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Project/Performance Site Location(s)

Project/Performance Site Primary Location I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name:
UEI:
* Street1:
Street2:
* City: County:
* State:
Province:
* Country:
* ZIP / Postal Code: * Project/ Performance Site Congressional District:

Project/Performance Site Location 1 I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name:
UEI:
* Street1:
Street2:
* City: County:
* State:
Province:
* Country:
* ZIP / Postal Code: * Project/ Performance Site Congressional District:

Additional Location(s)

Application for Federal Assistance SF-424

* 1. Type of Submission: <input type="checkbox"/> Preapplication <input checked="" type="checkbox"/> Application <input type="checkbox"/> Changed/Corrected Application	* 2. Type of Application: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision	* If Revision, select appropriate letter(s): <input type="text"/> * Other (Specify): <input type="text"/>
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* 3. Date Received: <input type="text" value="04/06/2023"/>	4. Applicant Identifier: <input type="text"/>
--	--

5a. Federal Entity Identifier: <input type="text"/>	5b. Federal Award Identifier: <input type="text"/>
--	---

State Use Only:

6. Date Received by State: <input type="text"/>	7. State Application Identifier: <input type="text"/>
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8. APPLICANT INFORMATION:

* a. Legal Name: <input type="text" value="Tri-County Electric Cooperative, Inc. (TCE)"/>	
* b. Employer/Taxpayer Identification Number (EIN/TIN): <input type="text" value="57-0263136"/>	* c. UEI: <input type="text" value="JDN7USEMDYG3"/>

d. Address:

* Street1: <input type="text" value="6473 Old State Road"/>
Street2: <input type="text"/>
* City: <input type="text" value="St. Matthews"/>
County/Parish: <input type="text"/>
* State: <input type="text" value="SC: South Carolina"/>
Province: <input type="text"/>
* Country: <input type="text" value="USA: UNITED STATES"/>
* Zip / Postal Code: <input type="text" value="29135-0217"/>

e. Organizational Unit:

Department Name: <input type="text"/>	Division Name: <input type="text"/>
---------------------------------------	-------------------------------------

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: <input type="text"/>	* First Name: <input type="text" value="Jimmy"/>
Middle Name: <input type="text"/>	
* Last Name: <input type="text" value="Bryant"/>	
Suffix: <input type="text"/>	

Title: <input type="text"/>

Organizational Affiliation: <input type="text"/>
--

* Telephone Number: <input type="text" value="803-874-1215"/>	Fax Number: <input type="text"/>
---	----------------------------------

* Email: <input type="text" value="jbryant@tce.coop"/>
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Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

N: Nonprofit without 501C3 IRS Status (Other than Institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

National Energy Technology Laboratory

11. Catalog of Federal Domestic Assistance Number:

81.254

CFDA Title:

Grid Infrastructure Deployment and Resilience

*** 12. Funding Opportunity Number:**

DE-FOA-0002740

* Title:

BIL Grid Resilience and Innovation Partnerships (GRIP)

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment

Delete Attachment

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*** 15. Descriptive Title of Applicant's Project:**

Topic-1 Project RF & Green Tree

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant

* b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:

* a. Start Date:

* b. End Date:

18. Estimated Funding (\$):

* a. Federal	<input type="text" value="4,665,803.00"/>
* b. Applicant	<input type="text" value="2,332,903.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="6,998,706.00"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

a. This application was made available to the State under the Executive Order 12372 Process for review on

b. Program is subject to E.O. 12372 but has not been selected by the State for review.

c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

Yes No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title:

* Telephone Number: Fax Number:

* Email:

* Signature of Authorized Representative: * Date Signed:

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2025

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Budget Period 1	81.254	\$	\$	\$ 636,856.00	\$ 318,428.00	\$ 955,284.00
2. Budget Period 2	81.254			1,101,966.00	550,984.00	1,652,950.00
3. Budget Period 3	81.254			1,077,610.00	538,805.00	1,616,415.00
4. Budget Period 4/5	81.254			1,849,371.00	924,686.00	2,774,057.00
5. Totals		\$	\$	\$ 4,665,803.00	\$ 2,332,903.00	\$ 6,998,706.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1) Budget Period 1	(2) Budget Period 2	(3) Budget Period 3	(4) Budget Period 4/5	
a. Personnel	\$ 11,256.00	\$ 21,818.00	\$ 22,473.00	\$ 43,648.00	\$ 99,195.00
b. Fringe Benefits	9,589.00	18,587.00	19,144.00	37,184.00	84,504.00
c. Travel	4,000.00	4,000.00	4,000.00	8,000.00	20,000.00
d. Equipment	7,990.00	21,572.00	21,572.00	36,243.00	87,377.00
e. Supplies					
f. Contractual	922,449.00	1,586,974.00	1,549,226.00	2,648,981.00	6,707,630.00
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)	955,284.00	1,652,951.00	1,616,415.00	2,774,056.00	\$ 6,998,706.00
j. Indirect Charges					\$
k. TOTALS (sum of 6i and 6j)	\$ 955,284.00	\$ 1,652,951.00	\$ 1,616,415.00	\$ 2,774,056.00	\$ 6,998,706.00
7. Program Income	\$	\$	\$	\$	\$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8.	Budget Period 1	\$ 318,428.00	\$ 0.00	\$ 0.00	\$ 318,428.00
9.	Budget Period 2	550,984.00	0.00	0.00	550,984.00
10.	Budget Period 3	538,805.00	0.00	0.00	538,805.00
11.	Budget Period 4/5	924,686.00	0.00	0.00	924,686.00
12. TOTAL (sum of lines 8-11)		\$ 2,332,903.00	\$ 0.00	\$ 0.00	\$ 2,332,903.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 636,856.00	\$ 159,214.00	\$ 159,214.00	\$ 159,214.00	\$ 159,214.00
14. Non-Federal	\$ 318,428.00	79,607.00	79,607.00	79,607.00	79,607.00
15. TOTAL (sum of lines 13 and 14)	\$ 955,284.00	\$ 238,821.00	\$ 238,821.00	\$ 238,821.00	\$ 238,821.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b)First	(c) Second	(d) Third	(e) Fourth
16. Budget Period 1	\$ 636,856.00	\$ 0.00	\$ 0.00	\$ 0.00
17. Budget Period 2	0.00	1,101,966.00	0.00	0.00
18. Budget Period 3	0.00	0.00	1,077,610.00	0.00
19. Budget Period 4/5	0.00	0.00	0.00	1,849,371.00
20. TOTAL (sum of lines 16 - 19)	\$ 636,856.00	\$ 1,101,966.00	\$ 1,077,610.00	\$ 1,849,371.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:	<input type="text"/>	22. Indirect Charges:	<input type="text"/>
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23. Remarks:

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
--	--	--

4. Name and Address of Reporting Entity:

Prime SubAwardee

* Name:

* Street 1: Street 2:

* City: State: Zip:

Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency: <input type="text" value="Department of Energy"/>	7. * Federal Program Name/Description: <input type="text" value="Grid Infrastructure Deployment and Resilience"/> CFDA Number, if applicable: <input type="text" value="81.254"/>
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8. Federal Action Number, if known: <input type="text"/>	9. Award Amount, if known: \$ <input type="text"/>
--	--

10. a. Name and Address of Lobbying Registrant:

Prefix * First Name Middle Name

* Last Name Suffix

* Street 1 Street 2

* City State Zip

b. Individual Performing Services (including address if different from No. 10a)

Prefix * First Name Middle Name

* Last Name Suffix

* Street 1 Street 2

* City State Zip

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* Signature:

* Name: Prefix * First Name Middle Name
* Last Name Suffix

Title: Telephone No.: Date:

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PROJECT TITLE: Tri-County Power Meter Squared & Green Tree

Concept Paper Identification Code : TA1-050-E

FOA: BIL – Grid Resilience and Innovation Partnerships (GRIP) /Funding Opportunity Announcement (FOA) Number: DE-FOA-0002740 FOA

TOPIC AREA: TOPIC 1= 40101(c): Grid Resilience Grants

TECHNICAL CONTACT:

- Jimmy Bryant
- Jbryant@tce.coop
- (803) 655-1009

BUSINESS CONTACT:

- Frank Furtick
- ffurtick@tce.coop
- (803) 655-1022

TEAM MEMBER ORGANIZATIONS: Tri-County Electric Cooperative, Inc. (TCE) & Aerinet Solutions Corp

Senior Key Personnel & their organizations:

- **Tri-County Electric:** Frank Furtick, Jimmy Bryant, and Airfineil Whitmore
- **Aerinet Solutions Corp:** Alvin Razon (ex-DOE EERE Technology Manager), Dr. Ranga Pitchumani (ex-DOE EERE Grid Integration and CSP Program Director and Chief Scientist), Tracey Klepic, Michael Barto, & Marlon Umali

PROJECT LOCATION(S): South Carolina - Portions of Calhoun, Orangeburg, Lexington, Richland, Sumter, and Kershaw counties. The following zip codes: 29018, 29030, 29044, 29047, 29048, 29052,29053,29059,29061,29078,29115,29118,29128,29135,29142,29160,29163,29168, 29172, 29223

CONFIDENTIALITY: *THIS PROPOSAL CONTAINS CONFIDENTIAL INFORMATION. ANY USE, REPRODUCTION OR DISCLOSURE FOR PURPOSES OTHER THAN EVALUATION OF THE PROPOSAL IS STRICTLY PROHIBITED.*

1. PROJECT OVERVIEW

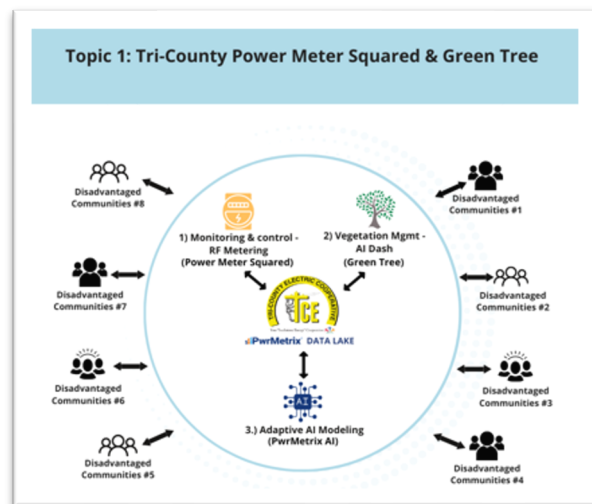
Background: Tri-County Electric Cooperative (TCE) was founded in 1940 as a not-for-profit electric distribution cooperative, to provide electric service to the rural communities where electricity was previously unavailable. TCE's goal is to provide cost-effective, reliable electricity, and energy services in a safe and efficient way to improve quality of life for TCE members (customers) and their communities. Electric power is provided to approximately **18,076 meters** in Calhoun, Orangeburg, Richland, Lexington, Kershaw, and Sumter Counties in central **South Carolina** by approximately **2,740 miles of distribution line** serving **17 zip codes in 19 counties**.¹ TCE serves some of the **most economically depressed and disadvantaged communities**. According to the Climate Energy and Justice Screening Tool CEJST², **more than 90%** of TCE's service area **are low-income and high-energy burden areas**. TCE provides several life-saving services and programs to the area, providing vouchers for energy bills and lifeline tools, and invests in quality paying jobs to enrich the lives of South Carolinians. To rapidly accelerate and increase the reliability and resiliency of TCE's electric system, help improve the lives of disadvantaged communities, reduce the likelihood and consequence of impacts to the electric grid due to extreme weather, wildfire, and natural disaster, and achieve the DOE GRIP FOA objectives, TCE is proposing a **grid transformational project** called **Power Meter Squared & Green Tree** with the following solutions:

1. Advancing RF (Radio Frequency) **meters** (Smart Monitoring and Control)
2. Modernizing **vegetation management software with AI** (Artificial Intelligence)
3. Implementing advanced **data analytics AI software** (Adaptive AI modeling)

Technical details are discussed under "Section 2: Technical Description, Innovation and Impact" of this proposal. TCE's vision of the project is shown on the graphic on the right.

Project Goal: TCE's Project Power Meter Squared & Green Tree has the following goals and targeted improvements that are relevant to the specific objectives of **Topic Area 1: Grid Resilience (40101c)**:

- Reduce the likelihood and consequence of **impacts to the electric grid** due to extreme weather, wildfire, and natural disaster.
- Generate **regional** and **SOUTH CAROLINA community benefit** in reducing the likelihood and consequences of disruptive events.
- Address comprehensive **transformational distribution technology solutions** that will mitigate hazards across state (SOUTH CAROLINA) and within a community, including



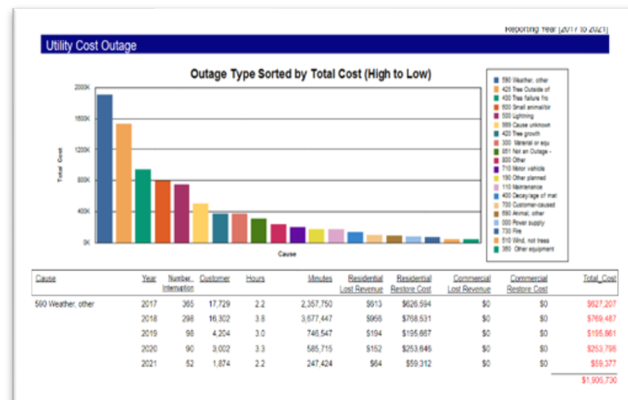
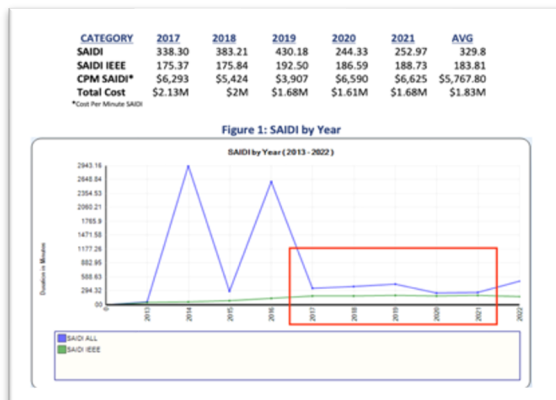
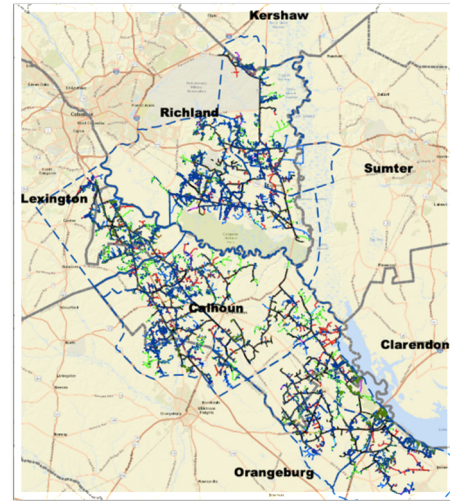
¹ <https://tri-countyelectric.net/coverage-area>

² <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>

wildfires, floods, hurricanes, extreme heat, extreme cold, storms, and any other event that can cause a disruption to the power system.

- Provide significant **economic and justice benefits** to SOUTH CAROLINA communities, leverage capital investment, and lead to scalable and repeatable solutions for other entities.

DOE Impact: The DOE funding will have a dramatic impact on TCE’s **underprivileged and disadvantaged members**. TCE has an average of **6.8 consumers per mile** and serves some of the **most economically distressed** areas in South Carolina. From the **Climate and Economic Justice Screening Tool**³, TCE serves the following **disadvantaged census blocks** (see image): 4585970902 Kershaw County; 45079012000 Richland County (Eastover-Lower Richland); 45079011800 Richland County (Hopkins/Gadsden- Lower Richland); 450107950400- Calhoun County (Fort Motte/Lone Star); 45075010400 Orangeburg County (Elloree/Providence); 45075010300 Orangeburg County (Santee/Vance); 45075010200 Orangeburg County (Holly Hill and location of the **Santee Indian Organization**); and, 45063020801 Lexington County (Horses Neck). TCE has **more miles of line per consumer** than suburban utilities; therefore, has a **higher cost per mile per member** to provide electricity. Without DOE funding, the \$6M+ implementation of these upgrades will slowly take several years with drastic rate increases that would burden TCE’s underprivileged members. From 2017 to 2021, analyzing **Lost Revenue and Restoration costs for outages** alone, TCE spends an average of **\$1.83M** each year (see Figure 1 below). With inflation, this cost will likely triple over the next ten years without system improvements. These cost increases will add to the energy burden on underprivileged families and communities and will likely result in an electricity bill increase for each consumer of TCE. DOE funding enables TCE to implement these upgrades in an **accelerated time frame**, which not only saves on outage restoration costs but also results in more stable electric bills for underprivileged TCE members. By putting money back in their pockets, TCE **enhances the quality of life for its members**. Figure 1 – Yearly Cost Outages by Cause Type.



³ <https://screeningtool.geoplatform.gov/en/#/33.47/-97.5>

It costs TCE an average of **\$100,000 per mile of 1/0 single phase line to install new wires**. TCE has an average of 6.8 meters per mile and serves some of the **most economically distressed areas** in South Carolina. This lower density means that **TCE's members will have to pay more** of the direct costs spent to improve service. Thus, the better the reliability, the higher the benefit, and less direct cost for outage recovery and loss of electricity experienced by the **underprivileged TCE members**. While TCE will proceed even without funding, **DOE funds allow for a rapid expansion of programs, reduction of implementation costs, acceleration of deployment, larger scale implementation, and enable the achievement of the Presidential goals of clean energy transition**. Without DOE funding and limited funding (baseline scenario), TCE is estimated to implement the proposed project solutions **within 9 years**. Labor cost is projected to increase by **5%/year and equipment cost by 10%/year**. In comparison, with the additional DOE funding, TCE is expected to complete the same solution in **5 years instead of 9 years**, thus, significantly **accelerating the timeline by 4 years**. This results in significant **reduction of up to 15% labor and 40% equipment cost** if the project is accelerated by 4 years with the help of DOE funding. Ultimately, the DOE grant funding will allow TCE to catalyze and accelerate the implementation of holistic-agile technology solutions, which, without the funding, would take an additional 4 years to even consider due to budget constraint.

Community Benefit Plan - Job Quality & Equity: Below is only the summary from TCE's comprehensive Community Benefit Plan with **SMART goals**. For more details, read the separate community benefits document, **"Cbenefits.PDF"**, submitted as part of the FOA document requirements. **The following details meet the tech-review CRITERION 4 – Community Benefits Plan.**

TCE's project is expected to bring numerous benefits to both the local community and DACs where more than **90% are low-income and high-energy burden areas**. These benefits include to reducing the likelihood and consequences of disruptive events, reducing the duration, frequency, and impact of power disruptions, increasing access to clean power, and supporting minority business enterprises in the Calhoun, Orangeburg, Richland, Lexington, Kershaw, and Sumter Counties in central **South Carolina**. Additionally, TCE's Project Power Meter Squared & Green Tree will provide **pro-active and comprehensive solutions** to its electrical grid through deployment of Smart Grid technologies such as: smart meters, advanced vegetation management software and data analytics with Artificial Intelligence (AI), that will benefit the communities and increase power **reliability during climate disasters**. Consumers will benefit from the RF meters that can notify TCE about power outages before customer calls in. TCE proposal to deploy RF meters and build a self-healing network will transition the community to provide real-time outage notification, forecast outage risks and provide consumer demand reduction programs, thus, making more green jobs, increasing community resiliency, and saving lives during climate disasters. This project will produce, at a minimum, **2 full time jobs as meter technicians** to replace existing meters with RF meters. Estimated direct contribution to the economy of disadvantaged communities is **approximately \$499,200** (annual salary meter technician \$48,920 x 2 individuals x 5 years). TCE is expected to bring outside capital investment and partner commitments, from South Carolina Business Development, Calhoun and Orangeburg County, and the SC Power Team, to add more high-quality paying jobs to the area. Hounen Solar

is building a manufacturing solar plant, **hiring 200 employees**, and bringing **clean energy jobs** to the area. TCE provides energy audits and whole house weatherization assessments that are financed with on-bill financing. These low-cost loans remove the need for upfront capital that many members cannot afford. **TCE SMART goals** for this project include demonstrating the model's ability to improve residential energy efficiency at scale; **reducing wholesale power costs by 10% per month**; and **exceeding 10% energy reduction**. Finally, **Project Power Meter Squared & Green Tree** will provide **life-saving services** to several of the members who are on life-saving medical devices.

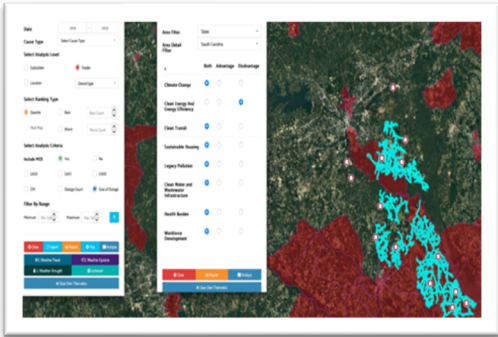
TCE's plan to attract, train, and retain a skilled labor force with strong labor standards, ensure workers' free and fair chance to **join a union** that includes the following: negotiate formal agreements with both Calhoun and Orangeburg County to detail partner obligations and create good-paying jobs. This coordinated effort is forecasted to bring a **12-15% increase in jobs over the next 3 years**. TCE provides a **"Return After Retirement"** offering to help bridge the knowledge gap between new positions and senior employees. Several TCE employees that have retired return to TCE to support the **knowledge transfer** and train new employees. TCE invests in continual workforce training to ensure an educated job force. TCE's line worker paid apprenticeship accepts applicants who have recently graduated from high school. TCE staff works with Orangeburg-Calhoun **County Technical College** to provide line worker classes that include donating a training yard with poles and running pole top training classes to ensure students have real-world experience. **The state-owned historically black college, Denmark Technical College** also conducts joint teaching with TCE on how to install wire, work with transformers and safety procedures in a real-world scenario. Lastly, TCE collaborates with **Northwest Linemen College** to accelerate line workers for higher certification and more advanced training.

The potential partners that will support these objectives are the following: South Carolina Business Development, Calhoun and Orangeburg County, SC Power Team, County Technical College, Denmark Technical College, South Carolina Business Development, Northwest Linemen College, Finemark National Bank and Trust, Santee Cooper, Central Electric Power Cooperative, TriCoLink, OCAB Community Action Agency, Aiken Barnwell Counties Community Action and Wateree Community Action, and various communities.

TCE's strategy for sharing and maximizing the project's benefits across disadvantaged communities and how resident and community leadership engages throughout the project's duration include TCE supporting low-income energy collaborations with the community leaders and organizations to help disadvantaged households pay for members' energy costs. **Aiken Barnwell Counties Community Action and Wateree Community Action** receive TCE's financial support for the **South Carolina's LIHEAP Program** to help the state's low-income households pay the price of home energy and to increase energy self-sufficiency. TCE is collaborating with **OCAB Community Action Agency** to eliminate the causes and conditions of poverty by developing strategies to ensure a better quality of life for disadvantaged and underserved residents. The local communities actively partners with TCE to reduce energy burden and reduce health issues by using more renewables. There are **life-saving energy vouchers** that TCE receives to pay for energy heating and cooling. **Project Power Meter Squared & Green Tree** will increase the reliability in these most desperate areas and provide faster restoration during days of excessive weather disruption. TCE has 2,981 members signed up to

receive “Beat the Peak” program alert to reduce electricity during high peak demands. Project Power Meter Squared & Green Tree plans to increase these savings **by 2% every year** by providing better technologies to help manage the peak alerts. TCE’s project has no potential long-term constraints on the community’s access to natural resources and tribal cultural resources.

The TCE climate resilience strategy that accounts for climate impacts and extreme weather patterns includes deploying Smart Grid technologies and advanced data analytics AI with Project Power Meter Squared & Green Tree will reduce faults that may lead to wildfires, reduce outage duration time, and reduce numbers of consumers affected by extreme weather thus, positively affecting members’ **quality of life**. Several counties experience **higher-than-normal outages** due to excessive wind, flooding, wildfires, or hurricanes. These areas have higher than average **health and energy burdens** according to CEJST. This project will provide **life-saving services** to several of the members who are on life-saving medical devices. Currently, there are 81 members on these devices.



In this (b) (4)



Several of these areas require medical devices 24/7 and thus cannot afford long outage durations. TCE will monitor service areas where **wildfire** and **outage cost** are directly impacting disadvantaged communities (*image on the right*).



TCE is constantly looking for ways to increase resiliency. TCE plans to provide **affordable clean energy** to deal with climate events by working with members to manage distributed energy and increase the use of renewable energy. TCE plans to **increase low-cost access to capital and reducing greenhouse emissions** with “Help My House” program. This is a TCE residential energy efficiency program that helps members take advantage of new energy-efficient systems. In addition, energy audit can now be covered with tax incentives and these programs can increase the purchase of energy efficiency items. New federal income tax credits are available through 2032 providing up to **\$3,200 annually** to lower the cost of **energy-efficient home upgrades by up to 30%**. Improvements such as installing heat pumps, heat pump water heaters, insulation, doors, windows, electrical panel upgrades, and home energy audits. Help My House was designed to address the special challenges and opportunities for disadvantaged members to **save energy, cut household utility bills, and reduce greenhouse gas emissions**. By driving consumer demand with the combination of low-cost funding and federal incentives job, growth in these areas will continue to grow.

2. TECHNICAL DESCRIPTION, INNOVATION, & IMPACT -

Relevance and Outcome: TCE's project is relevant to the following overall DOE GRIP FOA strategic goals. *These meet tech-review CRITERION 1 – "Impact, Transformation, and Technical Merit"*

- **Transform Community Resilience:** By deploying Project Power Meter Squared & Green Tree solutions, TCE aims to increase community resilience and improve TCE's electric grid's ability to avoid, mitigate, and recover from major disruptions and plan for future disruptions with Smart technologies, predictive vegetation management, and AI analytics.
- **Catalyze Investments & Advance Community Benefits:** Over the past decade, TCE has successfully and independently leveraged private sector and non-federal capital to build impactful technology and infrastructure in **low-income and high-energy burden areas**, which represents **more than 90%** of TCE's service area. In this project, TCE plans to catalyze more private investments by improving the reliability, affordability, and safe supply of electricity to **18,000 rural customers** and **disadvantaged communities** resulting in more economic benefits and energy equity.

TCE meets the TOPIC 1 Technical Approaches of interest:

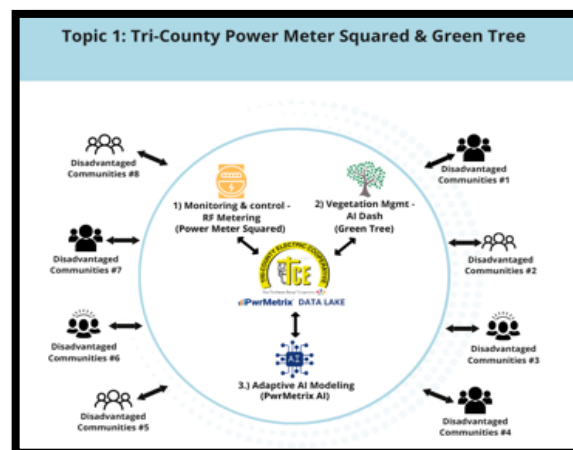
- Increase the ability to reduce the likelihood and consequences of impacts to the electric grid due to extreme weather, wildfire, natural disaster, and other disruptive events.
- Demonstrate a comprehensive and effective strategy to mitigate hazards across South Carolina and within TCE communities.
- Address **community transformation** and leverage **capital investments**.

