

## **Dane County Departmental SMART Fund**

### **Funding Opportunity Description**

The Sustainability Subcommittee of the Public Works and Transportation Committee is responsible for distributing grant money to county departments from a \$2 million fund in the county's 2014 capital budget. This fund helps support the county's goal of becoming more sustainable. For example, it supports initiatives that fulfill the county's desire for reducing greenhouse gas emissions by implementing systems that result in more efficient energy use and investments in renewable energy production at our various facilities. This fund is a part of the county's continued efforts to ensure that important natural resources and ecosystem services are maintained for current and future generations. The pilot phase of the fund was launched in late 2012 and 11 departmental capital projects have been funded since then. The 2014 fund can be used by your department to supplement current budget items that do not have enough funds to incorporate additional sustainable measures or to fully fund projects that are not in the current budget, but that will increase the sustainability of county operations and reduce long-term costs. The committee will select projects to fund based on their consistency with the sustainability principles adopted on October 18, 2012 by the Dane County Board to guide county government management, operations, and policy making.

Benefits of this fund:

- Alignment of departments and staff toward a common understanding of sustainability
- Clarity and consistency in assessing and organizing actions and programs for sustainable government operations
- Enhanced policies and programs incorporating a sustainability perspective
- Enhanced reputation as a proactive contributor to a more sustainable community
- Reduced operating costs

Dane County strives to operate in a sustainable way that will:

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;
- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

Eligible Applicants:

Dane County Departments

**Award Information:**

There are 3 deadlines for application:

1. March 7, 2014 — At this time up to 50% of the funds will be awarded.
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3. October 6, 2014 — At this time the remainder of the funds will be awarded.

**Examples of types of projects that would be eligible:**

- Covering the cost differential between conventional and fuel-efficient vehicles to purchase more fuel-efficient fleet vehicles or convert existing vehicles to more fuel-efficient and lower-emission vehicles
- Renewable energy or energy efficiency improvement investments for county facilities, such as LED lighting upgrades, energy efficient boilers, etc.
- Water conservation improvements
- Purchase of new or upgraded equipment that will improve the overall efficiency of facilities and reduce greenhouse gas emissions, reduce the use and disposal of toxic products, reduce maintenance costs and/or staff time using the equipment, and/or facilitate better tracking, measurement, and verification of sustainable outcomes in county operations

**Application and Submission Information:**

Apply electronically to Lisa MacKinnon at [Mackinnon@countyofdane.com](mailto:Mackinnon@countyofdane.com) and Travis Myren at [Myren@countyofdane.com](mailto:Myren@countyofdane.com).

Please include the following in your application:

- 1) A detailed description of your proposed project
- 2) How the project, if carried out, will meet the sustainability principles
- 3) How the county might build upon the sustainability outcomes of the proposed project
- 4) How your department intends to track and measure the outcomes of the project, such as cost savings, energy reductions, maintenance reductions, etc., if funded, and who will be responsible for measurement and verification.
- 5) Budget Sheet: Include all costs of achieving the objectives of the project.
- 6) Projected cost savings to the county due to implementation of the project.

Questions are to be directed to Travis Myren 366-4519, Lisa MacKinnon at 267-1529, or Jan Neitzel-Knox at 266-4029.

**Project Information:**

<p>Department: Land and Water Resources (LWR) Water Resource Engineering Division (WRE)</p> <p>Address: 5201 Fen Oak Drive Madison, WI 53718</p>	<p>Total project costs: \$216,400 (See Appendix 1: Project Budget)</p>
	<p>Funding amount in current budget: \$155,400 (See Appendix 1: Project Budget)</p>
	<p>Funding amount requested: \$61,000 (See Appendix 1: Project Budget)</p>
<p>Project Title: Records Modernization: Migration from Paper to Digital Documents</p>	
<p>Project Location: Lyman F. Anderson Agriculture &amp; Conservation Center 5201 Fen Oak Drive Room 208 Madison, WI 53718</p>	
<p>Project Description:</p> <p>The Water Resource Engineering Division (WRE) is proposing to transition from paper stormwater management permit records to searchable electronic records.</p> <p>Currently, stormwater management permit applications are submitted in paper format totaling more than 58,000 sheets of paper annually. Upon permit issuance, documentation is stored in perpetuity in metal file cabinets located on site. Documents must be accessed regularly to determine maintenance requirements, research past designs, and fulfill open records requests. Existing stormwater management permit documents will be scanned and loaded into a document management system. Architectural size plan sheets will be scanned with a large format scanner. Important plan information and spatial data will be digitized and entered into the Erosion Control &amp; Stormwater Management Permit Information Database.</p> <p>A web app will be developed to enable permit applications and associated documentation to be submitted in digital format. If applicants cannot utilize the web app, the auto feed sheet scanner will be used to scan paper documents at the time they are submitted. Digital documents will be reviewed and approved by staff from their workstation computers. The approved documents will be viewed for inspection purposes in the field using tablet computers. Open records requests will be fulfilled with digital files eliminating the need to</p>	

reproduce physical copies of every document.

This project is expected to provide a positive impact on the environment, increase the sustainability of the stormwater management program, reduce the cost of compliance with county requirements and save WRE approximately \$70,000 annually.

Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project.

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;

This project will eliminate the consumption of over 1,150 pounds of paper per year in the first year and more than 2,300 pounds of paper per year after the second year. This will save more than 34 million BTU of energy and eliminate the generation of **5,700 pounds of CO<sub>2</sub>** annually.

- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;

This project will reduce the county's dependence on paper, ink, toner and reduce the generation of solid waste.

- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems);

Reducing paper consumption by 2,300 pounds will result in the annual conservation of:

- 22,000 Gallons of water
- 19 Trees

And eliminate the annual production of:

- 11 Pounds of nitrogen oxides
- 6 Pounds of particulates
- 3 Pounds of volatile organic compounds
- 10 Pounds of biological oxygen demand

- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

The cost savings associated with paper reduction are realized by permit applicants, permit holders and citizens interested in obtaining public records. *This project will reduce the cost of complying with Dane County's stormwater management regulations.*

Include in your description any estimated reductions of CO<sub>2</sub> equivalent emissions related to your proposal. Please use the following calculator: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

In lieu of the above calculator, CO<sub>2</sub> equivalent emissions were estimated using the Environmental Paper Network paper calculator (v3.2) recommend by Lisa MacKinnon. This calculator estimates the project will result in the reduction of **5,700 pounds of CO<sub>2</sub>** emissions annually. The assumptions, methods and additional detailed results are presented in **Appendix 2: Cost Savings and Environmental Impact Analysis**.

Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.

This project will establish processes and methods that may be used by other LWRD divisions and other county departments transitioning to electronic records management. Lessons learned and experienced gained from this effort may be shared with other work units that rely on paper documents to manage program records.

Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement.

Anticipated cost savings, energy use reductions and environmental impacts are detailed in **Appendix 2**. Progress toward these anticipated reductions will be reported in the same format presented in the analysis.

Three primary metrics will be used to measure progress:

1. Cost savings realized by the reduction in time devoted to record management will be determined by tracking the number of times a document is filed, searched for, retrieved, replicated and distributed.
2. Resource conservation and waste reductions will be tracked by the number of electronic documents that are accessed and distributed, thereby reducing paper, ink and toner consumption.
3. Cost savings generated from the reduced space required to store documents will be determined by tracking the square footage of real estate gained by eliminating paper file storage.

A detailed implementation schedule is included in **Appendix 3: Implementation Schedule & Tracking Progress**.

Contact person:  
Jeremy Balousek, WRE Division Manager

Phone:  
608.224.3747

E-mail:  
[Balousek@countyofdane.com](mailto:Balousek@countyofdane.com)

## **Appendix 1**

### **Project Budget**

Digitization of Stormwater Management Permit Documentation

Item	Item Description	Grant Request	Budgeted	Project Budget
Staff	1456 hours \$50 per hour x 2 years	\$0	\$145,600	\$145,600
Tablet Computers <sup>1</sup>	8 x \$1500 per tablet with keyboard	\$10,500	\$1,500	\$12,000
Scanning Services	Provided by third party vendor. \$0.08 x 500 permits x 300 pages per application	\$12,000	\$0	\$12,000
Scanner	Auto-feed scanner for office use to digitize new paper documents	\$2,500	\$0	\$2,500
Scanner	Large format for office use to digitize and migrate architectural size plan drawings	\$0	\$8,300	\$8,300
Document Management System <sup>1</sup>	Document management software licenses and hardware to facilitate web submittal and sharing amongst county departments.	\$13,000	\$0	\$13,000
Mobile Data Access Software <sup>1</sup>	Mobile connectivity (NetMotion 4 x \$2000) to facilitate access to permit information system and digital documents using mobile data networks.	\$8,000	\$0	\$8,000
Web Application Development <sup>1</sup>	Development of web app for submittal of permit applications and associated electronic documents (DCIM) - \$25 per hour x 40 hours per week x 10 weeks	\$10,000	\$0	\$10,000
Document Management Application Development <sup>1</sup>	Document management system customization and integration with permit information system (DCIM) - \$25 per hour x 40 hours per week x 5 weeks	\$5,000	\$0	\$5,000
<b>Totals</b>		<b>\$61,000</b>	<b>\$155,400</b>	<b>\$216,400</b>

**1 Methods and costs developed in consultation with Dane County Information Management**

## **Appendix 2**

### **Cost Savings and Environmental Impact Analysis**

Digitization of Stormwater Management Permit Documentation



## Summary

A simple cost savings analysis was performed to quantify the benefit of this project. The analysis is not a comprehensive comparison of do nothing vs. the proposed project, rather the analysis estimates the cost savings that we expect to realize by transitioning to electronic document management. Transitioning to a digital documentation system for stormwater permitting will result in significant cost savings. The estimated annual cost savings are approximately \$70,000 as summarized in Table 2.

Table 1 Overall Annual Cost Savings by Category

Annual Cost Savings to Dane County	
Consumables	\$0
Equipment	\$0
Labor (productivity)	\$64,000
Storage	\$5,880
<b>Total</b>	<b>\$69,880</b>

In addition to the financial cost savings realized by this project, significant environmental benefits are realized by the reduction in paper consumption.

Table 2 Paper Consumption and Associated Environmental Impacts

Material	Quantity Per Year <sup>1</sup>	
<b>Paper</b>	2300	Pounds per year
<b>Wood Use</b>	3	Tons
	19	Trees
<b>Net Energy</b>	34	Million BTU's
<b>Greenhouse Gases</b>	5728	Pounds CO2 equiv.
	1	Cars/year (approximate equivalent)
<b>Water Consumption</b>	2241	Gallons
<b>Solid Waste</b>	1951	Pounds
<b>NOx</b>	11	Pounds
<b>Purchased Energy</b>	25	million BTU's
<b>SO2</b>	30	Pounds
	5	18-wheelers/year
<b>Particulates</b>	6	Pounds
	1	Buses/year (approximate equivalent)
<b>Hazardous Air Pollutants (HAP)</b>	3	Pounds
<b>Volatile Organic Compounds (VOCs)</b>	3	Pounds
<b>Total Suspended Solids (TSS)</b>	17	Pounds

<b>Chemical Oxygen Demand (COD)</b>	26 Pounds
<b>Biochemical Oxygen Demand (BOD)</b>	10 Pounds

<sup>1</sup> Environmental impact estimates were made using the Environmental Paper Network Paper Calculator Version 3.2. For more information visit [www.papercalculator.org](http://www.papercalculator.org).

