

# From Mussel Shoals to Muscle Shoals: Interpreting the History of Power Generation on the Tennessee River

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Interpreting the history of the Tennessee River reveals a narrative centered around two different understandings. For over 12,000 years, Indigenous Americans lived with the river mostly as it was, drawing food from it, migrating with seasonal floods, and using it to travel. Though they may have modified the river, such as through the construction of fishing weirs, these changes were small and impermanent.<sup>1</sup> By contrast, from the earliest days of Anglo-American presence in the river valley, people sought to tame the river, to mold it into something they could use to drive economic growth. This second way of thinking led to the literal reshaping of the Tennessee River in the 19th and 20th centuries. The river of today—made up of a series of reservoirs—little resembles the undammed river Indigenous Americans lived alongside.

The story of this transformation is intertwined with that of the Tennessee Valley Authority (TVA), a federally owned electrical utility corporation with a seven-state service area.<sup>2</sup> People living along the Tennessee River have a complicated relationship with TVA, valuing cheap power and beautiful lakes but often chafing against the regulations that protect the very shoreline they value. TVA's most recent power infrastructure expansion—especially solar farms—has raised concerns among citizens who worry about natural, cultural, economic, and historical resources. This essay explores how Muscle Shoals National Heritage Area (MSNHA) interprets the energy history of the Tennessee River in northwest Alabama. Additionally, it considers how MSNHA—and other national heritage areas across the country—can help guide the interpretation of the human history and environmental consequences of power generation, while also helping apply the lessons learned from past power projects to future endeavors.

Congress designated MSNHA in 2009, after an over ten-year grassroots effort to establish an NHA in northwest Alabama. The NHA program—now a system of the National Park Service—began in 1984, with the designation of Illinois and Michigan Canal National

Heritage Area (IMCNHA). In his dedication speech for IMCNHA, President Reagan defined NHAs as a “new kind of national park” that bring together the conservation of natural, cultural, and historical resources, as well as recreational and economic development, across a lived-in cultural landscape with a nationally significant story.<sup>3</sup> MSNHA covers the six counties of northwest Alabama (Colbert, Franklin, Lauderdale, Lawrence, Limestone, and Morgan). Before the damming of the Tennessee River, these counties were all connected to the stretch of the river labeled on some early maps as the “Mussel Shoals” for the thriving mussel population.<sup>4</sup> Between present-day Decatur and Florence, this shallow section of the river, 40 or so miles long, dropped over 130 feet in elevation. Rocks, sandbars, whirlpools, massive piles of driftwood, and “the current running in every direction” made the Muscle Shoals dangerous to navigate, especially in high water.<sup>5</sup> In some places during low water, “a man could walk across the river without ever getting his feet wet.”<sup>6</sup> Events that unfolded along this stretch of the river have significantly influenced the lives of nearby inhabitants over the past 12,000 years, and, more recently, the entire nation.

While Indigenous Americans may have lived with the Tennessee River in relative harmony, Anglo-Americans



Low Water on the Muscle Shoals. UNIVERSITY OF NORTH ALABAMA ARCHIVES AND SPECIAL COLLECTIONS

arriving in northwest Alabama in the late 1700s and early 1800s saw the Muscle Shoals as a hindrance to development. After a series of treaties with the Chickasaw in the 1810s—many negotiated by future president Andrew Jackson—opened up more territory in northwest Alabama, migration to the region increased along the Natchez Trace and Jackson’s Military Road, both of which connected Nashville to New Orleans.<sup>7</sup> Many of these migrants brought enslaved people to grow cotton in the rich bottomlands of the river.<sup>8</sup> The Muscle Shoals, however, prevented steamboats from operating freely along the river, making getting cotton and other goods to market challenging and expensive.<sup>9</sup> In the 1830s, when Alabama was still very much the frontier of the Old Southwest, the US government and local leaders sought to solve the “problem” of the Muscle Shoals. Between 1831 and 1834, private investors built the first railroad west of the Appalachian Mountains, which became the only railroad used during Indian Removal in the 1830s. The Tuscumbia, Courtland & Decatur (TC&D) Railroad allowed for rail shipment around the worst of the shoals.<sup>10</sup> The sale of 400,000 acres of land,

donated by Congress to the state of Alabama in 1828, funded a canal project to bypass the Muscle Shoals. Unfortunately, the first canal failed to function properly, and the US Army Corps of Engineers did not complete their second attempt until 1890.<sup>11</sup> Both the railroad and the first canal project used enslaved labor, and, in the post-Civil War period, the second attempt at a canal relied on convict labor.<sup>12</sup>