TCE project meets Topic 1 list of eligible funding (activities, technologies, equipment, and hardening measures) to reduce the likelihood and consequences of disruptive events particularly in the areas of vegetation management, monitoring and control technologies, and advanced modeling technologies.

To achieve these DOE FOA goals and objectives, TCE's Project Power Meter Squared & Green Tree plans to implement and deploy the solutions below. *These meet tech-review CRITERION 1 - supporting TOPIC 1 "objectives and desire outcomes and address priority investments."*

1. Modernize outdated meters with advanced RF (Radio Frequency) **meters**
2. Upgrade **vegetation management software with AI** (Artificial Intelligence)
3. Implement advanced **data analytics AI software** (monitoring and control/adaptive AI modeling)

TCE Project Power Meter Squared & Green Tree's visual representation of the solution and components is *shown on the right*. TCE seeks to deploy a **holistic-agile technology solution** and meet the DOE GRIP TOPIC 1 primary objectives. One of the **SMART metrics** of TCE's project is to decrease the outage duration (System Average Interruption Duration Index, **SAIDI**⁴), the outage frequency (System Average Interruption Frequency Index, **SAIFI**), and to expedite



⁴ <https://www.cooperative.com/programs-services/bts/Documents/Advisories/advisory-saidi-sept-2017.pdf>

restoration times (Customer Average Interruption Duration Index, **CAIDI**). In addition, TCE's goal is to enhance the **visibility and autonomous control** of the TCE electrical system with the power of advance data analytics, AI (Artificial Intelligence) software, and sensors. Moreover, TCE seeks to **pro-actively lower the cost of outages** (loss of revenue and restoration cost) with the new technology and provide significant **economic and justice benefits** to SOUTH CAROLINA communities, **leverage capital investment**, and lead to scalable and repeatable solutions for other entities. Ultimately, TCE's end goal is to modernize the electric distribution system and unlock significant public benefit to improve **safety, reliability, resiliency, and affordability** of electric service to TCE members (customers).

PROJECT CHALLENGES OR NEEDS

1. **Old PLC (Power Line Carrier) metering system** - TCE has recently **deployed a fiber network** on the cusp of major growth. The availability of symmetrical **1GBps speed** has opened the door to myriad of possibilities for the cooperative and its consumers (members). One possibility is the addition of a state-of-the-art intelligent and capable **Radio Frequency (RF) mesh metering system**. TCE's **existing PLC** metering system has been sufficient for many years, but an **advanced metering system** is needed to provide the co-op the capability to detect outages even before members call to report them. TCE needs a **modern edge technology** to expedite outage restoration times by increasing the accuracy of predicted outages and providing substantially more data to our Outage Management System (OMS). TCE needs an advanced monitoring of grid with **advanced data collection** that alerts operations to areas where possible faults can lead to increased fire risk and reduce the consequences of impacts to the electric grid due to extreme weather, wildfire, and natural disaster. TCE needs to improve **outage-reliability indices/metrics**: outage duration **SAIDI** (System Average Interruption Duration Index), outage frequency **SAIFI** (System Average Interruption Frequency Index), and restoration time **CAIDI** (Customer Average Interruption Duration Index). TCE needs to increase monitoring and control by increasing accuracy and frequency of meter reads, generate more accurate bill, and increase the notification of outages, even without the member being aware of the outage.
2. **Traditional Vegetation Management** - TCE needs to enhance the management and evaluation of right of way ROW. Traditional ROW management is **exceptionally time consuming**. Various circuits are cut on a rotational schedule, and hot spots are managed as they are discovered. However, sometimes these hot spots are not discovered until there is a consumer complaint of blinking lights or disturbances. TCE needs to implement an intelligent solution with advanced technology that incorporates **satellite imagery** to evaluate the encroachment of vegetation from all angles (adjacent, above, and below) of the power lines. TCE needs to **integrate the data** from vegetation management system with the other siloed systems (OMS, AMI, SCADA etc.) to enable **predictive and prescriptive AI data analytics** and actionable intelligence.
3. **Inadequate forecasting capability** - TCE needs to enhance real-time and secure data connectivity – TCE and most electric cooperatives rely on “best of breed” approach where we select different vendors for various systems (e.g., SCADA Supervisory Control and Data Acquisition, AMI Advance Metering Infrastructure, OMS Outage Management System etc.), compared to **expensive enterprise systems** purchased by larger utilities. Thus, secured and

standardized **data interoperability** or connecting siloed data from different systems to provide fast and secure data analytics becomes a challenge. As a result, implementing adaptive modeling capability by aggregating real-time data from various systems (e.g., SCADA, AMI, OMS, etc.) to predict reliability and outages also becomes a challenge.

PROPOSED SOLUTIONS

1. **Monitoring and Control (RF Meters)** - TCE Power Meter Squared plans to upgrade **18,500 existing PLC meters and communication devices** to advanced **AMI Radio Frequency metering technology**. RF Metering consists of the meters and an RF collection point. The meters communicate with the collection points via radio frequency. The collection points are either routed back to our office via cell service, radio, or in our case an optical fiber network. RF meters are the latest in innovative metering technology and provide advanced capabilities such as **real-time monitoring** of member service (intelligent outage detection with super capacitor allowing meters 60 seconds of communication time after power is lost), **remote disconnect, data analytics** (demand, voltage, power quality etc.), **demand response** (5,15,30 or 60 minute interval data stored up to 35 days' worth of data in each meter for determining TOU Time of Use or demand billing structures), **demand load shedding, personal energy management** (off peak charging of EV by using ZigBee smart energy profile), and **software integration** with leading Engineering/Operations application.⁵

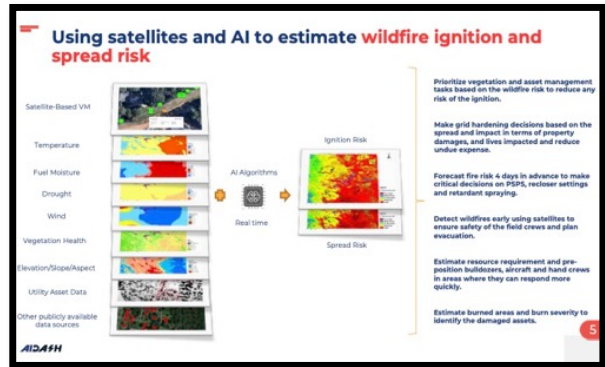
The new meters will identify temporary disruptions of power and allow optimizations that **strengthen** the distribution system and **improve resiliency** to widespread outages such as those caused by wildfires. The new smart meters will be responsive to elderly rural residents through alert mechanisms with enhanced capabilities to pro-actively communicate outages to grid operator before member reports issues. Detailed meter data will allow for **improved reliability, automatic transfer monitoring**, and the benefit of adding an automatic transfer switch. Advanced smart meters allow the option for **load control** in times of excess grid demand enabling opportunity to create **grid-interactive efficient buildings**. TCE has substations and metering points with fiber connections that can act as **backup communication system** in case the radio transmission is interrupted. Member access to greater detailed data will encourage **better energy habits** that can result in **lower energy bills**.

TCE Power Meter Squared will leverage detailed smart meter data on infrastructure usage and demand to pro-actively focus areas for system improvement. Savings to the cooperative are passed to members and allow rates to remain low. The new meters will empower TCE with the ability to have **integrated voltage** through use of quality end-point data and enhance the effectiveness of **automated controls**. TCE's new meter will allow conservation voltage reduction (**CVR**) by utilizing fast and dynamic meter data. Supervisory control and data acquisition (**SCADA**) will improve through the visual indication of active and inactive line segments. Outage Management System (**OMS**) will improve with the meter data provided rather than waiting for members to manually report outages. Finally, by using the **PwrMetrix AI platform**, TCE will **leverage the real-time capability of TCE's new RF meters** as remote sensors to provide real-time information on **pre-wildfire, active, and post-wildfire scenarios**

⁵ <https://www.landisgyr.com/webfoo/wp-content/uploads/2012/12/RFMeshBrochure.pdf>

and provide detailed outage data and maps for better communication to members and community, thus maximizing the impact of federal funds.

2. **Advanced Vegetation Management (AI Dash)** - Project Green Tree will streamline right of way management by implementing **AI-Dash**, an intelligent software solution that incorporates **satellite imagery** (see image) to evaluate the encroachment of vegetation from **adjacent, above, and below the power lines**. This solution measures and records the proximity of growth in relation to the power lines and reports problem areas as they become evident. Project Green Tree will enhance the management and evaluation of Tri-County Electric Cooperative's Right of Way ROW. Traditional ROW management is exceptionally time consuming. Various circuits are cut on a rotational schedule, and hot spots are managed as they are discovered. However, sometimes these hot spots are not discovered until there is a consumer complaint of blinking lights. **Traditional right of way management can also be inefficient** in finding danger trees that are outside of right of way, leading to torn down lines and typically lengthy outages when these danger trees do fall. Project Green Tree can solve both issues by **combining satellite imaging and artificial intelligence** to locate and prioritize **excessive growth and dying trees** that may be danger trees.



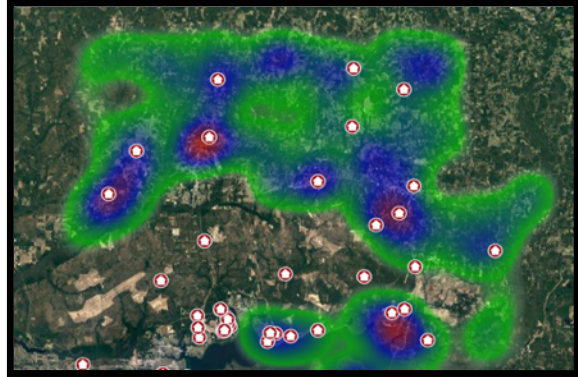
AI Dash can prioritize vegetation and asset management tasks based on the wildfire risk to reduce any risk of the ignition; make grid hardening decisions based on the spread and impact in terms of property damages, and lives impacted and reduce undue expense; **forecast fire risk 4 days in advance** to make critical decisions on recloser settings and retardant spraying; detect wildfires early using satellites to ensure **safety of the field crews** and plan evacuation; estimate resource requirement and pre- position bulldozers, aircraft and hand crews in areas where they can respond more quickly; and estimate burned areas and **burn severity** to identify the damaged assets.⁶ Project Green Tree will improve **right-of-way clearing and vegetation management** with AI Dash software, combined with PwrMetrix AI predictive analytics and state-of-the-art AI adaptive visualization technology.

Accelerating and Expanding our Planned Activities - TCE **will augment and expand existing work plans, as required by the FOA**, by deploying the following advance technologies as part of TCE holistic-agile solution.

3. **Adaptive AI Modeling (PwrMetrix AI, FireMetrix)** TCE will deploy **PwrMetrix AI** platform to enable adaptive modeling and real-time data analytic (b) (4) [redacted] enable **descriptive**

⁶ <https://www.aidash.com/industry/utilities/>

(historical), **predictive** (future), and **prescriptive** (optimization) analytics.⁷ TCE will implement **adaptive modeling** capability by aggregating real-time data from various systems (e.g., SCADA, AMI, OMS, etc.) to predict reliability and outages with higher probability and accuracy with PwrMetrix AI **(b) (4)**



TCE will deploy a new module within PwrMetrix AI engine called **FireMetrix**, specifically designed to give TCE a fast and state-of-the-art AI/ML data analytics that learns 24/7 to provide **wildfire situational awareness, and predictive analytics**. FireMetrix will maximize the real-time capability of TCE’s new RF meters as remote sensors to provide real-time information on pre-wildfire, active, and post-wildfire scenarios. TCE line crew and engineers are **highly knowledgeable about TCE territories**, with a thorough understanding of each area’s unique characteristics such as the areas that are **prone to wildfires**. TCE has connectivity model of the meters, transformers, circuits, and substations that gives **accurate estimation and location** of meters that are out of power due to wildfire. TCE will establish a **new innovative source** of reliable and consistent **24/7 wildfire data**, and cutting-edge analytics by combining TCE’s inherent knowledge of distribution grid with the real-time capability of RF meters, PwrMetrix AI core engine (data aggregator), AI/ML data analytics (predictive analytics), and visual platform layering multiple sources of data. TCE will add **real-time and secure data connectivity**. TCE and many electric cooperatives rely on “best of breed” approach where we select different vendors for various systems (e.g., SCADA, AMI, OMS etc.), compared to expensive enterprise systems purchased by larger utilities. Thus, data interoperability or connecting siloed data from different systems to provide fast and secure data analytics is a challenge in terms of cyber security and fast collection of data. TCE will improve **real-time visualization and GIS mapping of data analytics** (reliability/ resiliency metrics and cost) with time series analysis by day, month, and year and **standardize the real-time interoperability or connectivity of data (MultiSpeak/CIM/DOE ODIN Outage Data Initiative Nationwide)** to provide advance AI/ML analytics for predicting outage and wildfire events, and prescriptive solutions for operations and planning purposes. **TCE is a member of the White House call-to-action⁹ and DOE ODIN Outage Data Initiative Nationwide (TOPIC 1 Program Directive)** providing comprehensive interoperable power outage data that enables utilities and others to exchange data freely with designated stakeholders at all levels —

⁷ <https://aerinet.com/ai/>

⁸ <https://aerinet.com/2021/03/13/using-ai-tools-to-get-ahead-of-future-issues/>

⁹ <https://www.whitehouse.gov/ostp/news-updates/2022/11/22/a-white-house-call-for-real-time-standardized-and-transparent-power-outage-data/>

helping restoration, reliability, risk mitigation, emergency response, and more.¹⁰ (b) (4)

his facilitates rapid trouble call handling, outage analysis and prediction, crew management, and improves the reliability analysis and reporting.

Feasibility & Access to Necessary Infrastructure: (following details meet tech review CRITERION 1 – “sufficient technical detail to demonstrate that the proposed project is technically feasible and would likely result in the described smart grid benefits.”): TCE is confident of its **83 years** of experience in the power industry business, skilled work force (line crew, technicians, and contractors), technical resources (engineers and consultants), consistent work plans, specialized field equipment, hardware and software, and access to power system infrastructures to successfully achieve the project outcomes and performance targets. Given TCE’s established programs and decades of experience in distribution operation and technologies, the project is **foundationally viable, feasible and in a position of prime readiness** to successfully implement the project timeline based on the SOPO and work plan. TCE has the IT resources to host the PwrMetrix AI Analytics, AI Dash, and technical resources to implement the modernization of the smart meters. TCE also has facilities in place to manage the purchase and deployment of smart meters. As an energy provider, TCE has the **facilities in place to meet all regulatory requirements** for resiliency, security, cybersecurity, and infrastructure protection. TCE hold strong relationships with the member communities to communicate the value of proposed solutions.

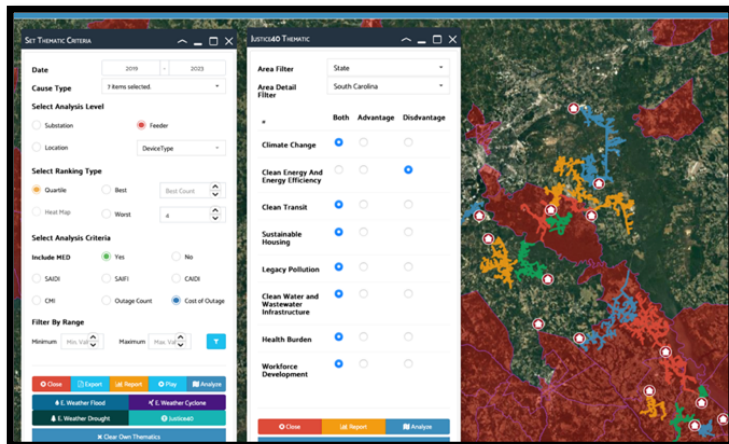
The readiness, viability, and expected timing of the project - TCE’s 2023-2026 Construction Work Plan is **shovel ready** and approved by TCE’s Board of Directors for implementation. Financing for the cost share portion of the grant is also ready. Project Meter Squared is **ready to deploy** as soon as the necessary equipment are acquired after funding is received from the DOE. This project is expected to be completed within four (4) years of receiving the necessary equipment. Because AI Dash and PwrMetrix AI are commercially readily available, tested, and validated software for data analytics, these can be implemented seamlessly after the company receive the GIS shapefiles, outage information, and meter data from TCE.

Innovation & Impacts: (the following details meet tech review CRITERION 1 – “potential impact of the project to catalyze additional private sector investments and/or non-federal public or regulated capital.”): TCE Project Power Meter Squared plans to upgrade 18,000 existing PLC meters to advanced **Radio Frequency metering technology** served by **13 substations, 50 distribution circuits**, and affecting **6 disadvantaged counties**. Compared to existing TCE meters, the new RF meters are the latest in innovative metering technology and provide **real-time monitoring of member service**. New meters will act as remote sensors and allow TCE to pro-actively visualize and monitor areas that have high potential threats of wildfires with **PwrMetrix & FireMetrix apps**. New meters will be responsive to the needs of elderly rural residents through alert mechanisms with enhanced capabilities to communicate outages to grid operator before

¹⁰ <https://aerinet.com/2021/08/16/department-of-energy-and-ornl-lab-hires-aerinet-solutions-to-promote-outage-communication-for-the-public-good/>

member reports issues. New meters allow the option for **load control** in times of excess grid demand enabling opportunity to create grid-interactive efficient buildings. Member access to greater detail data encourage **better energy habits** resulting in **lower energy bills**. Savings to TCE are passed to members and allow rates to remain low. New RF meters gives TCE the ability to have **integrated voltage**, enhance the effectiveness of **automated controls**, and implement Conservation Voltage Reduction (CVR). New meter data provide detailed outage maps for better communication to members and community. Project Green Tree (AI Dash) plans to enhance the management and evaluation of TCE right of way (ROW). **Traditional** ROW management is exceptionally **time consuming**. Traditional ROW management can also be **inefficient** in finding danger trees that are outside of right of way, leading to torn down lines and typically lengthy outages when dangerous trees fall. Project Green Tree can solve both issues by **combining satellite imaging and artificial intelligence** to locate and prioritize excessive growth and dying trees.

Innovative Grid benefits from PwrMetrix AI, compared to existing excel analytics, includes a fast, secure, and reliable visualization and predictive data analytics tools (b) (4) *see sample map below* illustrating the affected (multi-colored streets) feeders and substations (red polygon shape) by



severity of cost of outages and Justice40 burden areas (dark red). Using the results of AI analytics, TCE can make rapid **justifiable decisions to prioritize resources** (such as scoping highest priority power lines, optimal locations for smart technologies to best inform grid outage management and prevention), **pinpoint distressed areas** (predicting outage locations)¹¹, calculate return of investment (ROI) on upgrades, predict and assess grid

impact from natural hazards (wildfires, hurricanes, flooding etc.) to enable safety and security, and ensure all areas and communities within their service territory receive the most resilient and reliable electricity. Project Power Meter Squared & Green Tree plans to produce **yearly reports to DOE** on the reliability, cost, and weather events overlaid on top of Justice40 maps as part of the **SMART milestones and deliverables**. This meets the requirement of TOPIC 1 in improving the visibility of the electrical system to grid operators through data analytics, **SMART metrics**, and software.

Project Power Meter Squared & Green Tree's **success is verified** with **SMART metrics** by monitoring the **monthly, quarterly, and yearly** resulting **reliability metrics (SAIDI, SAIFI, CAIDI)** on the upgraded smart meters, feeders, and substations. The present and future resulting

¹¹ <https://aerinet.com/2021/03/13/using-ai-tools-to-get-ahead-of-future-issues/>

reliability metrics are monitored and compared by using the patented PwrMetrix AI system that provides detailed information by meter location, feeder, substation, time of year, outage cause, cost of outages, county, community, Justice40, and weather. Reduced outage duration and frequency will also result in **increased satisfaction of the members** and **increased revenue** for TCE. Results of this project improve TCE's delivery of electricity to its community, South Carolina, Tribal, and regional reliability, and resilience. Project Power Meter Squared & Green Tree is important to the TCE community and South Carolina because **reduced fault location time, reduced outage duration time, and reduced affected consumers** have a direct correlation with the **quality of life that TCE members experience**. With the reliance on electricity for air-conditioning in the summer to keep TCE members cool, resistive heating in the winter to keep TCE members warm, refrigeration to keep TCE members' food preserved, and the need for electricity to keep TCE members connected to the world via the internet, **electricity is more than a commodity, it is a necessity**.

The following details meet the tech-review CRITERION 1 – How the project supports State, local, Tribal, regional, and national resilience, decarbonization, or other energy goals, strategies, and plans? Project Power Meter Squared & Green Tree plays a pivotal role in supporting TCE's service territory (where more than **90%** are **low-income and high-energy burden areas**), State of South Carolina, local, tribal, regional, and national resilience, decarbonization, energy goals, strategies, and plans. TCE community and the State of South Carolina **collaborate on improving grid resiliency with local, state, and other cooperative** entities to provide **enhanced reliability**. The **SC State Energy Office** details, in their most recent State Energy Plan, how electric cooperative members **share a higher cost burden** than other urban South Carolina residents. The average SC cooperative member pays on **average \$3,300 a year for their energy**¹² compared to other consumers who pay about **\$3,050 per year**. South Carolina State Energy Office is working with TCE and other distribution cooperatives to increase grid modernization tools to decrease outages, increase reliability, and decrease future costs. This is why TCE's Project Power Meter Squared & Green Tree is vital for this area. By providing advance monitoring and control, proactive vegetation management, and predictive AI/ML data analytics, South Carolina communities will reduce the likelihood and consequence of impacts to the electric grid due to extreme weather, wildfire, and natural disaster, and provide comprehensive transformational distribution technology solutions that will mitigate hazards across South Carolina, and within the disadvantaged communities. TCE's project supports local (**Calhoun, Orangeburg, Richland, Lexington, Kershaw, and Sumter Counties**), Tribal (**Santee Indian Organization Holly Hill South Carolina**), community and regional resilience with the following endeavors:

- Improve the **location of hot spots and allow more efficient management of right of way** ROW - this benefits the TCE ROW crews by pro-actively identifying problems in advance. This will improve our members' experience by reducing the flickering lights. Also, this solution is designed to **identify dying trees**. This will allow TCE to pro-actively eliminate dying trees to reduce future outages. The combination of these two applications will **gain customer satisfaction** by improving power quality and reliability of service.

¹²<https://www.energy.sc.gov/files/Energy%20Plan%2003.02.2018.pdf>

- Improve meter reading accuracy and speed - the faster, more reliable communication with the members' meters will allow more frequent reads, fewer estimations of read, and real-time updates of outages. The benefits of this system to our members are the enhanced response times to outages and more accurate location of outages. TCE old system can overpredict outages and increase the zone line workers must search for the outage cause. The result of TCE project will also allow TCE to have more **accurate reliability metrics (SAIDI, SAIFE, CAIDI)**, because the actual times and number of members involved in an outage will be more accurately defined. PwrMetrix AI allows TCE to track reliability metrics by feeder, cause, time of year, weather, etc. and **quantify the cost savings effect of these improvements**. TCE's project will assist in decreasing the consequences of disruptive events.
- Implement a transformational and comprehensive solution (state-of-the-art hardware and software AI solutions) to mitigate hazards across a region and within TCE's counties and communities - TCE's aggressive goal is to **transform and modernize** our grid into a **self-healing, autonomous, controllable, smart, and interactive electric system**. TCE's project's success is verified by monitoring the **monthly, quarterly, and yearly** resulting **reliability metrics (SAIDI, SAIFI, CAIDI)** on the upgraded feeders and substations. The present and resulting reliability metrics are monitored and compared by using the patented **PwrMetrix AI system** with **FireMetrix app** that provides detailed information by feeder, substation, time of year, outage cause (wildfire), cost of outages, county, community etc. Results of this project improve TCE's delivery of electricity to its community, SOUTH CAROLINA, Tribal, and regional reliability, and resilience. This project is important to the TCE community and SOUTH CAROLINA because reduced outage duration time and reduced affected consumers have a direct correlation with the **improve quality of service and life in rural and underprivileged areas as part of Justice40 initiative**.
- Align proposed grid resilience and grid hardening investments with South Carolina, tribal lands, DOE, and regional resilience or **energy and cybersecurity plans**. TCE is collaborating closely with Santee Cooper G&T Generation & Transmission and South Carolina Energy office on projects to implement resilience and energy security strategies.
- Protect the electric grid from threats that could impact national security and public safety. TCE, electric cooperative leaders, and NRECA, along with other industry stakeholders, participate in the **Electricity Subsector Coordinating Council (ESCC)**, the principal liaison between the federal government and the electric power sector. The ESCC focuses on preparing for and responding to **natural disasters or threats to critical infrastructure**.

Potential impact of the project to reduce perceived risk for project deployment; achieve further deployment at-scale to; and lead to additional private sector investments. *The following details meet the tech-review CRITERION 1 –* TCE's proposed project will have impact in reducing the innovative technology risk of AI/ML (Artificial Intelligence/Machine Learning) data analytics and "best of breed" strategy. One of today's top electric industry technology trends is in **holistic-agile solutions** with the flexibility to **merge hardware with software AI data analytics** regardless of manufacturers and software vendors. TCE's solution is **flexible**. It allows selecting the **"best of breed"** and combining the technology of Smart Grid hardware devices with software solutions such as our SCADA, OMS, and others, and aggregating the data with PwrMetrix AI to produce predictive and prescriptive solutions. PwrMetrix AI will aggregate real-time data of power

outages and causes from TCE's OMS and AMI. PwrMetrix AI will connect to **three systems**: OMS, AMI, and AI Dash Vegetation Management system to **aggregate siloed data**. PwrMetrix will include a **real-time data aggregator** of outage locations (aggregated by street, zip code, county, state, and region), AI/ML (Artificial Intelligence/Machine Learning), outage cost financial analysis, and GIS mapping visualization platform. PwrMetrix AI will empower TCE to quickly analyze, predict, and visualize the outage data (pre-outage, active, and post-outage situations), estimate outage cost, location of outages based on weather condition, number of customers/meters with no power, date/time outages will likely happen, and frequency and duration of outages.

POTENTIAL RISKS AND CHALLENGES OF SOLUTION – TCE's solution presents limited risks because legacy equipment will be replaced with environmentally friendly and intelligent devices. The primary challenge is **obtaining the necessary equipment on time because of the supply chain shortages**. Presently, typical **lead times before metering equipment arrives is 40-52 weeks or 10-13 Months**. Also, real-time data interoperability/connectivity and data security are the challenges faced when combining various siloed data from different systems. Additionally, having the labor force to accomplish all projects in a reasonable time frame can be difficult. Other risks include risk of RF meters and equipment not functioning 100%, cybersecurity risk as any communication device has an associated risk, learning curve and training as TCE deploys new RF meters and integrate all benefits, and member education to explain the needs for meter change.

