

THE DANE COUNTY SMART FUND: A PROGRESS REPORT OF SUSTAINABILITY ACHIEVEMENTS

June 18, 2020

County Board Innovation Intern Project Team:

Dane County Board Office Innovation Project Intern: Melanie Mikkelsen

Dane County Board Office: Lisa MacKinnon, Sustainability & Program Evaluation Coordinator

Dane County Board of Supervisors: Melissa Ratcliff

INTRODUCTION

The Sustainable Management and Renewable Technologies Fund, or SMART Fund, provides grants to county departments and constitutional offices for capital projects that further Dane County's sustainability goals. The Sustainability Subcommittee of the Public Works and Transportation Committee is responsible for the distribution of the SMART Fund grants from the county's capital budget. These grants provide funding for a variety of projects that make county operations more sustainable and reduce the county's economic expenditures. These sustainability enhancements are part of advancing Dane County government's sustainability principles and the [Dane County Government Sustainable Operations Plan's goals and objectives](#).

The Dane County Government Sustainable Operations Plan (SOP) focuses on implementing strategies that further climate change mitigation, update the municipal transportation fleet and infrastructure, reduce water usage and waste creation, increase energy efficiency in county buildings and facilities, while increasing outreach and education, providing healthy, safe, and equitable environments for county employees, and being fiscally responsible.

The SMART Fund projects support these county goals through the implementation of various strategies, as these grants fully fund projects that are not in the budget, but that help improve the sustainability of county operations. The funds also supplement other currently budgeted items that do not have enough funding to include more robust sustainability measures. This is done through the investment in projects that increase energy efficiency, decrease the use of fossil fuels in vehicles and operations, use renewable technologies, or use other

environmentally sound resources. These efforts also reduce the county's greenhouse gas emissions and decrease long-term costs.

Since 2012 the Sustainability Subcommittee of the Public Works and Transportation Committee has distributed funds for 88 approved projects (2012 through 2019 projects). The SMART Fund projects have been implemented in 13 different Dane County departments and offices, each of which applied for the funding to support their sustainability efforts. Now totaling \$4.5 million in grants since 2012, SMART Funds have been awarded to projects ranging in cost from \$644 to \$153,000. These projects lie within a variety of categories, including the replacement of older appliances, purchases of or conversions to compressed natural gas (CNG)-fueled or electric vehicles, upgrades to LED lighting, installations of solar panels, building vegetative roofs, and updating electronic record systems, along with many other innovative ways of making the county's operations increasingly resource- and financially efficient. These projects have also led to other benefits for county employees and the community, as they continue to advance Dane County's Sustainable Operations Plan.

SUSTAINABILITY CATEGORIES AND TRACKING

With the original intent of assessing the sustainability benefits and financial savings from the implemented SMART Fund projects, awardees of the granted funds were informed, during the projects' application and approval processes, of their department's or office's responsibility for tracking the savings of each awarded project as best as possible. A project contact person was designated to carry out this responsibility, as well as to be the SMART Fund contact for any future inquiries and follow up about the project. The categories intended for assessment of sustainability impacts included savings in energy, electricity and gas, avoidance of carbon dioxide (CO₂) emissions, savings in water, reductions in waste, as well as overall financial savings and decrease to operational costs for the county through reductions in maintenance, fuel, supplies, etc. Department and office contacts were asked to measure and record this information as best as they could, based on the comparative data they had from before a project's implementation, potential metering or tracking systems, or by using estimates for past expenditures or use of resources. Data from these areas could later be used to show how effective the SMART Fund investments had been in benefiting sustainability and operations in county departments and offices, as well as in overall advancement of Dane County government's long-term sustainability goals.

Dane County Departments and Offices Awarded SMART Funds

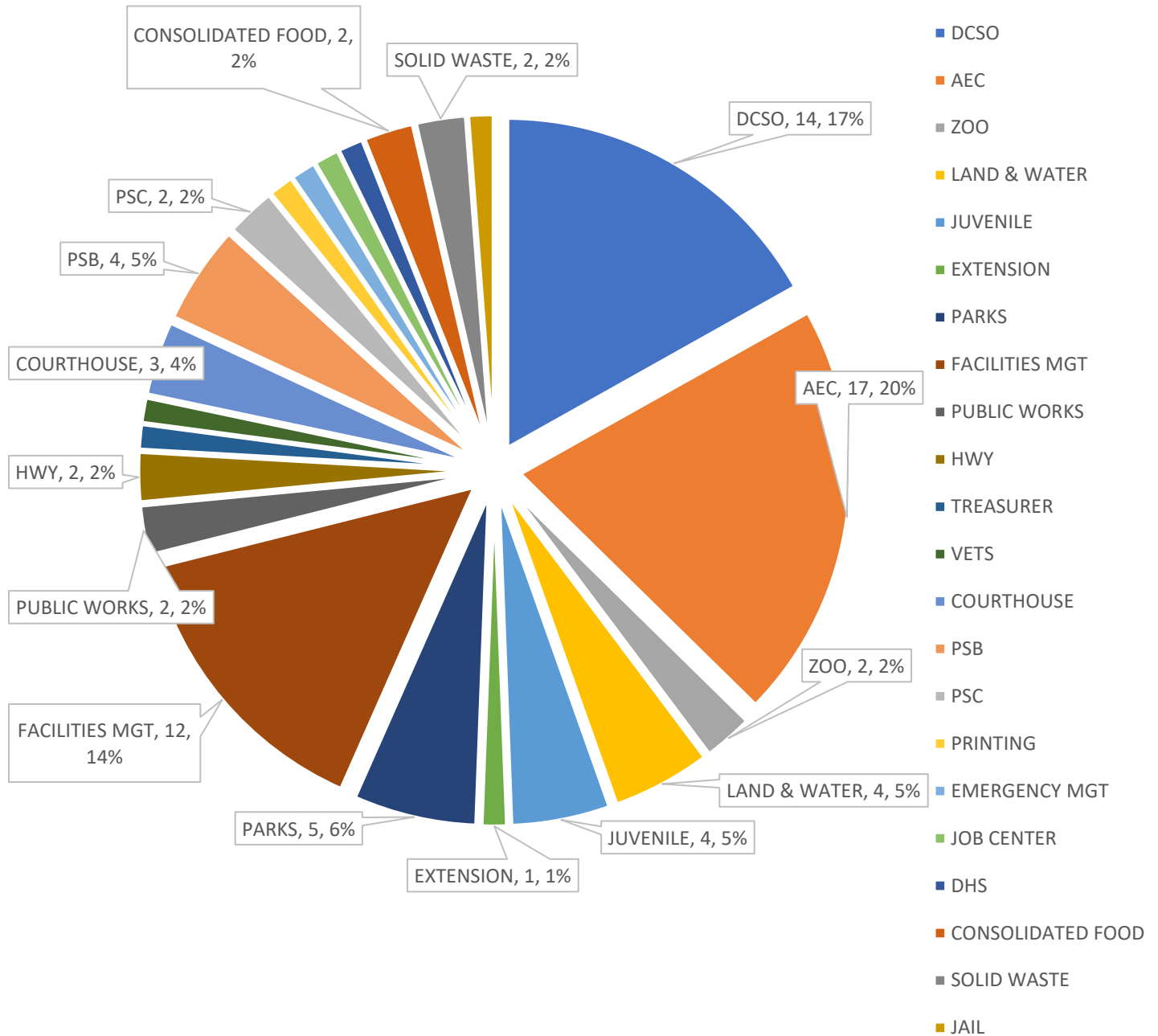


Figure 1. This chart shows the various Dane County Departments and Offices that have been awarded SMART Fund projects, shown by number of projects and percentage of total awards. (Lisa MacKinnon)

