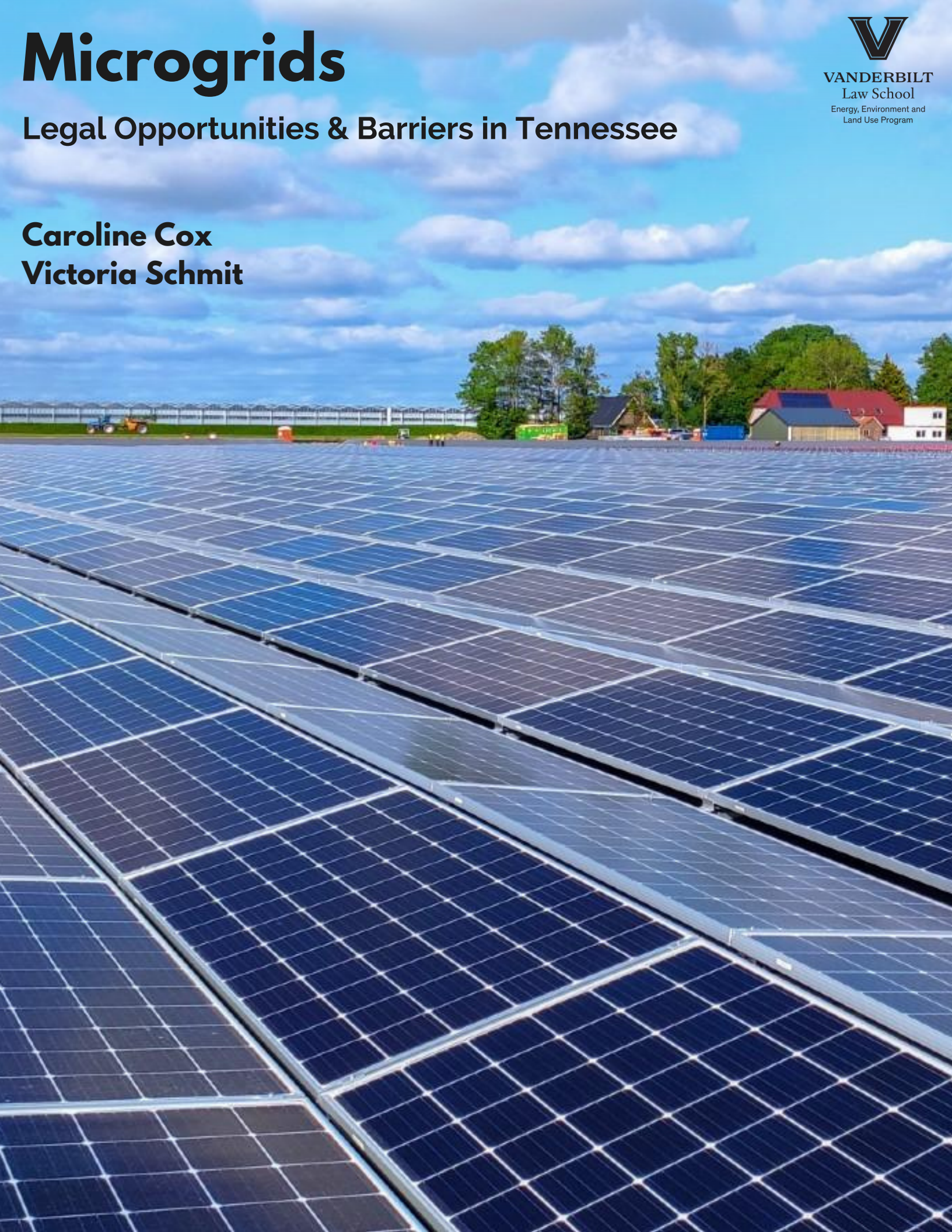
Microgrids

Legal Opportunities & Barriers in Tennessee

Caroline Cox
Victoria Schmit

VANDERBILT
Law School
Energy, Environment and
Land Use Program



About the authors: Caroline Cox is the program director of the Vanderbilt Law School Energy, Environment & Land Use (EELU) Program. In addition to teaching, she advises students interested in careers in environmental law and oversees the EELU Program's white paper series. Victoria Schmit is a student at Vanderbilt Law School and was a fall 2022 EELU research fellow.

Acknowledgements: The authors would like to thank Amanda Garcia and Daniel Metzger of the Southern Environmental Law Center for offering invaluable insight into the Tennessee Valley Authority and Tennessee Public Utilities Commission. The authors also thank Professor Jim Rossi, who provided both the white paper topic and guidance throughout the drafting process. Finally, the authors are grateful to Professor Mike Vandenbergh and EELU senior advisor Anne Davis for their review of the paper.

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Introduction

On May 24, 2021, a nonprofit corporation called the Jackson Sustainability Cooperative (JSC) filed a petition with the Tennessee Public Utilities Commission related to JSC's plan to construct and operate a solar energy facility in Jackson, Tennessee.[1] The facility would include battery-energy storage, smart meters, and over 35,000 solar panels meant to provide supplemental electricity to JSC members.[2] JSC's proposed 17-megawatt facility—which would act as a unified electricity grid that could connect or disconnect from the traditional electricity grid—is a *microgrid*.[3] The proposal resembles many such microgrid projects cropping up throughout the country as interest and investment in distributed electricity generation grows.[4]

Indeed, many environmental groups and those concerned with grid reliability have found that microgrids could offer a multitude of benefits. For example, microgrids can lower the overall demand for electricity from the traditional, centralized electricity grid. If microgrids use energy sources with lower carbon intensity than centralized power plants serving the same area, the decreased use of the traditional grid should reduce the emission of greenhouse gases.[5] Because microgrids are typically located onsite or close to end users, microgrids can improve system efficiencies by reducing the amount of energy lost during transmission across long distances.[6] In addition, microgrids can reduce losses from electric power interruptions and minimize power outages in general. Electric power interruptions—like "noise, distortions, high voltage spikes, and instable frequencies"—not only risk cascading grid failures but are also costly for energy users.[7] Because microgrids can connect and disconnect from the overall electric grid, microgrids can

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1 *See* Petition for a Solar Facility for Supplemental Energy, In re Petition of Jackson Sustainability Cooperative to Determine If a Certificate of Convenience and Necessity Is Needed, No. 21-00061 (Tenn. Pub. Util. Comm'n May 24, 2021) [hereinafter In re Jackson Sustainability Cooperative], http://share.tn.gov/tra/orders/2021/2100061.pdf [https://perma.cc/N98D-WHUP].

2 *See id.* at para. 3, 4.

3 *See id.*; *see also TVA Fights Proposed Solar Cooperative in West Tennessee*, AP (Jan. 1, 2022), https://apnews.com/article/business-environment-and-nature-tennessee-jackson-utilities-d6ecbcdde21ec5ec679603051f98b2c6 [https://perma.cc/A3TQ-4JMN] (noting that the JSC chief operating officer described the project as a microgrid and solar array).

4 *See Record Number of Microgrids Installed in US Last Year*, WOOD MACKENZIE (July 22, 2020), https://www.woodmac.com/press-releases/record-number-of-microgrids-installed-in-us-last-year/ [https://perma.cc/7UJM-S2FZ].

5 INDUS. ECON., INC., NY PRIZE ASSESSING THE BENEFITS AND COSTS OF DEVELOPING A MICROGRID: MODEL USER'S GUIDE 14, 22 (Mar. 2015), http://nyssmartgrid.com/wp-content/uploads/AssessingTheBenefitsandCostsofDevelopingaMicrogrid.pdf [https://perma.cc/C3RC-XESW].

6 Sara C. Bronin, *Curbing Energy Sprawl with Microgrids*, 43 CONN. L. REV. 547, 551 (2010).

7 *Id.* at 562.

supply electricity during these interruptions. This means that commercial, industrial, and public services can be maintained in such outages, reducing the losses that might otherwise occur.[8] And, on a larger scale, microgrids may reduce the need for new transmission lines and large power plants by decentralizing energy production.[9]

The reliability benefits of microgrids have particular appeal in Tennessee. The extreme cold temperatures of late December 2022 brought by winter storm Elliott resulted in "unprecedented demands on the power system."[10] To reduce the strain to the grid, the Tennessee Valley Authority, which has a monopoly on electricity generation and transmission in most of the state, required local power companies to curtail power consumption on December 23 and 24.[11] Most local power companies used rolling blackouts to achieve the temporary 5–10% energy load reductions.[12] However, Chattanooga's local power company, EPB, used a combination of voluntary power cutbacks and battery storage to reduce load on December 23.[13] The additional flexibility in Chattanooga's local power grid allowed the city to avoid rolling blackouts that day.[14] Areas with microgrids might have been able to maintain electricity service even without electricity from the primary grid.[15]

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8 INDUS. ECON., INC., *supra* note 5, at 23; *see also* Alexandra Klass et al., *Grid Reliability Through Clean Energy*, 74 Stan. L. Rev. 969, 987–88 (2022) (describing the reliability benefits of microgrids).

9 Bronin, *supra* note 6, at 551.

10 *See Flash Report #1 — December Weather System*, TENN. DEP'T OF MIL. (Dec. 23, 2022), https://www.tn.gov/tema/news/2022/12/23/flash-report--1---december-winter-weather-system.html [https://perma.cc/VKL5-2HUQ].

11 *TVA Accepts Responsibility, Starts Full Review*, TENN. VALLEY AUTH. (Dec. 28, 2022), https://www.tva.com/newsroom/press-releases/tva-accepts-responsibility-starts-full-review [https://perma.cc/YEW7-3Y55].

12 *Id.*; *see also* Mariah Timms & Adam Friedman, *What We Know: TVA Ordered Rolling Blackouts for the First Time in 90 Years Amid Freezing Temps*, NASHVILLE TENNESSEAN (Dec. 24, 2022), https://www.tennessean.com/story/news/local/2022/12/23/why-tennessee-valley-authority-ordered-rolling-blackouts-in-nashville/69754538007/ [https://perma.cc/PPY5-HQ9Z].

13 Dave Flessner, *Former Tennessee U.S. Sen. Corker Leads Panel Reviewing TVA's December Power Outages*, CHATTANOOGA TIMES FREE PRESS (Jan. 19, 2023), https://www.timesfreepress.com/news/2023/jan/19/corker-leads-panel-reviewing-tva-power-outages-tfp/ [https://perma.cc/VJR4-7TCB].

