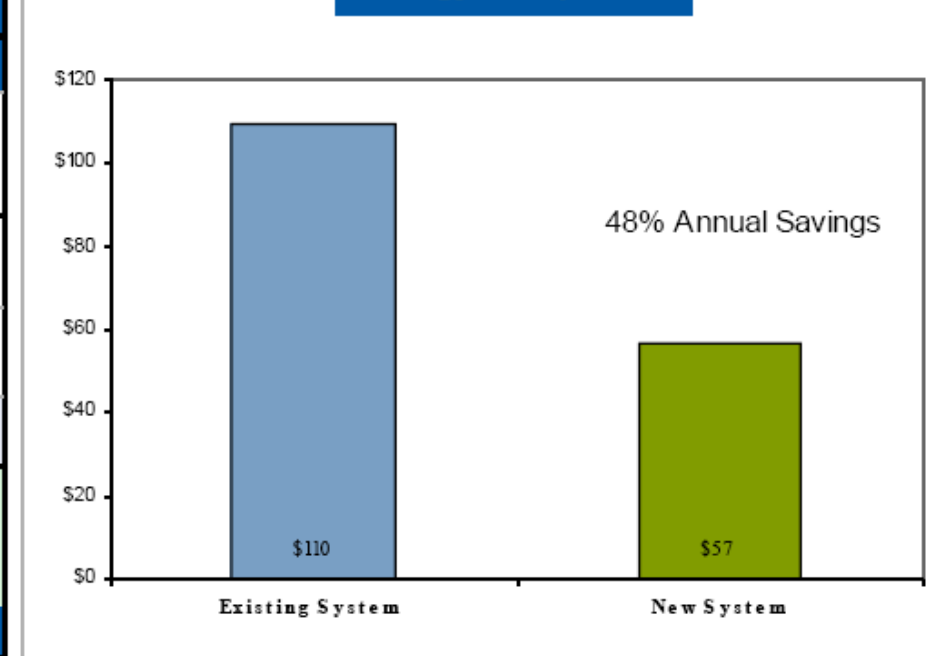


You can potentially save up to \$53 in energy cost per year by switching from a T12 system to a F32T8 Fluorescent system

Energy Cost Estimator

		Existing System		New System	
		M2/110RS-277		FSA80432ASI Standard Ballast Factor Fluorescent Strip	
Hours burned per year	4368	Number of Fixtures	1	Number of Fixtures	1
Cost per kWh \$	0.12	Watts per Fixture (existing system) (ballast input watts)	209	Watts per Fixture (new system) (ballast input watts)	108
Energy Cost Estimation		Energy used per yr. (existing system)	\$110	Energy used per yr. (new system)	\$57
Potential Yearly Savings:		\$53			

\$ Energy Cost per Year



- EP2/32IS/MV/MC/HE
- EP3/32IS/MV/MC/HE
- EP4/32IS/MV/MC/HE
- EPL2/32IS/MV/MC/HE
- EPL3/32IS/MV/MC/HE
- EPL4/32IS/MV/MC/HE
- EPH2/32IS/MV/MC/HE
- EPH3/32IS/MV/MC/HE



T8 Lighting System → T8 Energy Saving Lighting System

- Benefits of upgrading a T8 system to a T8 system with Energy Saving Lamps
 - Energy efficient
 - Longer life
 - Low mercury
 - Available in 30, 28, & 25 watts

•Features :

- T8 Fluorescent lamps
- 32 watt High Lumen lamps
- 3000K—6500K colors
- 25, 28 and 30 watt Energy Saving
- CEE listed
- U-bent 32 watt; 25 & 28 Energy Saving