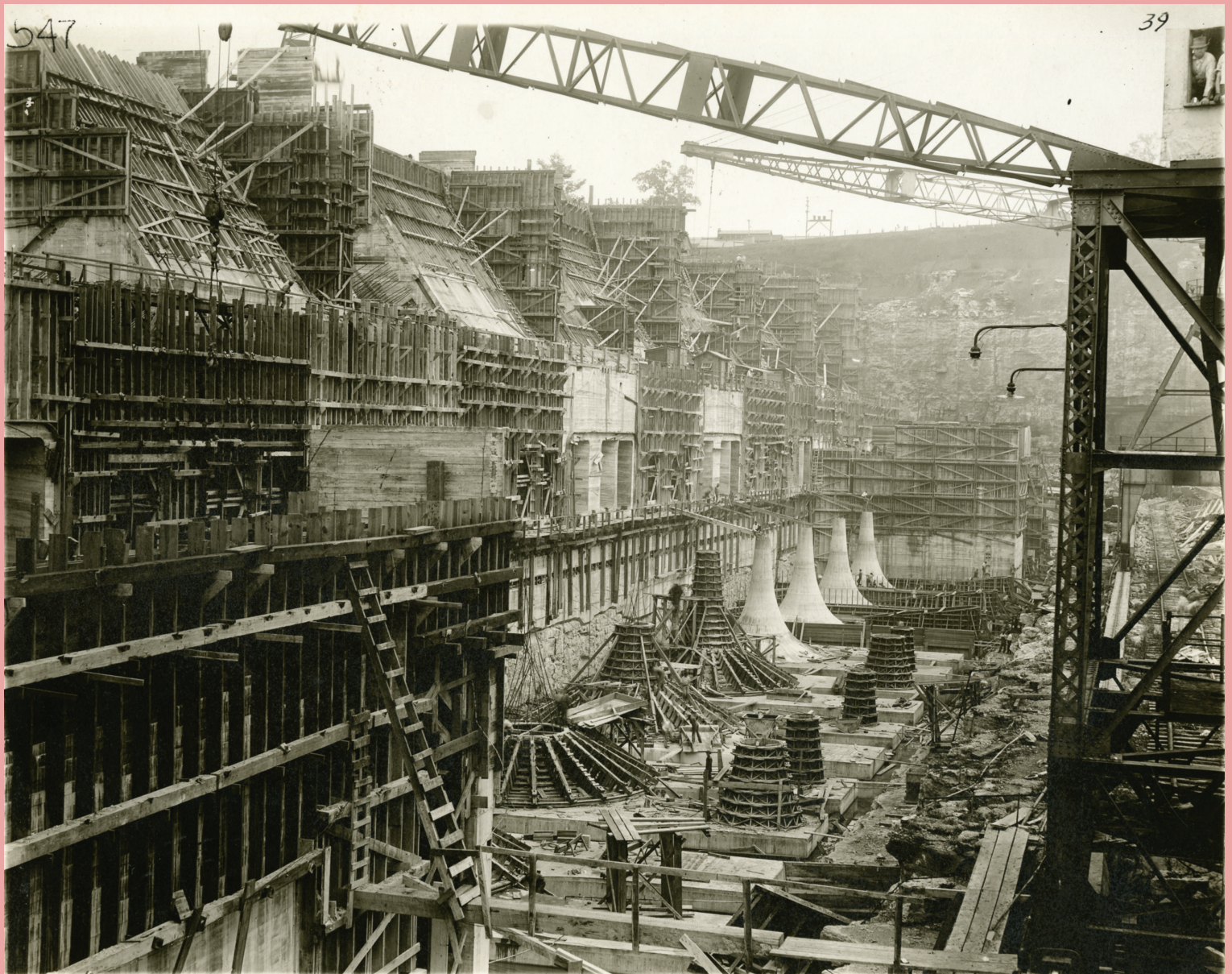
As the Corps of Engineers constructed the second canal system, hydroelectric power was gaining a foothold in the United States. In 1897, the newly-formed Muscle Shoals Power Company (MSPC) requested permission from Congress to build another canal and hydroelectric power plant at the Muscle Shoals.<sup>13</sup> While President McKinley signed a bill allowing MSPC to proceed in 1899, one of the provisions was that the secretary of war required payment for the use of the river’s water.<sup>14</sup> Because of this cost, MSPC did not move forward with its plan. Other private endeavors to develop hydroelectric facilities followed from N.F. Thompson and Associates, the Muscle Shoals Hydro-Electric Power

Company, and the Alabama Traction, Light, and Power Company (forerunner of Alabama Power).<sup>15</sup> None were successful. In addition to these private endeavors, in 1914 the Corps of Engineers proposed that the US government build four dams and a hydroelectric plant spread out along the Muscle Shoals in partnership with the Muscle Shoals Hydro-Electric Power Company. The company would lease the facilities for 100 years, repaying the cost of the dam to the US Government. This plan also failed.<sup>16</sup>

Despite the failure of these plans, when it came time to construct a hydroelectric facility to power nitrate

factories to produce explosives during World War I, the Muscle Shoals made the Interdepartmental Nitrates Board's short list.<sup>17</sup> The Muscle Shoals Association—a group of Alabama and Tennessee businessmen—lobbied hard for the facilities.<sup>18</sup> Alabama Senators John H. Bankhead and Oscar Underwood supported the project as well, recognizing the value of peacetime-produced nitrate fertilizer for Tennessee Valley farmers.<sup>19</sup> On September 28, 1917, Secretary of War Newton D. Baker announced that two nitrate plants, a hydroelectric dam, and a coal-fired steam plant, as well as roads, sewers, railroads, water plans, and residential communities (segregated, of course) would be built

Wilson Dam. UNIVERSITY OF NORTH ALABAMA ARCHIVES AND SPECIAL COLLECTIONS



in Sheffield, at the base of the Big Muscle Shoals.<sup>20</sup> Sixty thousand workers contributed to the massive undertaking of constructing the nitrate facilities and associated infrastructure, which saw little immediate use as the war ended a year after the project began.<sup>21</sup> As for the project's production of fertilizer during peacetime, one nitrate facility never operated correctly, and the other quickly grew outdated.<sup>22</sup>

The hydroelectric facility—Wilson Dam, completed in 1925—led to significant developments in power generation and improved navigability.<sup>23</sup> The Corps of Engineers employed over 18,000 workers to build the largest concrete dam and lock system ever constructed.<sup>24</sup> Power generation began at Wilson Dam on September 12, 1925, when three of the eighteen total generators planned for the power house became operational.<sup>25</sup> Three additional generators came online in 1926; by June of that year, the dam's production averaged 83,500KW.<sup>26</sup> In 1927, when the double lock system of Wilson Dam opened, navigating the Muscle Shoals became much easier, though until the construction of additional dams on the river in the 1930s “the problem” was not completely solved.<sup>27</sup>

