



**NORTH CAROLINA
AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY**



STEPs4GROWTH [Successful Training and Effective Partnerships for Growing Regional Opportunities in the Workforce To Harness] the NC Clean Energy Alliance.

Ms. Star Hodge
Program Manager for Workforce Development
State Energy Office, NC DEQ

Dr. Balu Gokaraju, PI
Associate Prof. of Computational Data Science and
Engineering
Associate Director of Visualization and Computation
Advancing Research (ViCAR) Center
NC A&T State Univ.

Dr. Gregory H. Monty, Co-PI
Center for Energy Research and
Technology, NC A&T State Univ.



Center for Energy Research and Technology
North Carolina A&T State University



Clean Energy Apprenticeships NCDEQ



- The NC Clean Energy Plan, 2019 included the skills training and workforce development plan for the new Clean Energy technologies.
- We found Apprenticeships are a suitable pathway with On-the-Job Training (OJT) in industries.
- Open to all ages, and worker groups.
- The CE Jobs are hi-tech skills, hi-paying Good Jobs.
- 2021-NCDEQ sponsored; OJT to 31 students, in 3 counties
 - 93 % minority and 67% female in Solar and Energy Efficiency (EE).
- 2022-NCDEQ sponsorship; OJT to 60 students, in 7 counties
 - 89% minority and 70% female in Solar, EE and Weatherization.
- Registered NC Clean Energy Apprenticeship—NC A&T, 2021
 - Energy Efficiency Registered Apprenticeship
 - Solar Energy Registered Apprenticeship
- First in the Nation encouraged through NCDEQ Sponsorship and Office of Governor Vision.

N.C. A&T GRANT DEVELOPS CLEAN ENERGY APPRENTICESHIP, FIRST OF ITS KIND IN NATION

By Alexander Saunders / 07/02/2021 Research and Economic Development, College of Engineering



STEPS4GROWTH—NC Clean Energy Alliance, \$23.7 Million Award to **NC A&T**, Aug. 22.



Collaborators :

NCDEQ-SEO

Office of Governor
Precise Educational Services
NC A&T- CERT
NCBCE
NCSU-CETC
UNCC-EPIC
App-State Energy Center
Advanced Energy
NC A&T-CEPDAM
Growth Sector



Community Colleges :

Guilford Tech. CC
Central Piedmont CC
Martin CC
Craven CC
Carteret CC
Roanoke Chowan CC
Nash CC
Edgecombe CC
Alamance CC
Randolph CC
Gaston CC
Wilson CC

STEPS4GROWTH Framework Diagram, with Leaders highlighted. \$23.7 M, USDOC-EDA-GJC

NCA&T/CERT: Clean-Energy System Lead Entity (PI: Dr. Gokaraju)

Program/Project Mgmt:

- Greg – Internal PM
- Program Mgr (PES)
- Grants Mgr (Ms. Quick)
- Administrative Assist (Just Hired)
- Robert Powell (Strategy Coordinator)
- IAB, EAB (TBD)

Vertical Clean-Energy Sectors	Energy Efficiency	Renewable Energy	Clean Vehicles	Grid & Storage
Clean-Energy Sub-Sectors	Lighting, HVAC, Advanced Materials	Solar, Wind, Bio-Energy	EVs & Charging Stations	Batteries/Storage, Smart Grid/Micro Grid/Grid Modernization, Cybersecurity of Grid
Backbone Thrust Leaders	Advanced Energy	NCSU Clean Tech Center	App State	UNCC- EPIC

Goals

- 3000 Good Jobs
- Fast-track Certifications
- New EV Techs.
- Cybersecurity Grid Techs
- Standardized curriculum
- Stackable Credentials
- Online Delivery

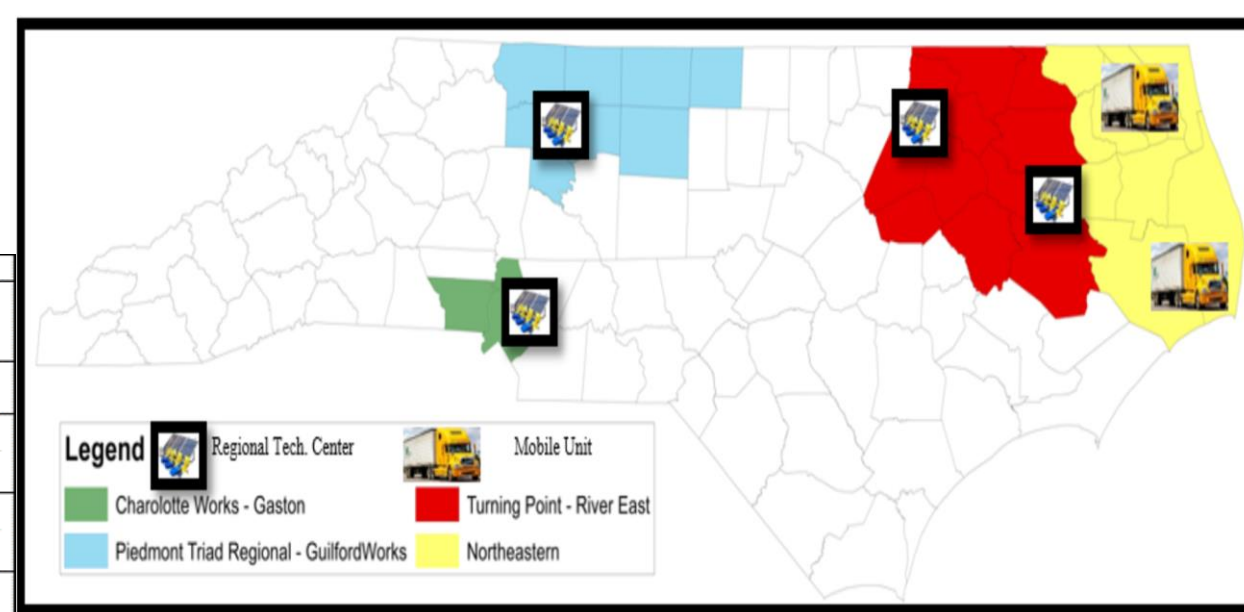
Horizontal Cross-Sector Leads & Thrusts	Valerie Hoskins, (PES)	DEIA: Diversity, Equity, Inclusion and Accessibility	Students/ Employees & Employers
	David Gruber, Growth Sector	Wrap-around Services: Student Support Specialists	
	Regional Coordinators	Recruiting: Recruiting Participants	
	Caroline Sullivan, NC Business Committee for Education (NCBCE)	Job Placement: Matching Employers & Employees	Education & Training
	Dr. Gokaraju, PI (NCAT/CERT)	Core Curriculum: Curriculum Development	
	Dr. Tesiero, co-PI (NCAT/CERT)	Hands-on Training: Training Center Development	
	Dr. Desai, co-PI (NCAT/CEPDAM)	Innovative Technology: Technology and Research	Technology & Research
	Dr. Russell, co-PI, AppState Univ/Appalachian Energy Center	Battery and Storage: Coordination across vertical CE Sectors	
	Dr. Monty, co-PI (NCAT/CERT)	Expansion: Scaling & Sustainability, Fund Raising	Growth
	Dr. Monty, co-PI (NCAT/CERT)	Advisory Boards: Internal and External	EAB & IAB

Clean Energy Sector Partnership Strategy Framework for STEPS4GROWTH

State-Wide Scale: 4 Regions

Govt. Agencies: Policy Advisors, Office of Governor, Asst. Secretaries of DEQ, DOC, DOT, DPI, EDPNC.