14 Chattanooga did have rolling blackouts on December 24 when TVA required a 10% power reduction from each local power company. *Id.*

15 *Cf.* Miguel Yañez-Barnuevo, *Microgrids in Puerto Rico Keep Rural Communities Connected*, ENV'T & ENERGY STUDY INST. (Jan. 6, 2023), https://www.eesi.org/articles/view/microgrids-in-puerto-rico-keep-rural-communities-connected [https://perma.cc/SKU6-BNGR] (explaining how rural areas of Puerto Rico have used microgrids to maintain electric power in the aftermath of hurricanes and other severe weather events); Kevin B. Jones et al., *The Urban Microgrid: Smart Legal and Regulatory Policies to Support Electric Grid Resiliency and Climate Mitigation*, 41 FORDHAM URB. L.J. 1695, 1721 (2014) (explaining that New York University's microgrid allowed the university's Washington Square campus to maintain heat and electricity in the "[d]uring and after Hurricane Sandy, despite a prolonged electric outage in lower Manhattan").

However, microgrids face several challenges under the existing federal and state regulatory schemes and from incumbent public utilities. The ability for JSC to operate its microgrid, for example, depends heavily on the Tennessee Public Utilities Commission's ruling on whether JSC is either (1) exempt from the definition of a public utility or (2) that the construction of the JSC facility qualifies for a certificate of public convenience and necessity. Even if JSC were to qualify for a certificate of public convenience and necessity, Tennessee's law defining the geographic territories for electric utilities may bar JSC's microgrid from operating in an area that a local power company already serves.[16] Several energy groups—including the TVA and the Jackson Energy Authority—argue that JSC cannot build such a microgrid under the current regulatory framework.[17] Although the Commission's analysis will be fact specific, JSC's proposal could have implications for the development of microgrids in Tennessee. As more companies, cooperatives, and individuals seek to build their own microgrids either to increase reliability or to be able to disconnect entirely from the primary grid, the question of microgrids' status under current regulatory regimes is critical.

This white paper examines the opportunities for, and barriers to, microgrids in Tennessee. First, the paper provides an overview of the common features and the typical variations of microgrids. Tennessee does not define "microgrid" in its laws or regulations, but we offer a working definition based on definitions from federal law, law of other states, secondary sources, and microgrid examples across the United States. Next, the paper discusses the legal and regulatory landscape relevant to microgrids in Tennessee. Starting with the federal level, we explore the challenges that TVA's generation and transmission monopoly within most of Tennessee presents to microgrid projects. We then proceed to state-level regulation, using the JSC proposal as a case study. The

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[16] *See* TENN. CODE ANN. § 65-34-103 (2021); *id.* § 65-34-101(1) & (2) (asserting that "[d]uplication of electric system facilities leads to excessive consumer costs and adverse environmental and aesthetic impacts," such that "[t]he public health, safety, and welfare require that electric service to a particular geographic area be provided by a single electric system."). The solar facility planned as part of the Jackson microgrid might attempt to sell power to TVA as a qualifying facility under the Public Utility Regulatory Policies Act (PURPA), *see* 16 U.S.C. §§ 824a-3(a), (b) (2018), but that would not allow the facility to provide power directly to members of the cooperative on a grid independent of the local power company or TVA's transmission system. *See infra* notes 66–87 and accompanying text.

[17] *See* Statement of the Tennessee Valley Authority Recommending that the Commission Not Issue a Declaratory Ruling and Decline to Open a Contested Case Proceeding, In re Jackson Sustainability Cooperative, No. 21-00061, at 1–2 (Tenn. Pub. Util. Comm'n July 1, 2021), http://share.tn.gov/tra/orders/2021/2100061g.pdf [https://perma.cc/G5EW-QAR8]; Statement of Jackson Energy Authority in Opposition to Commencement of a Contested Case and Requesting Denial of a Declaratory Order, In re Jackson Sustainability Cooperative, No. 21-00061, at 2 (Tenn. Pub. Util. Comm'n June 25, 2021), http://share.tn.gov/tra/orders/2021/2100061d.pdf [https://perma.cc/52YD-7ARF].

paper then provides recommendations for policies that the state of Tennessee could adopt to provide regulatory clarity and encourage the adoption of microgrids to promote clean energy and reliability in the state.

Defining and Categorizing Microgrids

Given the relative novelty of microgrids within the U.S. energy system, the definition of a microgrid varies among sources. The United States Energy Storage Competitiveness Act of 2007 defines "microgrid" as "an integrated energy system consisting of interconnected loads and distributed energy resources (including generators and energy storage devices), which as an integrated system can operate in parallel with the utility grid or in an intentional islanding mode."[18] The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy and the National Renewable Energy Lab have adopted a similar definition in public-facing documents. Both define a microgrid as "a group of interconnected loads and distributed energy resources (DERs) within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid."[19] Several states have also codified definitions.[20] The California Public Utility Code, for example, offers a detailed explanation of a microgrid, explaining it as:

> an interconnected system of loads and energy resources, including, but not limited to, distributed energy resources, energy storage, demand response tools, or other management, forecasting, and analytical tools, appropriately sized to meet customer needs, within a clearly defined electrical boundary that can act as a single, controllable entity, and can connect to, disconnect from, or run in parallel with, larger portions of the electrical grid, or can be managed and isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure.[21]

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[18] 42 U.S.C. § 17231(b)(6) (2018); *see also* 10 U.S.C. § 2911(h)(3) (2018) (defining "microgrid" within the context of the U.S. Department of Defense's energy policy as "an integrated energy system consisting of interconnected loads and energy resources that, if necessary, can be removed from the local utility grid and function as an integrated, stand-alone system").

[19] U.S. DEP'T OF ENERGY, OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, COMBINED HEAT & POWER TECHNOLOGY FACT SHEET SERIES: MICROGRIDS OVERVIEW at 1 (Feb. 2021) [hereinafter DOE MICROGRIDS OVERVIEW], https://www.energy.gov/sites/default/files/2021-03/Microgrids_Fact_Sheet_01.pdf [https://perma.cc/4HZ2-7EN5]; *Microgrids*, NAT'L RENEWABLE ENERGY LAB., https://www.nrel.gov/grid/microgrids.html [https://perma.cc/CUD3-PR4G] (last visited Apr. 17, 2023).

[20] *See, e.g.*, ME. REV. STAT. tit. 35-A, § 10129(H) (2021) (providing a definition of "microgrid" similar to the definition of "microgrid" found in federal law); *id.* § 3351(B) (offering a similar definition for "new microgrid"); HAW. REV. STAT. § 269-46(c) (2018) (defining a "microgrid project" as "a group of interconnected loads and distributed energy resources within a clearly defined electrical boundaries that acts as a single controllable entity with respect to the utility's electrical grid and can connect to the public utility's electrical grid" or can "operate in island mode" and that "[i]s subject to a microgrid services tariff" and "[g]enerates or produces energy").

[21] CAL. PUB. UTIL. CODE § 8370(d) (2022); *see also Resiliency & Microgrids*, CAL. PUB. UTIL. COMM'N, https://www.cpuc.ca.gov/resiliencyandmicrogrids [https://perma.cc/Y5M3-2M52] (last visited May 9, 2023) (discussing the California Public Utilities Commission's rulemaking on microgrids).

Taken together, these definitions underscore the key features of a microgrid. A microgrid generally is a single, controllable system that can connect, disconnect, or run in parallel with the larger electric grid. As opposed to the traditional power grid in which centralized power plants produce energy that is transmitted over long distances, microgrids offer more diffuse grid management.[22] Microgrids can act as smaller power plants in and of themselves; for example, hospitals connected to their own solar energy facilities, houses with solar panels and battery storage, or even electric vehicles providing battery storage of electricity that can flow back to a grid system may provide the electricity necessary for an isolated system to operate outside of the larger grid.[23] Figure 1 provides a highly simplified comparison of the traditional grid system—in which large power plants transmit electricity over long distances to end users—with a grid system that incorporates microgrids.

The generality and flexibility of these definitions also shows that not all microgrids are the same. Microgrids can come in different sizes, use different sources of energy, and supply different end users.[24] Based on secondary literature and a survey of existing projects, this paper offers a typology of the most common microgrid designs and an explanation of what is excluded from microgrid status.

First, a microgrid is not necessarily a *smart grid*. A smart grid often uses the same technology as a microgrid, including energy storage and smart meters. Although "a microgrid can also be a smart grid and vice versa," smart grids do not necessarily have the ability to isolate themselves from the larger distribution grid nor do they necessarily employ distributed generation.[25] Instead, smart grids are identifiable for their use of advanced technology to provide grid services or

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[22] *See* Bronin, *supra* note 6, at 561–62.

[23] *See* U.S. DEP'T OF ENERGY, OFF. OF ELEC., ADVANCED GRID RSCH., VOICES OF EXPERIENCE: MICROGRIDS FOR RESILIENCY 14–16 (Nov. 2020), https://www.nrel.gov/docs/fy21osti/75909.pdf [https://perma.cc/3WLZ-BWVG]; *cf. Regional Grid Transformation*, TENN. VALLEY AUTH., https://www.tva.com/energy/technology-innovation/regional-grid-transformation [https://perma.cc/EJF6-V4Y2] (last visited May 9, 2023) (illustrating how the traditional grid is transforming with new energy technology, including microgrids).

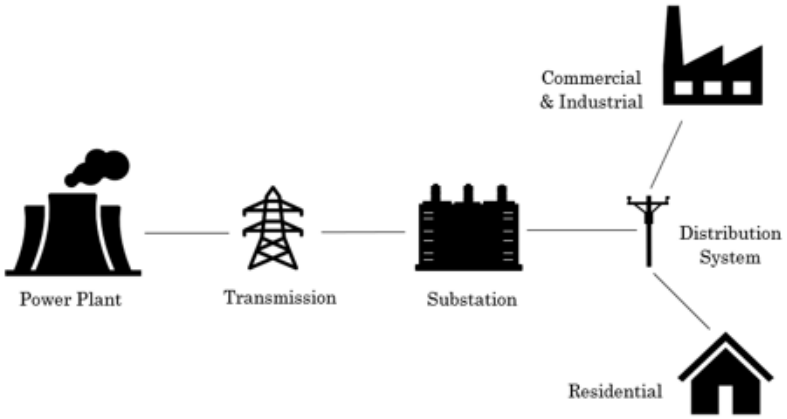
[24] *Cf.* Jones et al., *supra* note 15, at 1703–04 ("The ideal microgrid would feature a digital control system that could integrate solar photovoltaics (PV), efficient combined heat-and-power (CHP) generators, battery storage, thermal storage, demand response, and electric vehicle charging. This system would intelligently manage both supply and demand resources in a manner that ensures high reliability, reduces carbon emissions, and saves consumers money. The microgrid could operate disconnected from the utility system or could reconnect and sell any excess resources back to the interconnected grid.").

