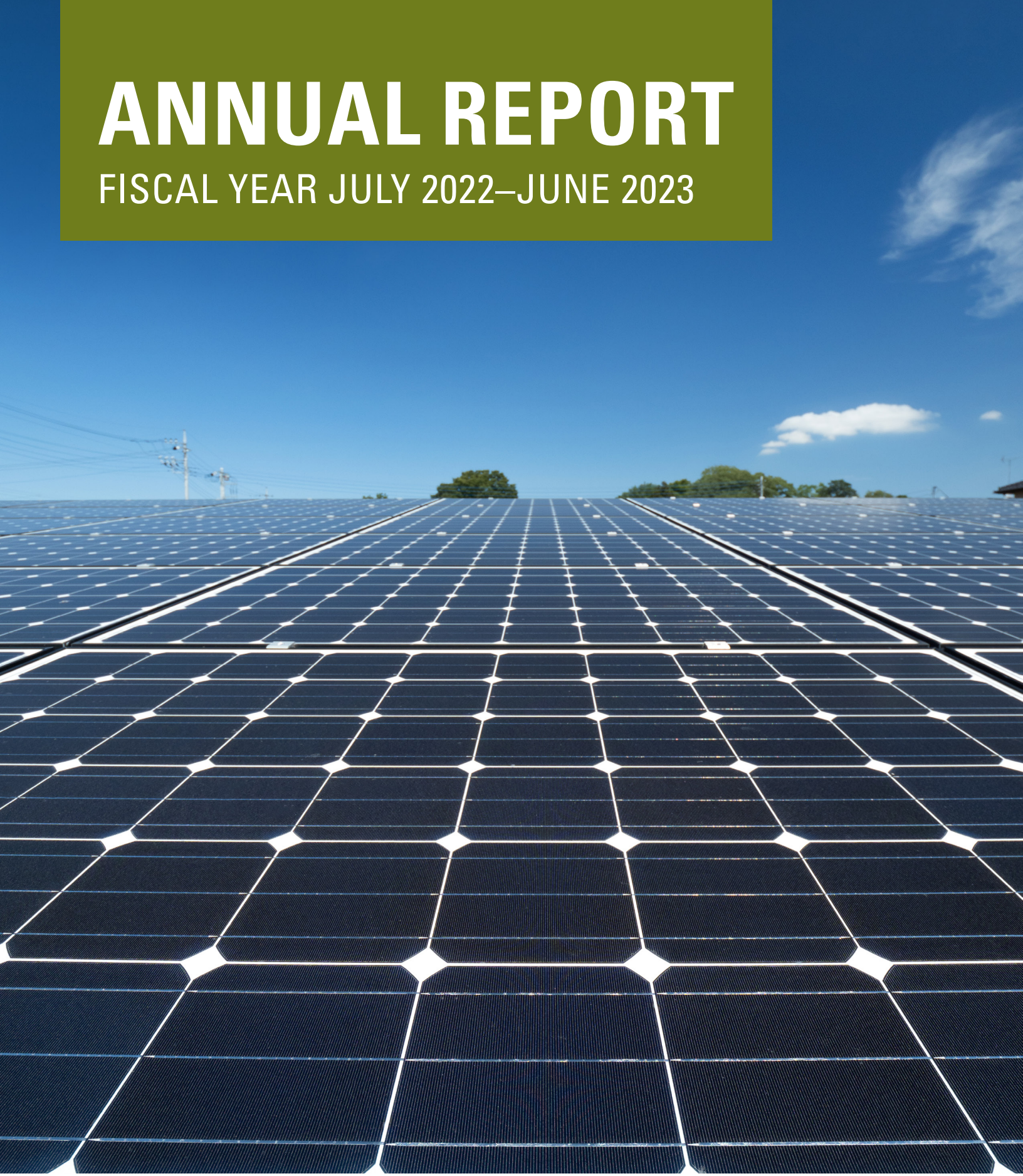
ANNUAL REPORT

FISCAL YEAR JULY 2022–JUNE 2023



NC CLEAN ENERGY TECHNOLOGY CENTER

Celebrating 35 Years

NC STATE

MISSION STATEMENT

The N.C. Clean Energy Technology Center advances a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies, practices, and policies.

