



American University
Washington, D.C.
Energy - LED Lighting

SCHOOL

American University (AU) is a four-year, private, liberal arts school in Washington, D.C. with an enrollment of 11,400 students.

ABSTRACT

AU installed LED (light-emitting diode) lights in the School of International Service (SIS) parking garage and in lamps along outdoor campus walkways.

GOALS AND OUTCOMES

Goals

The project was intended to:

- Reduce energy consumption and costs related to running the lights in the parking garage and the outdoor lamps by switching to lower-wattage LEDs,
- Reduce waste associated with replacing burnt-out lamps by using long-lasting LEDs,
- Improve the lighting quality in the garage by providing an LED with low-glare, and
- Reduce light pollution along campus walkways by using LEDs that do not cast light into the sky, but direct it down onto the ground.

Accomplishments and Outcomes

- **Energy/Costs:** Due to their high efficiency, the parking garage LED installation alone (not including the walkway LEDs) is expected to save 20.2 kW and \$135,000 in electricity costs over the first five and a half years, and an additional savings of \$23,000 in labor costs by avoiding bulb and parts replacements.
- **Waste:** The garage LEDs last 50,000-70,000 hours, compared to metal halide lights, 50 percent of which fail after just 15,000 hours.
- **Light Quality:** Infinilux Solid State Low Bay Lights were chosen for the garage because of "the low glare, robust design and incredibly low power consumption," said Architect Michael R. Purcell, AIA, LEED AP. Additionally, the longer-lasting LEDs reduce the frequency of burn outs, thus enhancing safety in the parking lot and walkways.
- **Light Pollution:** Spring City Electrical's Washington-style lights were selected for the lampposts. The Spring City Electrical LED walkway lamps are enclosed with globes that are opaque on top and transparent on the sides so light reflects downward where people walk instead of some of the light being emitted upward into the sky, disrupting adjacent neighborhood activities. This prevents light pollution and supports the Night Sky Initiative.

Challenges and Responses

The major challenge was having the lights make good economic sense in the long run. The essential questions were what was the pay back and how long would it take. We worked closely with the manufacturer and realized a future savings of \$135,000 over five years. The other major challenge was how to mount them in the garage (get them to be at a distance of 8'-0" from the floor) and we solved that

problem by using hangar rods from the concrete deck. The only change I would make is to plan better as we were rushed in the end to make a decision.

Campus Climate Action: Your School's Carbon Footprint

Environmental benefits from the parking garage installation alone include:

- 20.2 kW of power saved
- 635,000 tons of CO₂ avoided
- Equal to permanently taking 194 cars off the road

Commentary and Reflection

AU is researching opportunities to retrofit other lighting fixtures on campus with LEDs.

ENGAGEMENT AND SUPPORT

Leaders and Supporters

The project was headed up by the Office of the University Architect with support from the Office Sustainability.

Funding and Resources

The project cost \$119,000 including a demo site at the Katzen Parking Garage. It was financed through the overall new construction project budget and had the support of everyone involved in the project and provides exceptional lighting for the project.

Education and Community Outreach

The SIS installation is the first of its kind in the Washington D.C. area and is becoming a demonstration site for the U.S. Department of Energy.

CONTACT INFORMATION

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MORE ABOUT YOUR SCHOOL

Campus Sustainability History

American University is committed to acting on our values through social responsibility, service, and an active pursuit of sustainability. Our work at the Office of Sustainability celebrates the abundance of nature by building a campus community of leaders who work to clean our air and water, cool our atmosphere, and produce fertile land and habitat.

Please visit the Office of Sustainability online at www.american.edu/sustainability for information about our other initiatives.