With WWI over, no clear plan for the future of the dam and the nitrate facilities emerged, despite debates in Congress over proposals to purchase or lease the facilities from Henry Ford, Alabama Power, Newport Shipbuilding Corporation, and Dr. Charles Parsons, a chemist who served on the War Department's nitrate commission during WWI.<sup>28</sup> Ford's proposal gained the most national attention, prompting a real estate boom in the Shoals. Ford and his friend and collaborator Thomas Edison articulated a vision for development along the Tennessee River that blended small modern factories and farms, all powered by the clean hydroelectric power.<sup>29</sup> Senator George Norris of Nebraska, who chaired the Senate Committee on Agriculture and Forestry, stymied the proposals, believing the facilities should be used for the good of the people, not for private interests.<sup>30</sup> In the meantime, the War Department, which controlled the dam, sold the power to the Alabama Power Company.<sup>31</sup>

When Congress authorized the formation of TVA in 1933, it recognized that something serious needed to be done in the Tennessee Valley to prompt economic growth and environmental recovery. Already behind the nation in income levels, literacy rates, and electrification levels before the Great Depression, the Tennessee Valley had slid even further behind after 1929. Only 3% of farms in the valley had electricity and running water in 1933—and, according to 1930 numbers, 51% of valley residents

lived on farms.<sup>32</sup> Environmental problems also plagued the valley, including erosion of marginal farmland, the over-harvesting of forests, and unchecked forest fires.<sup>33</sup>

Congress charged TVA with improving navigability and flood control on the Tennessee River and its tributaries, producing cheap power, reforesting the valley, improving the agricultural and industrial economies, developing new fertilizers (and munitions during wartime), and conserving the valley's natural resources—putting Senator Norris' vision from the 1920s into action.<sup>34</sup> President Roosevelt supported Norris' vision as well, having advocated for the development of publicly owned utility companies to deliver power at lower rates than private companies while serving as governor of New York.<sup>35</sup> Roosevelt also saw TVA as “device to create hope, for the south and the nation, that economic recovery and a better life were within reach.”<sup>36</sup> The introduction of electricity across the rural landscape, the reduction of damaging floods, and the development of a diversified economy changed life for north Alabama residents. Since its creation over 90 years ago, TVA has generated electricity from hydroelectric dams; it manages 49 today.<sup>37</sup> TVA also has established coal-fired power plants, nuclear plants, natural gas plants, and solar farms.<sup>38</sup>

## INTERPRETATION

Since its beginning, TVA has consciously interpreted its own story through publications, films, and other media. Today, this interpretation also takes place in physical locations along the Tennessee River and its tributaries. Some hydroelectric sites have visitor centers, including Fontana Dam in North Carolina, Norris Dam in Tennessee, and Raccoon Mountain Dam, also in Tennessee. Others, including Wilson Dam in MSNHA, have outdoor interpretive displays about TVA's history and how it generates hydroelectric power.<sup>39</sup> Before the 9/11 attacks, the public had greater access to TVA's facilities; touring the dams and watching barges lock through were popular community activities. Today, access is far more restricted. To celebrate its 90th anniversary in 2023, however, TVA opened some facilities to limited tour groups of 20 people, each selected from thousands who entered a lottery.<sup>40</sup>

Interpretation also takes place online. TVA's website includes many resources about the agency's history, including a critical examination of how the construction of reservoirs for hydroelectric dams displaced tens of thousands of people—including poor tenant farmers who saw little or no compensation because they did not own their land.<sup>41</sup> Online, TVA documents the history of



Village School. ABRAHAM ROWE PHOTOGRAPHY

other power generation projects, including its coal-fired plants. Such interpretation, however, is focused more on the history of plant construction, what TVA is doing to move away from coal, and how it addresses the problem of coal ash today, rather than on the history of the environmental impact of the plants and the extraction of the coal necessary to keep them running.<sup>42</sup> While TVA does explore the fascinating story of the restoration of the Copper Basin in the 1980s on the website, the significant work TVA did in the 1960s to promote the protection of waterways during coal mining and the reclamation of strip-mined land through reforestation to “stabilize the soil and return the mine area to productive use” is absent.<sup>43</sup>

There are limitations to an energy organization interpreting its own history, but the story of the transformation of the Tennessee River is otherwise fragmented across the interpretive landscape, including in northwest Alabama. While many museums in MSNHA touch upon an aspect of the river’s story—e.g., the Native American connection to the river at the Florence Indian Mound Museum and the

role the river played in drawing early settlers to the region at Pope’s Tavern in Florence and the Old State Bank in Decatur—no museum or historic site specifically focuses on the impact that changing the shape and nature of the river had on the natural environment, nor how the power the river generates has transformed the region.

In exploring its river theme, MSNHA has stepped in to fill this interpretive gap. Since 2017, MSNHA has collaborated with the city of Sheffield and residents of Nitrate Village No. 1—constructed during the massive effort during WWI—to rehabilitate the village’s historic school, with the intention of interpreting the history of the Tennessee River and the impact of power generation on northwest Alabama at the site. The school, which will serve as a community center and event space, provides an opportunity to reach a variety of audiences using the space for different purposes. While much of the interpretation will focus on the construction of the nitrate facilities and TVA’s assumption of them during the 1930s due to the school’s place in those stories, grounding this story in the events that predate the 20th

century, as well as the changing understanding of the river outlined earlier, will be essential for a thoughtful and nuanced interpretation.

