

Scott County Jail & Courthouse

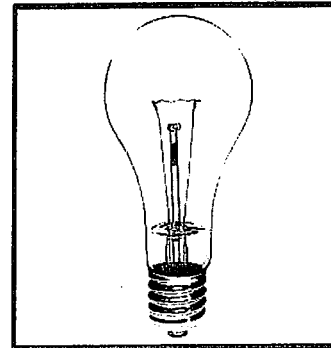
ENERGY EFFICIENCY MEASURES

This section describes the energy efficiency measures (EEMs) that were identified during the assessment. For each measure, a description is provided, as well as a basic savings calculation.

EEM-1 Replace Incandescent Lamps with LED Lamps

Summary

Incandescent lamps⁴ have previously been the standard for lighting. In recent years, LED technology has progressed to the point where it is comparable and in many cases, unnoticeable when retrofitted into an existing fixture that once held incandescent lamps.



Existing Condition

There are many 50W, 60W, and 150W incandescent lamps throughout the building.

Proposed Action

It is recommended that these lamps be replaced with LED lamps with equivalent lumen output.

O&M Impacts

Upgrading from incandescent to LED will result in an increase in life expectancy of the lamps resulting in reduced maintenance costs.

Other Impacts

N/A

Expected Useful Life

13 years

Energy Savings and Verification

Energy savings are calculated by determining the total kW load of the lamps and the annual hours that those lights could be on. Costs are first order estimates based on previous projects. These lamps are not eligible for a rebate through the MidAmerican Commercial Energy Solutions program, but have point-of-sale rebates through the Iowa Be Bright (www.iowabebright.com) program.

⁴ Photo credit: *Incandescent Lamp*. 1000bulbs.com. Web. 15 Jan. 2018. https://5fc98fa113f6897cea53-06dfa63be377ed632ae798753ae0fb3f.ssl.cf2.rackcdn.com/product_images/files/000/091/469/legacy_product_detail_large/116992_54637c886ae68_original.jpg?1429847735.

EEM-2 Replace Exterior HID Wall Packs with LED Wall Packs

Summary

High Intensity Discharge⁵ (HID) lighting was once common for higher ceiling and outdoor applications due to the high lumen output of HID lamps. In recent years, LED technology has progressed to the point where it is preferable for high-bay and outdoor fixtures.

Existing Condition

There are 13 metal halide 250W exterior wall packs around the building controlled by photocells.

Proposed Action

It is recommended that these fixtures be replaced with comparable LED fixtures.

O&M Impacts

Upgrading from HID to LED will result in an increase in life expectancy of the lamps resulting in reduced maintenance costs.

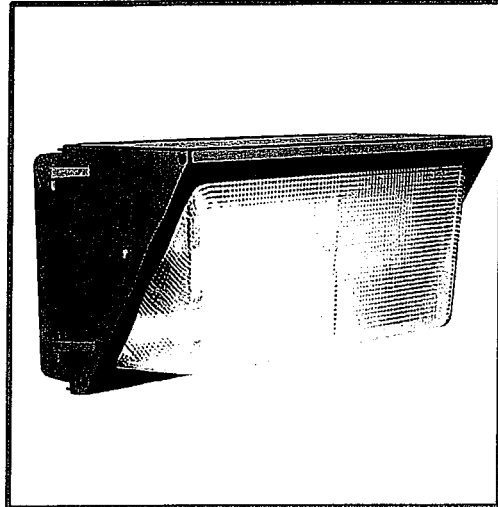
Other Impacts

N/A

Expected Useful Life

13 years

Energy Savings and Verification



EEM-3 Replace Compact Fluorescent Lamps with LED Lamps

Summary

LED lighting systems are now being used in many places where compact fluorescent lamps (CFLs) had previously been common.

Existing Condition

There are many 13W, 26W, and 42W CFL fixtures throughout the building.

Proposed Action

It is recommended that these lamps be replaced with comparable LED lamps.

