BEFORE THE TENNESSEE PUBLIC UTILITY COMMISSION
NASHVILLE, TENNESSEE

IN RE: THE APPLICATION OF JACKSON SUSTAINABILITY COOPERATIVE FOR A DETERMINATION OF EXEMPTION AND IN THE ALTERNATIVE, FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY	))))))	DOCKET NO. **21-00061**

DIRECT TESTIMONY OF DENNIS EMBERLING

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND TELEPHONE NUMBER.

A. Dennis Emberling
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Jackson, TN 38301
Phone: (731) 240-5001
Email: de@comdevent.com

Q. WHAT IS YOUR POSITION AND WHAT ARE YOUR RESPONSIBILITIES AT JACKSON SUSTAINABILITY COOPERATIVE ("JSC")?

A. President. I am responsible for overseeing and qualifying members to receive supplemental energy from renewable sources that JSC shares among its members. The members are a small group of manufacturers and commercial operators in an underserved area of Jackson, Tennessee. As the solar facility nears operation, I am responsible for making sure JSC has the administrative operations to run the cooperative.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I am an internationally-known, senior management consultant, with forty years of experience advising senior management of companies of all sizes, from startups to Fortune 100. My Bachelor's degree is in pure mathematics, from Reed College. For six years, I studied graduate-level and post-graduate-level classes in business, management theory and practice, organizational development, general systems theory, information theory, cybernetics, cognitive science, communication theory and practice, mediation and negotiation strategy, and finance. I was personally mentored for five years by Hugh MacLean, PhD., one of the country's leading pioneers in management science and related fields. My contributions to these fields have included over 4,000 pages of websites, articles, and teaching materials. This work is in use all over the world, including the

United Nations Development Program. I am also also an authority on distributed solar, having consulted for solar companies in California for seven years. I am a member of the California Intergovernmental Task Force on Consumer Protection and regularly advise the California Public Utility Commission. I have managed companies and have decades of experience in all aspects of business finance, tax, investing, and accounting.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony in this proceeding is to support JSC's Application for a determination of exemption under Tennessee law when constructing and operating a Solar Facility and Battery Storage in Madison County, Tennessee that offers supplemental energy from renewable sources to its members. If JSC is not exempt, then my testimony is to support a request for a Certificate of Public Convenience and Necessity to construct and operate this Solar Facility for shared supplemental energy.

Q. WERE YOU INVOLVED IN PREPARING JSC'S APPLICATION IN THIS DOCKET?

A. Yes.

Q. WHAT AUTHORITY IS JSC SEEKING FROM THE TRA?

A. JSC is requesting a prospective determination that it is exempt from regulation as a non-profit cooperative formed under the Electric G&T Cooperative Act. Alternatively, JSC is requesting approval to build and operate a solar facility and battery storage in Jackson, Tennessee.

Q. PLEASE DESCRIBE THE JACKSON SOLAR PROJECT.

A. As detailed in the JSC application, the Jackson Solar Project will make solar energy available in areas where it is presently uneconomical. The Jackson Solar Project has received an award from the U. S. Department of Energy's National Community Solar Partnership for innovation and contribution to making solar available in areas of the country where it is presently uneconomical. The Jackson Solar Project has strong support from the Jackson community and its businesses.

The Jackson Solar Project consists of solar panels mounted on fixed mounts (no movable trackers), inverters, batteries, system controller, and all associated electric equipment installed on 34.2 acres of land in Jackson, Tennessee, plus underground wiring to several commercial facilities within 3.5 miles of the solar site. The site is parcel IDs 057 065 10400 000 2020 (28.54 acres) and 057 065 10300 000 2020 (5.2 acres).

Approximately 33,347 SunPower A-450-COM solar panels rated for approximately 16 MW of power will supply approximately 25 GWh/yr. of electricity through SMA

Highpower string inverters, with Kore Power lithium battery storage of approximately 46 MWh. Northern Reliability, Inc., the nation's oldest developer of controller hardware and software (having built over 1,000 systems) is the prime contractor, and will design and build the controller hardware and software (including transformers and all supporting and safety electrical equipment on the site) for the Jackson Solar Project, install the system, and oversee, test, and commission the connections to the members of JSC. Smart electric meters will be installed at each customer's site. Energy from the Solar Facility will flow to these smart meters and to the electrical circuits in the buildings of the Members. The controller technology intelligently allocates power to and from the batteries and to members, taking all factors into account to optimize power delivery.

