

**Project Information:**

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

Department: Sheriff's Office	Total project costs: \$5,166.34
Address: 115 West Doty Street, Madison, WI 53703	Funding amount in current budget: \$5,166.34
	Funding amount requested: \$5,166.34
Project Title: Refrigeration Unit Replacement	
Project Location: Sub Basement, Sheriff's Office, Dane County Public Safety Building, 115 West Doty Street, Madison WI 53703	
Project Description: Replace refrigeration cooling unit with a non-R22 refrigerant unit.	

**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.

Include in your description any estimated reductions of GHGs / CO2 equivalent emissions related to your proposal. Please use the following calculator to do this: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html> This proposal would "Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances" and "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)" by eliminating the use of the refrigerant R-22, which is often used as an alternative to the highly ozone-depleting [CFC-11](#) and [CFC-12](#). However, even this lower ozone depletion potential is no longer considered acceptable and is being phased out. In addition, reducing our use of R-22 refrigerant will also advance our sustainability principle to "Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs" by mitigating the impacts of greenhouse gas and other polluted air emissions on human health and security.

As an additional environmental concern, R-22 is a powerful greenhouse gas with a global warming potential equal to 1810 (which indicates 1810 times as powerful as carbon dioxide).

A recent study of refrigerants assumed that on the average there may be 10 % inadvertent emissions of each refrigerant used in a cooling system, including residue refrigerant, illegal venting to air, and leakage through operation.

**Describe how the proposal furthers implementation of the Dane County Government Sustainable Operations Plan goals, objectives, and strategies in your department and/or countywide. Please identify specific plan goals, objectives, and strategies accomplished.**

Our goal is to reduce the negative environmental impact our cooling unit has on the environment. We can accomplish this by installing a new more efficient unit which does not use R22 refrigerant.

R22 refrigerant is aiding in the depletion of the Earth's ozone layer. The U.S. EPA, in cooperation with other agencies and groups around the world, initiated a phase out of many ozone-depleting agents as part of an international agreement known as the Montreal Protocol 1987. The regulation lists many HCFCs and CFCs (different types of refrigerants that deplete the ozone layer), but R22 is considered one of the worst offenders.

Since January 1, 2015, the use of all R22 in the maintenance or servicing of existing refrigeration, air conditioning and heat pump equipment was prohibited.

Because R22 also is a powerful greenhouse gas, by eliminating its use in our refrigeration unit, we would be advancing the following goals and objectives of the Dane County Government Sustainable Operations Plan (SOP page 13):

Climate Change Mitigation and Adaptation

Goal: Dane County is committed to reducing greenhouse gas emissions generated by all county operations and facilities, and to planning for and implementing climate adaptation measures to build resilience in the face of current and future impacts of global climate change on government operations and our community.

Objective: (1) Dane County will work toward avoiding and reducing greenhouse gas emissions in its operations and facilities.

County Buildings and Facilities (SOP, page 32)

Objective (4): Use sustainable materials, products, and operation and maintenance practices throughout the lifecycle of all county buildings and facilities.

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

Air conditioners installed before 2010 most likely use R22 refrigerant. This is a chemical that keeps the air coming from an air conditioning system cool. This refrigerant was introduced in the 1950s and became the leading AC refrigerant in the residential heating and cooling industry. The county should examine their air cooling systems county-wide to see how many units use R22. These units should be replaced with more modern units, which would eliminate their negative impact on the ecosystem.

**Does the proposed project include a strong sustainability education component? If yes, describe the educational component, who it will reach, and how it will be communicated.**

There is not an educational component to this project.

**Does the proposed project pilot an innovative new sustainability-advancing technology in county operations and can it be demonstrated by the applicant department to hold promise for additional future applications in county facilities? If yes, describe the elements of the innovative technology being proposed.**

Although this is not an innovative idea it does hold promise to improve county operations and is in alignment with the county mission to eliminate some of the damage R22 refrigeration units are causing through ozone depleting and global warming emissions

**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 and reporting back.**

Due to the installation of temperature monitoring software we will receive a daily average temperature via email along with email alerts when there are temperature changes outside the set limits. As such for the first time will have an automated system to monitor the temperature of the cooler so we will know very quickly if the unit was not operating efficiently and effectively. The current issue with the broke unit was not discovered until we had the unit inspected upon taking possession of the space from the Medical Examiner and there had been significant energy waste for undetermined amount of time. That problem has now been resolved with the monitoring software.

As far determine energy saving we will need to monitor our energy bill. According to several industry sources, refrigeration in grocery stores can be responsible for 40% to 50% of the total energy cost for the store. Refrigeration costs in restaurants can easily reach 15% or more of total energy usage. In our case energy use is certainly not the proportion it is for the before mentioned industries but I suspect the cost savings will be more than noticeable. We will be monitoring our energy bill to determine what our savings will be.

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