

LED Retrofit Case Study



EXECUTIVE SUMMARY

GOAL

Reduce operating cost and improve light quality for staff and patients at a healthcare facility.

CHALLENGE

Create a cost effective solution to be implemented with minimal disruption to staff and patients.

SOLUTION

Detailed lighting analysis and recommendation to replace existing lights with energy efficient LEDs.

APPROACH

NGL's comprehensive retrofit process minimized staff and patient impact, while achieving the initial goals of cost savings, safety and improved quality of light.

BENEFITS

The project has exceeded goals including cost savings, reduced maintenance and energy consumption, and an improved lighting environment.

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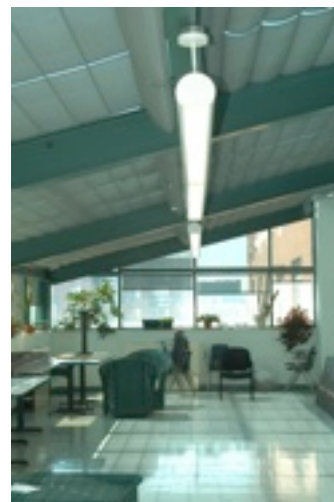
New York Health Care Facility goes green and saves money in the process

Eco-friendly LED Lighting retrofit project results in significant cost savings while improving light quality and reducing eyestrain.

(New York, New York) A 167,000 square foot, 280-bed Nursing Facility in Flushing, Queens recently completed a major project to upgrade all existing lighting to energy efficient and eco-friendly LED lighting. What started as a project to reduce operating cost yielded not only cost savings, but also improved the quality of light, reduced the facilities carbon footprint and created a safer environment for the staff and patients.

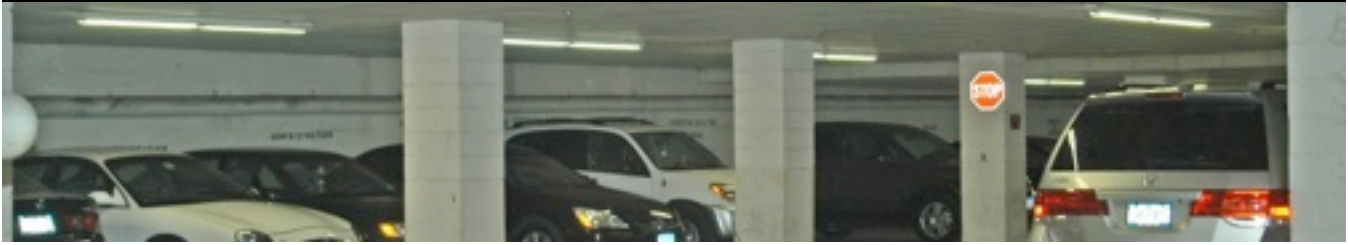
Rising operating costs.

Faced with rising energy costs, the facility owner wanted to find an energy efficient replacement for his existing lighting system. After researching a number of alternatives he contacted NextGenLights (NGL) to discuss potential solutions. NGL performed a detailed lighting analysis, including ROI calculations based on energy efficient replacement of the traditional incandescent and fluorescent lights in use throughout the healthcare facility. A proof of concept was then performed in a limited area to ensure color temperature and lighting met the facilities requirements.



Unexpected benefits.

NextGenLight's analysis not only showed the potential cost savings of an LED replacement project, but also identified a number of other benefits including the improved quality of light, as well as eliminating the health and safety risks associated with traditional lighting. Unlike traditional fluorescent lighting used in many commercial installations, LED lights use no Mercury and are flicker free resulting in much less eyestrain. This is especially important in a healthcare facility with convalescing patients and 24-hour staffing requirements. The project also qualified for a Federal Energy Tax Reduction further increasing the net savings for the facility.



The initial analysis.

NGL performed a comprehensive analysis using a proprietary process including an ROI Calculator Engine developed by NGL and certified by an independent lighting contractor. The process included a complete cost analysis including material, installation, operating and maintenance costs, disposal and sales tax. Additional factors such as improved Air Conditioning efficiency due to lower heat dissipation and federal tax incentives were also factored in to ensure a comprehensive ROI analysis.

Proof of concept.

Cost savings was the driving force behind the owner's decision to replace the lighting, but the quality of light was a critical factor in the final decision. In order to address this concern, a proof of concept was performed to verify light temperature and the quality of the light itself. A conference room, hallway and patient room were selected as a pilot and NGL replaced all existing lighting with energy efficient T8 linear LED tube lights. The pilot project confirmed that the LED light quality was better than the original lighting and the project was approved for complete implementation.

Facility overview.

The nursing facility spans 167,000 on nine floors with over 280 patient beds. The project was a complete replacement of all lighting including all administrative offices, patient rooms, stairwells, conference rooms, kitchen, supply rooms, therapy rooms, and nurses stations. The project also included replacing the lights in both the indoor and outdoor parking garages.