PROGRAM AREAS

Renewable Energy

Clean Power & Industrial Efficiency

Clean Transportation

Energy Policy & Markets

Training

ENERGY AND SUSTAINABILITY SERVICES

NCCETC offers business, industry, government and utilities a suite of services aimed at optimizing sustainability and energy-related objectives:

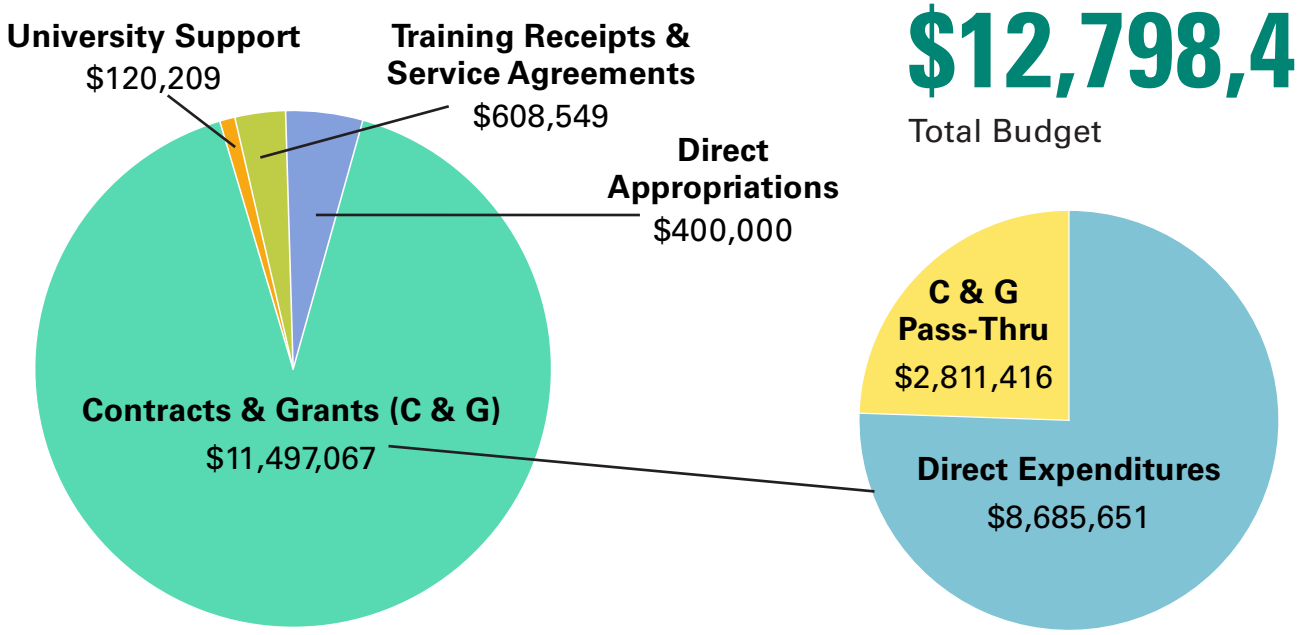
Planning and Guidance

Educational Opportunities, Training and Professional Development

Research and Market Analysis

Technical Assistance

JULY 2022-JUNE 2023 OPERATING BUDGET

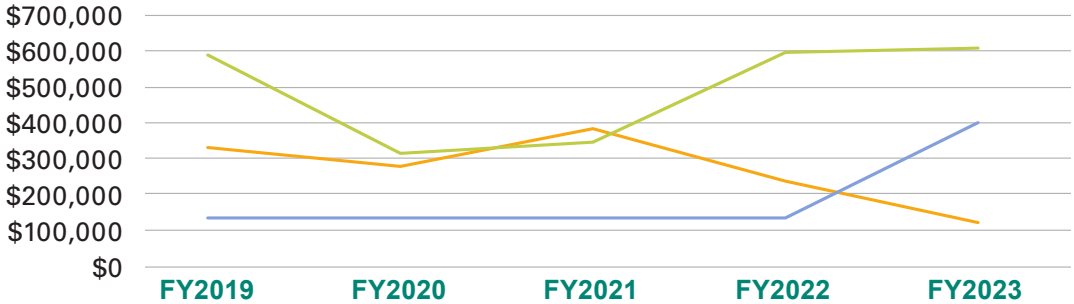


$12,798,457
Total Budget

HIGHLIGHTS

- NCCETC received $400,000 in direct appropriations from the North Carolina General Assembly. For FY2023, NCCETC received $120,209 in university support from the NC State College of Engineering and the Office of Research Innovation; University support varies each year.
- Grants and sponsored projects continue to be the largest portion of the Center budget with fee-for-service projects representing the next increasing portion.
- For FY2023, the NCCETC annual budget consists primarily of grant support from DOE, NCDOT, NCDEQ and Private Sector Entities with approximately 24% of grant funds appropriated to subrecipients to broaden the reach of the Center's mission and core programs.

FY2023 BUDGET – NON-GRANT SOURCES (5-YEAR TRENDS)



	FY2019	FY2020	FY2021	FY2022	FY2023
University Support	$330,430	$277,507	$383,274	$236,038	$120,209
Direct Appropriations	$133,333	$133,333	$133,333	$133,333	$400,000
Service Agreements	$589,296	$314,172	$345,477	$596,599	$608,549

- The 5-year trends of non-grant funding sources illustrate how vital grant funds are for the Center.
- State Appropriations are subject to action by the State Legislature on an annual basis leading the financial strategy of the Center to seek grant funding and engage in Service Agreement work for sustainability.