MITIGATION STRATEGIES – TCE is part of the NRECA 894 US electric rural cooperative association who has information on vetted and trusted vendors. TCE plans to request price quotes with delivery dates from trusted vendors ahead of time to **mitigate supply chain issues**. While lead times are long, the necessary equipment and materials are still available for purchase. **TCE will RFP and order metering equipment at least 12 months ahead**. Regarding labor and workforce needs, TCE will use external consultants to help us complete the required tasks on time. Use **MultiSpeak and DOE ODIN** standardized data interoperability solution to allow secure real-time data connectivity between various systems. **TCE is a member of the White House call-to-action and DOE ODIN Outage Data Initiative Nationwide (TOPIC 1 project directive)** providing comprehensive interoperable power outage data that enables utilities and others to exchange data freely with designated stakeholders at all levels — helping restoration, reliability, risk mitigation, emergency response, and more. TCE's existing PLC (Power Line Carrier) system will be **converted to RF mesh in stages** to alleviate risk. While the new metering system is being installed, the old system will remain in place until the new system is operating smoothly. **Mapping accuracy**, Project Green Tree, will have to be verified to allow this automated right of way evaluation solution to identify areas efficiently. TCE project will achieve further **deployment at-scale** by having the ability to add more data systems and integrate layers of data from siloed software into PwrMetrix AI system's **Data Lake**. In addition, TCE will leverage the cooperative principle "**Cooperation among cooperatives**" and share the best practices and lessons learned on this project. Since 1940, TCE has been practicing this principle by collaborating with the **831 electric distribution cooperatives**. TCE's project can lead into additional **private sector investments** because our solution is perceived as one of the top industry trends today. TCE's holistic-agile solution encourages merging of hardware with software AI data analytics regardless of manufacturers and vendors. TCE's solution is **feasible, flexible, and scalable**, allowing selection

of the **“best of breed”** hardware and software. **“Best of breed”** solution is a strategy used by most of the other 831 US electric cooperatives. The private sector investors see this as a **“scalable” (market size of 831 electric co-ops) and profitable market**, thus, attracting additional investment funds, positive business inertia, and competition. TCE has decades of experience supporting local communities by accessing public and private funding. Our project can provide significant **economic and justice benefits** to SOUTH CAROLINA communities, **leverage capital investment**, and lead to scalable and repeatable solutions for **831 co-ops** serving **42 million people and 21 million** businesses, homes, schools, and farms in **48 states**.¹³

How the project generates the greatest community, regional, or interregional resilience benefit in reducing the likelihood and consequences of disruptive events? How the project (1) comprehensively mitigates one or more hazards faced by community or region; (2) comprehensively mitigates the potential for equipment to cause a wildfire in a community or region; (3) fully addresses the consequences of an outage caused by a natural hazard; or (4) mitigates economic risk as derived from outage duration or outage frequency?

By implementing a **holistic-agile technology solution** (state-of-the-art RF meter, AI Dash and PwrMetrix AI/FireMetrix solutions), TCE will mitigate the consequences of wildfire, extreme weather, and other hazards to TCE grid, across the South Carolina region and within TCE counties and communities, where more than **90% are low-income and high-energy burden areas**. TCE seeks to pro-actively lower the cost of outages (loss of revenue and restoration cost), mitigate natural hazards in TCE power system, provide significant **economic and justice benefits** to SOUTH CAROLINA communities, **leverage capital investment**, and lead to scalable and repeatable solutions for other entities. The increased accuracy of new RF meter reading will allow TCE to transition towards using a **three-part billing rate**. This will directly benefit TCE members by **shifting the peak** usage towards more favorable times, helping to relieve stress from generation and transmission, and keeping the **electric rate affordable** to the **disadvantaged communities** across South Carolina. Project Meter Squared will improve the customer relationship with TCE members by increasing the metering resolution and pro-active outage notification. New RF meters and PwrMetrix AI will empower TCE to have predictive capability and more accurate tracking and visualization of reliability metrics (SAIDI, SAIFE, CAIDI) by meter, feeder, cause, time of year, cause of outage (weather, fire, natural hazard etc.), and quantify the effect and cost savings of capital improvements. This results in **better ROI and efficient use of funds**. TCE’s AI-Dash vegetation management and Drone AI technology will provide **wildfire mitigation solution** and pro-actively reports problem areas by providing alerts when dangerous issue is discovered such as excessive tree growth and dying trees that may fuel wildfire. TCE’s proposed project is very important to help the **disadvantaged communities** and SOUTH CAROLINA because reduced outage duration, and frequency will result in increased member satisfaction, quality of life, and increased revenue for TCE. Results of this project improve TCE’s safe delivery of electricity to its communities, across SOUTH CAROLINA, Tribal, and regional reliability, and resilience. Ultimately, TCE’s end goal is to modernize the electric distribution system and unlock significant public

¹³ <https://www.electric.coop/electric-cooperative-fact-sheet>

benefit to improve safety, reliability, resiliency, and affordability of electric service to TCE’s **18,000 members**.

How the grant funding provided by this program would result in proposed activities that go beyond and are additional to efforts that would have been undertaken but-for the funding and will generate the greatest community or regional resilience benefit in reducing the likelihood and consequences of disruptive events? The narrative should reference the *Report on Resilience Investments* to demonstrate how the proposed activities would be additional to existing planned investments.

TCE has identified a need to address aging infrastructure and has put together a thorough **replacement program with targeted yearly work plans**. TCE **evaluate the priorities and repair/replace** structures and equipment with the highest priority first. Over the **past 3 years TCE have spent over \$45M** (see table below *“Report on Resilience Investments”*) in resilience

	Funding - Past 3 Years			Funding - Current & Future 3 Years		
RIGHT OF WAY	\$ 1,617,789	\$ 1,721,676	\$ 1,998,886	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000
METERING	\$ 65,157	\$ 41,315	\$ 52,761	\$ 54,000	\$ 54,000	\$ 54,000
SUBSTATION MAINTENANCE	\$ 41,640	\$ 68,383	\$ 164,924	\$ 150,000	\$ 125,000	\$ 75,000
3 YR FIBER INVESTMENT (TCEC)	\$ 5,066,823	\$ 19,100,000	\$ 15,083,412			
Grant Proceeds					\$ 742,422	\$ 1,433,963
Totals	\$ 6,791,410	\$ 20,931,374	\$ 17,299,983	\$ 2,304,000	\$ 2,279,000	\$ 2,229,000

projects to replace aging structures and equipment. The DOE grant will be leveraged and maximized by TCE to deploy holistic-agile technology solution beyond the existing planned investment. Specifically, the Advanced Vegetation Management & Monitoring Technologies (AI Dash and Drones) and Adaptive Protection Technologies (PwrMetrix AI/FireMetrix) are the two proposed solutions that *“go beyond and are additional efforts that would have been undertaken but-for the funding and will generate the greatest community and regional resilience benefit in reducing the likelihood and consequences of disruptive events.”* These two solutions are not included in the near-term work plans. Ultimately, the DOE grant funding will allow TCE to **catalyze and accelerate** the implementation of holistic-agile technology **solution** which without the DOE funding will take **additional 4 years** to even consider due to budget constraint.

3.) WORKPLAN - the following shows how the project meets the tech-review CRITERION 2 *“Project Plan and Project Feasibility.”*

Project Objectives – TCE aims to improve the resilience and reliability of the power grid in South Carolina, Tribal, and local disadvantaged communities through the implementation of holistic-agile technology and Smart meter solutions. To achieve the project objectives, TCE will replace old PLC meters with new, state-of-the-art RF meters. The expected improvement in reliability metrics will be monitored using the patented PwrMetrix AI system that has been successfully used by more than 230+ electric utilities since 2011.¹⁴ The project also aims to mitigate hazards across South Carolina and within disadvantage communities, including wildfires, floods, hurricanes, extreme heat, extreme cold, storms, and any other event that can cause a disruption

¹⁴ <https://aerinet.com/case-studies/>

to the TCE power system. Unique features of this project is to implement **AI-DASH¹⁵ intelligent solution** with advanced technology that incorporates **satellite imagery** to evaluate the encroachment of vegetation from all angles (adjacent, above, and below) of the power lines, and create an enterprise wide, verified, and validated **single data base (Data Lake) combining data from GIS, OMS, and AMI systems**, that will enable TCE to use deep data analytics to improve grid performance – especially in advance of, during, and post outages due to natural hazards.

Technical Scope Summary – TCE Power Meter Squared & Green Tree project aims to improve the performance and reliability of TCE's distribution system by replacing **18,500 PLC meters and communication devices over a period of five years**. To ensure a timely progress, installation targets will be set for each year, with a minimum of 9% of the targeted installations to be completed in each half of the year. A go/no-go decision will be made at the end of each year based on the achievement of deliverables and milestones. In addition, the project will develop and implement a comprehensive advanced vegetation management (AI Dash) and PwrMetrix AI data analytics system over the same five-year period. This will include OMS and GIS analytics in the first year, AMI and weather data analytics in the second year, SCADA and grid-sensors analytics in the third year, asset management analytics in the fourth year, and AI systems in the fifth year. Successful implementation of each system deliverable will be required for the project to proceed to the next phase, with go/no-go decisions made at the end of each year. Below is TCE’s overall work scope and approach to achieve the project objectives divided by yearly performance period and separated by annual go/no-go point decision, specific results/deliverables, and **milestones detailed in the Community Benefits Plan**.

Type	YEAR 1	DUE
M0.1	Approved Project Management Plan, Project Management Briefings, Environmental Impact Study, Adherence to National Environmental Policy Act (NEPA)	Q1-Q4
M1.1	Per RFP RF Meters associated hardware/software are ordered for Y2 (approx 4,700 meters)	Q1
M1.2	AI Dash program implemented (subscription-based solution)	Q2
M1.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y2	Q3
M1.4	Begin installation of RF Collection points (20-30% of those required for Y2)	Q4
M1.5	Classify AI data model and implement PwrMetrix MultiSpeak interfaces for OMS, AMI, GIS.	Q4
M1.6	Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q1-Q14
D1.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D1.2	Q1 & Q2 Progress REPORT (End of Q2)	Q2
D1.3	AI Dash ROW management map for Y2, Q3 & Q4 Progress REPORT (End of Q4)	Q3 - Q4
D1.5	PwrMetrix analytics, MultiSpeak interfaces, GIS, and AI data classification models.	Q4
G1.1	Successful acquisition 20-30% of collection points and meter delivery on schedule for Y2Q1	
G1.2	Successful implementation of AI Dash	
G1.3	Successful implementation of PwrMetrix-MultiSpeak or other interoperability interfaces	
YEAR 1 Budget		\$955,284
-	YEAR 2	DUE
M2.1	Ordered RF Meters and associated hardware/software for Y3 (approximately 4,700 meters)	Q1
M2.2	Install 1,800-2,400 meters and associated equipment by end of Q2, AI Dash renewed	Q2
M2.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y3	Q3
M2.4	Begin installation RF Collection points (20-30% of those required for Y3). Install 1,800-2,400 meters and associated equipment by end of Q4	Q4

¹⁵ <https://www.aidash.com/resources/>

M2.5	Create AI regression data model and implement PwrMetrix data aggregation with GIS. Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D2.1	Project Management Plan (drafts and final)(Procurement and placement by RFP)	Q1
D2.2	Q1 &Q2 Progress REPORT (End of Q2)	Q2
D2.3	AI Dash ROW management map for Y3, Q3 & Q4 Progress REPORT (End of Q4)	Q4
D2.5	PwrMetrix analytics, data aggregation, GIS reports, and AI regression models	Q4
G2.1	75% targeted installations made in each year half (75% of half of the 4,700 in Q2 and Q4)	
G2.2	Successful Training and Use of AI Dash Modules	
G2.3	Successful aggregation of siloed data and implementation of PwrMetrix GIS analytics	
YEAR 2 Budget		\$1,652,950
YEAR 3		DUE
M3.1	Ordered RF Meters and associated hardware/software for Y4 (approximately 4,700 meters)	Q1
M3.2	Install 1,800-2,400 meters and associated equipment by end of Q2. AI Dash renewed	Q2
M3.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y4	Q3
M3.4	Begin installation Collection points (20-30% of those required for Y4). Install 1,800-2,400 meters and associated equipment by end of Q4	Q4
M3.5	Perform data aggregation & training of AI data models, continue PwrMetrix GIS and Analytics Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D3.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D3.2	Q1 &Q2 Progress REPORT (End of Q2)	Q2
D3.3	AI Dash ROW management map for Y4. Q3 & Q4 Progress REPORT (End of Q4)	Q4
D3.4	PwrMetrix Data Analytics, GIS, & trained AI Data Models	Q4
G3.1	75% targeted installations made in each year half (75% of half of the 4,700 in Q2 and Q4)	
G3.2	Successful use, training, and implementation AI Dash additional module	
G3.3	Successful creation, modeling, and training of PwrMetrix AI predictive data models.	
YEAR 3 Budget		\$1,616,415
YEAR 4		DUE
M4.1	Ordered RF Meters and associated hardware/software for Y5 (approximately 4,700 meters)	Q1
M4.2	Install 1,800-2,400 meters and associated equipment by end of Q2. AI Dash renewed	Q2
M4.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y5	Q3
M4.4	Begin installation RF Collection points (20-30% of those required for Y5). Install 1,800-2,400 meters and associated equipment by end of Q4	Q4
M4.5	Implement AI analysis and continue PwrMetrix data analytics and GIS. Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D4.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D4.2	Q1 &Q2 Progress REPORT (End of Q2)	Q2
D4.3	AI Dash ROW management map for Y5, Q3 & Q4 Progress REPORT (End of Q4)	Q4
D4.5	PwrMetrix Data Analytics, GIS, & AI	Q4
G4.1	75% targeted installations made in each year half (75% of half of the 4,700 in Q2 and Q4)	
G4.2	Successful implementation of AI Dash additional reports	
G4.3	Successful implementation of PwrMetrix AI – predictive analytics module	
YEAR 4 Budget		\$1,614,979
YEAR 5		DUE
M5.1	Install 20-30% of remaining meters and associated equipment	Q1 - Q4
M5.2	AI Dash program subscription renewed	Q2
M5.3	Continue PwrMetrix data analytics, GIS, AI Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D5.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D5.2	Q1 &Q2 Progress REPORT (End of Q2)	Q2
D5.3	From AI Dash analytics, ROW management map is produced for following year	Q4
D5.4	Q3 & Q4 Progress REPORT (End of Q4), FINAL DOE Report, 100% installations for Year 5	Q4
D5.7	100% completion PwrMetrix Data Analytics, GIS, & AI – Descriptive, Predictive & Prescriptive	Q4
YEAR 5 Budget		\$1,159,079
TOTAL 5 YEARS BUDGET		\$6,998,706

Work Breakdown Schedule and Task Description Summary - TCE will complete **8 major tasks** over the five (5) year project. Below is the summary of tasks and subtasks.

Task	Subtask	Task Description
1		Project Management and Planning - Perform project management with clear objectives, milestones, and deliverables, ensuring project completion within the specified time and budget. Complete Community Benefits Plan
	1	The project management plan will outline the project scope, timeline, budget, resources, and risks associated with the project. It will also include a communication plan and stakeholder management approach.
	2	National Environmental Policy Act (NEPA) - consider relevant regulations such as the National Environmental Policy Act, which may involve evaluating the potential environmental impacts of the project, identifying appropriate mitigation measures, and ensuring compliance with all relevant environmental regulations.
	3	Continuation Briefings
	4	Complete Community Benefits Plan
2		Determine equipment specifications, technical requirements, performance criteria, quality standards, including Buy America Requirements.
3		Evaluate each proposal and select the vendor that provides the best value for TCE and order the equipment.
4		Determine locations for collection points according to RFP proposal by vendor which outlines the distribution system's layout and identifies exact location points.
5		Install and deploy AI Dash overlay of GIS - Implement data analytics and generate visualization reports that analyze distribution vegetation management, track SMART Metrics, and help identify areas for immediate and future ROW management.
	1	Implement AI Dash data analytics for ROW management
	2	Run AI Dash analysis to determine areas needing immediate attention
	3	Give data acquired from AI Dash to ROW contractors for immediate mitigation
	4	Run AI Dash analysis to determine areas needing attention in following year
	5	Implement Artificial Intelligence Predictive Analytics for budget and planning for the next 5 years of ROW management
6		Request proposals (RFP) or quotations from metering contractors for meter installations based on factors such as cost, quality, reliability, support, and ability to complete work by end of grant period.
7		Remove existing, Install and Test New Equipment- Carry out installation, testing, and commissioning of equipment according to the project plan. Ensure that equipments are functioning as expected and properly integrated with TCE's fiber network.
8		Implement Adaptive AI Modeling (PwrMetrix AI/FireMetrix) platform with standard interoperability interface to aggregate data from siloed systems such as OMS, AMI, SCADA. Implement GIS application for real time visualization of data with time series analysis by day, month, and year. Develop and train AI adaptive data models base on siloed systems.
	1	Implement PwrMetrix MultiSpeak interfaces to connect to OMS, AMI, SCADA.
	2	Implement GIS analytics that incorporates vegetation and outage data to evaluate potential issues before they cause problems.
	3	Implement AI analytics by creating and training predictive models using aggregated data from OMS, AMI, and SCADA.

Cybersecurity - TCE has implemented a number of cybersecurity measures to protect its network and endpoints against potential threats. It utilizes a third-party vulnerability scanning tool to identify potential vulnerabilities and take appropriate action to remediate them. It has a Security Information and Event Management (SIEM) program that uses artificial intelligence to detect

abnormal activity on its network and endpoints, allowing it to identify potential security incidents before they can cause damage. TCE's Intrusion Detection and Prevention System uses technology to block traffic and isolate machines when abnormal activity is detected. To control access to TCE's resources, it has an identity access management tool that ensure only authorized personnel are granted access. Together, these measures provide TCE with a comprehensive cybersecurity posture that protects against a wide range of potential threats.

End of Project Goal

1. 100% successful removal and installations of **18,500 RF meters and communication devices**. Locations of the project includes **13** substations on **approximately 50** distribution circuits, serving **approximately 18,076** customers, and affecting **6** disadvantaged counties where more than **90% are low-income and high-energy burden areas**.
2. 100% Successful completion of **Community Benefits Plan SMART milestones**. See separate FOA required **Cbenefits.PDF** for details.
3. 100% Successful deployment of AI-Dash Advanced Vegetation Management
4. 100% Successful implementation of **PwrMetrix AI/FireMetrix Descriptive, Predictive, and Prescriptive Analytics** with **MultiSpeak** data interoperability interface

Project Schedule (Gantt chart)

PROJECT TIME TABLE		Budget Y1				Budget Y2				Budget Y3				Budget Y4				Budget Y5			
Task	Quarter Ending Month	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	39	42	45	48
1	Project Management & Planning																				
2	Determine equipment specifications																				
3	Evaluate proposal, select vendor																				
4	Determine locations collection points																				
5	Install and deploy AI Dash overlay of GIS																				
6	Request proposals (RFP) or quotations																				
7	Remove existing, Install and Test New Equipment																				
8	Implement Adaptive AI Modeling (PwrMetrix AI) platform																				

Buy America Requirements – TCE will include on all RFPs (Request for Proposal) the detailed specifications of the “Buy America Requirements”. All software and hardware requirements that will be purchased by this project shall meet the “Buy America Requirements”.

Project Management – TCE will be the prime-lead organization, with Aerinet Solutions Corp (Aerinet) as the contractor providing key technical and budget grant project management/DOE reporting support, and PwrMetrix AI/FireMetrix software implementation, deployment, and training. **TCE Project Manager, TCE support team, and Aerinet key personnel** are experienced and qualified program managers, finance-accounting, software, hardware technology, Smart

Grid, cybersecurity, and power system industry leaders who have successfully managed **hundreds of millions of dollars of federal-state grants** (see personnel resume and experience), collaborated successful **multi-year projects** with various teams across the nation, partnered with 230+ co-ops on **impactful projects**, commercialized innovative software, programs and technologies, and provided **measurable solutions to communities across the nation**. TCE PM will manage all technical tasks and supported by Aerinet. He will monitor progress, identify challenges/risks, and implement solutions with the TCE team leaders, with guidance from DOE, to mitigate risks. PM will work with Aerinet, and equipment vendors, to track progress on yearly deliverables, milestones and Go-NoGo SMART goals as shown on the SOPO. TCE PM and technical team, accompanied by DOE staff, will also visit some of the project location sites during installation phase to ensure proposed work and milestones are achieved as planned. PM and team members will conduct periodic virtual or in-person meetings with Aerinet and vendors to clarify roles of each project team member, track progress of work plans, and address each specific responsibilities and expectations as defined by the SOPO and yearly work plan. The PI will meet with DOE (virtually or in-person), on schedule as shown in the Work Plan and to explain progress, address issues, and collaborate on decision making. There are no critical hand-offs required in this project.

4.) TECHNICAL QUALIFICATIONS & RESOURCES

- **Project team’s unique qualifications and expertise including those of key subrecipients.**

Frank Furtick	Vice President of Engineering and Operations for TCE in St. Matthews, SC, where he leads and oversees both Engineering and Operations with over 30 years of experience in Member Services, Engineering, and Government Relations. Mr. Furtick has a degree in Business Administration from Limestone College. He is a South Carolina Certified Energy Auditor and is a Certified Building Analyst and Envelope Professional through the Building Performance Institute.
Jimmy Bryant, P.E.	System Maintenance Engineer for TCE, where he oversees the TCE Substation department. Mr. Bryant brings professional experience in electric system planning and protection projects, construction work plans, long range plans, arc flash hazard studies, sectionalizing/coordination studies and oil spill prevention, control, and countermeasure plans. He manages SCADA implementation, regulator control configuration, protection studies and control configuration, specification and implementation of various electrical equipment, load studies, and troubleshooting power quality issues. Mr. Bryant has a Bachelor of Science in Electrical Engineering from Pensacola Christian College.
Airfineil Whitmore	Supervisor of System Maintenance for TCE in St. Matthews, SC where he oversees the maintenance of all substation maintenance and sectionalizing equipment on the distribution line. Mr. Whitmore received his Lineman Class A status and became a crew leader in 2004 for the Underground Crew, Substation Journeyman in 2014 and then accepted his current position of Supervisor of System Maintenance in 2019.
Derrick Broughton	Line Technician A Class and Meter Technician for TCE in St. Matthews, SC. Mr. Broughton has 16 years of experience in electrical line work with his last 6 years being in Substation maintenance and metering equipment. Mr. Broughton completed the Northwest Lineman College program for the Lineman Progression Program in 2014. He also completed and received certificates for System Operator and Substation Program from Northwest Lineman College.
Marcie Zeigler	Engineering Coordinator for TCE where she manages GIS, Inventory of Materials, and the Engineering Accounting. With over 25 years of experience in Accounts payable,

	payroll, engineering work orders, and materials and with 9 years of experience in Geographical Information Systems and Outage Management Systems. She has earned several certifications since being employed at Tri-County: System Operator Certification from the Northwest Lineman College, Accounting Certification from the Rural Utilities Services (USDA), Forms Class Feature Building, Asset Management, and Indigo Administrator.
Matthew Martens	System Engineer for TCE, Inc. where he supervises the Engineering Department. Mr. Martens has over 14 years of experience in Electrical engineering with both TCE and McCall Thomas Engineering, Inc. Mr. Martens has attended Civil Engineering Technology from Central Carolina Technical College.
Philip Schneider	IT Coordinator for TCE where he oversees all purchasing and installation of computers and networking equipment. He performs maintenance and updates to all equipment software and Tri-County's network. He obtained his Computer Science/Information Technology degree from Orangeburg Calhoun Technical College.

In addition, TCE's project team consists of **world-class software and hardware partners, technical and grant project management consultants**, as well as community organizations. Aerinet Solutions Corp brings more than **100+ years** of combined GRANT, TECHNICAL, ACCOUNTING, FINANCE, AND PROJECT MANAGEMENT experience to help TCE ensure that the project and DOE reporting are successful.

Alvin Razon, MSc.	32 years in power system distribution design, engineering operation, DER micro-grid integration, grants creation, review & management , cyber security, AI data analytics, software development, and senior management. Alvin worked in the electric utility industry as a power engineer and director of dispatch center, as senior director NRECA, senior advisor U.S. Army Office of Energy Initiative, and Technology Manager Department of Energy Solar Energy Technology Office/Grid Integration program . Master of Science MSc Degree in Electrical Power Systems University of Bath England.
Ranga Pitchumani PhD, ME	George R. Goodson Professor in the Department of Mechanical Engineering at Virginia Tech and received PhD in Mechanical Engineering from Carnegie Mellon University. Served as the Chief Scientist for the DOE SunShot Initiative as one of the founding directors of the DOE SETO (Solar Energy Technology Office) SunShot Grid Integration program .
Eduardo R. Ilao PE MS	Professional Electrical Engineer with over 30 years of experience in businesses covering the fields of engineering, construction, grant project management, as well as operations & maintenance. Knowledgeable in all aspects of business activity, including strategic planning, finance, and operations.
Marlon Umali	Software development industry for over 25 years . He has experiences in grant project management, system analysis and design, application development and implementation, database and network administration, hardware maintenance, and grant technical project management.
Tracey Klepic	Responsible for Aerinet's brand, marketing, grant content, and grant project management. While at Cisco, Klepic conducted competitive product marketing for the rebranding of Cisco's Webex. Prior to working in the private sector, Tracey was the Director of Education and Professional Services for the National Rural Telecom Cooperative 15 years .
Michael Barto, CPA	He brings 30+ years of experience in the Finance field, both Public and Private, as an auditor , and senior financial executive. His expertise includes grant preparation, grant project management , compliance, and related reporting for a HUD state agency. SME in grant work for FEMA funded grants, CDBG, , and \$200Million in disaster assistance.
Farhad Abar, Ph.D.	Over 20 years of technical and business experience with particular focus in Artificial Intelligence (AI), big data analytics and machine learning in the context of precision medicine, pharmacogenomics, population health studies, and electric utilities.

Project team’s existing equipment and facilities, or equipment or facilities already in place on the proposed project site, that will facilitate the successful completion of the proposed project; include a justification of any new equipment or facilities requested as part of the project -TCE is confident of its **83 years** of experience in the power industry business, skilled work force (line crew, technicians, and contractors), technical resources (engineers and consultants), consistent work plans, specialized field equipment, hardware and software, and access to power system infrastructures to successfully achieve the project outcomes and performance targets. Given TCE’s established programs and decades of experience in distribution operation and technologies, the project is **foundationally viable, feasible and in a position of prime readiness** to successfully implement the project timeline based on work plan. TCE has the IT resources to host the PwrMetrix AI Analytics, AI-Dash, and technical resources to implement the modernization of the smart meters. TCE also **has facilities** in place to manage the purchase and deployment of advanced-RF meters. As an energy provider, TCE has the **facilities in place to meet all regulatory requirements for resiliency, security, cybersecurity, and infrastructure protection**. TCE hold’s strong relationships with the member communities to communicate the value of proposed solutions.

Relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives - **since 1940**, TCE has successfully installed, maintained, and retired distribution devices, meters and equipments in its electric 2,740 miles of distribution lines. TCE’s 83 years of previous experience will enable successful achievement of the project objectives of installing new RF meters and Smart Grid devices, and implementing AI Dash, and PwrMetrix AI data analytics with standardized and secure data interoperability connection. The project’s work plan is shovel-ready and approved by TCE’s Board of Directors for implementation. Financing for the cost share portion of the grant is also ready.

