



ENERGY SAVINGS GUIDE RETAIL & GROCERY



focus on energy[®]

Partnering with Wisconsin utilities

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YOUR GUIDE TO REDUCE ENERGY WASTE

FOCUS ON ENERGY® helps Wisconsin businesses to install energy-efficient technologies to improve store appearance and customer comfort, while reducing costs and energy waste. We assist you by providing:

- Dedicated staff who understand your business and provide hands-on support.
- Experience to identify key savings opportunities in your stores.
- Information to make fast and informed energy savings decisions.
- Financial incentives to help offset costs of making energy-efficient equipment upgrades.

About this guide

We will help make the most of your energy efficiency dollars while improving your customers' shopping experience. Use this guide as a tool to walk through your stores to identify different savings opportunities. You'll find guidance on identifying savings opportunities in:

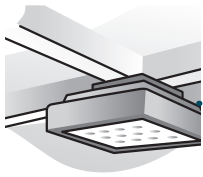
- Interior lighting.
- Exterior lighting.
- Heating, ventilation, and air conditioning.
- Refrigeration.

We're here to help

Contact **800.762.7077** or visit **focusonenergy.com/business** to learn more and to identify which program is right for you. Be sure to check the website for full eligibility and participation requirements.

INTERIOR LIGHTING





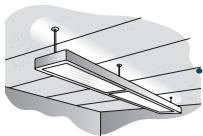
• High bay LED

- LED high bay fixtures offer a longer-rated life than non-LED fixture options, reducing downtime and maintenance expenses. With the recent advancements in LED technology, **energy savings of 60% to 80%** can be achieved.
- LED offers more controls-ready products, leading to additional savings when using strategies such as daylighting or occupancy controls.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
High Bay LED, per fixture	500-1,700	\$50-\$170	\$1,200-\$4,000

Menards® SUCCESS STORY

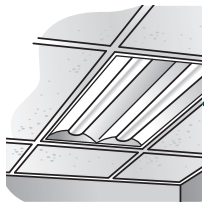
In addition to energy savings, the LED high bays installed at Menards stores throughout Wisconsin show the true colors of the products on the shelf, including paints, siding, and shingles, making it easier for customers to find the right product.



• Linear ambient LED

- Linear fluorescent lighting is a popular lighting design element for general (or ambient) store illumination, especially in dry-good aisles and over checkouts. LED alternatives produce the same amount of delivered light while consuming less energy.
- LED lamps and fixtures provide better uniformity and color fidelity, making product packaging “pop.”
- Tubular LEDs (TLED) can be an attractive retrofit option due to their low first cost, however, an integrated LED fixture can provide higher light output using lower wattage and longer useful life.
- Coupling LED linear ambient fixtures with integrated lighting controls takes advantage of additional savings through daylight harvesting, smart dimming, occupancy sensing and/or demand response strategies, and some systems can even provide intelligence through customer trends and analytics.

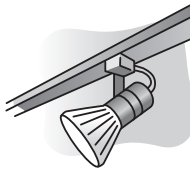
	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
LED Linear Ambient Fixture, per foot	20-90	\$2-\$9	\$40-\$140



• High performance troffers

- In general, LED troffers produce the same amount of delivered light as most existing 3- to 4-lamp T8 systems while **consuming 40-65% less wattage**.
- Lighting quality is often improved with better uniformity and color fidelity.
- Tubular LEDs (TLED) can be an attractive retrofit option due to their low first cost, however, an integrated LED fixture can provide higher light output using lower wattage and longer useful life.
- Coupling LED troffers with integrated lighting controls can add additional energy savings through daylight harvesting, smart dimming, occupancy sensing and/or demand response strategies.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
LED 2x4 product, per fixture	200	\$20	\$320
LED 1x4 product, per fixture	85	\$8.50	\$135
LED 2x2 product, per fixture	100-400	\$10-\$40	\$160-\$640



