# EZ Voltage – Lighting Retrofit Training Course (Commercial Buildings)

Trainees will develop practical and technical expertise in assessing, planning, and executing lighting retrofits in commercial spaces. The training emphasizes energy efficiency, safety, ROI calculations, and sustainable upgrades.

## Day 1 Summary (5 hours):

Day 1 provides an introduction to lighting systems, focusing on legacy versus LED technology, how to conduct commercial lighting audits, and the principles of energy efficiency and return on investment (ROI). Trainees begin to develop their understanding of lighting performance, audit techniques, and how to calculate long-term energy savings for clients.

### Unit 1 – Introduction to Lighting Systems (2 Hours)
Trainees learn to differentiate between traditional and modern lighting systems, including incandescent, fluorescent, HID, and LED technologies. The unit emphasizes key lighting terms such as lumens, color temperature, and CRI (Color Rendering Index).

### Unit 2 – Audit and Assessment Methodology (2 Hours)
This unit walks through the process of conducting a commercial lighting audit. Participants learn to use templates to record fixture counts, wattages, and usage patterns, and how to identify retrofit opportunities.

### Unit 3 – Energy Efficiency and ROI Principles (1 Hour)
Trainees will be introduced to methods for calculating energy savings and ROI, including payback periods and lifecycle cost analysis. The unit reinforces how retrofits impact utility costs and overall operational efficiency.

### Activities and Exercises:
Trainees will conduct a mock lighting audit using blueprints or on-site walk-throughs, compare fixture types for energy performance, and complete ROI calculations for a sample building.

## Day 2 Summary (7 hours):

Day 2 focuses on selecting appropriate lighting designs, ensuring compliance with codes, and accurately estimating project costs. Trainees learn how to create professional proposals that align technical solutions with client needs.

**Unit 4 – System Design and Fixture Selection (3 Hours)**
Participants explore how to choose the right lighting fixtures based on building use, layout, and lighting goals. This includes understanding beam angles, mounting types, and integrated controls.

**Unit 5 – Code Compliance and Standards (3 Hours)**
This unit covers the Ontario Building Code, Electrical Safety Code, and other regulatory requirements that apply to lighting systems in commercial settings. Fire safety and emergency lighting compliance are also discussed.

**Unit 6 – Project Cost Estimating (1 Hour)**
Trainees learn to calculate labour hours, material costs, and contractor overhead. They also explore how to price competitive proposals and factor in potential rebates.

**Activities and Exercises:**
Participants complete a design challenge comparing lighting layouts, take a code compliance quiz, and develop a mock estimate with detailed line items for materials and labour.

---

## Day 3 Summary (6 hours):

Trainees get hands-on experience in safe installation practices, wiring configurations, and adapting retrofit techniques to different commercial building types. Emphasis is placed on fieldwork and adapting to diverse infrastructure.

**Unit 7 – Fixture Installation & Safety (2 Hours)**
This unit covers safe use of ladders and PPE, use of hand tools for ceiling and wall-mounted fixtures, and job site hazard identification.

**Unit 8 – Retrofit Techniques for Different Buildings (2 Hours)**
Trainees will explore retrofit strategies for a variety of commercial layouts, such as drop ceilings, open warehouses, and office corridors. They will learn how to minimize disruptions to operations during installation.

**Unit 9 – Circuit Load & Panel Checks (2 Hours)**
Participants will assess how to evaluate existing electrical infrastructure to determine whether additional circuits or upgrades are required.

**Activities and Exercises:**
Trainees participate in a live fixture replacement demo, perform load verification on circuits using test meters, and complete a safety checklist tailored to commercial settings.

## Day 4 Summary (5 hours):

On Day 4, participants focus on smart lighting controls, coordinating large-scale retrofits, and setting up monitoring systems to validate energy savings post-installation.

### Unit 10 – Lighting Controls and Automation Systems (2 Hours)
This unit introduces dimmers, motion sensors, timers, and daylight harvesting technologies. Trainees will learn how these systems integrate with retrofits for enhanced energy savings.

### Unit 11 – Project Coordination and Scheduling (1 Hour)
Participants learn how to plan installation timelines, coordinate with building staff, and manage disruptions. Emphasis is placed on workflow efficiency and communication.

### Unit 12 – Post-Retrofit Performance Monitoring (2 Hours)
Trainees will learn how to set up data-tracking systems, such as smart meters or BMS (Building Management Systems), and evaluate whether actual performance matches savings projections.

### Activities and Exercises:
Trainees will install and test a basic occupancy sensor, develop a sample retrofit schedule using a case study, and evaluate a mock energy monitoring report for discrepancies.

## Day 5 Summary (5 hours):

The final day consolidates technical knowledge and practical field skills with a focus on testing, quality control, and long-term maintenance. Trainees also walk through the full retrofit process to ensure mastery.

### Unit 13 – Post-Install Testing & Quality Control (1 Hour)
Participants will measure light levels using lux meters, verify fixture operation, and complete sign-off documentation. Attention is paid to customer satisfaction and visual comfort.

### Unit 14 – Troubleshooting and Maintenance (3 Hours)
This unit addresses common post-installation issues such as flickering lights, premature burnout, or faulty sensors. Trainees will learn to build maintenance plans for clients.

### Unit 15 – Final Review and Walkthrough (1 Hour)
A full recap of the retrofit process from audit to completion. Participants walk through a simulated project, identifying gaps and areas for improvement before certification.

**Activities and Exercises:**
 Trainees will complete a final walkthrough on a mock site, perform troubleshooting drills with planted faults, and validate light levels against original design specs.

**Fee per Participant: $2,995**
**Certification Awarded: Commercial Lighting Retrofit Technician**