The methods used to estimate these cost savings and environmental benefits are detailed in the section that follow.

### ***Overview***

The cost savings associated with transitioning to digital documents can be classified into four major categories: consumables, equipment, storage, and labor. Each of these areas of savings is explained in detail in the sections that follow.

### ***Consumables***

Several materials are used in the production of paper documents including toner, ink, bindings, and of course paper. Permit applicants are responsible for preparing permit documentation and this is often done on their behalf by a consultant. Consultants charge for the preparation and production of paper documents. While there will be some minimal cost savings for the county, significant savings will be realized by our customers. Reducing the consumption of paper will result in significant environmental benefits. The reduction in consumption will be a direct result of this grant, therefore the environmental benefits have been estimated and attributed to this effort. Table 3 shows the typical amount of paper used to prepare stormwater permit applications on an annual basis.

**Table 3 Annual Stormwater Permit Paper Consumption**

Document	Typical # of Sheets	Typical Paper Size	Equivalent ANSI A Sheets
Application Form	2	Letter (ANSI A)	2
Applicant Authorization Form	1	Letter (ANSI A)	1
Plan Report	200	Letter (ANSI A)	200
Plan Drawings	10	ANSI D	80
Timetable and Construction Schedule	2	Letter (ANSI A)	2
Cost Estimate	1	Letter (ANSI A)	1
Maintenance Agreement	4	Letter (ANSI A)	4
Review Memo	2	Letter (ANSI A)	2
Permit Card	1	Letter (ANSI A)	1
Sheets of Paper Per Stormwater Permit Application	223		293
Permits Applications Per Year	50		50

<b>Total Sheets of Paper Per Year (Two copies per permit, two submittals per permit application)</b>	<b>58,600</b>
<b>Total Pounds of Paper Per Year</b>	<b>2,344</b>

These numbers are used throughout the analysis where annual paper quantities are referenced.

Because the cost of paper is bared primarily by the customer, the consumables cost savings for the county was assumed to be negligible.

### ***Equipment***

The LWRD office will continue to maintain the equipment necessary to print, copy, bind and file paper documentation. However, much of this cost is passed on to our customers via fees, such as reproduction fees for open records requests. If the entire office were to transition away from paper documentation, equipment costs would be reduced and savings would be realized. For the purpose of this analysis the cost savings for the county was assumed to be negligible.

### ***Labor***

The majority of cost savings will be achieved by reduced labor costs associated with increased productivity. Increased productivity enables WRE to achieve program goals without additional staff hours. Because the vast majority of savings are labor costs, two methods were utilized to quantify the expected savings. Document management consultants provide several methods and “rules of thumb” to estimate the efficiencies gained with digital document management. The simplest method assumes that 20% of an employee’s time is lost to the inefficiency of interacting with paper documents. This includes filing original documents, searching, retrieving, reproducing and re-filing documents. Some estimates are even higher. The Paperless Project asserts that “A typical employee spends 30% – 40% of his time looking for information locked in e-mail, documents, shared hard disks and filing cabinets”. Table 3 estimates our cost savings using this simple methodology.

Table 4 Labor Cost Savings Method 1

<b>Labor Cost Savings – 20% Method</b>	
Staff Time (FTE)	3.0
Annual Cost Per 1.0 FTE	\$104,000
Percentage of Time Managing Paper Records	20%
<b>Total</b>	<b>\$62,400</b>

Another common method used to estimate the time spent managing paper records involves estimating the number of times that a document is interacted with and the

average amount of time dedicated to each interaction because of its paper format. While this can be difficult due to high variability, it can be informative for organizations that may deal with documentation more or less than the typical organization. The results of this analysis are presented in Table 5.

Table 5 Labor Cost Savings - Method 2

<b>Labor Cost Savings - Document Interactions</b>		
<b><i>New Stormwater Permits</i></b>		
Number of Stormwater Permits Applications Per Year	50	Permits
Employee Cost	\$50	Per hour
Number of Documents Submitted Per Permit Application	16	Documents
Time to Accept and Review Draft Submittals	45	Minutes
<b>Submittal and Review Time Subtotal</b>	<b>600</b>	<b>Hours</b>
Number of Approved Documents Per Permit Issued	8	Documents
Time to File Approved Documents	35	Minutes
<b>Permit Issuance and Filing Time Subtotal</b>	<b>233</b>	<b>Hours</b>
Inspections per Permit Issued	2	Inspections
Time to Find, Retrieve, and Re-file For Inspection	25	Minutes
<b>Permit Issuance and Filing Time Subtotal</b>	<b>42</b>	<b>Hours</b>
<b>New Permit Annual Subtotal</b>	<b>\$43,750.00</b>	
<b><i>Existing Stormwater Permit Compliance</i></b>		
Number of Stormwater Permits	500	Permits
Number of Compliance Report Documents Per Permit	2	Submittals
Time to Accept and Review Compliance Report Documents	20	Minutes
<b>Compliance Report Time Subtotal</b>	<b>333</b>	<b>Hours</b>
Time to Find, Retrieve, and Re-file Permit For Record Management	15	Minutes
<b>Permit Record Maintenance Filing Time Subtotal</b>	<b>13</b>	<b>Hours</b>
<b>Existing Permit Annual Subtotal</b>	<b>\$17,291.67</b>	
<b>Total Annual Cost</b>	<b>\$61,041.67</b>	

## ***Storage***

Storage cost savings are realized by freeing up real estate and eliminating the cost of additional file cabinets and associated storage supplies.

Table 6 Storage Cost Savings

<b>Storage Cost Savings<sup>1</sup></b>	
Filing Cabinets	14

Square Foot Per Filing Cabinet	21
Cost per Square Foot	\$20
<b>Total Annual Cost</b>	<b>\$5,880</b>

<sup>1</sup> <http://www.ilmcorp.com/tools-and-resources/roi-calculator>

WRE currently utilized fourteen five-drawer file cabinets and requires an additional cabinet for stormwater permit files every two to three years. The reduction of fourteen file cabinets is a conservative estimate as it does not consider the cost of additional cabinets and space to accommodate future growth.

## **Appendix 3**

### **Implementation Schedule & Tracking Progress**

Digitization of Stormwater Management Permit Documentation

## ***Overview***

Transitioning to a digital documentation system for stormwater permitting will present many challenges. Staff will need to learn how to use new hardware and software technology, maintain continuity of services, and support redundant systems during the transition. The transition will be phased to best manage these challenges. Phasing the transition will allow staff to maintain services and ensure that basic program needs can continue to be met during the transition.

### ***Phase 1 - Existing Document Transition***

The first step will be moving all existing paper documents into the digital domain. A third party vendor will be employed to scan all existing permit documents. Digital documents will then be entered into a document management system. Important stormwater permit requirement information will be digitized and entered into our permit information database. This work involves ~500 existing permits, consisting of ~4000 documents (8 per permit) and ~146,500 sheets of paper. It is anticipated that this work will be completed within one year. At the conclusion of Phase 1, the frequency of document access and replication (sharing) will be tracked and the time and materials saved by accessing them electronically may be reported.

### ***Phase 2 - Digital Work Flow***

Phase 2 is a transition to a fully digital work flow. Initially, staff will operate in a hybrid workflow. Documents authored digitally can be submitted via email or FTP and manually entered into a document management system. Permit applications will likely be made in person and many documents may continue to be submitted in paper format. Staff will utilize the newly purchased auto feed scanner to digitize the documents that are submitted in paper format. Until the digital work flow is proven and required, staff will be able to accept paper documents and manually migrate them to the electronic document management system.

An internet based application (web app) that allows customers to apply for permits and submit the associated documentation electronically will be developed during Phase 2. Upon development of the web app, permit applications and associated documentation will be submitted, reviewed and stored electronically.

Going forward approximately 50 stormwater permits are issued per year. This represents ~ 200 documents per year. Two hard copies of all documentation are currently required, however as soon as electronic documentation is submitted, only one hard copy will be required. This results in the elimination of ~14,650 sheets of paper (ANSI A equivalent) in the first year.

Stormwater permits do not expire and require regular maintenance and reporting. As of 2013, the county has issued ~ 500 stormwater permits and issues ~ 50 per year. Given the current pace, in ten years the county will have issued ~ 1000 stormwater permits and will need to manage the associated documentation and compliance reporting.

It is anticipated that this work will be completed by the end of the second year. At the conclusion of Phase 2, the number of permit applications and associated documentation submitted via the web application will be tracked and the time and materials saved by interacting with them electronically may be reported.

### ***Phase 3- Legacy Document Purging***

Phase 3 is retirement of legacy systems, workflows and paper documentation. WRE will no longer accept paper documents. All work flows will rely on electronic documentation and records. All paper records will be purged and space currently occupied by file cabinets will be repurposed.

It is anticipated this work will be concluded by the end of year three. At the conclusion of Phase 3, the amount of real estate reclaimed and the number of file cabinets eliminated may be reported.



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- 6) Projected cost savings to the county due to implementation of the project.

Questions are to be directed to John Welch at 267-8815, Jan Neitzel-Knox at 266-4029, or Lisa MacKinnon at 267-1529.

**Project Information:**

Please provide the following information:

Department: Henry Vilas Zoo Address: 702 South Randall Ave	Total project costs: \$10,900  Fee for professional services - \$9,900 Fee for travel (est) - \$1,000  Funding amount in current budget: \$0.00 Funding amount requested: \$10,900
Project Title: Front End Evaluation of Sustainability Initiatives for Henry Vilas Zoo's Arctic Passage Exhibit	
Project Location: Henry Vilas Zoo	

**Project Description:**

At Henry Vilas Zoo there is a unique opportunity to share sustainability messaging as well as best practices with over 725,000 visitors each year. To date, there has been no evaluation of what the visitor's knowledge of sustainability is before their visit and if that knowledge has increased or even caused behavior change after their visit. Our project proposes to measure the zoo visitor's knowledge pre and post visit as well as determine which interpretives on grounds are the most successful in terms of educating and influencing our visitors. The long term outcome of this project is to develop successful sustainability messages to educate the visitor on how Dane County and Henry Vilas Zoo are currently building sustainability practices into all aspects of our operations as well as teach the visitor how to live more sustainably and affect positive behavioral change as an individual and share those practices with others.

