Project Summary

Gundersen Nursing Home – Tweeten

July 13, 2017

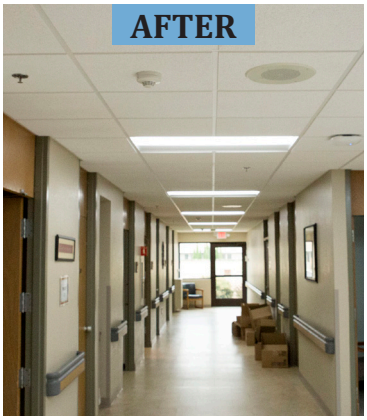
Project Overview

Midwest Lighting Institute (MLI) specified the lighting for the Tweeten Care Home in Spring Grove, MN. The entire facility was upgraded with a goal to save energy and improve the lives of residents and staff by introducing lighting that would more closely replicate natural sun light.

All common areas and halls were upgraded with dynamic LED lighting. This lighting changes color and intensity throughout the day. MLI worked with the staff to understand how the facility was used and what times were appropriate to vary the lighting. MLI also worked with the facility personnel to connect the lighting to an existing building automation system.

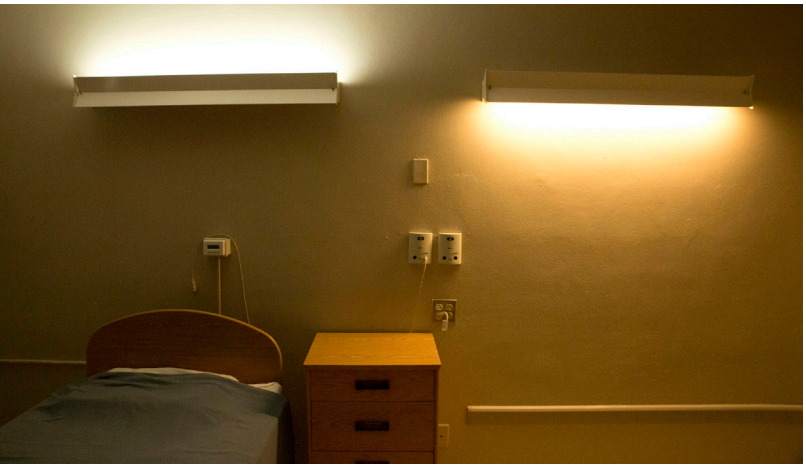
According to the Centers for Disease Control and Prevention, the cost of falls to Medicare in 2015 was over $31 billion.

Lighting upgrade results in 32% reduction in falls



HALLWAY LIGHTING

Patient rooms were relamped with a combination of lights. First, the existing wall fixtures were outfitted with two different lamps. The up-lights contained blue light for day use. The down-lights contained much less blue light and had a warmer color temperature for evening use. Staff were trained to switch the lights at breakfast and dinner.



UPDATED WALL FIXTURES IN RESIDENT ROOMS

The entry to the patient rooms had one can light. These were lamped with a dimmable lamp that had limited blue so that it could be used to gently check on patients at night without disturbing them.

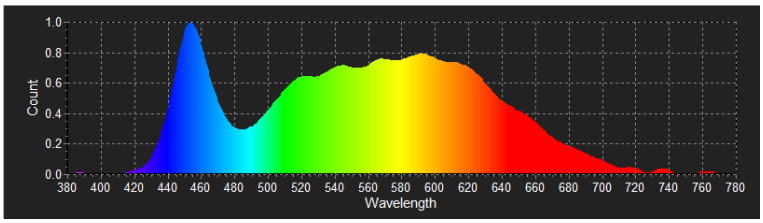
Bathrooms had lighting with limited blue light, but was not dimmable. We felt that there would be limited time spent in this space during the day. We were also concerned with the effects on the patient if they were to get up in the middle of the night and be exposed to a bright blue light.

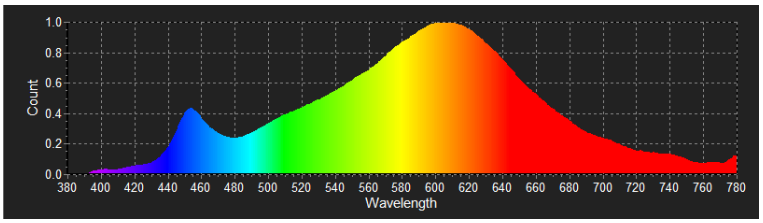
Results

The average fall costs $30,000 in medical expenses

MLI reviewed the project to obtain measurements of before and after lighting installation to determine if there was an actual effect of the light. Six months after installation data was gathered and compared based on aggregate medical records.

Color Spectrum was measured with a spectrometer and calculated with the Lucas Tool to determine the Melonopic Lux or alertness effect of the light. Below on the left is the Spectral Power Distribution of the light in the common areas during the day. The blue spike is the area of the spectrum which is the most effective at increasing alertness. On the right is the SPD at night. Note the lack of blue content.





Key Result Metrics

- Falls dropped from 9.12 per 1000 resident days to 6.17 (32% reduction)
- Antianxiety meds dropped from 1.99 to 1.84 per 1000 resident days
- Antipsychotic meds dropped from 1.00 to 0.92 per 1000 resident days
- Reports of sundowners reduced by 38%

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