

Power Problem Solver: A Little Bit of Electricity Goes A Long Way January 12, 2021



XS-APTEC is a design build contractor of high tech commercial building solutions and a Managed IT Support provider. In April of 2020 due to growing concerns regarding the spread of Covid-19, XS closed its office and adopted an entirely virtual business operation. While the staff was able to adapt to the change, the managing partners still needed a place to collaborate with one another and meet key-clientele in person. One of the partners had a suitable location - a two-story warehouse with a second floor loft space that had previously been used as an aviary. The loft space was the perfect size for an open office and conference room

Item	Quantity	Each	Offered
Material			
RAB RA4 Housing	40	\$ 20.76	\$ 830.40
Lithonia 4" Downlight	40	\$ 18.96	\$ 758.40
RL4 Mount Trim Kit	40	\$ 21.81	\$ 872.40
Electrical Service Panel	1	\$ 875.00	\$ 875.00
E-Lighting Wiring	40	\$ 7.06	\$ 282.24
Branch / Feeder Wiring	40	\$ 26.15	\$1,046.00
Hubbel 4in ² J-Box	40	\$ 7.92	\$ 316.80
Time (Labor Hours)			
Fixture Installation	14	\$ 59.10	\$ 827.40
E-Lighting Wiring	6.5	\$ 59.10	\$ 384.15
Branch Feeder Wiring	24.5	\$ 59.10	\$1,447.95
Subtotal			\$7,640.74
Permit/Inspection			\$ 291.05
Total Project, less tax			\$7,931.79

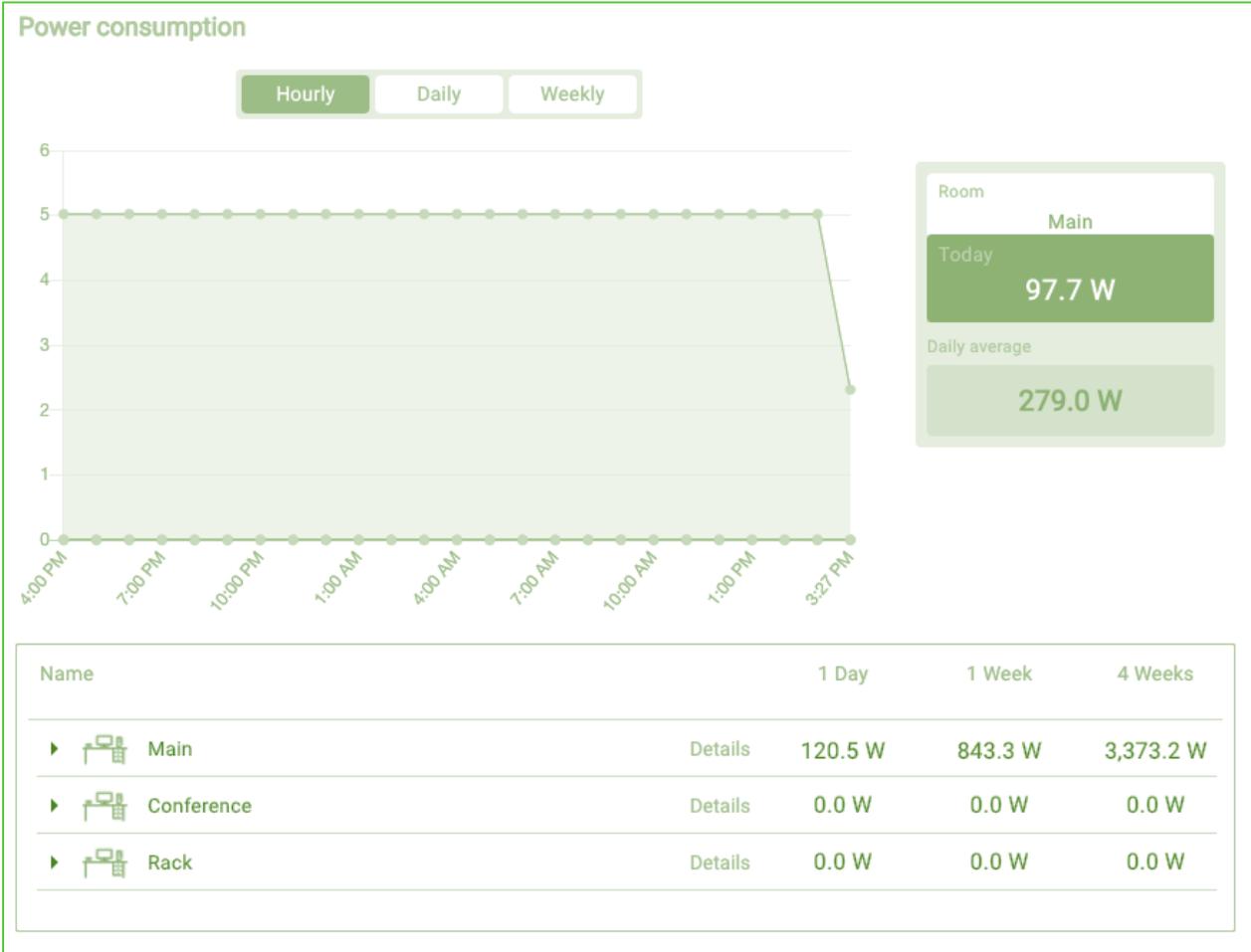
but the loft itself was little more than framing and subfloor. The ground floor was outfitted with only a basic electrical service panel – as there were little more than a roll-up door opener and a few bare-bulb fixtures and exhaust fans requiring power. The loft space had only two windows on opposite walls for ventilation but neither supplied much natural light. The challenge was to develop the space into a professional-looking studio without a tremendous upgrade to the power systems. While some upgrades could not be avoided – such as those required to power computers and the like – the goal was to use as little electricity as possible while outfitting the space with plenty of light and new technology without an enormous capital expense. XS initially priced a more traditional system – noting that LED fixtures and bulbs are cost effective with relamping projects (where fluorescent bulbs and ballasts are replaced with LED bulbs and drivers). But in this case, there was no infrastructure to relamp. Still, an estimate was provided by a neighboring electrical contractor for a conventional lighting system