The smart meters will be completely isolated ("islanded") from the existing Jackson Electric Authority ("JEA") meters, which will remain in place and remain connected to JEA's grid. Members will draw power seamlessly from both JEA and JSC's controller, but no power will ever be able to backflow onto JEA's grid. When demand is average or below, members will primarily use electricity from JEA, as they do now. When demand rises, members will draw the extra electricity needed from the Solar Facility. When a JEA grid outage occurs, customers will draw all their electricity from the Solar Facility for short periods of time and/or for priority usage until grid power is restored.

The entire Solar Facility will be storm hardened and able to withstand severe storms without losing power. The solar panels are rated for high winds and will be mounted in racks rated to withstand hurricanes. The batteries will be housed in storm-hardened enclosures. All wiring on and off site will be underground. This ensures the capability of providing uninterruptible power during storms. (Jackson experiences these frequently, including two direct hits from tornadoes in 2020 alone.)

The Solar Facility is expected to cost approximately $67M. It will have at least a 30-year life, because it uses the highest quality equipment, run conservatively so as to extend lifespans. Operations and maintenance will be handled by Northern Reliability, Inc. All equipment, construction, and installation costs will be borne by Community Development Enterprises - Jackson I ("CDE"), who will lease the equipment to JSC. The members will have little expense. Members will pay a lower rate to JSCfor their peak demand usage than JEA's scheduled peak-demand charges.

All environmental approvals have either been received or have been applied for. All civil engineering designs and documents have been submitted to the Jackson Planning Department and have received staff recommendation for approval. The Solar Facility is exempt from regulation under PURPA from FERC, NERC, and SERC because it does not connect to the public utility grid.

The project is financed by CDE's private-equity investment because it is eligible for the Investment Tax Credit, New Markets Tax Credit, and accelerated MACRS depreciation.

Q. HOW DOES THE JACKSON SOLAR PROJECT FIT WITH THE COMPANY'S COMMITMENT AND THE COMMUNITY REDEVELOPMENT AGENCY IN THE CITY OF JACKSON?

A. The Community Redevelopment Agency ("CRA") works with communities in Jackson to address blight and to provide affordable housing. CRA works with business owners and other community stakeholders to determine community priorities and potential projects. The Jackson Solar Project is a community priority. The Jackson Solar Project is a collaborative energy innovation project for the Jackson area along Roosevelt Parkway. One goal of JSC is to partner with the local community and elected leaders to help transition Jackson to a cleaner, smarter and more reliable energy future. JSC is committed to this partnership to promote the efficient use of energy in Madison County, Tennessee. The Jackson Solar Project represents a deliberate investment in shared renewable energy resources, and increased access to new and existing demand-side management and energy efficiency programs in Jackson. The Jackson Solar Project meets a portion of this commitment. JSC is evaluating additional solar and storage sites in Tennessee and will make appropriate filings with the Commission for approval once it has made a decision on those projects. Along with furthering its commitment to site solar and storage technologies in West Tennessee, JSC intends for the Jackson Solar Project to support the goals and objectives of the CRA.

Q. PLEASE DISCUSS THE NEED FOR THE JACKSON SOLAR PROJECT.

A. Members of JSC need a Solar Facility for many reasons. First, for environmental benefits: to reduce carbon emissions and clean the air and water. Many companies have publicly announced goals and policies for moving to clean energy in the future. The Solar Facility helps members of JSC do just that, without incurring any capital costs. Further, it is likely that new regulations and penalties for carbon emissions are coming, so the Solar Facility will help companies avoid these penalties.

Second, to provide uninterruptible power during grid outages without resorting to individually-owned diesel backup generators, which pollute, are hazardous, and canot supply enough electricity to meet commercial needs during outages. Jackson is regularly hit with severe storms that cause outages, including two tornadoes in 2020 alone. Outages are very expensive for manufacturers. They can damage machinery and often force manufacturers to lose production and send workers home during the outage, only calling them back to execute an extended restart protocol when power is restored. The Solar Facility increases energy security and resilience for all its users.