Region	Greensboro Area	Charlotte Area	Halifax Area	Northeast NC area
Counties	Guilford; Forsyth; Alamance; and Rockingham	Mecklenburg; Gaston	Halifax; Edgecombe; Martin; Northampton; Nash	Beaufort; Bertie; Pitt; Tyrrell; and Washington
Tier	2	3 (Mecklenburg); and 2 (Gaston)	1	1
Clean Energy Sector Primary Focus	Energy Efficiency	Grid & Storage	Clean Vehicles	Renewable Energy
Clean Energy Sector Secondary Focus	Clean Vehicles	Energy Efficiency	Grid & Storage	Renewable Energy
Backbone Org	Advanced Energy	UNC Charlotte	NCSEA or e4Carolinas	NCSU Clean Tech Center
NC Prosperity Zone	Piedmont Triad	Southwest	Central; Northeast	Northeast
Workforce Development Boards (WDB)	Guilford Works; Piedmont Triad Regional Council; and Regional Partnership	Charlotte Works; and Gaston County	Turning Point; Rivers East	Rivers East; Northeastern
CCs	Guilford Tech; Forsyth Tech; Alamance; and Rockingham	Central Piedmont; and Gaston	Nash, Edgecombe, Wilson	Martin CC, Roanoke Chowan, Craven and Carteret
Regional Training Center location	NCA&T, Guilford	CPC and Palisades	RTC	Martin CC
Economic Development Organizations (Chambers of Commerce, CoC)	Greesboro; Winston-Salem; Alamance County; and Western Rockingham CoC	Charlotte Area; and Gaston Business Association and CoC	Tarboro Edgecombe; Roanoke Valley; Martin County; Northampton County; Rocky Mount Area CoC	Washington-Beaufort County; Windsor/Bertie; Greenville; Tyrrell; and Washington County CoC
Existing Apprenticeship Programs		Olympic High School		
High Schools				
Demographics				
Average Salary for Region				
Key Industries				
Skills missing				



4 universities: NCA&T, UNCC, NCSU, AppState

Energy Partners: Advanced Energy; EPIC; CETC

4 Reg. Train. Centers: NC A&T/ GTCC; CPCC / Palisades HS; Martin;

10 smaller CCs : Serving 15 counties.

Alamance, Randolph, Gaston, Wilson, Nash, Edgecombe, Northampton, Bertie, Roanoke Chowan CC, Carteret and Craven.

Education Pyramids – Samples (EV and Renewables)

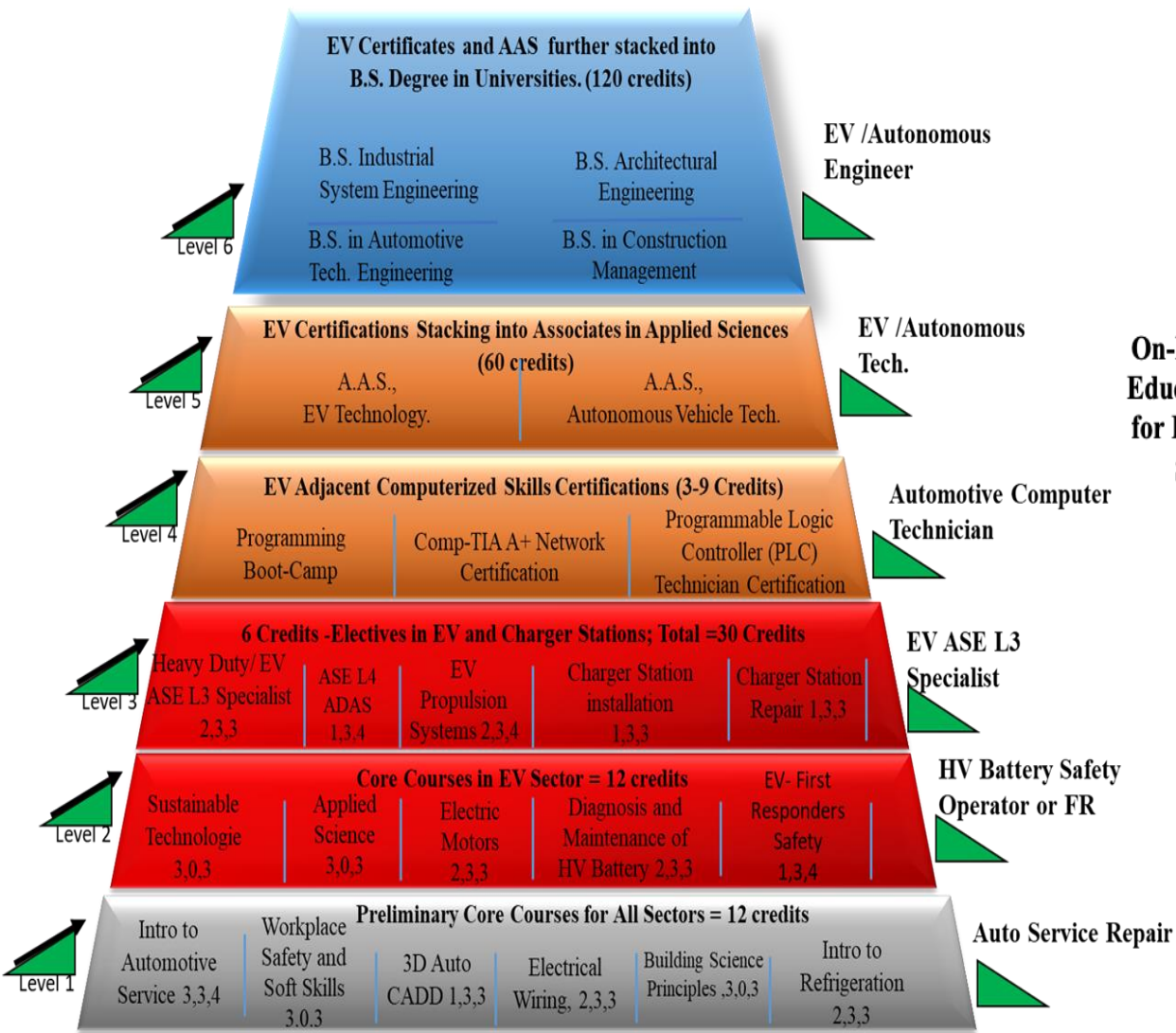


Figure 3. Clean Energy EV & Charger Education Pyramid Model

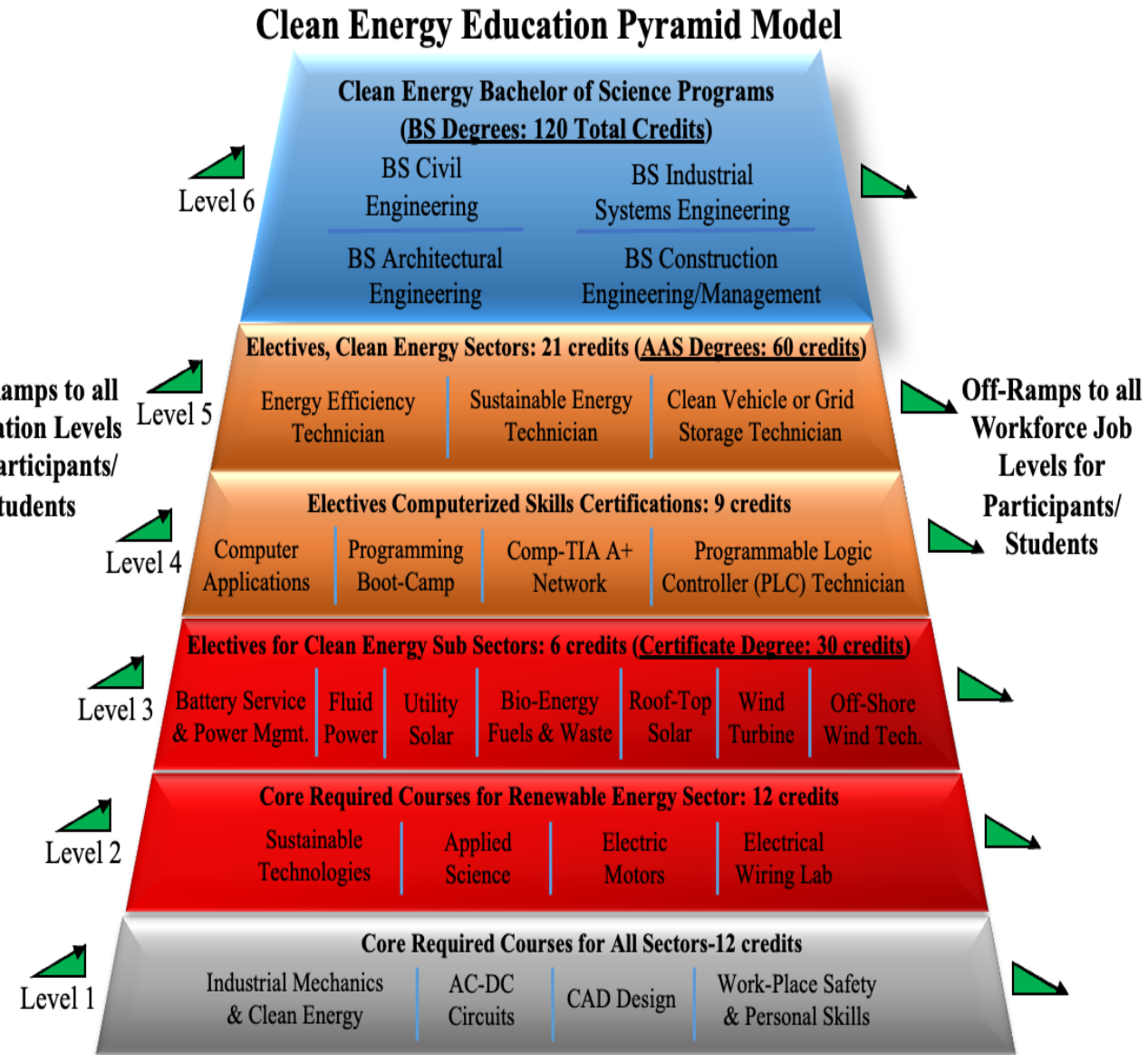


Figure 4. Clean Energy Renewable Education Pyramid Model

Highlights : in Year-1

S4G Job Placements (Clean Energy jobs are in demand)

