Infrastructure Investment and Jobs Act - SECTION 40101(d)

PREVENTING OUTAGES AND ENHANCING THE RESILIENCE OF THE ELECTRIC GRID

State of Tennessee - Program Narrative

The U.S. Department of Energy (DOE) will provide grants to States (including U.S. Territories) and Indian Tribes under the Grid Resilience Formula Grant Program (i.e., Section 40101(d) of the Infrastructure Investment and Jobs Act (IIJA) – Formula Grants to States and Indian Tribes for Preventing Outages and Enhancing the Resilience of the Electric Grid). States and Indian Tribes may further allocate funds to "Eligible Entities," to include: an electric grid operator; an electricity storage operator; an electricity generator; a transmission owner or operator; a distribution provider; a fuel supplier; and any other relevant entity, as determined by the Secretary.

The objective of DOE's Grid Resilience Formula Grant Program (hereinafter "Program") is to improve the resilience of the electric grid against disruptive events. IIJA section 40101(a)(1) defines a disruptive event as "an event in which operations of the electric grid are disrupted, preventively shut off, or cannot operate safely due to extreme weather, wildfire, or a natural disaster."

To achieve this goal, funding provided under this Program may be used to implement a wide range of "Eligible Resilience Measures" intended to mitigate the impact of disruptive events, including: 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 low-sag, 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 microgrids and battery-storage subcomponents; i) adaptive protection technologies; j) advanced modeling technologies; k) hardening of power lines, facilities, substations, or other systems; and l) the replacement of old overhead conductors and underground cables.

Funding may also be used for the training, recruitment, retention, and reskilling of skilled and properly credentialled workers in order to perform the work required for the particular resilience measures to be funded under the Program. Additionally, of the amounts made available under the Program each fiscal year, the State or Indian Tribe may use up to 5% of its federal allocation for providing technical assistance and administrative expenses associated with the Program.

Each year, States and Indian Tribes (hereinafter "Recipients") shall provide a Program Narrative to DOE that describes the criteria and methods that will be used by the Recipient to make subawards to Eligible Entities; is adopted after notice and a public hearing; and describes the proposed funding distributions and recipients of the subawards to be provided by the Recipient.

In addition to providing the annual Program Narrative, Recipients will be responsible for the following activities:

- **Task 1.0: Project Management and Administration:** The Recipient shall manage and administer activities in order to achieve project objectives. The activities will include tracking and disseminating information regarding the performance of the project, as well as administrative tasks associated with

Government reporting. An initial Project Management Plan (PMP) shall be provided within forty-five (45) days after the initial award. Subsequent PMPs shall be submitted within ninety (90) days prior to the beginning of each budget period. PMPs should be revised when major project changes are proposed, with less significant changes documented in the submitted Quarterly Progress Report (QPR).

- **Task 2.0: Technical Assistance and Planning:** As previously stated, the Recipient shall submit a Program Narrative each year. Further, the Recipient shall conform to all aspects of the Program Narrative in execution of the award. Note that it is not required that a new Program Narrative be created each year, but that the current Program Narrative be submitted.
- **Task 3.0: Resilience Project Approval:** The Recipient shall prepare and submit Resilience Project Packages to DOE. The Recipient may not execute a proposed resilience project or issue subawards/subcontracts for resilience projects without DOE Project Officer review and written determination of adequacy of the Resilience Project Package.
- **Task 4.0: Resilience Project Execution:** Upon DOE's written determination of adequacy of the Resilience Project Package, the Recipient shall execute the approved resilience project and/or issue subawards to Eligible Entities to execute the resilience project. For each resilience project and subaward/subcontract, the Recipient shall:
    - Monitor the performance of the entity/awardee to assure adherence to the Terms and Conditions of the subaward,
    - Collect necessary information for the Recipient to provide measurable progress towards completion of the funded activity, and
    - Collect necessary information for the Recipient to verify the extent to which its established objectives are being realized.

  The Recipient shall monitor the execution and performance of the resilience projects and provide the implementation status, progress toward measurable performance targets, and verifiable progress toward resilience objectives, as part of its QPRs to DOE.