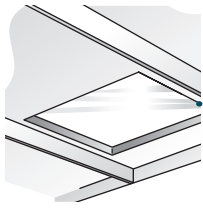
• LED track lights

- For retail display and other track lighting applications, LED track lights can replace 60- to 100-watt halogen or 20- to 39-watt metal halide.
- Hardwired LED luminaires have a built-in driver and light engine. The latest products provide comparable light to metal halide **using about 20% less power** and offer a 5- or 10-year warranty.
- Screw-based LED luminaires have reached 20 watts and provide light equal to the 23- to 25-watt self-ballasted metal halide screw-based lamps. These LED lamps cost about the same, but offer twice the lamp life, are instant starting, and have no UV.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
LED Track Lights, per lamp	100-200	\$10-\$20	\$110-\$200

Ace® Hardware SUCCESS STORY

Kimps Ace Hardware in Green Bay upgraded their interior lighting to LED and has achieved a significant decrease in maintenance for their in-store lighting. It also makes a great example of the products they sell in real life applications, allowing their customers to see how the LEDs perform firsthand.



Daylighting

- A significant amount of energy can be saved by using the light produced by the sun to offset the amount of electrically-powered lighting needed.
- Daylighting can be accomplished in various ways, but the most common applications for retail facilities include sky lighting and north facing windows.
- Daylighting systems can achieve an average **energy savings of 29% in retail facilities.**

PRO TIP

A study by the Heschong Mahone Group shows daylighting increases sales by up to 40% in retail stores.