POLICY & MARKETS

DSIRE & DSIRE INSIGHT

The Database of State Incentives for Renewables and Efficiency (DSIRE), operated by NCCETC, announced the addition of incentive programs for electric vehicles and charging infrastructure to the database. DSIRE is a publicly available resource on federal, state and utility policies and incentives for renewable energy, efficiency, energy storage, and electric vehicles.

DSIRE®
Database of State Incentives for Renewables & Efficiency
DSIRE insight

904,689 Total Unique Users to dsireusa.org

1,178 Policies and Incentives Updated on DSIRE

11 50 States Reports Published

HIGHLIGHTS

Complimentary copies of 50 States Reports were provided to policymakers or regulators in several states, including GA, ME, MT, NC, NJ, PA, RI, SC, TN, UT and VA, as well as the Federal Energy Regulatory Commission and the U.S. Department of Energy.

NCCETC launched **a new policy tracking report** series entitled **The 50 States of Power Decarbonization**, releasing its inaugural Q1 2023 edition in May 2023. The new quarterly series provides updates on state and utility actions pertaining to clean energy targets, emission reduction targets and carbon policies, generation planning and procurement rules, integrated resource plans, and electric generation capacity changes (RFPs, green tariffs, power plant retirements, etc.).

The Center offers c**ustomized policy research and analysis services** to clean energy businesses, utilities, advocacy organizations and other industry participants. These services include state comparative policy analysis, research and tracking of pending legislative and regulatory actions and analysis of market opportunities based on policy landscape.