Additionally, periodic and final reports will be submitted to DOE in accordance with federal guidance. Upon request by DOE, the Recipient will prepare detailed briefings for presentation to DOE explaining the plans, progress, and results of subaward activities.

1. Objectives and Metrics:

TDEC OEP has identified the following objectives that will guide the implementation of the State of Tennessee's Grid Resilience Program:

- **Improve Grid Resilience** – Maintain and enhance the reliability and resilience of the electric grid, with the goal of minimizing the frequency and duration of power outages resulting from natural hazards.
- **Promote Grid Equity** – Ensure that benefits from these funds are distributed equitably to Tennesseans, particularly for communities that are more susceptible or vulnerable to electric power outages.
- **Support the State's Grid Workforce** – Strengthen the workforce that is responsible for implementing grid reliability and resilience projects, potentially via offering professional training and/or workforce development opportunities, and consider any other efforts that will help the State attract, train, and retain an appropriately skilled workforce in the grid improvement space.

TDEC OEP also intends to design and implement its Program in alignment with the National Mitigation Investment Strategy (NMIS)[1], published by the Federal Emergency Management Agency in August 2019 to identify and measure the effectiveness of mitigation investments as well as to inform decisions on when and where to make investments.[1] NMIS provides three overarching goals that TDEC OEP will strive to meet in its Program implementation and reporting:

- Show how mitigation investments reduce risk,
- Coordinate mitigation investments to reduce risk, and
- Make mitigation investment standard practice.

To help the State measure its success in meeting the abovementioned program objectives, TDEC OEP has identified several potential metrics to track during program implementation.

In compliance with Section V.B.viii. Flood Resilience of the Program's Administrative and Legal Requirements Document (Amendment 5),[2] the location in which the Grid Resilience Program is being administered in Tennessee is not in a floodplain.

A. Improve Grid Resilience

According to DOE's Mini-Guide on Planning Objectives and Metrics for Integrated Distribution Planning Processes,[3] the Institute of Electrical and Electronics Engineers (IEEE) 1366 Standard[4] defines several reliability indices and provides guidance for calculating them, including the indices TDEC OEP may evaluate below:

- The System Average Interruption Frequency Index (SAIFI), which equals how often the average Tennessee electricity customer experiences an interruption. To calculate:
    - SAIFI = total number of customers interrupted/total number of customers served
- The System Average Interruption Duration Index (SAIDI), which equals the total number of minutes (or hours) the average Tennessee electricity customer experiences an interruption. To calculate:
    - SAIDI = sum of customer interruption durations/total number of customers served
- The Customer Average Interruption Duration Index (CAIDI), which equals the average time required to restore service to Tennessee electricity customers. To calculate:
    - CAIDI = sum of customer interruption durations/total number of customers interrupted
- The Customer Average Interruption Frequency Index (CAIFI), which equals the average number of interruptions per Tennessee electricity customer that experiences interruptions. To calculate:
    - CAIFI = total number of interruptions/total number of customers interrupted
- The Customers Experiencing Multiple Interruptions (CEMI), which equals the percent of Tennessee

[1] The National Mitigation Investment Strategy ("NMIS" or Investment Strategy) is a single national strategy for advancing mitigation investment to reduce risks posed by natural hazards (for example, sea level rise, droughts, floods, hurricanes, tornados, wildfires, earthquakes) and increasing the nation's resilience to natural hazards. Federal Emergency Management Agency, August 2019, https://www.fema.gov/sites/default/files/2020-10/fema_national-mitigation-investment-strategy.pdf.

[2] Opportunity: BIL – PREVENTING OUTAGES AND ENHANCING THE RESILIENCE OF THE ELECTRIC GRID FORMULA GRANTS TO STATES AND INDIAN TRIBES. FedConnect. Accessed March 27, 2023. https://www.fedconnect.net/FedConnect/default.aspx?ReturnUrl=%2ffedconnect%2f%3fdoc%3dDE-FOA-0002736%26agency%3dDOE&doc=DE-FOA-0002736&agency=DOE.