[25] ELEC. POWER RSCH. INST., PROGRAM ON TECH. INNOVATION, MICROGRID IMPLEMENTATIONS: LITERATURE REVIEW 1-2 (Jan. 2016), https://www.epri.com/research/products/3002007384 [https://perma.cc/ZWQ8-MLX8].

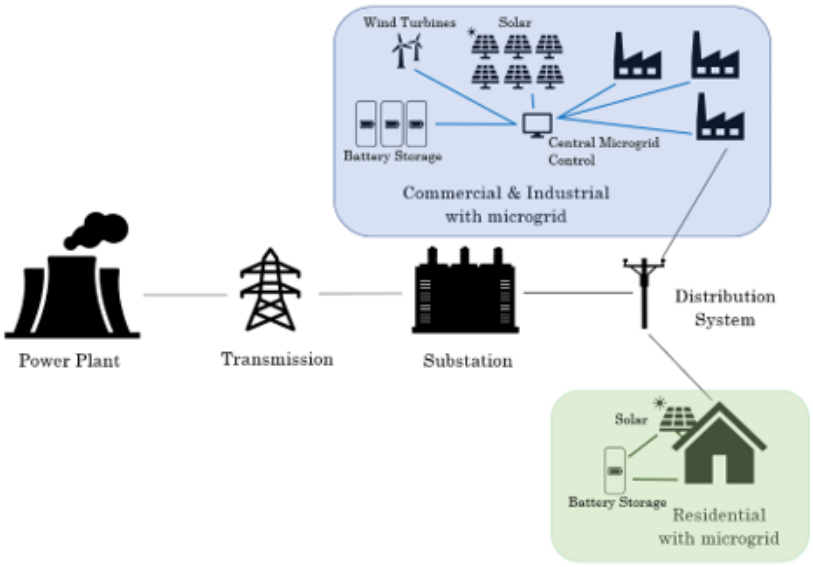
analyses.[26] Federal law, for example, provides that the Federal Energy Regulatory Commission will research smart grid technology, which includes "advanced techniques for measuring peak load reductions and energy-efficiency savings from smart metering, demand response, distributed generation, and electricity storage," along with the use of data mining, advanced computing, and

FIG. 1

TRADITIONAL POWER GRID



POWER GRID WITH MICROGRIDS



[26] *Id.*; *Grid Modernization and the Smart Grid*, U.S. DEP'T OF ENERGY, OFF. OF ELEC., https://www.energy.gov/oe/grid-modernization-and-smart-grid [https://perma.cc/VL62-PMCB] (last visited May 9, 2023).

other advanced technologies related to the electricity grid.[27] Microgrids might use the same systems, but the ability to isolate a microgrid from the larger grid system is its primary distinguishing feature. Put another way, microgrid implementation employs a bottom-up approach, focusing the end user's needs and local control, whereas smartgrid implementation is typically top-down as many advanced technological solutions require the resources of traditional utilities.[28]

Next, microgrids can differ in size. One of the most common types of microgrids is a *nanogrid.* A nanogrid, as the name suggests, is extremely small. It features "a single backup generator, perhaps with energy storage, to support minimal building operations when the larger grid goes down."[29] This definition applies if, for instance, a homeowner's rooftop solar panels can provide electricity to the home in case of blackouts or brownouts. In Figure 1, the residential user with a microgrid represented in green is an example of a nanogrid.

Experts and regulators typically categorize larger microgrids according to what end users the microgrid seeks to serve or how the project relates to the larger distribution and transmission grid. The Department of Energy, for example, tracks larger microgrid projects in part by the intended end use of the generated electricity: agricultural, airport, city/community, college/university, commercial, hospital/healthcare, military, multi-family, public institution, research facility, schools, water utility/treatment, and other.[30] Secondary literature also often distinguishes microgrid systems based on whether the microgrid will operate entirely isolated from the distribution and transmission grid or whether it will interconnect.[31] For the purposes of this paper, we group microgrids into four main categories: campus microgrids, community microgrids, commercial microgrids, and remote microgrids.

A *campus microgrid* "serves a single site or facility, such as a university, military base, or corporate or industrial facility"[32] that owns and operates all the buildings receiving electricity on the microgrid.[33] For instance, we can imagine a university creating a system parallel to the local

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27 42 U.S.C. § 17384(a) (2018).

28 ELEC. POWER RSCH. INST., *supra* note 24.

29 Gregory T. Bischoping, *Providing Optimal Value to Energy Consumers Through Microgrids*, 4 U. PA. J.L. & PUB. AFF. 473, 476 (2019).

30 *See Microgrid Installations in Tennessee*, U.S. DEP'T OF ENERGY, COMBINED HEAT & POWER & MICROGRID INSTALLATION DATABASES, https://doe.icfwebservices.com/state/microgrid/TN [https://perma.cc/VP5J-E5WX], (last visited Apr. 28, 2023).

31 *See, e.g.*, Bronin, *supra* note 6, at 559.

32 Patrick L. Morand, *The Evolving Role of Microgrids*, 32 NAT. RES. & ENV'T 27, 27 (Spring 2018); *see also* ELEC. POWER RSCH. INST., *supra* note 25, at 1-4.

33 DOE MICROGRIDS OVERVIEW, supra note 19, at 2.

distribution grid to reduce campus electricity costs, increase reliability, and serve as a backup source of power during blackouts. These functions have been essential in times of crisis, such as during Hurricane Sandy, where several campus microgrids in New York were able to maintain electric power even with widespread outages to the larger distribution grid.[34]

Tennessee has at least two campus microgrids, the largest of which is the Vanderbilt University microgrid.[35] When announcing changes to its power supply in 2013, Vanderbilt University emphasized that the presence of a major regional Level 1 Trauma Medical Center and Children's Hospital treating patients and conducting biomedical research required uninterrupted power.[36] As of November 2014, Vanderbilt University used a natural gas-fueled power plant to meet 23% of the university's electricity needs.[37] In 2023, the 35-megawatt Vanderbilt I Solar Farm began operation in cooperation with TVA and Nashville Electric Service.[38] The University has plans for an additional solar farm to further its goal of powering the campus entirely through renewable energy.[39]

Campus microgrids need not be affiliated with a university. The Erlanger Baroness Hospital microgrid in Chattanooga is the second approved campus microgrid in Tennessee.[40] This 8-megawatt microgrid began operation in 2018 to provide the hospital greater resilience given its critical role within the larger Erlanger Health System: Erlanger Baroness Hospital houses the Health System's Regional Operations Center and a Level 1 Trauma Center for adults.[41] The

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[34] James M. Van Nostrand, *Keeping the Lights on During Superstorm Sandy: Climate Change Adaptation and the Resiliency Benefits of Distributed Generation*, N.Y.U. ENV'T. L.J. 92, 96–97 (2015).

[35] *Microgrid Installations in Tennessee*, *supra* note 30.

[36] *See VU Power Plant to Convert to All-Natural Gas*, VAND. UNIV.: FUTUREVU SUSTAINABILITY (Apr. 22, 2013), https://www.vanderbilt.edu/sustainability/2013/04/vu-power-plant-faq/ [https://perma.cc/AJ75-HU7T]; *Frequently Asked Questions About the VU Power Plant Conversion*, VAND. UNIV.: FUTUREVU SUSTAINABILITY, https://www.vanderbilt.edu/sustainability/what-we-do/energy/power-plant-faq/ [https://perma.cc/KMZ3-EMSD] (last visited May 9, 2023). In 2016, Vanderbilt University and the Vanderbilt University Medical Center finalized a legal and financial separation. *See Transition Complete: Vanderbilt University Medical Center Is Independent Entity*, VAND. UNIV. MED. CTR.: VUMC REP. (Apr. 30, 2016, 1:00 AM), https://news.vumc.org/2016/04/30/transition-complete-vanderbilt-university-medical-center-is-independent-entity/ [https://perma.cc/TFR9-GMNC]. The authors were unable to ascertain what impact this legal and financial separation had on the power supply to VUMC.

[37] *Frequently Asked Questions About the VU Power Plant Conversion, supra* note 36.

[38] *University Joins Silicon Ranch, NES, TVA to "Flip the Switch" on Vanderbilt I Solar Farm*, VAND. UNIV.: MYVU NEWS (Apr. 14, 2023, 12:11 PM), https://news.vanderbilt.edu/2023/04/14/vanderbilt-university-joins-silicon-ranch-nes-and-tva-to-flip-the-switch-on-vanderbilt-i-solar-farm/ [https://perma.cc/9KEC-WDYS].

[39] *Id.*

[40] *See Microgrid Installations in Tennessee*, *supra* note 30.

[41] CHP TECH. ASSISTANCE P'SHIPS, PROJECT PROFILE: ERLANGER BARONESS HOSPITAL (June 2020), https://chptap.ornl.gov/profile/301/Erlanger-Project_Profile.pdf [https://perma.cc/D3NJ-9Q7P].

microgrid project was developed as part of TVA's 2011 agreement with the U.S. EPA to fund environmental mitigation projects.[42] The Erlanger microgrid provides increased energy savings, reduces the hospital's greenhouse gas emissions, and allows the hospital to maintain operations during grid outages.[43]

Rather than serving only a single entity, *community microgrids* "serve[] multiple customers within a community, typically to provide resilient power to vital community assets, such as hospitals, police and fire stations, and water treatment facilities."[44] Community microgrids' primary distinguishing feature is that they serve a public purpose.[45] While similar to campus microgrids, community microgrids typically are created in partnership with local utilities and use existing distribution-level infrastructure. These features make community microgrids easier to expand and often provide greater functionality.[46] An example community microgrid is the Panton, Vermont project, which was developed by the local utility, Green Mountain Power.[47] A 5-megawatt solar array and a 4-megawatt battery system power the Panton microgrid, offering sufficient power for 62 customers, including several businesses, homes, and small farms.[48] The Chattanooga Metropolitan Airport microgrid may also be classified as a community microgrid.[49] The microgrid uses both solar and storage to provide power for the airport's operations, and generated electricity may also help maintain power to an adjacent neighborhood in the event of a blackout.[50] As with the Vanderbilt University microgrid, the Chattanooga Airport project was completed in cooperation with the TVA.[51]

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42 *Id.*

43 *Id.*

44 Morand, *supra* note 31, at 27.

45 *See Microgrids,* CTR. FOR CLIMATE & ENERGY SOLS., https://www.c2es.org/content/microgrids/ [https://perma.cc/UZS9-FVKM] (last visited May 9, 2023).