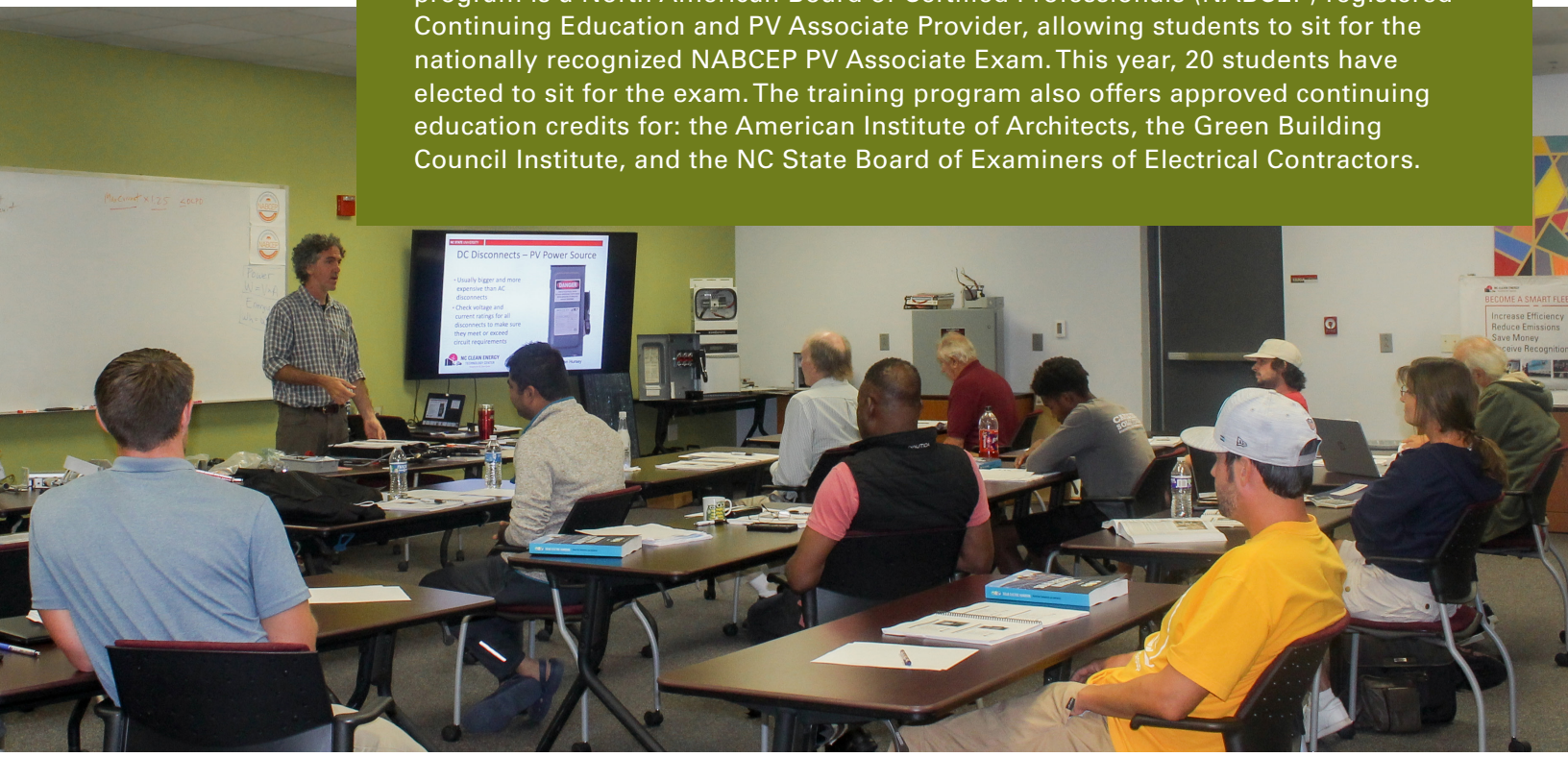
WORD TO THE WISE – HOME ENERGY UPGRADES WITH THE INFLATION REDUCTION ACT

NCCETC released a new *Word to the Wise* resource to help homeowners become a better educated consumer and navigate the financial incentives offered by electric utilities. This edition of *Word to the Wise* features "Your Guide to Home Energy Upgrades with the Inflation Reduction Act" and includes information about the many incentives expanded or made available via the Inflation Reduction Act. To help as many interested individuals as possible, NCCETC has also produced a version en Español: Unas Palabras para el Sabio – "Su Guía para Mejorar su Energía en la Casa con la Ley de Reducción de la Inflación."

TRAINING & WORKFORCE DEVELOPMENT

NCCETC TRAINING PROGRAM

With the addition of two new Senior Clean Energy Training Coordinators in the last year, the Training Team has been able to host hands-on training courses and develop an engaging webinar series. The team is also brainstorming innovative ways to increase program reach, better serve underrepresented populations, and to up-skill and re-skill the workforce for expanding Clean Energy opportunities. The training program is a North American Board of Certified Professionals (NABCEP) registered Continuing Education and PV Associate Provider, allowing students to sit for the nationally recognized NABCEP PV Associate Exam. This year, 20 students have elected to sit for the exam. The training program also offers approved continuing education credits for: the American Institute of Architects, the Green Building Council Institute, and the NC State Board of Examiners of Electrical Contractors.



