

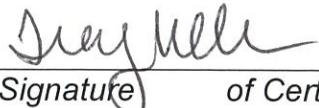
## **DISCLAIMER**

**This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof. Reference herein to any social initiative (including but not limited to Diversity, Equity, and Inclusion (DEI); Community Benefits Plans (CBP); Justice 40; etc.) is made by the Author independent of any current requirement by the United States Government and does not constitute or imply endorsement, recommendation, or support by the United States Government or any agency thereof.**

Final Technical Report (FTR)

Cover Page

<i>a. Federal Agency</i>	Department of Energy	
<i>b. Award Number</i>	DE-EE0010801	
<i>c. Project Title</i>	SmartFlower Renewable Energy Program	
<i>d. Recipient Organization</i>	Girl Scout Council of the Colonial Coast	
<i>e. Project Period</i>	<i>Start:</i> 10/01/2024	<i>End:</i> 09/30/2025
<i>f. Principal Investigator (PI)</i>	Name: Sally Swanson Title: Philanthropy Director Email address: <a href="mailto:sallys@gsccc.org">sallys@gsccc.org</a> Phone number: (757) 549-0641	
<i>g. Business Contact (BC)</i>	Name: Tracy Keller Title: Chief Executive Officer Email address: <a href="mailto:tracyk@gsccc.org">tracyk@gsccc.org</a> Phone number: (757) 547-0995	
<i>h. Certifying Official (if different from the PI or BC)</i>	Name: Tracy Keller Title: Chief Executive Officer Email address: <a href="mailto:tracyk@gsccc.org">tracyk@gsccc.org</a> Phone number: (757) 547-0995	



Signature of Certifying Official

12/17/2025

Date

By signing this report, I certify to the best of my knowledge and belief that the report is true, complete, and accurate. I am aware that any false, fictitious, or fraudulent information, misrepresentations, half-truths, or the omission of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (U.S. Code Title 18, Section 1001, Section 287 and Title 31, Sections 3729-3730). I further understand and agree that the information contained in this report are material to Federal agency's funding decisions and I have any ongoing responsibility to promptly update the report within the time frames stated in the terms and conditions of the above referenced Award, to ensure that my responses remain accurate and complete.

## 1. Acknowledgement

This material is based upon work supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) Solar Energy Technologies Office (SETO) under the FY2023 CDS Award Number DE-EE0010801

## 2. Disclaimer

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

## 3. Executive Summary

The SmartFlower Renewable Energy Programming project brings renewable energy education to K-12 youth in the region. The motivation of the project was to pair an educational curriculum with Girl Scouts of the Colonial Coast's newly acquired SmartFlower. A SmartFlower is a solar energy device shaped like a flower in which each petal is a solar panel. The 'stem' of the SmartFlower rotates throughout the day, so the petal panels follow the sun's path and maximize sunlight absorption. The goal of the project was to create an educational curriculum for K-12 youth that centered the SmartFlower and other renewable energy related topics. The Girl Scouts of Colonial Coast team created two educational curriculums; each designed for a specific age group (K-5 and 6<sup>th</sup>-12<sup>th</sup> grade). Both curriculums walk participants through hands-on activities about the sun, renewable energy, and sustainability.

The project adds to educational opportunities in the region and for Girl Scouts. As renewable energy becomes more prevalent and essential, youth must be informed on its' mechanics and application. The project provides an age-appropriate educational tool that welcomes youth to visit the SmartFlower, understand its larger purpose, and consider the importance of renewable energy. The project was achieved on a modest budget of \$16,672 and its sustainability beyond the project period has low to no cost for participants. The curriculum is free and accessible on our website and can be used as an evergreen educational tool. The SmartFlower Renewable Energy Programming project benefits the public as it provides a free, easily accessible education tool to children, families, caregivers, and local educators that is scientifically based and relevant to our energy landscape.

