

Implementation Grants

Background

The Legislature appropriated \$2.5 million to the School Facilities Board to implement a water and energy savings pilot grant program. The Board adopted the parameters for the distribution of these funds at the October 2007 Board meeting.

Grant funding was divided into two types of projects: development grants and implementation grants. Recommended awards for development grants were presented at the April meeting, recommendations for implementation grants are being presented today.

Implementation Grants

The establishing statute defines implementation grants as a project that saves electricity, natural gas, other energy fuels or water, in a school facility built and occupied before July 1, 1999, through any of the following:

- (a) Improvements in the efficiency of energy or water use.
- (b) On-site production and use of electricity and useful thermal energy.
- (c) Improvements in the operation of buildings and energy-consuming or water-using equipment in buildings.

The Board may award up to \$2,000,000 in implementation grants.

Disqualified Projects

Applications were generally disqualified for two reasons. First, the district did not include the required documentation to support the concluded energy savings. Second, the proposed project was to replace failed or failing equipment. SFB and Energy Office staff determined that projects that the district will have to complete to continue normal operation of the school were not eligible for energy grant funding. For example, the replacement of failed or failing HVAC units was not considered eligible.

Evaluation

The SFB received 164 complete applications for implementation grants. Attached is the summary scorecard for all of the applications. Applications were evaluated based on the following criteria (total 100 points):

Cost Benefit Ratio (35 points): The cost benefit ratio is based on proposed project savings versus grant funds requested. $\text{Cost benefit ratio} = \text{annual project savings} \times \text{useful economic life} / \text{grant funds requested}$

Percent Utility Savings (35 points): The electricity, gas, and water savings are calculated against the utility budget that includes annual cost of gas, electricity, and water. $\text{Percent Utility Savings} = 100 \times \text{Annual savings} (\$) / \text{Annual Gas, Water \& Electric bill} (\$)$

Local Resource Index (20 Points): This index is based on the per pupil bonding capacity of the applicant.

Environmental Impact (10 Points): The environmental savings are based on total pounds of CO₂ reduction per dollar spent. The calculations for CO₂ reduction are as follows:

- 1.2 lbs of CO₂ per KWH of Electricity (per EPA GRID database)
- 11.7 lbs of CO₂ per Therm of Natural Gas (per NaturalGas.org)
- 12.7 lbs of CO₂ per Gallon of LPG (Propane - per Climatetrust.org)
- 0.007456 lbs of CO₂ per Gallon of Water (Mike Pasqualetti, Professor, School of Geographical Sciences, ASU)

Example: $\text{Environmental Impact (lbs of CO}_2 \text{ per \$)} = \text{KWH saved} \times 1.2 / \text{Grant Funds Requested}$

Operating Hours

To be fair and uniform, the projects needed to be evaluated with standard operating hours. The recommended operating hours standard (below) is in line with typical school activities, and does not include hours for community activities.

Lighting:

- Classrooms/library/vocational spaces/kitchen/cafeteria/toilets- 2,000 hours
- Office/hallway/MPR/Gymnasium/Breakroom-2,300 hours
- Exterior Lighting- 4,380 hours
- Exit signs/Vending Machines- 8,760 hours

HVAC:

- Maricopa, Pima, Pinal, Yuma, La Paz- 400 (Heating) & 1,600 (Cooling)
- Mohave, Graham, Cochise, Santa Cruz- 800 (Heating) & 1,200 (Cooling)
- Yavapai, Gila- 1,200 (Heating) & 800 (Cooling)
- Coconino, Navajo, Apache- 1,350 (Heating) & 650 (Cooling)

Useful Economic Life

The economic useful life of different building components are as follows: (source: ASHRAE, CHPS, DEER)

- HVAC Equipment- 14 years
- HVAC Controls/EMS- 10 years
- Lighting Equipment/Control- 16 Years
- Waterless Urinals- 20 years (per Southern California Water Conservation Association)

Other Important Notes

- Savings are based on energy saving alone, and does not include operational savings.
- Occupancy sensors are assumed to save 20% of lighting load.
- EMS are assumed to save around 15% of HVAC load (gas and/or electric).
- Replacement of equipment at the end of its useful life is considered a capital improvement project, and not an energy efficiency project.
- The statute limits the application of the grant funds to the buildings built and occupied prior to July 1999.