MSNHA's *The Tennessee River in Northwest Alabama* (2018) and an Alabama Humanities Alliance-funded companion traveling exhibit explored the story of the transformation of the Mussel Shoals to the Muscle Shoals and provides an interpretive framework for future projects, including the Nitrate 1 Village School. Utilizing images taken of the TVA and Works Progress Administration's archeological excavations prior to the flooding of the Wheeler and Pickwick reservoirs, the book opens with an exploration of the Indigenous relationship with the river. Using maps, drawings, engineering and architectural plans, and photographs the book then moves through the construction of the TC&D Railroad, the river's role in the Civil War, and the completion of the Muscle Shoals Canal. Along the way, the book explores the impacts these projects had on enslaved people, free Black communities after emancipation, and Indigenous Americans, as well as the role the projects played in expanding the industrial economy of the region after the Civil War. Such expansion resulted in a growing immigrant population. Driven by a large collection of Corps of Engineers photographs, the chapter on the construction of Wilson Dam and the nitrate facilities reveals the massive undertaking such projects represented. Constructing the dam of poured concrete (1,259,400 cubic yards were utilized) required that the Corps of Engineers essentially build the dam out of wooden frames first—you can still see the impressions

of them in the dam's concrete walls today. The dam also required tunneling under the river through the blue limestone rock foundation.<sup>44</sup> The chapter on TVA provides examples of the various projects undertaken in northwest Alabama, as well as the impacts such projects had on the quality of life for residents of the Muscle Shoals region and, in the case of the fertilizer project, globally. The experience of Black workers on both the WWI-related projects and at TVA is also considered. Opportunities for Black workers certainly existed, but as expected in the Jim Crow south, these opportunities were underpaid, often dangerous, and segregated.

Additional river-related educator resources and educational programs engage teachers and home-school parents. Since 2010, MSNHA has developed a collection of educator packets that provide historical context and learning activities for the three themes of MSNHA, many of its subthemes, and specific historic sites or events. There are two river-themed packets: one explores the people of the Tennessee River and the other explores wildlife and habitats found along the river and its many tributaries. MSNHA also participates in the Alabama History Institutes (AHI), an award-winning program sponsored by the Alabama Department of Archives and History.<sup>45</sup> Hosted around the state, the AHI workshops give educators the opportunity to learn more about teaching Alabama history through primary sources, with each workshop focusing on the unique stories of the host site. While the focus of the Florence and Decatur AHI workshops changes each year, the river always sits at the center of the content. In 2024, the Decatur Institute examined how Alabamians have used their waterways and included opportunities to learn about the environmental consequences of the damming of the Tennessee River, including an interpretive canoe trip on the West Fork of Flint Creek. As a result of the construction of Wheeler Dam, which turned the creek into a backwater, sedimentation has resulted in very unsafe levels of mercury, meaning the creek can no longer be used as a source of drinking water. Additionally, teachers learned how the pollution of the Flint Creek Watershed captured the attention of Rachel Carson while she worked at Wheeler Wildlife Refuge in the 1950s—the watershed is mentioned in *Silent Spring*.<sup>46</sup> In 2024, the Florence Institute focused on how WWI and the Great Depression impacted life in MSNHA, with the story of power generation sitting front and center.

MSNHA staff and graduate assistants also explore the river story through social media series such as “History Mysteries,” the MSNHA blog, and projects such as the

Tennessee River Exhibit. CARRIE BARSKE CRAWFORD





Tennessee RiverLine Community Engagement Workshop. CARRIE BARSKE CRAWFORD

Memphis and Charleston Railroad National Register Nomination, which the Keeper of the National Register listed in July 2024. Most recently, MSNHA historic resources manager Clayton Davis developed a series of interpretive panels focused on the evolution of the river to its current state as a series of power-generating reservoirs that will be installed in the city of Florence's new River Heritage Walk park.

MSNHA's interpretation of the river's story has, to date, focused primarily on the human role in changing the river's shape to suit our ever-evolving needs. When considered from many angles, the engineering feats accomplished in the Muscle Shoals region are exceptionally impressive. The history of the Muscle Shoals reminds us, however, that the generation of power—even so-called clean power—can have serious environmental consequences. In "Why Biological Readjustment" (1937), TVA's A.R. Cahn, chief of the Biological Readjustment Unit, wrote of the impact damming the river would have on its aquatic inhabitants. The picture he paints is grim: "with the

impounding of these waters, the native clam will be totally wiped out; they will not have a chance of survival because they are utterly unsuited anatomically and physiologically for the deep, still, warm, lake condition which will cover and surround them."<sup>47</sup> Luckily, Cahn's prediction did not come completely true, though the damming of the river had serious consequences for mussels.<sup>48</sup> Before the dams, the Muscle Shoals stretch of the river was home to 79 species of mussels—many of which were only found in the Muscle Shoals. To put this number in perspective, there are a total of 280 mussel species native to North America, meaning Muscle Shoals represented a significant proportion of species diversity.<sup>49</sup> Today, only 38 native species remain, and additional invasive species have entered the river ecosystem.<sup>50</sup> Mussels, while historically an excellent food source for humans and wildlife alike, also play an instrumental role in maintaining water quality, with each mussel filtering at least twelve gallons of water a day. While Alabama remains the most aquatically biodiverse state in the US, over 67 species of fish and mollusks have become extinct, and another 54



Memphis & Charleston Railroad Bridge. ABRAHAM ROWE

are threatened or endangered, many because of the damming of Alabama’s waterways.<sup>51</sup>

As part of the Tennessee RiverLine, “a vision for a continuous, multimodal system of trail experiences along the Tennessee River from its formation in Knoxville, TN, to its confluence with the Ohio River in Paducah, KY,” MSNHA is collaborating with communities along the river to think about how we share the story of the river in such a way that recognizes TVA’s significant accomplishments but also the complicated legacy of power generation for the natural environment.<sup>52</sup> As the Tennessee RiverLine begins to develop its interpretive strategy, MSNHA and the University of North Alabama’s public history program will play an instrumental role in shaping it, identifying key river themes and stories to share, community partners to engage with, and a range of interpretive methods, both traditional and modern. As this interpretative strategy of the history of power generation and the resultant changes in the landscape evolves, increasing engagement with scientists will help fill current interpretive gaps.