[3] DOE Mini-Guide #2, Planning Objectives and Metrics for Integrated Distribution Planning Processes, April 18, 2022: netl.doe.gov/sites/default/files/netl-file/Planning%20Objectives%20and%20Metrics%204.18.2022.pdf.

[4] The IEEE 1366-2012 Standard is available at: ieeexplore.ieee.org/document/6209381.

electricity customers who have experienced a given number (*n*) or more sustained interruptions. To calculate:
    - CEMI = total number of customers that experience *n* or more interruptions/total number of customers served
- The Customers Experiencing Long Interruption Durations (CELID), which equals the percent of Tennessee electricity customers who experienced interruption duration of a given number (*n*) or more hours. To calculate:
    - CELID = total number of customers that experienced an interruption duration of *n* or more hours/total number of customers served

These reliability indices may be applied across a utility's service area or across portions of it; filtered by outage type, root cause, and/or customer class; and may cover specified periods of time (e.g., a year). In addition, the abovementioned indices are typically applied for sustained interruptions (i.e., those greater than 5 minutes), which may be caused by routine occurrences or major events (e.g., storms).

In order to track these metrics, TDEC OEP would need the cooperation of the utility network across the state to provide electricity outage frequency and duration data on a routine basis. TDEC OEP plans to work with Oak Ridge National Laboratory (ORNL) and leverage its relevant grid data resources, such as EAGLE- I[5], in order to set a historical baseline for power outages. Given that outage data is currently reported for only a portion of Tennessee's electricity service territory through the EAGLE-I system, TDEC OEP and ORNL plan to address reporting gaps and identify needs or resources that could be leveraged to fill such reporting gaps. If TDEC OEP is not able to obtain sufficient data for tracking these metrics, the office may need to identify other potential methods or grid reliability metrics for gauging program success. This could include using publicly available tools or other tools made available to TDEC OEP in its capacity as a State Energy Office.

B. Promote Grid Equity

In addition to the systemwide reliability metrics proposed above, TDEC OEP also proposes applying these reliability metrics to areas of the state that are more susceptible or vulnerable to electric power outages (hereafter referred to as "Vulnerable Communities"). Such metrics will help track the impact of this Program on such communities and will provide a mechanism to measure equitable investment of funds.

For purposes of this Program, TDEC OEP is defining Vulnerable Communities[6] as those that fall into at least one of the following categories:

- An area designated as a disadvantaged community (DAC) by the White House Council on Environmental Quality (CEQ) via its Climate and Economic Justice Screening Tool (CEJST).[7]
- An area that is evaluated as high risk for natural hazards, as determined by the Federal Emergency Management Agency (FEMA) Multiple Hazard Index for United States Counties.[8]

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[5] EAGLE-I is an interactive geographic information system that allows users to view and map the nation's energy infrastructure and obtain near real-time informational updates concerning the electric, petroleum, and natural gas sectors within one visualization platform. EAGLE-I can be accessed at: eagle-i.doe.gov/login.

[6] Vulnerable communities include DACs, as identified by the CEJST, but are not limited to DACs.

[7] The CEJST was designed by the CEQ to help agencies identify DACs for the purposes of implementing federal funds in compliance with Executive Order 14008 and the associated Justice40 Initiative. More info on CEJST can be found at: whitehouse.gov/ceq/news-updates/2022/02/18/ceq-publishes-draft-climate-and-economic-justice-screening-tool-key-component-in-the-implementation-of-president-bidens-justice40-initiative/.