Recommended Awards

SFB staff recommends awarding 30 projects to 16 districts. In total, these projects will save \$497,243 per year, which means the average payback for these projects is just over four years. As noted above, the SFB staff analyzed 164 projects. If all 164 projects were implemented, the projected annual savings would be \$1.2 million with a payback of just over nine years.

The projects recommended for award are as follows:

Payson Unified School District – Score 77

Payson High School

Amount Requested: \$100,000

Recommended Award: \$100,000

Project Scope: Install Direct Digital Controls (DDC) on all HVAC equipment; Install six economizers on existing RHEEM packaged units that serve dome facility; Replace existing T-12 lighting and early generation T-8 lamps & ballast with the latest generation T-8; Replace existing incandescent exit

signs with new LED exit signs; Install occupancy sensors; Replace HID at multipurpose room with T5HO and T-8; Install control at vending machines.

District Funds: \$455,236
Estimated Savings: \$70,968 per year
Environmental Impact: The project is estimated to save 447,590 KWH of electricity and 11,370 gallons of LPG per year.

Flowing Wells Unified School District – Score 65

Flowing Wells High School

Amount Requested: \$5,434
Recommended Award: \$5,434

Project Scope: Replace existing T-12 lighting with the latest generation T-8 lighting.

District Funds: \$0
Estimated Savings: \$3,629 per year
Environmental Impact: The project is estimated to save 40,320 KWH of electricity per year.

Eloy Elementary School District – Score 61

Eloy Intermediate School

Amount Requested: \$98,361
Recommended Award: \$98,361

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Install control at vending machines.

District Funds: \$7,684
Estimated Savings: \$17,558 per year
Environmental Impact: The project is estimated to save 144,558 KWH of electricity and 340 Therms of Natural Gas per year.

Altar Valley Unified School District – Score 58

Mary E. Dill Elementary School

Amount Requested: \$84,773
Recommended Award: \$84,773

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace HID with compact fluorescent; Install time clock and photo cells on three parking light poles; Install control at vending machines.

District Funds: \$0
Estimated Savings: \$14,461 per year
Environmental Impact: The project is estimated to save 86,474 KWH of electricity and 659 Therms of Natural Gas per year.

Altar Valley Unified School District – Score 56

Administration/Transportation Building

Amount Requested: \$12,890
Recommended Award: \$12,890

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace incandescent bulbs with compact fluorescent lamps.

District Funds: \$0
Estimated Savings: \$2,180 per year
Environmental Impact: The project is estimated to save 15,016 KWH of electricity per year.

Parker Unified School District – Score 54

Parker High School
Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting and early generation T-8 lamps & ballasts with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at gymnasium with T5HO; Install reflectors to reduce the number of lamps and ballasts required.

District Funds: \$188,573
Estimated Savings: \$28,590 per year
Environmental Impact: The project is estimated to save 252,597 KWH of electricity per year.

Payson Unified School District – Score 53

Payson Elementary School
Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Install Direct Digital Controls (DDC) on all HVAC equipment; Install economizers; Retro-commission outside air dampers on 20 units; Replace existing T-12 lighting and early generation T-8 lamps & ballast with the latest generation T-8; Replace existing incandescent exit signs with new LED exit signs; Install occupancy sensors; Install control at vending machines.

District Funds: \$27,960
Estimated Savings: \$20,102 per year
Environmental Impact: The project is estimated to save 147,766 KWH of electricity and 2,145 gallons of LPG per year.

Colorado River Union High School District – Score 52

River Valley High School
Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at gymnasium with T5HO; Install reflectors to reduce the number of lamps and ballasts required; Install vending machine controls; Replace twenty-one urinals with waterless urinals

District Funds: \$241,114
Estimated Savings: \$37,031 per year
Environmental Impact: The project is estimated to save 409,391 KWH of electricity, 1,643 Therms of Natural gas and 321,840 Gallons of water per year.