**Purpose of the evaluation:**

To determine the zoo visitor's familiarity with the concepts and vocabulary associated with sustainability concepts, methods and actions the county, zoo and they can take with the proposed exhibit and to use the information gleaned from this evaluation in the formation of the exhibit educational messages and delivery methods surrounding how sustainability methods can be achieved by Dane County, Henry Vilas Zoo and themselves as individuals.

**Questions to explore:**

With visitors at the zoo and at two other similar venues in the Madison, WI area we will investigate-

- What comes to mind when current and potential visitors hear proposed phrases associated with the exhibit and sustainability features and practices?
- What sustainable features and/or practices can they identify that Dane County does?
- What sustainable features and/or practices can they identify that Henry Vilas Zoo does?
- What sustainable features and/or practices did they learn about that they would be willing to incorporate into their daily lives? Were they new ideas or did going through the exhibit motivate them to commit to doing these activities?
- What vocabulary words or phrases do they recognize; which ones can they define? What emotions do these words, phrases or ideas elicit?
- What would these visitors find interesting and meaningful in an exhibit about Arctic wildlife and practicing sustainable methods in their daily lives?
- What delivery methods do participants find the most appealing and consider most effective?

**Evaluation Methods:**

We will use two methods of data collection to address the two different types of audiences that this exhibit is targeted at. The first method for the current and potential free choice visitors involves one on one interviews; approximately 5 to 8 minutes long with 4 to 6 demographic questions, 2 to 4 open ended questions and a vocabulary list. The second method utilizes focus groups and is targeted at school teachers and administrators to clarify their needs and expectations of the exhibit and to determine avenues for assisting the schools in meeting state science standards.

**Sample:**

For the interviews a sample size of 60 individuals will be large enough to clarify and then verify the feelings, conceptions and misconceptions associated with topics that the Arctic Passages exhibit addresses. Each member of the sample will be randomly selected from the general audience at the zoo and at two other venues in the Madison, WI area. All general visitors over the estimated age of eight, (excluding school and camp group participants), will be eligible to be a part of the sample. We will not collect names or contact information from any interview sample members.

Three focus groups will be conducted. Elementary, middle and high school administration officials will be included in the appropriate focus group session. Focus group grade level participants will be determined and recruited by zoo staff under the guidance of MPR Museum Consulting.

Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project.

- Reduce and eventually eliminate county government’s contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
- Reduce and eventually eliminate county government’s contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;
- Reduce and eventually eliminate county government’s contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government’s contribution to conditions that undermine people’s ability to meet their basic human needs.

Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.

This project will allow the County and Henry Vilas Zoo to identify successful interpretives that not only share what the County and Zoo are doing for sustainable practices but will also identify what individual visitors can do locally towards sustainability to have a global impact. The project will allow us to measure knowledge and behavior change from before visiting the zoo and after they leave.

Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement.

**Data Analysis and Final Report:**

Qualitative results from the surveys will be presented in chart with narrative format. Quantitative data will be presented in spreadsheet and graph formats. Summarized raw data and transcriptions will be provided to the zoo for further analysis or future use.

All findings will be summarized in a final report with graphs, demographic spreadsheet, all raw and compiled data and the original worksheets. This report may be used at the discretion of the zoo for award and grant applications.

Contact person: Dr. Erin Flynn

Phone: 608-444-1861

E-mail: Flynn.Erin@countyofdane.com

**Guiding questions for the project description.** Applicants should include a detailed discussion of the work planned and/or the technical approach used that illustrates what the project will achieve and how it will comply with the four sustainability principles. The following questions provide a guideline to help your department frame and describe the project. Please feel free to address additional issues.

- This evaluation will identify what has worked in the collaboration of Henry Vilas Zoo with Polar Bears International (PBI), the Association of Zoos and Aquariums (AZA), the Bear Taxon Advisory Group (TAG) and the Polar Bear Species Survival Plan (SSP) in addition to working closely with Dane County.
- This evaluation will allow us to measure visitor's understanding of how much Dane County and Henry Vilas Zoo have done to reduce wasteful dependence upon limited water resources.
- This evaluation will identify how many resources the county and zoo have reduced usage of.
- This evaluation will help us deliver an effective way to message and influence our visitors to decrease in greenhouse gas emissions.
- This evaluation will help us deliver an effective way to message and influence our visitors reduce the need for fossil fuel-dependent transport, increase public transit use, or increase walking and bicycling.
- This evaluation will help us deliver an effective way to message and influence our visitors to support businesses that emit less polluting or hazardous substances to air, water, or soil and influence our visitors to consider alternative routings to avoid damaging valuable natural sites and ecosystem services.
- This evaluation will help us deliver an effective way to message and influence our visitors about waste prevention and recycling among industry, government, resident households, etc., and how to help reduce the amount of waste going into the landfill.
- This evaluation will help us deliver an effective way to message and influence our visitors on how the county is adapting to the effects of climate change as well as what they can do to adapt to it.
- This evaluation will help us deliver an effective way to message and influence our visitors about avoiding negative impacts on water bodies, wetlands, etc., and is this project supporting the establishment and management of protected areas in water bodies, wetlands, etc.
- This evaluation will help us deliver an effective way to message and influence our visitors about raising awareness on issues surrounding water scarcity, water conservation, and water recycling and will teach ways to help improve the water quality in the area.
- Has this project developed a strategy for measuring anticipated outcomes of the project?
- Will this project address an identified local need that can have a positive benefit on the local community and improve the quality of life for everyone?
- This evaluation will help us deliver an effective way to message and influence our visitors about involving and engaging a new generation to positively contribute to their community and surroundings through simple actions towards being more sustainable.
- The Henry Vilas Zoo is a free zoo and everyone in the community and beyond has access to our services and facilities.

## **Dane County Departmental SMART Fund**

### **Funding Opportunity Description**

The Sustainability Subcommittee of the Public Works and Transportation Committee is responsible for distributing grant money to county departments from a \$2 million fund in the county's 2014 capital budget. This fund helps support the county's goal of becoming more sustainable. For example, it supports initiatives that fulfill the county's desire for reducing greenhouse gas emissions by implementing systems that result in more efficient energy use and investments in renewable energy production at our various facilities. This fund is a part of the county's continued efforts to ensure that important natural resources and ecosystem services are maintained for current and future generations. The pilot phase of the fund was launched in late 2012 and 11 departmental capital projects have been funded since then. The 2014 fund can be used by your department to supplement current budget items that do not have enough funds to incorporate additional sustainable measures or to fully fund projects that are not in the current budget, but that will increase the sustainability of county operations and reduce long-term costs. The committee will select projects to fund based on their consistency with the sustainability principles adopted on October 18, 2012 by the Dane County Board to guide county government management, operations, and policy making.

Benefits of this fund:

- Alignment of departments and staff toward a common understanding of sustainability
- Clarity and consistency in assessing and organizing actions and programs for sustainable government operations
- Enhanced policies and programs incorporating a sustainability perspective
- Enhanced reputation as a proactive contributor to a more sustainable community
- Reduced operating costs

Dane County strives to operate in a sustainable way that will:

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;
- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

Eligible Applicants:

Dane County Departments

**Award Information:**

There are 3 deadlines for application:

1. March 7, 2014 — At this time up to 50% of the funds will be awarded.
2. July 7, 2014 — At this time up to an additional 25% of the funds will be awarded.
3. October 6, 2014 — At this time the remainder of the funds will be awarded.

**Examples of types of projects that would be eligible:**

- Covering the cost differential between conventional and fuel-efficient vehicles to purchase more fuel-efficient fleet vehicles or convert existing vehicles to more fuel-efficient and lower-emission vehicles
- Renewable energy or energy efficiency improvement investments for county facilities, such as LED lighting upgrades, energy efficient boilers, etc.
- Water conservation improvements
- Purchase of new or upgraded equipment that will improve the overall efficiency of facilities and reduce greenhouse gas emissions, reduce the use and disposal of toxic products, reduce maintenance costs and/or staff time using the equipment, and/or facilitate better tracking, measurement, and verification of sustainable outcomes in county operations

**Application and Submission Information:**

Apply electronically to Lisa MacKinnon at [Mackinnon@countyofdane.com](mailto:Mackinnon@countyofdane.com) and Travis Myren at [Myren@countyofdane.com](mailto:Myren@countyofdane.com).

Please include the following in your application:

- 1) A detailed description of your proposed project
- 2) How the project, if carried out, will meet the sustainability principles
- 3) How the county might build upon the sustainability outcomes of the proposed project
- 4) How your department intends to track and measure the outcomes of the project, such as cost savings, energy reductions, maintenance reductions, etc., if funded, and who will be responsible for measurement and verification.
- 5) Budget Sheet: Include all costs of achieving the objectives of the project.
- 6) Projected cost savings to the county due to implementation of the project.

Questions are to be directed to John Welch at 267-8815, Jan Neitzel-Knox at 266-4029, or Lisa MacKinnon at 267-1529.



**Project Information:**

Please provide the following information:

Department: Henry Vilas Zoo Address: 702 South Randall Ave	Total project costs: \$107,000																										
	Funding amount in current budget: 0																										
	Funding amount requested: \$107,000																										
Project Title: Zoo PV pathway lighting																											
Project Location: Pathways inside the zoo																											
<p><b>Project Description:</b>                  The goal of this project is to enhance safety for guests and animals through improving site lighting inside the zoo.                  The zoo is currently investigating ways to enhance guest and animal safety and security on the zoo grounds. There are many reasons that photovoltaic lighting (PV) is a good solution for this goal. There is no better place where Dane County can demonstrate its commitment to sustainability and share sustainability messages with our more than 725,000 annual guests.</p> <p><b>Project scope:</b>                  The criteria for defining locations were based on availability of sun, pathway lighting, and security lighting needs. The zoo has identified 49 locations that could use lighting and 26 of those locations are good candidates for PV lighting. Lighting treatment was broken down into two categories, guest areas and behind the scenes areas. Forty lights were identified for guest areas and nine lights for behind the scenes areas. A two part graphics package is proposed with four larger signs with detailed message points on the benefits of solar lighting, emissions reductions, action step to take at home and the overall environmental benefits of the project. A smaller size graphics package with fun facts about solar lighting and the impacts is proposed to mount to every other light pole.</p> <table border="1"> <thead> <tr> <th>Cost Breakout</th> <th>Unit price</th> <th>Quantity</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>PV Lighting</td> <td>\$ 3,000</td> <td>26</td> <td>\$ 78,000</td> </tr> <tr> <td>Installation/Footings</td> <td>\$ 1,000</td> <td>26</td> <td>\$ 26,000</td> </tr> <tr> <td>Graphics (large)</td> <td>\$ 500</td> <td>4</td> <td>\$ 2,000</td> </tr> <tr> <td>Graphics (small)</td> <td>\$ 50</td> <td>20</td> <td>\$ 1,000</td> </tr> <tr> <td><b>Grand Total</b></td> <td></td> <td></td> <td><b>\$ 107,000</b></td> </tr> </tbody> </table>				Cost Breakout	Unit price	Quantity	Total	PV Lighting	\$ 3,000	26	\$ 78,000	Installation/Footings	\$ 1,000	26	\$ 26,000	Graphics (large)	\$ 500	4	\$ 2,000	Graphics (small)	\$ 50	20	\$ 1,000	<b>Grand Total</b>			<b>\$ 107,000</b>
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Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project.