46 *Id.*

47 Lisa Prevost, *Solar-Powered Microgrids Add Climate Resilience in Rural Vermont Communities*, ENERGY NEWS NETWORK (Nov. 30, 2022), https://energynews.us/2022/11/30/solar-powered-microgrids-add-climate-resilience-in-rural-vermont-communities/ [https://perma.cc/CY37-V8B4].

48 *Id.*

49 *See Microgrid Installations in Tennessee*, *supra* note 29.

50 *See Chattanooga Becomes First U.S. Airport to Run Entirely on Solar*, YALE ENV'T 360 (June 20, 2019), https://e360.yale.edu/digest/chattanooga-become-first-us-airport-to-run-entirely-on-solar [https://perma.cc/73KJ-YFNJ].

51 *See* Mike Pare, *A 'Beacon of Green Light': Chattanooga Airport Marks Completion of Solar Farm*, CHATTANOOGA TIMES FREE PRESS (June 20, 2019, 12:41 AM), https://www.timesfreepress.com/news/2019/jun/20/airport-solar-farm/ [https://perma.cc/Y3QB-2AJS] ("The $10 million, three-phase project that started at the airport in 2010 created a 2.64-megawatt solar farm. The energy is sold to TVA and then taken off of the airport's EPB power bill.").

A *commercial microgrid* serves commercial or industrial companies, generally built with the goal of reducing demand and costs during normal operation.[52] These are typically privately owned and operated projects.[53] The Sandbar Solar & Electric microgrid facility in Santa Cruz, California illustrates the basic features of a commercial microgrid project.[54] The company—a solar installer—determined that the cost of connecting to utility power was greater than using solar and energy storage to create a microgrid.[55] The microgrid provides all energy needs for the small company.[56] Many commercial microgrids, however, will maintain connection to the larger utility distribution grid.[57]

Finally, a *remote microgrid* is a microgrid that is "permanently disconnected from other grids, continuously operating in island mode."[58] Remote microgrids are often used to provide power to an area or facility to which it is not economically feasible to extend the larger distribution grid. The Sandbar Solar & Electric microgrid is an example of such a remote microgrid project.

Each of these different and often overlapping types of microgrids may be subject to different regulation under current regulatory regimes. However, guidance is unclear due to the novel questions of law that microgrids present. This paper thus seeks to analyze the different ways different microgrids are classified under existing regulatory frameworks in Tennessee.

Microgrid Regulation in Tennessee

Although microgrids are defined in federal regulations, the key players in regulating microgrids in Tennessee—the Tennessee Valley Authority and the Tennessee Public Utilities Commission—have yet to provide clear guidance on microgrids. Perhaps the most serious risk

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52 ELEC. POWER RSCH. INST., *supra* note 25, at 1-4. A commercial microgrid may also be a campus microgrid if it serves only one entity or a community microgrid if it serves more than one. *See* Morand, *supra* note 32, at 27.

53 *See* ELEC. POWER RSCH. INST., *supra* note 25, at 1-4.

54 *Microgrid Installations in California*, U.S. DEP'T OF ENERGY, COMBINED HEAT & POWER & MICROGRID INSTALLATION DATABASES, https://doe.icfwebservices.com/state/microgrid/CA [https://perma.cc/AE4Z-RT9K] (last visited May 9, 2023).

55 Elaine Ingalls, *SandBar Solar Microgrid Powers Business During PG&E Shutoffs*, SANTA CRUZ SENTINEL (Dec. 4, 2019), https://www.santacruzsentinel.com/2019/12/04/sandbar-solar-microgrid-powers-business-during-pge-shutoffs/ [https://perma.cc/5UBV-46JK].

56 *Id.*

57 *Cf.* Robert Walton, *Xcel Launches Microgrid-based Resiliency Service for Large Minnesota Commercial, Industrial Customers*, UTIL. DIVE (Apr. 26, 2023), https://www.utilitydive.com/news/xcel-expands-microgrid-offering-Minnesota-large-commercial-industrial/648659/ [https://perma.cc/ZN78-JA6L] (discussing regulated electric utility's plan to offer large and commercial and industrial consumers in Minnesota microgrid development service).

58 ELEC. POWER RSCH. INST., *supra* note 25, at 1-4.

from this regulatory uncertainty is that microgrids could fall under the state's regulatory definition of a public utility given the presence of power generation and distribution in microgrids. This regulatory uncertainty creates greater risk for larger microgrids or for microgrids with an interest in selling excess energy. If a microgrid is categorized as a public utility under the relevant law, it is unlikely to be permitted to operate, especially within the service territory of another public utility.[59] However, if a microgrid can avoid public utility status, there are areas where it may have the right to operate.[60] This means that the first barrier to analyzing the legal status of microgrids is to see where they may fit in with the definition of a public utility, which requires, in the case of this paper, an understanding of the network of Tennessee's energy system.

I. TENNESSEE'S ENERGY SYSTEM

In Tennessee, two key players regulate the electricity system: the Tennessee Public Utilities Commission (TPUC),[61] which is governed by state law, and the Tennessee Valley Authority,[62] which is governed by federal law. Within its territory, TVA controls the generation and transmission of electricity and regulates rates and other operational choices of local distribution utilities purchasing TVA-generated electricity. TVA explains its power within Tennessee as arising out of the TVA Act:

> The TVA Act vests broad discretion in the TVA Board of Directors to establish terms and conditions and rules and regulations related to the sale of TVA power. TVA is the exclusive retail rate regulator of Local Power Companies (LPCs) that distribute TVA power. Additionally, through the wholesale power contract with each LPC, TVA seeks to ensure that LPC systems are operated for the benefit of the electric consumers and that rates are kept as low as feasible.[63]

The TPUC focuses its regulatory oversight on non-TVA-customer public utilities that distribute that electricity to individual end users.[64] Federal law fixes the boundaries of TVA's authority,

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[59] *See* Douglas E. King, *The Regulatory Environment for Interconnected Electric Power Micro-grids: Insights from State Regulatory Officials* (Carnegie Mellon Elec. Indus. Ctr. Working Paper, No. CEIC-05-08, 2006), https://www.cmu.edu/ceic/assets/docs/publications/working-papers/ceic-05-08.pdf [https://perma.cc/M83U-GBE9].

[60] *Id.*

[61] TENN. CODE ANN. § 65-4-104 (2021).

[62] *See* Tennessee Valley Authority Act of 1933, Pub. L. No. 73-17, 48 Stat. 58 (codified as amended at 16 U.S.C. §§ 831–831ee).

[63] *Guidelines and Reports*, TENN. VALLEY AUTH., https://www.tva.com/about-tva/guidelines-and-reports [https://perma.cc/FNN8-SY3R] (last visited May 9, 2023).

[64] The Commission has jurisdiction over electric, telephone, water and wastewater, natural gas, and methane gas companies. TENN. PUB. UTIL. COMM'N, 2021–2022 ANNUAL REPORT 1 (Feb. 6, 2023), https://www.tn.gov/content/dam/tn/publicutility/documents/reports/anlrpt2122.pdf [https://perma.cc/Q863-5AVS]. Because TVA regulates the local power companies within its footprint, the Commission has jurisdiction over only a handful of electric utilities. *See id.* at 7 (stating that the Commission oversees four electric utilities);

while the Tennessee Geographic Territories Law establishes the boundaries among the distribution utilities. [65]

This section looks first at the aspects of the Tennessee Valley Authority that are likely to be relevant to the legal status of microgrids: primarily TVA's "fence" and "anti-cherry picking" provisions and the TVA's contracts with local distribution utilities. Next, this section considers relevant Tennessee law, including the definition of "public utilities" under the jurisdiction of the Tennessee Public Utilities Commission and the Tennessee Geographic Territories Law, which fixes the boundaries of public utilities in Tennessee.

A. The Tennessee Valley Authority

The Tennessee Valley Authority is the creation of the Tennessee Valley Authority Act, a New Deal-era law aimed at improving navigation on the Tennessee River and encouraging economic development in the region.[66] The Act provides expansive powers to the federally chartered corporation,[67] including the authorization to "produce, distribute, and sell electric power."[68] TVA serves distribution utilities in most of Tennessee and parts of Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia, as well as selling power directly to large industrial customers and federal installations.[69] Although its often acts like a private electric utility, TVA is somewhere between a private and public entity.[70] The corporation's sole stockholder is the United States,[71] but it currently does not receive taxpayer funding. Instead, its revenue solely comes from

TENN. PUB. UTIL. COMM'N, TENNESSEE PUBLIC UTILITY COMMISSION LIST OF ELECTRIC UTILITIES, https://www.tn.gov/content/dam/tn/publicutility/documents/utilitydivdocs/ListofElectricUtilities.pdf [https://perma.cc/L62G-MZMK] (last visited May 9, 2023) (listing Appalachian Power Company, Entergy Arkansas, LLC, and Kingsport Power Company as Commission-regulated electric utilities).

65 TENN. CODE ANN. § 65-34-101 (2021).

66 *See* Tennessee Valley Authority Act of 1933, *supra* note 62; 16 U.S.C. § 831 (2018).

67 Comment, *The Tennessee Valley Authority Act*, 43 YALE L.J. 815, 818 (1934); *see also* Ashwander v. Tenn. Valley Auth., 297 U.S. 288, 315 (1936).

68 16 U.S.C. § 831d(l) (2018); *see also* Memphis Power & Light Co. v. City of Memphis, 112 S.W.2d 817, 822 (Tenn. 1937) ("One of the objects of TVA is to supply the inhabitants within its territory with cheap electric current.").

69 *About TVA*, TENN. VALLEY AUTH., https://www.tva.com/about-tva [https://perma.cc/3H2M-CEHP] (last visited May 9, 2023).

70 Michael P. Vandenbergh, Jim Rossi & Ian Faucher, *The Gap-Filling Role of Private Environmental Governance*, 38 VA. ENV'T L.J. 1, 19 (2020).

71 Comment, *The Tennessee Valley Authority Act*, *supra* note 67, at 818; Tenn. Valley Auth. v. Hill, 437 U.S. 153, 157 (1978).

its electricity sales to local power companies.[72] Courts have concluded that TVA is a governmental agency, albeit one that can be sued in its corporate capacity.[73]

Federal law presents two main legal hurdles for microgrid projects in the TVA region. First, TVA interprets the TVA "fence" and "anti-cherry picking" statutory provisions to protect its monopoly on power generation and transmission within its footprint. Second, TVA's contracts with local distribution utilities can limit opportunities for microgrids to connect to the larger distribution system.