- S4G job placement goals (Total of 3000 good jobs in 4 years)
 - 100 jobs by 30Sep2023, end of Y1
 - 400 additional jobs by 30Sep2024, end of Y2
 - 1000 additional jobs by 30Sep2025, end of Y3
 - 1500 additional jobs by 30Sep2026, end of Y4
- 130+ good job commitments by 45+ industry partners have been made
 - Duke Energy hired 55 apprentices through S4G with good jobs in Y1.
 - Duke Energy estimated a savings of \$302K because of S4G apprenticeship, NC incentives (50% wage reimbursement through ApprenticeshipNC system funding, NCDEQ State Energy office workforce development support, and others)– all savings identified through collaboration with S4G
- NCDEQ supported 100+ participants in 10-week summer clean energy training in 15 NC counties in 2023.

Demographics Data out of the 100+ participants in Summer OJT, 10 week, 2023

Race	Count of Race	Percentage
American Indian or Alaska Native	1	1.02%
Asian or Pacific Islander	3	3.06%
Multiracial or Biracial	3	3.06%
Hispanic or Latino	4	4.08%
A race/ethnicity not listed here	2	2.04%
White or Caucasian	41	41.84%
Black or African-American	32	32.65%
Latino	12	12.24%

Gender	Count of Gender	Percentage
Female	20	20.41%
Male	78	79.59%

Highlights :

- Clean Energy Industry Partner Network (S4G continues to grow)
- S4G has attracted many large and medium-scale industry partners that need clean energy employees.
 - Duke Energy
 - Siemens
 - Hitachi
 - Dominion Energy
 - Roanoke Electric Cooperative
 - EMC (Electric Membership Corporation)
 - Blue Ridge Power
 - ATOM Power
 - KemPower
 - Toyota
 - Vinfast
 - Wolfspeed
 - And others



Highlights :

S4G Participation in Nationally Recognized Events (Shared best Practices from S4G)

- Dr. Gokaraju represented S4G when President Biden and first lady Dr. Jill Biden visited Nash CC (a CC member of S4G)
- S4G was on a panel when Secretary Granholm and her Federal EV roadshow passed through NC. Granholm's entire entourage drove EVs as they traveled through the Southeast recently
- S4G was invited to participate in two panels at an USDOL event in Washington DC
- Dr. Gokaraju participated in an NSF/The Ohio State University event in EV automation and AI technology
- NSF stated that it wants to integrate its efforts in advanced manufacturing with S4G Clean Energy
- NCA&T met with the USDOC Assistant Secretary of Global Markets and Foreign Trade in Greensboro (Apr2023).
- Additional S4G meetings occurred with the US DOC, Asst. Sec. of Global Markets and Vinfast in NC
- Dr. Gokaraju represented (by invitation) NC on an official NC state visit to Denmark Energy Agency related to off-shore-wind development. This visit brought recognition to NC through publications/communications
- S4G had a big presence at the NCSU State Energy Conference with representation on 3 panels, and was supported by the Federal EDA GJC S4G Program Officer, Frank Avery, at the event
- S4G, and Provost Smith-Jackson hosted at NCA&T the BOSS (Black Owners of Solar Systems) kickoff event for its ~\$9M DOE grant to develop clean energy with NCA&T.
- S4G was an invited guest to tour the Duke Energy Innovation Center and Mount Holly Micro-Grid Facility.

Hosting Bidens in NC <> S4G



Student named America spoke about her experience in EV training and her AAS degree in Automotive

3- US Secretaries of Commerce, Education and Labor in DC—S4G



US DOE. Sec. Granholm



WolfSpeed—Durham and S4G- Raleigh Meetings



Biden's 'Green Industrial Strategy'

"Putting it all together, it's a plan to invest in America"

- Joseph R. Biden



RMI - Energy. Transformed.

S4G representation with NC Commerce in DENMARK

US Commerce—Vinfast New EV Car... 10 Comm. College Consortium for EVs with NCAT



Highlights :

Additional funding leveraged from S4G success and recognition (growing the NC Clean Energy Alliance through workforce development and research)

- **NCDEQ** Sponsored **\$2.08 Million** for Clean Energy Workforce Development and Kenan Fellows
 - **\$1M** is for Kenan Fellow K-12 Clean Energy education and teacher professional development .
- US DOT proposal submitted 15Jun2023 for **\$15M** grant to do community development of EV Charger stations through installations and training at 10 NC Community Colleges within the S4G network (funding is expected)
- NCA&T funded **\$2.16M** for Metaverse-EV Hands-on VR Simulation to develop workforce training content. S4G intends to use VR remote training, and will demonstrate viability through pilot research programs.
- NCDOT expects to match the **\$2.16M** investment with an additional **\$2M** to expand S4G VR training technology to support EV systems development across NC. (negotiations for the extra \$2M are ongoing)
- S4G applied for NCDEQ-State Energy Office's Call for **\$5.08** Million Workforce development in Weatherization, part of the Energy-Efficiency Sector of Clean Energy.
- S4G wrote/won a "Clean Energy Trade Skills" **\$500k/3yr** proposal/grant to DOE MSIPP (Minority Serving Institutions Partnership Program) in collaboration with Las Positas College in Berkeley, CA to develop Community College curriculum to train workforce in the trades for LLNL (Lawrence Livermore National Labs). The curriculum from this program will be leveraged and used in S4G soon.

White House Presentations, Dr. Biden, Mitch Landrieu, John Podesta <> S4G

ETA VISION 2030
U.S. DEPARTMENT OF LABOR
ETA VISION 2030
Investing in America's Workforce

Meeting Agenda
(subject to change)
May 16-18, 2023
Hyatt Regency Crystal City, Arlington, VA

Day One: Tuesday, May 16, 2023

Time	Session/Topic	Description	Location
9:00 – 10:00 AM	Opening Plenary Mitch Landrieu: White House John Podesta: White House Brent Parsons: U.S. Department of Labor	A vision for Investing in America's workforce and the critical role of the workforce system.	Regency Ballroom E, F
10:00 – 10:20 AM	Break		Regency Foyer
11:00 AM – 5:00 PM	Story Station	Share Your Success at Our Story Station!	Regency Office Ballroom Level
10:20 – 11:15 AM	Breakout Sessions by Track	Four 50-Minute Concurrent Sessions	
	❖ INFRASTRUCTURE Leveraging Infrastructure Investment to Create Equitable Workforce Development Dr. Balakrishna Gokaraju: North Carolina A&T University Clyde McQueen: Full Employment Council Jack Porter: National Governor's Association	Hear how workforce partners are involved with investments in infrastructure, including equitable workforce development. This session will focus on providing real-life examples of how the workforce system has leveraged infrastructure investments while elevating the critical role the workforce system can play in creating pathways to good infrastructure jobs.	Arlington-Fairfax Third Floor Level
	❖ SECTOR Using Competency Models to Spark Skill Development	Various stakeholders use the semiconductor competency model, created by the National Institute for Innovation and Technology (NIIT), as the foundation for an online talent portal called	Prince William Third Floor Level

