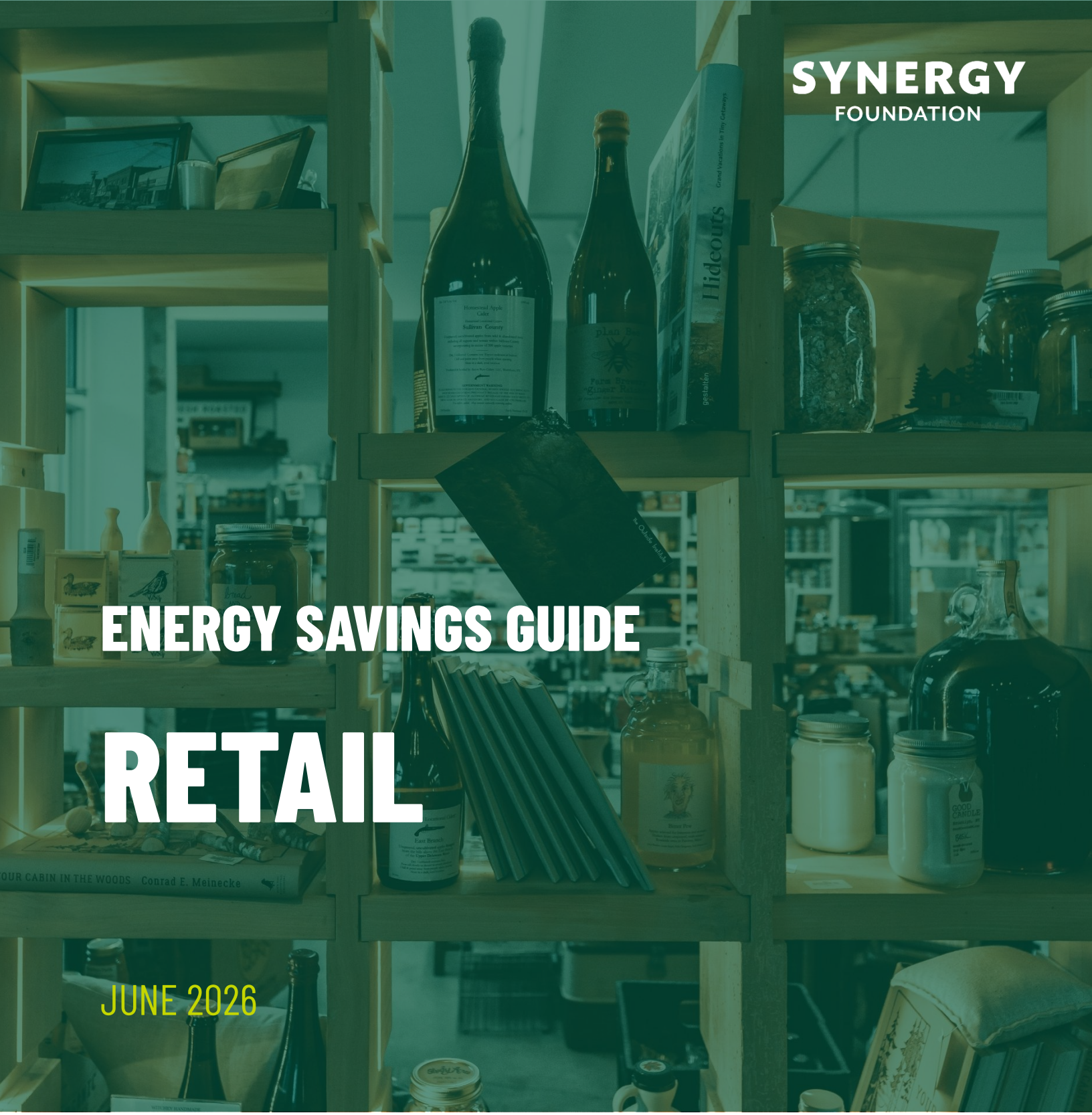

SYNERGY FOUNDATION

ENERGY SAVINGS GUIDE

RETAIL

JUNE 2026

BC GREEN BUSINESS

BC Hydro Power smart

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1. Executive Summary

Retail businesses face rising energy costs driven by long operating hours, lighting demands, heating and cooling requirements, and increasingly technology-heavy stores. This guide provides practical, proven strategies to help retail operators reduce energy use without compromising customer comfort, safety, or store appearance.