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;
- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

### **Energy, Emission and Environmental impact:**

Low Carbon foot-print. One solar street light saves about 1 ton of CO2 per year

No heavy metals in the LED fixtures

Highly recyclable batteries

Assuming that a 60W LED will replace a 250W HPS bulb, and a 250W HPS bulb (including the ballasts) consumes around 300W, then:

Total energy savings per year on a 26 street light project by switching to LED are estimated to be:

- 34,164 kWh saved on grid-electricity annually
- Savings of 26 tons of CO2 emitted\* (26 tons of CO2 emissions will be avoided annually)

\* Sources: United states Environmental protection Agency, <http://www.epa.gov>

### **Benefits:**

- There will be no increased energy needs to accomplish this goal.
- Replacement of existing outdoor pole lighting will reduce current energy requirements.
- Installation will not require costly expansion of the zoo power grid.
- No line voltage, trenching, or metering;
- No power outages
- Able to employ battery backup for cloudy or rainy days
- Distributed light and power - no single point of failure for enhanced security
- No scheduled maintenance for up to 15 years
- No cost of replacing concrete, asphalt or landscaping from trenching
- No cost of transformers or meters to be added for electric service
- Possible qualification for savings from various state and federal taxes and utility incentives
- Controlled charging to prolong battery service life
- Reduced emissions of criteria air pollutants from utility electricity production
- Self-contained-light on/off controlled by automatic daylight sensing or hour preset, thus no running or maintenance cost
- Safe 12 volt / 24 volt circuit with little to no risk of electric shock.

Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.

This project would showcase the county's commitment to sustainable projects in a high profile area. The project would include a small interpretative graphics package to illustrate the environmental impacts of solar powered lights. The zoo reaches 725,000 guests per year who would have exposure to this messaging. The message points would include what people can do at home to reduce their impact. This could serve as a pilot project for other county departments that are looking for environmentally friendly lighting projects.

Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement.

Currently there is limited exterior lighting in the zoo. There will be a small amount of energy savings that may not be measurable as this does not impact the current energy use at the zoo but mitigates the increased use of electricity need if the project was complete under conventional hardwire grid means.

This project mitigates the need for traditional hardwired electrical service. The United States Environmental Protection Agency estimated the total electricity reduction / energy conservation savings per year on a 50 street light project that uses solar-powered LEDs rather than traditional grid-connected lighting is 65,700 kWh.

At our current rate of \$0.18/kWh and project scope of 26 lights (34,164 kWh/year) that is a cost mitigation of \$6,150 the first year at current rates. This results in a 12 to 15 year return on investment. Assuming that energy costs increase between 2% and 5% annually with an estimated 20 years life span of the fixture the total savings range is \$152,392 to \$213,489 in electrical needs over the life time of the lights. Additionally, the avoided emissions are between 390 to 520 tons CO2 emissions annually.

Years	annual kWh	2%	3%	4%	5%
1	34,164	\$ 6,271.99	\$ 6,333.49	\$ 6,394.98	\$ 6,456.48
2	34,164	\$ 6,397.43	\$ 6,523.49	\$ 6,650.78	\$ 6,779.30
3	34,164	\$ 6,525.38	\$ 6,719.19	\$ 6,916.81	\$ 7,118.26
4	34,164	\$ 6,655.89	\$ 6,920.77	\$ 7,193.48	\$ 7,474.18
5	34,164	\$ 6,789.00	\$ 7,128.39	\$ 7,481.22	\$ 7,847.89
6	34,164	\$ 6,924.78	\$ 7,342.25	\$ 7,780.47	\$ 8,240.28
7	34,164	\$ 7,063.28	\$ 7,562.51	\$ 8,091.69	\$ 8,652.30
8	34,164	\$ 7,204.55	\$ 7,789.39	\$ 8,415.36	\$ 9,084.91
9	34,164	\$ 7,348.64	\$ 8,023.07	\$ 8,751.97	\$ 9,539.16
10	34,164	\$ 7,495.61	\$ 8,263.76	\$ 9,102.05	\$ 10,016.11
11	34,164	\$ 7,645.52	\$ 8,511.68	\$ 9,466.13	\$ 10,516.92
12	34,164	\$ 7,798.43	\$ 8,767.03	\$ 9,844.78	\$ 11,042.77
13	34,164	\$ 7,954.40	\$ 9,030.04	\$ 10,238.57	\$ 11,594.90
14	34,164	\$ 8,113.49	\$ 9,300.94	\$ 10,648.11	\$ 12,174.65
15	34,164	\$ 8,275.76	\$ 9,579.97	\$ 11,074.04	\$ 12,783.38
16	34,164	\$ 8,441.27	\$ 9,867.36	\$ 11,517.00	\$ 13,422.55
17	34,164	\$ 8,610.10	\$ 10,163.39	\$ 11,977.68	\$ 14,093.68
18	34,164	\$ 8,782.30	\$ 10,468.29	\$ 12,456.79	\$ 14,798.36
19	34,164	\$ 8,957.95	\$ 10,782.34	\$ 12,955.06	\$ 15,538.28
20	34,164	\$ 9,137.11	\$ 11,105.81	\$ 13,473.26	\$ 16,315.19
		\$ 152,392.87	\$ 170,183.13	\$ 190,430.24	\$ 213,489.54

\* Sources: United States Environmental Protection Agency, <http://www.epa.gov>

Updated January 2014

Contact person: Jeff Halter – Deputy Zoo Director	Phone: 608-515-8805 E-mail: <a href="mailto:Halter.jeff@countyofdane.com">Halter.jeff@countyofdane.com</a>
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**Guiding questions for the project description.** Applicants should include a detailed discussion of the work planned and/or the technical approach used that illustrates what the project will achieve and how it will comply with the four sustainability principles. The following questions provide a guideline to help your department frame and describe the project. Please feel free to address additional issues.

- Has this project been developed with the input of environmental and social stakeholders?
- Will this project reduce wasteful dependence upon fossil fuels, underground metals, and minerals?
- Will this project proposal ensure that the smallest possible amount of resources is used?
- Has the proposal included green procurement standards for required goods, materials, and services?
- Will this project lead to a decrease in greenhouse gas emissions?
- Will this project reduce the need for fossil fuel-dependent transport, increase public transit use, or increase walking and bicycling?
- Will this project support businesses that emit less polluting or hazardous substances to air, water, or soil and has this project considered alternative routings to avoid damaging valuable natural sites and ecosystem services?
- Will this project raise awareness about waste prevention and recycling among industry, government, resident households, etc., and will the project help reduce the amount of waste going into the landfill?
- Will this project still be relevant when looking at the demographic changes ahead?
- Will this project consider the most up-to-date technology for recycling and waste reduction?
- Will this project use products that are non-polluting or come from an environmentally friendly source that will reduce negative impacts of your project on the environment, e.g., FSC wood, non-toxic, and non bio-accumulative chemicals?
- Will this project avoid the risks of water, air, and soil contamination?
- Will this project support the provision of environmental and social services in a certain area (e.g., flood prevention, water purification, air cleaning)?
- Will this project be beneficial in helping the county to adapt to the effects of climate change (e.g., changes in precipitation, flood and drought risks, heat emergencies, etc.)?
- Is this project avoiding negative impacts on water bodies, wetlands, etc., and is this project supporting the establishment and management of protected areas in water bodies, wetlands, etc.?
- Is this project proposing activities to raise awareness about water scarcity, water conservation, or water recycling and will this lead to an improvement of the water quality of a certain water body?
- Will this project still be beneficial once the funding is used and what, if any, public funding will need to be used for ongoing maintenance?
- Will this project support jobs in the eco-technology field and/or does this project include training for relevant stakeholders in renewable energy and other clean and sustainable technology?
- Has this project developed a strategy for measuring anticipated outcomes of the project?
- Has this project developed a strategy for how to disseminate results or best practices?
- Will this project address an identified local need that can have a positive benefit on the local community and improve the quality of life for everyone?
- Will this project involve young people that will encourage a new generation to positively contribute to their community and surroundings?
- Will this project improve access to community services and facilities for all people of the community?

# Application for Sustainability Funds

## Alliant Energy Center

### Parking Lot Light Replacement

Department: Alliant Energy Center Address: 1919 Alliant Energy Center Way Madison, WI 53713	Total project costs: \$464,000
	Funding amount in current budget: \$0
	Funding amount requested: \$464,000
Project Title: Replace Parking Lot and Access Road Lights	
Project Location: Alliant Energy Center Parking Lots and Access Roads	
Project Description: Replace the 200 existing High Pressure Sodium parking lot lights at the Alliant Energy Center with new LED units.	
<ul style="list-style-type: none"> <li>• This project will replace the 200 existing high pressure sodium parking lot and access road lights with new LED lights. The proposed new lights are Cooper Lighting LD-RL-T3-B06-E-HA-PER-OA/RA1016 or equivalents.</li> <li>• The project will reduce power consumption for the parking lot and access road lights by approximately 66 percent. Assuming average usage of 8 hours per day, the present lights consume 289,664 KWH annually for a utility expense of \$42,964 per year. The LED system will consume 98,906 KWH annually for a cost of \$14,670 per year.</li> <li>• The project will reduce maintenance expense by approximately 90 percent. The annual maintenance savings are estimated to be \$6,505.</li> <li>• By eliminating lamp replacement the project will keep a significant number of mercury laden high pressure sodium lamps out of the community waste stream.</li> <li>• The projected return on investment based on a \$464,000 expenditure, with energy savings of \$28,294 per year and maintenance savings of \$6,505 per year is 13.33 years.</li> <li>• <b>NOTE:</b> There is a prescribed rebate incentive available from Focus on Energy that the County can claim post-installation. The estimated rebate based on this project's specs would be between \$10,000-\$12,000.</li> </ul>	
Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability. This project will provide an opportunity to evaluate new LED technologies for applications at other County facilities. The lights being spec'd for this project are the same ones that were spec'd for the parking ramp expansion project at the Airport.	
Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement. Because the parking lot and access roadway lights are not separately metered and our event schedule can vary greatly from one month to the next and one year to the next it is very difficult to measure the outcome of this project. The energy savings estimates used to justify this project are based on the energy rating of the new equipment.	
Contact person: Bill Franz	Phone: 267-3985 E-mail: franz@alliantenergycenter.com

