SMART Fund Projects AWARDED
2012-2014

2012 PROJECTS FUNDED:

- Installation of linkageless fuel air control systems on boilers at the Alliant Energy Center = $16,674.08
- Public Safety Building Digital Controls Upgrade (for floors three and four) = $22,225
- Replace high wattage parking lot lighting fixtures with low wattage LED lighting fixtures in the Parks Department = $10,000

2013 PROJECTS FUNDED:

2013 ROUND 1

The following three projects have been selected to receive funding in the first round of 2013 Dane County Departmental Sustainability Fund awards:

1) **Replace 535 35W and 80 70W High Pressure Sodium lamps with 615 9W LED lamps in the Dane County Parking Ramp** = $22,500
2) **Public Safety Building Digital Controls Upgrade** (continuation and completion of 2012 project) = $15,535
3) **Replacement of existing washer/dryer units with energy efficient washer and dryer units** at the Juvenile Detention and Shelter Home facilities (total of 4 washers and 3 dryers) = $6,260

Total award for the first round of 2013 Dane County Departmental Sustainability Fund awards: $44,295

Projected Outcomes:

According to the proposals that were selected in this first 2013 round, we should see annual savings from energy / fuel reductions that result from these projects, as well as decreased maintenance costs, and decreased pollution and greenhouse gas emissions.

1) **From the LED replacement lamps in the parking ramp**: An average annual savings of $65,000, or $650,000 over the 10-year project life. The savings will come primarily from energy efficiency, but also from reduced maintenance costs. There will also be reductions in greenhouse gas emissions from the significant electricity reductions.
2) **From the Public Safety Building Digital Controls Upgrade**: There currently is no energy baseline specific to the system that is being replaced, but the new system will be more energy efficient and easier to use and maintain, so we will see energy and maintenance costs reduced. We will be tracking changes in energy use through comparing pre- and post- project steam use and data on degree heating days. Through the trend log from the PSB digital controls upgrade, we will be able to track energy usage more closely in the future, and respond more efficiently and effectively to those data trends in the future. In addition, the new system is much more easily maintained and so we should be able to track reductions in maintenance costs.
3) **From the replacement of washers and dryers in Juvenile Detention and Shelter Home**: Currently, 20-28 loads of laundry are done per week at each site. Based on Energy Star estimates, the new washing machines alone should use 58% less water, 41% less electricity, and 66% less gas than the current inefficient machines. The project should reduce annual CO^2 emissions by approximately 1,966 lbs. per washer. It should save almost $3,000 per washer over the lifecycle of the machines. Because of the greater efficiency of the machines, it should also save staff time on laundry.

2013 ROUND 2

The following projects have been selected to receive funding in the second round of 2013 Dane County Departmental Sustainability Fund awards:

1) **Lyman Anderson Building Heating System Upgrade:** Replace boiler, upgrade controls, and remove electric unit heater from mechanical room and replace with hydronic heater ($13,600)
2) **Purchase of Chemical-Free Floor Finish Remover Machine for Dane County Facilities:** Eliminates use of chemical floor stripper and replaces it with a non-toxic physical stripping method ($9,925)

Total award for the second round of 2013 Dane County Departmental Sustainability Fund awards: $23,525

Projected Outcomes:
According to the proposals that were selected in this second 2013 round, we should see annual cost savings from energy / fuel reductions that result from these projects, as well as decreased maintenance time and costs and supply costs, decreased pollution and greenhouse gas emissions, and the use of more ecologically-friendly, less toxic chemicals by our facilities maintenance staff. The departments responsible for implementing these projects will be tracking and measuring actual outcomes once the new equipment and systems are in place.

1) **From the Lyman Anderson Building Heating System Upgrade**: This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems, and meeting human needs through ensuring building comfort, as well as saving money and maintenance hours that might be applied to other county services and functions. It will right-size and upgrade heating equipment. The cost and resource savings will come primarily from energy efficiency (electricity and natural gas), but also from reduced maintenance costs and increased equipment longevity. There also will be reductions in emissions of greenhouse gases and air pollutants.

2) **From the Purchase of Chemical-Free Floor Finish Remover Machine for Dane County Facilities**: This project satisfied the four sustainability principles, including reducing use of toxic chemicals and reducing encroachment on and degradation of natural systems. And we were glad to note that a change to this new technology will improve employee well-being, experience, and satisfaction, as well as save on maintenance and supply costs. Currently, the county spends around $3,000 annually on floor stripping chemicals and pads. This equipment will eliminate the need for these chemicals, and the stripping pads should last longer without chemical use. This equipment can be used across county facilities.