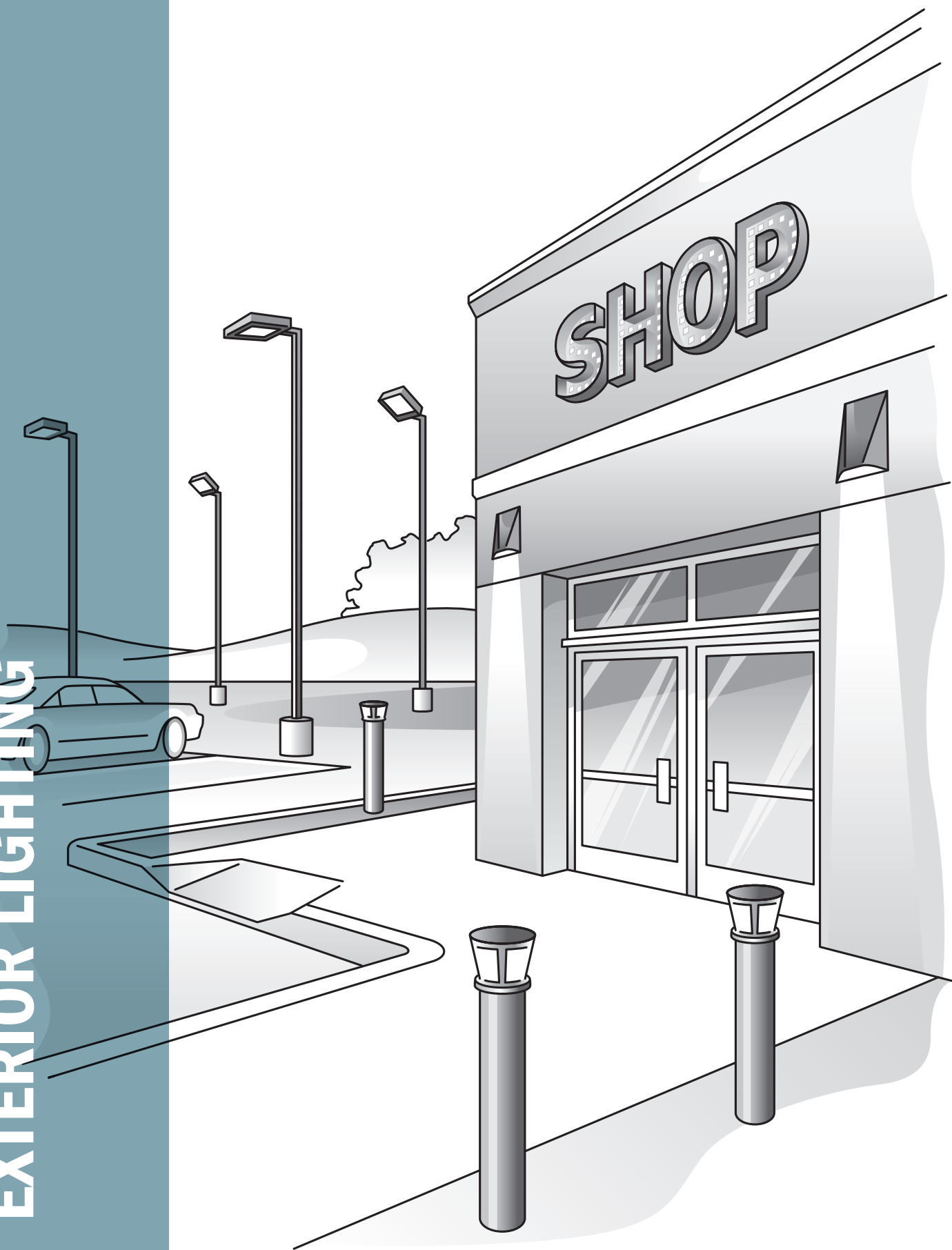
Lighting controls

- In retail and grocery, the best lighting control systems turn lights on and off according to store occupancy schedules. Separate controls are required by code for general lighting, display lighting, lighting for store windows, and exterior lighting. Setting tight schedules, which only operate lights when needed, is the optimal and recommended control strategy.
- Turning off display lighting and lowering general lighting levels for after-hours cleaning and stocking will result in additional energy savings.
- Networked Lighting Control systems are part of the next evolution in lighting and LED technology. Coupling an LED fixture upgrade with Networked Lighting Controls maximizes the full potential of LED control capabilities and your long term energy saving investment.

PRO TIP

Coupling LED upgrades with integrated lighting controls allows for asset and customer tracking and customizes fixture runtime based on space utilization. In addition, controls systems equipped with analytics can help customers navigate through the store, request assistance, and enable retailers to make product recommendations based on a customer's location in the store.

EXTERIOR LIGHTING





LED parking lot

- LED parking lot lighting can be cost effective in many applications and provides better uniformity than their high intensity discharge (HID) counterparts. The average light level of an LED can be 1/3 to 1/2 of an HID because of better overall uniformity.
- LED parking lot lighting can be dimmed or turned off when not needed, with the ability to instantly turn on when motion is sensed. When combined with controls, savings from LED lighting systems increase from 60% to 70% fewer watts to upwards of over 80%. Typical payback periods for these systems are less than 5 years.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
LED Parking Lot Lighting, per fixture	500-1,100	\$50-\$110	\$900-\$1,900



LED wallpacks and bollards

- Most low wattage wall packs and bollards use HID lamps. LED fixture wattage is about half of an HID lamp, while the cost is often comparable or lower.
- LEDs can be turned on and off as needed and have the ability to be integrated with motion sensors. HID lamps typically operate all night as they are not able to turn on and off instantly, limiting the opportunity for controls integration.
- Most LED luminaires are dark-sky friendly with total upward light cutoff, making them superior overall choices.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
Exterior LED Wallpacks and Bollards, per fixture	300-1,100	\$30-\$110	\$400-\$1,400



• Exterior controls

- LED parking lot lighting can be dimmed or turned off when not needed, such as after normal business hours or during periods of low nighttime customer activity. The LED lights can be turned on or brought back up to 100% when an occupancy sensor detects motion.
- Combining controls with an LED upgrade from conventional HID can produce **energy savings exceeding 80%**.
- Networked Lighting Control systems are part of the next evolution in lighting and LED technology. Coupling an LED exterior fixture upgrade with Networked Lighting Controls maximizes the full potential of LED control capabilities and your long-term energy saving investment.
- Choosing a DesignLights Consortium™ (DLC) listed system ensures your fixtures are networked (devices communicate with each other), can sense occupancy and traffic, and are able to respond to daylight, trim, zone, continuous dim, and scheduling type programming.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
Exterior Lighting Bi-Level Controls, Dusk to Dawn per controlled fixture	550	\$55	\$450
Photocell with Internal Timer or Wireless Schedule per controlled fixture	600	\$60	\$510