CEE Listed Lamps

Watts	Bulb	Nominal Length (in)	MOL (in)	Base	UPC#	Model #	Lumens Initial (lm)	Lumens Mean (lm)	Avg. Life (hours)	Color Temp. (K)	CRI	Pkg. Qty.	Footnotes
T8 Fluorescent Low Mercury (Energy Saving)													
25	T8	48	47.78	Med Bipin	799385-02922	F25T8/830/ES/ECO	2500	2425	24000	3000	85	25	1,2,3, E ,ECO
25	T8	48	47.78	Med Bipin	799385-02923	F25T8/835/ES/ECO	2500	2425	24000	3500	85	25	1,2,3, E ,ECO
25	T8	48	47.78	Med Bipin	799385-02924	F25T8/841/ES/ECO	2500	2425	24000	4100	85	25	1,2,3, E ,ECO
25	T8	48	47.78	Med Bipin	799385-03424	F25T8/850/ES/ECO	2500	2425	24000	5000	85	25	1,2,3, E ,ECO
25	T8	48	47.78	Med Bipin	799385-04685	F25T8/850/ES/ECO/IC	2500	2425	24000	5000	85	25	1,2,3, E ,ECO
28	T8	48	47.78	Med Bipin	799385-03910	F28T8/830/ES/ECO/IC	2725	2560	24000	3500	85	25	1,2,3, E ,ECO
28	T8	48	47.78	Med Bipin	799385-01515	F28T8/835/ES/ECO	2725	2560	24000	3500	85	25	1,2,3, E ,ECO
28	T8	48	47.78	Med Bipin	799385-01516	F28T8/841/ES/ECO	2725	2560	24000	4100	85	25	1,2,3, E ,ECO
28	T8	48	47.78	Med Bipin	799385-04023	F28T8/850/ES/ECO/IC	2725	2560	24000	3500	85	25	1,2,3, E ,ECO
T8 Fluorescent Low Mercury (High Lumens)													
32	T8	48	47.78	Med Bipin	799385-01947	F32T8/830/HL/ECO	3100	2950	24000	3000	85	25	1,2,3, E ,ECO
32	T8	48	47.22	Med Bipin	799385-03753	F32T8/830/HL/ECO/IC	3100	2950	24000	3000	83	25	1,2,3, E ,ECO
32	T8	48	47.22	Med Bipin	799385-03754	F32T8/835/HL/ECO/IC	3100	2950	24000	3500	83	25	1,2,3, E ,ECO
32	T8	48	47.22	Med Bipin	799385-03755	F32T8/841/HL/ECO/IC	3100	2950	24000	4100	83	25	1,2,3, E ,ECO
32	T8	48	47.22	Med Bipin	799385-03756	F32T8/850/HL/ECO/IC	3100	2950	24000	5000	83	25	1,2,3, E ,ECO

Footnote Legend:

- 1 Average-rated life is based on 3 hours per start.
- 2 Average-rated life at 12 hours per start will increase life by approximately 25% (e.g., lamps rated at 24000 would go to 30000).
- 3 Lumen ratings, CRI and average-rated lamp life subject to change.
- E This lamp meets Federal Minimum Efficiency standards.
- ECO Low-Mercury fluorescent lamps pass the Federal TCLP for hazardous waste. Disposal regulations may vary; check local and state regulations.

Benefits

- .Lower cost of ownership through energy savings
- .Modern look
- .Modern efficient lamp and ballast technology
- .Utility rebates
- .Reduced cost & waste relative to installing new fixture

Description

FTR1 allows for the conversion of a standard lay-in troffer or parabolic fixture into a sleek and efficient 2-lamp T5 direct/indirect. This combines significant energy savings with a fresh new look.

Retrofit Troffers

•FTR1 Series



Installs in 6 easy steps:

- 1) Remove existing door, ballast cover, ballast, and socket bars.
- 2) Screw retrofit endcaps into existing fixture
- 3) Hang retrofit body from endcap using provided tethers, make electrical connections.
- 4) Screw body to endcaps.
- 5) Attach ballast cover , insert lamps, attach lenses.
- 6) Energize

Fluorescent Strip Retrofit Kit

- FSR4 Series (4ft)
- FSR8 Series (8ft)

Applications

Multiple configurations allow you to select a lamp type and number to meet your criteria, whether they be:

- Improved Light
- Energy Savings
- Utility rebates
- Improved reliability

Description

FSR4 series fluorescent strip channel retrofit kit is a simple and cost-effective solution to upgrading existing 4' strip fixtures into newer and more efficient electronic T8 or T5 strips.



Up to 38%
Energy Reduction
with same light!