The TVA "fence" and "anti-cherry picking" provisions arise under two federal laws. In 1959, Congress amended the TVA Act to include a geographic boundary limiting the reach of TVA's power sales.[74] The TVA "fence"—found in Section 15d(a) of the TVA Act—forbids TVA from being "a source of power supply outside the area for which [TVA] or its distributors were the primary source of power supply on July 1, 1957."[75] Congress later created the "anti-cherry picking" provision, providing TVA protection against customer defection within its territory.[76] This protective measure arises from TVA's reading of Section 212(j) of the Federal Power Act. [77] Although the Federal Power Act generally requires utilities to provide open access to transmission on their grids,[78] Section 212(j) provides an exception for TVA:

> [W]ith respect to an electric utility which is prohibited by Federal law from being a source of power supply, either directly or through a distributor of its electric energy, outside an area set forth in such law, no order issued under section 824(j) of this title may require such electricity [. . .] to provide transmission services to another entity if the electric energy to be transmitted will be consumed within the area set forth in such Federal law.[79]

This provision prohibits FERC from ordering TVA to comply with the general obligation under Section 211 of the Federal Power Act that utilities transmit power for competitors on their

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72 *See About TVA*, *supra* note 69.

73 *See Ashwander*, 297 U.S. at 315 (referring to TVA as "an agency of the federal government"); Edwards v. Tenn. Valley Auth., 255 F.3d 318, 322–23 (6th Cir. 2001) (calling TVA a "wholly-owned corporate agency and instrumentality of the United States"); Posey v. Tenn. Valley Auth., 93 F.2d 726, 727 (5th Cir. 1937) ("Notwithstanding the corporate entity and its subjection to suit, the Authority is plainly a governmental agency of the United States, and except as Congress may otherwise consent, is free from state regulation or control."); *see also* 16 U.S.C. § 831r (2018) (terming TVA "an instrumentality and agency of the Government of the United States" in granting TVA access to the United States Patent and Trademark Office to study and copy certain information).

74 TVA Revenue Bond Act of 1959, Pub. L. No. 86-137, 73 Stat. 280 (1959) (codified as amended at 16 U.S.C. § 832n-4(a) (2018)).

75 16 U.S.C. § 831n-4(a) (2018).

76 *See* Energy Policy Act of 1992, Pub. L. No. 102-486 sec. 722, § 212(j), 106 Stat. 2776, 2916 (1992).

77 *See* 16 U.S.C. § 824k(j) (2018).

78 *See id.* § 824j.

79 *Id.* § 834k(j).

transmission system.[80] Combined with TVA's asserted discretion to require all-requirements contracts—electricity and transmission—from the customers it serves within the fence, the anti-cherry-picking provision protects against local power companies choosing alternative electricity suppliers within the TVA footprint. [81]

Federal law does not require TVA to have a complete monopoly within its territory, however. Nothing in the anti-cherry-picking or fence provisions prohibit TVA from voluntarily giving third parties access to its transmission system.[82] Furthermore, a later-enacted provision of the Federal Power Act, section 211A, appears to provide FERC discretion to order TVA to wheel power from other generators within its service area.[83] But FERC has so far declined to make such a ruling. In 2021, the Federal Energy Regulatory Commission rejected a petition from four distribution utilities to open TVA's transmission system so they could buy electricity from other power suppliers.[84]

In practice, TVA's interpretation of the fence and anti-cherry-picking provisions, and its assertion of the right to require its customers to commit to all-requirements contracts, mean that new, non-TVA-owned generation sources can struggle to connect to the transmission system within TVA territory. For example, a utility-scale solar farm in East Tennessee must have TVA's permission to connect to transmission lines that would allow it to sell electricity to areas in other parts of the state. This makes the fence around TVA's footprint impermeable: distribution utilities in this area generally cannot buy electricity from other suppliers without TVA cooperation, even

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80 *See* Tenn. Valley Auth., Annual Report (Form 10-K), at 45 (Nov. 15, 2022) [hereinafter TVA 2022 Annual Report].

81 *See* Daniel Tait & Joe Smyth, *TVA Attempts to Chain Local Power Companies to Longer Contracts in Effort to Prevent Defection Risk*, ENERGY & POL'Y INST. (Sept. 22, 2019), https://www.energyandpolicy.org/tva-local-power-companies-defection/ [https://perma.cc/9TWF-8N4V].

82 *See* Ethan Howland*, FERC Rejects Utilities' Request to Open TVA to Competition*, UTIL. DIVE (Oct. 22, 2021), https://www.utilitydive.com/news/ferc-rejects-utilities-request-to-open-tva-tennessee-transmission-access-competition/608721/ [https://perma.cc/2K2E-2B5L] (noting that the Energy Policy Act of 2005 provides FERC with the discretion to give third parties access to TVA's transmission system). TVA's anomalous status as an "unregulated transmission utility" exists because TVA is defined as a federal agency rather than a "public utility" under the Federal Power Act. *See* 16 US.C. §§ 824(f), 824d, 824e (2018). Although it is an "electric utility" and "unregulated transmitting utility" subject to FERC regulation under §§ 210, 211, 211A, and 212 of the Federal Power Act, it is not subject to FERC regulations under §§ 205 or 206 of the Federal Power Act as those speak only to public utilities. *See id.* § 796(22)(A) ("The term 'electric utility' means a person or Federal or State agency . . . that sells electric energy"); *id.* § 796(22)(B) ("The term 'electric utility' includes the Tennessee Valley Authority and each Federal power marketing administration."); *id.* §§ 824j, 824j-1(a), 824k.

83 *See* 16 U.S.C. § 824j-(b) (stating that, "[s]ubject to section 212(h), the Commission may, by rule or order, require an unregulated transmitting utility to provide transmission services" on similar terms and at similar rates as it imposes on itself). Congress included Section 211A as part of the Energy Policy Act of 2005. *See* Energy Policy Act of 2005, Pub. L. No. 109-58, sec. 1231, § 211A, 119 Stat. 594, 955 (2005).

84 *See* Order on Petition, Athens Utils. Bd. v. Tenn. Valley Auth., 177 FERC ¶ 61,021 (Oct. 21, 2021); *see also* Howland*, supra* note 82.

if that power is cleaner.[85] Although a microgrid may not need access to the transmission system, this restriction on competition within TVA's footprint may create some barriers to distributed energy innovation.

The other possible barrier to microgrid innovation is the standard TVA long-term agreement with local power companies. Currently, 153 local distribution utilities—either municipally owned utilities like Nashville Electric Service or rural electric cooperatives—receive their electricity exclusively from TVA.[86] These local distribution utilities are under all-requirement contracts that ensure the utilities can only buy electricity from TVA.[87] Before 2019, these contracts required the local power companies to provide, on average, less than seven years notice to terminate the agreement.[88] But in 2019, TVA adopted a new standard contract in response to concerns about distribution utility defection.[89] TVA's new standard long-term agreement has a twenty-year term and automatically renews each year for another twenty-year term.[90] Terminating the contract, however, requires 20-years' prior written notice.[91] Sending such notice bears an additional risk: from the date that TVA receives the termination notice, it has "no obligation to make or complete any additions to or changes in any transformation or transmission facilities for service" to the local

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[85] A local power company not in an all-requirements contract with TVA could use non-TVA transmission lines to purchase power within the TVA's fence. *See* TVA 2022 Annual Report, *supra* note 80, at 23. In practice, though, constructing new transmission lines would be prohibitively expensive, and the vast majority of LPCs have agreed to the new all-requirements contract with TVA. *See TVA Green Lights Local Power Company Electric Generation*, Tenn. Valley Auth. (June 22, 2020), https://www.tva.com/newsroom/press-releases/tva-green-lights-local-power-company-electric-generation [https://perma.cc/BSE3-GW2M] ("Currently, 140 of 154 LPCs have entered into 20-year Long-Term Partnership Agreements with TVA.").

[86] *Public Power for the Valley*, TENN. VALLEY AUTH., https://www.tva.com/energy/public-power-partnerships [https://perma.cc/2VV4-M2BM] (last visited May 9, 2023).

[87] Tait & Smyth, *supra* note 81.

[88] *See* Minutes of Meeting of the Board of Directors, Tenn. Valley Auth., at 28 (Aug. 22, 2019), https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/default-document-library/site-content/about-tva/our-leadership/board-of-directors/meetings/2019/august-22-2019/08-22-2019-board-meeting-minutes---knoxville-tn-(ripped-pdf).pdf?sfvrsn=69cbd100_0 [https://perma.cc/ET4Y-YE97].

[89] *See id.* at 29; Tait & Smyth, *supra* note 81. An example of this new 20-year contract is the long-term agreement between TVA and City of Huntsville, Alabama. *See* Long-Term Agreement Between the City of Huntsville, Alabama and Tennessee Valley Authority, TV-54501A, https://www.huntsvilleal.gov/wp-content/uploads/2020/02/Council_Package_TVA_Long_Term_Agreement.pdf [https://perma.cc/Z8G8-3V9C] [hereinafter Huntsville Agreement].

[90] Protect Our Aquifer v. Tenn. Valley Auth., 554 F. Supp.3d 940, 946 (W.D. Tenn. 2021); *see also* Huntsville Agreement § 1 ("[B]eginning on the first anniversary of said effective date, and on each subsequent anniversary thereof . . . this contract shall be extended automatically without further action of the parties for an additional 1-year renewal term beyond its then-existing time of expiration.").

[91] *See* Huntsville Agreement § 1 ("Municipality may terminate this contract at any time upon not less than 20 years' prior written notice, and TVA may terminate this contract upon not less than 20 years' prior written notice.").

distribution utility.[92] TVA, however, has emphasized that the benefits of the contracts include an allowance for local distribution utilities to purchase or generate three to five percent of their energy from non-TVA, renewable energy resources.[93]

Pushback to the new long-term contracts has had mixed success. As of May 2023, most of the local distribution utilities in TVA's footprint had signed on to the new power-supply agreements.[94] The Southern Environmental Law Center, on behalf of several conservation groups, sued TVA in 2020 to challenge the new standard agreement. The suit alleged that the long-term agreements' creation of an essentially never-ending contract violates the TVA Act's prohibition on contracts longer than 20 years and that TVA failed to conduct a required environmental analysis under NEPA.[95] Although the lawsuit survived a motion to dismiss,[96] the court eventually granted summary judgment to TVA based on its conclusion that the plaintiffs lacked standing.[97] In December 2022, Memphis Light Gas & Water's (MLGW) Board of Commissioners unanimously rejected TVA's 20-year contract.[98] Although MLGW will remain a TVA customer, the local power company will remain on its existing contract, which requires only 5-years' notice to terminate its agreement with TVA.[99]

The combination of TVA's aggressive policing of its transmission grid and the new long-term contracts makes the regulatory regime for microgrids challenging. Under current TVA policy, TVA blocks competitors from accessing its transmission system, and thus local distribution utilities and end-use consumers cannot use TVA's transmission system to buy electricity from alternative suppliers. A microgrid that seeks to sell excess electricity in the wholesale market within the TVA footprint, therefore, will need TVA's blessing. Even if a microgrid projects aims

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92 *Id.*

93 Protect Our Aquifer v. Tenn. Valley Auth., 554 F. Supp.3d 940, 945 (W.D. Tenn. 2021); *see* Proposed TVA Board Resolution, Long-Term Agreement § 2(e) (Aug. 22, 2019), https://s3.documentcloud.org/documents/6922275/Board-Exhibit-8-22-19J-TVA-LPC-Long-Term-Agreement.pdf [https://perma.cc/MWN7-NNS3].