Time commitment of the key team members

Position Title	Name	Y1 Hrs	Y2 Hrs	Y3 Hrs	Y4 Hrs	Y5 Hrs	Total
System Maintenance Engineer	James (Jimmy) Bryant	75	50	50	50	50	275
Vice President Engineering Operations	Frank Furtick	125	75	50	50	50	350
Supervisor System Maintenance	Airfineil Whitmore	50	150	150	128	100	578
Line Technician A Class and Meter Technician	Derrick Broughton	100	225	225	225	225	1000
IT Coordinator	Philip Schneider	75	150	150	150	150	675

Historical Sites by County- within or near Tri-County service territory

Calhoun

William Baker House
Col. J. A. Banks House
Buyck's Bluff Archaeological Site
Calhoun County Courthouse
Calhoun County Library
Cherokee Path, Sterling Land Grant
Col. Olin M. Dantzler House
Fort Motte Battle Site
Haigler House
David Houser House
Midway Plantation
Oakland Plantation
Prehistoric Indian Village
Puritan Farm
Ulmer-Summers House
Zante Plantation

Orangeburg

Donald Bruce House
Dantzler Plantation
Eutaw Springs Battleground Park
Numertia Plantation
Providence Methodist Church
St. Julien Plantation
Trinity Lutheran Church
White House United Methodist Church

Richland

Congaree Swamp National Monument
McEntire Air National Guard Base
Fort Jackson
Barber House
Big Lake Cattle Mount
Brady's Cattle Mount
Keziah Goodwyn Hopkin Brevard House
Bridge Abutments
J. A. Byrd Mercantile Store
Cattle Mount #6
Cooks Lake Cattle Mount
Cooners Cattle Mount

Dead River Cattle Mount
Dead River Dike
Farmers and Merchants Bank Building
(Eastover)
Good Hope Baptist Church
Goodwill Plantation
Groveswood
Hopkins Family Cemetery
Hopkins Graded School
Hopkins Presbyterian Church
John J. Kaminer House
Kensington Plantation House
Laurelwood Plantation House
Magnolia (Wavering Place)
Millwood
Northwest Boundary Dike
Oakwood
Richland Presbyterian Church
Saint Thomas' Protestant Episcopal Church
Claudius Scott Cottage
Siloam School
Southwest Boundary Dike
St. Phillip School

Tri-County Community Benefits Plan Job Quality and Equity:

Tri-County Electric Cooperative (TCE) in St. Matthews, SC supports an area that has been severely disadvantaged. According to the Climate Energy and Justice Screening Tool (CEJST), most of the service territory serves a higher-than-average energy burden, a higher health burden, and has a predominant minority low-income housing in many areas. Demand reduction programs are critical to reducing energy costs, consumer available tools **like smart thermostats, water heaters, and in-home energy monitors** are necessary to alleviate increased **costs on Tri-County’s members**. The Power Meter Squared and Green Tree project requires increasing reliability and resiliency by using AMI, advanced infrastructure of Smart meters, AI vegetation tools and data analytics.

Consumers will benefit from the RF meters that can notify TCE about power outages prior to customers calling the switchboard. TCE’s proposal involved upgrading to **18,500 RF meters and communication devices** that will transition the community to provide real-time outage notification, and provide consumer demand reduction programs, while AI Dash will forecast outage risks to be remedied that will make more green jobs, increase community resiliency, and save lives during climate disasters.

Climate Energy and Justice Screening Tool Results for TCE Service Area

CEJST Tract population	City	Zip Code	Disadvantaged
3,530	Cameron	29030	Disadvantaged
3,530	Lonestar	29030	Disadvantaged
5437	Eastover	29044	Disadvantaged
3453	Elloree	29047	Disadvantaged
5471	Eutawville	29048	Disadvantaged
5804	Gadsden	29052	Disadvantaged
2963	Gaston	29053	Disadvantaged
4707	Holly Hill	29059	Disadvantaged
5804	Hopkins	29061	Disadvantaged
4689	Lugoff	29078	No
5337	Orangeburg	29115	No
5645	St. Matthews	29135	No
6233	Santee	29142	Disadvantaged
5421	Swansea	29160	Disadvantaged
6233	Vance	29163	Disadvantaged
6321	West Columbia	29172	Disadvantaged

The Power Meter Squared and Green Tree project will focus on reducing the impacts of weather disasters, excessive heat waves, and the impact on the grid. These technologies reduce wildfire

outage and enable TCE to manage electrical assets remotely and proactively identify outages. By modernizing TCE's electric distribution system, it will **unlock significant public benefits** which improve the safety, reliability, resiliency, and affordability of electric service to TCE members (customers).

TCE's project supports State (South Carolina), local (**Calhoun, Orangeburg, Richland, Lexington, Kershaw, and Sumter Counties**), Tribal (**Santee Indian Organization Holly Hill South Carolina**), community and regional resilience, in reducing the consequences of disruptive events, increasing participation in energy efficient programs, and engaging the community energy programs that can help reduce the future generation demands.

Power Meter Squared and Green Tree project can proactively identify outages and provide analytic data to help reduce increased energy burden to specific areas. The integration of the OMS, SCADA, and AMI systems into a multi-communication platform will unlock the data silos.

Community and Labor Engagement: How Tri-County Conducts Consistent Engagement in the Community to Address Affected Stakeholders

Tri-County Electric Cooperative (TCE) is **committed to creating jobs** and working with the local community and state organizations to ensure equitable opportunities for the members they serve. By implementing advanced metering and providing better data to consumers many of these new renewable's opportunities may be in more demand in the community. Consumers will learn how much they are spending and can evaluate renewable options or increasing energy efficiency upgrades.

Tri-County Electric's (TCE) consistently aligns with the other South Carolina Cooperatives and the **State of South Carolina** regarding improving their grid resiliency. By implementing this cadre of tools, TCE will provide **enhanced reliability to the most vulnerable areas which is aligned with local, state, and federal objectives.**

The **SC State Energy Office** details in their most recent State Energy Plan how electric cooperative members share a higher cost burden than other urban South Carolina residents. The average SC cooperative member **pays on average \$3,300 a year for their energy.**¹ Compared to other consumers who pay about \$3,050 per year. Rural areas experience higher energy costs, due to the amount of distance to the service area and less residential density. These advanced meters along with an RF network provides an automated process that can reduce service calls, pinpoint outages, and reduce power restoration times. Currently, it is very difficult to hire new line men so this critical investment in using technology to cover the geographically spread service area.

¹ South Carolina Energy Plan <https://energy.sc.gov/energyplan>

The State Energy Office encourages distribution cooperatives to increase grid modernization tools to decrease outages, increase reliability, and decrease future costs. That is why TCE's project Power Meter Squared and Green Tree gives visibility and autonomous control of TCE electrical grid (e.g., feeder, substation, and downline devices) through deploying Smart Grid technologies, such as **sectionalizing devices, advanced relays, and data analytics with Artificial Intelligence (AI)**. The community at large will experience an increased reliability in their grid during climate disasters.

We expect there will be less outage calls, less issues with those who are on medical devices and allow TCE to pinpoint issues faster. The **SMART goal to accomplish this meter change out requires 2 dedicated contractors** to replace the old meters. Thus, completing **90% of all the meter upgrades in under 4.5 years**. (b) (4) TCE meter project lead, will report and test the new meters to ensure all the efficiency gains are accomplished yearly. Contractors will be compensated based on which types of meters will be switched out. However, for phase three meters, (b) (4) plus all travel costs will be compensated for the swap out. The estimated direct contribution to the economy of disadvantaged communities is (b) (4). The faster, more reliable communication with the members' meters will allow more frequent reads, fewer estimations of read, and real-time updates of outages. The benefit of enhanced response times to outages, emergency reporting during and after the storm and increased accuracy of outage locations will be helpful for future microgrid, DERS, and solar opportunities as well.

AI Dash Vegetation management is another solution that is designed to **identify dying trees**. This AI tool proactively identifies dying trees which is critical to reduce wildfires or falling trees after floods that cause more outages. The combination of these applications reduces the risks of losing power and dealing with delayed power restorations for several vulnerable TCE members.

TCE invested (b) (4) million dollars by purchasing a **380-acre industrial site** in Orangeburg, to create Tri-County Global. Tri-County Global is a 45-acre pad ready to accommodate a 1.5 million sq foot industrial building to help create more jobs in the community. This location is close to the railway which allows easy transport for manufacturing or exporting businesses. The Tri-County Global Industrial site was cleared, managed, and set up by local staff and contractors which were paid for the project based on their original quote. These high paying PLA agreements provide **good-paying construction and trade jobs** for the local community. Tri-County will implement meters, RF, and SCADA applications to assist with tracking the energy usage at this industrial site.

There is a state-of-the-art **solar farm implemented by Santee Cooper to support renewable energy** for the future businesses to take advantage of these energy savings on the global industrial site. As more companies **invest in managing their energy demands**, TCE will implement new technologies to provide **secure reliable energy that can be remotely managed** for these new opportunities.

Available Sites



Calhoun County I-26 Park



Tri- County Global Industrial Site



John Matthews Industrial Park



Jafza Magna Park – Santee

Tri-County worked alongside ***South Carolina Business Development, Calhoun and Orangeburg County, and the SC Power Team*** to accomplish these projects. This coordinated effort brought together outside capital investments and partner commitments to add more high-quality paying jobs to the area.

TCE Negotiated Formal Agreements with Both Calhoun and Orangeburg County to Detail Partner Obligations and Create Good-paying Jobs

To attract new businesses with renewable energy efficiency as a priority, the Tri County Global Industrial Site YouTube² video shows the intersection of good paying jobs and rural investment. For more information, read how the Orangeburg County Development announced their work in the article, “Our hope for tomorrow’: Tri-County Industrial site at I-26-U.S. 601 a ‘premier location’ | Orangeburg County Development Commission (ocdc.com)³” which details how Calhoun County and Orangeburg County collaborated with Tri-County to provide this local investment. This **formal agreement provides management and funding from Tri-County** as well as a coordinated investment from **(b) (4)** from both Orangeburg and Calhoun counties (see Letters of Commitment).

This coordinated effort is **forecasted to bring a 12-15% increase in jobs over the next 3 years**. There are already net benefits of these efforts as **Hounen Solar**, a minority-owned firm that is headquartered in California, builds a manufacturing solar plant that **hires 200 employees and brings clean energy jobs to the area**.

TriCoLink, a wholly owned broadband subsidiary of TCE, will provide world-class, **fiber-to-the-home and businesses. This 1 Gbps access will be available to all 18,000 members** of the TCE service area. The broadband network will deliver symmetrical gigabit internet capabilities along with high-quality phone services. Additionally, it will enable TCE basic



² https://www.youtube.com/watch?v=llo_fPJQ8gQ&t=4s

³ <https://www.ocdc.com/news/our-hope-for-tomorrow-tri-county-industrial-site-at-i-26-u-s-601-a-premier-location>

smart grid capabilities to respond quicker to outages. These services are critical in growing good-paying jobs, creating an educated workforce, and transitioning to a clean energy opportunity.

TCE's service territory is divided into three districts namely, St. Matthews, Santee, and Richland. Several **DAC areas benefited from TCE's (b) (4) million investment** which provides access to high-speed broadband. TriCoLink participates in the **Affordable Connectivity Program** and received ARPA permission to build in census block areas that have less than 25Mbps or 3 Mbps upload speed as part of the American Rescue Plan Act. There is also lifeline assistance via the FCC program to support several of our DACs.

Out of (b) (4) total members in Richland County, 2 (b) (4) Members have signed up for fiber services from the Richland County area which equates to (b) (4) take rate.

This investment is already **increasing jobs among our minority businesses**, like **Nexustech**. This small minority firm provides local computer repair and internet set up as well as coordinating with local businesses via Facebook to support the community.

Investing in the American Workforce TCE: Increases Job Pipeline and Job Training for Individuals in DACs

TCE provides hourly and full-time positions to our construction, linemen, and office personnel. All full-time exempt positions have access to participate in the NRECA electric cooperatives **benefits plans** which includes **paid time off, sick leave, paid holidays, the ability to save for retirement, and even receive a pension depending on years of service**. These quality jobs are extremely competitive and yearly salary and benefits research ensures TCE is competitive in the market. The project will help increase the demand for more green jobs, specifically for rooftop solar, EV installations and energy efficiency.

The TCE Human Resources division requires staff to **complete annual courses** that include management, security, DEI, and hiring practices delivered via our South Carolina Statewide organization. This training is one of the ways TCE ensures that the management and employees cultivate a respectful workplace.

TCE provides a **Return After Retirement** offering to help decrease the knowledge gap between new positions and senior employees. Several TCE employees that have retired return to TCE to support the **knowledge transfer** and train new employees. This allows the area personnel to generate more income while providing service to the cooperative. This partial retirement opportunity is creating on-the-job workforce training for our apprentices.

TCE conducts quarterly training that coordinates employees into 4 groups to review **new renewable technologies** regarding power supply and energy distribution issues and solutions. Central Cooperative employees provide bi-annual training regarding EVs and Community Solar. The project will enable more consumers to take advantage of having the correct meter data on

their home to invest in EVs. Time of use charging is a cost savings for all electric car owners and smart meters make that option a reality.



Employees are also encouraged to get trained in energy efficiency and become certified to provide energy audits so that their customers can take advantage of the IRA tax incentives. For example, Wilford Thompson is proud to provide energy audits to their members. He shows customers his certification prior to beginning any audit and details with his customers how they can save money on their energy bill by upgrading water heaters, heat pumps

and windows, to name a few. Specifically, TCE's smart goal is to be able to use the meter data to find those customers who would benefit from an energy audit. The SMART goal is **to increase energy audits by 8% each year**, to increase **those audited energy efficiency by 10%**, and to **train another certified professional to conduct audits**.

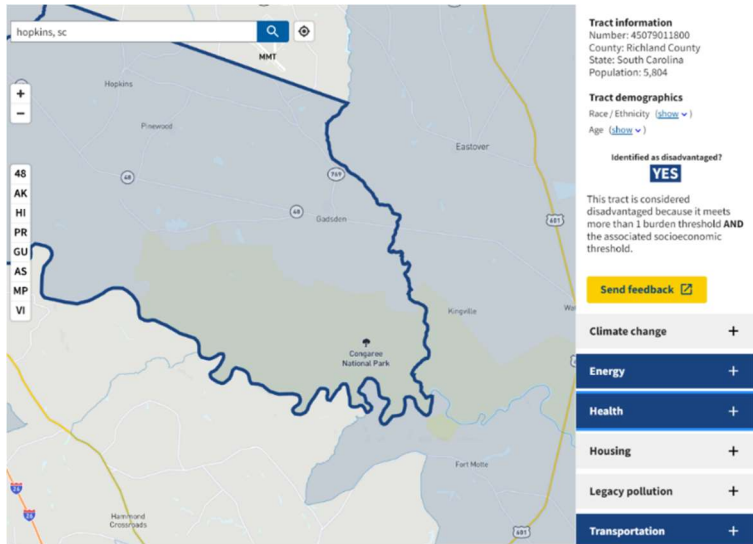
TCE Increases Clean Energy Enterprise Creation and Contracting in DACs

TCE invests in **continual workforce training** to ensure an educated job force. TCE's line worker apprenticeship accepts applicants that are right out of **high school**. This **paid internship** program provides on-the-job training while learning. Our slogan is to **Lead, Educate, and Cooperate for a Better Future**. Our staff works with **Orangeburg-Calhoun Technical College** to implement line worker classes that include donating a training yard with poles and running pole top training classes to ensure students have real-world experience. **Denmark Technical College** also conducts joint teaching with TCE to show how to install wire, work with transformers, and safety procedures in a real-world scenario. Aerinet's FireMetrix can also be used to teach linemen and potential linemen how they classify outages in their systems. By leveraging advanced data algorithms more linemen can use data to safer and more efficiently. Lastly, TCE utilizes **Northwest Linemen College** to accelerate their line workers for higher certification and more advanced training. Hence, there are multiple routes to provide training to our staff and future green energy employees.

Diversity, Equity, Inclusion, and Accessibility Equitable Access to Opportunities

Our DAC areas are faced with several unique challenges. Several of our areas have a higher-than-average **energy burden according to the CEJST**.

The Richland County CEJST details **Energy, Health, and Transportation** are all higher and **energy inefficient** i.e., extremely high concentration of mobile homes with a furnace.



- **Only one high school** for children in all **3 towns** to attend.
- Older population with **adverse health impacts.**
- Majority of our members, who are utilizing well water/septic tanks, have environmental exposure and **rank higher than the average for cancer risk.**
- Increased **heat waves with higher humidity** are increasing energy bills for the most vulnerable populations.

- **Floodplain makes up 21%** of the land area with the majority located along the Congaree River. **Floods pose a threat** to some existing residences and create dangerous situations.
- **Little to no medical facilities** available in Lower Richland

TCE Decreases the Energy Burden in DACs

TCE consistently supports **low-income energy collaborations** with the following organizations to help those households pay for their energy costs. The **Aiken Barnwell Counties Community Action and Wateree Community Action** receive TCE’s financial support for **the CSGB and South Carolina's LIHEAP Program**. These programs are designed to help the state's low-income households pay the price of home energy, defined as residential heating and cooling, and to increase energy self-sufficiency; **thereby, reducing the vulnerability resulting from energy need.** The mission of **OCAB Community Action Agency, Inc.** is to **eliminate the causes and conditions of poverty** in the service area by **developing strategies** to ensure a **better quality of life for disadvantaged and underserved residents.** The local area has been actively partnering with TCE to reduce energy burden and reduce health issues by using more renewables. These are **life-saving energy vouchers** that TCE receives to pay for energy heating and cooling. **Power Meter Squared and Green Tree will increase the reliability** in these most desperate areas and provide faster restoration during days of **excessive weather disruption.**

TCE reduces peak costs with the Beat the Peak program which is a free and voluntary program.

These advanced meter readings can provide more advanced alerts that ask consumers to reduce their electricity use during certain high-use periods, known as “peak demand” times. This program averages a demand reduction of **0.6 kW per member annually.** When the demand for electricity rises, so do the costs. Beat the Peak shifts the energy consumption from times when demand is the highest. This effort can save members/customers significant money over time by keeping the power costs low and stable. TCE alerts participants which will typically last only a few hours, and members will reduce power-intensive activities. TCE has **2,981 members signed up to**

receive these alerts. Which is a total demand reduction of 1,788.60 kW annually. Project Power Meter Squared and Green Tree will **increase these savings by 2%** in the next year by providing better technologies to help manage the peak alerts.

TCE provides additional consumer benefits that are available to not only employees but **any TCE consumer/member**. These **Touchstone Energy discounts** lower the costs of several different items that have real value for residents' everyday purchases like rental cars or expensive appliances. Most members can receive anywhere **from 5-10% off**.

Future Tax Credits for Residents Delivered by TCE's Programs

"Help My House" is a residential energy efficiency program operated by TCE that helps customers take advantage of new energy-efficient systems. The addition of smart meters can help consumers take **advantage of smart thermostats, water heaters, and in-home energy monitors which are necessary to alleviate new generation demand**. Consumers are hesitant to invest in their energy usage if it is going to cost them money to get new water heaters or heat pumps. The new **federal income tax credits** are available through 2032 providing up to **\$3,200 annually** to lower the cost of energy-efficient home **upgrades by up to 30%**. Improvements such as installing heat pumps, heat pump water heaters, insulation, doors, and windows, as well as electrical panel upgrades, and home energy audits are all covered under this program. As these new meters are rolled out, TCE's Help My House can provide funding for the energy audit which is covered by the tax credits and can help families save money on their monthly energy bills for years to come. **TCE will ensure that these dollars flow directly to their low-income members.**

In addition to the energy efficiency credits, homeowners can also take advantage of the modified and extended **Residential Clean Energy credit**, which provides a **30% income tax credit for clean energy equipment**, such as rooftop solar, wind energy, geothermal heat pumps, and battery storage through 2032. As mentioned, with **Community and Rooftop Solar programs**, TCE will ensure that the money flows exactly to those **low-income areas** that need those energy-efficient dollars to **reduce their energy burden**.

Increasing Low-Cost Access to Capital

Help My House also provides a **low-cost energy audit** and funding for residential energy efficiency improvements. These improvements are financed with **low-cost loans** that are repaid through the participating member's electric bills (a process known as "on-bill financing"). This allows individual members to improve their home with no upfront costs and to save money even while repaying the loan. **Help My House** was designed to address the special challenges and **opportunities facing DACs to save energy**, cut household utility bills, and reduce **greenhouse gas emissions**, all while supporting high-skilled jobs and keeping more dollars in the **local economy**.

TCE provided energy audits and a whole house weatherization assessment to their members. Once the member decides to proceed, those expensive upgrades could be financed with on-bill financing. These low-cost loans remove the upfront capital that many members do not have readily available.

TCE Has Loaned \$521,685 to DAC Members for an Approximate Savings of 94,476 MMBTU.

All original loans have been paid back in full. Consumers/members saved on average \$25-\$28 per month or about \$300 per year, even while paying off the loan. The program provided significant energy efficiency. Upgrades to homes included **air sealing, insulation, and HVAC upgrades**, which reduced their energy consumption and lowered their utility bills. **Project Power Meter Squared and Green Tree** will provide more reliability and ways to remotely monitor the systems. By providing **low-cost capital**, more members will take advantage of the upcoming tax credits and qualify for several federal saving dollars.

- **Savings during peak demand** periods (when co-ops pay the most for electricity) from the houses participating were more than **25% during the summer** cooling peak in June and over **45% during the winter** heating peak in January.

Increase Energy Democracy Including Community Ownership in DACs

Central Electric Power Cooperative is a not-for-profit generation and transmission cooperative headquartered in Columbia, South Carolina. Central owns community solar and peaking generator assets but obtains most of its power through long-term purchase agreements with Santee Cooper, Duke Energy Carolinas, and the Southeastern Power Administration. TCE has partnered with Central Electric Power Cooperative to offer several of their programs. The **Battery Project Initiative** created a plan that would allow for the effective deployment of large-scale batteries across the Central system. The Member & Energy Services Committee recommended that the team evaluate a 5-10 MW battery.

New meters may increase demand for Community and Rooftop Solar. TCE's solar demand is increasing in the area due to TCE's generous approach to buying back renewable power. TCE has seen a 15% increase in the past year. For example, South Carolina's Energy Freedom Act details how the transparency regarding selling any unused solar generation back to the local electric provider. While Duke and Dominion are only providing a **(b) (4)** per kw hour credit, **TCE is (b) (4) back** instead of the \$.03 back for community and rooftop solar. **TCE's 240KW Community Solar** provides access to solar energy for members, offers cost savings, promotes local energy production, engages the community, and supports environmental sustainability. TCE's ability to work with local solar companies to increase getting members online allows more access to their members. The adoption of clean energy that provides a retail payback provides real energy savings and will increase renewables in the area. This can make **clean energy technology more affordable and accessible** to a wider range of our members.

Increase Parity in Clean Energy Technology Access and Adoption in DAC

Project Power Meter Squared and Green Tree will increase the **consumption of Green Power**. Green Power which is located on TCE's 9-acre territory and provides cheap renewable energy via methane biogas recapture from a landfill. TCE customers can choose one to 3 blocks of power which costs less than a dime a day. One block (100kWh) is approximately 10 percent of a typical household's monthly energy use. Green Power provides everyone with renewable and sustainable energy for this and future generations. Green Schools are powered using several of these renewables out of this program. The benefits include reducing fossil fuel demand, increasing energy savings, and revenues from the sale of Green Power are reinvested into future renewable energy resources. This is a **GREEN-e Energy certified program**.

TCE leases to **Santee Cooper Jamison Solar** 9 acres in the Tri-County Global Industrial Site for this 1.2 MW site. During this time, TCE maintains and clears vegetation of 2.3 acres to ensure solar shading of the farm is reduced.

Tri-County also leases 3.6 acres of land to **Finemark National Bank and Trust** for a **240-kW community solar farm**. **TCE sells blocks of solar to our members**. TCE is the only one of 2 coops that has sold out our own consumer solar blocks due to our local education program. Because TCE **provides community solar members (b) (4) cents back on their portion of the production, the increased consumption of solar is accelerating at a rapid rate**.

TCE's Power Meter Squared and Green Tree Project will increase energy resiliency in DACs. TCE is constantly looking for ways to **increase resiliency**. Several sectionalized projects with advanced AMI can help reduce the issues. C&I Lighting incentives are provided to reduce the purchase price of reliable, energy-efficient lighting products. Purchasing efficient lighting products lowers their electric bill, provides quality lighting, and helps avoid costly, new electric generation.

TCE Exceeds Justice40 Initiative Reduce Health and Energy Burdens in DAC Areas

TCE views diversity, equity, and inclusion as an integral part of our cooperative culture. TCE remains committed to providing an environment that is welcoming to all, and where everyone feels included, accepted, seen, heard, and valued. Tri-County Electric strives to create a more diverse and inclusive through **proactive recruitment and employee retention efforts**.

One way of doing this is our commitment to hiring qualified minorities through our relationship at the Orangeburg-Calhoun– Allendale-Bamberg (**OCAB) Community Action Agency**. **This agency provides services, training, and lists job opportunities where we** continually look for qualified minorities to add to our staff. The staff at TCE are invested in providing quality customer service and responsive reliability.

TCE’s Collaboration Is Decreasing Environmental Exposure in DACs

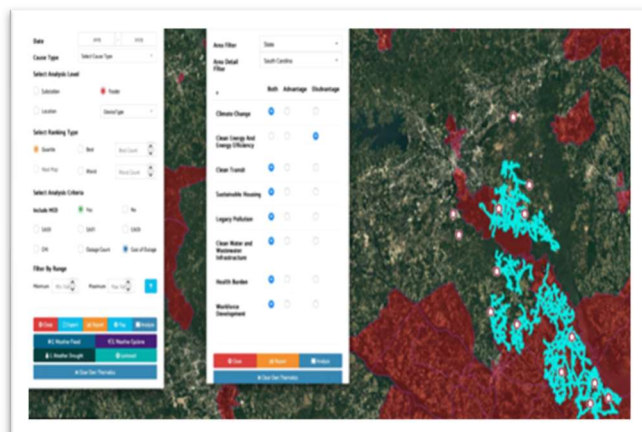
TCE’s GreenSC is a program collaborated with Central and several of the Member and Energy Services teams to **create a renewable energy program** that meets member owners’ sustainability and renewable energy goals. This program will have multiple renewable program offerings and a Central carbon footprint. A market-based **renewable energy credit (REC)** program is the first sub-program developed and will be the simplest way for member-owners to meet their sustainability goals. This is the first step in **reducing harmful environmental outputs**.

How Will TCE Use the DOE GRIP Funding to Flow to the DAC Areas

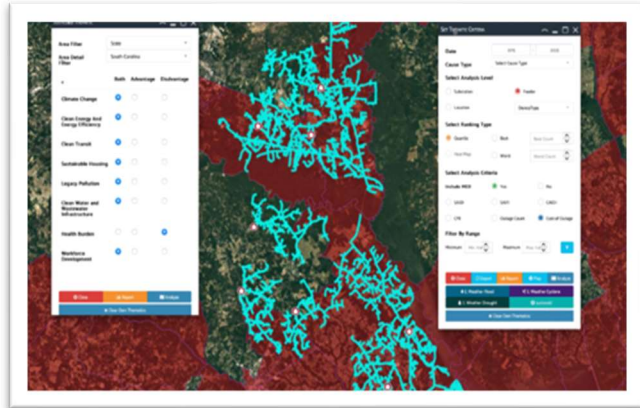
TCE technical benefits of reduced fault location time, reduced outage duration time, and reduced affected consumers have a direct correlation with the **quality of life that TCE members experience**. Several of these **counties experience higher-than-normal outages due to excessive wind, flooding, or hurricanes**. These areas have higher than average health and energy burdens according to the Climate and Economic Justice Screening Tool, **CEJST**. **Project Power Meter Squared and Green Tree** will provide **life-saving services** to several of the members who are on life-saving medical devices. Currently, there are 81 members on these devices.

Number of Members	DAC Community	County of Residence
31	Yes	Richland
23	Yes	Orangeburg
15	Yes	Calhoun
10	No	Lexington
2	No	Kersaw
Total 81		

TCE will use PwrMetrix AI’s outage and Justice 40 tracking and visualization to show details of affected TCE feeders (cyan lines) and substations (circled red houses) overlaid on top of **health burden** map (dark red areas). Several of these areas require medical devices 24/7 and thus cannot afford long outage durations (see *image on the right*).