**Grant Submittal - Sustainability Funds**  
**Alliant Energy Center**  
**Parking Lot Light Replacement Project**

**Existing Lights**

60 - Single Round High-Pressure Sodium Lights (400 watts)  
 54 - Double Round High-Pressure Lights (800 watts)  
 32 - Single Square (1000 watts)

	<u>Single</u>	<u>Double</u>	<u>Square</u>	<u>Total</u>	
Current power use:	24,000	43,200	32,000	99,200	watts
Use is 8 hrs.day =	2,920	2,920	2,920	8,760	hours per year
	70,080,000	126,144,000	93,440,000	289,664,000	watts per year
	1,000	1,000	1,000	1,000	
	70,080	126,144	93,440	289,664	kilowatts per year
Rate per kilowatt	0.1483224	0.1483224	0.1483224	0.1483224	
	\$10,394.43	\$18,709.98	\$13,859.25	\$42,963.66	Annual Electrical Cost
Annual Maintenance Cost:	\$2,595.00	\$3,037.50	\$1,568.00	\$7,200.50	
	<u><b>\$12,989.43</b></u>	<u><b>\$21,747.48</b></u>	<u><b>\$15,427.25</b></u>	<u><b>\$50,164.16</b></u>	<b>Total Annual Cost</b>

**LED Option**

Cooper Lighting LD-RL-T3-B06-E-HA-PER-OA/RA1016

Power Consumption based on

120-277v (232 total lights @ 146 watts)	33,872	watts
Use is 8 hrs.day =	2,920	hours per year
	98,906,240	watts per year
	1,000	
	98,906	kilowatts per year
Rate per kilowatt	0.1483224	
	\$14,670.01	Annual Electrical Cost
Annual Maintenance Cost:	\$696.00	
	<u><b>\$15,366.01</b></u>	<b>Total Annual Cost</b>

Project Energy Savings	\$28,293.65
Projected Maintenance Savings	\$6,504.50
<b>Total Projected Savings</b>	<b>\$34,798.15</b>

Cost of Cooper Lighting LEDs **\$464,000.00**

**Payback Period: 13.33 Years**



**Grant Submittal - Sustainability Funds**  
**Alliant Energy Center**  
**Parking Lot Light Replacement Project**

**Existing Lights**

60 - Single Round High-Pressure Sodium Lights (400 watts)  
 54 - Double Round High-Pressure Lights (800 watts)  
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	<u>Single</u>	<u>Double</u>	<u>Square</u>	<u>Total</u>	
Current power use:	24,000	43,200	32,000	99,200	watts
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Annual Maintenance Cost:	\$2,595.00	\$3,037.50	\$1,568.00	\$7,200.50	
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Cooper Lighting LD-RL-T3-B06-E-HA-PER-OA/RA1016

Power Consumption based on

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Use is 8 hrs.day =	2,920	hours per year
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Annual Maintenance Cost:	\$696.00	
	<b>\$15,366.01</b>	<b>Total Annual Cost</b>

Project Energy Savings	\$28,293.65
Projected Maintenance Savings	\$6,504.50
<b>Total Projected Savings</b>	<b>\$34,798.15</b>

Cost of Cooper Lighting LEDs and Poles **\$1,027,992.00**

**Payback Period: 29.54 Years**

## **Dane County Departmental SMART Fund**

### **Funding Opportunity Description**

The Sustainability Subcommittee of the Public Works and Transportation Committee is responsible for distributing grant money to county departments from a \$2 million fund in the county's 2014 capital budget. This fund helps support the county's goal of becoming more sustainable. For example, it supports initiatives that fulfill the county's desire for reducing greenhouse gas emissions by implementing systems that result in more efficient energy use and investments in renewable energy production at our various facilities. This fund is a part of the county's continued efforts to ensure that important natural resources and ecosystem services are maintained for current and future generations. The pilot phase of the fund was launched in late 2012 and 11 departmental capital projects have been funded since then. The 2014 fund can be used by your department to supplement current budget items that do not have enough funds to incorporate additional sustainable measures or to fully fund projects that are not in the current budget, but that will increase the sustainability of county operations and reduce long-term costs. The committee will select projects to fund based on their consistency with the sustainability principles adopted on October 18, 2012 by the Dane County Board to guide county government management, operations, and policy making.

Benefits of this fund:

- Alignment of departments and staff toward a common understanding of sustainability
- Clarity and consistency in assessing and organizing actions and programs for sustainable government operations
- Enhanced policies and programs incorporating a sustainability perspective
- Enhanced reputation as a proactive contributor to a more sustainable community
- Reduced operating costs

Dane County strives to operate in a sustainable way that will:

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;
- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

Eligible Applicants:

Dane County Departments

**Award Information:**

There are 3 deadlines for application:

1. March 7, 2014 — At this time up to 50% of the funds will be awarded.
2. July 7, 2014 — At this time up to an additional 25% of the funds will be awarded.
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**Examples of types of projects that would be eligible:**

- Covering the cost differential between conventional and fuel-efficient vehicles to purchase more fuel-efficient fleet vehicles or convert existing vehicles to more fuel-efficient and lower-emission vehicles
- Renewable energy or energy efficiency improvement investments for county facilities, such as LED lighting upgrades, energy efficient boilers, etc.
- Water conservation improvements
- Purchase of new or upgraded equipment that will improve the overall efficiency of facilities and reduce greenhouse gas emissions, reduce the use and disposal of toxic products, reduce maintenance costs and/or staff time using the equipment, and/or facilitate better tracking, measurement, and verification of sustainable outcomes in county operations

**Application and Submission Information:**

Apply electronically to Lisa MacKinnon at [Mackinnon@countyofdane.com](mailto:Mackinnon@countyofdane.com) and Travis Myren at [Myren@countyofdane.com](mailto:Myren@countyofdane.com).

Please include the following in your application:

- 1) A detailed description of your proposed project
- 2) How the project, if carried out, will meet the sustainability principles
- 3) How the county might build upon the sustainability outcomes of the proposed project
- 4) How your department intends to track and measure the outcomes of the project, such as cost savings, energy reductions, maintenance reductions, etc., if funded, and who will be responsible for measurement and verification.
- 5) Budget Sheet: Include all costs of achieving the objectives of the project.
- 6) Projected cost savings to the county due to implementation of the project.

Questions are to be directed to Travis Myren 366-4519, Lisa MacKinnon at 267-1529, or Jan Neitzel-Knox at 266-4029.

**Project Information:**

Please provide the following information (take as much space as your need to provide details):

Department: Dept of Administration Fac Mgmt Address: 210 Martin Luther King Jr Blvd	Total project costs: \$423,540.00
	Funding amount in current budget: \$0
	Funding amount requested: \$423,540.00
Project Title: CCB Cooling Tower Replacement and Controls upgrade	
Project Location: 210 Martin Luther King Jr Blvd	
Project Description: Replace cooling towers for CCB and upgrade fan controls to utilize VFD's.	

Describe how the proposed project moves the county toward meeting the following Sustainability Principles.

There are two cooling towers serving the main chiller plant for the CCB located on the east roof of the building. These towers were installed in the spring of 1992 which puts them into their twenty-second cooling season. In 2007, the fill media was replaced and the basins were sprayed with a coating to repair extensive basin leakage due to corrosion and failed caulk joints. The towers were reevaluated in the spring of 2014 as the basins are again starting to leak and the coating that was applied has begun to fail as it has reached the end of its life, causing corrosion to resume. The evaluation also revealed the fact that the heat transfer media is compromised by normal fouling to the point it is reducing our efficiency by roughly 15%. This loss of performance along with the basin leaks and corrosion in the distribution boxes is what has prompted the proposal to upgrade to a more efficient cooling tower and fan control strategy.

Technology has advanced significantly since these towers were installed. The new towers I am proposing share a similar footprint and piping arrangement to the current towers which will help keep structural and mechanical install costs down. However the advancements in fan design and fill media create a greater heat exchange surface area which will allow for much less airflow needed to achieve the desired return water temperatures. The XE or Extreme Efficiency tower now offered by BAC is rated for twice the gpm/hp as our existing towers and a 37.5% reduction in operating costs is what is to be expected according to the literature. We have a larger system than what they are basing these numbers on and our towers are already 15% compromised so I am confident in expecting to achieve at least 40% savings when drives are added.

In addition to more efficient cooling towers, the control of the fans would also be changed to include VFD's on smaller horsepower fan motors for increased savings. The current control strategy starts a 5hp fan for both first and second stage cooling and a 20hp fan for third and fourth stage. These fans cycle with a 16 degree proportional band, which means our return water temperatures must rise 4 degrees between fan stages. This strategy drives temperatures away from setpoint due to the deadband to prevent motor short cycling. The overall effect is higher head pressure on the chillers which makes them work harder and consume more energy. My calculations for chiller energy savings are based on a 10% drop in amp draw from the cooler condenser water temperatures. To accomplish this, the high efficiency tower would only have one 10hp motor in each unit and the fans would be run on a variable speed drive. This scenario would use fan energy much more wisely to vary fan speed in direct correlation to demand which will help maintain setpoint and not have such wide swings in return water temperature. This will help reduce energy demand from the chillers and lead to the most cost savings and reduction in emissions.

Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.

With mechanical systems accounting for roughly 40% of a typical buildings energy demand it is critical that data be available for establishing baseline data to measure system performance. This project will integrate both the fan and chiller pump VFD's to the building automation system. This feature will directly measure all critical energy data and log it in the systems network controllers for use in tracking demands in the future and assist in making further building improvements possible.

Describe how your department will track and measure outcomes of the proposed project.

There is no energy metering being done on any of the current equipment which makes baseline establishment very difficult. There are numerous trend data tables I have used for reference as well as run hours, amp draw readings, fan curves, formulas and many years of watching this system operate to come up with what I feel is a conservative estimate of energy savings associated with this project. Keep in mind that a chilled water plant is one of the most dynamic systems and these figures are estimates only. These numbers are representative of one full cooling season.

Estimate of fan energy saved per cooling season: 6,074 kWh (based on 4,460 run hours)

Estimate of chiller energy saved per cooling season: 42,000 kWh (based on 3,500 run hours)

Total kWh per season savings = 48,074 kWh or 33 metric tons of CO<sub>2</sub> equivalent, or the equivalent CO<sub>2</sub> emissions from burning 35,606 lbs of coal or 3,730 gallons of gasoline or 77.1 barrels of crude oil.

Annual operational cost savings is estimated at \$5,430.00

Source: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

Lifespan of towers: According to the rep, the average life of a galvanized tower basin is 15 years and the fill media is about 10 years if the water treatment is good. Our treatment is good and our current galvanized towers received full refurbishment at 15 years. Now we are seven years post refurb and the coating has failed and the fill is roughly 15% less efficient at heat transfer. The life of a refurbishment is supposed to be 10 years on both the basin and fill media.