METHODOLOGY

In order to evaluate the awarded SMART fund projects, in December 2019 the County Board Office's SMART Fund Innovation Intern sent out a survey and [data reporting template](#) to the departmental contacts for each awarded SMART Fund project, asking for data on each project's implementation, tracking of usage and savings in the various categories previously mentioned, and asking for additional information or suggestions from departments regarding future awards. We received the tracked and calculated data from 46 of the 88 funded projects, including estimates for numerous areas where departments were unable to do direct tracking of usage or calculate savings. We did a comparative analysis of the costs and savings based on the information provided. Missing the raw data and limited by both the inability to meter projects separately or compare them to pre-implementation costs or resource usage has left us with very conservative estimates for the results of the actual savings experienced, both financially and for the various sustainability categories.

RESULTS

During the application process many projects included expected annual savings in different categories of savings including monetary, energy usage, emissions, or waste reductions. While not all projects included these expected estimates in their applications, from those that did and also from those that submitted their report data after implementation, we find that most projects are close to achieving their estimated annual resource savings. Many of the projects for which we have received data also indicate through their annual savings a good return on investment and are on track within a few years (generally 4-6 years) to have recouped the full monetary value of their implementation cost. These projects will then continue to go on saving the county additional funds annually after their initial cost has been 'paid off' through their savings. In addition to this financial recovery of their expense and continued savings, these projects are continuing to reduce the county's use of other resources such as electricity, gas, fuel, water, maintenance, and disposal of wastes, which not only provide sustainability benefits, but also equate to further financial savings as these resources cost the county money to use on an ongoing basis. The sustainability benefits from these SMART fund projects also include significant reductions in CO2 emissions, therefore furthering the [county's sustainability and climate change emissions goals](#).

After receiving data from 46 projects, we have estimated the following savings results from these projects, seen in the various categories below. It is again worth noting that the total estimated saving from these projects, as well as those from which we have not received data on their savings, include monetary and non-monetary savings that are expected to continue annually for many years. Again, with the limitations of the data being provided by departments for only a little over half of the SMART fund projects awarded and implemented—and with some of the submitted data stating results as ‘unable to calculate’—these are rather rough and conservative estimates. In reality we expect a much higher level of actual experienced savings in all categories to date. We also expect the unaccounted for projects will continue to increase the total amount of savings in the various categories over time beyond what we were able to summarize here without any additional costs, as these projects have already been funded and implemented.

- **Monetary savings**

In estimating the total dollar savings to date from the SMART Fund projects, year-to-date totals and annual savings multiplied by the number of years a project had been implemented, were added together from the 46 projects for which data had been submitted. Of these 46 projects with data, 20 of them either did not provide information for the monetary savings or stated that they were either unable to measure and calculate this data, or that it was too early in the project, so their savings were ‘yet to be determined’. Of the monetary savings experienced and tracked from the different SMART Fund projects, savings come from a variety of factors, including the decrease in use of electricity, natural gas, fuel, maintenance, labor, and other resources.

The estimated total savings from the 26 projects that submitted monetary savings data calculations provided a rough estimate of \$811,925.36 in savings to date of reporting. The maximum SMART funds awarded for these 26 projects totaled \$1,167,355.45, although it is yet to be determined if the maximum amounts were actually used in the implementation of the projects. The estimated annual savings from these same 26 projects is approximately \$174,980.83 and these are savings which will continue to be experienced every year for these project’s life spans. Because some of these 26 projects are not fully implemented yet, their annual savings are not being fully generated at this point. For example, the Land and Water Resources Department's Records Modernization projects were only at 50% of implementation when this data was submitted and thus their annual savings of approximately \$32,000 and \$30,730 since 2014 and 2015, will eventually increase when the digital records management

system is fully implemented. In addition to the Land and Water Resources project just mentioned, another of the larger contributors to monetary savings includes the Alliant Energy Center's Main Marquee LED lighting replacement, which has experienced savings of \$44,490 since its implementation in 2013. Several other LED lighting projects, as well as CNG conversions to vehicles, have provided significant financial savings. The Sheriff's Office's Freeway Service Team truck converted to using a CNG fueling system and has had an actual savings of \$18,661.00 year-to-date since its implementation in 2016. It is again worth noting here that since we only have experienced monetary savings data from 26 of the 88 total projects, the savings experienced by Dane County to date are likely much greater than what we have estimated in this report. Similarly, the annual monetary savings from the numerous unaccounted for projects, which will continue every year for years to come are also not included in these estimates.

- **Carbon dioxide emissions avoided**

Here again we have rather rough estimates from the data provided to us, but even with only about half of the projects having responded, they have avoided emitting approximately 1,046.44 metric tons of CO₂. According to the United States Environmental Protection Agency (EPA) greenhouse gas equivalency calculator, this would be the equivalent of CO₂ emissions reduced if 225 cars were removed from the roads each year, preventing the 2,595,745 miles they would have driven in that time. Some projects that are bigger contributors to these reductions include LED lighting projects at the Alliant Energy Center. These lights reduce a significant amount of energy usage, which equates to a reduction in CO₂ emissions as well as operational energy costs. The solar photovoltaic panels installed at the Dane County Zoo also significantly reduce CO₂ emissions as they create the energy needed for lighting versus using any additional electricity from the grid.

SMART SUCCESS STORY

One successful project already paying off its investment cost includes the Sherriff's Office's Freeway Service Team (FST) CNG bi-fuel conversion of an existing DCSO vehicle. This project, which received a SMART Fund award of \$13,595, has already seen a return on investment through savings of \$18,551 year-to-date of reporting. While the project had an estimated expected savings on its SMART Fund application of about \$4,447 annually, since its full implementation in April of 2016 it has been realizing savings of \$5,089 annually through the vehicle's mileage reduction and savings in fuel cost. The Sheriff's Office has indicated these savings would be even higher if the vehicle were to use the County Landfill bio-CNG fuel. In addition to monetary savings and reduction in fuel usage, this project has avoided the emission of hundreds of thousands of pounds of CO₂: 327,662 in just 4 years (equating to 148.62 metric tons). This is the equivalent in emissions of about 29-30 cars having been taken off the road each year. The Sheriff's Office also shared with us that the vehicle now has over 200k miles on it, but that it has had minimal maintenance and seems to be wearing better than other vehicles. As mentioned previously, this FST vehicle has been present at many events where the vehicle is labeled CNG bi-fuel and CNG's benefits are discussed with participants and the public, setting a great example for Dane County residents and businesses thinking about potentially using these fuel alternatives.