#### 4. Table of Contents:

- a. **Background (Page 3)**
- b. **Project Objectives (Page 3)**
- c. **Project Results and Discussions (Page 4)**
- d. **Significant Accomplishments and Conclusions (Page 6)**
- e. **Path Forward (Page 6)**
- f. **Products (Page 7)**
- g. **Project Team and Roles (Page 7)**
- h. **References (Page 8)**

#### 5. Background

The SmartFlower Renewable Energy Programming curriculum differs from standard Department of Energy sponsored publications like peer-reviewed journals, conference proceedings, or other technical publications. Because the curriculum is built for youth and modeled after other Girl Scout educational curricula, it is less structured and technical but still educational, well-researched, and accessible. Several Solar Energy curricula exist for youth and are readily available. One such example is the nonprofit organization Subject to Climate's K-12 solar energy resources (Subject to Climate, 2023). Their curriculum explores the building blocks of solar energy through hands-on activities and lessons. Similar to our curriculum, it encourages youth to understand basic concepts like light, heat, and energy. Our curriculum differs from Subject to Climate's curriculum in that it weaves in activities surrounding the Solar Flower, thereby encouraging field trips to the machine and observation of its mechanics.



*SmartFlower at GSCCC Headquarters*



*SmartFlower Dedication Ceremony (October 2023)*

Another example of Solar Energy Curriculum for youth comes from Earthday.org, a nonprofit organization dedicated to environmental change. Our curriculums are similar

in that they explore how solar panels can be used to power and offset energy consumption. Our curriculums differ in that Earthday.org's is information based and not activity based (Earthday.org, 2024). Like many other Girl Scout curricula, we wanted to ensure our curriculum engaged youth in hands-on activities.

## 6. Project Objectives

The Statement of Project Objectives included connecting the SmartFlower to monitoring equipment, completing an educational curriculum around the SmartFlower and renewable energy, and notifying members and community partners of the available curriculum. Our team faced some project delays and challenges due to contractor availability and the federal funding freezes, however, all SOPO tasks were completed by July 2025. Our Property Team connected the SmartFlower to the monitoring equipment and our Program Team created the curriculum. Our Marketing and Communications Team promoted the curriculum and created a new page for it on our website for public access.

Educating youth on the mechanics and importance of clean energy better prepares the nation for a population that integrates, works in, and adopts clean energy practices. The SmartFlower Renewable Energy program engages youth in hands-on activities that are both fun and educational. Such activities supplement local school curriculums and standards of learning, further highlighting the importance of clean and renewable energy for our future. By learning about the possibilities in clean energy, youth also gain a greater understanding of potential careers in the field. According to the World Economic Forum, despite the employment boom in clean energy, green jobs are growing twice as fast as workers with green skills (Vakulchuk, 2024). Teaching youth about the value and possibilities of clean energy better prepares a clean energy workforce.

The stated goal of the project is to educate Girl Scouts and the community of the value of renewable energy. By creating and promoting a publicly accessible curriculum, Girl Scouts and the community will learn about the value of renewable energy and how it relates to their immediate surroundings. The expected outcome is that local Girl Scouts have an increase in knowledge and awareness of the SmartFlower and the value of renewable energy.

## 7. Project Results and Discussion

All SOPO Tasks and Subtasks were achieved however, they were not achieved on their anticipated timeline. By the end of February 2025, GSCCC completed Task 1.0. Our Property Team continued to troubleshoot issues with the metering equipment and video display. However, after this installation, our Program Team was able to reference readings on the SmartFlower's output. Girl Scouts and visitors could view the output on the video display in our lobby. We verified this milestone accomplishment by notifying and receiving verification from our CEO. By the end of April 2025, GSCCC completed Task 2.0. We experienced some setbacks in completing this task, including delays with the contractor (Task 1.0) and working cautiously after federal funding cuts. However, our Program Team produced 2 educational curriculums for K-12 Girl Scouts, which are also accessible to the general public through our website. We verified this milestone

accomplishment by notifying and receiving verification from our CEO. By the end of May 2025, we completed Task 3.0. Our Marketing and Communications team completed web development updates to include the curriculums on our website. Additionally, our Public Relations Manager sent press releases and social media posts to notify the public of the curriculum. We verified this milestone accomplishment by notifying and receiving verification from our CEO.

After receiving reallocation approval from the Department of Energy, the differences in our budgeted vs. actual expenses went toward purchasing more Solar Flower kits which Girl Scouts will use at upcoming Solar Energy events and programs. The kits give Girl Scouts hands-on practice in building a small solar powered wind turbine that resembles the SmartFlower.