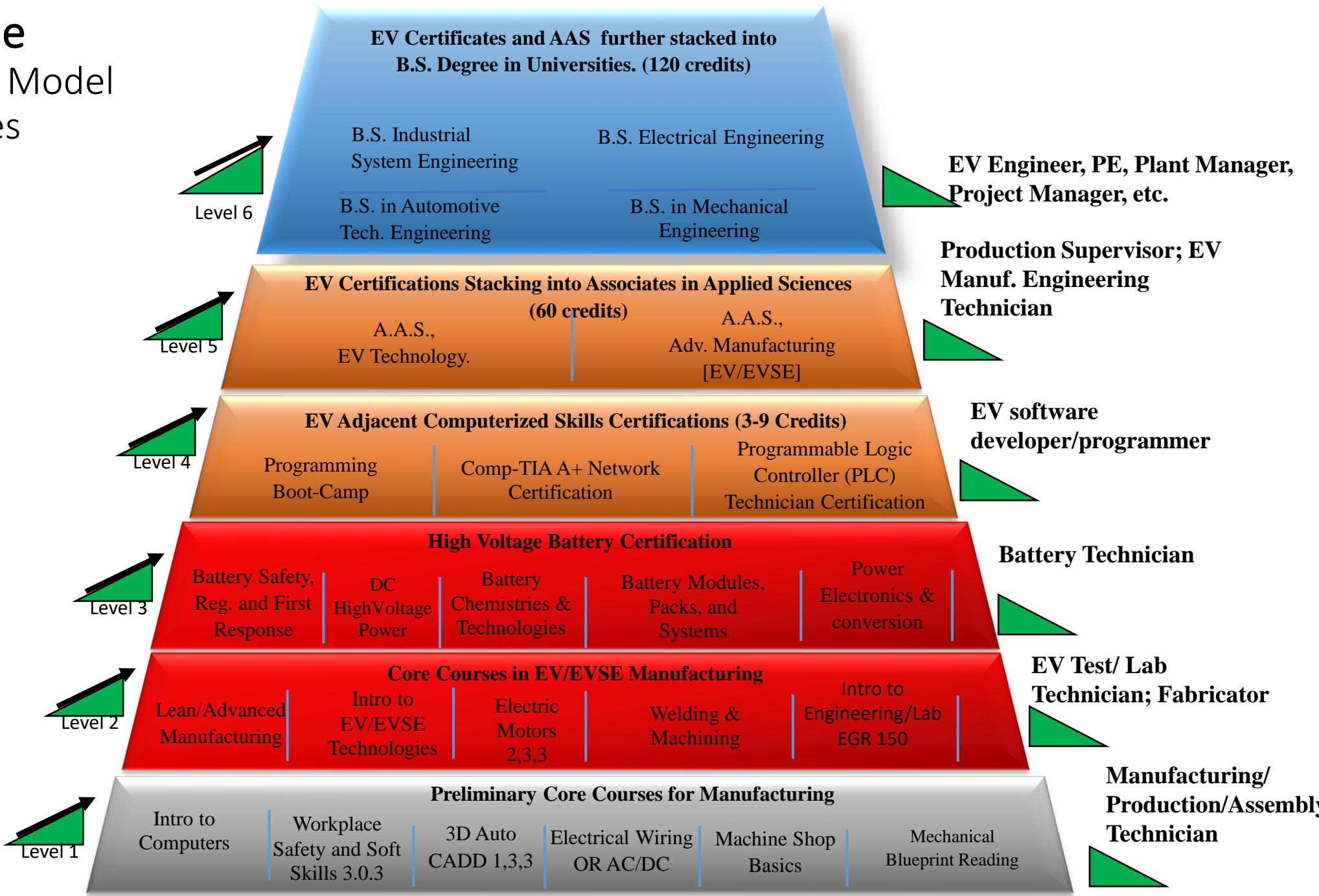
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S4G—Industry Partners' meeting in Charlotte



EV/ EVSE- Sample Education Pyramid Model For Electric Vehicles



EV/EVSE Core Courses/Topics for 5 Certificates

Courses can be added on to (or embedded into) existing curricula, degree programs or certificates (as stackable credentials) throughout any level of the pyramid models

- Intro. to Electric Vehicles and Charging
- Intro. to Battery Technologies
- High Voltage Batteries/Architecture
- EV Systems Technology (Thermal management, powertrain, EMS, etc.)
- High and Low-voltage DC/AC Electronics
- Battery Safety, Regulation, and First Response

EV Service Technician—Certificate1 (e.g. ASE L3 Specialist*)

Sample Curriculum:

- Safety (OSHA, NFPA, etc.)
- Intro. to Computers
- AC/DC Electricity
- Automotive Service & Electricity
- Intro. To EV Technology
- HVDC Batteries AND/OR Battery Technologies
- EV Propulsion Systems
- Braking, Steering, and Suspension Systems
- Customer Relations



Production/Assembly Technician- Certificate2 (Manufacturing)

Sample Curriculum:

- Safety (OSHA, NFPA, etc.)
- Intro. to Computers
- AC/DC Electricity
- CAD/Plan Reading
- LEAN Six Sigma
- Machining
- Fabrication
- Robotics
- Automotive



HV Battery Service Specialist / Battery Technician (Grid, EV, or Manufacturing applications) Certificate3

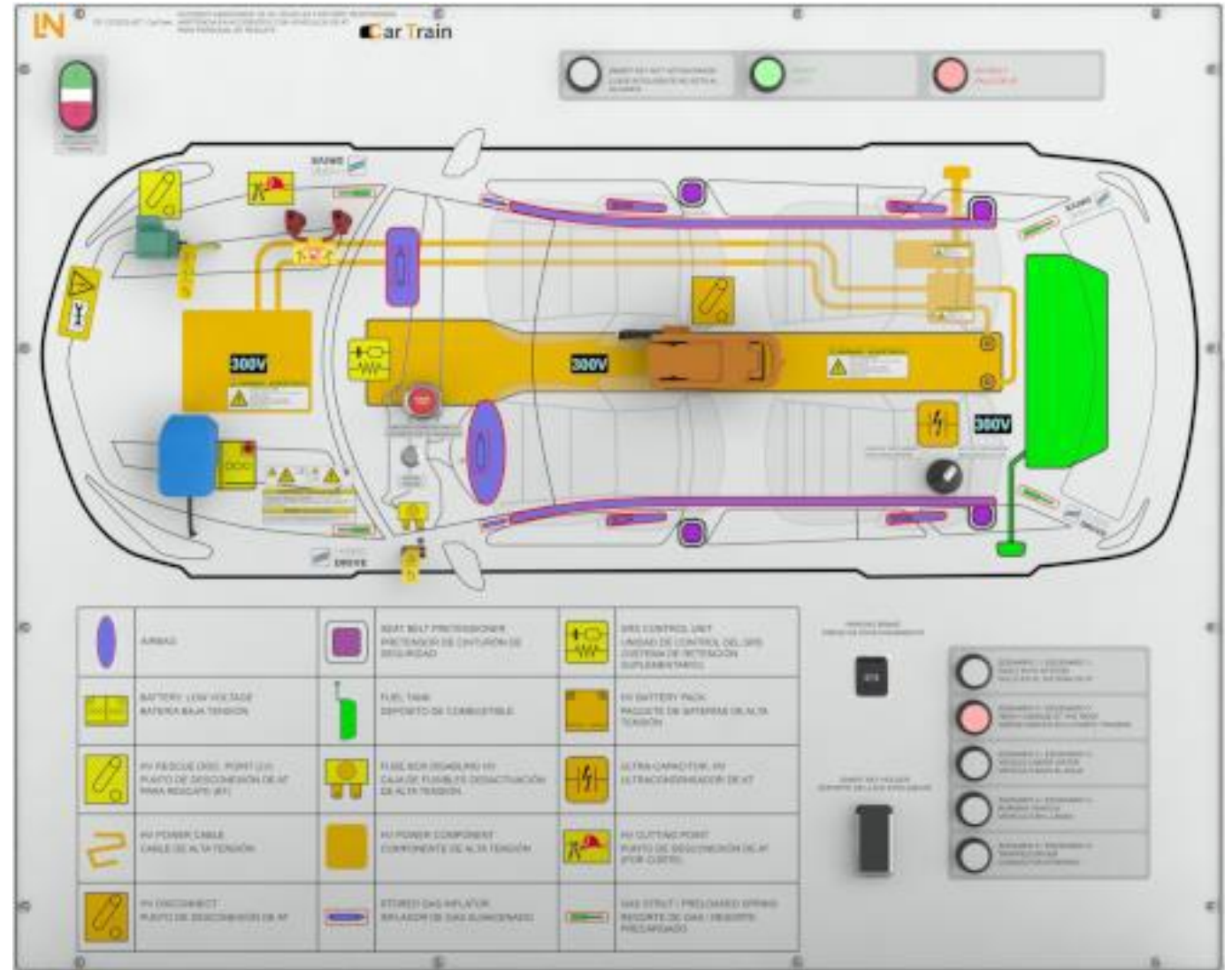
Sample Curriculum, plus labs:

- Level 1 Courses as needed
- Computers and Programs (Intro)
- Electrical Mathematics
- HVDC Power
- Battery Chemistries & Technologies
- Battery Safety and Regulation
- Battery Packs, Modules, and EMS/Systems
- Power Conversion and Converters
- Battery Use Cases and Applications
- End-of-Life, Second Life, & Recycling



CarTrain "First Responder Trainer" -- Certificate 4

- Have not seen posted jobs for this position yet.
- Important training within other existing collision-focused first responder positions
- Decision to develop S4G curriculum TBD.