94 *See* Caroline Eggers, *The Memphis and TVA Breakup Saga Is About Money. But It's Also About Pollution and Environmental Racism*, WPLN NEWS (Oct. 6, 2022), https://wpln.org/post/the-memphis-and-tva-breakup-saga-is-about-money-but-its-also-about-pollution-and-environmental-racism/ [https://perma.cc/S2WV-DZSU].

95 Protect Our Aquifer v. Tenn. Valley Auth., 554 F. Supp.3d 940, 946–47 (W.D. Tenn. 2021).

96 *Id.* at 959.

97 Protect Our Aquifer v. Tenn. Valley Auth., No. 2:20-cv-02615, 2023 WL 1459265, at *1 (W.D. Tenn. Feb. 1, 2023).

98 Adrian Sainz, *Memphis Power Company Rejects TVA's Long-Term Deal*, AP (Dec. 7, 2022), https://apnews.com/article/business-memphis-fb4a788b22667f586d9cd8610dc37de0 [https://perma.cc/FA45-44SR].

99 *Id.*

to connect only to the distribution grid, TVA's long-term agreements with local power companies will create a stumbling block. Those all-requirements contracts provide that local power companies can purchase only three to five percent of their energy from non-TVA, renewable energy sources. Furthermore, TVA's contractual efforts to quash local power company defection and opposition to the petition to FERC to open access to its transmission lines demonstrate TVA's willingness to fight perceived threats to its monopoly status. Because microgrids could reduce local power companies' demand for electricity, TVA is likely to oppose major microgrid projects. Even smaller projects may face interconnection challenges based on the limits to local power companies' purchases of non-TVA-generated electricity.

B. Tennessee Law

TVA's large presence in Tennessee leaves a limited role for state regulation of electric utilities as federal law—which includes TVA regulation of local power companies within its territory—preempts conflicting state measures.[100] The Tennessee Public Utility Commission's "regulatory jurisdiction extends only to private investor-owned public utilities," meaning that it lacks "authority or oversight of utility companies or utility services provided by any city or county, utility district, cooperative entity."[101] Under Tennessee law, public utilities are:

> [E]very individual, copartnership, association, corporation, or joint stock company, its lessees, trustees, or receivers, appointed by any court whatsoever, that own, operate, manage or control, within the state, any interurban electric railway, traction company, all other common carriers, express, gas, electric light, heat, power, water, telephone, telegraph, telecommunications services, or any other like system, plant or equipment, affected by and dedicated to the public use, under privileges, franchises, licenses, or agreements, granted by the state or by any political subdivision thereof.[102]

Although the electric public utilities falling under this definition and not subject to TVA authority are presently few,[103] those entities that qualify as public utilities subject to TPUC jurisdiction must receive a certificate of public convenience and necessity before operating.[104]

Key to this definition of "public utility"—and therefore to the requirement for a certificate of public convenience and necessity—is whether the electric service is "affected by and dedicated to

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[100] *Cf.* French v. Appalachian Elec. Coop., 580 S.W.2d 566, 569 (Tenn. 1978) (describing how the TVA's power contract with a rural electric cooperative "establishes the retail rates[,] strictly controls the use of [the cooperative's] electric revenue," and establishes other policies regulating the cooperative).

[101] *In re* Emergency Petition of the Consumer Advoc. Unit of the Fin. Div. of the Off. of the Tenn. Att'y Gen., No. 20-00047, 2020 WL 1655928, at *7 (Tenn. Pub. Util. Comm'n Mar. 31, 2020)

[102] TENN. CODE ANN. § 65-4-101(6)(A) (2021).

[103] *Supra* note 64.

[104] TENN. CODE ANN. § 65-4-201 (2021).

the public use."[105] A relevant Tennessee attorney general opinion on the topic of sale of electricity by a solar electricity generating facility provides that the phrase "affected by and dedicated to public use" is legal shorthand for the concept that "a distinguishing characteristic of a public utility is a devotion of private property by the owner to service useful to the public, which has a right to demand such service so long as it is continued with reasonable efficiency under proper charges."[106] The primary question, then, is whether the utility conducts its business in such a way that makes it a public concern: whether the utility "holds itself out (expressly or implicitly) as engaged in supplying its product or services to the public in general or to a limited portion of the public, as opposed to holding itself out as serving or prepared to serve only particular individuals."[107] The analysis is ultimately fact specific. Courts typically examine the totality of the circumstances, including the company's actual business practices, articles of incorporation, and bylaws, as well as the company's stated purpose, "whether it is providing a good or service in which the general public has an interest," the proportion of requests for service it accepts, how it structures service contracts, and "whether it is in actual or potential competition with other entities that are public utilities."[108] For example, a single-member limited liability company planning to build and operate rural cottages, a clubhouse, and wellness center, which required the creation of a new wastewater system on the land, petitioned the TPUC for a finding that the project did not require a certificate of public convenience and necessity. The TPUC reasoned that because the wastewater system was built for the exclusive use of the project and its customers—who would not be charged for utility service—the company was not acting as a public utility.[109] The TPUC therefore approved the company's petition.[110]

Even if the there is an argument that proposed electricity service is "affected by and dedicated to the public use," several exceptions to TPUC jurisdiction exist.[111] Notably, "county, municipal corporation[s] or other subdivisions of the state" and "corporation[s] owned by or any agency or

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[105] *Id.* § 65-4-101(6)(A).
[106] *See* Tenn. Att'y Gen. Op. No. 17-25 (April 10, 2017) (quoting 73B C.J.S. *Public Utilities* § 1 (2016)).
[107] *Id.*
[108] *See id.*; *see also* Memphis Nat. Gas Co. v. McCanless, 194 S.W.2d 476, 480 (1946) (charter conclusively authorized gas company to do business as a public utility).
[109] Initial Determination that CCN Is Not Required, In Re Petition of Sloan Farm Co., LLC for a Determination as to Whether Certificate of Convenience & Necessity Is Not Required for the Rural Retreat Project, Williamson County, Tennessee, No. 19-00008, 2019 WL 936743 (Tenn. Pub. Serv. Comm'n Feb. 21, 2019).
[110] *Id.*
[111] TENN. CODE ANN. §§ 65-4-101(6)(A)(i)–(ix), (B)–(C) (2021).

instrumentality of the state" are exempt.[112] Therefore, TPUC's jurisdiction, as mentioned above, does not extend to "utility companies or utility services provided by any city our county," like the Nashville Electric Service or the Knoxville Utilities Board.[113]

Tennessee law also expressly exempts rural nonprofit cooperatives from TPUC's oversight.[114] Rural nonprofit cooperatives are, pursuant to the Tennessee Rural Electric and Community Services Cooperative Act (RECSC), cooperatives operating on a nonprofit basis with the primary purpose of supplying wholesale or retail electricity to its members or another entity.[115] *Wholesale* electricity is energy sold by a supplier to a distributor, which then distributes that electricity to customers as *retail* energy.[116] Therefore, RECSC nonprofit cooperatives are allowed to distribute energy to customers directly, although they must do so on a nonprofit basis. RECSC nonprofit cooperatives have a secondary purpose of "promoting economic and industrial development through participation . . . in any economic or industrial development program established by any agency of the United States or of the state of Tennessee."[117] An entity qualifies as a RECSC cooperative if it is organized under or in accordance with the statute and its goals. Thus, a cooperative can qualify as a RECSC cooperative if it is a nonprofit rural electric cooperative providing wholesale or retail electric services to rural communities.[118]

Similarly, Generation and Transmission (G&T) cooperatives created pursuant to Tennessee's Electric Generation and Transmission Cooperative Act (G&T Act) are expressly excluded from the TPUC's jurisdiction.[119] The G&T Act's aim is to promote "additional sources of electrical energy through traditional sources of generation and through renewable, clean, and passive sources of electric energy."[120] To that end, Tennessee law permits a G&T cooperative formed under the G&T Act to provide wholesale electricity members and have control over transmission and generation "for the needs of its wholesale customers," among other purposes.[121] Membership in a G&T cooperative is limited to "distribution cooperatives, governmental electric systems, energy

[112] *Id.* § 65-4-101(6)(A)(ii)–(iii).
[113] *In re Emergency Petition of the Consumer Advoc.*, 2020 WL 1655928, *supra* note 101, at *7.
[114] TENN. CODE ANN. § 65-4-101(6)(A)(v) (2021).
[115] *See id.* §§ 65-25-102(4), 65-25-104(a).
[116] FED. ENERGY REG. COMM'N, ENERGY PRIMER: A HANDBOOK FOR ENERGY MARKET BASICS 35 (2020), https://www.ferc.gov/sites/default/files/2020-06/energy-primer-2020_0.pdf [https://perma.cc/3Z89-GCYN] .
[117] *Id.* § 65-25-104(a)(2)(C).
[118] *See id.* § 65-25-101-04.
[119] *Id.* § 48-69-119.
[120] *Id.* § 48-69-102(a).
[121] *Id.* §§ 48-69-106(a)(1).

acquisition corporations, []other G&T cooperative[s] and joint action agencies."[122] Retail customers are not eligible to become members,[123] and the law specifies that G&T cooperatives cannot provide electrical power and energy services to retail customers within the TVA fence.[124] In effect, this means that G&T cooperatives operating in TVA territory are able to supply electricity only to local distribution utilities and distribution cooperatives that are not in an all-requirements contract with TVA or to TVA itself, which will then sell the power to its customers.[125]

Several other entities are explicitly excluded under Tennessee law from the definition of a public utility. "Nonprofit homeowners associations or organizations whose membership is limited to owners of lots in residential subdivisions" are not public utilities when providing minor utility functions like the operation and maintenance of streetlights for the subdivision.[126] However, these groups must be "unable to obtain such services from the local utility district."[127] Wind energy facilities constructed prior to April 24, 2018, are similarly exempted from public utility regulation.[128]

Tennessee's Geographic Territories Law (GTL) places further limits on electric systems operating in the state. The GTL essentially prohibits "non-consumer owned electric systems" from expanding into the geographic bounds of a public electric system's territory as established in 1989.[129] Other statutory provisions divide the state into territories served by cooperatives and

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[122] *Id.* § 48-69-112(a).