The realized timeline was different from the anticipated timeline, namely due to contractual delays and a project pause around national news of federal funding changes. Creating and disseminating the educational curriculum was paused out of caution in mid-February. Amidst this funding cut news, our check-in meeting with the Department of Energy was cancelled and not rescheduled. Because of the federal funding news and meeting cancellation, we paused the curriculum creation out of caution that the grant may be dropped. The curriculum was already slightly delayed in Quarter 1, due to issues with our contractors who were responsible for installing the metering controls. After reconnecting with the Department of Energy in mid-March to confirm our grant would be protected, we filed a no-cost time extension so our team could regroup after project uncertainty. GSCCC resumed work under the hope that the NCTE would be approved and eventually finished work by June 2025. The no-cost time extension was approved June 30, 2025, and extended the project until September 30, 2025.

Below is our original Milestone Summary Table.

Milestone Summary Table							
Recipient Name:		Girl Scout Council of Colonial Coast					
Project Title:		SmartFlower Renewable Energy Programming					
Task Number	Task or Subtask (if applicable) Title	Milestone Type (Milestone or Go/No-Go Decision Point)	Milestone Number* (Go/No-Go Decision Point Number)	Milestone Description (Go/No-Go Decision Criteria)	Milestone Verification Process (What, How, Who, Where)	Anticipated Date (Months from Start of the Project)	Anticipated Quarter (Quarters from Start of the Project)
1	Link SmartFlower data to GSCCC for program use	Milestone	M1	Collect readings on SmartFlower outputs and display for educational purposes.	Verification of progress with CEO	1-2	1

2	Prepare educational curriculum for web and hardcopy resources	Milestone	M2	Publish relevant, age-appropriate educational resources.	Verification of progress with CEO	3-5	2
3	Present curriculum to GS members and public	Milestone	M3	Distribute resources to members and the public.	Verification of progress with CEO	6	2

Task Number 1 was achieved in February 2025, 2 months after the Anticipated Date of December 2024. This task was achieved after purchasing and installing the Solar Energy Metering from Commonwealth Automation and Controls in February 2025 as well as the display monitor (receipts for both expenses included in **Invoice #1 (Award EE0010801)**). Task Number 2 was achieved in April 2025, 3 months after the Anticipated Date of February 2025. Accomplishment of this task is namely seen in the **Invoice #2R DE-EE0010801 Personnel Timesheet Record** attachment under the section of employee “Sarah Peterson.” Task Number 3 was achieved in May 2025, 2 months after the anticipated date of March 2023. The documentation proving this task achievement is namely the **DBJ Daisy the SmartFlower and Solar Power and CSA Daisy the SmartFlower and Solar Power** products attached to this report. Further documentation is the link to our website where the curriculums have been published – which can be accessed [here](#).

## 8. Significant Accomplishments and Conclusions

The most significant accomplishment of this award is creating a publicly accessible, free curriculum on the SmartFlower and renewable energy. This accomplishment is significant for our jurisdiction, as no other SmartFlower exists in the region and is accompanied by educational materials for youth. We have also accomplished a more casual, informal form of education through displaying energy output in our lobby. Visitors, partners, Girl Scouts, and troop leaders alike stop to observe the SmartFlower’s daily energy data and ask questions about the device. Albeit casual, the SmartFlower and display system creates more conversations about solar and renewable energy in our community.

We have not experienced negative outcomes from this grant. Some of the unplanned outcomes include the timeline delays and budget changes. However, both were mitigated with the approval of a No-Cost Time Extension, as well as a budget reallocation compliant with the grants Terms and Conditions. Additionally, the pivot in the budget ultimately allows us to serve more Girl Scouts with renewable energy programs instead. Some of the challenges encountered include the non-compatible display device and contractual delays. The lesson learned on the device compatibility is to check if various technologies will work together before budgeting for such technologies. Another lesson learned is to add “contingency” time into the SOPO or

plan of work. In other words, add additional time to account for unexpected obstacles, delays, or changes to the work plan.

## 9. Path Forward

Girl Scouts of the Colonial Coast will continue to promote and disseminate the SmartFlower Curriculum. The curriculum will be promoted for individual troops, Girl Scouts, and other community, youth-serving groups. Elements of the curriculum will also be woven into our future programs and Girl Scouts will be encouraged to dive deeper into renewable energy by exploring our curriculum.

We will continue to monitor the SmartFlower, its energy output, and ensure it properly functions.