To that end, since 2021 MSNHA has been a part of the Tennessee River Basin Network. TRBN works to steward the Tennessee River Basin—one of the most aquatically biodiverse places in the world—connecting a diverse group of partners to share information, develop innovative approaches, and recognize points of collaboration.<sup>53</sup> These partners include state agencies, non-profits, land trusts, and TVA. As a result of engagement with TRBN, MSNHA is also now collaborating with the Paint Rock Forest Research Center. PRFRC is developing and implementing a new conservation model across the Southern Cumberland Mountains that better integrates human needs and resilient, biologically diverse landscapes.<sup>54</sup> The new relationship between MSNHA and PRFRC will help to shape the Tennessee RiverLine’s interpretive strategy, providing opportunities to share PRFRC’s research into Alabama’s biodiversity to a wider audience than they currently have the capacity to reach. Another potential partner, the Alabama Aquatic Biodiversity Center, founded in 2006, is working to conserve

and restore freshwater mollusk and fish species in Alabama's waters.<sup>55</sup> Sharing the stories of scientists who are working to address critical aquatic habitat loss, reintroduce native flora and fauna, remove unnecessary dams on tributaries, and combat invasive species helps to situate the story of power generation on the Tennessee River in a narrative that does not give primacy solely to human experience. Instead, the interplay between humans and the environment sits at the center.

A more nuanced and comprehensive interpretive strategy does not just help us think about the events of the past; it can also help to shape the future of power generation. Across the country, NHAs are engaged in contemporary conversations about environmental justice, water rights, land conservation, climate change, and clean(er) power. In MSNHA, much of this conversation is currently centered around TVA's expansion of solar power generation. A rapidly growing population in the TVA service area is putting pressure on the power system.<sup>56</sup> In 2023, TVA announced a \$15 billion investment between FY23–FY27 to increase power generation capacity by 3,800 megawatts, while at the same time moving towards a net-zero carbon future. Additionally, TVA intends to increase its solar production by 10,000 megawatts by 2035.<sup>57</sup> Such a commitment will result in the development of huge new solar farms across agricultural landscapes in the Tennessee Valley, which worries some residents. During a 2023 community meeting about a solar project in Moulton, Alabama, residents raised concerns about two projects—one led by TVA and the second by Urban Grid—that would turn 7,000 acres into solar farms in Lawrence County. Residents fear the projects “could impact local farmers’ livelihoods, the rural economy, and historical and natural landscapes.”<sup>58</sup> While solar certainly reduces carbon emissions, the infrastructure required results in massive amounts of waste at the end of the panels’ life cycle unless an effective system to maximize recoverable materials is in place.<sup>59</sup>

To complicate matters, this new infrastructure is also bringing manufacturing jobs to MSNHA. First Solar, an

Arizona-based company, is constructing a solar panel manufacturing facility in Lawrence County, in which Moulton is located. The plant is expected to create 715 manufacturing jobs, which Lawrence County desperately needs after the loss of 1,100 jobs when International Paper closed its facility in the county in 2014.<sup>60</sup> TVA helped to bring First Solar to Lawrence County, highlighting that it makes sense to build the panels in the places they will be used.<sup>61</sup> So while residents welcome new jobs, they remain concerned about the impact of solar on the rural landscape.

Looking at the history of power generation in MSNHA reminds us that while contemporary and future power infrastructure projects certainly benefit humans, they can have significant consequences in the world around us. Understanding the impacts of solar farms on ecosystems, wildlife habitats, avian migration, soil health, and stormwater runoff and water quality is an ongoing process requiring additional research.<sup>62</sup> At the same time, we must move quickly to source power from greener sources as the consequences of our past actions warm the globe. Providing historic context for these contemporary actions is certainly a contribution MSNHA can make to this conversation.

As historian Matthew Downs points out, while the 1923 damming of the Hetch Hetchy in California created an environmental uproar led by John Muir, “in Alabama no Muir arose to note the implications of the dam at Muscle Shoals, and no public discussion considered the long-term impact of such stark changes.”<sup>63</sup> When the Indigenous Americans’ “Mussel Shoals” became the “Muscle Shoals” we know today, our relationship with the Tennessee River forever changed. This does not mean, however, that we cannot chart a path forward that considers our significant natural resources and balances them against our very human needs. A thoughtful interpretation of the human accomplishments and environmental consequences of past power projects can help us to achieve this balance as we plan for the future. Doing so requires an alliance between public historians and environmental scientists, an effort well underway at MSNHA. 🌞

## ENDNOTES

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2. Tennessee Valley Authority, “About TVA,” <https://www.tva.com/about-tva> (accessed April 23, 2024).

