Duke Carbon Offsets Initiative

Request For Proposal Guide

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DUKE UNIVERSITY

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History

In 2007, Duke University signed the American College and University Presidents' Climate Commitment (ACUPCC) and set a target of achieving climate neutrality by 2024. To be climate neutral, Duke will have to offset an estimated 185,000 metric tons per year of carbon dioxide in 2024. The Duke Carbon Offsets Initiative was created as a branch of Sustainable Duke to help Duke University reach climate neutrality. Since DCOI's beginning in 2009, it has developed a number of innovative carbon offset programs in swine waste-to-energy, energy efficiency, and urban forestry.

Vision

To make Duke University a model climate-neutral institution and to lead peer institutions in their efforts to become climate neutral.

Mission

To meet Duke University's climate neutrality goal by 2024 by **developing and implementing the University's strategy** for identifying, creating, and purchasing carbon offsets.

To implement the strategy in a way that **provides educational opportunities** for students, faculty, and staff.

To **prioritize local, state, and regional offsets that provide significant environmental, economic, and societal co-benefits** that are beyond the benefits of greenhouse gas reduction.

To **facilitate and catalyze high-integrity, unique offset projects** by serving as a resource for other institutions.

How Does DCOI Choose Projects?

What is a Carbon Offset?

According to the American College and University President's Climate Commitment (ACUPCC) a carbon offset is a **reduction or removal of one metric ton of carbon dioxide equivalent** (CO_2e) greenhouse gas (GHG) emissions that is used to counterbalance or compensate for ("offset") emissions from other activities.

Basic Requirements of a Carbon Offset

Permanent—The reduction must last in perpetuity.

Additional—The reduction would not have occurred during business as usual.

Verified—The reduction must have been monitored and confirmed to have occurred.

Enforceable—The reduction must be counted only once and then retired.

Real—The reduction must have actually occurred.

Co-Benefits

Co-benefits are the additional, non-GHG reduction benefits of a carbon offset. Duke University prioritizes carbon offsets with high co-benefits. Below are a few examples of co-benefits that Duke considers.

Education—Most important to Duke University is that carbon offsets projects provide opportunities for students, staff, and faculty to engage with the projects through site visits, research on current projects, and development of new projects.

Social—Duke strives to provide opportunities for local community members and organizations to volunteer in project development and implementation.

Environmental —Many of Duke's projects have strong environmental co-benefits such as its swine waste-to-energy project, which reduces the amount of ammonia, odors, and pathogens from the waste water.

Scalability—Duke seeks to invest in projects that have the ability to grow and take advantage of economies of scale.

Public Relations and Partnerships—Duke greatly values its diverse array of governmental, non-profit, and corporate partners.

Required Project Information

Contact Information

Provide the name, email, and phone number of the contact person who can be DCOI's point of contact regarding questions and information on the project.

Picture of the Project

Provide a representative picture of the project. Additional pictures may be attached in the appendix.

$/Offset

Provide the price of the offsets you are selling in terms $ per $MTCO_2e$.

Potential Amount of Offsets

Provide the potential amount of offsets you are willing and able to sell to Duke University.

Total Cost of Purchase

This is for internal use only, please leave this blank.

Project Description

Describe your project in detail in no more than 300 words. Include the following information:

- Location
- Date the project was or will be launched
- How the offsets are generated
- Why the project is unique
- Additional products from the project. For example, if your project generates renewable energy.
- Describe how your project produces offsets that meet the basic offset eligibility criteria (see page 2 for more information)

Offsets Registration Organization

Identify which registry verifies your carbon offset project.

Description of Project Co-Benefits

Education

Educational co-benefits are a high priority for Duke University. Describe the educational co-benefits of your project, focusing on how your project will provide students, faculty, and staff with opportunities for:

Research

- Data collection and availability
- Faculty publication opportunities
- Ability to create institutional knowledge on the project subject area

Participation in Designing the Project

- Involving students in creating project-planning materials.

Participation in Implementing the Project

- Allowing students to volunteer or collect data from the project

Visiting and Touring the Project

- Location of the project – How close to Duke University?
- Accessibility – Are students, staff, or faculty allowed to tour the site?