2013 ROUND 3

1) **Alliant Energy Center Main Marquee Lighting Replacement (LEDs)**: Replace main marquee fluorescent lighting with LED lighting system ($15,674)

2) **Lighting Upgrade at the Juvenile Shelter Home:** Replace all existing T-12 and low-efficiency T-8 lighting with higher efficiency T-8 lighting and add occupancy sensors ($5,940)

3) **Courthouse variable frequency drive speed controls:** Install speed control on the VFDs for heating pump loops in the courthouse ($2,800)

Total award for the final round of 2013 Dane County Departmental Sustainability Fund: $24,414

Projected Outcomes:

According to the proposals that were selected in this round, we should see annual cost savings from energy / fuel reductions that result from these projects, as well as decreased maintenance time, decreased pollution and greenhouse gas emissions, and the purchase and use of fewer toxic materials, such as mercury contained in the older lighting systems. The departments responsible for implementing these projects will be tracking and measuring actual outcomes once they have completed their projects. The average project payback is anticipated in less than 1.5 years.

1) From the Alliant Energy Center Main Marquee Lighting Replacement (LEDs):
This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as saving money and maintenance hours that might be applied to other county services and functions. It will replace the existing fluorescent lighting in the marquee with an LED powerstrip lighting system. The cost and resource savings will come primarily from energy efficiency (electricity), but also from reduced maintenance costs and increased equipment longevity. There also will be reductions in emissions of greenhouse gases, air pollutants, and mercury from the old bulbs. This project also can serve as a pilot to evaluate LED outdoor and signage lighting for application at other county facilities. [Projected annual electricity savings: $7,690 and maintenance savings: $3,000]

2) From the Lighting Upgrade at the Juvenile Shelter Home: This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as saving money and maintenance hours that might be applied to other county services and functions. It will replace the current lighting with higher efficiency, longer lasting lighting that will reduce energy use and utility costs and reduce maintenance requirements. [Projected annual electricity savings: $2,868]

3) Courthouse variable frequency drive speed controls: This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as saving money and maintenance hours that might be applied to other county services and functions. The speed controls will optimize the performance of the VFDs and reduce energy consumption. Should be able to reduce operating costs in the upcoming heating season. [Projected annual electricity savings: $2,800]

INTERIM PROJECT BETWEEN 2013 ROUND 3 and 2014 ROUND 1

1) **Legacy Boiler Replacement at Fen Oak**: Replace boiler #2, upgrade controls, and remove electric unit heater from mechanical room and replace with hydronic heater. [NOTE: This request was made off-cycle because boiler #2 failed unexpectedly in the middle of the heating season. It was approved as it was an identical project to the first boiler replacement approved in Round 2 of 2013. It used remaining carryover funds from 2013)

Total award: $10,481.24

2014 PROJECTS FUNDED:

2014 ROUND 1

We are prioritizing projects that are strong across all factors—advancing the county's sustainability principles (which includes achieving emissions reductions and resource conservation) and achieving a financial return so that we can turn those operational savings into other sustainability enhancing projects (example: High-efficiency lighting replacements significantly reduce electricity use, reduce GHG emissions, and also give a quick financial ROI to reduce operational costs and reinvest savings).

The following four proposals have been selected to receive funding in the first round of 2014 SMART Fund awards:

1) **Energy and Water Savings Upgrades at Juvenile Shelter Home:** Replacement of all older bathroom faucets, shower heads and toilets with WaterSense rated models to reduce water usage; replacement of old water heater with a 95% thermal efficiency unit to reduce natural gas usage; replacement of kitchen counter and sink to comply with codes and reduce maintenance; replacement of kitchen faucet with a WaterSense rated model; and replacement of an inefficient dishwasher with a more durable and energy efficient commercial model. (Up to $51,750)
2) **Courthouse Static Pressure Reset:** Continued implementation of retrocommissioning report recommendations for the Courthouse. This measure will save energy by slowing down fans on air handling units during times of low zone demand and increasing fan speeds when cooling loads rise. The greatest cost of any HVAC system is the cost of fan energy, so this project focuses directly on that system component. ($2,787)
3) **Alliant Energy Center Zonal HVAC System:** Install a separate HVAC system for the back of house areas of Exhibition Hall, including the employee break room and staff offices, to reduce energy used for air conditioning for employee safety and comfort. ($15,000)
4) **LED Relighting Project for Multiple County Facilities:** Replacement of current garage and parking lot light fixtures at the CCB, DCCH, Fen Oak, and Public Safety Building facilities. ($42,600)