[8] The Multiple Hazard Index for United States Counties was designed to provide communities and public health officials with an overview of the natural disaster risks that are prominent in their county, and to facilitate the comparison of

- An area that houses high populations of electricity-dependent Tennesseans, particularly those who require electricity to operate medical devices and/or keep medications and treatments at prescribed temperatures. This is shown in the FEMA HHS emPOWER Map.[9]
- An area designated as a high social vulnerability community by the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index.[10]
- Economically Distressed or At-Risk counties, as determined by the Appalachian Regional Commission.[11]

Metrics that may be used by TDEC OEP for measuring grid equity could include the following:

- Percentage of overall funds provided to subrecipients serving Vulnerable Communities
- Vulnerable SAIFI = total number of Vulnerable Community customers interrupted/total number of Vulnerable Community customers served
- Vulnerable SAIDI = sum of Vulnerable Community customer interruption durations/total number of Vulnerable Community customers served
- Vulnerable CAIDI = sum of Vulnerable Community customer interruption durations/total number of Vulnerable Community customers interrupted
- Vulnerable CAIFI = total number of interruptions in Vulnerable Community/total number of Vulnerable Community customers interrupted
- Vulnerable CEMI = total number of Vulnerable Community customers that experience *n* or more interruptions/total number of Vulnerable Community customers served
- Vulnerable CELID = total number of Vulnerable Community customers that experienced an interruption duration of *n* or more hours/total number of Vulnerable Community customers served

If TDEC OEP is not able to obtain sufficient data for tracking these metrics, it may need to identify other potential methods or metrics for measuring Program success.

C. Support the State's Grid Workforce

Finally, the State intends to design its Program to support statewide efforts that attract, train, and retain an appropriately skilled and unskilled grid workforce. Because the project types allowed under this Program are

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hazard levels between counties. More info on the Multiple Hazard Index can be found at: fema.maps.arcgis.com/home/item.html?id=800f684ebadf423bae4c669cb0a1d7da.

[9] The HHS emPOWER Map displays the total number of at-risk electricity-dependent Medicare beneficiaries in a geographic area, down to the ZIP code. When combined with real-time severe weather, and hazard maps, communities can easily anticipate and plan for the needs of this population during an emergency. More info on the HHS emPOWER Map can be found at: fema.maps.arcgis.com/home/item.html?id=ba426da1e48d4026a1299a007ed2b1f1.

[10] A number of factors—including poverty, lack of access to transportation, crowded housing, etc.—may weaken a community's ability to prevent human suffering and financial loss in a disaster. These factors are known as social vulnerability. The CDC Social Vulnerability Index uses U.S. Census data to determine the social vulnerability of every county. More info on the CDC Social Vulnerability Index can be found at: atsdr.cdc.gov/placeandhealth/svi/index.html.

[11] Distressed counties rank among the 10% most economically distressed counties in the nation. Each year, the Appalachian Regional Commission (ARC) prepares an index of county economic status for every county in the United States. Economic status designations are identified through a composite measure of each county's three- year average unemployment rate, per capita market income, and poverty rate. Based on these indicators, each county is then categorized as distressed, at-risk, transitional, competitive, or attainment: https://www.tn.gov/transparenttn/state-financial-overview/open-ecd/openecd/tnecd-performance- metrics/openecd-long-term-objectives-quick-stats/distressed-counties.html.

diverse—spanning from vegetation management to installation of battery storage technologies, to reconductoring of powerlines—TDEC OEP has not yet identified which segment of the grid workforce, if any, to target with specific professional training and/or workforce development offerings.

As part of its Program planning process, TDEC OEP will evaluate the need for an inventory of existing or planned professional training and/or workforce development programs. Such an inventory could inform whether the State may want to conduct a more in-depth industry landscape analysis and/or support related initiatives in future years.

Further guidance on job creation and preservation reporting is anticipated from DOE. To the extent permitted by Tennessee law, TDEC OEP will comply with the federal guidance. For the time being, the following metrics may be used by TDEC OEP to track performance in equitable grid workforce support:

- Of all workers employed to execute projects funded by this Program, track percentage of workers that come from Vulnerable Communities;
- Track local businesses or vendors employed to execute projects funded by this Program;
- Of all local businesses or vendors employed to execute projects funded by this Program, track percentage of businesses located in Vulnerable Communities;
- Track number of Eligible Entities that utilize their existing workforce to execute projects funded by this Program, categorized by type of project.