"The FST Program is probably the most popular service we offer. Local businesses are supportive of the FST Program as they donated the funding to pay for the majority of the truck." — Dane County Sheriff's Office



Dane County Sheriff's Office's Freeway Service Team's CNG Vehicle

- **Energy savings**

- a) Electricity (kWh)

A variety of projects contributed to electricity savings, but here again the LED lighting projects achieved the vast majority of energy savings in the form of kilowatt hours. With the estimated amount from reported projects totaling 1,450,133 kWh, this would be the equivalent, according to the EPA calculator, of the electricity usage of 174 homes for one year. Many project contacts expressed the difficulty of measuring this area of energy savings as often there was a lack of separate metering, so savings could not be segregated, totaled, and added to this report, and again we were missing data from about half of the implemented projects. However, even from the amount we could calculate, these are savings that will continue as most of them are accrued on an annual basis.

- b) Gas (Therms)

Savings in gas, for example for heating, is another area that was noted as difficult to calculate directly, as sometimes a variety of factors contributed to the reduction in energy usage. For example, through new windows and solar panels being installed, the zoo measured a reduction in energy usage in the form of therms within the first year. Another large contributor to the estimated total natural gas savings was the Alliant Energy Center's high-speed door installed in the Coliseum, which prevented large amounts of heat loss. The reported estimated total gas savings for all the projects providing gas savings data was 15,267 therms, which is equal to about 80.8 metric tons of CO₂ being emitted, or the equivalent of burning approximately 89,006 pounds of coal. (EPA)



The Coliseum's high-speed door prevents significant heat loss, reducing gas usage and providing monetary savings for Dane County.

- **Water savings**

It is estimated from just the 46 projects with submitted data, and of those measuring water usage and savings from their projects, that over 4 million gallons of water have already been saved from these SMART Fund projects. Projects contributing to major savings in water include the Consolidated Food Service's and the Sheriff's Office's dishwasher replacements, which are

now respectively saving approximately 158,995 gallons of water and 87,600 gallons of water each year. Another savings contributor was the washer and dryer replacement for the Juvenile Detention Shelter Home, saving approximately 182,840 gallons of water over the past 6-7 years. The Alliant Energy Center's two upgrades to touchless restroom fixtures has saved in total an estimated 1,978,803 gallons of water since they were installed in 2015, and the second project saved a total of 904,080 gallons of water in just 2 years. Again, these savings will continue to go on each year, saving the county millions of gallons of water, contributing both to the county's water conservation goal within the SOP, as well as increased fiscal responsibility. There are also global resource savings that are associated with these projects. For instance, the reduction in paper usage through the records modernization by Land and Water Resources equates to almost 12,000 gallons of water saved per year, although this is at the global paper production level rather than any savings at the county operational level.

- **Solid waste reductions**

Solid waste reductions, for example through paper savings and related disposal or recycling reductions, have been achieved through the use of records modernization projects funded and implemented for Land and Water Resources and are saving more than 2,290 pounds of paper annually. These are also examples of projects with multiple solutions—saving resources in a variety of areas—as this process of saving paper also saves on water, reduces costs, and greenhouse gas emissions from production, transport, and disposal. A similar multi-resource savings was achieved by the Sheriff's Office's traffic court paper reduction project, equating to over 1,800 lbs. of paper saved over the last 3 years. The total estimated savings in solid waste, including paper products, equals over 21,000 lbs. According to the EPA, this would be similar to having saved about 168 trees.

- **Maintenance reductions**

There have also been significant maintenance reductions through the replacement of old equipment with newer, but also longer-lasting equipment, from LED bulbs to hybrid and CNG vehicles. This decrease in the need for stopping county work functions in order to provide maintenance, not only saves the county in the cost of labor and parts, but also in the cost of lost work time and productivity that could be used for other operations during this pause. According to the Land and Water Resources Department, the reduction in the time staff need to manage and handle paper records has also saved the county over \$62,730 annually from the department's two record modernization projects. The longevity of LED bulbs, which makes bulb

replacements unnecessary for 10 or more years, contributes significantly to maintenance savings. There are also reported reductions in plumbing, roofing, electrician, and appliance repairs, and having fewer facilities management repair calls equates to salary savings. Reductions in vehicle maintenance and repairs were also recorded for hybrid vehicles, including those funded for purchase by the Sheriff's Office. While it can be difficult to estimate a reduction in maintenance that has not needed to occur, the Sheriff's Office was able to do a comparison of 2 vehicle repair costs in the past 12 months, indicating a maintenance savings of \$3,288 from just one of their hybrid vehicles.

SMART SUCCESS STORY

Another project that has already successfully created a full return on investment since its implementation is the Alliant Energy Center's replacement of fluorescent lights with an LED lighting system for its main marquee. This project was awarded \$17,128 in 2013 and has since had a savings of \$44,490 year-to-date of reporting, through electricity and maintenance cost savings. The project's annual savings in energy is worth \$4,305, with annual maintenance savings of \$3,000. These savings will continue every year for the bulbs' lifespan.



So with this project's payback period on the full investment being estimated at 2.34 years, the county's savings going forward are significant. Together with the monetary savings, this project has already reduced the

usage of 153,939 kWh (25,777 kWh per year) of electricity, totaling approximately 109 metric tons of CO2 emissions avoided since the project's inception. This project has also reduced the number of mercury-containing lightbulbs, about 60 per year, which would have required disposal. As mentioned previously, the reduction in maintenance needed to replace burned out lightbulbs (since LED bulbs are much longer lasting) equates to about 45 hours of labor annually, which has also saved the county money and will continue to provide savings going forward.

- **Other benefits experienced, unexpected outcomes**

In addition to the many positive results of decreasing county expenditures, reductions in the use of resources, including electricity, water, labor, and in CO2 emissions, departments have experienced additional, unexpected benefits from the implementation of these SMART Fund projects. Some positive outcomes reported by departments include health and environmental benefits, such as less chemical usage with new appliances such as the dishwasher funded for Consolidated Food Services or the Clean Core Caddy, a chemical free cleaning station, funded for the Sheriff's Office. This means less exposure to toxic chemicals for county employees, as well as fewer toxic substances making their way into the sanitary sewer or the county landfill (for instance, from heavy metal-containing lightbulbs). Reduction in solid waste and the other associated environmental costs of energy and paper production for paper hand towels was also noticed with implementation of the Alliant Energy Center's eco hand dryer project.