Advanced Driver Assistance Systems (ADAS) Training: Certificate5

“ADAS technician training prepares learners to diagnose, repair, replace, and calibrate ADAS sensors.”

Topics include:

Defining ADAS

ADAS sensors

Proper calibration environment

Calibration types and best practices

Skills include:

ADAS tablet

Reading DTCs

Identifying ADAS-equipped vehicles

Alignment quick checks

Setting up calibrations

Performing calibrations

Calibration troubleshooting

Source: <https://caradas.com/adas-technician-training/>



UniTrain-Kurs
Aktiver Fahrspurassistent (Active Lane Assist)





Equipment of \$ 5 Million– Dr. Ray Tesiero

100's of Equipment Purchase Orders :

- **Electric Vehicle Service, Repair, Maintenance**
- **Solar Panels, Wind Training Equipment,**
- **HVAC, Building Energy Efficient Lighting Equipment**
- **Micro-Grid, Solar-Grid, Lineman Tech. Equipment**

Online Classes

- **Instructor teaches in College A**
- **Students can attend from College B and C.**
- ***Virtual Reality Classroom for EV Training***
- ***We cannot still buy enough equipment for all the colleges***

EQUIPMENT -- \$5 Million

Dr. Ray Tesiero is up-keeping the following processes on Grid and Storage Equipment Ordering Process:

- Milestones/Deliverables/Reports document from S4G
- 1. DELIVERABLE: COMPLETED FINAL DRAFT PYRAMIDS (approved by S4G leadership)
- 2. DELIVERABLE: COMPLETED FINAL DRAFT CURRICULUMS (approved by S4G leadership)
- 3. DELIVERABLE: EQUIPMENT INVENTORY FOR THE BBO's REGIONS (ALL CCs, HS, Training Center current equipment/labs)
 - a. ALL GAPS Identified showing specific equipment/lab needs
 - b. preliminary quotes, costs, and location identified to fill each GAP
- 4. MILESTONE: A SEPARATE ZOOM MEETING (Hosted by BBO) TO DISCUSS EQUIPMENT NEEDS IN EACH VERTICAL (basically showing all the gaps and what will be required to fill those gaps, with some cost estimates) all S4G leadership should be present
- 5. DELIVERABLES: WRITTEN DOCUMENTATION (EQUIPMENT PURCHASING PLAN):
 - A. A WRITTEN REQUEST FROM THE BBO FOR SPECIFIC EQUIPMENT BASED ON FILLING A SPECIFIC GAP IN THEIR CURRICULUM
 - B. A JUSTIFICATION AS TO WHERE THE EQUIPMENT SHOULD BE LOCATED FOR BEST USE IN THE REGION...WE WOULD ALSO NEED TO BE SURE THAT WE HAVE PUT THE FINITE FUNDS/VERTICAL TO BEST USE IN THE PYRAMID (DON'T BLOW ALL THE FUNDS IN ONE ORDER FOR ONE GAP IN YOUR CURRICULUM) – THIS IS A MAJOR DISCUSSION WITH PLANNING (IS WHY WE CAN'T GET REQUESTS FROM ANYONE EXCEPT THE BBO LEADERSHIP, BECAUSE THEY HAVE VETTED
 - C. INDUSTRY PARTNERS, HSs, CCs, ETC. FOR THEIR REGION SIGNING OFF ON THE EQUIPMENT PURCHASING PLAN
- 6. DELIVERABLE: ALL SPECIFICATIONS OF MAJOR COMPONENTS WITH AT LEAST 3 QUOTES FROM 3 DIFFERENT VENDORS.
- 7. MILESTONE: S4G LEADERSHIP HAS REVIEWED AND FINAL SIGNATURE APPROVAL BEFORE ANY ORDER IS PLACED