using branch and feeder wiring and 110VAC 120V service-based LED drivers and LED fixtures. The conventional lighting system was specified to include only 12.5-watt recessed downlights throughout the space. The conventional system, using materials purchased at local suppliers (such as the Home Depot) was estimated at just under \$8,000.00 (see above image) before outdoor lighting, light switches and occupancy sensors were added. The price also excluded emergency battery power supplies for e-lights. The ongoing electrical cost to light the space was projected at approximately \$34.00 per month.

LV Energy Systems recommended **Luminetworx™ Network PoE LED** with a lighting array consisting of thirty-eight 4-inch-diameter recessed downlights, a single linear “S-Curve” pendant in the conference nook and a 4-foot linear pendant to illuminate the staircase. Outside, a fully autonomous solar powered plank was installed to provide outdoor path lighting along the walkway. Each of the downlights operate at 5-watts at full power. The 4-foot linear and S-Curve function at 30 and 60-watts, respectively. Smart sensors were added to automate switching the lights on and off and control dimming when natural light was available to offset the artificial light. The system, excluding the outdoor solar planks (for an accurate comparison) was

- System Configuration**
- Luminetworx™ 4" Downlights
 - Luminetworx™ S-Curve Pendant
 - Luminetworx™ 4' Linear Pendant
 - Luminetworx™ Solar Outdoor Plank
 - Luminetworx™ UPoE Gb Switch
 - Luminetworx™ 3.6KVA Power Bank
 - Luminetworx™ Lighting Controls
 - Luminetworx™ Intelligent Sensors
 - Luminetworx™ Smart Rack

estimated at \$6,162.00 including all material and labor time. Since Luminetworx™ is powered by network switch and Cat6a data cabling, it is classified as low-voltage, not Class 1 electrical service. Thus, there was no need for a licensed electrical contractor to perform the installation. And because each cable provided power for up to six downlights, very little wiring infrastructure was required. After a few days, the partners felt that the space was brighter than necessary, and dimmed the fixtures by 50%, which also translated to an approximately 50% reduction in wattage draw as well. The conference nook is adjacent to the front facing window and gets plenty of natural sunlight which means the need for supplemental lighting from the Luminetworx™ system is needed. The solar plank being self-powered was not connected to any AC circuitry inside or out. The cost to run the system is about \$0.04 per day at half-power – less than \$2.00 per month (based on a 30-day calendar). Luminetworx™ was installed within a few days and the resulting power efficiency and ongoing cost of lighting was just as forecasted.



The Luminetworx™ Network PoE LED Lighting and Lighting Controls was designed to lower energy costs, improve area lighting, and scale quickly. Due to the Luminetworx HELP® (High Efficacy, Low Power) LED architecture, most Luminetworx™ fixtures produce more than 100 lumens per watt. Luminetworx™ Lighting Controls offers advanced management, ultra-low latency on demand control, scenes/schedules, and automation with integrated smart sensors. And because Luminetworx™ fixtures are wired using only Category-6a UTP cable and RJ-45 connectors, fixtures can be added or moved without a lot of headache or cost.