The towers in the proposal have stainless steel basins which increases the lifespan to at least 20 years with fill media still only good for 10. Replacing just fill media is much less costly than having to recoat the basins, and with stainless steel, the basin maintenance is much less involved even after the twenty year life expectancy.

The tracking and M&V will be done by Facilities Management using the data that was gathered to make this cost saving analysis as the baseline. The fan energy data will be logged upon startup with the VFD networking, which will allow us to give solid post project energy consumption numbers. The chiller energy savings will compare average Run Load Amp readings for a full season compared to the last two seasons (2013,2014). If this project is funded, work would start after the 2014 cooling season and full M&V would be completed after the 2015 cooling season.

Another benefit of tower replacement would be in the sustainability of county employees in terms of safety and maintenance hours on equipment. The current towers demand a lot of cleaning in the upper basins due to rust buildup. These towers have no safety railing around the top of the unit or access ladder to the upper fan section. The current method of maintaining upper basins is by the use of a ladder and extreme care to not get caught up in the fan or fall when moving across the top of the tower. New towers would come equipped with many safety features. Facilities Management also spends at least 40 hours per year maintaining the current units and there would be about 16 hours of savings with new units from less rust removal and leak repair. The per hour staff costs would be roughly \$63/hr and if we save two days of maintenance that would be \$1,008 saved annually.

These cooling towers play a critical role in the functionality of the CCB and it's many important offices and departments. This major upgrade to the largest chilled water system the county operates would demonstrate the county's commitment to sustainable energy practices when replacing large system components.

The budget for this project is as follows.

2- BAC XE series 3000 cooling towers - \$142,940

2- ABB 10 hp variable frequency drives with repeaters - \$4,000

Control drawings and tech time for BAS and drive integration - \$6,000

Installation and Materials costs - \$228,600

Updated May 2014

Contact person: Todd Draper	Phone: 575-2667 E-mail: <a href="mailto:draper@countyofdane.com">draper@countyofdane.com</a>
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**Guiding questions for the project description.** Applicants should include a detailed discussion of the work planned and/or the technical approach used that illustrates what the project will achieve and how it will comply with the four sustainability principles. The following questions provide a guideline to help your department frame and describe the project. Please feel free to address additional issues.

- Has this project been developed with the input of environmental and social stakeholders?
- Will this project reduce wasteful dependence upon fossil fuels, underground metals, and minerals?
- Will this project proposal ensure that the smallest possible amount of resources is used?
- Has the proposal included green procurement standards for required goods, materials, and services?
- Will this project lead to a decrease in greenhouse gas emissions?
- Will this project reduce the need for fossil fuel-dependent transport, increase public transit use, or increase walking and bicycling?
- Will this project support businesses that emit less polluting or hazardous substances to air, water, or soil and has this project considered alternative routings to avoid damaging valuable natural sites and ecosystem services?
- Will this project raise awareness about waste prevention and recycling among industry, government, resident households, etc., and will the project help reduce the amount of waste going into the landfill?
- Will this project still be relevant when looking at the demographic changes ahead?
- Will this project consider the most up-to-date technology for recycling and waste reduction?
- Will this project use products that are non-polluting or come from an environmentally friendly source that will reduce negative impacts of your project on the environment, e.g., FSC wood, non-toxic, and non bio-accumulative chemicals?
- Will this project avoid the risks of water, air, and soil contamination?
- Will this project support the provision of environmental and social services in a certain area (e.g., flood prevention, water purification, air cleaning)?
- Will this project be beneficial in helping the county to adapt to the effects of climate change (e.g., changes in precipitation, flood and drought risks, heat emergencies, etc.)?
- Is this project avoiding negative impacts on water bodies, wetlands, etc., and is this project supporting the establishment and management of protected areas in water bodies, wetlands, etc.?
- Is this project proposing activities to raise awareness about water scarcity, water conservation, or water recycling and will this lead to an improvement of the water quality of a certain water body?
- Will this project still be beneficial once the funding is used and what, if any, public funding will need to be used for ongoing maintenance?
- Will this project support jobs in the eco-technology field and/or does this project include training for relevant stakeholders in renewable energy and other clean and sustainable technology?
- Has this project developed a strategy for measuring anticipated outcomes of the project?
- Has this project developed a strategy for how to disseminate results or best practices?
- Will this project address an identified local need that can have a positive benefit on the local community and improve the quality of life for everyone?
- Will this project involve young people that will encourage a new generation to positively contribute to their community and surroundings?
- Will this project improve access to community services and facilities for all people of the community?



## **Dane County Departmental SMART Fund**

### **Funding Opportunity Description**

The Sustainability Subcommittee of the Public Works and Transportation Committee is responsible for distributing grant money to county departments from a \$2 million fund in the county's 2014 capital budget. This fund helps support the county's goal of becoming more sustainable. For example, it supports initiatives that fulfill the county's desire for reducing greenhouse gas emissions by implementing systems that result in more efficient energy use and investments in renewable energy production at our various facilities. This fund is a part of the county's continued efforts to ensure that important natural resources and ecosystem services are maintained for current and future generations. The pilot phase of the fund was launched in late 2012 and 11 departmental capital projects have been funded since then. The 2014 fund can be used by your department to supplement current budget items that do not have enough funds to incorporate additional sustainable measures or to fully fund projects that are not in the current budget, but that will increase the sustainability of county operations and reduce long-term costs. The committee will select projects to fund based on their consistency with the sustainability principles adopted on October 18, 2012 by the Dane County Board to guide county government management, operations, and policy making.

Benefits of this fund:

- Alignment of departments and staff toward a common understanding of sustainability
- Clarity and consistency in assessing and organizing actions and programs for sustainable government operations
- Enhanced policies and programs incorporating a sustainability perspective
- Enhanced reputation as a proactive contributor to a more sustainable community
- Reduced operating costs

Dane County strives to operate in a sustainable way that will:

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
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- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

Eligible Applicants:

Dane County Departments

**Award Information:**

There are 3 deadlines for application:

1. March 7, 2014 — At this time up to 50% of the funds will be awarded.
2. July 7, 2014 — At this time up to an additional 25% of the funds will be awarded.
3. October 6, 2014 — At this time the remainder of the funds will be awarded.

**Examples of types of projects that would be eligible:**

- Covering the cost differential between conventional and fuel-efficient vehicles to purchase more fuel-efficient fleet vehicles or convert existing vehicles to more fuel-efficient and lower-emission vehicles
- Renewable energy or energy efficiency improvement investments for county facilities, such as LED lighting upgrades, energy efficient boilers, etc.
- Water conservation improvements
- Purchase of new or upgraded equipment that will improve the overall efficiency of facilities and reduce greenhouse gas emissions, reduce the use and disposal of toxic products, reduce maintenance costs and/or staff time using the equipment, and/or facilitate better tracking, measurement, and verification of sustainable outcomes in county operations

**Application and Submission Information:**

Apply electronically to Lisa MacKinnon at [Mackinnon@countyofdane.com](mailto:Mackinnon@countyofdane.com) and Travis Myren at [Myren@countyofdane.com](mailto:Myren@countyofdane.com).

Please include the following in your application:

- 1) A detailed description of your proposed project
- 2) How the project, if carried out, will meet the sustainability principles
- 3) How the county might build upon the sustainability outcomes of the proposed project
- 4) How your department intends to track and measure the outcomes of the project, such as cost savings, energy reductions, maintenance reductions, etc., if funded, and who will be responsible for measurement and verification.
- 5) Budget Sheet: Include all costs of achieving the objectives of the project.
- 6) Projected cost savings to the county due to implementation of the project.

Questions are to be directed to Travis Myren 366-4519, Lisa MacKinnon at 267-1529, or Jan Neitzel-Knox at 266-4029.

**Project Information:**

Please provide the following information (take as much space as you need to provide details):

Department: Highway Address: 2302 Fish Hatchery Road, Madison, WI 53713	Total project costs: \$43,000
	Funding amount in current budget: \$0
	Funding amount requested: \$43,000
Project Title: Insulation for Heated Highway Storage Facility	
Project Location: Dane County Ramp – 2302 Fish Hatchery Road, Madison, WI 53713	
Project Description: Purchase and install Fiberglass Batt insulation in the County Highway storage facility located on Fish Hatchery Road.	
Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project. <ul style="list-style-type: none"> <li>• Reduce and eventually eliminate county government’s contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;</li> <li>• Reduce and eventually eliminate county government’s contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;</li> <li>• Reduce and eventually eliminate county government’s contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and</li> <li>• Reduce and eventually eliminate county government’s contribution to conditions that undermine people’s ability to meet their basic human needs.</li> </ul> <p>Include in your description any estimated reductions of CO2 equivalent emissions related to your proposal. Please use the following calculator: <a href="http://www.epa.gov/cleanenergy/energy-resources/calculator.html">http://www.epa.gov/cleanenergy/energy-resources/calculator.html</a></p> <p><b>Installation of fiberglass insulation at this heated storage building will be an effective and cost efficient means of reducing the overall energy consumption of the building. Currently, much of the heat generated in the building is quickly lost through the uninsulated walls and ceiling. The addition of insulation will reduce this heat loss and reduce the energy consumption of the natural gas heating system. By reducing energy consumption, the County will save money on natural gas and reduce dependence on fossil fuels. As a result, the County will be reducing emission of greenhouse gasses and other pollutants. By reducing the energy consumption by an estimated 27,000 therms per year, the County will eliminate 143 metric tons of carbon dioxide equivalents of greenhouse gas production annually.* This project will improve the County’s efficiency in terms of energy consumption by ending the expensive practice of heating an uninsulated space. *Source: <a href="http://www.epa.gov/cleanenergy/energy-resources/calculator.html">http://www.epa.gov/cleanenergy/energy-resources/calculator.html</a></b></p> <p><b>The project is estimated to save the County \$16,000 a year in heating expenses from the reduction of heat losses. At an estimated project cost of \$43,000, the project will have a 2.7 year return on an investment, after which the county will be saving money as a result of the project.</b></p>	

Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.

**By getting in the practice of ensuring proper insulation of heated buildings, the County can effectively improve its efficiency in terms of energy and resource use. In a broader sense, by prioritizing efficient use of energy, the county can do a great deal to reduce and eventually eliminate its dependence on polluting fossil fuels.**

Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement.