O&M Impacts

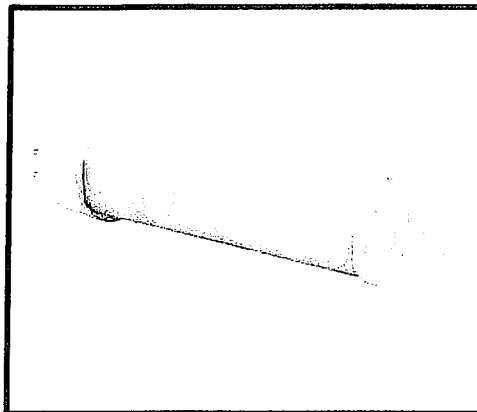
Upgrading from CFLs to LEDs will result in an increase in life expectancy of the lamps resulting in reduced maintenance costs.

Other Impacts

N/A

Expected Useful Life

13 years



EEM-6 Replace T8 Lamps with Linear LED Lamps

Summary

T8 fluorescent lighting has previously been the standard for energy efficient lighting. In recent years, linear LED technology has progressed to the point where it is comparable when retrofitted into an existing fixture that once held T8 lamps.

Existing Condition

Most of the facility is lit by 2 and 3-lamp T8 fixtures. There are also approximately 150 T5 fixtures.

Proposed Action

It is recommended that these lamps be replaced with comparable LED lamps.

O&M Impacts

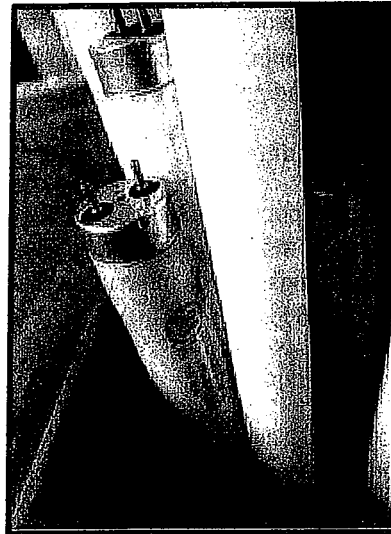
Upgrading from fluorescent to LED will result in an increase in life expectancy of the lamps resulting in reduced maintenance costs.

Other Impacts

N/A

Expected Useful Life

13 years



EEM-7 Install Occupancy Sensors

Summary

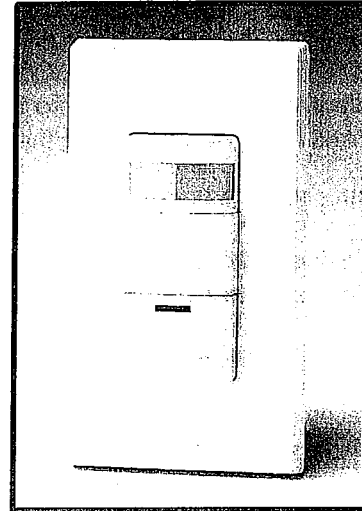
Lighting occupancy sensors⁶ use passive infrared or ultrasonic detectors to control light fixtures and turn them off when areas are unoccupied and on when they are occupied.

Existing Condition

There is an opportunity to utilize occupancy sensors in the pavilion office area of the jail, where the lights are not always required to be on. This savings for this measure were calculated using 24 sensors to control 176 fixtures.

Proposed Action

By installing occupancy sensors, lights in areas that go unoccupied for periods of time can be turned off until the area becomes occupied again. The remaining private offices were noted as one area that these sensors could be utilized.



O&M Impacts

With the reduced hours, the lamp life would increase; however, a fluorescent lamp's life is negatively affected by the number of cycles they undergo, which can be problematic in high traffic areas. The life of LED lamps controlled by occupancy sensors would not be affected by on/off cycling.

Other Impacts

N/A

Expected Useful Life

8 years

Energy Savings and Verification

Energy savings are calculated by determining the total kW load of the lamps and the annual hours that those lights could be on. The estimated time that the lamps would be turned off is based on area type, and comes from the Illuminating Engineers Society (IES) Handbook. Costs are first order estimates based on previous projects.

This measure is intended to provide typical project economics for similar occupancy sensors applications.

⁶ Photo credit: *Occupancy Sensor*. [amazon.com](https://images-na.ssl-images-amazon.com/images/G/01/aplusautomation/vendorimages/c7e623d5-cae4-4821-9438-55cc577c4ce8.jpg._CB293125757_.jpg). Web. 15 Jan. 2018. https://images-na.ssl-images-amazon.com/images/G/01/aplusautomation/vendorimages/c7e623d5-cae4-4821-9438-55cc577c4ce8.jpg._CB293125757_.jpg.