Total award for the final round of 2013 Dane County Departmental Sustainability Fund: Up to $112,137

Projected Outcomes:

According to the proposals that were selected in this round, we should see annual cost savings from electricity, natural gas, and water use reductions that result from these projects, as well as decreased maintenance time, and decreased pollution and greenhouse gas emissions. The departments responsible for implementing these projects will be tracking and measuring actual outcomes once they have completed their projects.
Estimated project paybacks are anticipated to be achieved between 0.8 and 3 years (based on utilities and maintenance savings).

1) From the Energy and Water Savings Upgrades at Juvenile Shelter Home

This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems by reducing water, natural gas, and electricity consumption, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, and educating Shelter Home residents and staff about resource conservation, as well as saving money and maintenance hours that might be applied to other county services and functions. The bathroom fixture replacements are estimated to save *at least* $740 on utilities, 7,100 cubic feet of natural gas, 80,000 gallons of water, and avoid the emission of 760 pounds of greenhouse gas annually. Additional energy and water savings will be achieved through the replacement of the water heater with a 95% thermal efficiency model and Energy Star rated commercial kitchen appliances. Additional GHG emissions, energy, water, and cost savings will be estimated during the project design stage.

2) From the Courthouse Static Pressure Reset: This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as saving money and maintenance hours that might be applied to other county services and functions. The electricity savings of this measure are estimated to be approx. 35,000 kWh annually. The estimated cost savings will be $3,300.00 annually. Annual Greenhouse Gas Emissions Avoided: An estimated 24 metric tons, or 53,185 pounds of CO2 equivalent emissions (based on estimated kWh reduction).

3) From the Alliant Energy Center Zonal HVAC System: This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as saving money and maintenance hours that might be applied to other county services and functions. The electricity savings of this measure are estimated to be approx. 36,715 kWh annually. The cost savings are estimated to be $4,772.95 annually. Annual Greenhouse Gas Emissions Avoided: An estimated 25 metric tons, or 55,750 pounds of CO2 equivalent emissions (based on estimated kWh reduction).

4) From the LED Relighting Project for Multiple County Facilities: This project satisfied the four sustainability principles, including reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as saving money and maintenance hours that might be applied to other county services and functions. The electricity savings of this measure are estimated to be approx. 67,433 kWh annually. The energy-related cost savings are estimated to be $4,018 annually. Estimated Annual Greenhouse Gas Emissions Avoided: An estimated 46.5 metric tons, or 102,470 pounds of CO2 equivalent emissions (based on estimated kWh reduction).

2014 ROUND 2

The following six proposals have been selected to receive funding in the second round of 2014 SMART Fund awards:

1) Land and Water Resources Division Records Modernization: The Water Resource Engineering Division (WRE) will transition from paper stormwater management permit records to a searchable electronic records system. ($61,000)

2) Zoo Solar PV Pathway Lighting: The goal of this project is to enhance safety for guests and animals by installing solar PV pathway site lighting inside the zoo. ($107,000)

3) Highway Heated Storage Facility Insulation: Scrape and power spray existing exteriors walls and install expanding spray foam insulation in the County Highway storage facility located on Fish Hatchery Road. ($100,629)

4) Renovations for CNG Code Compliance at Highway Department Vehicle Storage Facility: This project will bring the Highway Division's blue vehicle storage building on Fish Hatchery Road into compliance with building and safety codes for CNG vehicles, which will allow them to park the county's expanding CNG vehicle fleet in this area and perform limited maintenance on the vehicles (not to exceed $210,000)

5) Veterans Services Office Desktop Scanners: Install desktop scanners at six work stations, enabling the adoption of a paperless system of filing US Department of Veterans Affairs (VA) claims. ($3,000)

6) Alliant Energy Center Parking Lot Light Fixture Replacement (LEDs): Replace 243 existing parking lot and walkway light fixtures with energy efficient and lower maintenance LED light fixtures (not to exceed $460,000)

Total award for the second round of 2014 Dane County Departmental Sustainability Fund: Up to $941,629

Projected Outcomes:

According to the proposals that were selected in this round, we should see annual operational cost savings from electricity, natural gas, water , and paper use reductions that result from these projects, as well as decreased maintenance and labor time, and reduced pollution and greenhouse gas emissions. The departments responsible for implementing these projects will be tracking and measuring actual outcomes once they have completed their projects.

