

## **LED Lighting Retrofit Complements Solar**

When the City of Powell, Ohio located North of Columbus pursued a State of Ohio ARRA Energy Efficiency grant for City Hall and other city buildings **in Powell, Ohio**, they decided to invest in a solar array, a comprehensive lighting upgrade, and a few other energy-reducing opportunities to achieve positive, long-lasting benefits. The ARRA grant required 50/50 matching funds from the City and set parameters for paybacks and documentation that enabled the City to make significant improvements while requiring diligent accounting of costs and the savings generated. The project was framed as a “Request for Proposals” that ended in interviews of the top 3 team proposals. The award went to the team led by Thomas & Marker Construction of Marysville, Ohio and included Solar work by Dovetail Solar & Wind, and LED lighting products by Watt Works Inc. Metro CD Engineering provided engineering, savings calculations, utility rebate application, and ongoing verification.

The RFP was released with expectations of converting about 80% of the lighting at the City Hall/Police Station site to LED lighting to take advantage of the very low power consumption and very long life of LED technology. Due to the falling prices of photovoltaic panels, the Solar proposal was under budget and approval was granted to move some budget from Solar work to more lighting upgrades. The energy and other savings apparent from LED lighting convinced the city to convert nearly 100% of the facility lighting to LED technology. The resulting combined project included converting:

- 1036 ea. 4 ft. 277VAC fluorescent tubes in 2x4’ troffers, from a mix of 3 or 4 tube 40W T-12 and 34W T-8 lamps with various ballasts, to Ledtronix LED tubes at 22W rated 50,000 hours life;
- 25 ea. Parking Lot and Building-mounted “sombbrero” fixtures from 250W sodium to Relume 65W LED retrofits rated 70,000 hours life;
- 30 ea. Downlight Cans from 100W incandescent bulbs to Cree 10.5W or 12W dimmable LEDs
- 18 ea. Flagpole Spotlights from 125W HID to Cree PAR38 14W LED narrow spot lights;
- 16 ea. Wall Sconces from dual 75W incandescent bulbs or dual 23W CFL to dual 14W or 5W LED;
- Outdoor soffit and pendant fixtures, restroom fixtures, and fluorescent cans to LEDs.
- Provided all LED lighting under the new solar-roofed shelter house and cruiser car ports.

Only the HID walkway bollards on the park grounds around City Hall, the amphitheatre stage lighting, and 4 lonely CFL bulbs remain unconverted to LED.

The Solar Power project design evolved in parallel with the lighting and other retrofit work, and the lighting was completed before the steel was fabricated for the shelter and carport. Reduced electric bills began immediately, further enhanced by a **\$5000** check from AEPOhio under the gridSmart incentive program.

Watt Works determined appropriate LED retrofit products and methods, keeping in mind ARRA sourcing requirements, and provided the energy savings values to MetroCD as included in the ARRA grant reports and AEPOhio incentive applications. The LED lighting has received only positive comments from the public as to its appearance and brightness.

## **LED Lighting Complements Solar in Powell, Ohio**

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Examples of the Savings from Converting to LED Lighting:

Fluorescent 40W T12 lamps and magnetic ballasts converted to 22W LED tubes operated 70 hours/week:

- Received a \$7.20 AEPOhio incentive per tube;
- Is a reduction of 28 W/tube, which cuts 101kWh per year worth \$9.17 each year (at today's rates),
- Outlasts 12,000 hour rated tubes that would have cost \$2 per year,
- Continues to save this \$11 per year over a 50,000 hour life of 13+ years,
- And ends up having saved the City of Powell \$151 for a 6:1 ROI ratio on their contribution.

Incandescent 75W R30 flood bulbs converted to 10.5W LED modules operated 50 hours per week:

- Received a \$29 AEPOhio incentive;
- Is a reduction of 64.5 Watts, which cuts 167kWh per year worth \$15 each year (at today's rates),
- Outlasts two 1500 hour incandescent bulbs per year that would be replaced at a cost of \$7 each year,
- Continues to save this \$22 per year over a 50,000 hour life of 19+ years,
- And ends up having saved the City of Powell \$447 for a 10:1 ROI ratio on their contribution.

Sodium Vapor 250W parking lot lights converted to 65W LED disks operated 84 hours per week.

- Received a \$48 AEPOhio incentive;
- Is a reduction of 185 Watts, which cuts 810kWh per year worth \$73 each year (at today's rates),
- Outlasts 12,000 hour rated bulbs and ballasts that would have cost \$16 per year, plus labor,
- Continues to save this \$89 per year over a 70,000 hour life of 15 years,
- And ends up having saved the City of Powell \$1335 for over a 4:1 ROI ratio on their contribution.

Careful application of the proper LED products assured the most possible energy savings and longest possible lifetimes, while preserving or improving light levels and dispersion. Watt Works has unmatched experience with and access to the newest and best energy saving technologies. From T5/T8 Fluorescent upgrades and LED lighting to web-enabled HVAC systems, from radiant heat panels to variable speed drives, from solar collectors to water conservation, Watt Works can help you take advantage of the best, most efficient, and best-performing technologies for your situation to get you the results you need, whether you own a building or lease a space for your business.

*Call Watt Works today to start saving money!*