Challenges of a healthcare facility.

As a 24-hour care facility, a major lighting retrofit required careful planning and scheduling to avoid impacting the staff and



Project Background

Facility Overview

Location: Flushing, Queens New York

Square feet: 167,000

Total patient beds: 280

Total lights replaced: 4,790

Wattage Comparison

Total wattage before: 139,590 watts

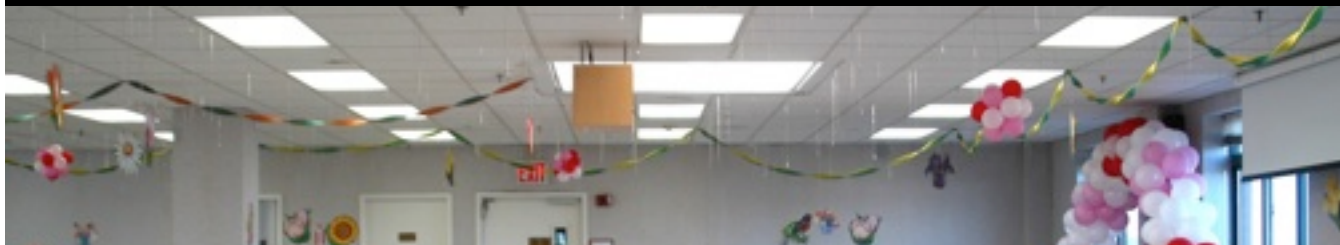
Total wattage after: 65,480 watts

Total wattage savings: 74,110 (53%)

patients, as well as ensuring their safety throughout the retrofit process. NGL worked closely with the staff to ensure minimal disruptions based on their schedules and patient care requirements. Safety cones and signage was set-up to clearly identify work zones as the electricians worked through the facility. In critical sections such as kitchen and offices, the electricians worked off hours to minimize the disruption.

The retrofit process.

The project was performed in two phases. The first phase included hallways and patient rooms, and consisted of replacing 3,860 tube lights. The second phase covered the remaining 930 lights including administrative offices, main lobby and garage. Since LED T8 Tube lights are a direct replacement for traditional fluorescent tube lighting, NGL was able to use the existing lighting fixtures with only minor modifications for the ballast units no longer required for the LED tubes. This allowed the facility to realize the benefits of LED lighting without the additional cost associated with a complete replacement of the lighting fixtures.



Safe disposal of mercury based lighting.

A challenge in any fluorescent lighting project is the safe disposal of the mercury based lights. NGL used a bulb crusher and a qualified, environmentally friendly disposal service to ensure that all debris was disposed of in a safe and environmentally responsible manner.

The final results.

The retrofit resulted in a total of 4,790 fluorescent tube lights replaced with energy efficient and eco-friendly LED T8 tubes of 2, 3, 4 foot lengths. Total light wattage prior to the replacement was 139,590 watts and was reduced over 53% to 65,480 watts for a total reduction of 74,110 watts. In addition to energy savings due to the substantially reduced wattage, the long-life of the LED tubes reduces the cost of frequent maintenance associated with traditional lighting and provides a flicker free light source to reduce eyestrain of both staff and patients. The project also qualified for the Federal Energy Tax Deduction further improving the cost savings and ROI of the project.



About NextGenLights

New York based NextGenLights, headquartered in Flushing, Queens, was founded in 2006 and provides state-of-the-art lighting consulting and installation services for commercial, industrial and residential projects across the Northeastern United States. NextGenLights Inc. was founded by a group of dedicated individuals who believe that anyone can make a difference in conservation, environmental protection and ensuring a better future for our children. We have strong backgrounds in developing and manufacturing various eco-friendly products. Our

OTHER BENEFITS

Cost Savings

LED lights have extremely low power consumption, typically 1/3rd to 1/30th of incandescent or fluorescent tube lighting. With 80% of energy converted into light only 20% is lost as heat resulting in less wasted energy on cooling systems. LED lights are unaffected by ambient temperature and are never more than warm to the touch, even after hours of use.

Environmental

LED lights are environmentally friendly both in production and in use. LED's do not contain lead or mercury, argon, xenon or krypton gases. Nor do they emit infrared or ultraviolet radiation.

Light Quality

The color rendering properties of LED lighting is superior to that available in common fluorescent and incandescent lights, matching the qualities of daylight. LED lights are also completely flicker free which reduces eyestrain.

Long Life, Low Maintenance

The operational life LED lights is an average of 50,000 hours, far exceeding even the highest quality fluorescent tubes and a stark contrast to the 5,000 hour average life of an incandescent bulb.

Safety

LEDs use solid state technology making the LED lights shatter-proof and virtually unbreakable in normal conditions. They contain no mercury or other toxic chemicals making them easy to dispose after their long lives.

products have been tested and are proven to both lower energy consumption and be cost effective.