3. National Park Service, “National Heritage Areas,” <https://www.nps.gov/subjects/heritageareas/index.htm> (accessed January 27, 2024).
4. Franklin County was connected to the river until 1867, when it split into Colbert and Franklin counties. The Muscle Shoals were actually a collection of shoals, including the Big Muscle Shoals, the Little Muscle Shoals, and the Elk River Shoals. Below the Muscle Shoals, between Florence and Waterloo, were the Colbert Shoals and the Bee Tree Shoals. Pools of calmer and deeper water sat at either end of each of the shoals. Two of these larger pools, Lambs Ferry and Bainbridge, became sites of ferry crossings. During dry periods, the water levels dropped very low on the shoals—sometimes just a few inches of water remained. This proved as challenging to shipping as the dangers posed by the high waters of the rainy season. Why the transformation from “Mussel Shoals” to “Muscle Shoals”? There isn’t a clear answer. Many early maps use the spelling “mussel,” clearly in reference to the bivalve. Today, some people claim the use of the spelling “muscle” reflects the need for strength to navigate the shoals. Another theory claims that “muscle,” once a common spelling for the bivalve, also refers to the mussels in the river. Whatever the reason, the increasingly common use of “muscle” instead of “mussel” is an excellent way to think about how different people thought about the river and what they needed most from it. For Indigenous people, mussels provided a food source. To Anglo-Americans, the might of the river provided a way to profit and to transform a region. Walter McFarland, “Resurvey of the Tennessee River from Brown’s Ferry to Florence, Alabama,” in *Report of the Secretary of War* (Washington: Government Printing Office, 1872), 495; Stuart McGregor, “The Mussels of Muscle Shoals,” *Alabama Heritage*, No. 64 (Spring 2002): 22.
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8. Kenneth Johnson, *Life in the Muscle Shoals* (Florence, AL: Bluewater Publishing, 2013), 23.
9. Thomas P. Abernathy, *The Formative Period in Alabama, 1815–1828* (Montgomery, AL: The Brown Printing Company, 1922), 68–69.
10. Gail King, Marty King, Lamar Marshall, and Larry Smith, “Chapter Two,” *North Alabama’s Tusculumbia, Courtland, and Decatur Railroad and Its Role During Cherokee Emigration/Removal Beginning in 1837* (Muscle Shoals, AL: Southwestern Anthropological Institute and Northwest Shoals Community College, 2009), 11.
11. Daniel Dupre, “Ambivalent Capitalists on the Cotton Frontier: Settlement and Development in the Tennessee Valley of Alabama,” *The Journal of Southern History*, Vol. 56, No. 2 (May 1990), 216; Leland Johnson, *Engineers on the Twin Rivers: A History of the U.S. Army Engineers Nashville District 1769–1978*, (Nashville: US Army Engineer District, 1978), 138.
12. In an 1836 report to the TC&D directors, David Deshler—board member, engineer and general superintendent of the railroad—provided a breakdown of the company’s investments, which included \$9,575 for “Negroes.” In a later entry documenting profits, Deshler includes an entry for “Negro property,” with a \$2,503.00 value likely derived from the sale of enslaved persons whose labor was no longer needed. David Deshler, “Third and Fourth Annual Reports of the Officers of the Tusculumbia, Courtland & Decatur Rail-road Company” (August 1, 1836) in King, *North Alabama’s Tusculumbia, Courtland, and Decatur Railroad*, 8–11; Johnson, *Engineers on the Twin Rivers*, 56, 126.
13. Judson King, *The Conservation Fight: From Theodore Roosevelt to the Tennessee Valley Authority* (Washington, DC: Public Affairs Press, 1959), 1.
14. King, *The Conservation Fight*, 2–3.
15. King, *The Conservation Fight*, 4, 9; Matthew Downs, *Transforming the South: Federal Development in the Tennessee Valley, 1915–1960* (Baton Rouge: Louisiana State Press, 2014), 13.
16. King, *The Conservation Fight*, 37–39.
17. J.K. Crain, “The Muscle Shoals Situation,” *Army Ordnance* Vol. 3, No. 13 (Summer 1922): 145–146. [https://books.google.com/books?id=trbmAAAAMAAJ&pg=RA1-PA145&lpg=RA1-PA145&dq=national+defense+act+of+1916+section+124&source=bl&ots=xr5fNjMrWZ&sig=eh\\_YGXPzMUkBXDMLGIZtTTVIQKI&hl=en&sa=X&ved=0ahUKewj-fK7wITVAhWEED4KHam9CSUQ6AEIMjAC#v=onepage&q=national%20defense%20act%20of%201916%20section%20124](https://books.google.com/books?id=trbmAAAAMAAJ&pg=RA1-PA145&lpg=RA1-PA145&dq=national+defense+act+of+1916+section+124&source=bl&ots=xr5fNjMrWZ&sig=eh_YGXPzMUkBXDMLGIZtTTVIQKI&hl=en&sa=X&ved=0ahUKewj-fK7wITVAhWEED4KHam9CSUQ6AEIMjAC#v=onepage&q=national%20defense%20act%20of%201916%20section%20124).
18. Downs, *Transforming the South*, 14. Thomas Hager’s description of this massive undertaking reveals just how much the project transformed the region, drawing tens of thousands of workers to the region—doubling the population of Florence, Sheffield, and Tusculumbia in a single year. The two facilities occupied a total of 3,900