Should TDEC OEP leverage Program funding to support professional training and/or workforce development initiatives, the following, additional metrics could be tracked:

- Number of community educators (e.g., local technical colleges, non-profit institutions, State agencies, etc.) providing professional development opportunities for the grid workforce;
- Number of recruits trained by said community educators;
- Of all recruits trained by community educators, track percentage of recruits that reside in Vulnerable Communities.

TDEC OEP strongly supports investments that expand good paying jobs, increase job access, improve job quality, provide strong labor standards, strengthen local/regional economies, and develop an equitable and diverse grid workforce. TDEC OEP will engage the appropriate labor and workforce development entities (e.g., Tennessee Department of Labor and Workforce Development, Tennessee Board of Regents / Tennessee Colleges of Applied Technology) to achieve this objective.

2. Criteria, Methods, and Funding Distribution:

At this time, the State has not eliminated any of the Eligible Entity types as potential subrecipients under the Program. Additionally, TDEC OEP has not made a determination as to whether funding will be awarded to subrecipients via competitive solicitation(s) and/or a formula grant(s). Following submission and receipt of DOE's approval of Tennessee's Program Narrative, TDEC OEP will convene a stakeholder working group, comprised of representatives from Local Power Companies (large, medium, small, municipally-owned, cooperatively-owned, rural, and urban), the Tennessee Valley Authority (TVA), Tennessee Electric Cooperative Association (TECA), Tennessee Municipal Electric Power Association (TMEPA), Tennessee Valley Public Power Association (TVPPA), ORNL, the Electric Power Research Institute (EPRI), Vulnerable Communities, Tennessee Board of Regents / Tennessee Colleges of Applied Technology, urban and rural local governments, and other State Agencies, including the Tennessee Emergency Management Agency.

This working group will inform the development of key Program design decisions, including the decision to award funding via competitive solicitation(s) and/or formula grant(s) and the potential prioritization of

Eligible Resilience Measures to be funded under the Program. (For example, aggregated grid modernization data collected for TVA's Regional Grid Transformation initiative could be used to support the identification and prioritization of measures in the areas of grid operations and system planning.) This working group will also evaluate the need to expand the State's list of Eligible Entities to include critical facilities and infrastructure that ensure essential community services or lifelines[12] remain functioning when a disruptive event occurs. Further, the working group will utilize data and existing tools to develop a framework and a methodology for determining and/or evaluating community benefit of grid resilience projects in a measurable way, where possible. (An example of an existing tool is TVA's Mapping Key Data for Connected Communities Focus Areas, which was developed to baseline communities, focus efforts, and track progress and is expected to soon be available to the public and aid in the identification of needs by county or by Local Power Company geographic area.)

In order to ensure that the percentage of funding made available to Eligible Entities that sell not more than 4,000,000 MWh of electricity is not less than the percentage of all customers in Tennessee served by those Eligible Entities,[13] TDEC OEP will also work with TVA, Local Power Companies, and the associations that represent the Local Power Companies to first determine how "customer" will be defined (i.e., by meter or population based) and then confirm the percentage of all customers in Tennessee that are served by those Eligible Entities.

TDEC OEP will conduct a comprehensive review of all complete and eligible grant applications, including all required supporting documentation. In accordance with the abovementioned objectives, selection of awards to Eligible Entities will be informed by a variety of criteria, including but not limited to:

- Potential of the project to minimize the frequency and duration of power outages;
- Potential benefits that would impact Vulnerable Communities;
- Community benefits to be achieved as a result of the project in reducing the likelihood and consequences of disruptive events, with priority given to projects that will generate the greatest community benefit (whether rural or urban);
- Potential for the project to directly strengthen and/or support the workforce that is responsible for implementing grid resilience projects;
- Proposed cost match contribution in excess of the percentage required and any other cost-effectiveness considerations; and
- The location of the project (the project must be located within the State of Tennessee).

