

# Green Energy Fund

Annual Report  
2021



459 - The College School  
459 - Laboratory Preschool  
451 - Cooperative Extension



# What is the Green Energy Fund?

For 22 years, the Green Energy Fund (GEF) has been transforming the Delaware market for renewable energy. The GEF was established by the Delaware Legislature in 1999. It is funded by Delmarva Power electric customers who are then eligible to access the GEF for renewable energy projects.

The GEF was created to accelerate deployment of renewable energy systems in Delaware. Why? Because renewable energy:

-  reduces emissions that are harmful to the environment and human health
-  improves energy security
-  benefits our local economy

GEF resources in 2021 were principally used to fund work under the Green Energy Program to help Delaware homeowners, businesses and nonprofit organizations meet their energy needs in a more sustainable way through the installation of renewable energy systems. Qualifying systems include solar photovoltaic (PV) systems, solar water heating systems, small wind turbines and geothermal (Geo) heat pumps.



# Sources and Uses of GEF Funds

The GEF collected \$2,652,186 from Delmarva Power customers in 2021. The table below summarizes the funding of Green Energy Program projects in 2021.

## 2021 Green Energy Program Grants Paid

		Number of Projects	System Capacity	Funding Paid	Leveraged Funds
Residential	PV	446	3.97 MW*	\$2,261,298	\$13,757,162
	Geo	12	64 tons	\$ 46,800	\$471,882
Commercial	PV	13	1.40 MW	\$292,770	\$1,295,960
Nonprofit	PV	5	0.18 MW	\$185,200	\$536,514
Totals		476		\$2,786,068	\$16,061,518

DNREC has been successful in using the Green Energy Program to leverage other investments in clean energy systems at \$6 of private investment to \$1 of program investment in 2021.

\*Megawatts

# Looking Forward

- The Green Energy Fund and Weatherization Assistance Program's jointly managed Low- to Moderate-Income Solar Pilot Program is anticipated to launch in the summer of 2022. This pilot program will help expand equitable access to renewable energy in Delaware.
- Utilizing the newly revised Green Energy Fund regulations, the Research & Development Program and Technology Demonstration Program administration will be streamlined to the benefit of potential grant applicants. These two programs will begin accepting applications under the new and improved process in the summer of 2022.
- Green Energy Program solar incentives will be updated to incorporate the value of Solar Renewable Energy Credits (SRECs).



# Highlights

In 2021...

- The Green Energy Program received 539 new applications requesting funding to support 6.7 megawatts (MW) of new solar and 97 tons of new geothermal capacity.
- The GEF helps achieve Delaware's Climate Action Plan goal to reduce carbon dioxide (CO<sub>2</sub>) emissions, which significantly contribute to climate change. Additional solar capacity, from the 464 approved solar applications in 2021, reduces CO<sub>2</sub> by 7,090 metric tons annually. Saving 7,090 metric tons of CO<sub>2</sub> each year is equivalent to:



1,528 gasoline-powered passenger vehicles taken off the road for a year



1,380 homes' electricity use



- The Green Energy Fund promulgated revised regulations. These revised regulations will allow the Green Energy Fund to operate all of its programs more efficiently.
- A Request for Qualifications (RFQ) was issued for the Green Energy Fund and Weatherization Assistance Program's jointly managed Low- to Moderate-Income (LMI) Solar Pilot Program. This RFQ was issued in order to approve specific highly qualified solar installers to operate in the LMI Pilot Program, which will launch in 2022.

Since 1999, the Green Energy Fund has:

- provided more than \$58 million for renewable energy projects installed in Delaware
- benefited 5,528 Delaware homeowners, businesses and nonprofit organizations
- supported local jobs at 27 solar installation companies and more than 35 geothermal installers
- helped increase Delaware's solar capacity from 8.6 MW in 2010 to over 140 MW in 2021
- awarded \$2.4 million to projects in the Technology Demonstration Program
- awarded \$1.6 million in Research & Development Program funding

COVER

University of Delaware research team installing bi-facial solar array *Evan Krape/ University of Delaware* (lower left) and PV installation at Bay Crossing Home Owners Association, Lewes (upper right)

ABOVE

Residential PV installation, Georgetown

LEFT

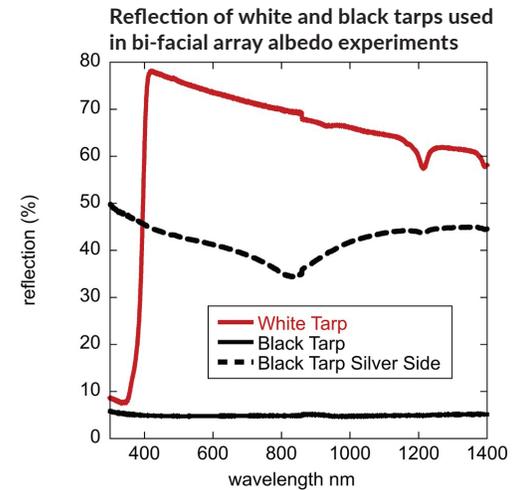
PV installation at The Islamic Society of Delaware, Newark (far left); residential PV installation, Middletown

RIGHT

Residential PV installation, Newark



## Project Spotlight



ABOVE

Reflectivity of surfaces tested by IEC. From final report on *Photovoltaic Test Bed for Characterization of Bi-Facial Modules*, 2021

LEFT

University of Delaware research team following installation of bi-facial solar array. Evan Krape/University of Delaware

Dr. Steve Hegedus and his research team at the University of Delaware's Institute of Energy Conversion (IEC) were able to benefit from funding from the GEF Research & Development Program. Established in 1972, the IEC is assumed to be the oldest continuously operating solar research institute in the world. The IEC's scope of research and applications for solar technologies spans the broad fields of chemistry, materials science, physics, electrical engineering, mechanical engineering and chemical engineering. Dr. Hegedus, a professor of Electrical and Computer Engineering and a senior scientist at the IEC, has been involved in solar photovoltaic research for more than 35 years.

The GEF awarded the IEC \$17,500 from the Research & Development Program. The project, titled *Photovoltaic Test Bed for the Characterization of Bi-Facial Modules*, was completed in the fall of 2021.

The goal of the project was to analyze the impact of different reflective ground cover structures on the amount of additional power that can be generated from the rear surface of bi-facial solar panels. Unlike standard mono-facial solar panels that are installed on rooftops, bi-facial panels can capture light on the front surface and reflected light from the ground. Bi-facial panels are constructed with a clear back surface that allows light reflected from the ground or surfaces below and

behind the panel to be absorbed by the rear-side solar cells and converted into electrical energy.

To conduct this project, a 5-kW array was constructed at the IEC using 12 commercially available bi-facial modules. Over three months, the research team of graduate and undergraduate students collected detailed data on several different ground reflection strategies to understand all factors that influence bi-facial array output. They found significant increase in reflection onto the back side of the module with white ground cover, but even gray gravel gave a measurable boost. The full report will be made available on DNREC's website.

## Contact Us



[de.gov/greenenergy](https://de.gov/greenenergy)

Department of Natural Resources and Environmental Control

Division of Climate, Coastal and Energy  
Green Energy Fund

**Green Energy Fund Coordinator**



(302) 735-3480



[DNREC\\_GreenEnergyProgram@delaware.gov](mailto:DNREC_GreenEnergyProgram@delaware.gov)