Day-to-Day Challenges & Successes

Kate Quick
Grants Manager



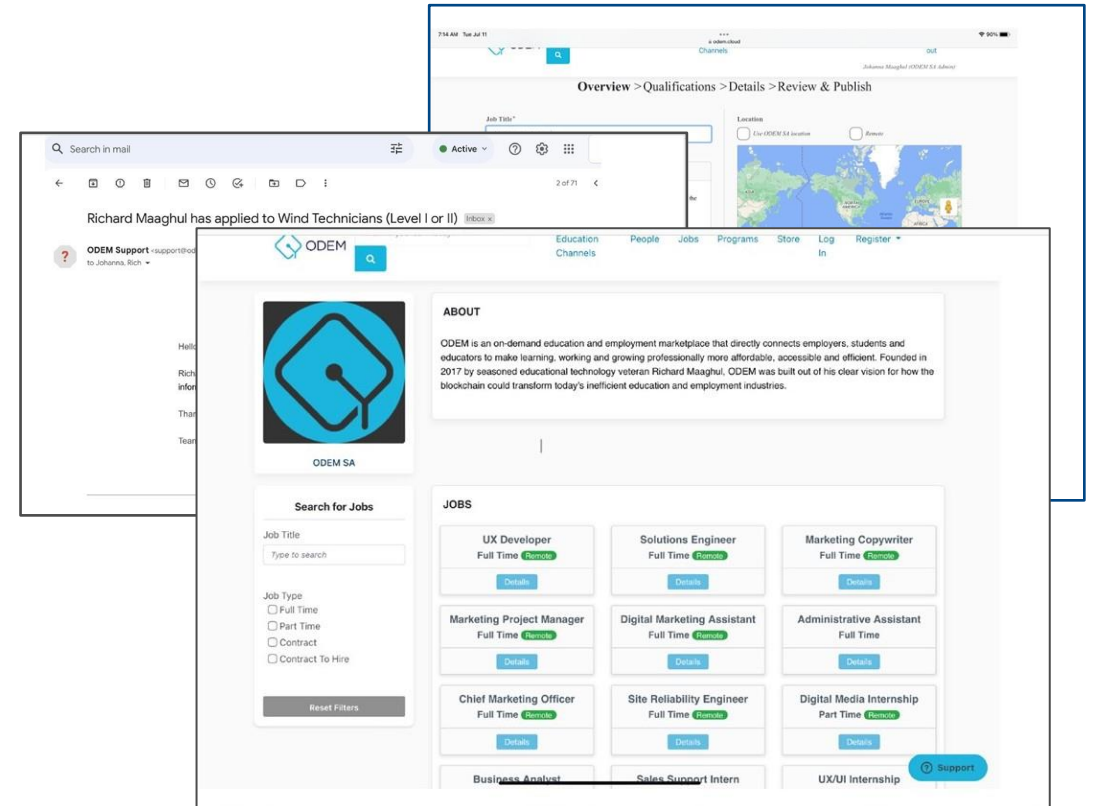


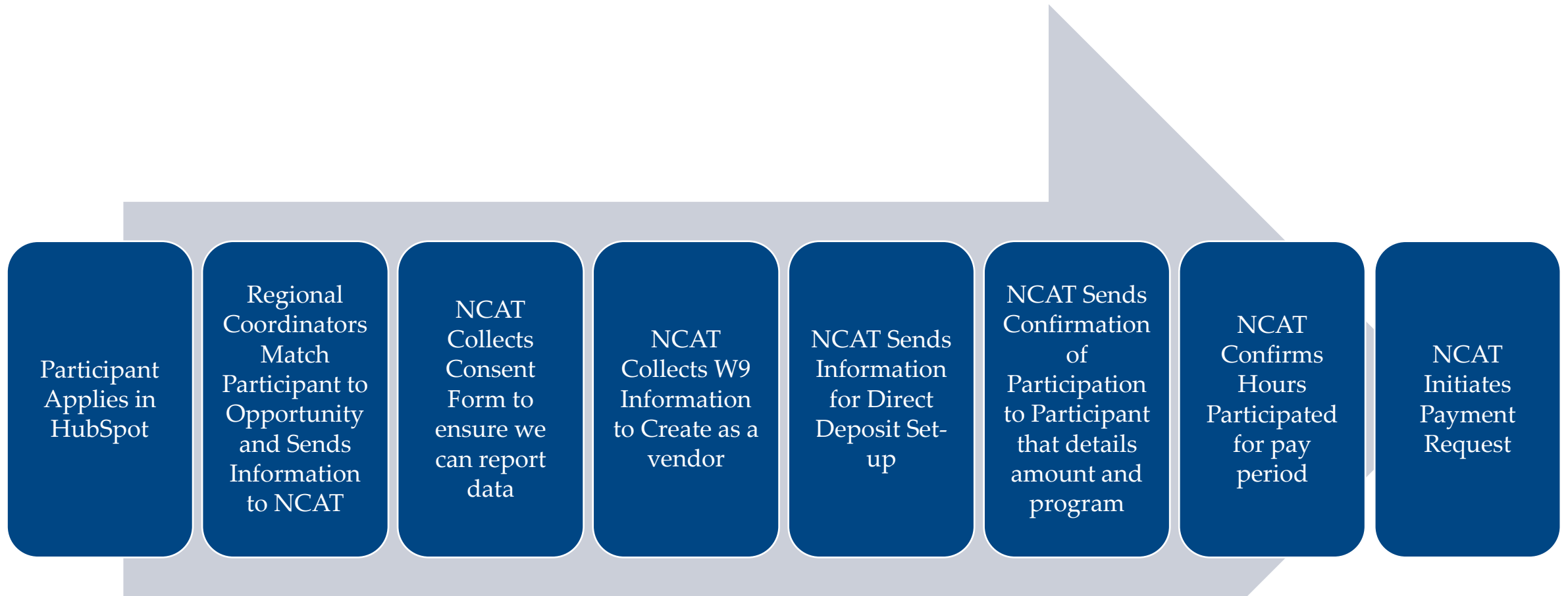
ODEM/Next Wave Resources

ODEM is an on-demand education and employment marketplace that directly connects educational organizations, employers, students and educators to make learning, working and growing professionally more affordable, accessible and efficient. ODEM provides a program, education and employment marketplace, learning management integration and digital certification upon course completion, available for sharing by users with employers and higher education institutions.



- S4G is working with Assistant Vice Provost Dr. Tonya Amankwatia and the Distance Education and Extended Learning Team to use S4G as the Pilot Program.
- We are working with representatives from Duke Energy and Toyota Battery to assist in developing the platform.
- We are working with Growth Sector to identify student participants to be part of the pilot program.







Details about the Individual Participant in S4G for Summer on-boarding:

- 1) The graduating senior from high school, or Community College, or University, who is Committed as follows:
 - a. Summer OJT/registered pre-apprenticeship at the job site or Community College.
 - b. Completion of one Online coursework, where applicable.
 - c. Full-time job placement/ Hybrid OJT Apprenticeship opportunity in Fall 2023, where applicable.

- 2) Rising Senior from high school or Community College, who is committed to entry into a registered pre-apprenticeship or apprenticeship program, as follows:
 - a. Summer registered pre-apprenticeship at the job site or Community College.
 - b. Completion of one Online coursework, where applicable.
 - c. Dual enrollment in High School, where applicable.
 - d. Part-time/ Hybrid OJT and coursework toward apprenticeship in Fall 2023, where applicable.

- 3) Open to incumbent employees or General Public for upskilling as follows :
 - a. Summer OJT/registered pre-apprenticeship at the job site.
 - b. Completion of one Online coursework.
 - c. Full-time job placement/ Hybrid OJT Apprenticeship opportunity in Fall 2023.
 - d. The apprenticeship benefits are not available to the General Public if they are not of age group of 16-25.

4) The public outside this age group shall be qualified as WIOA candidates.

First name

Last name

Email *

Phone number

Provide the name of the High School or College/University where you are currently enrolled. *
Provide the name here. If you are not currently enrolled in High School or a College/University, please enter "not enrolled"

Current focus area or major? *

Please enter below your College/University major or the focus area of interest.

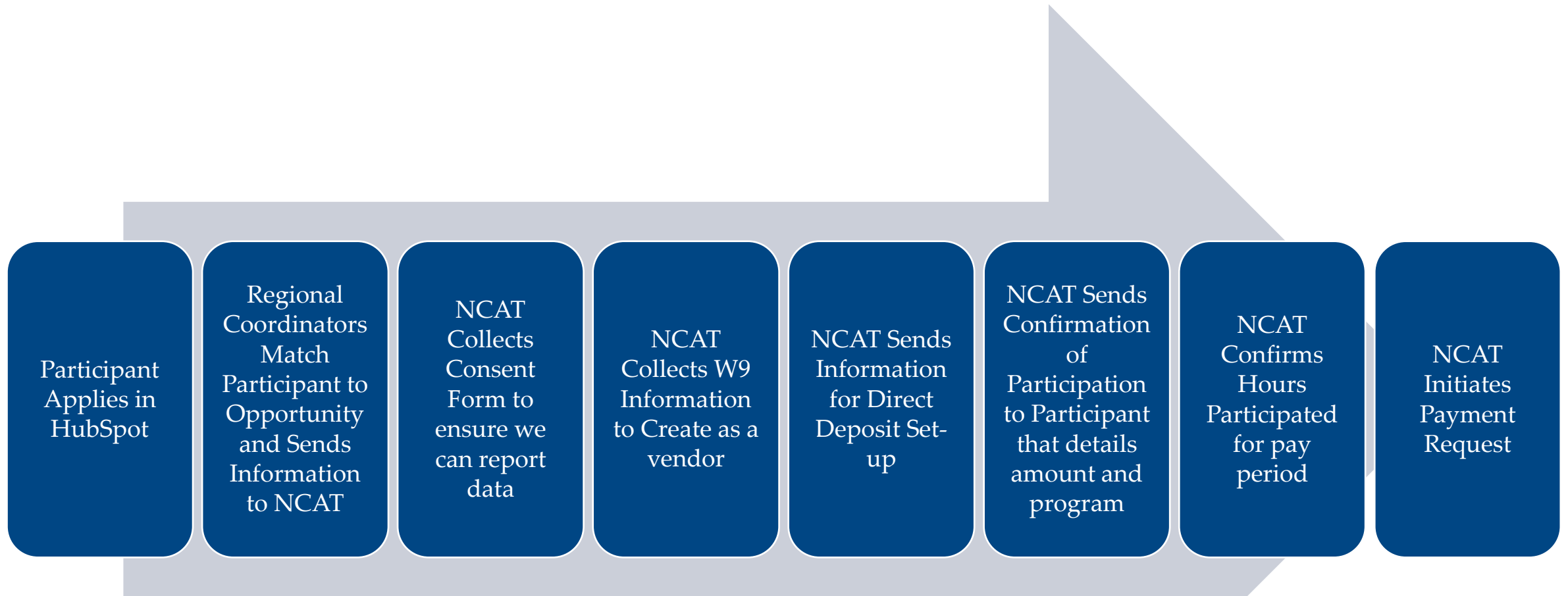
Fall 2023 High School Grade Level or Undergraduate Class Standing?

- High School Senior
- High School Graduate
- College/University Senior
- College/University Graduate
- Incumbent Worker

Apprenticeship/Internship/Co-op/On the Job Training Location *

Which North Carolina county do you prefer to work in? (Most internships are in the Greensboro, Raleigh and Charlotte areas)


- Guilford Region (Greensboro, Randolph, Alamance, Rockingham, Forsyth)
- Raleigh Region
- Mecklenburg and Gaston Region
- North East Region (Nash, Edgecombe, and Wilson)
- NC Coastal Region (Martin, Roanoke Chowan, Carteret and Craven)
- Other Location(s)





NCAT Collects Consent Form to ensure we can report data

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH STUDY



Study Title: STEPS4GROWTH Principal Investigator: Balakrishna Gokaraju

Purpose of the Study

You have been asked to participate in a research study about education and workforce development experiences in the clean energy sector. The purpose of this study is to give education and work experience to students that might have interest in the clean energy sector. This research is conducted by Dr. Balakrishna Gokaraju from the department of Computational Data Science and Engineering at North Carolina A&T State University. This research is sponsored by the Good Jobs Challenge program of the US Economic Development Administration.

Procedures

You may be asked to take some class and hands-on instruction related to clean energy. This may include electric vehicles, charger stations, renewable, energy efficiency, Grid Resilient Grid Storage clean energy infrastructure and technologies, Lean Sigma, OSHA Safety, ST learning and soft-skills development for students that might enter the clean energy sector. Additionally, you will have some on-the-job training opportunities that will expose you to the types of jobs that might be of interest to you. We may ask you a few questions about the program, your likes and dislikes, and whether the program has been successful for you. There are no known risks with these surveys. There is no direct benefit but that the evaluation of the program will determine how the activities implemented by the program are helping to meet the goal of developing good jobs in the clean energy sector for the future. You can decide not to participate in any of these surveys.