The Training Team is also pursuing accreditation by Interstate Renewable Energy Council (IREC), the lead accrediting body for clean energy training in the United States and an American National Standards Developer. This accreditation would increase visibility at the National level and allow the Center to engage more directly in developing clean energy training standards. Additionally, the Training Team is participating in two workforce development projects, including Steps4Growth and NIST-RACER: Building Pandemic Resilience in Native American Communities. Through these efforts, the Training Team is working to develop a pipeline of qualified employees while building strong relationships with industry partners, other education and training providers, and individuals invested in the success of the renewable energy industry.

305 Hours of Training Offered

168 Students Trained

10 Hands-On Training Classes

6 Diploma Graduates

NIST-RACER: BUILDING PANDEMIC RESILIENCE IN NATIVE AMERICAN COMMUNITIES

As a subrecipient of PowerAmerica's "Building Pandemic Resilience in Native American Communities" proposal, awarded by the National Institute of Standards and Technology (NIST), the NCCETC has spearheaded the effort to recruit and train participants in solar energy training courses to help meet the needs of Native American communities. NCCETC recruited participants from Tribal Colleges and Universities (TCUs) and Native American Serving Non-Tribal Institutions (NASNTIs). Expanding on the original scope of the project, NCCETC also has been able to reach other underserved and underrepresented groups. To date, NCCETC has contacted over 750 colleges, universities, non-profit organizations, and companies, with the vast majority supporting Native American communities.

This summer, NCCETC enrolled 73 individuals in two solar training courses; 42 completed the Fundamentals of Solar Photovoltaic Design and Installation course while 30 completed the Solar Storage course. Participants included skilled professionals, like electricians, contractors, and engineers, along with educators and students from community colleges or other institutions. Additionally, 14 people registered to sit for the North American Board of Certified Energy Professionals (NABCEP), a nationally recognized certification organization for renewable energy professionals, Associate PV Credential Exam. In total, representation spanned 23 states across the U.S., including Alaska; 9 NASNTIs or Native American serving companies, 8 TCUs, and 2 HSIs. Lastly, 4 participants identified as being disabled; 5 individuals were either active duty members of the military or veterans; and 1 participant identified as part of the LGBTQIA+ community. Additionally, 34% of the trainees across both classes were female.

NCCETC and PowerAmerica aim to diversify the solar workforce, which is currently comprised of 73% white males. This effort not only enhances pandemic resilience but also reflects the diverse communities they serve. They plan to engage underserved groups further and promote participation in future courses to foster a more resilient and diverse solar industry as the grant continues.

MISCONCEPTIONS IN SOLAR WEBINAR SERIES

NCCETC's Training Program hosted a series of three webinars on Misconceptions in Solar from April through June 2023. As decarbonization and the utilization of renewable resources move to the forefront at the legislative level, academic research, and industry integration, more misconceptions about these topics also arise. Speakers addressed misconceptions in the solar industry related to public health and safety, land-use and development, and finance and policy. Each session included three speakers with diverse perspectives from academia, government, legal, and business sectors on common misconceptions, the facts, and how they counter these misconceptions with their customers and the public.

STEPS4GROWTH: CREATING THE NEXT GENERATION OF CLEAN ENERGY ENTREPRENEURS

The U.S. Department of Commerce's Economic Development Administration (EDA) is awarding a $23.7 million American Rescue Plan Good Jobs Challenge grant to North Carolina Agricultural and Technical State University (NC A&T) to create STEPs4GROWTH, a clean energy workforce training program. NCCETC is pleased to support NC A&T's proposal to create STEPs4GROWTH, or Successful Transitions and Effective Partnerships for Growing Regional Opportunities in the Workforce to Harness, a clean energy workforce training program that will start in high school and continue through college. Currently, NCCETC is working with industry partners to help craft the curriculum for solar and clean energy technology through the educational model being developed.

CLEAN TRANSPORTATION

ELECTRIC VEHICLES (EV) & EV SUPPLY EQUIPMENT INCENTIVES IN NORTH CAROLINA GUIDANCE

NCCETC published a guidance document – *Electric Vehicles & Electric Vehicle Supply Equipment Incentives in North Carolina* – to help customers navigate the variety of direct financial incentives for electric vehicles and supporting EV infrastructure and planning offered throughout North Carolina. Incentives are available through federal, state, regional and electric utility funded programs. Staff from NCCETC's Clean Transportation and Policy & Markets programs collaborated to develop this resource for both commercial and public sector customers interested in purchasing an electric vehicle or installing a charging station.

