SSL IMPLEMENTATION:

Iowa Municipalities Unite to Save Energy with LED Street Lighting

Fifteen Iowa towns and cities united to upgrade more than 1,100 streetlights to LEDs using federal funding, joint purchasing, and technical specifications modified to suit their needs. Their collaborative effort resulted in buying power, substantial energy savings, and paybacks that might not have been possible individually.

The Iowa Association of Municipal Utilities (IAMU), founded in 1947, today represents all 136 community-owned, locally controlled municipal electric utilities in Iowa, more than any other state. IAMU is one of the oldest and largest organizations of its kind in the country. Several cities in the region belong to the U.S. Department of Energy's Municipal Solid-State Street Lighting Consortium, a program directed by Seattle City Light and managed by Pacific Northwest National Laboratory, so when IAMU members decided to take a collective approach to bring LED street lighting to Iowa, 15 municipalities turned to DOE Consortium resources to guide the way.

Community Strength, Joint Purchasing

IAMU chose to approach LED lighting adoption through a joint purchase and competitive bid process for a number of reasons:

- Volume pricing to reduce first costs for buying new fixtures
- Broader range of products and prices
- Central point of contact for sales inquiries
- Up-to-date technical knowledge of products and applications

IAMU received funding from an Energy Efficiency Conservation Block Grant (EECBG) as well as from the American Recovery and Reinvestment Act (ARRA), and tapped into technical assistance available through the DOE Municipal Solid-State Street Lighting Consortium. Using the Consortium's Model Specification for LED Roadway Lighting, IAMU and lighting designer Mike Lambert of KCL Engineering coordinated a Request for Proposal (RFP) process on behalf of the municipalities seeking to retrofit high-pressure sodium (HPS) streetlights with LED.

Algona, Iowa, replaced 422 streetlights with Leotek luminaires like the one pictured above, and estimates a 9.5 year payback.* Ten of the 15 participating communities used the IAMU joint purchase arrangement to retrofit fewer than 42 luminaires. *Photo courtesy of Leotek.*

**Payback includes maintenance savings. Electricity rate is $.08 per kWh.*

A Commitment to Collaborate

Each city was required to complete and return a Memorandum of Understanding and to contribute a $200 good faith deposit as a commitment to the project. (The $200 deposit was credited toward the participation fee if the city ordered fixtures.) The cost of preparing the RFP was recovered with a per-fixture participation fee included in the final price. The RFP was for three different HPS cobra head fixtures—70/100W, 150W, and 250W—so each city could choose the fixtures that best met its needs.

Because swapping LEDs for HPS fixtures is not a "cut-and-paste" exercise, IAMU adapted the Consortium's Roadway Model Specification to fit the needs of the local utilities.

Also, cities with EECBG funds were required to have a disposal plan for the defunct fixtures. IAMU found a service to recycle the luminaires and lamps, with documentation, for a small fee.

Economies of Scale Deliver Savings

The Iowa Utilities Board set high standards for exterior lighting, with

an efficacy rating equal to or greater than 66 lumens per watt. Swapping LEDs for HPS fixtures is not a "cut-and-paste" exercise, and defining and communicating the specifics required more technical expertise than the communities had in house. IAMU solved this by adapting the Consortium Model Specification to fit the needs of the local utilities, and requesting that manufacturers provide products based on that spec, including pre-specified data that allowed IAMU to verify whether the product would work for the specified application. Using Consortium expertise, IAMU determined exactly what modifications would produce the right fixtures. IAMU also required that the bidder meet the "Buy American" provision of ARRA and provide an extended warranty for all products.

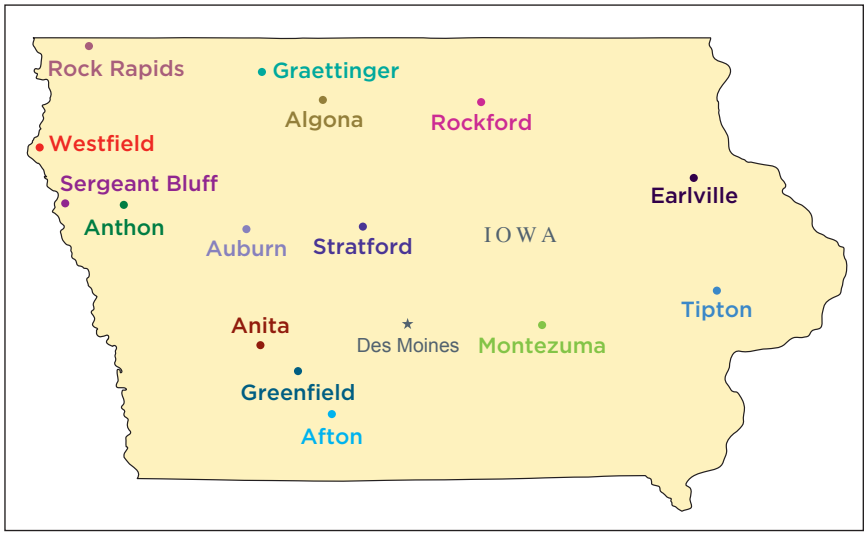
The 15 participating municipalities installed a total of 1,154 LED streetlights. The expected annual energy savings is approximately 549,743 kilowatt-hours, which amounts to $56,570—or enough electricity to power 43 U.S. households. The payback is expected to be between 2.4 and 9.5 years, well within the rated life of the fixtures. In addition, the new luminaires are expected to yield significant annual operation and maintenance savings. Moreover, the communities responded positively to the new lighting, with comments ranging from "easy to install" to "good quality" to "very impressed with the light."

Conclusions

Iowa municipalities combined ingenuity, community needs, and technical guidance to attain undeniable energy savings, ultimately bringing them close to their energy efficiency goals. This kind of joint purchasing and financing is proof that regardless of size or economic situation, LED street lighting solutions are attainable and beneficial. Users are strongly encouraged to read the full report for details on assumptions and estimated payback.

Purchase Volume by Town with Energy Savings Estimates

Community	Number Purchased	Annual Estimated Energy Savings (kWh)
Greenfield	2	736
Anthon	13	4,568
Afton	20	6,745
Earlville	30	11,038
Rockford	38	12,816
Stratford	32	12,847
Westfield	40	13,490
Graettinger	32	16,372
Montezuma	41	21,370
Auburn	24	37,843
Tipton	105	42,035
Sergeant Bluff	87	45,346
Anita	138	49,547
Rock Rapids	130	67,759
Algona	422	207,231
Total	1,154	549,743



Fifteen Iowa municipalities joined forces to buy LED streetlights to work toward achieving their energy efficiency goals. Regardless of size, all benefited from joint purchasing and financing.

Municipal Solid-State STREET LIGHTING CONSORTIUM

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

The DOE Municipal Solid-State Street Lighting Consortium shares technical information and experiences related to LED street and area lighting demonstrations and serves as an objective resource for evaluating new products on the market intended for these applications. Cities, power providers, and others who invest in street and area lighting are invited to join the Consortium and share their experiences. For more information visit www.ssl.energy.gov/consortium.html.

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