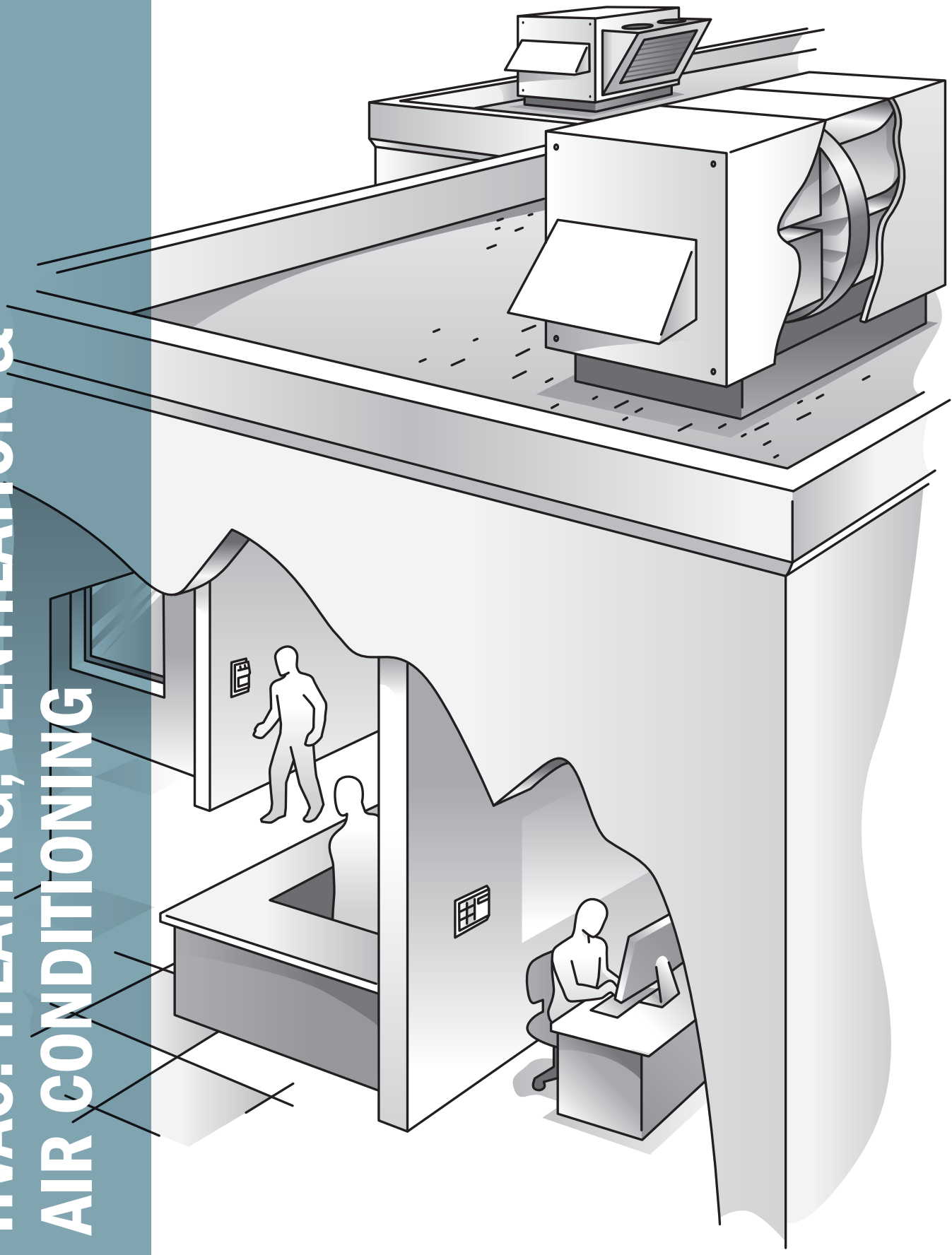
• Exterior signage

- LED technology can be a good alternative to incandescent, high intensity discharge (HID), fluorescent, or neon in exterior commercial signage.
- Channel lettering and backlit panels are some of the more common and cost-effective upgrades. They provide better uniformity in sign illumination, produce significant maintenance savings and **reduce energy use by more than 30%**.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
Exterior LED Signage per Watt reduced	4	\$0.40	\$6.40