By focusing on lighting, HVAC, building envelope improvements, equipment efficiency, and staff engagement, retail businesses can significantly lower utility costs while improving customer experience and supporting sustainability commitments.

Key Benefits of Energy Efficiency for Retailers

- **Lower operating costs** and improved profit margins
- **More comfortable shopping environments** for customers and staff
- **Extended equipment life** and fewer maintenance issues
- **Alignment with sustainability goals, certifications, and utility programs**

2. Understanding Retail Energy Use

2.1 Typical Retail Energy Use Profile

While energy use varies by store size and format, most retail energy consumption falls into these categories:

- **Lighting:** 30–50%[1]
- **HVAC (heating, cooling, ventilation):** 25–40%[2]
- **Plug loads & equipment:** 10–20%[3]
- **Other (signage, exterior lighting, misc.):** 5–10%[4]

3. Lighting: The Top Priority for Retail Savings

Lighting is typically the **largest single consumer of electricity in retail stores**, and it plays a critical dual role: driving energy costs while directly shaping the customer experience. Retail spaces require higher lighting levels than many other commercial buildings to support product visibility, visual merchandising, safety, and brand presentation—often for long operating hours.

The U.S. Department of Energy (DOE) identifies retail as one of the **most lighting-intensive commercial sectors**, due to extended operating hours and high use of accent and display lighting.[1]

Because lighting loads operate whenever the store is open—and often when it is closed — inefficiencies accumulate quickly, making lighting upgrades one of the fastest and most reliable paths to energy savings.

3.1 Lighting Equipment Upgrades

Full LED Conversion

Replacing incandescent, halogen, or fluorescent lighting with LED fixtures can reduce lighting energy use by **50–70%**[5] making LED conversion one of the most effective and reliable energy-saving measures available to retail businesses.

Beyond direct electricity savings, full LED conversion delivers several additional benefits:

- **Lower cooling demand:** Older lighting technologies emit a large amount of waste heat. LEDs operate much cooler, which can reduce air-conditioning loads—especially during summer months and in high-density retail layouts.[5]
- **Reduced maintenance costs:** LEDs typically last **up to 25 times longer** than incandescent lighting significantly reducing lamp replacement frequency, labour costs, and disruptions to store operations.[5]
- **Improved light quality:** Modern retail-grade LEDs offer high colour rendering, consistent illumination, and better control over colour temperature—enhancing product appearance and customer experience.[6]
- **Compatibility with controls:** LEDs integrate easily with advanced lighting controls such as occupancy sensors, scheduling, dimming, and daylight harvesting, unlocking additional energy savings beyond the fixture upgrade itself.[1]

For most retail stores, a full LED conversion offers **fast payback, predictable savings, and minimal operational disruption**. Lighting upgrades are often the first step in an energy management plan because they can be installed in phases, deliver immediate savings, and improve store appearance rather than compromise it.

To reduce the upfront cost of these upgrades, **BC Hydro offers financial incentives for eligible commercial LED lighting projects** through its Business Energy-Saving Incentives and related programs. These incentives can cover **up to 100% of project costs**, significantly improving the business case for LED retrofits.[7]

Where to focus:

- Sales floors
- Accent and display lighting
- Stock rooms
- Exterior and parking areas

Canadian Tire LED Lighting Retrofit (Canada)[8]

Canadian Tire, one of Canada's largest retail chains, completed a multi-site LED lighting retrofit across 15 retail stores located in British Columbia, Ontario, Quebec, and Saskatchewan, replacing legacy fluorescent, HID, and metal-halide lighting systems with high-efficiency LED fixtures.