Third, to lower peak-demand charges and thus overall electricity costs. Peak demand is very expensive for commercial customers, as well as for JEA and TVA. Even if demand spikes are brief, TVA must have massive reserve power generation on standby to meet it (with a 20% cushion on top of the peak). This is very expensive for TVA, who must pass

the cost on to JEA, who must pass the cost onto the customers in the form of peak demand charges. For the commercial customers JSC can serve, these demand charges represent approximately 44% to 66% of their annual electricity bills. By helping JEA meet these peak demands, the Solar Facility reduces costs to its customers and lowers JEA's charges from TVA. For example, JEA maintains a total capacity of 570 MW to meet a maximum demand in any one hour of 381 MW (354,549 in 2020). If the six heavy commercial users near JSC's site receive their peak power from the Solar Facility, that would reduce JEA's overall peak demand by 12.9% for 2020.

Fourth, meeting peak demand for power is also stressful on all utility equipment and power lines. Reducing this demand lengthens the life and reduces repair costs for the utilities. The Solar Facility also saves JEA the capital costs of installing backup batteries themselves, thereby allowing them to lower their rates.

Fifth, lower electricity costs will allow businesses in Jackson to expand. The availability of lower-cost, clean, solar energy will put Jackson on the map as a forward-looking city moving towards a cleaner environment, attracting new businesses to the area. Jackson is an economically distressed community that needs more job opportunities. This project will provide 511 full-time-equivalent jobs in 2020 and 22 permanent jobs, rising to 28 over the first ten years of operation.

Sixth, planning for unknown future electricity rate increases is difficult for businesses. JSC's rates will not rise in real dollars, which hopefully, will help members of JSC to better control their electricity costs over the next thirty years.

Seventh, the Solar Facility provides higher quality power than the utility grid, which regularly suffers from brownouts, voltage fluctuations, and unstable frequency of current. The electricity from the Solar Facility is tightly regulated, providing steady, high-quality power that improves the reliability and extends the life of machinery.

Eighth, it is very uneconomical for businesses to acquire their own renewable energy generation, because of the lack of state incentives, high cost for small systems and batteries, lack of attractive financing, inadequate roof or ground space at their site, costs of operation and maintenance, need to upgrade equipment from time to time, and lack of utility net-metering programs (which allow customers to sell back excess electricity generated during peak hours to the utility for a credit). As a result, there is little renewable energy in Jackson, and it is likely to remain that way without help. The Solar Facility solves many of those problems by taking advantage of lower costs due to economies of scale, tax incentives, and financing not available to most businesses.

Q. PLEASE DISCUSS THE ENVIRONMENTAL ATTRIBUTES OF THE PROJECT.

A. Operation of the Facility will have no emissions or pollutants, and the generation source

of the solar power will be 100% renewable. In addition, the Facility will be designed in accordance with State of Tennessee environmental requirements with regard to materials.

Q. TO YOUR KNOWLEDGE, HAS JSC FILED AND PROVIDED ALL INFORMATION AND OBTAINED ALL FEDERAL AND STATE LICENSES, PERMITS, AND EXEMPTIONS REQUIRED FOR CONSTRUCTION AND OPERATION OF THE PROPOSED GENERATION FACILITY?

A. Yes. I believe that the Application provides all information required under federal and state law and the Commission's rules. The Facility is expected to be fully permitted prior to construction. A complete list of all required federal, state and local approvals and their status is in the Application for Exemption.

Q. WHAT IS THE PROJECTED COST OF THE JACKSON SOLAR PROJECT?

A. The current engineering cost estimate for the Jackson Solar Project development is approximately $67M. The estimate includes Engineering Procurement & Construction ("EPC"), major equipment, labor, and associated permitting and development costs. Any tax credits and accelerated depreciation benefits will offset project costs for the benefit of the members of JSC.

Q. WHAT IS THE ESTIMATED CONSTRUCTION SCHEDULE FOR THE PROJECT?

A. If Commission approval were to be obtained, the notice to proceed is expected to be issued in May 2021, with site mobilization to begin as early as July 2021, with final commissioning by February of March of 2022.

Q. IN CONCLUSION, WHY IS JSC REQUESTING APPROVAL TO CONSTRUCT THE JACKSON SOLAR PROJECT?

A. The Jackson Solar Project is an innovative modernization solution for shared renewable energy. Moreover, it will enhance reliability to its members in the City of Jackson. The existing JEA grid incurs long duration outage events due to its location and is expected to require high-cost equipment upgrades in the future. Investing approximately $67M in the Facility, as an alternative to traditional utility upgrades to meet capacity requirements for peak demand, JSC will leverage local renewable generation and storage, improving reliability of service to its members who are primarily served by JEA. The project is also one of many deployments and initiatives designed to meet the shared goals of the members of JSC to invest in smart, clean energy projects in Tennessee. Finally, this project presents a unique opportunity for JSC to collaborate with community stakeholders on an innovative solution and reflects the community commitment to proactively support their energy-related goals and objectives. We are pleased with the strong local support for the Jackson Solar Project and look forward to bringing it online

for the benefit of the members of JSC and the Jackson community.