## 10. Products

Girl Scouts of the Colonial Coast's Program Team created two educational curriculums about the SmartFlower and renewable energy. These curriculums were modeled after curriculum design in Girl Scouts of the USA, our parent organization. The curriculums are available on our website and linked on OSTI.gov below.

- SmartFlower Page [Linked Here](#)
  - o [K-5 Curriculum](#)
  - o [6<sup>th</sup>-12<sup>th</sup> Grade Curriculum](#)

No other publications/papers, scientific/technical software/data, websites, inventions/patents, or other products were developed or submitted under this award.

**11. Project Team and Roles:** List all participants along with their individual roles and/or intellectual contribution (e.g., DOE personnel, students, collaborating organizations).

### Girl Scouts of the Colonial Coast

- Tracy Keller – Girl Scouts of the Colonial Coast Chief Executive Officer – Award's Business Contact and Certifying Officer
  - o Award's Certifying Officer, certified progress and milestones.
- Sally Swanson – Girl Scouts of the Colonial Coast Philanthropy Director – Award's Principal Investigator
  - o Award's Principal Investigator, oversaw project.
- Caroline Kelsick – Girl Scouts of the Colonial Coast Grant Manager – Award's Technical Contact
  - o Award's Technical Contact, worked with Department of Energy throughout project period.
- Jody Kaurup – Girl Scouts of the Colonial Coast Property Director – Property Director listed in Personnel Budget
  - o Property Director purchased monitoring and display equipment, oversaw connection of SmartFlower output to monitoring equipment.
- Sarah Peterson – Girl Scouts of the Colonial Coast Council Events and Partnership Manager – Council Events and Partnership Manager listed in Personnel Budget

- Council Events and Partnership Manager created the curriculum.
- Shanise Harris – Girl Scouts of the Colonial Coast Public Relations Manager – Public Relations Manager listed in Personnel Budget
  - Public Relations Manager promoted the curriculum.
- Kim Breeding-Mercer – Girl Scouts of the Colonial Coast Web and Digital Marketing Manager – Web and Digital Marketing Manager listed in Personnel Budget
  - Web and Digital Marketing Manager created a new webpage for the curriculum.
- David Marley – Girl Scouts of the Colonial Coast Property Maintenance Technician – Property Maintenance Technician listed in Personnel Budget
  - Property Maintenance Technician supported the installation of the monitor and display system for the SmartFlower.

#### Department of Energy & Department of Energy Contractors

- Bruno Estrada – BGS, LLC | US Department of Energy, Solar Energy Technical Advisor, Congressionally Directed Spending.
  - Supported application completion and edits.
- Carmen Rodriguez – Department of Energy Technical Project Officer
  - Supported application completion and edits, award package onboarding, and guidance throughout project duration (October 2024 – April 2025)
- Lakeisha Leach – ProVets Consulting Group, LLC | FP&C Consulting | US Department of Energy Procurement Specialist II
  - Supported application completion, budget adjustments, and budget changes throughout project duration (October 2024 – September 2025).
- Mallorie Conway - Project Monitor, Congressionally Directed Spending/Concentrated Solar Power Lindahl Reed, Inc. | U.S. Department of Energy
  - Supported project completion, quarterly report review, and final technical report guidance (May 2025 – September 2025)
- Kosshare Eagle - Technical Closeout Coordinator Team Lead, Boston Government Services | U.S. Department of Energy
  - Supported project closeout (August 2025 – Closeout)

## 12. References

Subject to Climate. 2023. Renewable Energy: Solar.

<https://subjecttoclimate.org/teacher-guides/renewable-energy-lesson-plan-for-k-2>

Vakulchuk, Roman. "Green Skills: We Need Educational Reform in Renewable Energy." *World Economic Forum*, 24 Apr. 2024, [www.weforum.org/stories/2024/04/green-skills-gap-educational-reform-renewable-energy/](https://www.weforum.org/stories/2024/04/green-skills-gap-educational-reform-renewable-energy/).

Walker, Emily. 2024. The Middle Schoolers Guide to Renewable Energy. [Earthday.org](https://www.earthday.org/wp-content/uploads/2024/11/Education-Package_Middle-School-Guide_v3.pdf). chrome-extension://efaidnbmnnibpcajpcglclefindmkaj/https://www.earthday.org/wp-content/uploads/2024/11/Education-Package\_Middle-School-Guide\_v3.pdf