Estimated project paybacks are anticipated to be achieved in between 0.8 and 12 years (based on resource and maintenance savings).

1) From the Land and Water Resources Division Records Modernization:

This project satisfies the county's four sustainability principles by reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems by reducing water, natural gas, electricity, and paper/raw materials consumption, and meeting human needs through creating a more user-friendly and transparent permitting system for county customers and by significantly reducing labor time on the part of county staff. The energy conserved through this measure is estimated to be approx. 34 million BTUs annually. Water conservation is estimated at 22,000 gallons per year. The estimated savings—primarily from labor reductions, but also energy and paper use reduction—is $70,000 annually. Annual Greenhouse Gas emissions avoided: An estimated 2.6 metric tons of CO2 equivalent emissions (based on estimated kWh, paper use, and transportation reductions).

2) **From the Zoo Solar PV Pathway Lighting:** This project satisfies the county's four sustainability principles by avoiding use of fossil fuels, avoiding emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as by improving patron and staff safety on zoo grounds and providing education and outreach information to the public on energy conservation as a part of the project. It should also save maintenance hours that might be applied to other county services and functions. The electricity use avoided through this measure is estimated to be approx. 34,000 kWh annually with a related estimated energy cost avoidance of $6,150.00 annually. Annual Greenhouse Gas emissions avoided: An estimated 24 metric tons of CO2 equivalent emissions (based on estimated kWh reduction).

3) **From the Highway Heated Storage Facility Insulation:** This project satisfies the county's four sustainability principles by reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as through improving staff comfort and saving money and maintenance hours that might be applied to other county services and functions. The energy savings of this measure are estimated to be approx. 27,000 therms of natural gas annually. The cost savings are estimated to be $16,000-$19,000 annually. Annual Greenhouse Gas emissions avoided: An estimated 132 metric tons of CO2 equivalent emissions (based on estimated kWh reduction).

4) **Renovations for CNG Code Compliance at Highway Department Vehicle Storage Facility:**
This project satisfies the county's four sustainability principles by reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as through improving staff comfort and safety. Because this measure enables the county to increase and expand its CNG and bio CNG fleet of vehicles with the addition of a code-compliant space for storage, it will result in the following estimated per-vehicle emission reductions: Carbon monoxide by 90%, ground-level ozone by 75%, Greenhouse gas emissions by 90%. The Public Works Department will be gathering actual reduction and cost savings data on the individual CNG vehicles in the fleet versus the existing non-CNG baseline data.

5) **From the Veterans Services Office Desktop Scanners:** This project satisfies the county's four sustainability principles by reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reducing the use of raw materials such as wood and water to make paper, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, as well as by improving public/customer access to information. It will also save labor and money that might be applied to other services and functions. The energy savings of this measure are estimated to be approx. 2 million BTUs annually. The energy-related cost savings are estimated to be $430 annually. Estimated Annual Greenhouse Gas emissions avoided: An estimated .20 metric tons of CO2 equivalent emissions (based on estimated energy and paper reduction). There will be additional emissions reductions from reduced transportation of paper files in the mail, but the department could not determine an accurate measure for that.

6) **Alliant Energy Center Parking Lot and Walkway Light Fixture Replacement (LEDs):** This project satisfies the county's four sustainability principles by reducing use of fossil fuels, reducing emissions of air pollutants and greenhouse gases, reducing encroachment on and degradation of natural systems through reduction of air

pollution from electrical generation, and meeting human needs through reducing county resident exposure to air pollutants and GHGs from energy generation, improving staff and patron safety, and saving money and maintenance hours that might be applied to other county services and functions. The electricity savings of this measure are estimated to be approx. 190,758 kWh annually. The cost savings are estimated to be $34,798 annually. Annual Greenhouse Gas emissions avoided: An estimated 132 metric tons of CO2 equivalent emissions (based on estimated kWh reduction).

TOTAL AWARDS FOR EACH YEAR:

2012: $48,899.08 (out of $100,000 available)
2013: $102,715.24 (out of $100,000 and 2012 carryover)
2014 (Rounds 1 and 2 only): $1,053,766 (out of $2 million and 2013 carryover) (Amount does not include Round 3 projects.)