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19. Downs, *Transforming the South*, 21.
  20. Crain, “The Muscle Shoals Situation,” 146; Preston J. Hubbard, *Origins of the TVA* (Nashville: Vanderbilt University Press, 1961), 3.
  21. Downs, *Transforming the South*, 22.
  22. Hagar, *Electric City*, 37, 47.
  23. Wilson Dam was listed as a national historic landmark in 1966 based on the documentation completed by Horace J. Sheely, Jr., with a form update by the Historic Sites Survey in 1976. Polly Rettig, “Wilson Dam,” National Register of Historic Places Nomination Form (February 1976), <https://npgallery.nps.gov/NRHP/AssetDetail/96094e34-68d1-4b3e-9083-fb09d24c625a>.
  24. Patricia Bernard Ezzell, “Wilson Dam” *Encyclopedia of Alabama*, <https://encyclopediaofalabama.org/article/wilson-dam-and-reservoir/> (last modified December 8, 2023).
  25. King, *The Conservation Fight*, 143.
  26. Today, the dam has 21 generators with a summer net capacity of 663MW, the second largest capacity in the TVA system after the Racon Mountain Pumped Storage Plant outside of Chattanooga. David P. Billington, Donald C. Jackson, Martin V. Melosi, *The History of Large Federal Dams: Planning, Design, and Construction in the Era of Big Dams*, (Denver: US Department of the Interior, Bureau of Reclamation, 2005): 118–119; Tennessee Valley Authority, “Wilson Dam,” <https://www.tva.com/energy/our-power-system/hydroelectric/wilson> (accessed March 20, 2024).
  27. Billington, “The History of Large Federal Dams,” 122.
  28. Reynold M. Wik, *Henry Ford and Grass-roots America* (Ann Arbor: University of Michigan Press, 1973), 110; Leslie S. Wright, “Henry Ford and Muscle Shoals,” *Alabama Review*, Vol. 14, No. 3, (July 1961): 201; King, *The Conservation Fight*, 99–103; Richard Lowitt, *George Norris: The Persistence of a Progressive, 1913–1933* (Urbana: University of Illinois Press, 1971), 201; *Muscle Shoals: Hearings Before the Committee on Agriculture and Forestry, United States Senate, Sixty-Seventh Congress, Second Session on S. 3420* (Washington, D.C.: Government Printing Office, 1922). 423–424.
  29. Hagar, *Electric City*, 58–67, 78–80.
  30. Richard Lowitt, “George Norris and Agricultural Relief During the Twenties,” *Nebraska History* Vol. 36 (1955): 172–182, [https://history.nebraska.gov/wp-content/uploads/2017/12/doc\\_publications\\_NH1955AgRelief.pdf](https://history.nebraska.gov/wp-content/uploads/2017/12/doc_publications_NH1955AgRelief.pdf).
  31. Lowitt, *George Norris*, 333.
  32. Patricia Ezzell, “Tennessee Valley Authority in Alabama,” *Encyclopedia of Alabama*, <http://www.encyclopediaofalabama.org/article/h-2380> (last modified April 24, 2015); Gordon R. Clapp, “The Meaning of TVA,” in *TVA: The First Twenty Years*, ed. Roscoe C. Martin (Tuscaloosa: University of Alabama Press, 1956), 2; Andra Martens, Cathleen Collett, Phil Thomason, Rebecca Hightower, “Historic Resources of the Tennessee Valley Authority Hydroelectric System, 1933–1979,” National Register of Historic Places (November 11, 2015), E-21.
  33. Patricia Ezzell, “Tennessee Valley Authority in Alabama,” W. H. Droze, “TVA and the Ordinary Farmer,” *Agricultural History*, Vol. 53, No. 1, (January 1979): 189, <https://www.jstor.org/stable/3742869>.
  34. Ezzell, “Tennessee Valley Authority in Alabama.”
  35. William M. Emmons, III, “Franklin D. Roosevelt, Electric Utilities, and the Power of Competition,” *The Journal of Economic History*, Vol. 53, No. 4 (December 1993): 884, <https://www.jstor.org/stable/2122643>.
  36. Erwin C. Hargrove, *Prisoners of Myth: The Leadership of the Tennessee Valley Authority, 1933–1990* (Princeton, NJ: Princeton University Press, 1994), 22.
  37. “Tennessee Valley Authority, River Management,” <https://www.tva.com/about-tva/learn-about-tva/river-management> (accessed April 18, 2024).
  38. Tennessee Valley Authority, “Our Power System,” <https://www.tva.com/energy/our-power-system> (accessed April 9, 2024).
  39. Tennessee Valley Authority, “TVA Visitor Center Opening for 2019 Season on April 6,” <https://www.tva.com/newsroom/press-releases/tva-visitor-centers-opening-for-2019-season-on-april-6> (accessed March 18, 2024).
  40. “Tennessee Valley Authority Offers Rare Public Tours of Some of Its Dams” *The Waterways Journal Weekly*, May 15, 2023, <https://www.waterwaysjournal.net/2023/05/15/tennessee-valley-authority-offers-rare-public-tours-of-some-of-its-dams/>.
  41. Tennessee Valley Authority, “The Lost Towns of Pickwick,” <https://www.tva.com/about-tva/our-history/built-for-the-people/the-lost-towns-of-pickwick> (accessed March 18, 2024). Because they rented land, Black and White tenant farmers and sharecroppers did not often receive payouts when TVA took property to create the reservoirs through eminent