County employees' wellbeing and sense of community have also been positively affected, for example, through the larger and newer refrigerator funded for the Treasurer's Office, which has encouraged workplace community with employees bringing personal lunches, having communal potlucks, and sharing treats. Decreases in maintenance and more streamlined workflows have been cited as an unexpected outcome from both replacing LED lighting and converting vehicles to CNG fuel. An additional aesthetic benefit from some SMART Fund projects, such as Facilities Management's vegetative roof on a portion of the CCB, has also been highlighted. Not only is this project expected to double the lifespan of the building's roof by blocking ultraviolet radiation from hitting the rooftop surface and reducing temperature extremes, but the vegetative roof is also expected to enhance the building's appearance, while providing the healthy benefit of a quiet and green space for staff to enjoy.

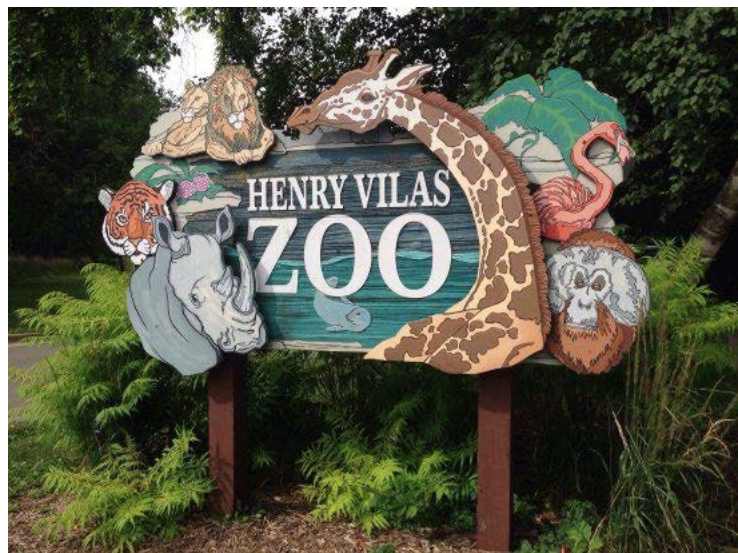
Broader community benefits have been experienced through the Sheriff's Office's CNG Hostage Negotiation Van, which has been used in numerous high-risk situations and in assistance of neighboring agencies such as the FBI. With its "mobile command unit that has countless benefits to community members and law enforcement personnel," this SMART Fund project has provided additional positive outcomes beyond the decrease in fossil fuel usage and reduction in greenhouse gas emissions.

Transitioning to a paperless record management system has also allowed for better accessibility of information to the public, according to the Sheriff's Office. Records digitization also has potentially saved the courts money through going paperless for its warrants and filings. It has also been noted that the increased ease of knowledge sharing from the Land and Water Resources erosion control permits records modernization project has had positive responses from the regulated community and saved county staff time in managing and handling paper records. Additionally, these SMART Funded records digitization projects are paying unexpected dividends during the current COVID-19 pandemic by providing electronic access for both staff and the public to documents that previously were only accessible in person.

- **Public Education elements**

Some of the SMART Fund sustainability projects have been more publicly visible than others. These have provided various opportunities for Dane County residents to observe SMART Fund projects and learn about their sustainability benefits. Examples include the Dane County Sheriff's Office's Freeway Service Team's CNG-converted vehicle, their Hostage Negotiation Team Van, and Detective hybrid vehicle, which have been utilized at numerous public events where the vehicles' purposes, alternative fueling systems, and the county's sustainability efforts have been highlighted and

discussed. Public education has also been an intentional focus of the Extension's Water Conservation Practices and Education Program at the Fen Oak Resource Center, which is using its awarded funds to incorporate more sustainable water conservation gardening techniques, such as drip irrigation, into its garden areas. Extension has



highlighted these water conservation practices in their educational tours and trainings for gardeners, landscapers, and nurseries, by providing fact sheets, online resources, and tip sheets for at-home gardens, and through signage on the newly incorporated drip irrigation system and techniques.



The Dane County Zoo has posted publicly accessible signage on all of its solar photovoltaic lighting poles, informing visitors (approximately 800,000 annually) of the zoo's and county's commitment to sustainability and renewable energy. The zoo also has shared information pertaining to their rhino barn energy improvements on their website, through their social media platforms, and as part of their on-the-ground educational programs.

Solar photovoltaic path lighting at Dane County's Henry Vilas Zoo, reduces energy usage and carbon dioxide emissions, while expanding on outdoor lighting, safety, and public awareness of sustainability efforts by Dane County

The forthcoming Department of Waste and Renewables' Mobile Sustainability and Environmental Education Lab project, once implemented, will engage with approximately 2,300 students each year, 40% of whom will be elementary and middle school students learning about environmental and sustainability concepts and solutions, as well as how they connect to local government operations. These are just a few of the SMART Fund projects that have raised the public profile of Dane County's sustainability efforts, not only bringing awareness to the SMART Fund's advancement of the county's sustainability goals, but also driving community curiosity and knowledge sharing about sustainability concepts and solutions.

- **Advancing Dane County Government's Sustainable Operations Plan (SOP)**

Overall, the SMART Fund's significant reductions in resource use and waste outputs are advancing many of Dane County's sustainability goals. Whether replacing appliances with energy-efficient models, updating building fixtures and installing LED lighting, converting vehicles to alternative and renewable fuels, or installing solar panels, these projects are decreasing Dane County's use of many natural resources, as well as reducing its use of non-renewable fossil fuels and dependence on dirty energy. This change is also leading to a significant reduction in the county's emission of greenhouse gases, specifically carbon dioxide produced by the county's operations, as well as the CO₂ and other pollutants emitted in the process of transporting these resources to the county.

The SMART Fund projects are in this way also increasing the county's resilience. This resilience is built not just with regard to future climate challenges and potentially limited resources; these projects also ensure county operations are more economical for many years to come. We are investing today, in a smart way that is more responsive to the needs and values of our employees and the residents we serve while maintaining our innovative facility operations in a less resource-dependent *and* more fiscally sound way into the future.

KEY FINDINGS & RECOMMENDATIONS

Overall, SMART Fund projects are providing savings and sustainability benefits, some faster and with greater impact than others, and some taking longer to return on their investments. Going forward it is worth examining what types of projects can provide greater total savings or bring about savings faster, as well as which project types have more potential for implementation throughout many county departments, offices, and sites. It is also important to focus on projects that bring multiple benefits—not just financial savings, but also numerous environmental and community benefits.

While some types of projects are more specifically linked to a department's or office's needs, such as specialized vehicles or appliances, others with more global usage, such as replacement of LED light bulbs and replacement of old mechanicals and HVAC with highly-efficient and renewable energy-powered technologies, could be used in almost all of the county's facilities. These types of projects can present great opportunities for future financial and other resource savings for the county. LED lighting projects bring in a substantial dollar savings, as well as savings in electricity, CO2 emissions, water and solid waste reductions, bringing the county closer to its sustainability goals. They are some of the larger contributors to the SMART Fund's current estimated savings. Other project types with similar savings monetarily, in resource usage and in reduction of CO2 emissions, are CNG vehicles and solar panels, which have also contributed toward larger savings.