**The outcome of the project will be directly apparent in the utilities billing for the building and the reduction in the natural gas bill. Annual natural gas costs at the building shall be compared to natural gas costs during 2014 and the cost reduction shall be attributed to the addition of insulation.**

Contact person: John Welch

Phone: 608-516-4154

E-mail: [welch@countyofdane.com](mailto:welch@countyofdane.com)

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Cost breakdown:

	Area (sf)	Rate	Total
<b>Materials</b>			
Insulation	25600	\$0.50/sf	\$12,800.00
<b>Installation</b>			
Walls	10100	\$.60/sf	\$6,060.00
Roof	15540	\$1.30/sf	\$20,202.00
Contingency		10%	\$3,906.20
<b>Total</b>			\$42,968.20

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- Purchase of new or upgraded equipment that will improve the overall efficiency of facilities and reduce greenhouse gas emissions, reduce the use and disposal of toxic products, reduce maintenance costs and/or staff time using the equipment, and/or facilitate better tracking, measurement, and verification of sustainable outcomes in county operations

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- 1) A detailed description of your proposed project
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- 4) How your department intends to track and measure the outcomes of the project, such as cost savings, energy reductions, maintenance reductions, etc., if funded, and who will be responsible for measurement and verification.
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Questions are to be directed to Travis Myren 366-4519, Lisa MacKinnon at 267-1529, or Jan Neitzel-Knox at 266-4029.



**Project Information:**

Please provide the following information (take as much space as your need to provide details):

Department: Public Works - Highway Address: 2302 Fish Hatchery Rd	Total project costs: \$610,853
	Funding amount in current budget: \$0
	Funding amount requested: \$610,853
Project Title: Code Compliance for CNG Vehicle Parking & Maintenance	
Project Location: Fish Hatchery Highway Garage	
<p><b>Project Description:</b>                  The Highway Department is one of the County's early adopters of CNG. It has three (3) pickup trucks, two (2) plow trucks, and four (4) 1-ton trucks with dump boxes. They also have five (5) more plow trucks already ordered, with plans for several more CNG trucks in the next several years. This project will bring the Fish Hatchery blue vehicle storage building and the vehicle maintenance area into compliance with building and safety codes, which will allow the Highway Department to park CNG vehicles in these areas and perform maintenance on their CNG vehicles. Highway vehicles must be parked inside during the winter to ensure proper operation during storm events.</p> <p>The project includes installation of detectors for CO, NO<sub>2</sub>, and CH<sub>4</sub> (methane), completely new fire alarm systems, increased ventilation and exhaust equipment, new "no open flame" heating units, and emergency gas and electrical shut-offs.</p> <p>Although building code compliance for CNG vehicles can be done on new buildings for very little additional expense, that is not always the case on existing, older buildings. That is because, as building codes change, older buildings are often grandfathered in. They usually do not need to perform significant upgrades to comply with new building codes until a large enough renovation project is undertaken in that building. In this case, the upgrades we need to make to the HVAC and alarm systems for CNG vehicles trigger a code requirement to bring the entire space up to current building codes.</p> <p>By improving the buildings to meet current building and safety codes, not only will we be accommodating CNG vehicles. We will also be improving worker comfort and worker safety through increased ventilation and new fire, CO, NO<sub>2</sub>, and CH<sub>4</sub> detection and alarm systems.</p>	

Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project.

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
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Include in your description any estimated reductions of CO<sub>2</sub> equivalent emissions related to your proposal. Please use the following calculator: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

These improvements will allow the Highway Department to continue to expand its CNG fleet. Increased use of CNG and bioCNG will result in a significant reduction of emissions and a reduction of our fossil fuel dependence. According to the U.S. Environmental Protection Agency, CNG reduces carbon monoxide by 90%, ground-level ozone emissions by 75%, and greenhouse gas (GHG) emissions by 25%. It produces little or no fine particle pollution. BioCNG reduces life-cycle GHG emissions by 90%. Based on these rates, each plow truck will reduce emissions by 5.3 tons of CO<sub>2</sub>e if using CNG and 19.2 tons of CO<sub>2</sub>e if using BioCNG.

The improved ventilation and safety alarm systems will also increase worker comfort and enable the County to meet our employees' basic human need of safety.

Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.

Successful use of CNG in County plow trucks will demonstrate to other County Departments that CNG vehicles can be used in many non-traditional vehicle applications. Hopefully, this will encourage other Departments to look seriously at using CNG in as many of their applications as possible.

Also, having this maintenance shop approved to maintain CNG vehicles could potentially provide a CNG vehicle maintenance option for smaller Department fleets. This could eliminate one of the hurdles that small County fleets encounter when considering CNG vehicles.

Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement.

The average county plow consumes 2,400 gallons of diesel fuel per year. BioCNG and CNG costs the county the gasoline equivalent of \$1.25-\$2.00 a gallon. With diesel prices at nearly \$3.75 a gallon locally, that amounts to up to \$6,000 in fuel savings per CNG plow per year.

The Highway Department currently tracks all of its fuel usage and fuel pricing for diesel, gasoline, and CNG. This will allow the County to easily calculate CNG fuel usage, fuel savings, and CO<sub>2</sub>e emission reductions. These records are kept by Dan Behrend and Jim Matzinger, and the results can be reported monthly, semi-annually, or annually upon request.

Contact person: John Welch

Phone: 608-267-8815

E-mail: [welch@countyofdane.com](mailto:welch@countyofdane.com)

**Guiding questions for the project description.** Applicants should include a detailed discussion of the work planned and/or the technical approach used that illustrates what the project will achieve and how it will comply with the four sustainability principles. The following questions provide a guideline to help your department frame and describe the project. Please feel free to address additional issues.

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- Will this project still be beneficial once the funding is used and what, if any, public funding will need to be used for ongoing maintenance?
- Will this project support jobs in the eco-technology field and/or does this project include training for relevant stakeholders in renewable energy and other clean and sustainable technology?
- Has this project developed a strategy for measuring anticipated outcomes of the project?
- Has this project developed a strategy for how to disseminate results or best practices?
- Will this project address an identified local need that can have a positive benefit on the local community and improve the quality of life for everyone?
- Will this project involve young people that will encourage a new generation to positively contribute to their community and surroundings?
- Will this project improve access to community services and facilities for all people of the community?

## Veterans Service Office Desktop Scanner Project 2014 Round 2 – Project Information:

Department: Veterans Service Office Address: 210 Martin Luther King Jr. Blvd.	Total project costs: \$3,000 (estimated) Funding amount in current budget: \$0 Funding amount requested: \$3,000 (estimated)
Project Title: Veterans Service Office Desktop Scanner Project	
Project Location: CCB Room 108 (Veterans Service Office)	
Project Description: Install desktop scanners at six work stations, enabling the adoption of a paperless system of filing US Department of Veterans Affairs (VA) claims.	
Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project.	
<p>Installing desktop scanners at six Veterans Service Office work stations will enable the office to move toward the adoption of a paperless system of filing VA claims.</p> <p>Currently service officers file VA claims almost entirely by mailing paper copies of claims to the VA Regional Office (VARO) in Milwaukee. Service officers meet with an average of four clients a day (excluding walk-ins), photocopy medical records and other supporting documentation, print hardcopies of claim paperwork, and mail all claim documentation to Milwaukee.</p> <p>The VA, however, is moving toward an electronic process of filing claims, whereby applicants email claim paperwork and supporting documentation to a group mail box (email address) at the VARO. Instead of printing all claim paperwork and mailing it to Milwaukee, service officers are able to secure a veteran's digitized signature, apply it to claim paperwork, save the claim paperwork as a .pdf file, and securely email it to the VARO group address. Likewise, service officers can scan supporting documentation of 25 pages or less, save it as a .pdf, and email it directly the VARO group address.</p> <p>The Dane County Veterans Service Office has tested the digital process of filing claims successfully several times. However, the office's current workstation configuration does not allow for the adoption of the process on a routine basis. The office currently relies on one networked scanner in a common room. Due to the location of the scanner, as well as the shortage of scanners, it is not feasible to adopt a paperless system of filing VA claims without reducing the average number of clients served daily. First, one scanner simply will not support the workload of multiple service officers if the office moves to a process that relies on the scanning of documents. Secondly, it is neither practical nor professional for service officers to leave their clients in the office while scanning supporting documents in another room. Currently service officers frequently accept supporting documentation from clients, photocopy this documentation after the client leaves, return the client's documentation via mail, and send a copy to VARO Milwaukee via mail. Desktop scanners would allow service officers to scan supporting documentation as they meet with clients. Clients could then retain their copies of documentation, with no need for service officers to mail multiple copies.</p>	

Adoption of a paperless system of filing VA claims supports all county Sustainability Principles.

- Adoption of a paperless system of filing claims will reduce county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems by greatly reducing the amount of paper produced in the office by printing and photocopying.

In 18 months, our office used 11 cartons of paper (standard box of copy paper), with an average of 7.33 cartons used over a one year period (for an average of 366.5 pounds of paper per year).

Please see attached Paper Calculator chart to see the lifecycle environmental impact of current paper use (left column) and projected paper use (right column). The office projects cutting the amount of paper used by a minimum of 50%, which would reduce annually: 3 million BTUs of net energy, 456 pounds of greenhouse gases, 1,786 gallons of water, 155 pounds of solid waste, 2 million BTUs of purchased energy, 2 pounds of SO<sub>2</sub>, 1 pound of Total Suspended Solids (TSS), 2 pounds of Chemical Oxygen Demand (COD), and 1 pound of Biochemical Oxygen Demand (BOD).<sup>1</sup>

Additionally adoption of a paperless system of filing claims will save the Dane County Veterans Service Office money. Assuming we cut our paper use in half, we should reduce our annual expenditures on paper and copies from \$851.29 to \$425.64. Please note in 2012/2013, the office drastically reduced the amount of paper it uses (from 40,114 copies in 2010 to 7,894 copies in 2013) by converting paper files to digital files. Purchasing the desktop scanners will allow us to continue this trend.

- Adoption of a paperless system of filing claims will reduce county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals by eliminating the need to transport paper mail between the City-County Building and VARO Milwaukee will reduce gasoline. Additionally, the current outdated officer scanner will be replaced with an ENERGY STAR Qualified scanner that produces lower emissions/pollutants and provides savings on energy bills.
- Adoption of a paperless system of filing claims will reduce county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances by reducing the amount of copy/printer toner used in the office.

Dane County Veterans Service Office will disseminate best practices and results to the broader County Veterans Service Officer (CVSO) community. Dan Connery, Dane County CVSO, has just begun a term as Secretary of the Southeast Association of CVSOs (SEACVSO). In this capacity, he is well positioned to share best practices and lessons learned with other counties throughout Wisconsin.

Note: It must be conceded that supporting documentation in excess of 25 pages will still be mailed to VARO Milwaukee, and in the short- to mid-term, the claim filing process will not be absolutely paperless. Additionally, paper savings do not take into account unforeseen instances of client requests for copies of service treatment records, private treatment records, and military personnel records.

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<sup>1</sup> Refer to [www.papercalculator.org](http://www.papercalculator.org)

The County Veterans Service Office will track and measure outcomes by comparing data available from Printing & Services on the number of pages photocopied and printed. After receiving the desktop scanners, the office will allow a three month training period before full implementation of the paperless claim filing process. Assuming desktop scanners will be available September 1, 2014, the office will begin paperless claim filing on December 1, 2014. Printing & Services data on pages photocopied and printed will be compared for the following quarters: March – May 2014, June – August 2014, September – November 2014, and December 2014 – February 2015. The Assistant Veterans Service Officer Supervisor is responsible for tracking and recording this data. Tracking dates will be modified based on date of initial scanner installation.