Example Project

A local urban forestry project where students are able to help develop program materials, volunteer at tree planting events, collect data on the health and location of trees, and can be visited at anytime.

Social

Describe the social co-benefits of your project, focusing on the following categories:

Increased Social Equity

Increased social equity refers to whether the project helps increase the well being of community members with low socio-economic status in order to decrease the inequality gap

Whether the benefits and costs of the project are shared equally by all project participants regardless of age, religion, race, ethnicity, gender, socioeconomic level, and education background.

Community Engagement

Community engagement refers to whether the project provides Duke the opportunity to engage the local community at the project location in a way that benefits the community.

Example Project

An energy conservation education program that teaches local Durham residents in need, on how to save energy within their homes.

Description of Project Co-Benefits

Environmental

Describe the environmental co-benefits of your project, focusing on the following categories:

Air Quality

Air quality refers to the health of Earth's atmosphere and the cleanliness of ground-level air. A good project reduces the negative impacts of air pollution by decreasing the number of harmful pollutants such sulfur dioxide and particulate matter from entering the air.

Water Quality

Water quality refers to the health of Earth's streams, rivers, lakes, and oceans. A good project reduces the negative impacts of pollution by decreasing the number of harmful pollutants such as nitrogen and phosphorus from running off into waterways. Projects that reduce storm water runoff will also be considered as they can lead to increases in water quality and a decrease in the amount of infrastructure needed to manage high storm water flows.

Biodiversity

Biodiversity refers to the variety of flora and fauna within an area. A good project maintains or leads to an increase in the variety of native flora and fauna in an area.

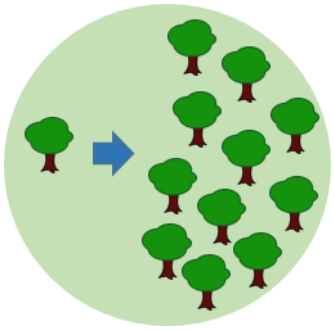
Land Use / Soil Quality

Land use refers to the availability and quality of the land. This includes the project's effects on soil quality, erosion control, land availability, and land use. An ideal project either maintains or increases the quality of the land and the availability of the land for environmentally beneficial uses.

Example Project

The Loyd Ray Farms swine waste-to-energy system generates renewable energy and offsets while simultaneously cleaning up the waste stream. The system improves water quality by reducing the amount of nutrients in the wastewater, decreases odor within and outside of the barns, and increases the health of the hogs. Thus, this project provides positive co-benefits for air quality, water quality, and land use.

Description of Project Co-Benefits



Scalability

Describe how the project can be scaled in size to generate more offsets and/or replicated at other sites. In addition, describe how implementing the current project will assist this process.

Projects that are easily scalable benefit from economies of scale – as the project grows, efficiencies are gained and fewer resources are needed to produce additional offsets. The ideal scalable offset project has few, if any, barriers to expansion and is easily replicated and scaled.

Example Project

Forestry projects in developing countries tend to be highly scalable. These projects benefit from economies of scale as the cost to purchase and manage each acre of a forest decreases significantly as more acreage is added. A 100,000-acre forest can provide offsets at a significantly lower per -offset price than a 1,000-acre forest.

Public Relations and Partnerships

Describe how the project will impact Duke University's public relations and partnerships.

An ideal project fosters good publicity for Duke University through print, social media, or televised sources and results in the formation of longstanding and impactful partnerships between Duke University and other institutions. Projects that negatively impact PR or current partnerships will not be considered.

Example Project

The Loyd Ray Farms project has been highlighted in a number of articles in local and national newspapers, as well as videos that discuss the project. DCOI has been asked to consult on similar projects around the United States.