It is worth noting that while some of these larger investments do provide larger savings but can also take more years to pay for their initial investments, there have been numerous smaller projects that have already paid for themselves through strong and fast returns on investment. For example, the washer and dryer project awarded to Juvenile Detention was funded with \$6,050 and has already paid for itself. This project continues to save the county \$1,100 every year through ongoing reductions in the usage of gas, electricity, and water. When many of

these smaller projects are implemented, there can be faster returns on investment paired with continual sustainability savings—and smaller initial investments mean more of them can be funded at a time.

With regard to the application and funding process going forward, it could be worth requesting more detail in the application process on how departments and offices plan to monitor and track the various areas of savings after a project's implementation. It may also prove to be helpful, not only in future reporting, but also to departmental focus, to have slightly stricter requirements and timelines for receipt of project savings tracking and measurement. There could potentially be an annual submission of data, similar to the matrix sent out for this report, requesting information on a project's progress and savings per year. This would not necessarily be burdensome and, if built into the process with the application's requirement, it should be rather reasonable for project contacts to assess their data tracking and measurement needs and capabilities going into the project.

It was suggested by a department that having annual check-ins could be helpful to ensure that a project contact is tracking costs, savings, and usage accurately. This could also apply to getting ideas for other benefits coming out of a project's results. It was also suggested by a department that having a way to learn about other departments' or offices' projects could be helpful in learning about how to best use, implement, and track an awarded project. This kind of support or cross-departmental teamwork could help in knowledge sharing, especially when departments have needed to do research when moving into new territory around certain sustainable technologies. This could be an opportunity for a county educational sustainability event, sharing both the knowledge gained from SMART Fund projects within the various departments and offices, as well as informing the public and raising awareness around county sustainability measures.

Building a minimal monitoring plan into the project concept from the start of the application process would help increase awareness by the departments, offices, and their contact person of their specific tracking and reporting responsibility, as well as ensuring that a tracking method is in place. These will in turn assist in better data collection for later reporting purposes and learning for the SMART Fund.

APPENDIX

Dane County SMART Fund Project List: All projects 2012-2019

(Includes those that did not participate in this reporting project)

Department or Office	Project/Application Title	Year & Round	Amount Awarded	Data Included
Consolidated Food Services -- Greg Brockmeyer Brockmeyer@countyofdane.com	Purchase of Chemical-Free Floor Finish Remover Machine for Dane County Facilities:	2013-2	\$9,925	N
Consolidated Food Services -- Benjamin Boyce Boyce.benjamin@countyofdane.com	Consolidated Food Service Dishwasher Replacement	2016-1	(up to \$117,434)	Y
Solid Waste -- John Welch Welch@countyofdane.com	Solid Waste Construction and Demo Facility LED Lighting: This project will substitute energy efficient LED lighting fixtures for 29 metal halide lighting fixtures in the high bay area of the new Construction & Demolition Material Recovery Facility. The estimated cost of the project is \$20,000. Estimated energy savings are \$1,839 per year with additional maintenance and replacement savings.	2015-2	The subcommittee approved funding for this project up to \$20,000.	Y
Waste and Renewables -- Roxanne Wienkes wienkes.roxanne@countyofdane.com	WASTE & RENEWABLES MOBILE SUSTAINABILITY AND ENVIRONMENTAL EDUCATION LAB	2019-3	(up to \$100,000)	Y
Treasurer -- Adam Gallagher Gallagher@countyofdane.com	High efficiency refrigerator replacement for Treasurer	2014-3	\$644	Y
Printing -- Pete Patten Patten@countyofdane.com	<u>Printing and Services CNG Vehicle Conversion</u> : 2015 Capital Budget approved a project to replace Printing and Services pickup truck and full size van with newer, more efficient models. The cost to convert the replacement vehicles to CNG was not included in the budget. This project would fund the cost	2015-2	The subcommittee approved funding for this project up to \$17,600.	Y

	difference to convert the replacement vehicles to CNG. The estimated cost of the project is \$17,600. Estimated fuel savings are \$815 per year, based on current fuel prices. The payback period is expected to decrease as fuel prices increase in the future.			
Public Works -- John Welch Welch@countyofdane.com	Public Works CNG weed collection dump truck replacement (contact: John Welch): \$76,310 (NOTE: This award amount will supplement \$60,000 currently budgeted for truck replacement)	2014-3	?	N
Public Works -- John Welch Welch@countyofdane.com	PWHT-Solid Waste – Landfill Shop Lighting Replacement	2015-1	\$6300.00?	N
Land and Water Resources/ Parks -- Darren Marsh marsh@countyofdane.com	LED Light Pole Upgrade	2012-3	?	N
Land and Water Resources-- Jeremy Balousek Balousek@countyofdane.com	Records Modernization	2014-2	(up to \$61,000)	Y
Land and Water Resources/ Parks -- John Reimer reimer.john@countyofdane.com	Retrofit selected park facilities with low water consumption toilets and urinals, sensor faucets, occupancy sensors for lighting, and high-efficiency LED lighting for the restrooms and parking lots	2014-3	?	N
Land and Water Resources-- Jeremy Balousek Balousek@countyofdane.com	LWR – WRE Records Modernization: This project will transition the Land and Water Resource Department - Water Resource Engineering Division's erosion control permit records from paper to searchable electronic records. \$53,100 in SMART Funds is being requested to supplement the \$124,800 currently in	2015-3	Up to \$53,100	Y

	the budget for this project. WRE staff estimate that the division will save over \$60,000 annually, primarily in labor costs. They also estimate that there will be substantial sustainability benefits from reduced paper consumption, as well as a more accessible and efficient system for customers.			
Land and Water Resources /Parks -- Chris James james@countyofdane.com	PARKS: POROUS PAVING LAKE FARM PARK	2017-1	Up to \$31,069	N
Land and Water Resources /Parks -- Laura Hicklin hicklin.laura@countyofdane.com (Kevin Connors retired)	LWR: SILVERWOOD PARK SOLAR PANELS	2017-1	(up to \$12,870)	N
Land and Water Resources /Parks -- Sarah Close Close.sarah@countyofdane.com	PARKS: LED LIGHTING AT LUSSIER CENTER	2017-1	(up to \$32,942)	N
Juvenile Detention -- John Bauman Bauman.john@countyofdane.com	Washer & Dryer -Shelter Home (John Bauman)	2013-1	Awarded \$6,050.00	Y
Juvenile Detention -- John Bauman Bauman.john@countyofdane.com	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	2013-3	Awarded \$3556.18	Y
Juvenile Detention John Bauman Bauman.john@countyofdane.com	Energy and Water Savings Upgrades at Juvenile Shelter Home	2014-1	Awarded \$52,225.27	Y
Juvenile Detention John Bauman Bauman.john@countyofdane.com	Juvenile Court – Shelter Home Appliance Update	2015-1	Awarded \$12,584.67	Y
Highway -- John Welch Welch@countyofdane.com	Replacement LED Lighting in County Ramp	2013-1		N
Highway -- John Welch Welch@countyofdane.com	Heated Highway Storage (Blue Shed)	2014-2		N
Highway -- John Welch Welch@countyofdane.com	Renovations for CNG Code Compliance at Highway Department Vehicle Storage Facility	2014-2		N
Highway -- Jerry Mandli mandli@countyofdane.com (and John Behrend)	Springfield Highway Garage and Salt Shed LED upgrade	2017-3		N

