

City Success Story – Energy Savings Performance Contracting

The City of Henderson, the second largest city in Nevada, put its quest for sustainability into action. The city just completed a \$23.1 million energy savings performance contracting (ESPC) project without increasing the city's budget. "Implementing energy-saving programs that help preserve our community's natural resources for future generations is a key component of our vision to be America's Premier Community," said City of Henderson Mayor, Andy Hafen. "We trust that by taking a leadership role, we can foster an ethic of conservation and resource stewardship throughout our community." For the facilities maintenance staff, it was a solution for long-range planning. "We looked at energy savings potential, maintenance cost savings, dealing with problematic buildings and optimizing maintenance resources," said Ed McGuire, the city's Facilities Maintenance Manager. "It's the most complete city-wide project that I know of," said Paul Ira, Senior Account Executive of Ameresco – the energy service company (ESCO) that brought this turn-key effort to the city.

Sustainability in Action A City-Wide Demonstration

Making the Case

When energy service companies introduced ESPC to the city, Kathy Ogle, Construction Project Manager (Department of Public Works, Facilities Management - Design and Construction), was more than willing to listen. She recognized it as a good fit for the city to demonstrate its sustainability commitment. She introduced the idea to city decision-makers who gave the go-ahead to try it out on one building.

Successful Pilot

The Justice Facility (detention center) was an obvious first choice because it's one of the oldest buildings with many HVAC problems. The facilities staff welcomed the plan to upgrade the old systems through this new-found funding source of future cost

"It has been great for the city. It fit into our sustainability action plans for energy efficiency, renewable energy, emissions reductions, water conservation and economic development through green industries. The city is walking the talk to lead by example."

- Ed McGuire, Facilities Maintenance Manager, City of Henderson



The City's Facilities Maintenance team – Mike Fish, HVAC Technician; Ed McGuire, Manager; Kathy Ogle, Construction Project Manager.

savings. New HVAC equipment, with an energy management control system to optimize its operation, not only eliminated the comfort complaint calls but improved the maintenance of the facility. Not stopping there, the project included exterior lighting systems, plumbing maintenance fixes, and LED traffic signal upgrades to finish-out a formerly unfunded project.

Buy-In

Ogle said, "it was a no-brainer to go forward. The success of the pilot project inspired the Recreation Center staff to do a project in their building as a second phase. Ogle went to the Finance Director to do a third phase and he responded, "get it all done." The Director of Public Works liked the idea



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because they wouldn't have to use their own staff or funds to do the projects, and because there's no up-front engineering work and only one contract to oversee a multitude of projects. The IT department was in favor of the power management software for computers. The Traffic Division, when faced with switching to induction lighting for streetlights, was skeptical but after testing and community education they could buy-in as well. The City Council was more than happy to approve a city-wide project nearing election time. And, the Finance Department pushed the city-wide effort.

Leveraging Funds

The city-wide effort cost \$23.1 million. The main funding source is energy and water savings which delivered close to \$2 million in annual savings. The timing was right to bring in \$2.2 million in grant funds from the American Recovery and Reinvestment Act (ARRA) – the audit revealed shovel-ready projects that were a perfect fit for ARRA funding and ESPC implementation. Utility rebates of \$495,000 further expanded the scope of the ESPC project.

Thinking Big

The city upgraded over 60 buildings from the convention center to administrative buildings, 28,000 streetlights throughout business and residential districts and traffic lights at 64 intersections.



In the City Hall, lighting indoors and out was upgraded. New operating hours were set to coordinate with heating and cooling needs. The mechanical system was balanced to optimize comfort and costs.

Projects with Many Benefits:

Projects went beyond the norm of lighting, energy management controls and HVAC improvements. The induction lighting replaced high pressure sodium streetlights, cutting electricity costs by 65%, providing a truer light that aids security

and law enforcement, functioning better than LEDs in Nevada's hotter climate and lasting longer for lower maintenance costs. It's generating interest from neighboring cities to do the same. Lighting is improved in all buildings – “no more buzzing lights,” said Ogle. Plumbing fixture replacements solved a major maintenance problem staff had tried to fix for a long time.



Swimmers appreciate the improved indoor air quality. An ultraviolet water treatment system reduces the need for chemicals.

For indoor and outdoor pools, a heat pump heater system and variable speed pump controls reduce costs while the ultraviolet water treatment system in some pools reduces chemical use and improves air quality for swimmers. Other projects include lighting occupancy sensors and a solar PV array which tops the parking structure and generates electricity for a police substation.

Sustainability

The city embraced the new technologies introduced in the multi-faceted ESPC projects and incorporated them into specifications for new construction of city buildings, expanding the long-term impact of the ESPC project.

A Public-Private Partnership

“It was a very interactive process,” said McGuire. The ESCO, Ameresco, managed and implemented the ESPC effort from the initial assessment, to installation, to the annual measurement and verification of guaranteed savings. The city followed the State Legislature's guidelines to hire a third party consultant. Celtic Energy served as the city's ESPC expert and project facilitator, reviewing and approving engineering calculations and project estimates. “We met frequently during installation and optimized along the way,” added McGuire.

