

CASE STUDY: NAIT Productivity & Innovation Centre



The Northern Alberta Institute of Technology in Edmonton, Alberta, Canada is a leader in technical training and applied education. In September 2018, they officially opened their newest facility, the Productivity and Innovation Centre (PIC) to support their mission to be one of the world's leading polytechnics. At approximately 17,650 square metres (190,000 square feet), this state-of-the-art purpose-built space is one of North America's largest innovation spaces.

The PIC is progressive in another way: during its construction, the team moved away from traditional – and inefficient – jobsite lighting.

ON THE JOBSITE: EXISTING INEFFICIENCIES

Traditional temporary lights are a habitual choice for many construction crews. But these lights have significant downsides. They compromise **safety**, because compact fluorescent and metal-halide bulbs contain mercury and toxic heavy metals. Workers can be exposed to these toxins when bulbs break. Furthermore, these lights emit UV radiation and can be a burn hazard, since they get extremely hot. Traditional lights waste **energy** through excessive power consumption. Compact fluorescent and metal-halide lights also waste **time**. Upon start-up and re-start, they are slow to warm-up and cool-down; in fact, it is common for power disruptions on the jobsite to result in lighting-associated downtime, a clear loss in productivity that can impact the project schedule. Finally, bulb breakage and burnouts have a negative effect on both time and cost, because they require expensive labour for maintenance and cause project downtime.

PROJECT FACTS:

LOCATION:

Northern Alberta

FACILITY SIZE:

17,650 square metres (190,000 square feet)

TYPE OF PROJECT:

Institution, Post-Secondary

CONSTRUCTION DURATION:

18 Months

ELECTRICITY SAVINGS:

\$31,873.15



ENVIRONMENTAL GAINS:

207.5

METRIC TONS CO₂ SAVED

POSITIVE ENVIRONMENTAL IMPACT EQUIVALENT TO:

REMOVING **43.9** CARS FROM THE ROAD PER YEAR



PLANTING **5,319.8** URBAN TREES



ELECTRICITY TO POWER **30.6** HOMES PER YEAR



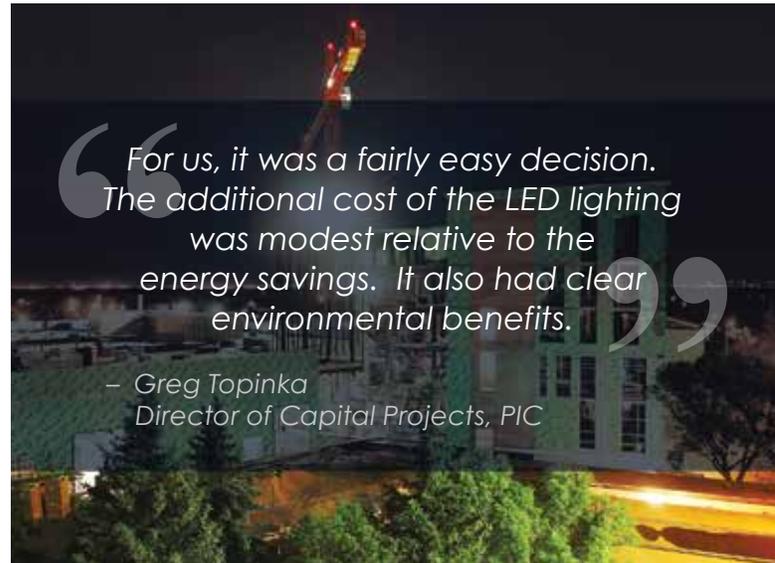


THE ALTERNATIVE

In a continuing effort by Clark Builders to incorporate sustainable practices into all aspects of the building, they partnered with Vallen, a leading supplier of industrial goods, to adopt Lind Equipment's LED Jobsite lighting system during the construction phase. The LED Jobsite replaces all traditional bulb-based temporary construction lighting with state-of-the-art, purpose-built LED lights. The LED Jobsite specialists at Lind Equipment reviewed the project floorplans and provided the Clark Builders project team with an optimal temporary lighting layout which included a full savings analysis and bill of materials. Clark Builders and the NAIT project team found this service to be a valuable tool to evaluate the cost-benefit considerations for the project.

Lind Equipment's LED Jobsite lighting system **reduced energy consumption by 80%** and **saved more than \$30,000 in energy costs alone** over the course of the project. The LED Jobsite lighting system paid for itself solely on this project. The lights themselves have an estimated service life greater than five years (at 24/7 usage), which means Clark Builders will further increase their ROI by reusing the lights again and again on multiple future projects.

Labour savings on the PIC project were quite significant. Installation time was decreased with simple plug-and-play daisy-chaining capabilities and fewer LED lights were required overall. LED lighting's dramatic reduction in energy demand translated into fewer temporary circuits needed to run the lighting, and with no bulbs to change, maintenance activities were eliminated.



The environmental impact of the project was reduced by **saving more than 200 metric tons of CO₂**. With the lights being reusable for future projects, the LED Jobsite temporary lighting did not produce any of the landfill or hazardous waste that is typical with traditional bulb-based temporary lighting.

Utilizing LED Jobsite lighting on the PIC benefited the entire project team and all stakeholders. For NAIT, such innovation in environmental sustainability fits the current approach to all campus projects. “New renovations are going to LED lighting as a permanent install, so taking that same efficiency initiative for temporary lighting also makes sense,” pointed out Greg Topinka, Director of Capital Projects, PIC.

CALCULATING THE SAVINGS:

LED LIGHTS USED	TO REPLACE THESE BULB-BASED LIGHTS	ENERGY REDUCTION
LE980LED LED Crane Light	1000W Metal-Halide Crane Light	70%
LE360LED 360 Area Light	100W Incandescent Stringlights (each LED light replaces 25 stringlight bulbs)	95%
LE-HB150LED Highbay Light	400W Metal-Halide Highbay Light	63%
LE970LED Flood Light	500W Quartz Halogen Flood Light	90%