Zoo -- Ronda Schwetz Schwetz.Ronda@henryvilaszoo.gov (Jeff Halter left)	Solar Photovoltaic	2014-2	Awarded \$107,000	Y
Zoo -- Ronda Schwetz Schwetz.Ronda@henryvilaszoo.gov (Jeff Halter left)	RHINO BARN ENERGY IMPROVEMENTS	2017-2	Awarded \$14,093	Y
Extension -- Mindy Habecker Habecker@countyofdane.com and Lisa Johnson johnson.lisa@countyofdane.com	Extension – Water Conservation Practices and Education at Fen Oak Resource Center (up to \$4,300) - This project will allow Dane County UW- Extension to expand its education to incorporate more sustainable water conservation gardening techniques of drip irrigation in its high water needs garden areas.	2018-2-5	(up to \$4,300)	Y
Facilities Management -- Todd Draper draper@countyofdane.com	PSB Digital Controls Upgrade	2012-2 & 2013-1		N
Facilities Management -- Todd Draper draper@countyofdane.com	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) (Todd Draper)	2013-2		N
Facilities Management -- Todd Draper draper@countyofdane.com	Courthouse variable frequency drive speed controls: Install speed control on the VFDs for heating pump loops in the courthouse	2013-3		N
Facilities Management -- Todd Draper draper@countyofdane.com	Courthouse Static Pressure Reset	2014-1		N
Facilities Management -- Nate Tuggle tuggle.nathan@countyofdane.com	LED Relighting Project for Multiple County Facilities	2014-1		N
Facilities Management -- Nate Tuggle tuggle.nathan@countyofdane.com	Jail LED lighting (contact: Nate Tuggle): \$50,000	2014-3		N
Facilities Management / Emergency Mgt -- Nate Tuggle tuggle.nathan@countyofdane.com	Emergency management LED lighting (contact: Rick Lange/Nate Tuggle): \$7,000	2014-3		N
Facilities Management -- Todd Draper draper@countyofdane.com	FM – CCB Steam Convactor Controls Upgrade and Trap Replacement	2015-1		N

Facilities Management – Nate Tuggle tuggle.nathan@countyofdane.com	Job Center Lighting Replacement: This project will replace all of the existing interior fluorescent and exterior HID lights at the Job Center with energy efficient LEDs. The estimated cost of the project is \$152,400. Estimated energy savings are \$29,863 per year. The subcommittee approved funding for this project up to \$152,400.	2015-2		N
Facilities Management -- Todd Draper draper@countyofdane.com	Courthouse Water Heater Conversion (contact: Todd Draper): Up to \$30,600: This project will replace the last electric water heater in the Courthouse with a steam fired unit as well as add building automation controls for additional energy savings and improved performance of the system.	2015-3		N
Facilities Management – Nate Tuggle tuggle.nathan@countyofdane.com and Paul Logan Logan@countyofdane.com	Public Safety Communications (PSC) LED lighting replacement: This project will replace all of the existing interior fluorescent lights at the Public Safety Communications (911 Call) Center in the City-County Building with energy efficient LEDs. The estimated cost of the project is \$15,000. Estimated energy savings are \$695 per year with an additional estimated lifetime savings of \$45,000 for maintenance and bulb replacement. The subcommittee approved funding for this project up to \$15,000.	2015-2		N

Facilities Management -- Todd Draper draper@countyofdane.com	Courthouse Water Heater Conversion (contact: Todd Draper): Up to \$30,600: This project will replace the last electric water heater in the Courthouse with a steam fired unit as well as add building automation controls for additional energy savings and improved performance of the system.	2015-3		N
Facilities Management – Nate Tuggle tuggle.nathan@countyofdane.com	CCB 4th and 5th Floor and hallway LED relighting project (up to \$159,500— with an expectation that it will be lower once City of Madison pays its percentage to DOA) This project will convert the entire 4th and 5th floors of the CCB, as well as all the floors’ public corridors, from inefficient fluorescent lighting to efficient LED lighting.	2016-1		N
Facilities Management – Nate Tuggle tuggle.nathan@countyofdane.com	DHS Stoughton Office LED relighting project (up to \$18,500) This project will convert this entire office from inefficient fluorescent lighting to efficient LED lighting.	2016-1		N
Facilities Management – Nate Tuggle tuggle.nathan@countyofdane.com	Consolidated Food Service Kitchen LED Relighting project (up to \$23,000) This project will convert this entire office from inefficient fluorescent lighting to efficient LED lighting.	2016-1		N
Facilities Management -- Amanda DePagter Depagter.amanda@countyofdane.com	DOA Energy Management System	2016-2	\$17,100.00	Y
Facilities Management / Public Safety Communications – Nate Tuggle tuggle.nathan@countyofdane.com and Paul Logan Logan@countyofdane.com	PSC Phase 2 LED Lighting upgrade	2016-2		N
Facilities Management -- Todd Draper draper@countyofdane.com	WATER SOFTENERS - CCB PSB DCCH BP	2016-3		N

Facilities Management -- Amanda DePagter Depagter.amanda@countyofdane.com	FACILITIES MANAGEMENT: WATER BOTTLE FILLING STATIONS (up to \$85,921)	2017-1		N
Facilities Management -- Todd Draper draper@countyofdane.com	FACILITIES MANAGEMENT: INCREASED WATER SOFTENER EFFICIENCY (up to \$18,080)	2017-1		N
Facilities Management -- Nate Tuggle tuggle.nathan@countyofdane.com and Paul Logan Logan@countyofdane.com	Facilities Management – Lussier Family Heritage Center LED Upgrade (up to \$15,200) - This project will upgrade the inefficient HID, CFL and incandescent lighting that is currently being used at the Lussier Center with energy efficient LED lighting. **This project is eligible for a Focus on Energy Rebate incentive. The contact needs to contact our Focus on Energy representative to calculate and utilize the incentive.**	2018-2		N
Facilities Management -- Todd Draper draper@countyofdane.com	Facilities Management – City County Building Point of Service Urinal Flush Upgrade (up to \$35,000) Add point of service flush heads and operators to each individual urinal in the men’s restrooms. Single timer flush equipment will be removed. **This project may be eligible for a Focus on Energy Rebate incentive. The contact needs to contact our Focus on Energy representative to determine and calculate and utilize the incentive.**	2018-2		N
Facilities Management -- Amanda DePagter Depagter.amanda@countyofdane.com	FACILITIES MANAGEMENT— VEGETATIVE ROOF CITY COUNTY BUILDING	2019-1	(Approved for funding not to exceed \$153,600)	Y