3. Equity Approach:

The State's Program will support the grid workforce and prioritize communities most affected by extreme weather or that face other inequities. To that end, TDEC OEP has made equity and jobs two of the three objective focus areas for this Program and has proposed metrics in order to evaluate the degree to which the State's efforts are achieving these goals. Additionally, as noted within the Criteria section above, TDEC OEP will utilize data and existing tools to develop a framework and a methodology for determining and/or evaluating community benefits of eligible projects in a measurable way, where possible. In accordance with Section 40101(d)(5) of the IIJA, priority will be given to projects that will generate the greatest community benefit in reducing the likelihood and consequences of disruptive events.

[12] https://www.fema.gov/emergency-managers/practitioners/lifelines

[13] Preventing Outages and Enhancing the Resilience of the Electric Grid Formula Grants to States and Indian Tribes, Administrative and Legal Requirements Document, Section V.D., p. 25. https://www.fedconnect.net/FedConnect/default.aspx?ReturnUrl=%2ffedconnect%2f%3fdoc%3dDE-FOA-0002736%26agency%3dDOE&doc=DE-FOA-0002736&agency=DOE.

Tennessee has a diverse landscape and population, with the four major cities (Memphis, Nashville, Knoxville, and Chattanooga) representing a combined population of more than 1.7 million people. In addition, more than 90% of the state is classified as rural.[14] TDEC OEP will communicate directly with stakeholders in rural, urban, and suburban communities throughout the state to ensure that investments made under this Program reflect the diverse nature of Tennessee. As grid resilience investments are identified and proposed, there will be further opportunities to ensure that resources are distributed equitably across communities. Continued engagement with both urban and rural areas, as well as with Vulnerable Communities, will be key to ensuring the identification of opportunities and support for local demand. Collaborating with local governments and Local Power Companies alike will ensure that local needs are considered and that local leaders are engaged in the planning process.

Across the nation, many of the burdens from outages and grid disturbances are disproportionally borne by Vulnerable Communities, including energy and transportation-burdened communities and those facing high rates of environmental pollution and social vulnerability. As mentioned above, TDEC OEP has defined "Vulnerable Communities" for the purposes of this Program and will prioritize funding for those areas of the state. Consistent with Executive Order 14008, Interim Justice40 Guidance issued by the Office of Management and Budget (OMB), and Tennessee law, the Program will consider metrics using tools such as the CEJST, emPOWER Map, and CDC Social Vulnerability Index to ensure that repeating of biases or other historical injustices are avoided and that at least 40% of the overall benefits of investments flow to Vulnerable Communities identified in the Objectives and Metrics section above.

In order to ensure that Vulnerable Communities benefit substantially from the Program, TDEC OEP will consider the potential of the project to minimize the frequency and duration of power outages in these communities. TDEC OEP will also assess the expected benefits to the communities from reduced power outages and will consider conducting pre- and post-surveys in selected communities to measure the Program's impact.

Meaningful community engagement can improve outcomes by helping to inform decisions with the needs, interests, and concerns of affected stakeholders and groups. However, TDEC OEP recognizes additional work is necessary to engage and build trust in Vulnerable Communities. As Program deployment activities progress, TDEC OEP will continue to engage Vulnerable Communities in an iterative fashion in order to receive input on priorities and concerns; publicly summarize inputs from stakeholders; communicate Program design decisions and solicit feedback on such; communicate and validate benefits received by impacted communities; and update any Program design considerations accordingly, as needed.

Using Program funds to support the creation of good paying, safe jobs based in Tennessee is also a priority. Not only will TDEC OEP prioritize investments in Vulnerable Communities, but the Program will encourage Eligible Entities to hire local workers in these communities, when possible.

4. Technical Assistance and Administration:

The State intends to utilize the five percent allowed for administrative and/or technical assistance. Administrative activities covered include, but are not limited to, stakeholder engagement, Program design and implementation (e.g., development of program collateral such as grant applications, grant program manual, reporting templates, monitoring plans), project evaluation, and Program / project oversight. Technical assistance will be provided through existing and new personnel or through contractual services that

[14] https://www.tn.gov/health/cedep/environmental/healthy-places/healthy-places/land-use/lu/rural-areas.html.

focus on assisting applicants with applying for Program funds, assisting grantees with compliance with State and federal requirements (e.g., quarterly status and financial reporting, National Environmental Protection Act (NEPA), Title VI, Davis-Bacon Act, Buy America/Build America), data analysis, modeling, and project evaluation.