The project delivered major reductions in lighting energy use—reported at roughly 50–70% per store depending on location and fixture type—resulting in over $500,000 in annual energy cost savings across the retrofitted sites. In addition to electricity savings, the upgrade significantly reduced maintenance requirements by eliminating frequent lamp and ballast replacements, while also improving lighting uniformity, colour quality, and visual comfort for both customers and staff. The project team also leveraged utility incentive programs to offset upfront costs, helping accelerate payback and enabling the retailer to scale the lighting upgrades across multiple locations.

Lighting Controls

Lighting controls add **significant additional energy savings on top of LED upgrades** by ensuring lights are only on when and where they are needed. In retail environments where operating hours are long and lighting levels are high; controls are often the difference between efficient lighting and optimal lighting. When combined with LED fixtures, lighting controls typically deliver an **additional 20–40% reduction in lighting energy use**, depending on store layout, operating hours, and control strategy.[9]

Key Lighting Control Strategies for Retail:

Back-of-house & low-traffic areas > Occupancy sensors

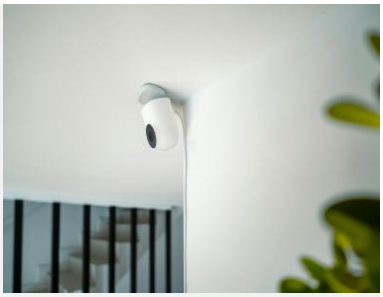
Occupancy sensors automatically turn lights off when spaces are unoccupied and back on when movement is detected.

Interior, Exterior & Signage lighting > Time scheduling

Time-based controls switch lighting on and off according to predefined schedules.

Windows & Storefronts > Daylight sensors

Daylight sensors measure incoming natural light and automatically dim or turn off electric lights when sufficient daylight is available.



3.2 Lighting Operations Best Practices

Even in stores with efficient LED lighting, **daily operating practices play a major role in determining how much energy is actually saved**. Lighting is often left on longer than needed out of habit or convenience, particularly during opening, closing, and low-activity periods. The following best practices focus on simple operational changes that can deliver **immediate, no-cost or low-cost savings** while maintaining safety and customer experience.

- Turn off non-essential lighting during non-business hours
- Reduce accent lighting during stocking or cleaning
- Use zoned lighting so only active areas are illuminated
- Assign Responsibility and Create Simple Routines

4. HVAC & Customer Comfort Systems

Heating, ventilation, and air-conditioning (HVAC) systems play a **critical dual role** in retail spaces: they maintain a comfortable environment for customers and staff, while also representing one of the **largest sources of energy use** in most retail stores[10]. A well-managed HVAC system supports customer comfort, protects merchandise, and reduces operating costs.

4.1 HVAC Efficiency Improvements

Regular Maintenance

- Replace air filters regularly
- Clean coils and fans
- Ensure sensors and thermostats are functioning correctly

Poorly maintained HVAC systems can use **10–30% more energy**.[11]

Smart Thermostats & Controls

Smart or programmable thermostats automatically adjust temperatures based on occupancy and time of day.

Best practices

- Reduce heating/cooling overnight
- Avoid excessive heating near entrances
- Prevent simultaneous heating and cooling

Optimize Temperature Setpoints

Even small adjustments can lead to savings:

- Winter heating reductions of 1–2°C
- Summer cooling increases of 1–2°C

You **reduce the temperature gap** between indoors and outdoors. This means:

- Heat leaks out more slowly in winter
- Heat comes in more slowly in summer

So, the HVAC system runs **less often and for shorter periods**, saving energy.[12]

Each 1°C (≈2°F) adjustment in thermostat setpoint typically saves **1–3% of heating or cooling energy**, depending on climate and building efficiency.[13]

4.2 Managing Infiltration & Drafts

Retail buildings lose energy whenever **warm or cool air escapes and is replaced by outdoor air**. This happens most often at openings or weak points in the building envelope—especially doors, windows, and poorly sealed frames. When conditioned air leaks out (or outdoor air leaks in), the HVAC system has to work harder to maintain a comfortable indoor temperature, increasing energy use and costs.