Also, TCE will monitor circuits, feeders, substations, and service areas where **wildfires** and **outage cost** are directly impacting disadvantaged communities who are experiencing energy burden and lack of reliable electricity (see *image on the right*).



Increase Funds for DAC Areas With Operation Round Up to Offset Health and Energy Costs

Operation Round Up is a charitable trust set up by TCE Trust in 2006 that provides needed services for individuals who are below the poverty level, disabled or have family issues. Over the past 16 years, grants totaling **\$1,422,171.89** have been awarded to organizations, agencies, individuals, and families.

The Power Meter Squared and Green Tree project will protect the members of Tri-County Electric by reducing outages, reducing truck rolls during climate disasters, reducing the energy burden, and identifying energy efficient solutions for their consumers.

SCHEDULE 1. IDENTIFICATION

SURVEY CONTACTS: Persons to contact with question about this form

RESPONSE DUE DATE: Please submit by April 30th following the close of calendar year

Contact Michael Weeks
Title: Chief Administrative Officer

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
REPORTING PERIOD: 2021

Phone: (803) 655-1016 FAX: Email: mweeks@tce.coop

Logged By / Date:

Supervisor Chad T. Lowder
Title: CEO

Logged In: Receipt Date (mm/dd/yyyy):

Phone: (803) 874-1215 Ext. 1300 FAX: Email: clowder@tce.coop

1	Legal Name of Industry Participant	Tri-County Electric Coop, Inc (SC)	Submission Status/Date:	<input type="text" value="Submitted"/>	<input type="text" value="04/21/2022"/>
2	Current Address of Principal Business Office	6473 Old State Road St. Matthews SC 29135 0217			
3	Preparer's Legal Name Operator (if different than line 1)				
4	Current Address of Preparer's Office (if different than line 2)				
5	Respondent Type (Check One)	<input type="checkbox"/> Federal <input type="checkbox"/> Political Subdivision <input type="checkbox"/> Municipal Marketing Authority <input checked="" type="checkbox"/> Cooperative <input type="checkbox"/> Independent Power Producer or Qualifying Facility	<input type="checkbox"/> State <input type="checkbox"/> Municipal <input type="checkbox"/> Investor-Owned <input type="checkbox"/> Retail Power Marketer (or Energy Service Provider) <input type="checkbox"/> Community Choice Aggregator	<input type="checkbox"/> Transmission <input type="checkbox"/> Behind the Meter <input type="checkbox"/> Wholesale Power Marketer <input type="checkbox"/> DSM Administrator	

For questions or additional information about the Form EIA-861 contact the Survey Manager: Fax: (202) 287 - 1938 Email: EIA-861@eia.gov
Stephen Scott Phone: (202) 586-5140 Email: stephen.scott@eia.gov

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175

REPORT PERIOD ENDING: 2021

SCHEDULE 2: PART A: GENERAL INFORMATION

LINE NO.

1	Regional North American Electric Reliability Council (Not applicable for power marketers)	<input type="checkbox"/> TRE (formerly ERCOT)	<input type="checkbox"/> NPCC	<input type="checkbox"/> SPP
		<input type="checkbox"/> FRCC	<input type="checkbox"/> RFC (formerly ECAR, MAIN, MAAC)	<input type="checkbox"/> WECC
		<input type="checkbox"/> MRO	<input checked="" type="checkbox"/> SERC	
2	Name of RTO or ISO	<input type="checkbox"/> California ISO	<input type="checkbox"/> Southwest Power Pool	
		<input type="checkbox"/> Electric Reliability Council of Texas	<input type="checkbox"/> Midwest ISO	
		<input type="checkbox"/> PJM Interconnection	<input type="checkbox"/> ISO New England	
		<input type="checkbox"/> New York ISO	<input checked="" type="checkbox"/> None	
3	(For EIA Use Only) Identify the North American Electric Reliability Council where you are physically located	SERC		
4	Did Your Company Operate Generating Plants(s)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
5	Identify The Activities Your Company Was Engaged In During The Year (Check appropriate activities)	<input type="checkbox"/> Generation from company owned plant	<input type="checkbox"/> Buying distribution on other electrical system	
		<input type="checkbox"/> Transmission	<input type="checkbox"/> Wholesale power marketing	
		<input type="checkbox"/> Buying transmission services on other electrical system	<input type="checkbox"/> Retail power marketing	
		<input checked="" type="checkbox"/> Distribution using owned/leased electric wires	<input type="checkbox"/> Bundled Services (electricity plus other services such as gas, water, etc. in addition to electric service))	
6	Highest Hourly Electrical Peak System Demand	Summer (Megawatts)	73.3	Prior Year 77.5
		Winter (Megawatts)	80.9	Prior Year 79.1
7	Did Your Company Operate Alternative-Fueled Vehicles During the Year?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	Does Your Company Plan to Operate Such Vehicles During the Coming Year?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	If "Yes", Please Provide Additional Contact Information	Name:	Title:	
		Telephone: - -	Fax: - -	Email:

REPORT FOR: Tri-County Electric Coop, Inc (SC)

14175

REPORT PERIOD ENDING: 2021

SCHEDULE 2: PART B. ENERGY SOURCES AND DISPOSITION					
	SOURCE OF ENERGY	MEGAWATTHOURS		DISPOSITION OF ENERGY	MEGAWATTHOURS
1	Net Generation		11	Sales to Ultimate Consumers	299,146
2	Purchases from Electricity Suppliers	314,252	12	Sales For Resale	
3	Exchanged Received (In)		13	Energy Furnished Without Charge	
4	Exchanged Delivered (Out)		14	Energy Consumed By Respondent Without Charge	
5	Exchanged Net				
6	Wheeled Received (In)				
7	Wheeled Delivered (Out)		15	Total Energy Losses (positive number)	15,106
8	Wheeled Net				
9	Transmission by Others Losses (Negative Number)				
10	Total Sources (sum of lines 1, 2, 5, 8 & 9)	314,252	16	Total Disposition (sum of lines 11, 12, 13, 14, & 15)	314,252

REPORT FOR: Tri-County Electric Coop, Inc (SC)
 REPORT PERIOD ENDING: 2021

14175

SCHEDULE 2, PART C, ELECTRIC OPERATING REVENUE

LINE NO.	TYPE OF OPERATING REVENUE	(THOUSAND DOLLARS to the nearest 0.1)
1	Electrical Operating Revenue From Sales to Ultimate Customers (Schedule 4: Parts A, B, and D) \$	43,398.0
2	Revenue From Unbundled (Delivery) Customers (Schedule 4: Part C) \$	
3	Electric Operating Revenue from Sales for Resale \$	
4	Electric Credits/Other Adjustments \$	
5	Revenue from Transmission \$	
6	Other Electric Operating Revenue \$	729.3
7	Total Electric Operating Revenue (sum of lines 1, 2, 3, 4, 5 and 6) \$	44,127.3

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175

REPORT PERIOD ENDING: 2021

SCHEDULE 3, PART A
 DISTRIBUTION SYSTEM RELIABILITY DATA

INSTRUCTIONS: For the purpose of this schedule, a distribution circuit is any circuit with a voltage of 34kV or below that emanate from a substation and that serves end use customers.

State/Territory	SC
1	Total Number of Distribution Circuits 59.0
2	Number of Distribution Circuits that employ voltage/VAR optimization (VVO)

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
 REPORT PERIOD ENDING: 2021

**SCHEDULE 3 PART B
 DISTRIBUTION SYSTEM RELIABILITY DATA**

Who is required to complete this schedule?

This schedule collects System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) statistics. If your organization does not compute these indexes, answer 'no' to Question 1 and then skip to Schedule 4A. You do not have to complete any other part of this schedule 3B or 5C.

Should you complete Part B or Part C?

If your organization computes the SAIFI and SAIDI indexes and determines Major Event Days using the IEEE 1366-2003 or the IEEE 1366-2012 standard, answer 'YES' to Questions 1 and 2, and complete Part B. Then skip to Schedule 4A. (You do not complete Schedule 3, Part C.)

If your organization does not use the IEEE 1366-2003 or the IEEE 1366-2012 standard but calculates SAIDI and SAIFI indexes via other method, answer 'yes' to question 1 and 'no' to question 2 and complete Part C. Then go to Schedule 4A.

- 1 Do you calculate SAIDI and SAIFI by any method? If Yes, go to Question 2. If No, go to Schedule 4, Part A. Yes No
- 2 Do you calculate SAIDI and SAIFI and determine Major Event Days using the IEEE 1366-2003 standard or IEEE-2012 standard? If Yes, complete Part B. If No, go to complete Part C. Yes No

PART B- SAIDI and SAIFI in accordance with IEEE 1366-2003 standard or IEEE 1366-2012 standard

	State	SC
3a. SAIDI value including Major Event days		244.850
3b. SAIDI value excluding Major Event days		203.070
4 SAIDI value including Major Event days minus loss of supply		182.110
5a. SAIFI value including Major Event days		2.610
5b. SAIFI value excluding Major Event days		2.310
6. SAIFI value including Major Event days minus loss of supply		1.930
7. Total number of customers used in these calculations		18,355.0
8. What is the highest voltage that you consider part of the distribution system, as opposed to the supply system? (kV)		14.4
9. Do you receive information about a customer outage in advance of a customer reporting it?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Thank You for completing this part. Skip Part C and go directly to Schedule 4 Part A.

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
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Part C- SAIDI and SAIFI calculated by other methods

State

10a. SAIDI value including Major Events

10b. SAIDI value excluding Major Events

11a. SAIFI value including Major Events

11b. SAIFI value excluding Major Events

12. Total number of customers used in these calculations

13. Do you include inactive accounts? Yes No

14. How do you define momentary interruptions Less than 1 min. Less than 5 min. Other

15. What is the highest voltage that you consider part of the distribution system, as opposed to the supply system? kv

16. Is information about customer outages recorded automatically? Yes No

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
 REPORT PERIOD ENDING: 2021

SCHEDULE 4 PART A SALES TO ULTIMATE CUSTOMERS FULL SERVICE ENERGY AND DELIVERY SERVICE (BUNDLED)

RESIDENTIAL (a) COMMERCIAL (b) INDUSTRIAL (c) TRANSPORTATION (d) TOTAL (e)

State	SC	Balancing Authority	17543						
Revenue (thousand dollars)	35,799.1	5,694.2	1,904.7						43,398.0
Megawatthours	230,716	43,615	24,815						299,146
Number of Customers	17,614	531	265						18,410
Are your rates decoupled?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
If the answer is YES, is the revenue adjustment automatic or does it require a rate-making proceeding?	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic	<input checked="" type="checkbox"/> automatic
	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding	<input checked="" type="checkbox"/> proceeding
Cents/Kwh	15.517	13.056	7.676						14.507

State									
Revenue (thousand dollars)									
Megawatthours									
Number of Customers									
Are your rates decoupled?									
If the answer is YES, is the revenue adjustment automatic or does it require a rate-making proceeding?									

Cents/Kwh									
Total									
Revenue (thousand dollars)	35,799.1	5,694.2	1,904.7						43,398.0
Megawatthours	230,716	43,615	24,815						299,146
Number of Customers	17,614	531	265						18,410

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
 REPORT PERIOD ENDING: 2021

SCHEDULE 4 PART B SALES TO ULTIMATE CUSTOMERS ENERGY - ONLY SERVICE (WITHOUT DELIVERY SERVICE)

	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
State	Balancing Authority				
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
Total					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
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	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
Balancing Authority					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
Total					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					

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SCHEDULE 4. PART D. BUNDLED SERVICE BY RETAIL ENERGY PROVIDERS AND POWER MARKETERS

	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
Revenue (thousand dollars)	State	Balancing Authority			
Megawatthours					
Number of Customers					
Cents/Kwh					
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
Total					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175

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SCHEDULE 5: MERGERS and/or ACQUISITIONS

Mergers and/or acquisitions during the reporting month

If Yes, Provide:

Date of Merger or Acquisition

Company merged with or acquired

Name of new parent company

Address

City

State, Zip

New Contact Name

Telephone No.

Email address

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
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 SCHEDULE 6 PART A ENERGY EFFICIENCY PROGRAMS
 Adjusted Gross Energy and Demand Savings - Energy Efficiency

If you have a non utility DSM administrator that reports your DSM activity for you please select them from the list

State/Territory	SC	Balancing Authority	17543	INDUSTRIAL	TRANS	Total
	RESIDENTIAL	COMMERCIAL		(c)	(d)	(e)
	(a)	(b)				
1 Energy Savings (MWb)	Reporting Year Incremental Annual Savings					
2 Peak Demand Savings (MW)	Increment Life Cycle Savings					
3 Energy Savings (MWb)	Reporting Year Incremental Costs					
4 Peak Demand Savings (MW)	Incremental Life Cycle Costs					
5 Customer Incentives	Reporting Year Incremental Costs					
6 All other costs	Incremental Life Cycle Costs					
7 Customer Incentives	Reporting Year Incremental Costs					
8 All other costs	Incremental Life Cycle Costs					
9 Weighted Average Life	Weighted Average Life (on Portfolio (Years) Use Spreadsheet to Calculate					

Please provide website address to your energy efficiency program reports:

REPORT FOR: Tri-County Electric Coop, Inc (SC)
14175
REPORT PERIOD ENDING: 2021

SCHEDULE 6. PART A. ENERGY EFFICIENCY PROGRAMS

DMS Administration only. List all utilities that you provide service for.

State	Utility Name
-------	--------------

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
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Schedule 6, Part B, Yearly Energy and Demand Savings - Demand Response

Reporting Year Savings

State/Territory	SC	Balancing Authority	17543	Reporting Year Savings			(e) Total
				(a) Residential	(b) Commercial	(c) Industrial	
1		Number of Customers Enrolled	17,326	242		17,568	
2		Energy Savings (Mwh)	1,013,000	320,000		1,333,000	
3		Potential Peak Demand Savings (MW)	3,000	0,000		3,000	
4		Actual Peak Demand Savings (MW)					

Schedule 6, Part B, Program Cost - Demand Response (Thousand Dollars)

Reporting Year Costs

5	Customer Incentives	
6	All other costs	
7	If you have a demand side management (DMS) program for grid-interactive water heaters (as defined by DOE), how many grid interactive water heaters were added to your program this year?	

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175

REPORT PERIOD ENDING: 2021

SCHEDULE 6 PART C DYNAMIC PRICING PROGRAMS
Number of Customers

INSTRUCTIONS: Report the number of customers participating in dynamic pricing programs, e.g. Time-of-Use-Pricing, Real-Time-Pricing, Variable Peak Pricing, Critical Peak Pricing Programs.

State/Territory SC Balancing Authority 17543

	Residential (a)	Commercial (b)	Industrial (c)	Transportatio (d)	Total (e)
1			252		252

Number of Customers enrolled in dynamic pricing programs, by customer class

Types of Dynamic Pricing Programs

INSTRUCTIONS: For each customer class, mark the types of dynamic pricing programs in which the customers are participating.

	Residential (a)	Commercial (b)	Industrial (c)	Transportatio (d)
2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
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SCHEDULE 6. PART D. ADVANCED METERING

Only customers from schedule 4A and 4C need to be reported on this schedule.
 AMR- data transmitted one-way, to the utility.
 AMI- data transmitted in both directions, to the utility and customer

State	SC	Balancing Authority	17543	Residential (a)	Commercial (b)	Industrial (c)	Transportation (d)	Total (e)
1	Number of AMR Meters			17,614	531	265		18,410
2	Number of AMI Meters							
3	Number of AMI Meters with home area network (HAN) gateway enabled							
4	Number of non-AMR/AMI Meters							
5	Total Number of Meters (All Types), line 1+2+4			17,614	531	265		18,410

6 Energy Served Through AMI

Number of Customers able to access daily energy usage through a webportal or other electronic means

8 Number of customers with direct load control

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SCHEDULE 7: PARTIAL NET METERING

Net Metering programs allow customers to sell excess power they generated back to the electrical grid to offset consumption. Provide the information about programs by State balancing authority, customer class, and technology for all net metering applications.

State	SC	Balancing Authority	17543	Residential (a)	Commercial (b)	Industrial (c)	Transportation (d)	Total (e)
				0.926				0.926
								112
								0.000
								0
								0.000
								0
				0.240				0.240
				44				44
								0.000
								0
								0.000
								0.000
								0
								0.000
								0.000
				1.166	0.000	0.000	0.000	1.166
				156	0	0	0	156
				0.000	0.000	0.000	0.000	0.000
				1.166	0	0	0	1.166
				156	0	0	0	156
				0	0	0	0	0
				1.166	0.000	0.000	0.000	1.166
				156	0	0	0	156
				0	0	0	0	0

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SCHEDULE 7 PART B NON-NET-METERED DISTRIBUTED GENERATORS

If your company owns and/or operates a distribution system, please report information on known distributed generation (grid connected/synchronized) capacity on the system. Such capacity must be utility or customer-owned

NUMBER AND CAPACITY

State SC Balancing Authority 17543 < 1MW

- 1. Number of generators
- 2. Total combined capacity (MW)
- 3. Capacity that consists of backup-only units
- 4. Capacity owned by respondent

Capacity by Technology and Sector (MW)		Industrial	Transportation	Direct Connected	Total
5. Internal combustion					
6. Combustion turbine(s)					
7. Steam turbine(s)					
8. Fuel Cell(s)					
9. Hydroelectric					
10. Photovoltaic					
11. Storage					
12. Wind turbine(s)					
13. Other					
14. Total					

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SCHEDULES: DISTRIBUTION SYSTEM INFORMATION

If your company owns a distribution system, please identify the names of the counties (parish, etc.) by State in which the electric wire/equipment are located.

LINE NO.	STATE (US Postal Abbreviation) (a)	COUNTY (Parish, Etc.) (b)	LINE NO.	STATE (US Postal Abbreviation) (a)	COUNTY (Parish, Etc.) (b)
1	SC - Calhoun				
2	SC - Kershaw				
3	SC - Lexington				
4	SC - Orangeburg				
5	SC - Richland				
6	SC - Sumter				

REPORT FOR: Tri-County Electric Coop, Inc (SC) 14175
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SCHEDULE 9 COMMENTS

SCHEDULE (a)	PART (b)	LINE NO. (c)	COLUMN (d)	NOTES (e)
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REPORT FOR: Tri-County Electric Coop, Inc (SC)
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EIA-861 ERROR LOG

Part	State	BA ID	Error No.	Error Description/Override Comment	Type	Override
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U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL QUESTIONNAIRE

I. INSTRUCTIONS

The proposer shall prepare this Environmental Questionnaire (EQ) as accurately and completely as possible. Supporting information can be provided as attachments. The proposer must identify the location of the project and specifically describe the activities that would occur at that location. The proposer must provide specific information and quantities, regarding air emissions, wastewater discharges, solid wastes, etc., to facilitate the necessary review. In addition, the proposer must submit with this EQ a FINAL copy of the project's statement of work (SOW) or statement of project objective (SOPO) that will be used in the contract/agreement between the proposer and the U.S Department of Energy (DOE).

II. QUESTIONNAIRE

A. PROJECT SUMMARY

1. Solicitation/Project Number: _____ Proposer: _____
2. This Environmental Questionnaire pertains to a: Recipient or Prime Contractor Sub-recipient or Subcontractor
3. Principal Investigator: _____ Telephone Number: _____
4. Project Title: _____
5. Expected Project Duration: _____
6. Location of Activities covered by **this** Environmental Questionnaire: (City/Township, County, State):
7. List the full scope of activities planned (only for the location that is the subject of this Environmental Questionnaire).
8. List all other locations where work would be performed by the primary contractor of the project and subcontractor(s). Each of the following must have an individual Environmental Questionnaire.

Subcontractor or sub-recipient	Location of activities for this project

9. Identify and select the checkbox with the predominant project work activities under Group A, B, or C

Group A

- Routine administrative, procurement, training, and personnel actions. Contract activities/awards for management support, financial assistance, and technical services in support of agency business, programs, projects, and goals. Literature searches and information gathering, material inventories, property surveys; data analysis, computer modeling, analytical reviews, technical summary, conceptual design, feasibility studies, document preparation, data dissemination, and paper studies. Technical assistance including financial planning, assistance, classroom training, public meetings, management training, survey participation, academic contribution, technical consultation, and stakeholders surveys. Workshop and conference planning, preparation, and implementation which may involve promoting energy efficiency, renewable energy, and energy conservation.

STOP! If all work activities related to this project can be classified and described within categories under Group A, proceed directly to Section III CERTIFICATION BY PROPOSER. No additional information is required. If project work activities are described in either Group(s) B or C; then continue filling out questionnaire.

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ENVIRONMENTAL QUESTIONNAIRE

Group B

- Laboratory Scale Research, Bench Scale Research, Pilot Scale Research, Proof-of-Concept Scale Research, or Field Test Research. Work DOES NOT involve new building/facilities construction and site excavation/groundbreaking activities. This work typically involves routine operation of existing laboratories, commercial buildings/properties, offices and homes, project test facilities, factories/power plants, vehicles test stands and components, refueling facilities, utility systems, or other existing structures/facilities. Work will NOT involve major change in facilities missions and operations, land use planning, new/modified regulatory/operating permit requirements. Includes work specific to routine DOE Site operations and Lab research work activities, but NOT building construction and site preparation. DOE work typically involves laboratory facilities and lab equipment operations, buildings and grounds management activities; and buildings and facilities maintenance, repairs, reconfiguration, remodeling, equipment use and replacement.

Group C

- Pilot Test Facilities Construction, Pilot Scale Research, Field Scale Demonstration, or Commercial Scale Application. Work typically involves facility construction, site preparation/excavation/groundbreaking, and/or demolition. This work would include construction, retrofit, replacement, and/or major modifications of laboratories, test facilities, energy system prototypes, and power generation infrastructure. Work may also involve construction and maintenance of utilities system right-of-ways, roads, vehicle test facilities, commercial buildings/properties, fuel refinery/mixing facilities, refueling facility, power plants, underground wells, and pipelines, and other types of energy research related facilities. This work may require new or modified regulatory permits, environmental sampling and monitoring requirements, master planning, public involvement, and environmental impact review. Includes work specific to DOE Site Operations and Lab operation activities involving building and facilities construction, replacement, decommissioning/demolition, site preparation, land use changes, or change in research facilities mission or operations.

B. PROPOSED PROJECT ALTERNATIVES

1. If applicable, list any project alternatives considered to achieve the project objectives.

C. PROJECT LOCATION

1. Provide a brief description of the project location (physical location, surrounding area, adjacent structures).
2. Attach a project site location map of the project work area.

D. ENVIRONMENTAL IMPACTS

NEPA procedures require evaluations of possible effects (including land use, energy resource use, natural, historic and cultural resources, and pollutants) from proposed projects on the environment.

1. Land Use

- a. Characterize present land use where the proposed project would be located.

- | | | | |
|-----------------------------------|--|--------------------------------------|--|
| <input type="checkbox"/> Urban | <input type="checkbox"/> Industrial | <input type="checkbox"/> Commercial | <input type="checkbox"/> Agricultural |
| <input type="checkbox"/> Suburban | <input type="checkbox"/> Rural | <input type="checkbox"/> Residential | <input type="checkbox"/> Research Facilities |
| <input type="checkbox"/> Forest | <input type="checkbox"/> University Campus | <input type="checkbox"/> Other: | _____ |

- b. Identify the total size of the facility, structure, or system and what portion would be used for the proposed project.

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ENVIRONMENTAL QUESTIONNAIRE

- g. Would the proposed project involve any of the following: nanotechnology; recombinant DNA or genetic engineering; facility decommissioning or disposition of equipment/materials; or management of radioactive wastes/materials?
- No Yes (describe)

3. Biological Resources

- a. Identify any State or Federally listed endangered or threatened plant or animal species potentially affected by the proposed project.
- None
- b. Would any designated critical habitat be affected by the proposed project? No Yes (describe)
- c. Describe any impacts that construction would have on any other types of sensitive or unique habitats.
- No planned construction No habitats None Impact (describe)
- d. Would any foreign substances/materials be introduced into ground or surface waters, soil, or other earth/geologic resource because of project activities? How would these foreign substances/materials affect the water, soil, biota, and geologic resources? No Yes (describe)
- e. Would any migratory animal corridors be impacted or disrupted by the proposed project? No Yes (describe)

4. Socioeconomic and Infrastructure Conditions

- a. Would local socio-economic changes result from the proposed project? No Yes (describe)
- b. Would the proposed project generate increased traffic use of roads through local neighborhoods, urban or rural areas?
- No Yes (describe)
- c. Would the proposed project require new transportation access (roads, rail, etc.)? Describe location, impacts, costs.
- No Yes (describe)
- d. Would the proposed project create a significant increase in local energy usage? No Yes (describe)

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ENVIRONMENTAL QUESTIONNAIRE

5. Historical/Cultural Resources

- a. Describe any historical, archaeological, or cultural sites in the vicinity of the proposed project; note any sites included on the National Register of Historic Places. None
- b. Would construction or operational activities planned under the proposed project disturb any historical, archaeological, or cultural sites? No planned construction No historic sites Yes (describe) No Impact (discuss)
- c. Has the State Historic Preservation Office been contacted with regard to this project? No Yes (describe)
- d. Would the proposed project interfere with visual resources (e.g., eliminate scenic views) or alter the present landscape? No Yes (describe)
- e. Would the proposed project be located on or adjacent to tribal lands, lands considered to be sacred, or lands used for traditional purposes? Describe any known tribal sensitivities for the proposed project area.

6. Atmospheric Conditions/Air Quality

- a. Identify air quality conditions in the immediate vicinity of the proposed project with regard to attainment of National Ambient Air Quality Standards (NAAQS). This information is available under the Green Book Non-Attainment Areas for Criteria Pollutants located at <http://www.epa.gov/air/oaqps/greenbk/astate.html>

	Attainment	Non-Attainment
O ₃ - 1 Hour	<input type="checkbox"/>	<input type="checkbox"/>
O ₃ - 8 Hour	<input type="checkbox"/>	<input type="checkbox"/>
SO _x	<input type="checkbox"/>	<input type="checkbox"/>
PM - 2.5	<input type="checkbox"/>	<input type="checkbox"/>
PM - 10	<input type="checkbox"/>	<input type="checkbox"/>
CO	<input type="checkbox"/>	<input type="checkbox"/>
NO ₂	<input type="checkbox"/>	<input type="checkbox"/>
Lead	<input type="checkbox"/>	<input type="checkbox"/>

- b. Would proposed project require issuance of new or modified local, state, or federal air permits to perform project related work and activities? No Yes (describe)
- c. Would the proposed project be in compliance with local and state air quality requirements? Yes
 If not, please explain.

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- d. Would the proposed project be classified as either a New Source or a major modification to an existing source?
 No Yes (describe)

- e. What types of air emissions, including fugitive emissions, would be anticipated from the proposed project, and what would be the maximum annual rate of emissions for the project?

	Maximum per Year	Total for Project
<input type="checkbox"/> SO _x		
<input type="checkbox"/> NO _x		
<input type="checkbox"/> PM - 2.5		
<input type="checkbox"/> PM - 10		
<input type="checkbox"/> CO		
<input type="checkbox"/> CO ₂		
<input type="checkbox"/> Lead		
<input type="checkbox"/> H ₂ S		
<input type="checkbox"/> Organic solvent vapors or other volatile organic compounds--List:		
<input type="checkbox"/> Hazardous air pollutants -- List:		
<input type="checkbox"/> Other -- List:		
<input type="checkbox"/> None		

- f. Would any types of emission control or particulate collection devices be used?
 No Yes (describe, including collection efficiencies)

- g. How would emissions be vented?