TDEC requests authorization to engage the technical assistance services of Oak Ridge National Laboratory (ORNL) under this Program, as this National Laboratory / Federally Funded Research and Development Center (FFRDC) has significant expertise in tracking customer-level outages, grid resilience modeling, and infrastructure interdependence analysis, a history of working with the Tennessee Valley Authority (TVA) and various Local Power Companies in Tennessee, and great familiarity with the transmission and distribution grid in Tennessee. This expertise will be leveraged to provide technical assistance, particularly in the following areas: 1) data-driven analysis of outages; 2) engaging with stakeholders to establish metrics, data exchange, and interoperability considerations; and 3) analyses to evaluate mitigation technologies before and after deployment.

ORNL's technical assistance, offered to the State and/or our other subrecipients, will fall within three major areas of activity:

1) **Data and Analytics:** ORNL maintains several years of outage data through the EAGLE-I platform, with over 75% of coverage for the State of Tennessee. This data can be utilized to understand the severity of outages by geographical region over time and the impact of disruptive events (e.g., hurricanes). This data, combined with geospatial datasets representing Vulnerable Communities, will enable TDEC OEP to understand regional needs for grid resilience investments.
2) **Data curation:** ORNL has experience working with utilities in standardizing collection for reporting outages (i.e., Outage Data Initiative Nationwide or ODIN). Outage data from utility energy management systems enables computation of the IEEE 1366 reliability metrics for use by TDEC OEP to evaluate the effectiveness of the technologies over time. Existing distribution automation systems often have the capability to generate the required data and, in some cases, a retrofit system for data collection and curation may need to be established. ORNL can support in the data generation or in the establishment of data gathering requirements for Eligible Entities.
3) **Modeling and Simulation:** Resilience enhancements often require "what if" scenario modeling and simulation to understand the long-term impact of the mitigating measures as well as potential performance during disruptive events. ORNL has tools to perform power flow modeling, interdependency analysis, voltage stability analysis, impact of natural threats, and contingency analysis. These capabilities can be utilized to support simulation-driven and data-driven analysis as well as quantification of resilience improvements to the grid.

ORNL has secured the attached Contracting Officer letter to authorize, in writing, the use of the FFRDC on the proposed project, and the State of Tennessee will explore pathways to engage with ORNL directly as a subrecipient to provide technical assistance to the State and its other subrecipients.

The technical assistance that ORNL can provide to the State of Tennessee will have applicability to other states in the TVA service territory (TVA provides power to 153 Local Power Companies serving ~10 million people in parts of seven states), the remainder of the Southeast region, and other regions. The foundational analysis applied to Tennessee-specific and other state data can serve as an anchor and an opportunity to evaluate common data challenges, interoperability considerations between varying outage data tracking systems, the state of such outage tracking systems, and how best to prioritize projects. Lessons learned from this work can then be shared with other states and applied to other parts of the country.

The State Energy Offices of Mississippi and Georgia and TVA have confirmed interest in coordinating regionally

and leveraging this type of technical assistance from ORNL, if made available to other states. The State Energy Offices of Alabama, Florida, and Kentucky have also expressed an interest in learning more about the technical assistance that ORNL plans to provide to the State of Tennessee. With over 16,000 miles of transmission line within their system, TVA and its Local Power Companies will also serve to benefit from this type of regional coordination and support that ORNL can provide, as such technical assistance, data analysis, data curation, and modeling support can inform TVA's Integrated Resource Planning process and position both TVA and its Local Power Companies to better prioritize grid resiliency projects and investments throughout the region.