Studies show that uncontrolled air leakage through doors, windows, and gaps in the building envelope can account for **10–40% of heating and cooling energy use** in commercial buildings, meaning that relatively small investments—such as sealing gaps or controlling door operation—can deliver **long-term energy savings, improved comfort, and reduced HVAC wear.**[14]

Ensure that you have:

- Weatherstripping and door seals on bay door and all entrances/exits
- Double paned windows or draft proofed windows
- Air curtains at high-traffic entrances

Solar Heat Gain Control

Large storefront windows are a common source of excess heat in retail spaces during summer months**. Solar heat transmitted through unshaded glazing raises temperatures near display windows** and forces air conditioning to work harder to compensate, increasing energy costs and creating uncomfortable hot spots for customers and staff.

Simple measures to reduce solar heat gain include:

- Exterior awnings or overhangs to block direct sunlight before it reaches the glass
- Interior motorized shades or blinds that can be adjusted based on sun angle and time of day
- Solar-control window films help reduce heat transmission without blocking natural light or visibility

These measures are **low-disruption, relatively low-cost, and can meaningfully reduce cooling loads** near high-exposure windows throughout the summer.

4.3 Demand-Controlled Ventilation (DCV)

Retail stores experience significant occupancy swings throughout the day from quiet early mornings to busy weekend peaks. Traditional ventilation systems run at a fixed rate regardless of how many people are in the store, continuously heating or cooling outdoor air that may not be needed.

Demand-controlled ventilation uses CO_2 or occupancy sensors to **dynamically adjust fresh air intake based on real-time store occupancy**. When the store is quiet, the system reduces outdoor air intake; when occupancy rises, ventilation scales up accordingly. This reduces the energy load of conditioning unnecessary outdoor air without compromising air quality or customer comfort.

A U.S. Department of Energy study found that DCV delivers the greatest energy savings in stand-alone retail and strip mall buildings compared to other advanced ventilation strategies, **with average ventilation-related energy cost reductions of up to 38% across commercial building types.**[18] DCV is compatible with most modern HVAC control systems, making it a practical upgrade rather than a full system replacement.

5. Equipment & Plug Loads

While equipment and plug loads typically use less energy than lighting or HVAC, they can add up quickly in retail spaces because many devices run all day, every day, often across multiple locations. Items such as cash registers, point_of_sale systems, computers, monitors, printers, routers, digital displays, break_room appliances, and device chargers all draw power whenever they are plugged in. Additionally upgrading to energy_efficient options when equipment needs replacing is another meaningful opportunity to lower total electricity consumption, especially in stores with extended hours or multiple electronic systems.

Key Opportunities

- Use smart power strips in offices and staff areas
- Turn off unused technology overnight
- Upgrade monitors, and office equipment to ENERGY STAR_certified models

Table 1: Estimated energy savings from switching conventional electronic equipment to ENERGY STAR® certified alternatives, including typical percentage reductions and annual electricity savings (kWh).[15, 16]

Equipment type	ENERGY STAR® product	Energy saved	Annual kWh saved (typical)
Computer monitor (24–27")	Efficient backlighting + auto sleep	**7–30%**	**15–25 kWh**
Desktop computer / POS terminal	Advanced power management	**30–40%**	**100–200 kWh**
Printer / multifunction device	Low-power sleep & auto-off	**30–60%**	**40–100 kWh**
TV / digital display	Efficient panel + low standby	**25–30%**	**50–100 kWh**
Office / staff refrigerator	High-efficiency compressor & insulation	**15–20%**	**300–400 kWh**

6. Staff Engagement

Staff play a major role in the day-to-day energy performance of a retail store, since they regularly interact with lighting, HVAC systems, and equipment throughout their shifts. Simple behavioural actions—such as turning off lights in fitting rooms and stock areas, powering down displays and equipment after hours, and reporting drafts or equipment issues early—can reduce overall energy use by **5–10%**, based on workplace studies showing similar behavioural interventions achieving 5% or more in savings.[17].

6.1 Why Staff Engagement Matters

- Staff control lights, displays, and equipment daily
- Behaviour-based savings are often **free or low-cost**
- Engagement supports long-term performance

6.2 Practical Staff Engagement Strategies

Energy Awareness Training

Incorporate energy efficiency practices into new-hire onboarding and regular staff meetings.