Additional Requirements

By submitting a project fact sheet to DCOI for consideration, you certify that your company and proposed services are described accurately above. In addition, you certify and can provide evidentiary documentation for the following:

- Project is verified by at least one third-party agency
- Project has at least one educational component
- Project has at least one other co-benefit as listed above
- Project does not have negative impacts on public relations

Example Request for Proposal

Loyd Ray Farms Swine Waste-To-Energy

April 10, 2015

Company Name: Duke Carbon Offsets Initiative

Address: Duke University, 203 Allen Building, Box 90027
Durham, NC 27708

Point of Contact

Name: Charles Adair

Email: Charles.Adair@duke.edu

Phone: 919.613.7466

Brief Project Description (No more than 300words):

Loyd Ray Farms (LRF) is a feeder-to finish swine operation located in Yadkinville, North Carolina. Traditional waste management systems on swine farms utilize open-air lagoons to store waste. These lagoons produce methane emissions and odor that enter the atmosphere. To reduce these greenhouse gas emissions, generate renewable energy and carbon offsets, and minimize the overall environmental impact of the swine farm, an innovative waste management system was installed at the farm.

System construction began in 2010 and the system came online in 2011. The waste management system includes an anaerobic digester for biogas production, a microturbine for electricity generation, and an aeration basin for further COD reduction and partial nitrification/denitrification prior to recycling of the waster for barn flushing. The system includes various recycle lines to maximize energy production and treatment efficacy. The system is designed in a way to keep operations simple and maintenance at a minimum. There are no complex controls and, with the exception of the microturbine, the system uses mostly off-the-shelf equipment already familiar to farmers. Notably, the parties responsible for development of the system have declined patent protection in order to facilitate deployment of similar systems.

Offset Information

Offset Type: Waste-to-energy

$/Offset: $50

Potential # of Offsets: 4,000 per year

Offset Registry: CAR

Total Cost of Purchase & Staff Time

*For Internal Use Only

Minimum Criteria

_____ **PAVER**

_____ **Educational Opportunities**

_____ **PR and Partnerships**

*For Internal Use Only

Example Request for Proposal

Project Criteria Rubric	
Education	
Score: *Internal Use Only	DCOI staff host regular visits to the farm and provide guided tours to teach students, staff, and faculty about waste management, carbon offset generation, and renewable energy production. DCOI works closely with faculty and staff from the Pratt School of Engineering and Nicholas Institute for Environmental Policy Solutions to conduct research on best practices for and scaling of anaerobic digester systems. The project has resulted in multiple publications and data collected from the project will continue to support current and future research.
Social	
Score: *Internal Use Only	In many cases, hog farms can be situated in poorer areas where neighbors have fewer means of addressing the negative impacts that hog farms have on adjacent property. One of the biggest issues is odor. The innovative system at Loyd Ray Farms greatly reduces the odor from the hog waste, thereby decreasing the impact on the surrounding community.
Environmental	
Score: *Internal Use Only	The anaerobic digester eliminates nearly all the methane that would have entered the atmosphere using a traditional waste management system. The aeration basin reduces the amount of ammonia that enters the air, thereby improving air quality and decreasing odor. In addition, lower ammonia levels are expected to increase the livelihood of the hogs. The system is a closed loop, recycling the cleaned waste water and eliminating the likelihood of waste entering nearby streams during large storm events.
Scalability	
Score: *Internal Use Only	Hog farming is one of the largest industries in North Carolina, providing ample opportunity to add innovative systems to other farms. Loyd Ray Farms can serve as an example of how individual farms can eliminate their waste stream from hogs while also producing a revenue stream through electricity and carbon offset sales. In addition, there is potential to build digesters that serve multiple farms, thereby decreasing the cost to individual farm owners. Scaling in this manner could address NC's hog waste issues.
Public Relations and Partnership Creation	
Score: *Internal Use Only	This system is the first of its kind and has been heralded in many newspaper and magazine articles. In addition, LRF has been featured on television news, including Bloomberg Business. It has also won a number of engineering awards such as the 2013 ACEC/NC Henry A. Stikes Grand Conceptor Award for Engineering Excellence. Lastly, DCOI has partnered with a wide variety of organizations on the project, including Duke Energy, Google, and Cavanaugh and Associates.

For more information on the
Duke Carbon Offsets Initiative, please visit
http://sustainability.duke.edu/carbon_offsets/