- domain, meaning they had to leave their homes and start over somewhere else with few resources at their disposal. TVA connected impacted families to resources provided by other federal programs through their TVA Reservoir Family Removal Section but they rarely offered any direct aid of their own. Melissa Walker, “African Americans and TVA Reservoir Property Removal: Race in a New Deal Program” *Agricultural History*, Vol. 72, No. 2 (Spring 1998): 417–428, <https://www.jstor.org/stable/3744390>.
42. Tennessee Valley Authority, “Coal,” <https://www.tva.com/energy/our-power-system/coal> (accessed March 20, 2024); Tennessee Valley Authority, “Plants of the Past,” <https://www.tva.com/energy/our-power-system/coal/plants-of-the-past> (accessed April 1, 2024). In “Kingston Slated for Retirement,” TVA outlines a plan for how this historic coal plant is going to be reimagined as a new kind of “energy complex consisting of natural gas, solar, and battery storage.” After the retirement of Kingston, TVA will only manage three coal plants, having retired ten already. Tennessee Valley Authority, “Kingston Slated for Retirement,” <https://www.tva.com/the-powerhouse/stories/kingston-slated-for-retirement> (accessed April 9, 2024).
  43. Not only did TVA require the companies they got coal from to replant the land, they also showed them how to do it, planting demonstration plots using a variety of trees and other vegetation to maximize recovery. In the 1960s, their work also helped secure state legislation in their service area regarding strip mining reclamation. “TVA is Projected Into ‘New Generation’ of Problems,” *The Jackson Sun* [Jackson, TN] (January 1, 1968): 16–17, <https://www.newspapers.com/image/282160209/>.
  44. “A Dam for the People,” *TVA.com*, <https://www.tva.com/about-tva/our-history/built-for-the-people/a-dam-for-the-people> (accessed July 22, 2024).
  45. “Alabama Department of Archives and History,” <https://archives.alabama.gov/teach-learn/professional-development/alabama-history-institutes.aspx> (accessed July 22, 2024).
  46. Thomas V. Ress, *Wheeler National Wildlife Refuge* (Mount Pleasant, SC: Arcadia Publishing, 2019), 99.
  47. Arthur Cahn, “Why Biological Readjustment,” July 20, 1937, 14, File 77-37, Forestry Relations Box 280, Tennessee Valley Authority Collection, National Archives, Atlanta.
  48. The damming of the river was not the only human activity that had negative consequences for mussels. Over-harvesting for the pearl button industry also impacted mussel numbers and diversity. In “Why Biological Readjustment,” Cahn doesn’t mention why the loss of mussels is significant from a biological perspective, but rather takes an economic perspective, as those “trained through life for the peculiar necessities and expertnesses [sic] of this strange method of livelihood [sic], will be out of work.” Cahn “Why Biological Readjustment,” 14; “Fresh Water Mussels,” *Awareness: The Official Blog of Alabama Water Watch* (blog), August 18, 2023, <https://awwblog.auburn.edu/2023/08/18/freshwater-mussels/>.
  49. McGregor, “The Mussels of Muscle Shoals,” 16, 21.
  50. Jeffrey Garner and Stuart McGregor, “Current Status of Freshwater Mussels (Unionidae, Margaritiferidae) in the Muscle Shoals area of Tennessee River in Alabama (Muscle Shoals revisited again),” *American Malacological Bulletin* Vol. 16, No. 1 (January 2001): 155–170.
  51. Alabama Aquatic Biodiversity Center, “Alabama Aquatic Biodiversity Facts,” <https://www.outdooralabama.com/aquatic-biodiversity-center/aabc-facts> (accessed March 19, 2024).
  52. The Tennessee RiverLine, “Tennessee RiverLine,” <https://www.tnriverline.org/> (accessed March 22, 2024).
  53. Tennessee River Basin Network, “About,” <https://www.trbnetwork.org/about> (accessed April 18, 2024).
  54. Paint Rock Forest Research Center, “About,” <https://paintrock.org/board-of-directors/> (accessed April 23, 2024).
  55. “Alabama Aquatic Biodiversity Facts.”
  56. Josh Howarth, “20 Fastest Growing Cities in the US (2024),” December 1, 2023, <https://explodingtopics.com/blog/fastest-growing-cities>; Paul Gattis, “Is Today’s Huntsville’s Last as Nation’s Best City to Live In? New Rankings Out Soon,” May 15, 2023, <https://www.al.com/news/2023/05/is-today-huntsvilles-last-as-nations-best-city-to-live-in-new-rankings-out-soon.html>.
  57. Tennessee Valley Authority, “TVA Plans to Invest \$15 Billion Over the Next Three Years to Meet Region’s Growth,” August 24, 2023 [https://www.tva.com/newsroom/press-releases/tva-plans-to-invest-15-billion-over-the-next-three-years-to-meet-region-s-growth#:~:text=Press%20Releases,TVA%20Plans%20to%20Invest%20\\$2415%20Billion%20Over%20the,Years%20to%20Meet%20Region’s%20Growth&text=%2425%20billion%20invested%20in%20TVA’s,in%20the%20past%2010%20years.&text=Building%20about%203%2C800%20megawatts%20of,of%20solar%20energy%20by%202035](https://www.tva.com/newsroom/press-releases/tva-plans-to-invest-15-billion-over-the-next-three-years-to-meet-region-s-growth#:~:text=Press%20Releases,TVA%20Plans%20to%20Invest%20$2415%20Billion%20Over%20the,Years%20to%20Meet%20Region’s%20Growth&text=%2425%20billion%20invested%20in%20TVA’s,in%20the%20past%2010%20years.&text=Building%20about%203%2C800%20megawatts%20of,of%20solar%20energy%20by%202035). TVA is also expanding capacity in other areas. Nuclear energy makes up about 40% of TVA’s current energy portfolio. As part of a multinational corporate effort, TVA is exploring the construction of advanced nuclear reactors, which improve upon earlier designs and often have a smaller generating capacity (up to 300 megawatts versus 1,000 megawatts). While TVA has not yet built one of these new reactors, they are

- working through the process of preparing to do so with the Nuclear Regulatory Commission (NRC) on a site on the Clinch River next to the Oak Ridge Reservation in Tennessee. As with the expanded solar project, there are concerns about the consequences of an expanded nuclear program. For example, Steve Smith, the executive director of the Southern Alliance for Clean Energy, has expressed concerns about the environmental impact of mining of nuclear material and its disposal. See, Tennessee Valley Authority, “TVA Board Authorizes New Nuclear Program to Explore Innovative Technology,” <https://www.tva.com/newsroom/press-releases/tva-board-authorizes-new-nuclear-program-to-explore-innovative-technology> (February 10, 2022); Tennessee Valley Authority, “Advanced Nuclear Solutions,” <https://www.tva.com/energy/technology-innovation/advanced-nuclear-solutions> (accessed March 14, 2024); Hope McAlee, “TVA Partnership to Design Nuclear Reactor for Clinch River Site,” *WATE 6 News*, March 23, 2023 <https://www.wate.com/news/tennessee/tva-to-make-announcement-on-future-of-nuclear-energy/>; Office of Public Affairs, Nuclear Regulatory Commission, “NRC Completes Environmental Review for Clinch River Early Site Permit,” *NRC News*, April 8, 2019, <https://www.nrc.gov/reading-rm/doc-collections/news/2019/19-019.pdf>; Vinay Simlot, “TVA Looks for Feedback on New Clinch River Nuclear Program,” *10News*, February 10, 2022, <https://www.wbir.com/article/news/local/tva-launches-new-nuclear-program-for-smaller-modular-reactors/51-bdee55e6-bb47-4ab7-b5da-6af2798bf09a>.
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  63. Downs, 38.