Colorado River Union High School District – Score 52

Mohave High School
Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at gymnasium and multipurpose with T5HO; Install reflectors to reduce the number of lamps and ballasts required; Install vending machine controls; Replace twenty-one urinals with waterless urinals

District Funds: \$248,420
Estimated Savings: \$41,523 per year
Environmental Impact: The project is estimated to save 460,839 KWH of electricity, 1,906 Therms of Natural gas and 521,280 Gallons of water per year.

Clarkdale-Jerome Elementary School District – Score 51

Clarkdale-Jerome Elementary
Amount Requested: \$98,961
Recommended Award: \$98,961

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at multipurpose with T5HO.

District Funds: \$7,390
Estimated Savings: \$14,034 per year
Environmental Impact: The project is estimated to save 103,706 KWH of electricity and 1,706 Therms of Natural Gas per year.

Concho Elementary School District – Score 50

Concho Elementary School
Amount Requested: \$64,259
Recommended Award: \$64,259

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install occupancy sensors. The proposal includes reduction of lamps in the fixtures significantly as compared to the existing fixtures.

District Funds: \$2,800
Estimated Savings: \$8,171 per year
Environmental Impact: The project is estimated to save 81,716 KWH of electricity per year.

Sahuarita Unified School District – Score 48

Sahuarita Intermediate School
Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment.

District Funds: \$131,080
Estimated Savings: \$29,427 per year
Environmental Impact: The project is estimated to save 72,466 KWH of electricity and 1,918 Therms of Natural Gas per year.

Parker Unified School District – Score 48

Wallace Elementary School
Amount Requested: \$71,011
Recommended Award: \$71,011

Project Scope: Replace existing T-12 lighting and early generation T-8 lamps & ballasts with the latest generation T-8; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at dome building with T-8; Install reflectors to reduce the number of lamps and ballasts required; Install vending machine controls.

District Funds: \$10,143
Estimated Savings: \$12,118 per year
Environmental Impact: The project is estimated to save 103,878 KWH of electricity per year.

Eloy Elementary School District – Score 45

Curiel Annex School

Amount Requested: \$18,234
Recommended Award: \$18,234

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install occupancy sensors.

District Funds: \$651
Estimated Savings: \$3,095 per year
Environmental Impact: The project is estimated to save 22,475 KWH of electricity per year.

Altar Valley Unified School District – Score 45

Altar Valley Middle School

Amount Requested: \$81,114
Recommended Award: \$81,114

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID with compact fluorescent; Replace HID at gymnasium with T5HO.

District Funds: \$0
Estimated Savings: \$10,880 per year
Environmental Impact: The project is estimated to save 71,439 KWH of electricity and 1,067 Therms of Natural Gas per year.

Avondale Elementary School District – Score 45

Lattie Coor (West) Elementary School

Amount Requested: \$60,913
Recommended Award: \$60,913

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment.

District Funds: \$0
Estimated Savings: \$11,620 per year
Environmental Impact: The project is estimated to save 102,830 KWH of electricity per year.

Gilbert Unified School District – Score 45

Gilbert High School

Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8.

District Funds: \$58,576
Estimated Savings: \$33,844 per year

Environmental Impact: The project is estimated to save 392,618 KWH of electricity per year.

Fowler Elementary School District – Score 45

District office

Amount Requested: \$58,008

Recommended Award: \$58,008

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Replace existing incandescent exit signs with new LED exit signs

District Funds: \$0

Estimated Savings: \$5,216 per year

Environmental Impact: The project is estimated to save 58,661 KWH of electricity per year.

Parker Unified School District – Score 44

Wallace Junior High School

Amount Requested: \$24,006

Recommended Award: \$24,006

Project Scope: Replace existing T-12 lighting and early generation T-8 lamps & ballasts with the latest generation T-8; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Install reflectors to reduce the number of lamps and ballasts required; Install vending machine controls.

District Funds: \$6,271

Estimated Savings: \$4,620 per year

Environmental Impact: The project is estimated to save 39,597 KWH of electricity per year.

Sacaton Elementary School District – Score 43

Sacaton Elementary School

Amount Requested: \$31,107

Recommended Award: \$31,107

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at gymnasium with T5HO. Install vending machine controls.