Notes:

HVAC: HEATING, VENTILATION & AIR CONDITIONING





High efficiency packaged rooftop units (RTU) with advanced rooftop unit controllers

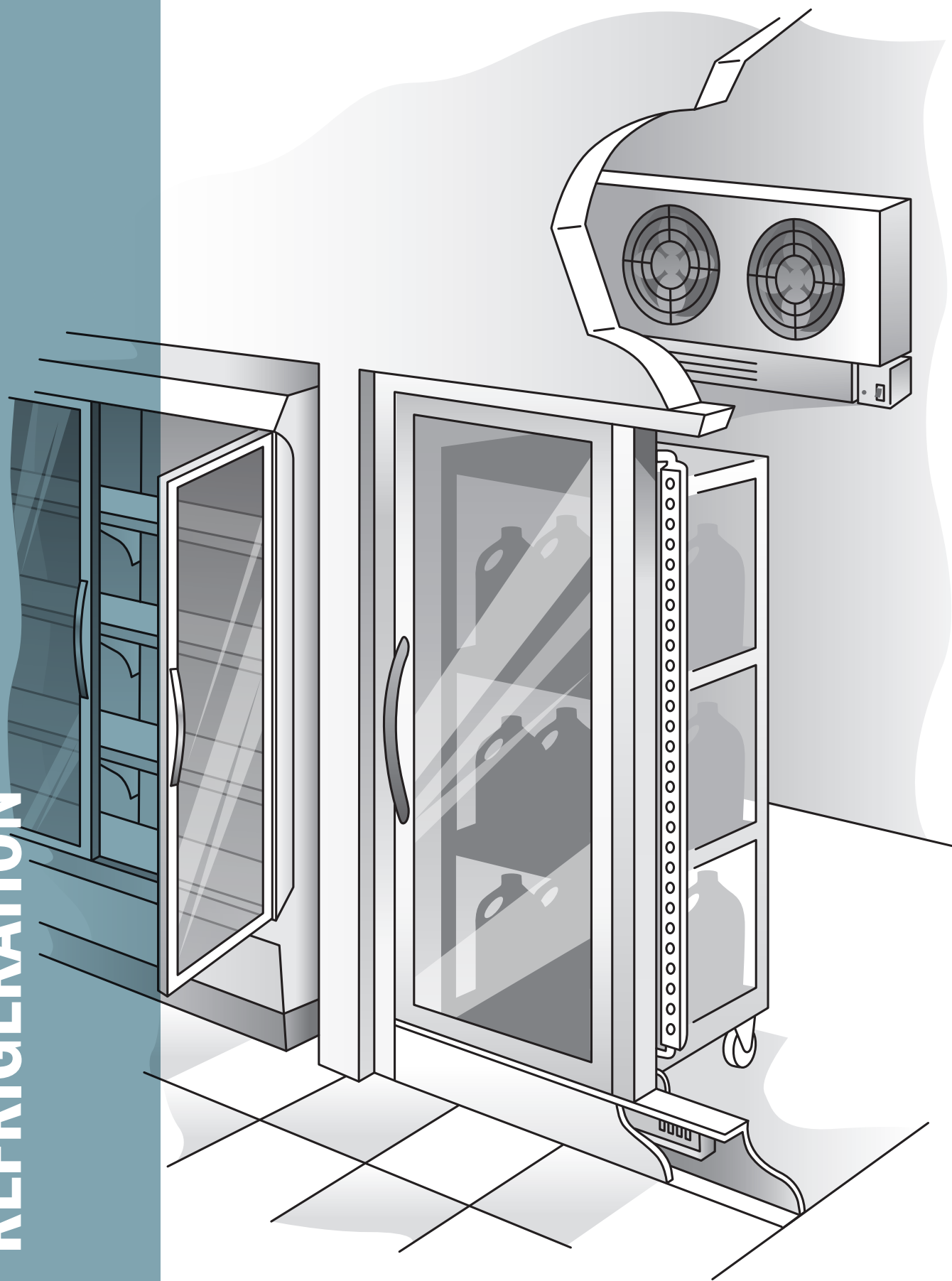
- Packaged rooftop units are used in over 50% of commercial buildings, but most lack effective controls to perform efficiently throughout daily changes in operating conditions. Advanced Rooftop Unit Controllers (ARC) **improve efficiency by up to 50%** with the use of advanced control strategies.
- Integrated economizer control regulates the amount of ventilation airflow being introduced to the building. Economizers save energy by using cool outside air to condition the space — commonly referred to as "free cooling" — instead of running the compressors to provide cool, conditioned air.
- Demand control ventilation slows or speeds up fans and air intake based on building occupancy instead of running the supply fan at a constant rate. This is commonly implemented through measurement of carbon dioxide concentration levels inside the building.
- Variable or multi-speed fan controls adjust the speed of the RTU's supply fan based on an operating signal like desired temperature or amount of fresh air. This reduces the amount of time the fan runs at full speed.