MAPPING ELECTRIC VEHICLE CHARGING STATION SITE SUITABILITY WITH GIS TOOL

To help planners and developers select the perfect site to fit their needs, NCCETC developed a customizable tool for prioritizing the placement of EV chargers. The EVSE Suitability GIS product is not only able to consider several variables relevant to determining charging infrastructure siting benefits, but also has a custom weighting function so developers can tailor the weight of each variable being considered to their unique situation. The GIS product was created using data for the five counties covered by Roanoke Electric Cooperative: Bertie, Gates, Halifax, Hertford, and Northampton.

2022 SUSTAINABLE FLEET TECHNOLOGY WEBINAR SERIES

The 2022 Sustainable Fleet Technology Webinar Series concluded after bringing together industry experts and top performing fleet managers for 13 webinar sessions over the course of the year. The Sustainable Fleet Technology Webinar Series (SFTWS), now in its 8th year, is offered through a collaborative partnership between NCCETC and NAFA Fleet Management Association (NAFA). The series focuses on sharing real-world use cases and success stories of sustainable fleet operations and strategies. Each webinar session featured in-depth presentations from nationally recognized fleets describing their experience with integrating applications of sustainable fleet technologies and strategies into their fleet as well as the lessons they learned along the way.

CLEAN TRANSPORTATION DEMONSTRATION DAYS AND RIDE & DRIVE EVENTS

The Clean Transportation program at NCCETC hosts Ride & Drive and Vehicle Displays for a variety of audiences to provide an opportunity for attendees to learn more about clean transportation technologies including electric vehicles (EVs) and other alternative fuel vehicles (AFVs), along with dealers and local EV drivers onsite to answer questions about the driving experience behind the wheel of an EV.

CLEAN POWER & INDUSTRIAL EFFICIENCY

U.S. DEPARTMENT OF ENERGY SOUTHEAST COMBINED HEAT AND POWER TECHNICAL ASSISTANCE PARTNERSHIP

The U.S. Department of Energy's (DOE) Combined Heat and Power Technical Assistance Partnerships (CHP TAPs) promote and assist in transforming the market for CHP, waste heat to power, and district energy technologies/concepts throughout the United States. NCCETC is the home of the U.S. DOE Southeast CHP TAP which includes eight states: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee, as well as Puerto Rico and the U.S. Virgin Islands.

$11.7 Million in Potential Energy Cost savings Per Year

1,995 Megawatts of Solar Photovoltaics Identified

33 Facility Energy Assessments

82 Megawatts of Combined Heat & Power Identified

NCCETC AT NC STATE UNIVERSITY SELECTED AS SOUTHEAST LEAD FOR U.S. DOE'S ONSITE TECHNICAL ASSISTANCE PARTNERSHIPS

The U.S. DOE's Industrial Efficiency and Decarbonization Office announced the selection of nine organizations that will establish a network of Technical Assistance Partnerships (TAPs) to help industrial facilities and other large energy users increase the adoption of onsite energy technologies. NCCETC was selected as one of the awardees and will lead this proposed team for a DOE Southeast Onsite Energy TAP, in collaboration with team members from the University of Puerto Rico Mayagüez (UPRM) and Tennessee Tech. The award is for $1.5 million over three years, and will support technical assistance on a wide variety on technologies, including battery storage, combined heat and power (CHP), district energy, fuel cells, geothermal, industrial heat pumps, renewable fuels, solar photovoltaics, solar thermal, thermal storage, and wind power.