Risks and Discomforts

We do not anticipate any risks from your participation in this research. Safety training to minimize risk will be part of the program. If you begin to feel uncomfortable, you may discontinue participation, either temporarily or permanently.

The information that we will be required to collect for the program include: name, email, phone number, street address, current educational institution you are attending, grade level, GPA range, birthday and ethnicity.

Every effort will be made to protect this data and to limit the use and disclosure of your personal information to the research team and others who have a need to review this information. Other organizations that may access information from this study include the US and the US Economic Development Administration.

Benefits

Direct benefits from your participation include getting educated and having a work experience in the clean energy sector that might be of future interest to you as you enter the workforce or go through additional education before entering the workforce. You will be paid for your participation for On-the-Job-Training experiences and may be eligible for other tangible support. This support differs for different tasks and will be reviewed with you.

Page 1 of 3

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NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Audio/Video Recording

You consent to allow pictures/video/audio recording during certain program photos may appear on official STEPS4Growth social media and website

Confidentiality

All information collected in this study will be kept strictly confidential by law. The information you give in the study will be handled confidentially and be destroyed three years after the completion of the study.

If the results of this research are published or discussed in conferences included that would reveal your identity.

If we collect any data from you via the Internet, please note that absolute confidentiality cannot be guaranteed due to the limited protections of Internet access. This online survey involves risks similar to a person's everyday use of the Internet.

Your email address will be requested so that we may send you survey results (and survey questions). However, it will be stored separately from any data collected.

Questions about the Study

If you have any questions about your involvement in this project, you may call Dr. Balakrishna Gokaraju at 662-617-5624 or by email at bgokaraju@ncat.edu. If you have any questions about your rights as a research study participant, you may contact the Office of Research Compliance and Ethics at North Carolina A&T State University at rescomp@ncat.edu.


Voluntary Participation/Withdrawal

Your participation is voluntary, and you may end your participation at any time by not participating or leaving the study at a later time will not result in any penalty which you are entitled. Your grade, record, academic standing, or relationship with the university will not be affected if you choose not to participate or withdraw.

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NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH STUDY



Statement of Consent

I have read the above information and have received answers to any questions I had. I am at least 18 years of age or older and voluntarily consent to take part in this research study. Some of our research will be conducted through an online survey. An "I agree" button has been added to every survey following the text: "By continuing to the survey, I am indicating that I have voluntarily consented to take part in this research, and am at least 18 years of age."

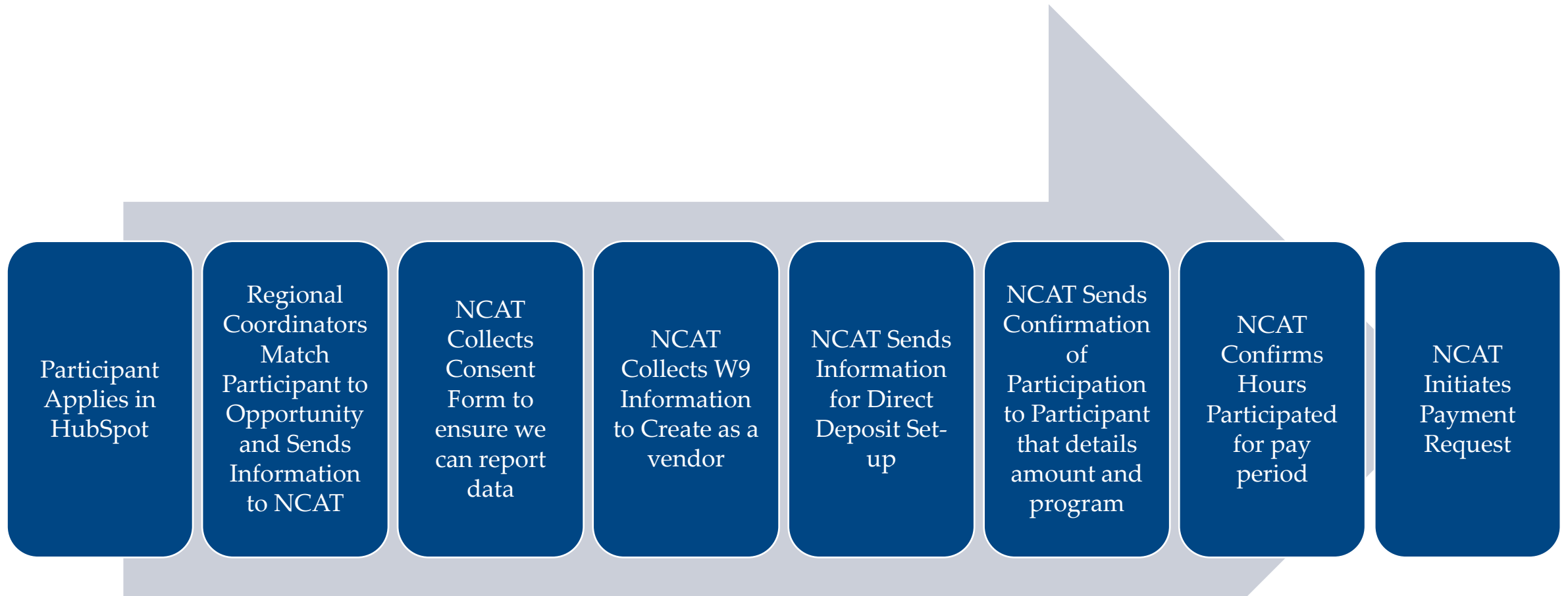
Participant's Name (Printed): _____

Participant's Signature: _____ Date: _____

Researcher's Signature: Dr. Balakrishna Gokaraju _____ Date: _____

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Form W-9
Request for Taxpayer Identification Number and Certification
Department of the Treasury
Internal Revenue Service
Give Form to the requester. Do not send to the IRS.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes:
 Individual/sole proprietor or single-member LLC
 C Corporation
 S Corporation
 Partnership
 Trust/estate
 Limited liability company. Enter the tax classification (C-C corporation, S-S corporation, P-Partnership) **▶**
Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.
 Other (see instructions) **▶**

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
 Exempt payee code (if any) _____
 Exemption from FATCA reporting code (if any) _____
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions. Requestor's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)
Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.
Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Part II Certification
Under penalties of perjury, I certify that:
 1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
 2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
 3. I am a U.S. citizen or other U.S. person (defined below); and
 4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.
Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person **Date**

General Instructions
Section references are to the Internal Revenue Code unless otherwise noted.
Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.
Purpose of Form
An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:
 • Form 1099-INT (interest earned or paid)
 • Form 1099-DIV (dividends, including those from stocks or mutual funds)
 • Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
 • Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
 • Form 1099-S (proceeds from real estate transactions)
 • Form 1099-K (merchant card and third party network transactions)
 • Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
 • Form 1099-C (canceled debt)
 • Form 1099-A (acquisition or abandonment of secured property)
 Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.
If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