	approved for funding not to exceed \$153,600			
AEC -- Bill Franz Franz@alliantenergycenter.com	Main Marquee Lighting Replacement (LEDs): Replace main marquee fluorescent lighting with LED lighting system	2013-3	Awarded \$17,128	Y
AEC -- Bill Franz Franz@alliantenergycenter.com	Alliant Energy Center Zonal HVAC System	2014-1		N
AEC -- Bill Franz Franz@alliantenergycenter.com	Alliant Energy Center Parking Lot Light Fixture Replacement (LEDs)	2014-2		N
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC - Coliseum Building Mechanical System Upgrades and Adjustments	2015-1		N
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC - Exhibition Hall Building Mechanical System Upgrades and Adjustments	2015-1		N
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC - Exhibition Lighting Project (funds reallocated from 2014-2-6 \$100,000 and 2015-1-1 \$130,000 plus \$35,000 new award) SEE 2018-1-3B	2015-1-reallocate		N
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC Restroom Fixture Upgrades (contact: Bill Franz): Up to \$107,475: This project will replace all of the existing toilets, urinals, and sinks at the Alliant Energy Center Exhibition Hall and AEC Administration building with high efficiency water saving fixtures. The estimated cost of the project is \$107,475 (71 sinks, 105 toilets, 37 urinals in Exhibition Hall and the Admin bldg.)	2015-3	Up to \$107,475	Y
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC Exhibition Hall Loading Dock High Speed Door (up to \$160,000, increased to \$212,825 at the 8/31/16 meeting, increased \$4,523 per email on 1/31/17)	2016-1		N
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC Coliseum LED Lighting upgrade	2016-2	Awarded \$78,300	Y

AEC -- Bill Franz Franz@alliantenergycenter.com	AEC Coliseum Restroom Fixture upgrades	2016-2	Awarded \$80,000	Y
AEC -- Bill Franz Franz@alliantenergycenter.com	ECO FRIENDLY HAND DRYERS	2016-3	Awarded \$45,930	Y
AEC -- Bill Franz Franz@alliantenergycenter.com	AEC: COOLING TOWER WATER TREATMENT (up to \$5,500)	2017-1	(Up to \$5,500)	Y
AEC -- Bill Franz Franz@alliantenergycenter.com	3) AEC Exhibition Hall Set- up Lighting (up to \$110,664). Mark Clarke indicated that this revised proposal will include the direct purchase of 150 additional energy efficient lights. 788 bulbs will be replaced rather than 488 bulbs. The return on investment is the same with the additional bulbs. AEC will use the existing labor for scheduled projects to install the additional bulbs. Bill Franz indicates that AEC's utility bills have been reduced by \$15,000 per month at the same time that business has increased. **This project is eligible for a Focus on Energy Rebate incentive. The AEC contact needs to contact our Focus on Energy representative to calculate and utilize the incentive.** SEE 2015-1- REALLOCATE	2018-1		N
AEC -- Bill Franz Franz@alliantenergycenter.com (John Dunn retired)	Link Ageless Boiler	2012-1		N
AEC -- Bill Franz Franz@alliantenergycenter.com and Don Kraft kraft.donald@alliantenergycenter.com	COLISEUM CONCOURSE LED LIGHTING	2017 2 1	Awarded \$98,499	Y
AEC -- Bill Franz Franz@alliantenergycenter.com and Don Kraft kraft.donald@alliantenergycenter.com	COLISEUM UPLIGHTING LED UPGRADE	2017 3 2	Awarded \$23,760	Y

AEC -- Bill Franz Franz@alliantenergycenter.com and Don Kraft kraft.donald@alliantenergycenter.com	AEC Coliseum LED Lighting upgrade -see email from Bill Franz on 5/14/18 about part of the award going towards the Coliseum Project	2018-1-3a	Awarded \$29,164	Y
AEC --Don Kraft kraft.donald@alliantenergycenter.com	ALLIANT ENERGY CENTER—EXTERIOR LED LIGHTING UPGRADE approved for funding not to exceed \$25,650. **NOTE: This project is potentially eligible for a Focus on Energy rebate incentive. The AEC contact needs to contact our Focus on Energy representative to calculate and take advantage of the incentive.**	2019 1 1		N
AEC --Don Kraft kraft.donald@alliantenergycenter.com	ALLIANT ENERGY CENTER—COLISEUM HIGH-SPEED DOOR approved for funding not to exceed \$83,500. increased to \$125,000 on 6/6/19	2019-1	Approved for funding not to exceed \$83,500-- increased to \$125,000 on 6/6/19.	Y
AEC --Don Kraft kraft.donald@alliantenergycenter.com	AEC EXHIBITION HALL AND COLISEUM HIGH- EFFICIENCY WATER SOFTENERS WITH BRINE RECOVERY	2019-3	Awarded \$18,250	Y
Sheriff's Office -- Lt. Alecia Rauch Rauch@countyofdane.com	Sheriff – Hostage Negotiations Team Van Replacement	2015-1	(Awarded \$55,000)	Y
Sheriff's Office/PSB -- John Welch Welch@countyofdane.com	Public Safety Building (PSB) Garage CNG Code Compliance: This project will create code complaint parking for up to 18 CNG vehicles at the Public Safety Building garage. The estimated cost of the project is \$100,000. It was noted that a CNG code compliant parking space is needed even for short- term parking. It was also noted that other county CNG vehicles could also	2015-2	2015, Round 2, \$100,000. Subcommittee approved additional funding of \$38,465 on 7/28/15 to cover increased project cost	Y

	<p>use this parking space if the Sherriff's office staff moved in the future. The subcommittee approved funding for this project up to \$100,000.</p> <p>subcommittee approved an increase on 7/28/16 to cover the full project costs (should be around \$38,465)</p>			
<p>Sheriff's Office/Facilities Mgt -- Nate Tuggle tuggle.nathan@countyofdane.com and Matt Alsaker Alsaker.richard@danesherriff.com</p>	<p>Public Safety Building (PSB) LED Lighting Conversion: This project will replace the existing interior fluorescent lights in the stairwells and on the first floor of the Public Safety Building with energy efficient LEDs. The estimated cost of the project is \$34,000. Estimated energy savings are \$7,644 per year. The subcommittee approved funding for this project up to \$34,000.</p>	2015-2	\$34,000	Y
<p>Sheriff's Office -- Sgt. Jeff Heil heil@danesherriff.com (submitted by Alsaker)</p>	<p>Sheriff's Freeway Service Team CNG System (contact: Jeff Teuscher): Up to \$13,595: This project will purchase and install a CNG bi-fuel system on the Sheriff Office's new 2016 Ford F250 Freeway Service Team truck. The vehicle uses an estimated 5,000 gallons of fuel per year. Estimated fuel savings are \$4,477 per year, based on current retail fuel prices. The estimated fuel savings would increase to \$8,827 per year if bio-CNG from the Dane County Landfill is used. (NOTE: John Welch reported that Public Works recently received a lower quote</p>	2015-3	\$13,595	Y

