

EMERGING TECHNOLOGIES AND ACCELERATED COMMERCIALIZATION PROGRAM (ETAC)

Case Study: LED Lighting Design Brightens New Home

Background

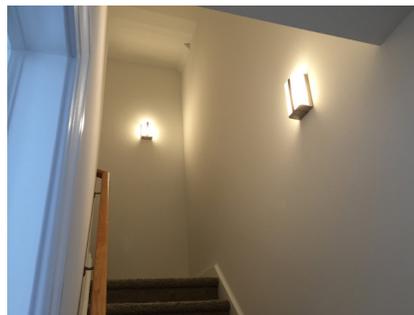
Homeowners William and Stephanie Whitty were selecting finishing touches before construction began on their new home in Saratoga County, New York. But they didn't give much thought to lighting until their builder introduced them to some options. Their last home featured a pretty basic lighting system using primarily incandescent bulbs. The couple now has a new appreciation for energy-efficient lighting after moving into their new one-story, single-family home in November 2014.

Designing with LEDs

Their builder, Saratoga Builders, had partnered with Newport Ventures, a Schenectady-based research and consulting firm, to participate in a light-emitting diode (LED) demonstration project supported by NYSERDA. Through NYSERDA's Emerging Technologies and Accelerated Commercialization – Residential (ETAC-RES) program, Newport is one of three firms in New York competitively selected to demonstrate and validate that LED bulbs (also known as lamps) save energy in real-world applications and meet or exceed homeowner expectations for light quality.

Through this project, the Whittys' home received lighting upgrades. Their lighting package was specified to all LED-integrated or LED-compatible fixtures for the home. Jan Moyer Design of Troy, NY designed their whole lighting system with LEDs. The builder installed the system along with a programmable, wireless control system that gives the couple better control over the lighting in their home. In return, the Whittys agreed to have their lighting energy use monitored via the wireless remote connection for a period of one year and to participate in an "open house" event to educate the public on the quality and environmental benefits of LED lighting.

LEDs are widely considered to be the future of lighting, but the initial costs are still higher than their less efficient counterparts. However, LED prices have dropped significantly in recent years. As more manufacturers produce LED products and market share continues to increase, prices will continue to decline. LED lamps are now available in a wide variety of shapes, sizes, and colors to accommodate almost any interior or exterior lighting application. Improved design allows LEDs to provide the comfortable look and feel of a traditional incandescent bulb with lower energy usage.

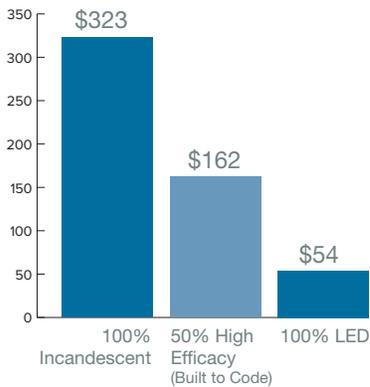


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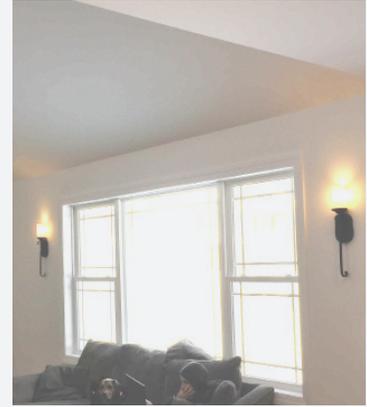
Key Benefits of LED Lighting

- **Energy Efficiency:** Approximately 15% more energy-efficient than compact fluorescent lamps (CFLs) and 80% more efficient than incandescent bulbs.
- **Longevity:** Expected to burn 50,000 hours (24 hours per day for 5.5 years) compared to 10,000 hours for a CFL.
- **Aesthetics:** Available in varied colors and brightness to better fit the specific use or task.
- **Control:** Better dimming capabilities to move from 0 to 100% than CFLs or incandescents.
- **Ecofriendly:** Does not contain mercury, therefore reduces environmental risk

Cost Per Year Comparison Whitty Residence*



*Costs are estimated, based on all lights in the home operating for 1.6 hours per day (US DOE: Residential Lighting End-Use Consumption Study)



Cut lighting costs by more than half

The Whittys understand the differences between lighting technologies as a result of their participation in this demonstration project. They also have a better understanding about how to select the right type of light for different areas of their home. The couple customized the wireless control system to fit their lifestyle, and appreciate the added convenience and energy savings that it provides. The couple can expect to cut their annual lighting costs by about 50 percent, according to initial estimates.

In addition to the new lighting system, the Whittys stand to save energy in other areas of the home as well. Saratoga Builders certifies its homes through NYSERDA's New York ENERGY STAR® Certified Homes program. ENERGY STAR homes feature high-efficiency comfort systems (furnace and air conditioner) and household appliances. A high-performance building shell (insulation, windows, and doors), minimizes air leakage, keeping in heat during the winter and cool air during the summer months.

The Whittys report that learning how to use the new LED lighting has been a pleasant experience. And they are quite satisfied with the end result. "This system rocks. It was extremely easy to program. And the convenience was life-changing," according to William. "We never forget to turn a light off, or struggle to find a switch on the way in with our hands full."

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