ACHIEVING RESILIENCE BENEFITS THROUGH UTILITY SOLAR + STORAGE DEPLOYMENT IN LOW-INCOME COMMUNITIES

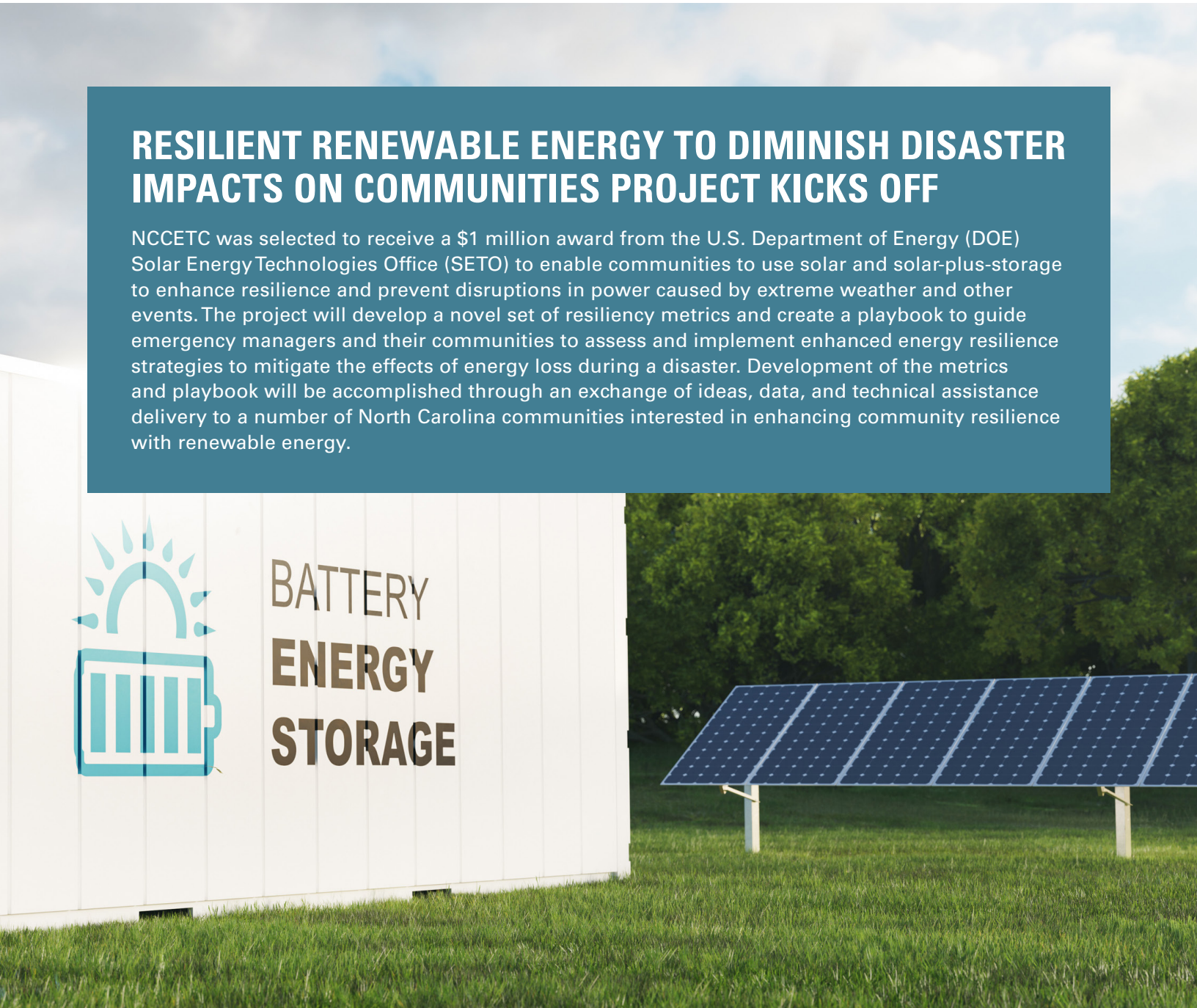
The NCCETC concluded two projects in October 2022 focused on community solar access and achieving resilience benefits for low and moderate-income communities. The projects – **Community Solar Access for Low and Moderate-Income Utility Customers**, and **Achieving Resilience Benefits Through Utility Solar + Storage Deployment in Low-Income Communities** – were funded through the American Rescue Plan Act (ARPA).

NCCETC partnered with three electric utilities in North Carolina to support 52 subscriptions of 10-years or more for a total $80,000. The team also developed the **Solar-Plus for Electric Cooperatives Early-Stage Decision Model**, which allows for analysis of multiple value streams that can be garnered from solar-plus-storage projects including peak-shaving, ancillary services, distribution deferral, and resiliency value.