	for a similar CNG system from Madison Truck Equipment. <i>The subcommittee requested that the DCSO get at least another quote from Madison Truck Equipment and/or ask Barnes to meet the lower bid.</i>)			
Sheriff's Office -- Sgt. Nick Skrepenski Skrepenski@danesherriff.com	DCSO: JAIL DISHWASHER REPLACEMENT (up to \$29,648)	2017-1	(up to \$29,648)	Y
Sheriff's Office -- Sgt. Kris Boldt boldt@danesherriff.com	CHEMICAL FREE CLEANING Clean Core Caddy	2017-2	\$37,193	Y
Sheriff's Office -- Lt. Brian Hayes hayes.brian@danesherriff.com	SHERIFF OFFICE TRAFFIC COURT PAPER REDUCTION	2017-3	\$2,471	Y
Sheriff's Office/Public Works -- Eric Urtes urtes.eric@countyofdane.com	SHERIFF OFFICE EVIDENCE STORAGE EXPANSION	2017-3	<p>\$100,000 and \$38,465 "Plan A -- to remodel and expand existing evidence area.</p> <p>Plan B -- to construct a new storage room for Emergency Management Services (EMS), and the Sheriff's Office to use the old EMS storage room for evidence.</p> <p>Plan B option was selected. That decision ended DCSO's involvement with the Evidence Room Storage Expansion Project which never materialized for the Sheriff's Office."</p>	Y

<p>Sheriff's Office -- Matt Alsaker Alsaker.richard@danesherriff.com</p>	<p>1) Dane County Sheriff's Office Freeway Service Team Vehicle CNG and LED (up to \$26,537) The DCSO indicated they would be getting the CNG for this vehicle from the county highway garage bio-CNG source, which is the same place they fuel their current CNG freeway service truck.</p>	<p>2018-1</p>		<p>Y</p>
<p>Sheriff's Office -- Matt Alsaker Alsaker.richard@danesherriff.com (Porter submitted)</p>	<p>2) Dane County Sheriff's Office Hybrid Detective Vehicle (up to \$23,286 with conditions) Funding condition: Lt. Porter (DCSO) indicated that this fuel-efficient vehicle is not an addition to the DCSO fleet; rather it will replace an SUV that gets about 15 MPG with a hybrid vehicle that will get an estimated 40 MPG, thereby saving fuel and reducing fossil fuel use, and reducing emissions.</p> <p>The subcommittee members had a discussion regarding their desire to have any future proposals for vehicle replacements include an increment of funding from the department making the request as a part of the proposal, so that the SMART Fund is not covering the entire cost of the vehicle replacement and the departments' contribution offsets the full cost.</p> <p>The subcommittee approved this item but made the approval contingent on the Sheriff's Office returning</p>	<p>2018-1</p>	<p>\$23,286</p>	<p>Y</p>

	the proceeds of the auction to the SMART Fund rather than to the general fund when they sell a DCSO vehicle at a later date in 2018. The estimated sales proceeds from the auction of the old DCSO vehicle is \$3,500. The County Board will draft a resolution at a later date directing the transfer of funds from the DCSO vehicle auction sale, increasing the expenditures of the SMART Fund by the proceeds of the auction (\$3,500) and DCSO will work with the Controller after the auction to record the transfer properly.			
Sheriff's Office -- Jessica Greer greer.jessica@danesherriff.com	Dane County Sheriff's Office – Warrant Scanners (up to \$4,000) - Installation of desktop scanners at five workstations, enabling the adoption of a paperless system of filing for the Warrants Department in the Dane County Sheriff's Office.	2018-2	(Awarded up to \$4,000) Only spent \$1250.00 as IT purchased 5 Epson DS-530 scanners. 5*\$250	Y
Sheriff's Office -- Melissa Zielke zielke@danesherriff.com	Dane County Sheriff's Office – Laserfiche System and Access for DCSO staff (up to \$65,934.98) Purchase two high speed scanners and access to Laserfiche for DCSO staff members. Includes funding to cover this cost for the first year of operation. The Sheriff's Office will budget for ongoing maintenance fees after the first year.	2018-2	(up to \$65,934.98)	Y
Sheriff's Office -- Lt. Brian Hayes hayes.brian@danesherriff.com	Dane County Sheriff's Office – Refrigeration Unit Replacement (up to	2018-2	(Awarded up to \$5,166.34) Actual Spent \$4,897.00	Y

	\$5,166.34) - Replace refrigeration cooling unit with a non-R22 refrigerant unit.			
Sheriff's Office -- Sgt. Ira Simpson simpson.ira@danesherriff.com	Dane County Sheriff's Office – Revised Proposal from 2017 Rd 1 Smart Fund— Tactical Response Team (Trt) Truck & Trailer Replacement (up to \$40,000 <i>with conditions</i> — This is in addition to the \$110,000 approved in 2017 Rd 1) This approval of the additional funds to cover actual bids received was on the condition that DCSO return proceeds of any auction of the old trailer and truck to the SMART Fund per SMART Fund policy. DCSO will work with the Controller after the auction to record the transfer properly.	2018-2	(up to \$110,000) + (up to \$40,000)	Y
Sheriff's Office -- Sgt. Ira Simpson simpson.ira@danesherriff.com	DCSO: TACTICAL RESPONSE TEAM TRUCK AND TRAILER REPLACEMENT (up to \$110,000)	2017-1		Y
Sheriff's Office -- Jessica Greer greer.jessica@danesherriff.com	REPLACE 1 FREEZER COOLING UNIT WITH A NON-R22 REFRIGERANT UNIT.	2019-2	(Awarded \$6,000) Total spent \$5,836.00	Y
Sheriff's Office -- Jeff Heil heil@danesherriff.com	DCSO JAIL LIGHTING UPGRADE FOR HUMAN HEALTH AND ENERGY BENEFITS	2019-3	(Awarded \$27,908.00)	Y
Sheriff's Office -- Jenna Shelley shelley.jenna@danesherriff.com	DCSO INVESTIGATIVE SERVICES BUREAU (ISB) FOSSIL FUEL REDUCTION PLAN--PLUG-IN VEHICLES	2019-3	(Awarded up to \$101,235.00)	Y
Sheriff's Office -- Jessica Greer greer.jessica@danesherriff.com	DCSO 2ND COOLER REPLACEMENT WITH NON-R22 REFRIGERANT	2019-3	\$6,000	Y

Additional Sources:

United States Environmental Protection Agency (EPA) Greenhouse Gas Equivalency calculator

<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

EPA Waste-wise Environmental Factoids -

<https://archive.epa.gov/epawaste/conserve/smm/wastewise/web/html/factoid.html>