TDEC OEP (the Tennessee State Energy Office) proposes to organize and host a kickoff discussion alongside representatives from both ORNL and DOE to frame the opportunity and to gather feedback and interest from other State Energy Offices in the Southeast region at the National Association of State Energy Officials (NASEO) Southeast Regional Meeting (June 2023), with the opportunity for further in-depth discussions and/or workshopping sessions at both the NASEO Annual Meeting (occurs every fall), NASEO Mid-Winter Policy Outlook Conference (occurs every February), and NASEO Southeast Regional Meeting (occurs every spring / summer). Additional opportunities in Tennessee and the Southeast region to engage in multi-state and multi-stakeholder coordination regarding ORNL's technical assistance offerings include the Tennessee Valley Regional Resiliency Summit (co-hosted by TVA and ORNL), the Tennessee Chamber of Commerce and Industry's annual Environment Conference, the Tennessee Environmental Show of the South Conference, the Georgia Environmental Conference, the Municipal Electric Authority of Georgia (MEAG) Power Annual Conference, Georgia Electric Membership Corporation Annual Meetings, the Southeast Energy Summit, the Georgia Environmental Finance Authority (GEFA) Energy Assurance Tabletop Exercise, and annual meetings hosted by the Tennessee Electric Cooperative Association, the Tennessee Municipal Electric Power Association, and the Tennessee Valley Public Power Association. Other regional and National opportunities will be evaluated with other Southeastern states and territories.

Considering this broad applicability, the State of Tennessee requests that DOE commit direct technical assistance funding from the Grid Deployment Office's technical assistance budget to ORNL to support this work in order to ensure that technical assistance insights gained regarding the grid in Tennessee, Mississippi, and Georgia can be maximized and applied throughout the country.

5. Public Notice and Hearing:

A comprehensive public engagement strategy was developed in August 2022 to ensure meaningful public engagement in compliance with Program guidance, including the development of a Program-specific website (https://www.tn.gov/content/tn/environment/program-areas/energy/state-energy-office--seo-/programs-projects/programs-and-projects/grid-resilience.html), the recording and publishing of an informational webinar (https://www.youtube.com/watch?v=ddw6MsYSsCY), the release of a public notice (provided as an attachment to this Program Narrative), issuance of a press release on the public notice, advertising placement of the public notice in 10 minority-owned newspapers (summarized in Figure 1 below), execution of an in-person and virtual public hearing with attendance from 40 stakeholders, and solicitation of verbal and written feedback, which has been collected, reviewed, and incorporated where relevant.

Figure 1. Summary of Public Notice Placements in Minority-Owned Newspapers

Publication	Distribution Area	Ownership	Circulation
Tennessee Tribune	Davidson, Shelby, Hamilton, and Knox counties	African-American	25,000
El Crucero de Tennessee	Nashville/ Davidson County	Spanish-American	10,000
Nashville PRIDE	Nashville/ Davidson County	African-American	56,000

La Campana	Franklin	Spanish- American	5,000
Memphis' Tri-State Defender	Memphis	African-American	7,350
Chattanooga Courier	Chattanooga	African-American	26,400
Knoxville Enlightener	Knoxville	African-American	31,000
Clarksville Press	Clarksville	African-American	15,000
Murfreesboro Vision	Murfreesboro	African-American	14,000
La Prensa Latina	Memphis	Spanish- American	5,000

The publicly accessible website dedicated to the Program was developed as the primary landing page for public outreach during plan development. The website includes background information about the Program, information on Eligible Entities and Eligible Resilience Measures, definitions, resources, a recorded webinar, email listserv sign-up link, and information on the public hearing. This website will continue to be used as a resource for disseminating information, including the Program Narrative, as well as relevant news and resources.

In addition, TDEC OEP sends a monthly newsletter to a maintained listserv of approximately 5,000 subscribers on issues related to energy news, upcoming events, funding opportunities, and resources. Subscribers to this newsletter include members of the public and key stakeholders involved in the energy, utility, resilience, and related sectors. Key stakeholder groups including TECA, TMEPA, TVPPA, and TVA further supported this outreach by sharing the information with their respective listservs and/or member organizations.