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# Paper Calculator

presented by environmental paper network

## Lifecycle Environmental Impact

The following is a break down of the environmental impact of your choices. These impact estimates were made using the Environmental Paper Network Paper Calculator. For more information visit [www.papercalculator.org](http://www.papercalculator.org).

Remember to cite Environmental Paper Network when using information provided by the Paper Calculator. A sample citation is available at [www.papercalculator.org](http://www.papercalculator.org).

	Baseline Paper	Target I Paper
Wood Use	0 tons	0 tons
Net Energy	5 million BTU's	<b>3 million BTU's</b>
Greenhouse Gases	913 lbs CO2 eqv.	<b>456 lbs CO2 eqv.</b>
Water Consumption	3,571 gallons	<b>1,786 gallons</b>
Solid Waste	311 pounds	<b>155 pounds</b>
NOx	2 pounds	<b>1 pounds</b>
Purchased Energy	4 million BTU's	<b>2 million BTU's</b>
SO2	5 pounds	<b>2 pounds</b>
Particulates	1 pounds	<b>0 pounds</b>
Hazardous Air Pollutants (HAP)	0 pounds	0 pounds
Volatile Organic Compounds (VOCs)	0 pounds	0 pounds
Total Reduced Sulfur (TRS)	0 pounds	0 pounds
Total Suspended Solids (TSS)	3 pounds	<b>1 pounds</b>
Chemical Oxygen Demand (COD)	4 pounds	<b>2 pounds</b>
Biochemical Oxygen Demand (BOD)	2 pounds	<b>1 pounds</b>

## Explanation of Data Values

### 🌲 Wood Use

**Wood use** measures the amount of wood required to produce a given amount of paper. The number of typical trees assumes a mix of hardwoods and softwoods 6-8" in diameter and 40' tall. Calculated collaboratively by Conservatree, Environmental Defense Fund, and Environmental Paper Network.

The Baseline Paper Paper uses 0 tons, made from about 3 trees  
Target I Paper would use 0 tons more, made from about -1 more trees



## Net Energy

The Paper Calculator includes an energy credit for energy that is created by burning paper – or the methane that decomposing paper creates – at the end of its life. The Net Energy takes the total amount of energy required to make the paper over its life cycle, and subtracts this energy credit. If most of the energy used to make the paper is purchased, then the energy credit might make the Net Energy lower than the Purchased Energy. The average U.S. household uses 91 million BTUs of energy in a year.

The Baseline Paper Paper uses 5 million BTU's, the equivalent of about 0 homes/year

The Target I Paper Paper uses -2 million BTU's more, the equivalent of about 0 more homes/year

## Greenhouse Gases

**Greenhouse gases**, including carbon dioxide (CO<sub>2</sub>) from burning fossil fuels and methane from paper decomposing in landfills, contribute to climate change by trapping energy from the sun in the earth's atmosphere. The unit of measure is CO<sub>2</sub> equivalents. The average car emits 11,013 pounds of CO<sub>2</sub> in a year.

The Baseline Paper Paper uses 913 pounds CO<sub>2</sub> equiv., the equivalent of about 0 cars/year

The Target I Paper Paper uses 457 fewer pounds CO<sub>2</sub> equiv., the equivalent of about 0 fewer cars/year

## Water Consumption

**Water Consumption** measures the amount of process and cooling water that is consumed or degraded throughout the life cycle of the paper product. The largest components of water consumption come from the production of purchased electricity, and the use of process and cooling water at pulp and paper mills. Water volume indicates both the amount of fresh water needed and the potential impact of discharges on the receiving waters. 1 Olympic-sized swimming pool holds 660,430 gallons.

The Baseline Paper Paper uses 3,571 gallons, the equivalent of about 0 swimming pools

The Target I Paper Paper uses 1,785 gallons less, the equivalent of about 0 fewer swimming pools

## Solid Waste

**Solid Waste** includes sludge and other wastes generated during pulp and paper manufacturing, and used paper disposed of in landfills and incinerators. 1 fully-loaded garbage truck weighs an average of 28,000 pounds (based on a rear-loader residential garbage truck).

The Baseline Paper Paper uses 311 pounds, the equivalent of about 0 garbage trucks

The Target I Paper Paper uses 156 pounds less, the equivalent of about 0 fewer garbage trucks

## Nitrogen oxides (NO<sub>x</sub>)

**Nitrogen Oxides** (NO<sub>x</sub>, which include NO and NO<sub>2</sub>) are products of the combustion of fuels that contain nitrogen. NO<sub>x</sub> contribute to acid rain and can react with volatile organic compounds and sunlight in the lower atmosphere to form ozone, a key component of urban smog. The average 18-wheel truck emits 261 pounds of NO<sub>x</sub> in a year.

The Baseline Paper Paper uses 2 pounds, the equivalent of about 0 18-wheelers/year

The Target I Paper Paper uses 1 pounds less, the equivalent of about 0 fewer 18-wheelers/year

## Purchased Energy

A subset of total energy, **purchased energy** measures how much energy comes from purchased electricity and other fuels. The unit of measure is British Thermal Units (BTUs). The average U.S. household uses 91 million BTUs of energy in a year.

The Baseline Paper Paper uses 4 million BTU's, the equivalent of about 0 homes/year

The Target I Paper Paper uses 2 million BTU's less, the equivalent of about 0 fewer homes/year

## Sulfur dioxide (SO<sub>2</sub>)

Chemical compound produced when boilers burn fuel that contains sulfur. Of the fuels used in the paper industry, oil and coal generally contain the highest quantities of sulfur. **Sulfur dioxide** contributes to air pollution problems like acid rain and smog. The average 18-wheel truck emits 5.5 pounds of SO<sub>2</sub> in a year.

The Baseline Paper Paper uses 5 pounds, the equivalent of about 1 18-wheelers/year

The Target I Paper Paper uses 3 pounds less, the equivalent of about 1 fewer 18-wheelers/year

## Particulates

**Particulates** are small particles generated during combustion, and pose a range of health risks, including asthma and other respiratory problems, when inhaled. The average urban bus emits 11.2 pounds of particulate matter in a year.

The Baseline Paper Paper uses 1 pounds, the equivalent of about 0 buses/year

The Target I Paper Paper uses 1 pounds less, the equivalent of about 0 fewer buses/year

## Hazardous Air Pollutants (HAP)

**Hazardous Air Pollutants** are any of a group of 188 substances identified in the 1990 Clean Air Act amendments because of their toxicity.

The Baseline Paper Paper uses 0 pounds

The Target I Paper Paper uses 0 more pounds

## Volatile Organic Compounds (VOCs)

**Volatile Organic Compounds (VOCs)** are a broad class of organic gases, such as vapors from solvent and gasoline. VOCs react with nitrogen oxides (NOx) in the atmosphere to form ground-level ozone, the major component of smog and a severe lung irritant.

The Baseline Paper Paper uses 0 pounds

The Target I Paper Paper uses 0 more pounds

## Total Reduced Sulfur (TRS)

**Total Reduced Sulfur** compounds cause the odor associated with kraft pulp mills. Exposure to TRS emissions has been linked to symptoms including headaches, watery eyes, nasal problems, and breathing difficulties.

The Baseline Paper Paper uses 0 pounds

The Target I Paper Paper uses 0 more pounds

## Total Suspended Solids (TSS)

**Total suspended solids (TSS)** measure solid material suspended in mill effluent, which can adversely affect bottom-living organisms upon settling in receiving waters and can carry toxic heavy metals and organic compounds into the environment. The average home discharges 207 pounds of Total Suspended Solids (TSS) in a year.

The Baseline Paper Paper uses 3 pounds, the equivalent of about 0 homes/year

The Target I Paper Paper uses 2 pounds less, the equivalent of about 0 fewer homes/year

## Chemical Oxygen Demand (COD)

**Chemical Oxygen Demand (COD)** measures the amount of oxidizable organic matter in the mill's effluent. Since wastewater treatment removes most of the organic material that would be degraded naturally in the receiving waters, the COD of the final effluent provides information about the quantity of more persistent substances discharged into the receiving water. The average home discharges 465 pounds of Chemical Oxygen Demand (COD) in a year.

The Baseline Paper Paper uses 4 pounds, the equivalent of about 0 homes/year

The Target I Paper Paper uses 2 pounds less, the equivalent of about 0 fewer homes/year

## Biochemical Oxygen Demand (BOD)

**Biochemical Oxygen Demand (BOD)** measures the amount of oxygen that microorganisms consume to degrade the organic material in the wastewater. Discharging wastewater with high levels of BOD can result in oxygen depletion in the receiving waters, which can adversely affect fish and other organisms. Average home discharges 186 pounds of Biochemical Oxygen Demand (BOD) in a year.

The Baseline Paper Paper uses 2 pounds, the equivalent of about 0 homes/year

The Target I Paper Paper uses 1 pounds less, the equivalent of about 0 fewer homes/year

## Paper Content and Details:

<b>Paper Name:</b>	Baseline Paper	Target I Paper
<b>Paper Grade:</b>	Uncoated Freesheet	Uncoated Freesheet
<b>Quantity (per year)</b>	366.5 pounds	183.25 pounds
<b>Percent Recycled Content:</b>	30	30
<b>Total Pulp Content:</b>	84	84
<b>Pulp Types and Sources</b>		
<b>Percentage of Virgin Pulp:</b>	70	70
<b>Percentage Kraft Bleached:</b>	70	70
<b>Percentage Kraft Unbleached:</b>	0	0
<b>Stone or pressurized groundwood:</b>	0	0
<b>Thermomechanical:</b>	0	0
<b>Recycled Pulp Types</b>		
<b>Percentage of recycled Pulp:</b>	30	30
<b>Recycled Office Paper:</b>	30	30
<b>Recycled newspaper:</b>	0	0
<b>Recycled corrugated containers:</b>	0	0
<b>Recycled Mixed Paper/ Board:</b>	0	0
<b>Kraft Bleaching Technology</b>		
<b>Elemental Chlorine Free (ECF):</b>	42	42
<b>Enhanced EECF:</b>	28	28
<b>Kraft Unbleached Composition</b>		
<b>Linerboard:</b>	0	0
<b>Medium:</b>	0	0
<b>Integrated:</b>	0	0
<b>Non-integrated:</b>	0	0

The Paper Calculator is based on research done by the [Paper Task Force](#), a peer-reviewed study of the lifecycle environmental impacts of paper production and disposal. The underlying data in the Paper Calculator are updated regularly.

Questions? Comments?

[Contact Environmental Paper Network](#)

For more information visit [www.papercalculator.org](http://www.papercalculator.org).