



New Condo Complex Slashes Energy Over 30%

Building:

Park Laurel luxury condominiums

Location:

San Diego, California

Energy Challenge:

Reduce energy spending without compromising the building's elegant décor or resident security

Solution:

A lighting conversion project that included

- Completely replacing or exchanging lamps and ballast in approximately 2,000 fixtures
- Adding 1,000 motion sensors

Results:

\$59,891 in annual energy savings
 Reduced energy use by 521,407 kWh
 Payback in 1.3 years

Undertaking a lighting conversion project isn't normally a focus in a new high-rise condominium community, but it was an idea Bonnie Demers, Community Association Manager for The Prescott Companies at Park Laurel Owners Association wanted to pursue. When Dan Drahos of ABM Engineering joined as Chief Engineer, Bonnie knew she had someone who could run with her idea.

Based on his experiences with other buildings, Dan only had to take one look at the HID lamps in the underground parking garage to know that he could significantly reduce energy use and expense.

Situated across from the entrance of San Diego's renowned Balboa Park, the Park Laurel complex consists of two towers connected by a grand entrance lobby and features 99 luxury residences on 14 floors. Maintaining the beauty and aesthetics of this high-end residential community would be as important as saving energy.

Given the scope of the project, Dan was referred by his lighting distributor to Advanced Energy Innovations, Inc. for expert assistance. Initially Dan had them look only at the garage, but upon reviewing the initial proposal that showed projected energy savings of 74%, he asked Ken Patterson, one of the company's founders and leader of the Park Laurel project, to audit all common areas. With these levels of savings for a relatively small investment, it made sense to create a plan for the whole building.

Working from the ground up

All in all, the project team completely replaced or exchanged lamps and ballasts in nearly 2,000 fixtures.

First lighting in underground parking was replaced. The existing high-intensity discharge, or HID, lamps were replaced with 36 MEV Super T8's with motion sensors. One of the three lamps remains

on 24/7, with motion sensors triggering the two remaining lamps when a car or person enters.

Not only did Advanced Energy Innovations, Inc. project a 74% reduction in energy consumption for garage lighting, but a reduction in maintenance expenses as well. Each new lamp costs less than what the existing HID lamps cost, and they need to be replaced every 2.5 years as opposed to every 8 months.

Park Laurel is supported by a labyrinth of service corridors, back stairwells, storage and common trash collection areas which were lit 24/7 for owner convenience and safety. In these areas, the ballast and lamps were replaced and motion sensors were added to provide lighting only when it's needed. The lamps illuminate immediately when activated by motion sensors, ensuring there's no wait time leaving people temporarily in darkness.

"We installed over 1,000 motion sensors in Park Laurel. Residents are never in the dark and we're reducing energy use in these areas from almost 450,000 kWh/year to only 29,000 kWh/year. This simple step reduces energy use for these areas by over 90%," added Ken Patterson.

The lobby, which features twelve custom-designed chandeliers, was next. Each used five 100-watt halogen bulbs that generated so much heat, the building designer added extra air conditioning vents in the lobby lighting soffits. Today each chandelier houses three 13-watt fluorescent bulbs with comparable lumen output. Ken was sensitive to aesthetics of the custom fixtures and specified a mix of 2700k and 3000k lamps to replicate the correct color. Dan gained additional energy savings by installing timers that reduce overnight lighting levels.

The outdoor entry area, landscape lights, and courtyards also received energy-efficiency makeovers. Just by replacing 45-watt bulbs with 3-watt bulbs in landscape up-lighting will generate measurable returns to the homeowners.

“When we started to investigate a lighting conversion program our north tower was four years old and our south tower was two, so our Board was somewhat skeptical when Advanced Energy Innovations and I presented a program to reduce energy spending by 30%, which is turning out to be a conservative estimate.”

Dan Drahos, Chief Engineer, ABM Engineering

“By becoming much more green through reducing energy consumption and carbon emissions, it’s easy to see why the Board, homeowners, management, and staff all take great pride in the completion of this project.”

Bonnie Demers, Certified Community Association Manager for The Prescott Companies

Bringing the financial picture together

Part of Advanced Energy Innovations’ service is creating a multi-tiered cost analysis that compares the existing lighting system with the proposed system. Ken and his team were able to detail, area by area, what the projected savings would be for Park Laurel owners.

The team projected Park Laurel could reduce energy consumption for lighting by 47%. When all energy use is considered, such as pool amenities, heating, and air conditioning, the lighting solutions are projected to reduce Park Laurel’s total energy consumption by approximately 30%.



Park Laurel Lobby - Each chandelier was illuminated with five 100-watt lamps which generated so much heat extra cooling vents were designed into the soffits. With only three 13-watt lamps in each chandelier, Park Laurel reduced energy consumption for lighting and cooling, while maintaining lumen output that showcases the beauty of the custom onyx fixtures.

Annual kWh consumed	Existing	AEI Plan	Reduction %
Garage	65,416	16,983	74.0%
Stairs & back areas w/sensors	449,432	29,058	93.5%
Outside entry	4,280	8	99.8%
Lobby chandelier	52,416	4,088	92.2%
Stairs & back areas w/out sensors	535,569	415,528	22.4%
Totals	1,107,113	585,706	47.0%

In the analysis, Ken went beyond energy savings to clearly define projected maintenance costs, re-lamping schedule and costs, reduction in A/C required to offset heat from lighting, and return on investment.

Advanced Energy Innovations, Inc. also specializes in obtaining maximum utility company rebates for its clients, which it did for Park Laurel. The \$91,606 rebate from San Diego Gas & Electric significantly offset project costs to generate an ROI of 77% and payback within 1.3 years.

Installation & construction costs	\$205,086
SDG&E Incentive	\$91,606
Out of Pocket	\$113,480
Energy savings	\$59,891
Maintenance savings	\$30,424
Actual cost with 1-year savings considered	\$23,165
Payback	1.3 years

Projections are becoming reality at Park Laurel. With 85% of the conversion completed, the SDG&E bill showed over 30% savings compared to the same billing cycle in the previous year.

Switching to more energy-efficient lighting was a breeze with expert guidance from Ken and his team.

According to Bonnie and Dan, “Ken and his staff helped every step of the way. They gave us an accurate assessment of the savings and financials, even the construction process, so we knew what to expect.”


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