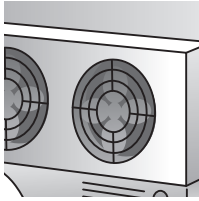
	ANNUAL KWH SAVINGS	ANNUAL THERM SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
High Efficiency Packaged RTUs (15 SEER), 5 ton units	1,100	0	\$110	\$2,000
High Efficiency Packaged RTUs (12.0 SEER, 13.8 IEER), 10 ton units	3,000	0	\$300	\$5,500
Advanced Rooftop Unit Controllers	30-50% annual savings over existing operation			

PRO TIP

Not only do advanced rooftop unit controllers optimize your existing units' runtime and efficiency — they also improve indoor air quality, occupant and customer comfort, and reduce the noise level of the rooftop units.

REFRIGERATION





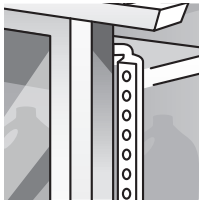
Evaporator fan motors and controls

- Standard shaded pole (SP) and permanent split capacitor (PSC) motors are inefficient, ranging from 20% to 40%, and also dissipate a significant amount of heat to the refrigerated space.
- Electronically commutated motors (ECM) are approximately 75% more efficient and create less heat, resulting in both motor and refrigeration savings. As an added benefit, they also run more quietly.
- The typical payback for replacing SP motors with ECMs is approximately 1 year.
- Evaporator fan speed controls increase the efficiency of walk-in coolers and freezers by alleviating the need for fans running continuously at one speed. The controller manages fan speed by responding when the compressor cycles off and there is no refrigerant flow through the evaporator.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
ECM Evaporator Fan Motors, per motor	350-2,500	\$35-\$250	\$650-\$4,650
Motor Controls, per motor	200-450	\$20-\$45	\$100-\$250

PRO TIP

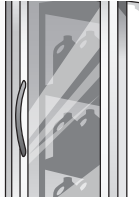
When upgrading to ECMs, consider upgrading the fan blades at the same time to ensure optimal operation of the fans. Many times, the blades are dented or misshapen, causing the new motors to run less efficiently.



LED refrigerated case lighting and controls

- Refrigerated case lights produce heat, causing the refrigeration system to run longer to maintain cold temperatures in the case.
- Replacing fluorescent lighting with LED reduces the heat generated and provides a higher-quality light on the product, making colors pop.
- **Energy savings exceed 50%** and LED lamps look better and last longer. Payback is especially fast in retail applications with long operating hours.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
LED Refrigerated Case Lighting, per door	650	\$65	\$450
Occupancy Sensors, per door	180	\$18	\$160
Horizontal LED Refrigerated case Lighting, per linear foot of lamp	130	\$13	\$90



Energy-efficient refrigerated case doors

- Refrigerated case doors have heaters to reduce the moisture build-up on the glass doors.
- Low-energy and no-energy doors reduce the total number of heaters and instead use additional insulation and coatings to reduce moisture buildup. Using low- and no-energy doors reduces the heat load added to the refrigerated cases.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
Low Energy and No Energy Refrigerated Case Doors, per case	120-1,800	\$12-\$180	\$115-\$2,000

**Piggly
Wiggly®**

SUCCESS STORY

Olsen's Piggly Wiggly in Cedarburg added doors to its existing dairy open multideck-style cases. The doors gave the older cases a brand new look and have improved customer comfort in the dairy aisle, making it warmer.