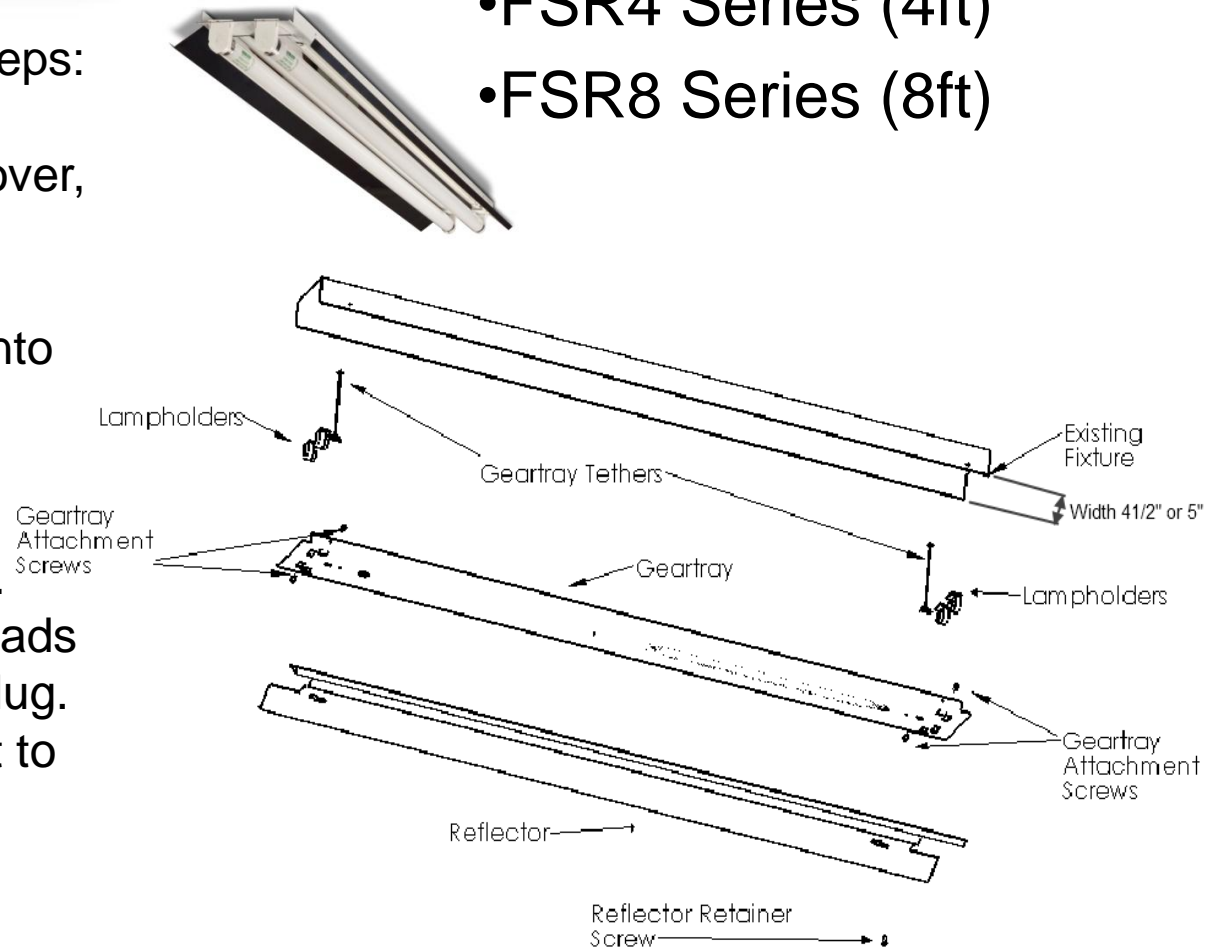
Lamp Type	Existing Fixture 2x 40W T12 Base Case	2x 32W T8 Low Ballast Factor	2x 32W T8 Standard Ballast Factor	2x 32W T8 High Ballast Factor
Watts	87	48	54	72
Raw lamp lumens	5760	6200	6200	6200
Ballast factor	92%	77%	87%	114%
Effective Lamp Lumens (BF * raw lumens)	5300	4774	5394	7068
Lumens per Watt	59	99	100	98
Lumens relative to base case (%)	100%	90%	102%	148%
Energy Savings	NA	45%	38%	17%

Fluorescent Strip Retrofit Kit

- FSR4 Series (4ft)
- FSR8 Series (8ft)

Installation in seven easy steps:

1. Power off
2. Remove existing front cover, lampholders, and socket bars.
3. Screw geartray tethers into existing fixture to hang geartray.
4. Insert lampholders into labeled geartray cutouts.
5. Insert incoming power leads into ballast disconnect plug.
6. Close cover and screw it to fixture body.
7. Insert lamps.