[123] *Cf. id.* § 48-69-103(5) (defining an "existing G&T cooperative" as a nonprofit corporation created under past versions of the law that "does not have retail residential, commercial or industrial customers").

[124] TENN. CODE ANN. § 48-69-118(a) (2021).

[125] *See* REUBEN KYLE, TENN. ADVISORY COMM'N ON INTERGOVERNMENTAL RELS., COMM'N REP.: THE ELECTRIC GENERATION AND TRANSMISSION COOPERATIVE ACT OF 2009 AND ITS POSSIBLE IMPACT ON THE TENNESSEE VALLEY AUTHORITY'S PAYMENTS IN LIEU OF TAXES 9–10 (June 2010), https://www.tn.gov/content/dam/tn/tacir/documents/electric_generation_cooperative_act.pdf [https://perma.cc/8RAF-RZCL].

[126] TENN. CODE ANN. § 65-4-101(6)(B)(i) (2021).

[127] *Id.*

[128] *Id.* §§ 65-4-101(6)(C), 65-17-102. A "wind energy facility" is "the equipment necessary for the operation of a facility that uses wind to generate electricity or that uses wind energy to heat or cool, or provide hot water for use in, a building or structure . . . [that] has a rated capacity of one megawatt (1 MW) or more of energy and has a total height in excess of two hundred feet" and "[d]oes not include equipment that, when installed in connection with a dwelling, transmits or uses wind energy to produce energy in a useful form for residential purposes." *Id.* § 65-17-101(12).

[129] *Id.* §§ 65-34-102(1), 65-34-103.

municipal public electric systems.[130] The statutory definition of "public electric system" echoes the definition of a "public utility" discussed above. Public electric systems include:

> electric and community service cooperatives, municipal electric systems, and every individual, co-partnership, association, corporation or joint stock company, their lessees, trustees or receivers, appointed by any court whatsoever, that own, operate, manage, or control any electric power system, plant, or equipment within Tennessee affected by and dedicated to public use.[131]

Therefore, municipal local power companies like the Nashville Electric Service, rural cooperatives, and electric utilities under TPUC jurisdiction qualify as public electric systems under the law. A "non-consumer owned electric system" is a subset of public electric systems that are not community service cooperatives—such as RECSC cooperatives—or municipal electric systems.[132] Importantly, a "non-consumer owned electric system" must, like other electric systems defined under this chapter, be "affected by and dedicated to the public use."[133] These entities cannot expand their "service into areas already served by consumer owned municipal and cooperative electric systems,"[134] and the law authorizes the TPUC hear and resolve boundary disputes.[135] Prohibited expansion includes the "construct[ing], acquir[ing], or maintain[ing] facilities, lines, poles, or other equipment . . . for the distribution or sale of electricity outside their current geographic territory" or "provid[ing], by sale or otherwise, electricity" to those outside the non-consumer owned electric system's current territory.[136] A non-consumer owned electric system may expand into another electric system's territory if it reaches an agreement with the adjacent electric system to modify their respective geographic territories.[137]

These state laws create several challenges for new energy projects. An entity that seeks to avoid regulation as a public utility and non-consumer owned electric system will need either to

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[130] *See id.* § 6-51-112(7) ("The territorial areas lying outside municipal boundaries served by municipal and cooperative electric systems will remain the same as generally established by power facilities already in place or legal agreements on March 6, 1968, and new consumers locating in any unserved areas between the respective power systems shall be served by the power system whose facilities were nearest on March 6, 1968, except to the extent that territorial areas are revised in accordance with this section."); *see also id.* § 65-34-101(3) ("The general assembly has heretofore established the geographic territories of electric systems as those geographic areas in which a particular electric system maintained facilities to provide electric service on March 6, 1968.").

[131] *Id.* §§ 65-34-102(2), (5)

[132] *Id.* § 65-34-102(4).

[133] *Id.* § 65-34-102(5).

[134] *Id.* § 65-34-103.

[135] *Id.* § 65-34-105.

[136] *Id.* § 65-34-103.

[137] *Id.* § 65-34-108.

have a fact-specific argument that it is not "affected by and dedicated to the public use"[138] or operate as a nonprofit cooperative under either the RECSC or GTA.[139] Nonetheless, there may be a narrow path forward for a project that qualifies as a public utility and non-consumer owned electric system. So long as the project does not expand into a public electric system's territory without a contractual agreement, it may operate if it can obtain a Certificate of Public Convenience and Necessity from the TPUC.[140] The following section provides further analysis of these challenges for microgrid projects.

II. THE EXTENT TO WHICH THE CURRENT LEGAL REGIMES REGULATE MICROGRIDS

Microgrid projects in TVA's territory in Tennessee will need to navigate federal and state regulatory regimes not designed for such distributed energy resources. Successfully doing depends on the type of project and, in many cases, coordination with TVA. This section begins with a discussion of the types of microgrid projects that should face few obstacles to development under federal and Tennessee law. The section then considers microgrid projects that face legal uncertainty if proposed within the TVA footprint. Finally, the section concludes with a discussion of microgrid projects that almost certainly are not authorized under current law.

A. Microgrids Likely Authorized Under Federal and Tennessee Law

The types of microgrid projects without significant legal obstacles to development in TVA's Tennessee footprint are few. Nanogrid projects, particularly plans for residential microgrids that each serve only one household, are unlikely to create problems under TVA's contracts with local power companies or under state law. A homeowner with solar panels and solar battery storage for their exclusive use will not "be affected by or dedicated to the public use," and therefore not qualify as a public electric system under Tennessee law. TVA's Green Connect program for residential solar also provides a pathway for local power companies in TVA territory to approve residential solar and battery projects, suggesting TVA oversight will not create substantial regulatory hurdles for residential nanogrids.[141]

Larger microgrid projects initiated by or completed in collaboration with local power companies and TVA similarly can avoid regulatory challenges. Indeed, TVA was involved in the

[138] *Id.* §§ 65-4-101(6)(A), 65-34-102(5).
[139] *See supra* notes 114–125 and related text.
[140] TENN. CODE ANN. § 65-4-301 (2021).
[141] *See* Green Connect, TENN. VALLEY AUTH., https://www.tva.com/energy/valley-renewable-energy/green-connect[https://perma.cc/P7N5-5U2L] (last visited May 18, 2023).

development of each of the three large microgrid installations in Tennessee.[142] TVA provided funding and support for the Erlanger Baroness Hospital microgrid, for example, as part of a 2011 settlement agreement with the U.S. Environmental Protection Agency (EPA). Because of Clean Air Act violations at TVA's coal-fired plants, TVA agreed with EPA to invest approximately $350 million in clean energy projects to reduce pollution, save energy, protect public health and the environment.[143] The Erlanger microgrid project received a $6.75 million grant from that funding.[144] The Vanderbilt University and Chattanooga Municipal Airport microgrid projects similarly involved TVA support, with electricity sold to TVA and the local power companies' crediting that power on utility bills.[145]

Groups interested developing large microgrid projects have some reason to hope that TVA will agree to approve their projects. TVA is currently working with local power companies on a Regional Grid Transformation program, which seeks to create "a more resilient, flexible and integrated" grid system that includes distributed energy and energy storage.[146] TVA's 2019 Integrated Resource Plan, a comprehensive study to provide direction on how best to meet future electricity demand,[147] recommends projects to promote resiliency, listing microgrids as one such example.[148]

B. Microgrids that Fall Within a Statutory Gray Area

Without TVA approval early in the development process, larger microgrid projects—those that serve more than one user—face significant regulatory uncertainty in Tennessee. Microgrids that seek interconnection to the distribution grid, for example, will need the cooperation and permission of the relevant local power company. Because local power companies in TVA territory purchase

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142 *See Microgrid Installations in Tennessee*, *supra* note 30;

143 *See Tennessee Valley Authority Clean Air Act Settlement*, EPA (Apr. 14, 2011), https://www.epa.gov/enforcement/tennessee-valley-authority-clean-air-act-settlement [https://perma.cc/4G96-WC5T].

144 CHP TECH. ASSISTANCE P'SHIPS, *supra* note 41.

145 *See* Anand Upadhyay, *USA's First 100% Solar Airport Comes Up at Chattanooga, in the Heart of Trump Land*, CLEANTECHNICA (Aug. 21, 2019), https://cleantechnica.com/2019/08/21/usas-first-100-solar-airport-comes-up-at-chattanooga-in-the-heart-of-trump-land/ [https://perma.cc/B75M-Y5EF].

146 *See Regional Grid Transformation*, *supra* note 23; TENN. VALLEY AUTH., A STRATEGIC ROADMAP FOR TENNESSEE VALLEY REGIONAL GRID TRANSFORMATION 10–13 (Aug. 2022), https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/energy/technology-innovation/connected-communities/rgt-strategic-roadmap.pdf?sfvrsn=858879dd_1 [https://perma.cc/2H2B-F5CW].

147 *See generally* TENN. VALLEY AUTH., 2019 INTEGRATED RESOURCE PLAN: VOLUME I – FINAL RESOURCE PLAN (2019), https://tva-azr-eastus-cdn-ep-tvawcm-prd.azureedge.net/cdn-tvawcma/docs/default-source/default-document-library/site-content/environment/environmental-stewardship/irp/2019-documents/tva-2019-integrated-resource-plan-volume-i-final-resource-plan.pdf?sfvrsn=44251e0a_4 [https://perma.cc/PNB8-HFHW].

148 *Id.* at 6–8.

power under all-requirements contracts, TVA approval will be necessary for excess power from the microgrid to flow into the distribution system. A local power company may be able to count excess electricity provided by a microgrid toward the company's three to five percent flexibility provisions allowed under TVA's new long-term contract. Even if microgrid projects are allowed under this flexibility provision, microgrid projects will have to work with the local power company to ensure that the microgrid capacity will not put the local power company above its flexibility threshold.