7. Hydrologic Conditions/Water Quality

- a. What nearby water bodies may be affected by the proposed project? Provide distance(s) from the project site.

- b. What sources would supply potable and process water for the proposed project?

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ENVIRONMENTAL QUESTIONNAIRE

c. Quantify the wastewater that would be generated by the proposed project.

	Gallons/day	Gallons/year
<input type="checkbox"/> Non-contact cooling water		
<input type="checkbox"/> Process water		
<input type="checkbox"/> Sanitary		
<input type="checkbox"/> Other -- describe:		
<input type="checkbox"/> None		

d. What would be the major components of each type of wastewater (e.g., coal fines)? No wastewater produced

e. Identify the local treatment facility that would receive wastewater from the proposed project.

No discharges to local treatment facility

f. Describe how wastewater would be collected and treated. No wastewater produced

g. Would any run-off or leachates be produced from storage piles or waste disposal sites? No Yes (describe source)

h. Would project require issuance of new or modified water permits to perform project work or site development activities?

No Yes (describe)

i. Where would wastewater effluents from the proposed project be discharged? No wastewater produced

j. Would the proposed project be permitted to discharge effluents into an existing body of water?

No Yes (describe water use and effluent impact)

k. Would a new or modified National Pollutant Discharge Elimination System (NPDES) permit be required?

No Yes (describe)

l. Would the proposed project adversely affect the quality or movement of groundwater? No Yes (describe)

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ENVIRONMENTAL QUESTIONNAIRE

- m. Would the proposed project require issuance of an [Underground Injection Control \(UIC\)](#) permit?
 - No
 - Yes (describe)

- n. Would the proposed project be located in or near a wellhead protection area, drinking water protection area, or above a sole source aquifer or underground source of drinking water (USDW)?
 - No
 - Yes (describe)

8. Solid and Hazardous Wastes

- a. Identify and estimate wastes that would be generated from the project. Solid wastes are defined as any solid, liquid, semi-solid, or contained gaseous material that is discarded, has served its intended purpose, or is a manufacturing or mining by-product (See [EPA Municipal Solid Waste](#) and [Municipal Solid Waste by State](#)).

	Annual Quantity
<input type="checkbox"/> Municipal solid waste (e.g., paper, plastic, etc.)	
<input type="checkbox"/> Coal or coal by-products	
<input type="checkbox"/> Other -- Identify:	
<input type="checkbox"/> Hazardous waste – Identify:	
<input type="checkbox"/> None	

- b. Would project require issuance of new or modified solid waste and/or hazardous waste related permits to perform project work activities?
 - No
 - Yes (explain)

- c. How and where would solid waste disposal be accomplished?
 - None generated
 - On-site (identify and describe location)
 - Off-site (identify location and describe facility and treatment)

- d. How would wastes for disposal be transported?

- e. Describe hazardous wastes that would be generated, treated, handled, or stored under this project. Hazardous waste information can be found at [EPA Hazardous Waste](#) website.
 - None

- f. How would hazardous or toxic waste be collected and stored?
 - None used or produced

U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL QUESTIONNAIRE

- g. If hazardous wastes would require off-site disposal, have arrangements been made with a certified TSD (Treatment, Storage, and Disposal) facility?
- Not required Arrangements not yet made Arrangements made with a certified TSD facility (identify)

9. Health/Safety Factors

- a. Identify hazardous or toxic materials that would be used in the proposed project.
- None Hazardous or toxic materials that would be used (identify):
- b. Describe the potential impacts of this project's hazardous materials on human health and the environment.
- None
- c. Would there be any special physical hazards or health risks associated with the project? No Yes (describe)
- d. Does a worker safety program exist at the location of the proposed project? No Yes (describe)
- e. Would additional safety training be necessary for any new laboratory, equipment, or processes involved with the project?
- No Yes (describe)
- f. Describe any increases in ambient noise levels to the public from construction and operational activities.
- None Increase in ambient noise level (describe)
- g. Would project construction result in the removal of natural or other barriers that act as noise screens?
- No construction planned No Yes (describe)
- h. Would hearing protection be required for workers? No Yes (describe)

10. Environmental Restoration and/or Waste Management

- a. Would the proposed project include CERCLA removals or similar actions under RCRA or other authorities?
- No Yes (describe)

U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL QUESTIONNAIRE

- b. Would the proposed project include siting, construction, and operation of temporary pilot-scale waste collection and treatment facilities or pilot-scale waste stabilization and containment facilities? No Yes (describe)
- c. Would the proposed project involve operations of environmental monitoring and control systems?
 No Yes (describe)
- d. Would the proposed project involve siting, construction, operation, or decommissioning of a facility for storing packaged hazardous waste for 90 days or less? No Yes (describe)

E. REGULATORY COMPLIANCE

1. For the following laws, describe any existing permits, new or modified permits, manifests, responsible authorities or agencies, contacts, etc., that would be required for the proposed project
- a. Resource Conservation and Recovery Act ([RCRA](#)): None New Required Modification Required
Describe:
- b. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):
 None New Required Modification Required
Describe:
- c. Toxic Substance Control Act (TSCA): None New Required Modification Required
Describe:
- d. Clean Water Act (CWA): None New Required Modification Required
Describe:
- e. Underground Storage Tank Control Program (UST): None New Required Modification Required
Describe:
- f. Underground Injection Control Program (UIC): None New Required Modification Required
Describe:
- g. Clean Air Act (CAA): None New Required Modification Required
Describe:

U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL QUESTIONNAIRE

- h. Endangered Species Act (ESA): None New Required Modification Required
Describe:
- i. [Floodplains and Wetlands Regulations](#): None New Required Modification Required
Describe:
- j. Fish and Wildlife Coordination Act (FWCA): None New Required Modification Required
Describe:
- k. National Historic Preservation Act (NHPA): None New Required Modification Required
Describe:
- l. Coastal Zone Management Act (CZMA): None New Required Modification Required
Describe:

2. Identify any other environmental laws and regulations (Federal, state, and local) for which compliance would be necessary for this project, and describe the permits, manifests, and contacts that would be required.

F. DESCRIBE ANY ISSUES THAT WOULD GENERATE PUBLIC CONTROVERSY REGARDING THE PROPOSED PROJECT. None

G. WOULD THE PROPOSED PROJECT PRODUCE ADDITIONAL DEVELOPMENT, OR ARE OTHER MAJOR DEVELOPMENTS PLANNED OR UNDERWAY, IN THE PROJECT AREA?
 No Yes (describe)

H. SUMMARIZE THE SIGNIFICANT IMPACTS THAT WOULD RESULT FROM THE PROPOSED PROJECT.
 None (provide supporting detail) Significant impacts (describe)

U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL QUESTIONNAIRE

I. PROVIDE A DESCRIPTION OF HOW THE PROJECT WOULD BE DECOMMISSIONED, INCLUDING THE DISPOSITION OF EQUIPMENT AND MATERIALS.

The project will consume all project materials by end of project term; therefore decommissioned assets would not apply. In the event an unexpected disposal/decommission becomes necessary; we will follow 2 CFR 200 and state/local statutes for compliance on disposition.

III. CERTIFICATION BY PROPOSER

I hereby certify that the information provided herein is current, accurate, and complete as of the date shown immediately below.

Signature: 

Date (mm/dd/yyyy): 04/05/2023

Typed Name: Jerrel Furtick

Title: VP Engineering & Operations

Organization: Tri-County Electric Inc.

IV. REVIEW AND APPROVAL BY DOE

I hereby certify that I have reviewed the information provided in this questionnaire, have determined that all questions have been appropriately answered, and judge the responses to be consistent with the efforts proposed.

DOE Project Manager

Signature: _____

Date (mm/dd/yyyy): _____

Typed Name: _____



July 1, 2021

Ms. Bertie McKie
Senior Administrator
Aiken Barnwell Counties Community Action
P.O. Box 2066
Aiken, SC 29802

Dear Mrs. McKie,

It is a pleasure to give my support for the renewal of the CSGB and LIHEAP funding for Aiken/Barnwell and Lexington Counties Community Action Agency, Inc. Tri-County Electric Cooperative is a power supplier to many homes in Lexington County and many of our members need this assistance for their energy bills. The area of Lexington County serviced by Tri-County Electric Cooperative is a rural area in South Carolina that has a high poverty rate. Grants made available through this program are essential for many of these families.

Sincerely,

Chad T. Lowder
Chief Executive Officer



CALHOUN COUNTY COUNCIL

David K. Summers, Jr., Chairman
James E. Haigler, Vice Chairman
John D. Nelson
Cecil M. Thornton, Jr.
Ken Westbury

F. Lee Pickett, Jr., County Administrator
Theodore B. Felder, Assistant County Administrator
Vickie B. Stoudemire, Clerk to Council

January 26, 2017

Chad T. Lowder, CEO
Tri-County Electric Cooperative
Post Office Box 217
St. Matthews, South Carolina 29135

RE: Regional Multi-County Industrial Park

Dear Chad:

Thank you for the opportunity for Calhoun County to work with Tri-County Electric Cooperative on a regional multi-county industrial park to be located in Orangeburg County at the intersection of US Highway 601 and Interstate I-26. Due to the location of the park, we feel this project will certainly be a benefit to the area and will potentially provide job opportunities to the citizens of Calhoun County.

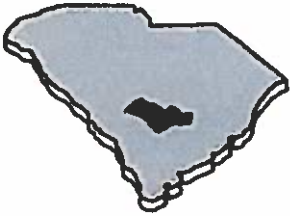
Based upon the facts set forth by you in your letter dated January 19, and your presentation to Calhoun County Council, Calhoun County is willing to commit \$100,000 per year for up to five (5) years to support infrastructure construction at the park. This commitment is conditioned upon the following: (a) approval and full funding of the project by Santee-Cooper, Tri-County Electric Cooperative, the County of Orangeburg, and other grants; (b) execution of a multi-county industrial park agreement with Orangeburg County, SC, which provides for distribution of tax revenue and/or fees from the park to be allocated between Orangeburg County and Calhoun County proportionate to the investment made by each County.

Calhoun County looks forward to working with Tri-County, Santee-Cooper, and Orangeburg County on this project.

Yours truly,


F. Lee Prickett, Jr.
Administrator

FLP,jr/vbs



COUNTY ADMINISTRATOR
HAROLD M. YOUNG

COUNTY OF ORANGEBURG

P.O. DRAWER 9000, ORANGEBURG, S.C. 29116-9000
TELEPHONE 803/533-6101
WWW.ORANGEBURGCOUNTY.ORG



COUNCIL MEMBERS
JOHNNIE WRIGHT, SR., CHM.
JANIE COOPER-SMITH, VICE CHAIR
CLYDE B. LIVINGSTON
HEYWARD H. LIVINGSTON
WILLIE B. OWENS
JOHNNY RAVENELL
HARRY WIMBERLY

January 24, 2017

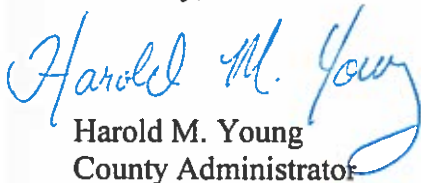
Chad T. Lowder, CEO
Tri-County Electric Cooperative
Post Office Box 217
St. Matthews, SC 29135-0217

Chad,

We are excited about Tri-County Electric Cooperative's purchase of the Gue-Gressette property and the economic implications this purchase has for our citizens and your service area. The County of Orangeburg is committed to assisting Tri-County Electric get the Gue-Gressette property site ready for prospects. As discussed, the County of Orangeburg has committed \$500,000.00 to assist with water, wastewater, and natural gas infrastructures with the understanding that additional funds will be requested from South Carolina Department of Commerce.

If you have any questions, please do not hesitate to contact me.

Sincerely,


Harold M. Young
County Administrator

HMY/ah



January 3, 2022

OCAB

1822 Joe Jeffords Highway

Orangeburg, SC 29115

Attn.: Portia Jackson

Dear Ms. Jackson:

As a government contractor, Tri-County Electric Cooperative, Inc. must comply with the provisions of Executive Order 11246, as amended, and other existing laws related to equal employment opportunity. Part of our commitment to equal employment opportunity is to take affirmative action to ensure that job seekers are recruited; job applicants are considered for employment opportunities; and employees are treated without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, or status as a qualified individual with a disability or a protected veteran.

You can support and share in our commitment when you assist us with our employment needs. As we contact you for assistance in filling specific open positions, we wish for your help in identifying qualified applicants for consideration. Whenever possible, please refer qualified minorities, women, individuals with disabilities, and protected veterans.

Although we specifically have requested that OCAB refer minority group members and women, Tri-County Electric Cooperative, Inc. welcomes referrals of all qualified applicants regardless of race, color, religion, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.

Your assistance in referring all qualified candidates will help us achieve our commitment to equal employment opportunity. Please contact our VP of Human Resources, Kristen Zeigler, for further information.

Very truly yours,

Chad T. Lowder

Chief Executive Officer

**SOUTH CAROLINA LOW-INCOME HOME ENERGY ASSISTANCE PROGRAM (LIHEAP)
VENDOR AGREEMENT**

This Vendor Agreement shall govern certain activities of the Low-Income Home Energy Assistance Program, hereinafter referred to as LIHEAP, which are to be carried out by the Vendor identified on the signature page of this Agreement, hereinafter referred to as the Vendor, as a condition of receipt of payment, and the Community Action Agency; hereinafter referred to as the CAA.

The Wateree Community Actions, Inc. and the Vendor agree to the following:
(Community Action Agency)

A. SERVICES TO BE PERFORMED

1. The Vendor shall charge the eligible household, in the normal billing process, the difference between the actual cost of the home energy and the amount of the payment.
2. The Vendor is required to verify the account holder's name and/or household member(s), account number, current balance on account and signature upon receipt of the energy voucher prior to crediting the customer's account.
3. The Vendor will accept the voucher(s) as credit for actual commitment/cash payment for the purchase of home heating fuel or cooling assistance. The Vendor shall specify on the signature page of this Agreement the fuel type to be provided. The Vendor will accept vouchers for the purchase of only the type fuel approved in this Agreement.
4. The Vendor will only deliver fuel to the actual residence of the account holder or credit the account of the account holder as documented on the voucher.
5. If the customer has moved and the energy voucher does not reflect the new address, the Vendor shall not accept the voucher until the customer returns the voucher and requests a change of address from the Community Action Agency (CAA).
6. Vendors are to ensure credit and/or service to approved households within the designated program year.
7. This assistance is provided for households, not individuals. For this reason, no name changes may be made on the energy voucher. The address that appears on the voucher should match the name and address shown on the Vendor records. No alterations of any kind should be made to the voucher.
8. LIHEAP assistance may be used for deposits if specified by the CAA.
9. The parties recognize that each party is bound to act in accordance with their respective bylaws and policies at all times. Nothing in this Agreement is intended or shall be construed to supersede a party's obligations under their respective bylaws and policies or prevent a party from acting in accordance therewith.

B. PROVISIONS UNDER WHICH PAYMENT WILL BE MADE TO VENDORS

1. The Vendor must return this properly executed Vendor Agreement to the CAA prior to being reimbursed.
2. The Vendor must provide a Federal Employer Identification Number (FEIN) or a Social Security number will be acceptable only if the Vendor is an individual and has no FEIN.
 - a. If a Vendor provides a Social Security Number, the Vendor must use the proprietor's name, not the company name. If a FEIN is supplied, a company name must be used.
 - b. The Vendor shall notify the CAA in writing immediately when the FEIN, Social Security number, business name and/or address changes. Failure to report changes may result in a delay of payments. An IRS W-9 must accompany changes.

September 15, 2021

Mrs. Margaret Gibson
Program Director
Wateree Community Actions, Inc.
Post Office Box 8328
Columbia, SC 29202

Dear Mrs. Gibson,

As the CEO of Tri-County Electric Cooperative, I would like to provide you with this letter of support for the LIHEAP funding grant that is administered in our area by Wateree Community Actions, Inc. Tri-County Electric Cooperative is the main power supplier to the homes in Lower Richland County and many of our members need this assistance for their energy bills. Lower Richland County is a rural area in South Carolina that has a high poverty and elderly rate. Grants made available through this program are essential for many of these families.

Sincerely,

Chad T. Lowder
Chief Executive Officer

Mr. Frank Furtick
Tri-County Electric Cooperative
VP Engineering and Operations
6473 Old Stat Rd. St. Matthews
SC 29135-0217

SUBJECT: Letter of Support DOE FOA **TOPIC 1** 40101(c): Grid Resilience Grants

Dear Mr. Furtick,

Aerinet Solutions supports the grant project proposal “**TOPIC 1 - Tri-County Power Meter Squared & Green Tree**” led by **Tri-County Electric Cooperative (TCE)** and its partners in response to Grid Resilience and Innovation Partnerships (GRIP) /Funding Opportunity Announcement (FOA) Number: **DE-FOA-0002740 FOA**.

We understand that this project will focus on deploying comprehensive **transformational distribution technology solutions** that will mitigate hazards in TCE territories, and within disadvantaged communities, including **wildfires, floods, hurricanes, extreme heat, extreme cold, storms**, and other events that can cause disruption to the power system. We support these goals and activities and upon award, is **prepared to provide resources as defined** in the project scope of work and budget for the project’s duration.

Since 2011, Aerinet has been providing world-class technical, software, and grant project management capabilities and resources in the electric industry. Aerinet has undertaken a wide variety of technology and deployment projects in conjunction with electric cooperatives, private industries, and DOE national labs.

We are looking forward to a successful partnership with Tri-County Electric Cooperative.

Sincerely,


Alvin Razon MSc
CEO & General Manager
Aerinet Solutions Corporation
Alvin.razon@erinet.com
M: 1-703-888-8356

April 3, 2023

Frank Furtick
VP of Engineering and Operations
Tri-County Electric Cooperative, Inc.
6473 Old State Rd
St Matthews, SC 29135

RE: Letter of. Support for DOE Proposal

Dear Mr. Furtick,

Landis+Gyr Technology, Inc. is pleased to offer this letter of support for proposal “Topic 2- RF Meter and Green Tree” in response to the Bipartisan Infrastructure Law – Grid Resilience and Innovation Partnerships funding opportunity. The proposed project is positioned as a template to increase the adoption of electric vehicles and distributed energy resources, demand side management, CVR and will prove beneficial to the cooperative members, while transitioning into a clean energy future.

Landis+Gyr is the leading global provider of integrated energy management solutions for the utility sector. Offering one of the broadest portfolios of products and services to address complex industry challenges, the company delivers comprehensive solutions for the foundation of a smarter grid, including smart metering, distribution network sensing and automation tools, load management, analytics, and electric vehicle charging. Landis+Gyr operates in more than 30 countries across five continents. With sales of approximately USD \$1.7 billion, the company pursues the sole mission of helping the world manage energy better.

Globally headquartered in Cham, Switzerland, Landis+Gyr serves over 30 countries worldwide. Landis+Gyr’s North American headquarters is located in the greater metro Atlanta, Georgia area. Landis+Gyr also employs 810 employees in the U.S. across 14 states and offers employees a variety of workforce development initiatives including college internship programs, required learning hours, a leadership development program, and others.

Landis+Gyr is responding to customer needs and offers solutions to their biggest challenges driven by industry trends and policies that shape the future of energy consumption. Already today, the company’s communications and Grid Edge Intelligence technology allows utilities and consumers to control the way energy is used in a safe, secure, and reliable way, driving efficiencies, and allowing for increased cost control and data utilization. Going forward, Landis+Gyr will shape the way resources are being managed through Smart Infrastructure technology even more effectively and efficiently, creating value for utilities and energy consumers.



20 COOPERATIVE WAY
COLUMBIA, SC 29210
803-779-4975

April 4, 2023

Dear Mr. Furtick,

Central Electric Power Cooperative, Inc. (Central) is pleased to offer this letter of support for Tri-County Electric Cooperative in the DOE "Topic 2-RF Meter and Green Tree" Proposal. As our electric grid continues to transition to clean and distributed forms of energy, new technologies are rapidly increasing on our system that require more abilities for utilities to manage and utilize.

Central is a wholesale electric generation and transmission cooperative (G&T) headquartered in Columbia, South Carolina. Central is owned by the 20 independent, consumer-owned South Carolina distribution electric cooperatives. Many of the benefits of the new Advanced Metering Infrastructure (AMI) system will help solve some of the challenges Central faces at the G&T level.

As more and more distributed energy resources are deployed throughout Tri-County's service territory it is imperative that we not only know where those devices and resources are, but we must know how they are operating at specific times throughout the day. Voltage reduction, smart thermostats, and water heaters are a big part of Central and Tri-County's demand response inventory. Electric vehicles and battery systems could provide another big opportunity for us to increase demand response and load optimization resources. Having an up-to-date AMI system will be invaluable for Central and Tri-County to manage resources and plan for future resource needs.

We plan to support Tri-County throughout this process in any way possible. If you have any questions, please contact Scott Hammond at (803) 779-4975.

Sincerely,

A handwritten signature in blue ink that reads "Scott Hammond".

Scott Hammond
Director, Member Programs



April 3rd, 2023

Frank Furtick
VP of Engineering and Operations
Tri-County Electric Cooperative, Inc.
6473 Old State Rd
St Matthews, SC 29135

RE: Letter of. Support for DOE Proposal

Dear Mr. Furtick,

CEEUS is pleased to offer this letter of support for proposal “Topic 2- RF Meter and Green Tree” in response to the Bipartisan Infrastructure Law – Grid Resilience and Innovation Partnerships funding opportunity. The proposed project will be a template to support members of the cooperative in ways to improve demand side management through automation and utilizing technology through improved resources.

CEEUS supports Tri-County Electric Cooperative in all aspects of Supply Chain initiatives as we are their leading supplier of material for all their electric utility and broadband projects on daily and project needs. We have been partners with Tri-County EC as a member owned distributor for more than 40 years. CEEUS is the leading electric utility distributor in South Carolina dating back to 1974. CEEUS is credited with sales of over \$260 million in 2022. We offer our members all the electric utility and broadband material items needed on a daily basis through our stocking warehouse located in West Columbia, SC utilizing over 145,000 square feet of indoor warehouse and over 100,000 square feet of sheltered and yard space. We are in the process of constructing a new facility within the same industrial park we are currently located in that will double our stocking capacities to be completed 2nd quarter of 2024. We have 7 delivery trucks available 5 days a week and 24hrs on call for emergency needs. CEEUS currently employees 74 individuals. Please visit our website at ceeus.com

Tri-County Electric Cooperative has chosen to partner with CEEUS as their main distributor for a new RF metering AMI project supplied by Landis+Gyr. This AMI system will vastly improve the capabilities of Tri-County Electric Cooperative by putting them on the leading edge of Automated Metering Infrastructure. The new technology in these RF projects puts all of the capabilities possible in the fingertip control of the cooperative with faster meter reads which the meter is the “cash register” for the electric utility. This system is IP based which gives it the capacity to support a mesh system to offer other automated infrastructure such as street lighting and distribution automation.

We look forward to supporting Tri-County Electric Cooperative on this project and all needs in their near and distant future. If you have any questions or would like to discuss anything involving Tri-County and CEEUS we would be happy to discuss. Please call Trey Brown at 843-939-7700 or email at tbrown@ceeus.com

Sincerely,

Trey Brown
Account Manager
CEEUS
101 Enterprise Parkway
West Columbia, SC 29170

Locations of Work (DE-FOA-0002740)

Prime or Sub	Name	City	State	Zip Code + 4
Prime	Tri-County Electric Cooperative, Inc.	Cameron	SC	29030-0000 to 29030-9998
Prime	Tri-County Electric Cooperative, Inc.	Lonestar	SC	29030-0000 to 29030-9998
Prime	Tri-County Electric Cooperative, Inc.	Eastover	SC	29044-0006 to 29044-9999
Prime	Tri-County Electric Cooperative, Inc.	Elloree	SC	29047-0000 to 29047-9998
Prime	Tri-County Electric Cooperative, Inc.	Eutawville	SC	29048-0000 to 29048-9802
Prime	Tri-County Electric Cooperative, Inc.	Gadsden	SC	29052-0000 to 29052-9799
Prime	Tri-County Electric Cooperative, Inc.	Gaston	SC	29053-0000 to 29053-9999
Prime	Tri-County Electric Cooperative, Inc.	Holly Hill	SC	29059-0000 to 29059-9657
Prime	Tri-County Electric Cooperative, Inc.	Hopkins	SC	29060-8811 to 29061-9999
Prime	Tri-County Electric Cooperative, Inc.	Lugoff	SC	29078-0000 to 29078-9770
Prime	Tri-County Electric Cooperative, Inc.	Orangeburg	SC	29118-0000 to 29118-9859
Prime	Tri-County Electric Cooperative, Inc.	St. Matthews	SC	29135-0000 to 29135-9805
Prime	Tri-County Electric Cooperative, Inc.	Santee	SC	29142-0000 to 29143-9529
Prime	Tri-County Electric Cooperative, Inc.	Swansea	SC	29160-0000 to 29160-9999
Prime	Tri-County Electric Cooperative, Inc.	Vance	SC	29163-0000 to 29163-9801

APPENDIX F – PROJECT DESCRIPTION AND ASSURANCES DOCUMENT TEMPLATE (PDAD)

Project title:

Applicant Name:

Applicant Address:

Names of all team member organizations (if applicable):

Principal Investigator (Name, Address if different than Applicant's, Phone Number, E-mail):

Business Point of Contact (Name, Address if different than Applicant's, Phone Number, E-mail):

Include any statements regarding confidentiality.

Federal Share:

Cost Share:

Total Estimated Project Cost:

Item 1: Specify (mark with "X") the FOA Topic Area and as applicable the Area of Interest (AOI):

_____ Topic Area 1: **Grid Resilience Grants** (BIL section 40101(c))

_____ Topic Area 2: **Smart Grid Grants** (BIL section 40107)

_____ Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 1
(Transmission System Applications)

_____ Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 2
(Distribution System Applications)

_____ Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 3
(Combination System Applications)

TOPIC AREA 1 Specific Items:

Item 2: Specify (mark with "X") the entity type of the applicant organization:

_____ electric grid operator

_____ electricity storage operator

_____ electricity generator

_____ transmission owner or operator

_____ distribution provider

_____ fuel supplier

If further description is needed for the specified entity type, please provide below:

Item 3: Please provide the total amount (USD) of qualifying resilience investments (as outlined in DE-FOA-00002740) that has been spent for the previous 3 years. Please also provide the time period utilized for calculation of this amount.

Total Amount:

Time Period for Resilience Investments:

Note: Topic Area 1 applicants must submit as part of their application, a report detailing past, current, and future efforts by the eligible entity to reduce the likelihood and consequences of disruptive events. This report should include efforts over at least the previous 3 years and at least the next 3 years and any broader resilience strategy used by the applicant.

Item 4: Is the eligible entity a Small Utility as defined in DE-FOA-0002740 (sells no more than 4,000,000 MWh of electricity per year)? If NO is selected, skip to Item 7.

_____ Yes

_____ No

Note: If YES, applicant must provide their Form 861 for the last reporting year submitted to the Energy Information Administration (EIA).