Convert old exit signs (incandescent or fluorescent) to LED Exit Signs

Howard Lighting offers a full line of Exit and Emergency lighting products, as well as, combo units, remote lamp heads, and emergency ballasts. Our LED exit and emergency products will save you energy and money. LEDs use less energy and last longer than incandescent and fluorescent lighting. Switching to LED Exit signs will save your energy costs, as well as, maintenance and replacement costs.



Thermoplastic LED Combo HL0214 Series

- Completely self-contained
- Long life, energy saving LED lamps
- Fully-automatic operation
- Universal mounting
- Dual voltage 120/277 VAC operation
- Push to test switch
- Includes two adjustable glare-free lighting heads
- Self-Diagnostic and remote capable features also available



Thermoplastic LED Exit Signs HL0201 Series

- Slim profile
- Long life, energy saving LED lamps
- Snap-fit faceplate installs without tools
- Snap-fit canopy for top or end mounting
- Dual voltage 120/277 VAC operation
- Battery Back up version available
- Self-Diagnostic and Remote Capable features also available

HID Wallpack → LED Wallpack



LED systems use less energy, last longer, and reduce long-term maintenance costs compared to HID lighting systems.

Advantages

- Long lifespan—between 50,000+ hours
- Minimal Lumen depreciation—70%
- Great color rendering
- Instant-on—light up very quickly
- Environmentally friendly—uses less energy and contains no mercury

LED – A New Lighting Solution

With Howard LED products you are guaranteed to save energy, save time and save money. Our LED products will cut your energy costs drastically by up to 50%. With over 50,000 hours life expectancy, our LEDs will save you time and money in maintenance and energy costs. Let us be your choice for LED lighting solutions!

HID Canopy → Induction Canopy



Induction lighting offers great benefits for those looking to save energy without a large investment. Also called an electrodeless lamp, induction lighting offers a solution to customers looking for long-life, energy savings, and no high-end investment. Induction lighting offers these great benefits.

Advantages

- Long lifespan—between 65,000 and 100,000 hours
- High energy conversion efficiency between 62 and 90 Lumens per watt
- High power factor
- Minimal Lumen depreciation
- Instant-on and hot re-strike
- Environmentally friendly—uses less energy and uses less mercury compared to conventional lighting due to long lifespan
- Long term cost benefit of 35% to 55% in energy and maintenance costs compared to traditional commercial and industrial lighting.

HID Cobrahead → LED Cobraheads

Howard roadway LED luminaires provide better nighttime visibility, use less energy, last longer and with significantly less light degradation, require less maintenance, and have less environmental impact than conventional lighting.

•Benefits Include

- Highest target efficiency
- Uses up to 50% less energy
- Maintenance-free for 10+ years
- Environmentally friendly
- No light trespass
- No light pollution
- Full cutoff
- Low glare
- Dark Sky compliant
- Die-cast housing
- Maximum flexibility
- IESNA Type II distribution pattern
- Flat Glass or Profiled
- Acrylic Lens



VHA1

Vaporproof Highbay
4 or 6 lamp



VSA4

VSA8

Vaporproof Strip
4 or 8 foot



VFP

Vaporproof Strip
Food Processing



Food Processing & Cold Storage facilities require certain specifications of the fixtures they use. They must be vapor tight to prevent contaminants and other foreign objects from entering the facility. In addition, the fixtures must withstand hose-down and washing procedures at certain psi's. Some of our fixtures, such as the vaporproof highbays and strips meet these requirements. We also have several fixtures in development to also support this market.

Database of State Incentives for Renewables and Efficiency

DSIRE is a comprehensive source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council.

Website: www.dsireusa.org

Michigan Department of Energy, Labor, and Economic Growth

The Bureau of Energy Systems promotes energy efficiency and renewable energy resource development to Michigan's residents, businesses and public institutions.

Website: <http://www.michigan.gov/dleg/> (Click on Energy Office)