Another layer of uncertainty exists under state law. Without a statutory definition of, or TPUC guidance on, microgrids, developers may be worried that microgrid projects could be treated as public utilities and public electric systems. This status would require projects to apply for and receive a certificate of public convenience and necessity before operating.[149] Such a certificate requires a written application and hearing and may face opposition from existing utilities.[150] A microgrid deemed a public electric system would also be subject to the Geographic Territories Act, effectively barring the microgrid from operating within the geographic territory already assigned to another utility.[151] Microgrid projects that are community service cooperatives would not be subject the strictest limitations applicable to non-consumer owned public electric systems—such as the prohibition on constructing, acquiring, or maintaining facilities or equipment outside its existing territory.[152] But meeting the statutory requirements to operate as a RECSC cooperative may prove challenging.[153] Similarly, it is an open question whether microgrids, which typically operate at the distribution level, could qualify as a G&T cooperative.[154] Moreover, new microgrid projects, unless initiated by an existing municipal utility or cooperative, are unlikely to have an *existing* territory. As the Geographic Territories Act effectively bars new public electric systems from operating in the state, microgrid projects not developed under the auspices of an existing public electric system will need to avoid public utility status.

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[149] TENN. CODE ANN. § 65-4-201(a) (2021).
[150] *Id.*; *see generally* In re Jackson Sustainability Cooperative, *supra* note 1.
[151] *See supra* notes 129–140 and accompanying text.
[152] *See supra* notes 114–118 and accompanying text.
[153] *Id.*
[154] *See, e.g.*, Statement of Jackson Energy Authority in Opposition to Commencement of a Contested Case and Requesting Denial of a Declaratory Order, In re Jackson Sustainability Cooperative, *supra* note 17, at 4 ("A G&T cooperative is not statutorily authorized to provide services to retail customers, as [the Jackson Sustainability Cooperative] proposes to do in its Application.").

Microgrid projects may succeed in arguing that they do not qualify as a public utility or a public electric system under Tennessee law provided that they can show that they are not "affected by and dedicated to the public use." A microgrid that is owned by a single entity, is the exclusive user of the electricity it generates, and does not sell or charge any other entity for its service, for example, has a strong argument that it is not "dedicated to public use." Even a larger project, like a campus microgrid, may succeed with such an argument. In the wastewater context, for example, the TPUC determined that a school campus's proposed wastewater system did not qualify as a public utility because it was not dedicated to the public use.[155] The TPUC found that the project was not a public utility because it was being built for the exclusive use of the school and its facilities and that the school would not sell or charge for utility service on campus.[156] Campus microgrids generally may be similarly positioned, so long as the campus microgrid does not sell energy to customers. For larger campus microgrids, however, regulatory certainty from the TPUC would be helpful.

In summary, except for nanogrids and certain microgrids that can operate exclusively in island mode or are developed in cooperation with TVA, essentially all microgrid projects will have to determine whether local power companies and TVA will allow them to connect to the distribution grid and whether they qualify as public electric systems. Even if operating outside of TVA territory, a microgrid determined to be a public electric system faces TPUC oversight and limitations imposed under the Geographic Territories Act.

Policy Recommendations

The current regulatory regime in Tennessee and in TVA's footprint does not provide the necessary regulatory certainty for microgrid projects and, in some cases, may inhibit their development. Tennessee lags other states when it comes to microgrid deployment. For example, in 2018, California implemented a new law "[requiring] the governing board of a local publicly owned electric utility to develop and make available a standardized process for the interconnection of a customer-supported microgrid."[157] In 2019, the California Public Utilities Commission issued

[155] Initial Order that CCN Is Not Required, In Re Petition of Grace Christian Acad. for a Determination as to Whether Certificate of Convenience & Necessity Is Not Required for the On-Site Wastewater Sys. for the Grace Christian Acad. Campus, No. 21-00035, 2021 WL 1087961 (Tenn. Pub. Serv. Comm'n Mar. 19, 2021).

[156] *Id.*

[157] CAL. PUB. UTIL. CODE. § 8372.

R.19-09-009, an order instituting rulemaking regarding microgrids, with the stated purpose of "crafting a policy framework surrounding the commercialization of microgrids."[158] This ruling included information on reducing barriers for microgrid deployment, among other information intended to incentivize microgrids.[159] Although California had at least 56 microgrids prior to 2019, the regulatory recognition of microgrids may have encouraged more projects: the Department of Energy lists at least 28 new microgrids in California since 2019.[160] There are a few main ways that TVA and Tennessee could similarly incentivize microgrids projects within the state.

First, regulatory certainty can start with TVA policy and complementary state legislation that explicitly addresses microgrids. TVA has yet to define microgrids in its Integrated Resource Plan. An updated plan should both define microgrids—including threshold capacities for different regulatory treatments—and explain the types of projects that fall within TVA's oversight. A complementary provision in the Tennessee Code defining microgrids would reduce confusion about the overall place of microgrids in the statutory scheme. Professor Sara Bronin offers guidance about the ideal way that this could be done, and recommends that such a recognition have several components:

> (1) an articulation of the state policy promoting alternative energy; (2) a definition of the term "microgrid" […] (3) a limit on the size of unregulated microgrids, with respect to number of participants and energy output, to prevent overly large projects from evading public utility status; (4) a description of an application and registration process which would be administered by the state public utility commissions; and (5) the articulation of certain rights for microgrid owners, such as the right to net meter, and certain prohibitions on utility behavior, such as prohibiting them from refusing to serve microgrid customers.[161]

Such changes to Tennessee law would need to be very carefully tailored to apply in the TVA context. Because TVA is the primary regulator of local power companies within its territory, Tennessee legislators have limited influence over electricity regulation in much of the state. Nevertheless, legislators might be able define microgrids and their legal status with an eye toward energy sources that will be used to supply the three to five percent generation flexibility allowed in TVA's current long-term contracts.

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[158] Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339 & Resiliency Strategies, No. 19-09-009, 2019 WL 4726350 (Cal. Pub. Util. Comm'n Sept. 12, 2019).

[159] *Id.*; *see also* Michael J. Melton et al., *Cal. Pub. Utils. Comm'n* 25 CAL. REG. L. REP. 219, 223–24 (Fall 2019)

[160] *Microgrid Instillations in California*, U.S. DEP'T OF ENERGY, COMBINED HEAT & POWER & MICROGRID INSTALLATION DATABASES, https://doe.icfwebservices.com/state/microgrid/CA [https://perma.cc/D8B8-NPV4] (last visited May 9, 2023).

[161] Bronin, *supra* note 6, at 548.

Second, Tennessee lawmakers could further clarify the definition of "public electric system" and expand the scope of existing exceptions from public electric system status to include microgrid projects. For example, legislators could consider adding language to the Geographic Territories Act providing that microgrids of certain capacities and serving certain numbers of customers are not public electric systems. Such an idea is present in other states, for example, Oregon's definition of "public utility" excludes from public utility regulation any entity that provides power from any energy resource to fewer than twenty residential customers, solar or wind resources to any number of customers; or biogas, waste heat or geothermal resources for nonelectric generation purposes to any number of customers.[162]

Third, Tennessee's Public Utilities Commission could issue regulations to clarify the regulatory definition of a "public utility" to provide a carveout for certain types of microgrids. Again, such recognition of the legal status of microgrids could provide ample opportunity for new microgrid projects to grow. This would likely be an easier path than statutory regime changes, but it would require both an attention to TVA's regulatory authority over local power companies within its territory and the risk of that Government Operations Committee of the Tennessee General Assembly could reject the rules or amend the authorizing statute in reaction to the regulatory change.

Fourth, the TVA could reintroduce the Green Power Providers Program. In prior years, TVA had a Green Power Providers Program that allowed customers to sell power from rooftop solar and private renewable installations to TVA.[163] The stated purpose of the former program was to help consumers support renewable energy generated within the Tennessee Valley.[164] The program ended on December 31, 2019,[165] and replacement programs for the green Power Providers Program have not provided the same incentives to install rooftop solar.[166] TVA later approved a new rate structure allowing local power companies to charge fees to customers with solar panels.[167]

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[162] OR. REV. STAT. § 757.005(1)(a)(A) (2009); *see also generally* Bronin, *supra* note 6.

[163] *Green Power Providers*, TENN. VALLEY AUTH., https://www.tva.com/energy/valley-renewable-energy/green-power-providers [https://perma.cc/AW7P-T7LR] (last visited May 9, 2023).

[164] *Id.*

[165] *Id.*

[166] *See* Caroline Eggers, *Want Solar Panels? In Tennessee, Only Corporations and the Wealthy Can Really Afford Them*, WPLN (Aug. 15, 2022), https://wpln.org/post/want-solar-panels-in-tennessee-only-corporations-and-the-wealthy-can-really-afford-them/ [https://perma.cc/GY52-JGM6].

[167] Daniel Tait, *TVA Green-Lights New Potential Fees on Distributed Solar by Local Utilities*, ENERGY & POL'Y INST. (Feb. 1, 2021), https://www.energyandpolicy.org/tva-solar-fee/ [https://perma.cc/7XHQ-ZX7R]; *see* Caroline Eggers, *Nashville and Memphis Rank Near the Bottom for Solar Capacity. Here's Why*, WPLN (May 12, 2022),

As rooftop solar is often a key component of residential microgrids, programs that encourage rooftop solar deployment also support the creation of microgrids. Although TVA's 2019 Integrated Resource Plan identifies the advantage that local distributed energy can provide over energy transmitted over long distances and managed by multiple intermediaries, the plan itself does not have provisions that would incentivize microgrids.[168] A new Green Power Providers Program could allow nanogrids using clean energy to sell electricity to TVA and/or to the local distribution utility, without counting towards the three to five percent limit under TVA's long-term agreements. This would incentivize clean energy microgrids without creating substantial disruption to the current energy grid.

Fifth, TVA could take a leadership role in developing microgrid projects in the state. As the Vanderbilt, Chattanooga Metropolitan Airport, and Erlanger Baroness Hospital microgrids demonstrate, TVA approval of and funding for microgrids is key to successful large microgrid projects in Tennessee. As part of TVA's integrated resources plan update,[169] it could consider how partnering with local power companies to invest in microgrids may improve reliability and meet customers' desire for more distributed generation.

Conclusion

Microgrids have numerous benefits for Tennessee's electric system, ranging from reducing overall demand and corresponding emission of pollutants, to providing cleaner energy alternatives for generation, to improving system efficiencies and grid reliability. However, the current state and federal regulatory regimes in Tennessee make it difficult to for non-utilities to develop microgrids. As a result, it is in Tennessee's best interest for TVA and the state to encourage such projects, or at least to provide regulatory certainty for those interested in developing microgrids.

https://wpln.org/post/nashville-and-memphis-rank-near-the-bottom-for-solar-capacity-heres-why/ [https://perma.cc/8RR9-56U2].

[168] *See generally* 2019 INTEGRATED RESOURCE PLAN, *supra* note 147.

[169] *See* Integrated Resource Plan and Environmental Impact Statement, 88 Fed. Reg. 32,265 (Tenn. Valley Auth. May 19, 2023).

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