Item 5: Per BIL section **40101(e)(2) (C) APPLICATION LIMITATIONS.—An eligible entity may not submit an application for a grant provided by the Secretary under subsection (c) and a grant provided by a State or Indian Tribe pursuant to subsection (d) during the same application cycle.**

Therefore, is the eligible entity a Subaward/Subcontract recipient for an application submitted under IIJA Section 40101(d), ALRD 2736? If “YES”, please describe the differences between the GRIP FOA 2740 application [40101(c)] and the ALRD 2736 [40101(d)] applications in the box below:

_____ Yes

_____ No

TOPIC AREA 2 Specific

No items

TOPIC AREA 3 Specific

Item 6: Specify (mark with "X") the entity type of the applicant organization:

_____ a State

_____ a combination of 2 or more States

_____ an Indian Tribe

_____ a unit of local government

_____ a public utility commission

If further description is needed for the specified entity type, please provide below:

Item 7:

Authorized Organizational Representative (AOR): please provide name, address, phone number and e-mail address for the authorized agent to bind the entity

Authorized Organizational Representative (AOR):

Name:

Address:

Phone:

E-mail:

Item 8: Signature of Authorized Organizational Representative (AOR)

 _____

For: **Tri-County**
 Project **Topic 1**
Resilience on Investments Report

Funding - Past 3 Years				Funding - Current & Future 3 Years				GRAND
2020	2021	2022	Total	2023	2024	2025	Total	GRAND
\$ 6,791,410	\$ 20,931,374	\$ 17,299,983	\$ 45,022,766	\$ 2,304,000	\$ 2,279,000	\$ 2,229,000	\$ 6,812,000	\$ 51,834,766

Cost Detail

	Funding - Past 3 Years			Funding - Current & Future 3 Years		
RIGHT OF WAY	\$ 1,617,789	\$ 1,721,676	\$ 1,998,886	\$ 2,100,000	\$ 2,100,000	\$ 2,100,000
METERING	\$ 65,157	\$ 41,315	\$ 52,761	\$ 54,000	\$ 54,000	\$ 54,000
SUBSTATION MAINTENANCE	\$ 41,640	\$ 68,383	\$ 164,924	\$ 150,000	\$ 125,000	\$ 75,000
3 YR FIBER INVESTMENT (TCEC)	\$ 5,066,823	\$ 19,100,000	\$ 15,083,412			
Grant Proceeds					\$ 742,422	\$ 1,433,963
Totals	\$ 6,791,410	\$ 20,931,374	\$ 17,299,983	\$ 2,304,000	\$ 2,279,000	\$ 2,229,000

ALLOWED COSTS

- (A) weatherization technologies and equipment;
- (B) fire-resistant technologies and fire prevention systems;
- (C) monitoring and control technologies;
- (D) the undergrounding of electrical equipment;
- (E) utility pole management;
- (F) the relocation of power lines or the reconductoring of power lines with lowsag, advanced conductors;
- (G) vegetation and fuel-load management;
- (H) the use or construction of distributed energy resources for enhancing system adaptive capacity during disruptive events, including—
- (I) adaptive protection technologies;
- (J) advanced modeling technologies;
- (K) hardening of power lines, facilities, substations, of other systems;
- (L) the replacement of old overhead conductors and underground cables
- (M) new distribution lines below 69 kV, reconductoring, undergrounding and other upgrades to existing transmission infrastructure.

Resume – Chad T. Lowder, Chief Executive Officer

Contact Information:

Tri-County Electric Cooperative Inc., Tel. No. (803) 874-1215, CLowder@tce.coop

Office: P.O. Box 217, St. Matthews, SC 29135

Education:

- Ashford University, Clinton, Master of Business Administration, 2009
- Clemson University, Bachelor of Science in Forest Resource Management Minor in Forest Products, 1999

Training:

- Residential Energy Auditor, Southeastern Electrification Council, March 2000
- CKAE, National Rural Electric Cooperative Association, April 2004
- Supervisory Certificate, Nation Rural Electric Cooperative Association, 2010
- Professional development with North Carolina/South Carolina Metering School, 2003 and South Carolina Economic Developers School, 2007

Professional Experience:

Summary: Twenty plus years of successful experience with Tri-County Electric Cooperative with a broad range of responsibilities which include human resources, personnel management, finance and budgeting, member services, marketing, economic development, government relations, information technology, and program management provides me with a unique understanding of the full processes of the Cooperative business model. This experience and knowledge provides the basis to meet the challenges of managing an electric distribution cooperative in today's utility climate.

2014-Current: Chief Executive Officer, Tri-County Electric Cooperative

Responsible for the budgetary and operational planning of an electric distribution cooperative with a plant value of over \$100 million.

- Successfully restructured debt that will save the Cooperative \$12 million over a 20-year period.
- Work with a Nine Member Board of Directors to develop policies and guidelines to improve work processes and service to the membership.
- Work with finance department to implement a proactive financial modeling program and equity plan.
- Improved operational workflows by restructuring the operation and engineering departments.

- Work directly with State and Congressional leaders on energy related issues and the overall economic development of our region.

2002-2013: Manager of Marketing and Government Relations, Tri-County Electric Cooperative

- Supervise a department of 18 employees: member service representatives, call center, collections, marketing, billing, and warehouse personnel.
- Develop capital and operational budgets for each area of supervision.
- Manage building maintenance and grounds for 3 office locations.
- Conduct public relations through interviews and presentations on cooperative issues.
- Interacted with all levels of the Cooperative Membership on various issues ranging from services provided to rate structure.
- Serve as the registered lobbyist with the purpose of building relations with elected officials in the County, State, and Federal Delegations.
- Evaluate and implement procedures to improve work processes. This has included implementing a central dispatcher and call center.
- Managed the implementation of an Outage Management System and a microwave communication back bone.
- Worked with financial institutions to improve cash flow through the implementation of ACH check imaging and same day deposit for all office locations.
- Analyze residential, commercial, and industrial bills to evaluate rate structure.
- Developed load control programs for industrial accounts.
- Served as the economic development coordinator with the purpose of attracting new commercial and industrial investment. By working with County and local economic developers Tri-County has successfully located major industries such a Starbucks Roasting Plant and developed four industrial parks.

Current Appointments:

- Board Member of Central Electric Cooperative (2014 to Current)
- Board Member of the Electric Cooperative of SC (2014 to Current)

Resume – Jerrell L. (Frank) Furtick, VP Engineering & Operations

Contact Information:

Tri-County Electric Cooperative Inc., Tel. No. (803) 874-1215, FFurtick@tce.coop

Office: P.O. Box 217, St. Matthews, SC 29135

Education:

Limestone College Block Program, associate degree – Business, 2001

Training:

- Energy Auditor Certificate, State of South Carolina, 1995
- Edisto Electric Cooperative, Multiple Management, Safety, Regulatory, Business and Employee Training Courses
- National Rural Electric Cooperative Association Courses (national trade group):
 - Supervisors Role in Managing Change - 2010
 - Human Resources and The Law - 2010
 - Motivating Employees - 2009
 - Resolving Conflict Through Negotiation -2009
 - The Supervisor and Human Resources - 2009
 - Personal Leadership Skills - 2004
 - Legal Issues in the Workplace - 2003
 - Accepting a Management Role - 2002
 - Supervising in a New Competitive Environment - 2002
 - Provide “Knock Your Socks Off” Quality Service - 1995
 - Competitive Challenge: Getting New Customers - 1996
 - The “Three C’s of Service” - 1996

Professional Experience:

Summary: Thirty plus years’ experience and trained in all issues effecting rural electric cooperatives, effective manager of company’s staff, administration and computer networks, proven skill in providing positive public relations with electric consuming public, leading advocate of promoting energy efficient heating / cooling and appliances and excellent oral and written communication with public and employee audiences.

2014-Current: VP Engineering & Operations, Tri-County Electric Cooperative

- Act in CEO capacity in his absence.
- With CEO develop and implement service rules, regulations, rates, and employee policies.
- Lobby South Carolina legislators and local officials on electric cooperative issues.

- Supervise all department heads.
- Manage territorial assignment and legal issues.
- Recommend and financially justify capital expenditures as budget inclusions.
- Work with local economic development officials to attract new industrial customers.
- Manage and oversee engineering and right-of-way contracts.
- Member of Central R2E2 Renewables Committee and Statewide Solar Product Design Team.
- FEMA storm point of contact for storm reimbursement.
- Member of Central R2E2 Renewables Committee and Statewide Solar Product Design Team.

1999-2014: Mgr. of Marketing & Government Relations, Edisto Electric Cooperative, Inc.

- With CEO develop and implement service rules, regulations, rates and employee policies.
- Successfully lobbied South Carolina legislators on electrical cooperative issues:
 - Base Load Review Act – allows rate adjustment for finance cost of plant construction.
 - Santee Cooper Board Restructuring – sets term limits and limits reasons for removal.
 - 2,500 Rule; annexation and a utility's right to serve.
 - 750KW Rule; territory assignment and cooperative's right to serve =>750KW loads
- Lead cooperative's public relations initiative with local communities.
- Manage Cooperative's advertising program, and territorial assignment, legal, and landowner right-of-way issues.
- Recommend and financially justify capital expenditures as budget inclusions.
- Organize and oversee annual meeting.
- Work with local economic development officials to attract new industrial customers.
- Manage and conduct employee recognition dinners and other company events.
- Sizes service equipment based on customers load requirements.
- Assists Operations Department to diagnose and remedy power quality issues.
- Calculates line extension costs and meets with customer to review.
- Assists with various reports and studies such as irrigation studies, work plans and load studies, etc.

Resume –Matthew S. Martens, System Engineer

Contact Information:

Tri-County Electric Cooperative Inc., Tel. No. (803) 874-1215, mmartens@tce.coop

Office: P.O. Box 217, St. Matthews, SC 29135

Education:

Central Carolina Technical College, Civil Engineering Technology (2001-2003)

Professional Experience:

Summary: Twenty plus years' experience including engineering in distributed, substation, and telecommunications, construction management, and land surveying. Skills include staking, right of way and easement operations, permitting, work plan, O&M and long-range planning, design, AutoCAD, contracts, permitting, job estimating, project management, Boundary, Topo, Alta, construction layout, legal research, and GPS.

2015-Current: System Engineer, Tri-County Electric Cooperative

System Engineer-Substation Engineering, Distribution Engineering, Telecommunication Engineering, Permitting and AutoCAD. Supervisor for the Engineering department, Substation Department and Warehouse and Purchasing. Project Management of TriCoLink Fiber optic project.

2008-2015: Assistant Engineer, McCall Thomas Engineering, Inc.

Substation Engineering, Distribution Engineering, Telecommunication Engineering, Permitting and AutoCAD.

2006-2008: Lad Corporation of West Columbia

Boundary Survey, AutoCAD, GPS, Alta Survey, Topo Survey and Legal Research.

2003-2008: Sinclair and Associates, Inc.

Construction Management, Project Estimator, GPS, Construction Layout and AutoCAD.

2001-2003: Duvalle Elliot Land Surveying

Boundary Survey, AutoCAD, GPS, Alta Survey, Topo Survey and Legal Research.

Resume –James (Jimmy) S. Bryant, System Maintenance Engineer

Contact Information:

Tri-County Electric Cooperative Inc., Tel. No. (803) 874-1215, Jbryant@tce.coop

Office: P.O. Box 217, St. Matthews, SC 29135

Education:

Pensacola Christian College, B.S. in Electrical Engineering, 2014

Professional Experience:

Summary: Eight plus years' experience in engineering and related cooperative operations.

2020-Current: System Maintenance Engineer, Tri-County Electric Cooperative

Spec, procure, install, and program various controls for the cooperative. Maintain, implement, and enhance SCADA. Perform coordination and load studies on an 'as-needed' basis. Write and verify switching orders and callout switching operations. Troubleshoot various power quality issues on the line. Supervise dispatch from June 2021-Present.

2015-2020: Engineer in Training, McCall Thomas Engineering, Inc.

Assist in a meter change out, the process of staking new powerlines, preparation of arc-flash study/analysis, preparation of coordination/sectionalizing studies, and the preparation of construction work plans and long-range engineering plans for various clients. Have become proficient in the use of various software including: Milsoft Windmill Engineering Analysis software, Light Table, AutoCAD, and Arc Pro, as well as various Microsoft office programs.

Resume –Marcie L. Zeigler, Coordinator of Engineering Services

Contact Information:

Tri-County Electric Cooperative Inc., Tel. No. (803) 874-1215, MZeigler@tce.coop

Office: P.O. Box 217, St. Matthews, SC 29135

Education:

- Winthrop University, B.A. in History, Minor in Social Sciences, 1993
- Colleton County Vocational Center, Record Keeping, 1988

Training:

RUS Accounting Course 2000

Professional Experience:

Summary: Twenty-six plus years' experience with Tri-County Electric Cooperative providing engineering, customer service, and accounting including GIS mapping, materials management, property records, permitting, financial reporting, and RUS support and document management.

2013-Current, Coordinator of Engineering Services

- Maintain GIS/Mapping for the Tri-County Electric Cooperative System.
- Make specialty maps for various projects and Contract bids.
- Account for all material, labor, equipment cost and contract services for the addition of electric plant.
- Maintain various classifications of work performed by operations and engineering personnel to aid management in decision making.
- Maintains Continuing Property Records, Work Orders, Inventory, Work Plan, Contracts for Right of Way, Underground agreements, three phase contracts, large power contracts and Electric Construction Contracts.
- Assist with obtaining all permits, environmental, regulatory, and other authorities.
- Coordinate work with both Engineering and Operations.
- Aid in Closing of Accounting Monthly.
- Help Consumers with any Right of Way, Permitting and service questions.
- Prepares and Reports RUS reports to be maintained.

2006-2013, Accountant/Work Order

- Account for all material, labor, equipment cost and contract services for the addition of electric plant.
- Accounting for Payroll and Accounts Payable.
- Prepared Sales Tax, Federal and State Tax reports.

- Performed Inventory and worked with Auditors to reconcile our Plant accounts and Bank Accounts.
- Maintains Continuing Property Records, Work Orders, Inventory, Work Plan, Contracts for Right of Way and Electric Construction.
- Assisted with permits.
- Maintained SAIDI/SAIFI/ASAI reports.

1998-2006, Work Order Clerk

- Account for all material, labor, equipment cost and contract services for the addition of electric plant.
- Maintain various classifications of work performed by operations and engineering personnel to aid management in decision making.
- Maintains Continuing Property Records, Work Orders, Inventory, Work Plan, Contracts for Right of Way, Underground agreements, three phase contracts, large power contracts and Electric Construction.
- Aid in Closing of Accounting Monthly.
- Help Consumers with any Right of Way, Permitting and service questions.
- Prepares and Reports RUS reports to be maintained.

1997-1998, Member Service Representative

- Provided Customer Service to members.
- Established new accounts with members.
- Maintained a cash drawer, receiving payments from consumers and also handled collections.
- Dispatched service crews for Power outages.
- Prepared a monthly report of memberships for our Board of Directors.
- Balanced to an account sheet daily.

Resume –W. Michael Weeks Jr., Vice President of Finance

Contact Information:

Tri-County Electric Cooperative Inc., Tel. No. (803) 874-1215, MWeeks@tec.coop

Office: P.O. Box 217, St. Matthews, SC 29135

Education:

- University of South Carolina, Bachelor of Science in Business Administration, 2005, Majors: Accounting/Real Estate/Finance, Minor: Hotel Restaurant Tourism Management
- Strayer University, Online, twenty-seven hours course work towards Master of Accountancy
- **CPA Candidate**

Professional Experience:

Summary: Eighteen plus years' experience as a financial professional including eight years with Tri-County Electric Cooperative. CPA Candidate and subject matter expert in finance, federal and state taxation, implementing and maintaining a cost-effective management system, safeguarding assets, budgeting, accounting, commercial banking, and team management.

2015-Current, Tri-County Electric Cooperative Inc., Vice President of Finance

- Prepares and files federal, state, and local tax reports and payments.
- Develops, implements, and maintains cost-effective management systems.
- Develops Finance Department budget and work plan and coordinates the departments budgeting process and annual work plans with all departments.
- Ensures the safeguarding of all company assets including, but not limited to, physical assets of the company and retirement assets of the employees.
- Supervises the preparation of member capital credits.
- Maintains filing system in good order for accounts payable, payroll and general ledger application.
- Effectively direct and efficiently coordinate the general office activities and supervise assigned personnel.

2010-2015, Brodie, Summers, & Wilkes, CPA's, LLP, Accountant

- Prepared and filed federal, state, and local tax reports and payments. Prepared federal and state income tax returns for traditional corporations.
- S corporations, partnerships, individuals, and non-profit entities.
- Beginning in 2012, in charge of tax preparation for 4 of firm's 13 largest clients.
- Increased revenue produced individually by 29% and 24% in calendar years 2012, and 2013 respectively, and exceeded firm billing goals set each year by minimum of 24% each year with firm.

- Chosen by firm partners to oversee monthly bookkeeping and financial statement preparation of firm's largest bookkeeping client.
- Met with clients to analyze financial data and put a plan in place for achieving growth and profitability goals, while also planning for income tax consequences.
- Grew number of personal clients by 100% and business clients by 34% from 2011 to 2013 by bringing in new clients to the firm.

2010-2015, South Carolina Bank & Trust, NA, Commercial Lender/Banking Officer

2008-2005, Commercial Lender/Banking Officer

- Work with customers to find the best loan terms to meet their needs by analyzing financial statements, tax returns, personal financial statements, and cash flows.
- Ongoing management of \$14.5 million loan portfolio.
- Grew loan portfolio three-fold by meeting and exceeding quarterly loan goals.

2006-2008, Branch Manager/Banking Officer

- Managed branch of 26 employees to include all roving employees for entire region.
- Won deposit campaign by opening more than 300 new deposit accounts.
- Promoted to Commercial Loan Officer after eighteen months.

Project Title: Tri-County Power Meter Squared & Green Tree
Name of Applicant: Tri-County Electric Cooperative, Inc
Project Managers:

Frank Furtick - Chief Operating Officer for Tri-County Electric Cooperative in St. Matthews, SC, he oversees both Engineering and Operations.

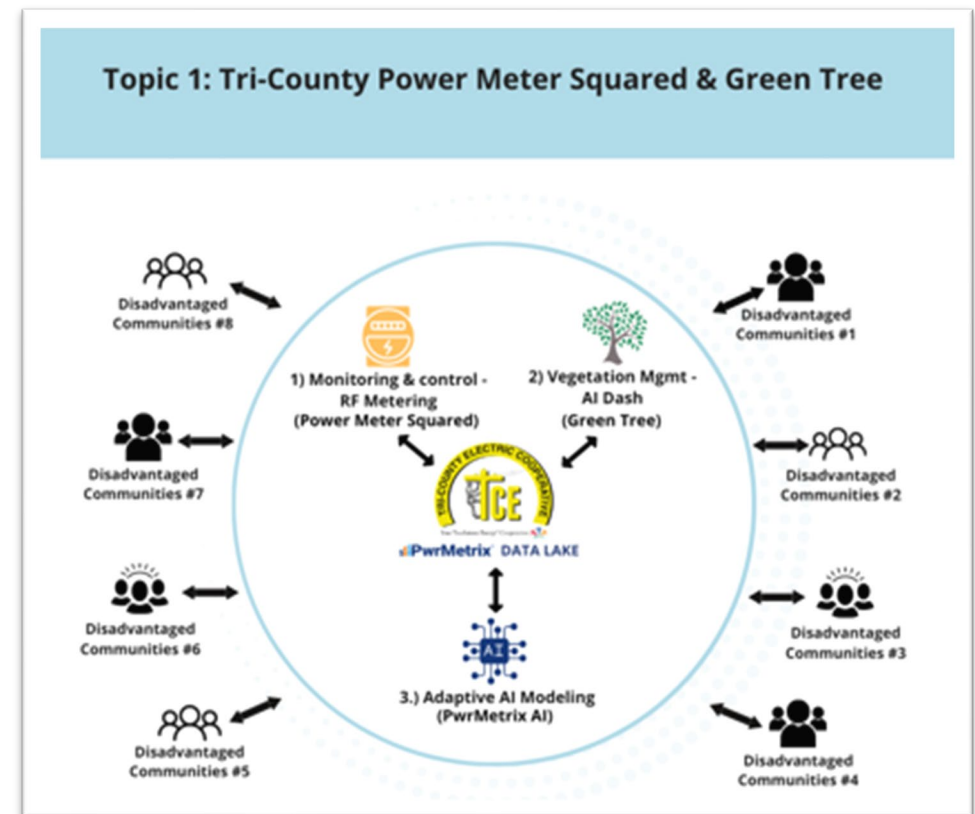
Jimmy Bryant - System Maintenance Engineer for Tri-County Electric Cooperative in St. Matthews, SC, he oversees the Tri-County Electric Substation department.

Project Description:

TCE has proposed a grid transformational project named Power Meter Squared & Green Tree that aims to improve grid resilience by reducing the likelihood and consequences of disruptive events such as extreme weather, wildfire, and natural disasters. TCE proposes advancing RF meters for smart monitoring and control, modernizing vegetation management software with AI, and implementing advanced data analytics AI software for adaptive AI modeling.

Goals:

- Reduce the likelihood and consequence of impacts to the electric grid due to extreme weather, wildfire, and natural disaster.
- Generate regional and SOUTH CAROLINA community benefit in reducing the likelihood and consequences of disruptive events.
- Address comprehensive transformational distribution technology solutions that will mitigate hazards across state (SOUTH CAROLINA) and within a community, including wildfires, floods, hurricanes, extreme heat, extreme cold, storms, and any other event that can cause a disruption to the power system.
- Provide significant economic and justice benefits to SOUTH CAROLINA communities, leverage capital investment, and lead to scalable and repeatable solutions for other entities.



Tri-County South Carolina TOPIC 1
Concept Paper Identification Code : TA1-050-E

Technology Summary:

- TCE plans to upgrade existing meters to advanced AMI Radio Frequency metering technology that offers real-time monitoring, remote disconnect, data analytics, demand response, personal energy management, and software integration with leading Engineering/Operations application.
- The new meters will improve reliability, automatic transfer monitoring, and the benefit of adding an automatic transfer switch.
- TCE plans to use AI-Dash, which utilizes satellite imagery to assess vegetation growth near power lines. By prioritizing tasks based on wildfire risk, it aims to reduce the likelihood of ignition and prepare for emergencies.
- The project will improve right-of-way clearing and vegetation management with AI Dash software, combined with PwrMetrix AI predictive analytics and state-of-the-art AI adaptive visualization technology.
- TCE will deploy PwrMetrix AI//FireMetrix platform to enable adaptive modeling and real-time data analytics with Artificial Intelligence/Machine Learning (AI/ML) technology to aggregate siloed systems such as OMS, AMI, GIS map, and others, to enable descriptive (historical), predictive (future), and prescriptive (optimization) analytics.
- TCE will implement adaptive PwrMetrix AI modeling capability by aggregating real-time data from various systems to predict reliability and outages with higher probability and accuracy with PwrMetrix AI software.

Key Idea/Takeaway:

- The project aims to reduce the likelihood and impact of disruptive events, increase access to clean power, and support minority business enterprises.
- Smart Grid technologies like smart meters and advanced vegetation management software shall be deployed to increase power reliability during climate disasters.
- The project shall create jobs and provide training to workers in the region, along with financing options for low-cost loans for energy efficiency upgrades.
- TCE also plans to collaborate with various community organizations and leaders to reduce energy burden and improve energy self-sufficiency.
- Climate resilience strategy will be implemented to account for climate impacts and extreme weather patterns.
- The project aims to achieve SMART goals like reducing wholesale power costs, improving residential energy efficiency, and exceeding energy reduction.
- DOE funding enables TCE to implement these upgrades in an accelerated time frame, which not only saves on outage restoration costs but also results in more stable electric bills for underprivileged TCE members. By putting money back in their pockets, TCE enhances the quality of life for its members.

DOE Funds Requested:	\$3,499,353.00
Applicant Cost Share:	\$3,499,353.00
Total Cost:	\$6,998,706.00

STATEMENT OF PROJECT OBJECTIVES (SOPO) – Tri-County Power Meter Squared & Green Tree

A. OBJECTIVES - The project seeks to modernize outdated meters with advanced Radio Frequency (RF) meters that can provide timely and accurate energy consumption data. Additionally, TCE plans to upgrade its vegetation management software with Artificial Intelligence (AI) to identify and mitigate potential hazards associated with vegetation-related power outages. It will also implement advanced data analytics AI software for monitoring, control, and adaptive AI modeling to improve system performance and reduce the impact of disruptive events. The ultimate objective of the project is to reduce the frequency and duration of outages, expedite restoration times, and decrease the cost of outages while delivering significant economic and justice benefits to communities in SOUTH CAROLINA. The project also intends to leverage capital investment, lead to scalable and repeatable solutions for other entities, and modernize the electric distribution system to improve the safety, reliability, resiliency, and affordability of electric service to TCE customers.

B. SCOPE OF WORK - The proposed solutions are aimed at enhancing the operations of Tri-County Electric Cooperative (TCE) in several ways. Firstly, TCE Power Meter Squared plans to upgrade the existing PLC meters to advanced AMI Radio Frequency metering technology, which will allow for real-time monitoring of member services, remote disconnect, data analytics, demand response, and personal energy management. This technology will enable the identification of temporary disruptions of power, thereby strengthening the distribution system and improving resiliency to widespread outages, such as those caused by wildfires. Secondly, Project Green Tree will enhance the management and evaluation of TCE's right of way (ROW) by implementing AI-Dash, an intelligent software solution that incorporates satellite imagery to evaluate the encroachment of vegetation from adjacent, above, and below the power lines. AI-Dash can prioritize vegetation and asset management tasks based on wildfire risk, forecast fire risk, detect wildfires early, estimate resource requirements, and identify damaged assets. Lastly, TCE will deploy PwrMetrix AI platform to enable adaptive modeling and real-time data analytics with Artificial Intelligence/Machine Learning (AI/ML) technology to aggregate siloed systems such as OMS, AMI, GIS map, Asset Management, Grid sensors, Weather data, wildfire, and others, to enable descriptive, predictive, and prescriptive analytics. These proposed solutions will provide TCE with the ability to proactively focus on areas for system improvement, enhance the effectiveness of automated controls, and improve outage management system.

C. TASKS TO BE PERFORMED

Task 1.0: Project Management and Planning - Perform project management with clear objectives, milestones, and deliverables, ensuring project completion within the specified time and budget. Complete Community Benefits Plan

- **Subtask 1.1 – Project Management Plan (PMP)**
- **Subtask 1.2: National Environmental Policy Act (NEPA) Compliance**
- **Subtask 1.3: Continuation Briefings**

Task 2.0: Determine equipment specifications, technical requirements, performance criteria, quality standards, including Buy America Requirements.

Task 3.0: Evaluate each proposal and select the vendor that provides the best value for TCE and order the equipment.

Task 4.0: Determine locations for collection points according to RFP proposal by vendor which outlines the distribution system's layout and identifies exact location points.

Task 5.0: Install and deploy AI Dash overlay of GIS - Implement data analytics and generate visualization reports that analyze distribution vegetation management, track SMART Metrics, and help identify areas for immediate and future ROW management.

- **Subtask 5.1** – Implement AI Dash data analytics for ROW management
- **Subtask 5.2** – Run AI Dash analysis to determine areas needing immediate attention
- **Subtask 5.3** – Give data acquired from AI Dash to ROW contractors for immediate mitigation
- **Subtask 5.4** – Run AI Dash analysis to determine areas needing attention in following year
- **Subtask 5.5** –implement Artificial Intelligence Predictive Analytics for budget and planning for the next 5 years of ROW management

Task 6.0: Request proposals (RFP) or quotations from metering contractors for meter installations based on factors such as cost, quality, reliability, support, and ability to complete work by end of grant period.