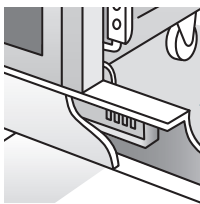
• Open case modifications

- Open vertical multideck-style cases are about three times more energy intensive per linear foot than a vertical refrigerated display case with doors.
- The open cases run air curtains continuously to keep cold air inside the cooler or freezer. These fans run constantly, causing additional load and heat gain on the cases.
- Each time the air curtain is “broken” by customers or products blocking the flow of the curtain, the refrigerated case air flows into the store. Many times, customers complain of cold aisles.
- Continual blocking of the air curtain can lead to longer compressor and refrigeration runtimes and can also increase product shrink and spoilage.

	ANNUAL KWH SAVINGS	ANNUAL THERM SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
Adding doors to existing open multideck-style cases, per linear foot of case	710	80	\$135	\$2,025
Replacing open multideck-style cases with new cases with doors, per linear foot of case	975	110	\$185	\$2,775

Roundy's[®] SUCCESS STORY

As part of the rebranding efforts of Pick ‘n Save and Metro Market stores, Roundy's replaced its open multideck-style cases with new cases with doors. The new cases vastly improved the appearance of the store and the product within the cases.



• Anti-sweat heater controls

- Refrigerated case doors have heaters to reduce the moisture buildup on the glass doors. These heaters run 24/7, but in Wisconsin, they are only necessary during the hot and humid months of the year.
- Anti-sweat heater controls regulate the heaters, turning them on when the temperature and humidity levels are high to reduce the moisture on the glass and turning the heaters off when they are not needed.
- Adding anti-sweat heater controls to refrigerated case doors will reduce runtime of the heaters, also reducing the amount of heat added to the refrigerated space.

	ANNUAL KWH SAVINGS	ANNUAL SAVINGS	LIFETIME SAVINGS
Anti-Sweat Heater Controls, per case	575-2,060	\$60-\$200	\$850-\$2,800

Get started today!

Take advantage of financial incentives

Start saving energy and money on all the technologies listed in this guide. Follow these simple steps:

- 1 Work with your Energy Advisor from Focus on Energy to identify the opportunities right for your facility. Your Energy Advisor will also help with any necessary pre-approvals and equipment qualification. Visit focusonenergy.com/energy-advisor-map to find yours.
- 2 Work with your Trade Ally to perform your energy-efficient upgrades. Need a Trade Ally? Go to focusonenergy.com/findatradeally.
- 3 Apply for incentives. Go to focusonenergy.com/applications to ensure you're using the most recent form.

Contact us to get started

For more information, call **800.762.7077** or visit focusonenergy.com.

Energy savings ranges within this guide are derived from Program assumptions documented in Program measure work papers. Cost savings ranges in this guide are derived from utility data provided by the Energy Information Administration (EIA), with annual \$ savings using present day assumptions of \$0.10/kWh and \$0.762/therm. Lifetime \$ savings assume an annual 3% utility escalation rate for the life of each measure. Expected lifetimes of each measure are calculated using the effective useful life values referenced from the Focus on Energy Technical Resource Manual.

Notes:



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REDUCING ENERGY WASTE ACROSS WISCONSIN

Focus on Energy, Wisconsin utilities' statewide program for energy efficiency and renewable energy, helps eligible residents and businesses save energy and money while protecting the environment. Focus on Energy information, resources, and financial incentives help to implement energy efficiency and renewable energy projects that otherwise would not be completed. 067-0135-11-00

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