Q. ARE ALL STATEMENTS IN JSC'S APPLICATION TRUE AND CORRECT TO THE BEST OF YOUR KNOWLEDGE, INFORMATION, AND BELIEF?

A. Yes.

Q. DOES JSC HAVE ADEQUATE ACCESS TO THE CAPITAL NECESSARY TO PROVIDE SERVICE IN TENNESSEE?

A. Yes, JSC will lease the equipment and obtain start up capital from CDE. CDE has access to the financing necessary to fulfill any obligations it may undertake with respect to the operation and maintenance of the services specified in the Application.

Q. IF AUTHORIZED TO PROVIDE SUPPLEMENTAL ELECTRIC POWER SERVICES, WILL JSC ABIDE BY THE RULES, STATUTES, REGULATIONS, POLICIES, AND ORDERS OF THE COMMISSION, AND THE LAWS OF TENNESSEE, IN ITS PROVISION OF SERVICES, INCLUDING THOSE FOR DISCONNECTION AND RECONNECTION OF SERVICE?

A. Yes.

Q. PLEASE DESCRIBE THE PUBLIC INTEREST BENEFITS ASSOCIATED WITH JSC'S PROPOSED OFFERING OF SUPPLEMENTAL ELECTRIC POWER SERVICES IN JACKSON TENNESSEE?

A. Many environmental benefits, including reducing carbon emissions from power production, replacing fossil-fuel backup generators, and encouraging additional development of renewable energy projects. Many developmental benefit to Jackson for its economic redevelopment, including developing its reputation as a leader in green energy, a home for companies that have green-energy goals they must meet, $212M in economic impact over ten years, $14M in new tax receipts, 511 additional full-time-equivalent jobs in 2021, many additional jobs in the future, spurring expansion of existing businesses in Jackson, and attracting additional new businesses to Jackson. JSC will provide training, internships, and educational programs in the renewable energy field to Jackson's high school and colleges at its own cost. JSC will contribute to the improvement and redevelopment of Jackson's infrastructure. JSC's partners and members will contribute various programs to Jackson's community in the areas of job training and community building. The increasing availability of uninterruptible power will benefit first responders and improve safety in Jackson. Members who share supplemental energy from the Solar Facility will be able to afford to switch a major portion of their electricity usage to renewables without incurring any capital costs, while reducing their total electricity costs. They will be assured of future stable electricity pricing, enabling them to

plan with confidence and expand their businesses.

Q. HAS ANY STATE EVER DENIED OR REVOKED THE CERTIFICATION OF JSC OR ONE OF ITS AFFILIATES?

A. No.

Q. HAS JSC OR ONE OF ITS AFFILIATES EVER BEEN INVESTIGATED OR SANCTION BY ANY REGULATORY AUTHORITY FOR SERVICE OR BILLING IRREGULARITIES?

A. No.

Q. WHO IS KNOWLEDGEABLE ABOUT JSC'S OPERATIONS AND WILL SERVE AS JSC'S REGULATORY AND CUSTOMER SERVICE CONTACT?

A. Mr. Dennis Emberling is knowledgeable about its operations and will serve as CDE'S Regulatory and customer service contact.

Q. PLEASE EXPLAIN IN DETAIL JSC'S PROPOSED PROCEDURES FOR RESPONDING TO INFORMATION REQUESTS FROM THE TRA AND ITS STAFF.

A. All requests should be routed to Dennis Emberling, via email or telephone with a copy to counsel.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

I swear that the foregoing testimony is true and correct to the best of my knowledge.

Dennis Emberling

Dennis Emberling, President

Respectfully submitted this 18th day of May, 2021.

STATE OF TENNESSEE)
)
COUNTY OF DAVIDSON)

Subscribed and sworn to me a Notary Public, in his capacity as President of JSC this this 18th of May, 2021.

Brandee Perrin
Notary Public

BRANDEE PERRIN
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY

Commission Expires: 9th July 2024