District Funds: \$0

Estimated Savings: \$5,027 per year

Environmental Impact: The project is estimated to save 57,129 KWH of electricity per year.

Osborn Unified School District – Score 43

Solano Elementary School

Amount Requested: \$25,000

Recommended Award: \$25,000

Project Scope: Replace nineteen urinals, fifteen faucets and forty-six toilets with low water usage urinals, faucets and toilets

District Funds: \$14,972

Estimated Savings: \$7,807 per year

Environmental Impact: The project is estimated to save 1,561,320 gallons of water per year.

Osborn Unified School District – Score 43

Osborn Middle School

Amount Requested: \$5,000

Recommended Award: \$5,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8.

District Funds: \$14,439

Estimated Savings: \$2,057 per year

Environmental Impact: The project is estimated to save 20,570 KWH of electricity per year.

Fowler Elementary School District – Score 43

Sunridge School

Amount Requested: \$98,880

Recommended Award: \$98,880

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Replace existing incandescent exit signs with new LED exit signs; Replace Metal Halides at canopy with PL Fixtures.

District Funds: \$0

Estimated Savings: \$11,982 per year

Environmental Impact: The project is estimated to save 124,588 KWH of electricity per year.

Catalina Foothills Unified School District – Score 42

Manzanita Elementary School

Amount Requested: \$100,000

Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Add roof insulation; Replace HAVC packaged units and reconfigure ductwork; Install energy management system.

District Funds: \$119,595

Estimated Savings: \$14,552 per year

Environmental Impact: The project is estimated to save 165,367 KWH of electricity per year.

Sacaton Elementary School District – Score 42

Sacaton Middle School

Amount Requested: \$94,762

Recommended Award: \$94,762

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at gymnasium with T5HO. Install vending machine controls.

District Funds: \$0

Estimated Savings: \$11,385 per year

Environmental Impact: The project is estimated to save 121,746 KWH of electricity per year.

Osborn Unified School District – Score 42

Clarendon Elementary School

Amount Requested: \$16,000

Recommended Award: \$16,000

Project Scope: Replace sixteen urinals, eleven faucets and forty-two toilets with low water usage urinals, faucets and toilets

District Funds: \$19,147
Estimated Savings: \$4,946 per year
Environmental Impact: The project is estimated to save 989,280 gallons of water per year.

Madison Elementary School District – Score 41

Richard Simis Elementary School
Amount Requested: \$100,000
Recommended Award: \$100,000

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Upgrade Energy Management System; Replace incandescent bulbs with compact fluorescent lamps; Replace metal halides with T-8 lamps and ballasts.

District Funds: \$93,362
Estimated Savings: \$32,473 per year
Environmental Impact: The project is estimated to save 314,834 KWH of electricity per year.

Osborn Unified School District – Score 41

Encanto Elementary School
Amount Requested: \$7,500
Recommended Award: \$7,500

Project Scope: Replace existing T-12 lighting with the latest generation T-8.

District Funds: \$17,588
Estimated Savings: \$2,817 per year
Environmental Impact: The project is estimated to save 28,174 KWH of electricity per year.

Pine Strawberry Elementary School District – Score 40

Pine Strawberry Elementary School
Amount Requested: \$94,918
Recommended Award: \$94,918

Project Scope: Replace existing T-12 lighting with the latest generation T-8; Install Energy Management System on all HVAC equipment; Install occupancy sensors; Replace existing exit signs with new LED exit signs; Replace HID at multipurpose with T5HO.

District Funds: \$6,878
Estimated Savings: \$14,615 per year
Environmental Impact: The project is estimated to save 88,534 KWH of electricity and 3,147 Gallons of LPG per year.

Gilbert Unified School District – Score 40

Highland High School
Amount Requested: \$100,000
Recommended Award: \$48,395

Project Scope: Replace existing T-12 lighting with the latest generation T-8.

District Funds: \$51,402
Estimated Savings: \$27,692 per year

Environmental Impact: The project is estimated to save 318,328 KWH of electricity per year.

Note: The district must add an additional \$51,605 for this project to meet the environmental impact.