

Project 1: Emergency Corridor Conversion to Smart LED

OVERVIEW

For safety reasons, a rarely used emergency escape corridor inside an industrial building located in Metro Vancouver, Canada is lit round the clock and adds > \$700 per year to the electric bill. Due to the short life span of fluorescent lamps, some of the lamps were already burnt out and a few others flickered annoyingly. After conversion to Smart LEDs with **Alec Smart LED Conversion (SLC)** kit, huge energy savings and improved light quality are realized.



BEFORE

Fixture Type:	2-Tube, 4-ft T12, 40W per tube with magnetic ballast
Number of Fixtures	7 – Total lighting power=7x40x2 = 560W = 0.56kWh
Operating hours:	Round the clock = 8760 hours per year
Annual Electric Bill:	Energy=0.56 x 8760 = 4906 kWh Rate @ \$0.15/kWh => 4906 x 0.15 = \$736 per year

AFTER

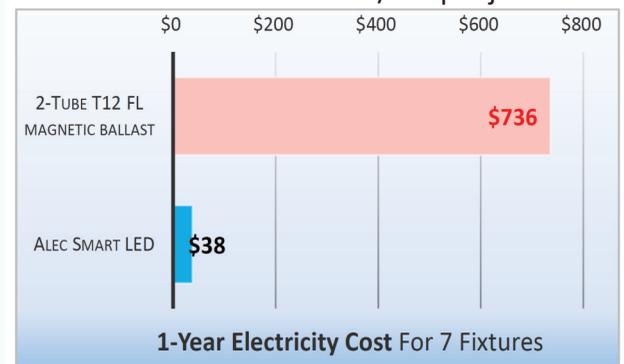
All 7 fluorescent fixtures were converted to Smart LEDs using Alec SLC. Every fixture now stays in DIM mode when there is no occupant. When an occupant is detected by the occupancy sensor on each fixture, the corresponding light will brighten up immediately and smoothly to 80% brightness for up to 2 minutes. It then dims down to minimum brightness when no more occupant is sensed. Each light, when brightened is twice as bright as the original 2-tube T12 lighting. Thus, better and more energy efficient lighting is provided when required, after converting to Smart LEDs using **Alec SLC**.



Fixture Type:	Every fixture is converted using a set of SLC-24F50K
Power	DIM = 4W. Brightened = 32W
Metered Avg Daily Energy:	0.686 kWh (averaged using metered readings over 2 weeks)
Annual Electric Bill:	Energy=0.686 x 365 = 250kWh Rate @ \$0.15/kWh => 250 x 0.15 = \$38 per year

Watch actual video at:

www.aleccontrol.com/slc-project01



Total Energy Saving = **95%!**

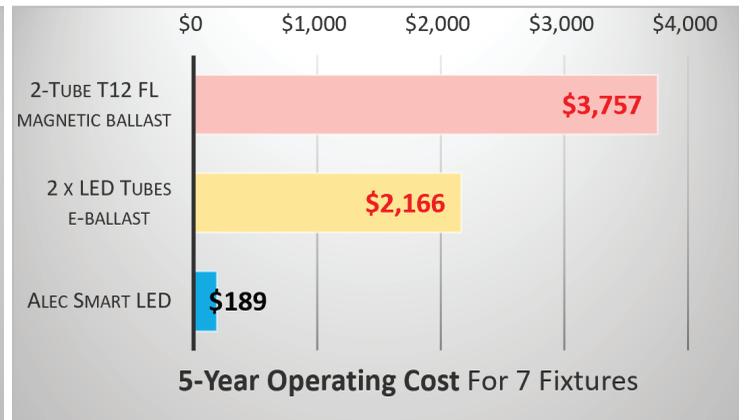
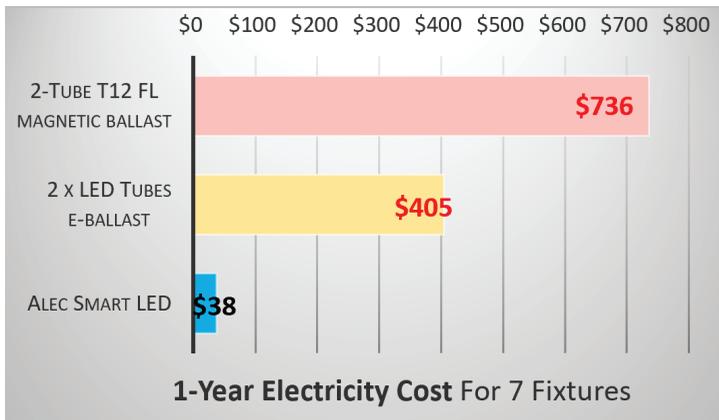
Alec SLC vs T8 LED TUBES

An alternative retrofit solution is to replace the fluorescent lamps with electronic ballast compatible, T8 LED tubes (a.k.a. Tubular LED or TLED). However, TLED tubes will not work with the old magnetic ballast in these fixtures. The magnetic ballast must be replaced by electronic ballast and the old lamp holders may need to be replaced or re-wired, which increase the installation time and labour cost. The power consumption of a fixture retrofitted with TLED is usually higher than the sum of the rated power of all the TLED tubes, after compensating for the ballast factor and adding in the ballast power loss.

The current generation **TLED thus provides less than 50% energy savings.**

The following table and charts compare a T8 LED tube solution vs an ALEC SLC solution. Without a doubt, the ALEC SLC solution is indisputably superior to the T8 LED tube-replacement solution, in terms of cost savings. Your savings start immediately and even extend beyond the typical 5-year lifespan of a TLED tube, because the dimming feature of **Alec SLC's** LEDs enable them to last much longer.

	T8 LED Tube	Alec Smart LEDs
Energy Savings compared to T12	Save only about 40~50% energy	Save up to 95% energy
Require ballast maintenance?	YES (every 15K to 25K hours)	NO
Lamps near end of life after 5 years?	YES	NO – Lights are still “lightly used” after 5 years due to dimming



CONCLUSION

The conversion of the 7 units of T12 fixtures to Smart LED Lighting cuts down energy usage substantially by 95%, and saves about \$700 in electricity bill per year (based on \$0.15/kWh). All lighting control settings are fully programmable, thus allowing the project to meet the most stringent energy codes such as ASHRAE 90.1-2016.

Conversion time of each fixture into Smart LED takes less than 10 minutes. The total conversion cost for this

Emergency Corridor project was < \$1000, including parts and labour, but before any utility rebates. Payback is < 1.5 years, even without utility rebate. You will enjoy even greater savings if your local electricity rate is higher than the \$0.15/kWh used in this calculation.

Many other lighting spaces such as stairwells, parkades, corridors, public washrooms etc, would also enjoy equally impressive savings once converted using the **Alec Smart LED Conversion kit**.