NCCETC's second ARPA project sought to create a scalable, cost-effective c**ommunity resiliency program model for electric cooperatives** to help address hurricane-related resilience needs. In consultation with Roanoke Electric Cooperative, NCCETC designed and conducted feasibility tests for these programs involving utility or third party-owned energy storage system deployment to support critical community centers.

RESILIENT RENEWABLE ENERGY TO DIMINISH DISASTER IMPACTS ON COMMUNITIES PROJECT KICKS OFF

NCCETC was selected to receive a $1 million award from the U.S. Department of Energy (DOE) Solar Energy Technologies Office (SETO) to enable communities to use solar and solar-plus-storage to enhance resilience and prevent disruptions in power caused by extreme weather and other events. The project will develop a novel set of resiliency metrics and create a playbook to guide emergency managers and their communities to assess and implement enhanced energy resilience strategies to mitigate the effects of energy loss during a disaster. Development of the metrics and playbook will be accomplished through an exchange of ideas, data, and technical assistance delivery to a number of North Carolina communities interested in enhancing community resilience with renewable energy.



COMMUNICATIONS & OUTREACH

CELEBRATING 35 YEARS!

72 Mentions of the Center in News Articles

57 Presentations & Webinars Given

40 Events & Workshops Hosted by the Center

12,000 Newsletter Recipients

2,861 Facebook Followers

1,043 Instagram Followers

4,730 LinkedIn Followers

3,347 X (Formerly Twitter) Followers

TECHNICAL ASSISTANCE LOCATIONS

2023 STATE ENERGY CONFERENCE OF NORTH CAROLINA

Over 800 clean energy professionals joined NCCETC at the 2023 State Energy Conference (SEC) of North Carolina at the McKimmon Center on NC State University's campus in Raleigh, NC. Attendees from a variety of backgrounds – including state and local governments, non-profit organizations, startups, academia and corporate organizations – joined under the SEC's theme: "Connecting North Carolina's Diverse Energy Economy." Content focused on residential homes, clean transportation, commercial and industrial buildings, government and institutional buildings, renewable energy, utilities and infrastructure, and energy innovation and deployment.

During the two-day event, 30 sessions and four keynote sessions were available to attendees, and a sold out exhibit hall held networking events that showcased a variety of vendors from the energy industry.

In addition, continuing education credits (CECs) were offered to attendees for their participation in sessions. Available CECs included:

- American Institute of Architects (AIA): Learning Units (LUs) and Health, Safety, Wellness (HSWs)
- Leadership in Energy and Environmental Design (LEED): Green Building Certification Inc. (GBCI) Continuing Education (CE)
- North Carolina State Bar: Continuing Legal Education (CLE) credits
- Self-reporting professionals could receive Professional Development Hours (PDHs)

1,600 Total Hours of Completed Continuing Education Documented by Attendees

28 Of 35 Total Conference Sessions Approved for CECs

210 Certificates of Completion for Continuing Education Credentials Issued

For more information on the conference, visit: **www.NCEnergyConference.com**

2022 SUSTAINABLE FLEET TECHNOLOGY CONFERENCE & EXPO

The 2022 Sustainable Fleet Technology Conference & Expo, hosted by the NCCETC, showcased the latest technologies in the biofuels, electric, natural gas and propane arenas – including everything from a mobile solar electric vehicle charging model to a diverse display of alternative fuel vehicles and other clean transportation technologies. Over 80 speakers from a variety of backgrounds presented their ideas and best practices during the conference – highlighting the leading edge of sustainable fleet practices and clean transportation opportunities – including fleet managers, technicians, company presidents and CEOs, university professors, researchers, analysts, nonprofit managers, motivational speakers and more.

Learn more: **www.SustainableFleetExpo.com**.

GET INVOLVED

Achieving a sustainable future requires securing the work done by the Center. Become a Friend of the North Carolina Clean Energy Technology Center and support its mission of advancing clean energy for a sustainable energy economy. Individuals, private firms, and non-profit organizations are invited to support the Center (through the N.C. State Engineering Foundation) and its initiatives.

CONTACT US

Physical Address:
1575 Varsity Drive
North Carolina State University
Raleigh, NC 27606

Mailing Address:
Campus Box 7409
North Carolina State University
Raleigh, NC 27695

www.nccleantech.ncsu.edu
nccleantech@ncsu.edu

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