Task 7.0: Remove existing, Install and Test New Equipment- Carry out installation, testing, and commissioning of equipment according to the project plan. Ensure that equipment is functioning as expected and properly integrated with TCE's fiber network.

Task 8.0: Implement Adaptive AI Modeling (PwrMetrix AI/FireMetrix App) platform with standard interoperability interface to aggregate data from siloed systems such as OMS, AMI, GIS. Implement GIS application for real time visualization of data with time series analysis by day, month, and year. Develop and train AI adaptive data models base on siloed systems.

- **Subtask 8.1** Implement PwrMetrix MultiSpeak interfaces to connect to OMS, AMI, GIS.

(b) (4)

- **Subtask 8.3** Implement PwrMetrix AI analytics by creating and training predictive models using aggregated data from OMS, AMI, and GIS.

D. DELIVERABLES

Legends: M1-Mx=Milestones, D1-Dx=Deliverables, G1-Gx=Go/NoGO

Type	YEAR 1	DUE
M0.1	Approved Project Management Plan, Project Management Briefings, Environmental Impact Study, Adherence to National Environmental Policy Act (NEPA)	Q1-Q4

M1.1	Per RFP RF Meters associated hardware/software are ordered for Y2 (approx 4,700 meters)	Q1
M1.2	AI Dash program implemented (subscription-based solution)	Q2
M1.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y2	Q3
M1.4	Begin installation of RF Collection points (20-30% of those required for Y2)	Q4
M1.5	Classify AI data model and implement PwrMetrix MultiSpeak interfaces for OMS, AMI, GIS.	Q4
M1.6	Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q1-Q14
D1.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D1.2	Q1 & Q2 Progress REPORT (End of Q2)	Q2
D1.3	AI Dash ROW management map for Y2, Q3 & Q4 Progress REPORT (End of Q4)	Q3 - Q4
D1.5	PwrMetrix analytics, MultiSpeak interfaces, GIS, and AI data classification models.	Q4
G1.1	Successful acquisition 20-30% of collection points and meter delivery on schedule for Y2Q1	
G1.2	Successful implementation of AI Dash	
G1.3	Successful implementation of PwrMetrix-MultiSpeak or other interoperability interfaces	
YEAR 1 Budget		\$955,284
YEAR 2		DUE
M2.1	Ordered RF Meters and associated hardware/software for Y3 (approximately 4,700 meters)	Q1
M2.2	Install 1,800-2,400 meters and associated equipment by end of Q2, AI Dash renewed	Q2
M2.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y3	Q3
M2.4	Begin installation RF Collection points (20-30% of those required for Y3). Install 1,800-2,400 meters and associated equipment by end of Q4	Q4
M2.5	Create AI regression data model and implement PwrMetrix data aggregation with GIS. Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D2.1	Project Management Plan (drafts and final)(Procurement and placement by RFP)	Q1
D2.2	Q1 & Q2 Progress REPORT (End of Q2)	Q2
D2.3	AI Dash ROW management map for Y3, Q3 & Q4 Progress REPORT (End of Q4)	Q4
D2.5	PwrMetrix analytics, data aggregation, GIS reports, and AI regression models	Q4
G2.1	75% targeted installations made in each year half (75% of half of the 4,700 in Q2 and Q4)	
G2.2	Successful Training and Use of AI Dash Modules	
G2.3	Successful aggregation of siloed data and implementation of PwrMetrix GIS analytics	
YEAR 2 Budget		\$1,652,950
YEAR 3		DUE
M3.1	Ordered RF Meters and associated hardware/software for Y4 (approximately 4,700 meters)	Q1
M3.2	Install 1,800-2,400 meters and associated equipment by end of Q2. AI Dash renewed	Q2
M3.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y4	Q3
M3.4	Begin installation Collection points (20-30% of those required for Y4). Install 1,800-2,400 meters and associated equipment by end of Q4	Q4
M3.5	Perform data aggregation & training of AI data models, continue PwrMetrix GIS and Analytics Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D3.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D3.2	Q1 & Q2 Progress REPORT (End of Q2)	Q2
D3.3	AI Dash ROW management map for Y4. Q3 & Q4 Progress REPORT (End of Q4)	Q4

D3.4	PwrMetrix Data Analytics, GIS, & trained AI Data Models	Q4
G3.1	75% targeted installations made in each year half (75% of half of the 4,700 in Q2 and Q4)	
G3.2	Successful use, training, and implementation AI Dash additional module	
G3.3	Successful creation, modeling, and training of PwrMetrix AI predictive data models.	
YEAR 3 Budget		\$1,616,415
YEAR 4		DUE
M4.1	Ordered RF Meters and associated hardware/software for Y5 (approximately 4,700 meters)	Q1
M4.2	Install 1,800-2,400 meters and associated equipment by end of Q2. AI Dash renewed	Q2
M4.3	RFP & award subcontractors to install RF meters and associated hardware/software for Y5	Q3
M4.4	Begin installation RF Collection points (20-30% of those required for Y5). Install 1,800-2,400 meters and associated equipment by end of Q4	Q4
M4.5	Implement AI analysis and continue PwrMetrix data analytics and GIS. Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D4.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D4.2	Q1 & Q2 Progress REPORT (End of Q2)	Q2
D4.3	AI Dash ROW management map for Y5, Q3 & Q4 Progress REPORT (End of Q4)	Q4
D4.5	PwrMetrix Data Analytics, GIS, & AI	Q4
G4.1	75% targeted installations made in each year half (75% of half of the 4,700 in Q2 and Q4)	
G4.2	Successful implementation of AI Dash additional reports	
G4.3	Successful implementation of PwrMetrix AI – predictive analytics module	
YEAR 4 Budget		\$1,614,979
YEAR 5		DUE
M5.1	Install 20-30% of remaining meters and associated equipment	Q1 - Q4
M5.2	AI Dash program subscription renewed	Q2
M5.3	Continue PwrMetrix data analytics, GIS, AI Completed Community Benefits Plan list of Milestones (see community benefits plan)	Q4
D5.1	Project Management Plan (drafts and final) (Procurement and placement by RFP)	Q1
D5.2	Q1 & Q2 Progress REPORT (End of Q2)	Q2
D5.3	From AI Dash analytics, ROW management map is produced for following year	Q4
D5.4	Q3 & Q4 Progress REPORT (End of Q4), FINAL DOE Report, 100% installations for Year 5	Q4
D5.7	100% completion PwrMetrix Data Analytics, GIS, & AI – Descriptive, Predictive & Prescriptive	Q4
YEAR 5 Budget		\$1,159,079
TOTAL 5 YEARS BUDGET		\$6,998,706

E. BRIEFINGS/TECHNICAL PRESENTATIONS

Recipient shall prepare, and present periodic briefings, technical presentations, and demonstrations as requested by the Federal Project Officer, which may be held at a DOE or Tri-County Electric’s facility, other mutually agreeable location, or via webinar. Such meetings may include all or a combination of the following: **Kickoff Briefing** - Not more than 30 days after submission of the Project Management Plan, Recipient shall prepare and present a project summary briefing as part of a Project Kickoff Meeting. **Pre-Continuation Briefing** - Not less than 90 days prior to the planned start of a budget period, Recipient shall brief the DOE on the results to date, and their plans for the subsequent periods of work. The DOE will consider the

information from this briefing, as well as the content of deliverables submitted to date, prior to authorizing continuing the project. **Final Project Briefing** - Not less than 30 days prior to the end of the project, the Recipient shall prepare and present a Final Project Briefing on the results and accomplishments of the entire project. **Other Briefings** –Recipient shall prepare and present technical, financial, and/or administrative briefings as requested by the DOE. Additionally, the DOE may require Recipient to make technical presentations at national and/or industry conferences.

Project Summary

Name of Applicant: Tri-County Electric Cooperative, Inc.

Project Managers: Frank Furtick, Jimmy Bryant

Project Title: Tri-County Power Meter Squared & Green Tree

Description: TCE has proposed a grid transformational project that aims to improve grid resilience by reducing the likelihood and consequences of disruptive events such as extreme weather, wildfire, and natural disasters. TCE proposes advancing RF meters for smart monitoring and control, modernizing vegetation management software with AI, and implementing advanced data analytics AI software for adaptive AI modeling.

Objectives:

The project seeks to modernize outdated meters with advanced Radio Frequency (RF) meters that can provide timely and accurate energy consumption data. Additionally, TCE plans to upgrade its vegetation management software with Artificial Intelligence (AI) to identify and mitigate potential hazards associated with vegetation-related power outages. It will also implement advanced data analytics AI software for monitoring, control, and adaptive AI modeling to improve system performance and reduce the impact of disruptive events. The project also intends to leverage capital investment, lead to scalable and repeatable solutions for other entities, and modernize the electric distribution system to improve the safety, reliability, resiliency, and affordability of electric service to TCE customers.

Methods: The project will upgrade the existing PLC meters to advanced AMI Radio Frequency (RF) metering technology, which provides real-time monitoring of member service, remote disconnect, data analytics, demand response, and personal energy management, among other capabilities. The new meters will improve reliability and resiliency to widespread outages and enable TCE to have integrated voltage and automated controls, among other benefits. TCE will streamline right of way management by implementing AI-Dash, an intelligent software solution that incorporates satellite imagery to evaluate the encroachment of vegetation from adjacent, above, and below the power lines. This will enhance the management and evaluation of TCE's Right of Way (ROW) by prioritizing vegetation and asset management tasks based on the wildfire risk, forecasting fire risk, and detecting wildfires early, among other capabilities. It will also involve deploying PwrMetrix AI platform which enables adaptive modeling and real-time data analytics to predict reliability and outages with higher probability and accuracy.

Project Impact: TCE's project aims to benefit the local community and DACs in central South Carolina through several initiatives. The project aims to reduce the likelihood and impact of disruptive events, increase access to clean power, and support minority business enterprises. It plans to deploy Smart Grid technologies like smart meters and advanced vegetation management software to increase power reliability during climate disasters. The project shall create jobs and provide training to workers in the region, along with financing options for low-cost loans for energy efficiency upgrades. TCE also plans to collaborate with various community organizations and leaders to reduce energy burden and improve energy self-sufficiency. DOE funding enables TCE to implement these upgrades in an accelerated time frame, which not only saves on outage restoration costs but also results in more stable electric bills for underprivileged TCE members. By putting money back in their pockets, TCE enhances the quality of life for its members.

Instructions and Summary

Award Number: _____
Award Recipient: Tri-County Electric Coop. Inc.

Date of Submission: 4/5/2023
Form submitted by: Tri-County Electric Coop. Inc.
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs. If using this form for invoice submission, fill out tabs a. through j. with total costs for just the proposed invoice and fill out tab k. per the instructions on that tab.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, vendors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows or columns.
8. **ALL budget period cost categories are rounded to the nearest dollar.**

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary								
		Federal	Cost Share			Total Costs	Cost Share %	Proposed Budget Period Dates
	Budget Period 1	\$636,856	\$318,428			\$955,284	33.33%	2024
	Budget Period 2	\$1,101,966	\$550,984			\$1,652,950	33.33%	2025
	Budget Period 3	\$1,077,610	\$538,805			\$1,616,415	33.33%	2026
	Budget Period 4	\$1,076,653	\$538,326			\$1,614,979	33.33%	2027
	Budget Period 5	\$772,719	\$386,360			\$1,159,079	33.33%	2028
	Total	\$4,665,803	\$2,332,903			\$6,998,706	33.33%	
Section B - Budget Categories								
CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Costs	% of Project	Comments (as needed)
a. Personnel	\$11,256	\$21,818	\$22,473	\$22,147	\$21,501	\$99,195	1.42%	
b. Fringe Benefits	\$9,589	\$18,587	\$19,144	\$18,867	\$18,317	\$84,504	1.21%	
c. Travel	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$20,000	0.29%	
d. Equipment	\$7,991	\$21,572	\$21,572	\$19,464	\$16,781	\$87,378	1.25%	
e. Supplies	\$0	\$0	\$0	\$0	\$0	\$0	0.00%	
f. Contractual								
Sub-recipient	\$0	\$0	\$0	\$0	\$0	\$0	0.00%	
Vendor	\$922,449	\$1,586,974	\$1,549,227	\$1,550,501	\$1,098,480	\$6,707,630	95.84%	
FFRDC	\$0	\$0	\$0	\$0	\$0	\$0	0.00%	
Total Contractual	\$922,449	\$1,586,974	\$1,549,227	\$1,550,501	\$1,098,480	\$6,707,630	95.84%	
g. Construction	\$0	\$0	\$0	\$0	\$0	\$0	0.00%	
h. Other Direct Costs	\$0	\$0	\$0	\$0	\$0	\$0	0.00%	
Total Direct Costs	\$955,284	\$1,652,950	\$1,616,415	\$1,614,979	\$1,159,079	\$6,998,706	100.00%	
i. Indirect Charges	\$0	\$0	\$0	\$0	\$0	\$0	0.00%	
Total Costs	\$955,284	\$1,652,950	\$1,616,415	\$1,614,979	\$1,159,079	\$6,998,706	100.00%	

Additional Explanation (as needed):

a. Personnel

INSTRUCTIONS - PLEASE READ!!!

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and vendors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base pay rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., actual salary, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 3	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 4	Time (Hrs)	Pay Rate (\$/Hr)	Total Budget Period 5			
1	Sr. Engineer (EXAMPLE!!!)	2000	\$85.00	\$170,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	200	\$50.00	\$10,000	2400	\$190,000	Actual Salary
2	Technicians (2)	4000	\$20.00	\$80,000	0	\$0.00	\$0	0	\$0.00	\$0	0	\$0.00	\$0	0	\$0.00	\$0	4000	\$80,000	Actual Salary
1,2,3,6,7	System Maintenance Engineer	75	\$43.28	\$3,246	50	\$44.58	\$2,229	50	\$45.92	\$2,296	50	\$47.29	\$2,365	50	\$48.71	\$2,436	275	\$12,571	Actual Salary plus increase (3%)
7	Supervisor System Maintenance	50	\$41.58	\$2,079	150	\$42.83	\$6,424	150	\$44.11	\$6,617	128	\$45.44	\$5,816	100	\$46.80	\$4,680	578	\$25,616	Actual Salary plus increase (3%)
7	Technician A Class and Meter Technician	100	\$36.80	\$3,680	225	\$37.90	\$8,528	225	\$39.04	\$8,784	225	\$40.21	\$9,048	225	\$41.42	\$9,319	1000	\$39,360	Actual Salary plus increase (3%)
5,7	IT Coordinator	75	\$30.01	\$2,251	150	\$30.91	\$4,637	150	\$31.84	\$4,776	150	\$32.79	\$4,919	150	\$33.78	\$5,066	675	\$21,648	Actual Salary plus increase (3%)
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
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				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
				\$0			\$0			\$0			\$0			\$0	0	\$0	
Total Personnel Costs		300		\$11,256	575		\$21,818	575		\$22,473	553		\$22,147	525		\$21,501	2528	\$99,195	

Additional Explanation (as needed):

b. Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	\$170,000	20%	\$34,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$10,000	20%	\$2,000	\$38,000
System Maintenance Engineer	3,246	85.19%	\$2,765	2,229	85.19%	\$1,899	2,296	85.19%	\$1,956	2,365	85.19%	\$2,014	2,436	85.19%	\$2,075	\$10,709
Supervisor System Maintenance	2,079	85.19%	\$1,771	6,424	85.19%	\$5,473	6,617	85.19%	\$5,637	5,816	85.19%	\$4,954	4,680	85.19%	\$3,987	\$21,822
Technician A Class and Meter Technician	3,680	85.19%	\$3,135	8,528	85.19%	\$7,265	8,784	85.19%	\$7,483	9,048	85.19%	\$7,708	9,319	85.19%	\$7,939	\$33,530
IT Coordinator	2,251	85.19%	\$1,917	4,637	85.19%	\$3,950	4,776	85.19%	\$4,068	4,919	85.19%	\$4,190	5,066	85.19%	\$4,316	\$18,442
			\$0			\$0			\$0			\$0			\$0	\$0
Total:	\$11,256		\$9,589	\$21,818		\$18,587	\$22,473		\$19,144	\$22,147		\$18,867	\$21,501		\$18,317	\$84,504

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at <http://www1.eere.energy.gov/financing/resources.html>, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate. As a rate has not been determined will be treated as cost matching until rate is finalized.

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Federal travel regulations are contained within the applicable cost principles for all entity types. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
Domestic Travel		Budget Period 1									
1	EXAMPLE!!! Visit to PV manufacturer			2	2	\$250	\$500	\$100	\$160	\$2,020	Current GSA rates
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
										\$0	
										\$0	
International Travel										\$0	
Budget Period 1 Total										\$4,000	
Domestic Travel		Budget Period 2									
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
										\$0	
										\$0	
International Travel										\$0	
Budget Period 2 Total										\$4,000	
Domestic Travel		Budget Period 3									
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
										\$0	
										\$0	
International Travel										\$0	
Budget Period 3 Total										\$4,000	
Domestic Travel		Budget Period 4									
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
										\$0	
										\$0	
International Travel										\$0	
Budget Period 4 Total										\$4,000	
Domestic Travel		Budget Period 5									
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
1	Meet and present to DOE (TBD)	TBD	TBD	3	1	\$300	\$500	\$200		\$2,000	estimated flight/room/car costs
										\$0	
										\$0	
International Travel										\$0	
Budget Period 5 Total										\$4,000	
PROJECT TOTAL										\$20,000	

Additional Explanation (as needed): Travel included to budget travel to DOE for meetings and presentations, we acknowledge basis for expense reimbursement be based consistently though company policy

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.
2. List all equipment below, providing a basis of cost (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.
3. During award negotiations, provide a vendor quote for all equipment items over \$50,000 in price. If the vendor quote is not an exact price match, provide an explanation in the additional explanation section below. If a vendor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.
4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
3,4,5	EXAMPLE!!! Thermal shock chamber	2	\$70,000	\$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
7	Substation Pickup	50	\$96	\$4,791	Vehicle Audit Report	Project Support All
7	Meter Technician's Pickup	100	\$32	\$3,200	Vehicle Audit Report	Project Support All
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 1 Total			\$7,991		
Budget Period 2						
7	Substation Pickup	150	\$96	\$14,372	Vehicle Audit Report	Project Support All
7	Meter Technician's Pickup	225	\$32	\$7,200	Vehicle Audit Report	Project Support All
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 2 Total			\$21,572		
Budget Period 3						
7	Substation Pickup	150	\$96	\$14,372	Vehicle Audit Report	Project Support All
7	Meter Technician's Pickup	225	\$32	\$7,200	Vehicle Audit Report	Project Support All
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 3 Total			\$21,572		
Budget Period 4						
7	Substation Pickup	128	\$96	\$12,264	Vehicle Audit Report	Project Support All
7	Meter Technician's Pickup	225	\$32	\$7,200	Vehicle Audit Report	Project Support All
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 4 Total			\$19,464		
Budget Period 5						
7	Substation Pickup	100	\$96	\$9,581	Vehicle Audit Report	Project Support All
7	Meter Technician's Pickup	225	\$32	\$7,200	Vehicle Audit Report	Project Support All
				\$0		
				\$0		
				\$0		
				\$0		
	Budget Period 5 Total			\$16,781		
	PROJECT TOTAL			\$87,378		

Additional Explanation (as needed):

e. Supplies

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.
2. List all proposed supplies below, providing a basis of costs (e.g. vendor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.
3. Multiple supply items valued at \$5,000 or less used to assemble an equipment item with a value greater than \$5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.
4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 1						
4,6	EXAMPLE!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 1 Total				\$0		
Budget Period 2						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 2 Total				\$0		
Budget Period 3						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 3 Total				\$0		
Budget Period 4						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 4 Total				\$0		
Budget Period 5						
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
				\$0		
Budget Period 5 Total				\$0		
PROJECT TOTAL				\$0		

Additional Explanation (as needed):

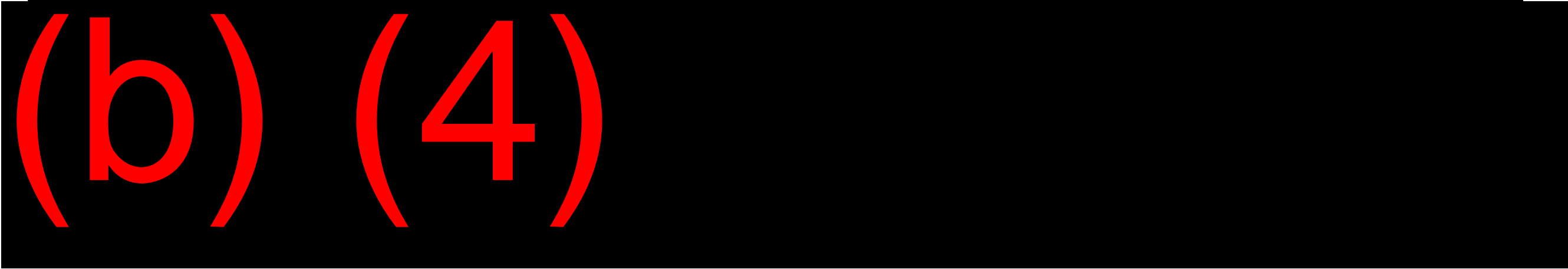
f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to subrecipients, vendors, and FFRDC partners in the applicable boxes below.
2. Subrecipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) \$100,000 or (2) 50% of total award costs. These subrecipient forms may be completed by either the subrecipients themselves or by the preparer of this form. The budget totals on the subrecipient's forms must match the subrecipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
3. Vendors (including contractors): List all vendors and contractors supplying commercial supplies or services used to support the project. For each Vendor cost with total project costs of \$250,000 or more, a Vendor quote must be provided. A vendor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs. vendor status.
4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	EXAMPLE!!! XYZ Corp.	Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	\$48,000	\$32,000	\$16,000			\$96,000
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

SOPO Task #	Vendor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	EXAMPLE!!! ABC Corp.	Vendor for developing robotics to perform lens inspection. Estimate provided by vendor.	\$32,900	\$86,500				\$119,400



		Sub-total	\$922,449	\$1,586,974	\$1,549,227	\$1,550,501	\$1,098,480	\$6,707,630
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SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								\$0
								\$0
		Sub-total	\$0	\$0	\$0	\$0	\$0	\$0

	Total Contractual		\$922,449	\$1,586,974	\$1,549,227	\$1,550,501	\$1,098,480	\$6,707,630
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Additional Explanation (as needed):

g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient should be entered under f. Contractual.
2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.
3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
Budget Period 1				
3	EXAMPLE ONLY!!! Three days of excavation for platform site	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
	Budget Period 1 Total	\$0		
Budget Period 2				
	Budget Period 2 Total	\$0		
Budget Period 3				
	Budget Period 3 Total	\$0		
Budget Period 4				
	Budget Period 4 Total	\$0		
Budget Period 5				
	Budget Period 5 Total	\$0		
	PROJECT TOTAL	\$0		

Additional Explanation (as needed):

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).
2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.
3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
Budget Period 1				
5	EXAMPLE!!! Grad student tuition - tasks 1-3	\$16,000	Established UCD costs	Support of graduate students working on project
Budget Period 1 Total		\$0		
Budget Period 2				
Budget Period 2 Total		\$0		
Budget Period 3				
Budget Period 3 Total		\$0		
Budget Period 4				
Budget Period 4 Total		\$0		
Budget Period 5				
Budget Period 5 Total		\$0		
PROJECT TOTAL		\$0		

Additional Explanation (as needed):

i. Indirect Costs

INSTRUCTIONS - PLEASE READ!!!

1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
Provide ONLY Applicable Rates:							
Overhead Rate	0.00%	0.00%	0.00%	0.00%	0.00%		
General & Administrative (G&A)	0.00%	0.00%	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%	0.00%	0.00%		
OTHER Indirect Rate	0.00%	0.00%	0.00%	0.00%	0.00%		
Indirect Costs (As Applicable):							
Overhead Costs						\$0	
G&A Costs						\$0	
FCCM Costs, if applicable						\$0	
OTHER Indirect Costs						\$0	
Total indirect costs requested:	\$0	\$0	\$0	\$0	\$0	\$0	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.

There is not a current, federally approved rate agreement negotiated and available*.

*When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided by your DOE contact, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Additionally, any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities described in Appendix VII to Part 200—States and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely. As described in §200.403 Factors affecting allowability of costs, costs must be consistently charged as either indirect or direct costs, but may not be double charged or inconsistently charged as both. If chosen, this methodology once elected must be used consistently for all Federal awards until such time as a non-Federal entity chooses to negotiate for a rate, which the non-Federal entity may apply to do at any time.

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.
2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. Any partial donation of goods or services is considered a discount and is not allowable.
3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. Vendors may not provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.
4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.
5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
6. **NOTE:** A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.**
7. **NOTE:** A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**
8. **Each budget period is rounded to the nearest dollar.**

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company EXAMPLE!!!	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of \$680 per module	\$13,600					\$13,600
Tri-County Electric	Cash	Company's cost share commitment for the entire project.	\$315,232	\$544,788	\$532,424	\$532,037	\$380,254	\$2,304,735
Tri-County Electric	Cash	Cash cost share commitment for Fringe Benefits (tab b) until an indirect rate agreement is negotiated with DOE or elects the 10% De Minimis allowed by Office of Management and Budget.	\$3,196	\$6,196	\$6,381	\$6,289	\$6,106	\$28,168
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
								\$0
		Totals	\$318,428	\$550,984	\$538,805	\$538,326	\$386,360	\$2,332,903

Total Project Cost: \$6,998,706

Cost Share Percent of Award:

33.3%

Additional Explanation (as needed): Cost Share includes half of the cost (not including fringe benefits) plus fringe benefits added to Tri-County Electric's costs. **Note that TCE has qualified for 1/3 match or 33.3%**

Applicant Name: Tri-County Electric Coop. Inc. Award Number: 0

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary							
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget			Total (g)
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)		
1. Budget Period 1				\$636,856	\$318,428		\$955,284
2. Budget Period 2				\$1,101,966	\$550,984		\$1,652,950
3. Budget Period 3				\$1,077,610	\$538,805		\$1,616,415
4. Budget Period 4				\$1,076,653	\$538,326		\$1,614,979
5. Budget Period 5				\$772,719	\$386,360		\$1,159,079
6. Totals				\$4,665,803	\$2,332,903		\$6,998,707

Section B - Budget Categories							
6. Object Class Categories	Grant Program, Function or Activity					Total (5)	
	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5		
a. Personnel	\$11,256	\$21,818	\$22,473	\$22,147	\$21,501	\$99,195	
b. Fringe Benefits	\$9,589	\$18,587	\$19,144	\$18,867	\$18,317	\$84,504	
c. Travel	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$20,000	
d. Equipment	\$7,991	\$21,572	\$21,572	\$19,464	\$16,781	\$87,378	
e. Supplies	\$0	\$0	\$0	\$0	\$0	\$0	
f. Contractual	\$922,449	\$1,586,974	\$1,549,227	\$1,550,501	\$1,098,480	\$6,707,630	
g. Construction	\$0	\$0	\$0	\$0	\$0	\$0	
h. Other	\$0	\$0	\$0	\$0	\$0	\$0	
i. Total Direct Charges (sum of 6a-6h)	\$955,284	\$1,652,950	\$1,616,415	\$1,614,979	\$1,159,079	\$6,998,706	
j. Indirect Charges	\$0	\$0	\$0	\$0	\$0	\$0	
k. Totals (sum of 6i-6j)	\$955,284	\$1,652,950	\$1,616,415	\$1,614,979	\$1,159,079	\$6,998,706	
7. Program Income						\$0	