



## SHOWCASE PROJECT: DYSART UNIFIED SCHOOL DISTRICT: KINGSWOOD ELEMENTARY SCHOOL

### SOLUTION OVERVIEW

Dysart Unified School District has implemented an Energy Service Performance Contract (ESPC) at Kingswood Elementary to maximize opportunities for high efficiency technology upgrades and energy cost saving strategies. The project achieved an annual energy savings of 16% and a cost savings of \$44,000.

Kingswood Elementary is one of 20 primary schools in the District with a student population of 738. Efficiency goals include the optimization of the school's central plant which accounts for 100% of the energy use used to cool the campus. To help reduce the overall energy demand, a full-scale lighting retrofit was performed throughout the campus. Building energy performance models were used to profile the impact of a reduced lighting load on the cooling and heating needs of the building in order to right size replacement equipment. Efficiency measures were implemented in November 2011 and completed in January 2012.

### SECTOR TYPE

Education

### LOCATION

Surprise, Arizona

### PROJECT SIZE

86,300 Square Feet

### FINANCIAL OVERVIEW

Project Cost \$195,000

### SOLUTIONS

Kingswood also benefits from a district-wide effort to install solar photovoltaic electric energy systems at 20 schools and the District Office in 2013. The solar energy system is designed to serve a dual purpose – energy production and shade for playgrounds and parking. The solar generating capacity at Kingswood is 469 kW.

Energy efficiency measures implemented at Kingswood Elementary were financed using ARRA funds with matching ESCO funds and include:

- Central chiller plant upgrades
  - Installation of two water-cooled Trane RTHD-100 ton screw chillers
  - Two chilled water pumps and associated Variable Frequency Drives (VFDs)
  - Two cooling towers with VFDs on the fan motors
- New lighting controls
- Installation of new lighting fixtures and upgrades for existing fixtures with energy efficient products
- Installation of solar hot water heaters

Solar hot water heaters were installed to take advantage of the solar resource capacity and further reduce annual energy costs. Goals of the solar energy system include reducing dependency on the electricity grid and providing educational benefits to student curriculums and the environment.

The solar products and service provider is working with Dysart USD on an energy buy back agreement for surplus energy generated at the site.

## **OTHER BENEFITS**

School-based activities are used to educate students on the benefits of energy efficiency and renewable energy. The solar projects allow students to monitor how energy is produced and the amount of energy produced in different weather conditions. Student energy patrols are issued vests and badges to monitor behavioral modifications that can assist with energy conservation including turning off of lights and ensuring closure of facility doors.

## Annual Energy Use

(Source EUI)

Baseline(2011)



Actual(2013)



**Energy Savings**

**16%**

## Annual Energy Cost

Baseline(2011)



Actual(2013)



**Cost Savings**

**\$44,000**



School front