Reinforce simple habits with clear signage such as:

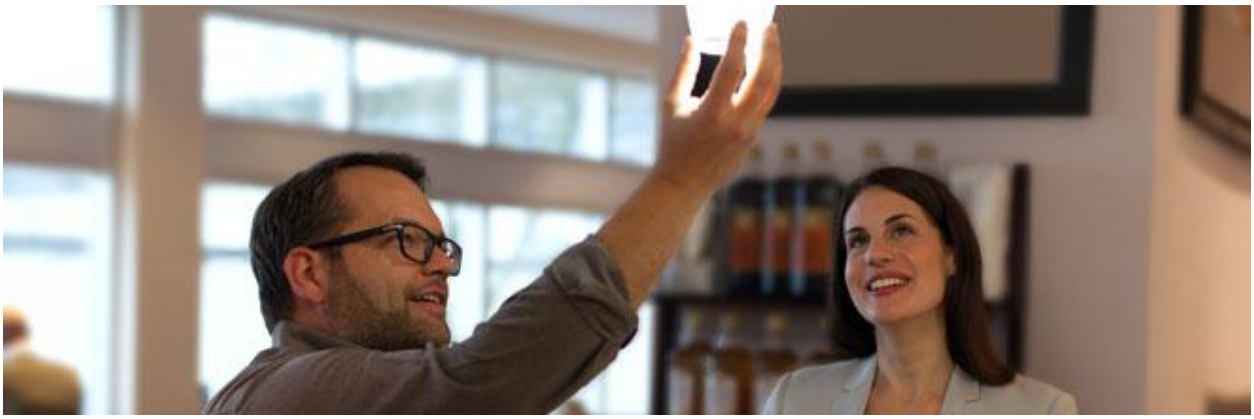
- "Lights Off When Not in Use"
- "Please Keep Door Closed"
- "Power Down at Close"

6.3 Energy Champion Program

An Energy Champion is a designated staff member who takes ownership of promoting and supporting day_to_day energy_saving practices within the store. Designate one staff member to:

- Monitor energy actions
- Share updates
- Encourage consistent practices

7. BC Hydro Programs & Support



Below are key BC Hydro programs that support large commercial customers, including retail stores, in managing energy use and identifying efficiency opportunities. Programs offer expert guidance, funding, and technical assessments to help reduce operating costs and improve long-term energy performance.

Resource	Eligibility	About
Business Energy Advisors	Business Energy Advisors are available to business customers who don't have a Key Account Manager and who operate in one of the following regions: • Lower Mainland • Fraser Valley • Vancouver Island • Interior B.C. • Northern B.C.	A free consultation at your facility from a Business Energy Advisor. They'll identify energy-saving opportunities, provide you with a report of your current technologies and the new, energy-efficient replacement options, and give you advice about next steps and financial incentives that you may qualify for.
Continuous Optimization	Owner or long-term leaseholder of a large commercial or institutional building, or a facility with a total indoor floor area of at least 40,000 square feet.	Incentives, tools, and support to improve your building's energy efficiency now and in the future.

Business Energy Saving Incentives (BESI)	Available to commercial and small industrial sites using under 500 MWh/year and requires installation by an Alliance of Energy Professionals contractor.	Provides funding for energy-efficient upgrades such as lighting, refrigeration add-ons, and HVAC/mechanical measures, typically covering ~40% of costs with an additional 30% bonus available.

8. Measuring Success

Tracking performance helps maintain savings and identify opportunities for continual improvement while reinforcing a positive, sustainability-focused brand image.

- Review monthly energy bills
- Compare year-over-year usage
- Celebrate wins with staff and share initiatives through social media
- Use ENERGY STAR Portfolio Manager — a free tool to track and benchmark energy use

9. Additional Resources

List of sustainability and operational resources:

- BC Green Business
- Employee Energy Awareness Guide
- BC Hydro Programs & Incentives
- Energy Star Benchmarking tool
- Appliance Cost Calculator

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