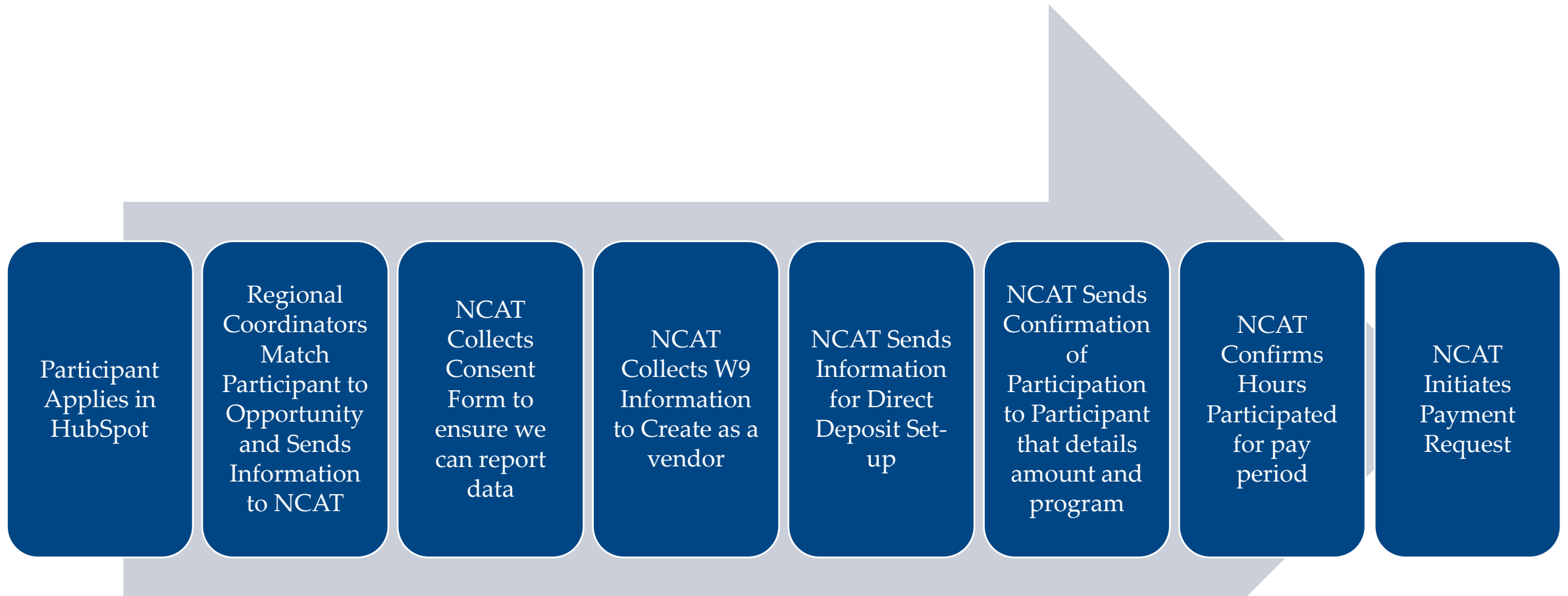
Cat. No. 10231X Form **W-9** (Rev. 10-2018)

Also needs phone number and email contact information.

Biggest Challenges:


- Legibility
- Forgetting to sign and date
- Adding a Business Name
- Incomplete addresses

Once all correct information is collected, we submit an Aggiermart Request to Create them as a new Vendor.





NCAT Sends Information
for Direct Deposit Set-up



Vendor # _____

NCA&TSU Vendor/Employee Electronic Payment (NOT PAYROLL)
Direct Deposit Authorization Agreement

New Enrollment _____ **Change Enrollment** _____ **Delete Enrollment** _____

Please select type of enrollment by placing an "x" in the appropriate space. Choose "New" if you are signing up for the first time, or wish to restart direct deposit. Choose "Change" in the event you wish to have the funds deposited into a different bank account.

Federal ID Number _____	Company Name (please print) _____	
Deposit Funds Into:		
Bank Name _____	Branch _____	
City _____	State _____	Zip Code _____
Routing No. _____	Account No. _____	<input type="checkbox"/> CHECKING ACCOUNT <input type="checkbox"/> SAVINGS ACCOUNT

⇌⇌⇌ PLEASE ATTACH A VOIDED CHECK (for checking account) ⇌⇌⇌
(write "void" across the front of the check)

-OR-

⇌⇌ PLEASE ATTACH A VOIDED PREPRINTED DEPOSIT SLIP (for savings account) ⇌⇌
(write "void" across the front of the slip)

NOTE: After your consent for direct deposit has been processed, a one-time zero dollar (\$0.00) transaction occurs and may appear on your bank statement. This is a test transaction to ensure the accuracy of the direct deposit information. This initial process will take up to ten business days. After you enroll for direct deposit, all future payments will be deposited directly to the account specified unless this agreement is terminated or amended by written notification. If funds are directly deposited to your account in error, the University may initiate a transaction to remove the funds. If you change or close the bank account specified, you must resubmit this form (Change Enrollment) immediately.

I authorize North Carolina A&T State University to deposit Vendor/Employee reimbursable payments into the checking account or savings account noted above. This form is not to be used for Payroll purposes. This authorization will remain in effect until I provide written notification to the Disbursements Unit-University Accounting Office requesting termination (allowing 15 days for processing).

Signature _____ Date _____

Contact Name and Phone Number (Please print) _____

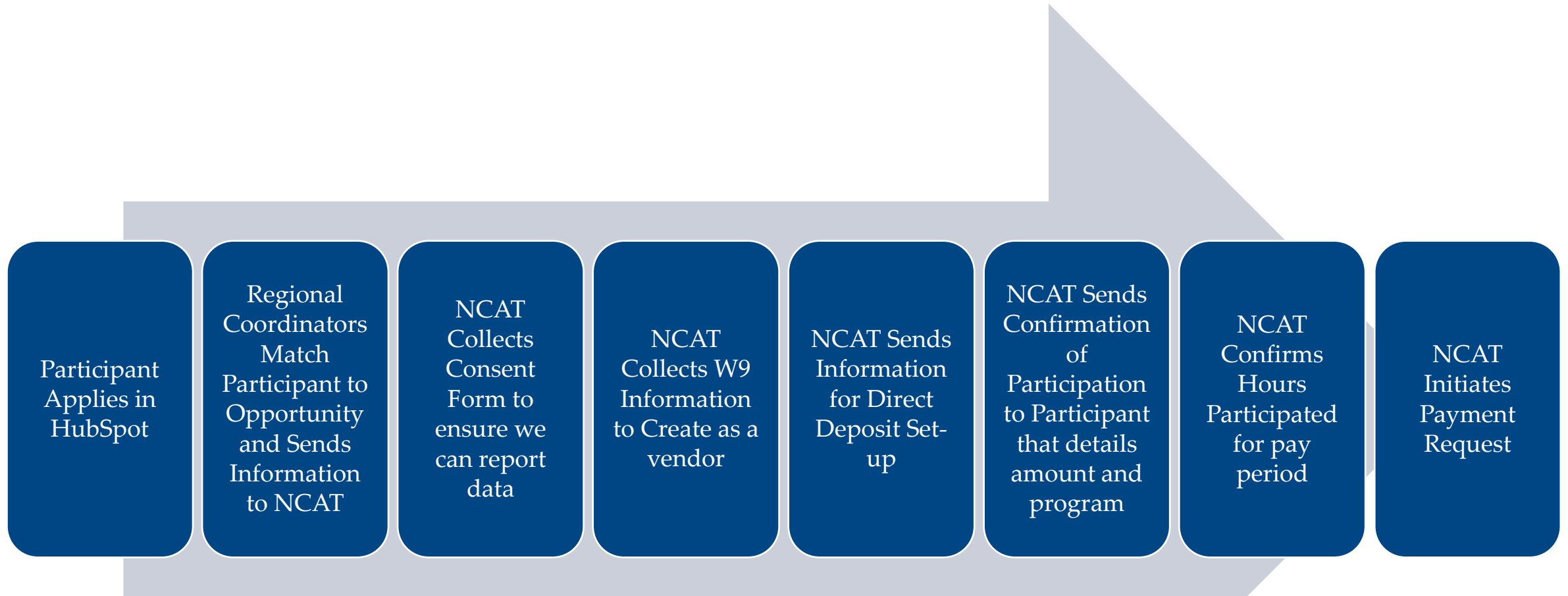
E-Mail Address: _____

Please forward to – University Accounting Office, 2nd Floor Dowdy Bldg.
fax number 336.256.0891
If you have questions, call us at 336.334.7684

Accts Payable Form July 2006

Biggest Challenges:

- Legibility
- Not understanding what Vendor# Banner #, Federal ID and Company name mean
- Incorrect backup documentation.





NCAT Sends Confirmation of Participation to Participant that details amount and program

This is confirmation that you have been selected to participate in a research study called STEPS4GROWTH about education and workforce development experiences in the clean energy sector. The purpose of this study is to give education and work experience to students that might have interest to develop a career in the clean energy sector. This research is conducted by Dr. Balakrishna Gokaraju from the department of Computational Data Science and Engineering at North Carolina A&T State University. This research is sponsored by the Good Jobs Challenge program of the US Economic Development Administration. This is being sent on his behalf to confirm the following:

Your participation for Summer of 2023 is through _____ Community College where you will be attending a specialized class on Electric Vehicles. The program runs from June 5 – July 31st and is 176 hours long. Your total compensation for participating in the program is \$_____.

I hope you find your participation useful for career pathways in Clean Energy. I appreciate your time and efforts.

Dr. Balakrishna (Balu) Gokaraju, Ph.D
Principal Investigator - STEPs4GROWTH
Associate Director, Visualization and Computation Advancing Research Center (ViCAR)
Associate Professor, Computational Data Science and Engineering (CDSE)
North Carolina A and T State University, Greensboro, NC.