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# Radioactive Dixie: A History of Nuclear Power and Nuclear Waste in the American South, 1950-1990

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RADIOACTIVE DIXIE: A HISTORY OF NUCLEAR POWER AND NUCLEAR WASTE  
IN THE AMERICAN SOUTH, 1950-1990

by

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Bachelor of Arts  
University of Arkansas, 2008

Master of Arts  
University of South Carolina, 2012

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Submitted in Partial Fulfillment of the Requirements

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## DEDICATION

For Dean and my family.

## ACKNOWLEDGEMENTS

Distance runners and graduate students share common ground. Both enterprises require long hours, if not physically alone, then alone with your own thoughts. Those thoughts often rebel against the intended purpose—five hundred words appears good enough and twelve miles rather than fifteen might suffice for now, but accomplishing big goals requires a kind of fortitude to override those signals and to suffer well. Of course, running thousands of miles and writing hundreds of pages are rewarding, even when the end result does not match the original vision. While these accomplishments require individual will and personal sacrifice, if we are lucky, our family, friends, mentors, and peers sustain us. Long before the first inkling of this project materialized, I received tremendous support and inspiration, and those forces have only grown in the last few years.

This project would not have been possible without the generous support of the University of South Carolina’s College of Arts and Sciences, especially Mary Anne Fitzpatrick, USC’s Office of the Vice President for Research, USC’s Institute for Southern Studies, USC’s Department of History, the National Science Foundation and American Society for Environmental History for travel grants, the Kentucky Historical Society, the Women in Technology History group, and the Rachel Carson Center and the University of Wisconsin-Madison for support to attend the Anthropocene Slam in 2014.

I would also like to thank the University of South Carolina’s Department of History. Although I’ve considered many different paths in life, the decision to attend

the University of South Carolina has been one decision I have not questioned. The faculty's guidance, along with the friendships forged at USC, have proven far more meaningful than I could have imagined.

A special thanks goes to my dissertation director Kent Germany. He has devoted an astounding amount of time guiding me through the dissertation process. While his editorial and scholarly feedback have been invaluable, he gave me enough freedom to shape the project early on and provided the necessary encouragement to sustain the project through various hurdles. From the first year at USC, I had a gut instinct that he was the right mentor, and I'm thankful he stuck with me. Whether I proposed studying southern wrestling, police brutality, or nuclear power, his approach provided a kind of scholarly sustenance that buoyed me through many different ways of exploring southern history. Besides being a genuinely good person and a great mentor, he also provides the best marginal comments—ranging from the comic to the moving. Sometimes we get to know one another through strange ways, in this case, comment bubbles.

I would also like to thank the other members of my dissertation committee: Ann Johnson, Marjorie Spruill, Thomas Lekan, and Robert Brinkmeyer. Ann Johnson gave me the confidence and the guidance necessary to dive into the history of technology midway through graduate school. Adopting a new field has not been easy, and I couldn't have done it without her. She has been an important mentor to so many graduate students, and I'm glad she thought adopting the “southern nukes chick” label wasn’t crazy after all.

Marjorie Spruill has been a phenomenal mentor, who gave me much-needed encouragement and constructive feedback in her graduate seminar. She also gave me the

opportunity to work as her research assistant, where I learned the ropes of oral history transcription. More importantly, Marjorie's kindness and intellect continue to inspire me.

Likewise, Thomas Lekan, the department's resident environmental history, offered encouragement during the project's earliest stages and has been a wonderful resource for understanding the field. Like the history of technology, I came to environmental history late in the game, and I appreciate Tom's generosity and willingness to lend his keen perspective to the dissertation.

Finally, I'd like to thank Robert Brinkmeyer for his long-standing support and agreement to serve on the committee. I first met Bob as an undergraduate at the University of Arkansas. Bob upended everything I thought I knew and sparked an interest in southern history, culture, and literature. His style of teaching seemed so radical yet so organic. I've been fortunate enough to take an independent study and a graduate seminar with Bob, and the conversations, friendships, and books from those courses run through it all.

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I'd also like to thank Lauren Sklaroff for her tremendous support and her guidance. Larry and Lauren, together, advocated for me at a critical hour in graduate school. Beyond that, I've learned so much from Lauren as her student and as her TA, and I've always respected her knack for giving meaningful feedback and for encouraging students to do more.

I would be remiss if I failed to thank other faculty and staff at USC. A special thanks goes to Matt Childs. Matt's graduate seminar and the time spent as his TA are among some of my best grad school experiences. You are the Yoda to many, and I hope you know that. Dean Kinzley, thank you for your unfailing support, leadership, and wit. The graduate students at USC have been well-served by you. Thanks should also be extended to Pat Sullivan, whose guidance and scholarship, inspires and gives us all a model for making our work matter. Don Doyle, thank you for your support and for allowing me to serve as your research assistant. The experience taught me about the depth of knowledge required to write great historical scholarship. Mark Smith, thank you for the valuable feedback and encouragement during the project's first stage. Thanks to Emily Brock for her support as I initially explored environmental history. Also, thanks should go to Bob Ellis in USC's Institute for Southern Studies.

Several other people have played important roles in my academic career. Among them is Debra Rae Cohen. I took three courses with DRC at the University of Arkansas, and like Bob Brinkmeyer's classes, Debra Rae inspired and challenged me. The rock critic turned professor made me a lot more convinced that college wasn't such a bad idea, and she's continued to guide me at the University of South Carolina. I'd also like to thank Lynda Coon. Her undergraduate courses helped get me back on track after a

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A special thanks to the archivists and staff at a number of institutions: Maureen Hill and the National Archives and Records Administration (Morrow, Georgia), the Lyndon Johnson Presidential Library, UT-Austin's Briscoe Center, Tulane University's Louisiana Research Collection, Loyola University (New Orleans), UT-Chattanooga, University of Mississippi, Mississippi Department of Archives and History, Jimmy Carter Presidential Library, UNC-Chapel Hill's Wilson Library, South Carolina Department of

Archives and History, South Carolina Political Collections, Florida's Department of Archives and History, Louisiana's Department of Archives and History, University of Kentucky's Special Collections, and Kentucky's Department of Archives and History.

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brothers, Jay and Alex, for their encouragement and for giving me an early version of peer review. Those denouncements of my comedic skills have made me a sharper thinker, I think. More than that, the support and inspiration they've provided has been critical. I'd also like to thank my in-laws, Hallie and Bill Clement, whose kindness and good-spiritedness is a great source of light in my life. During the writing process, both of my grandmothers, Bonnye Peel and Margaret Peyton, passed away, and I'd like to thank them for their roles in my life. Even when I was alone typing away, my family felt near.

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## ABSTRACT

“Radioactive Dixie: A History of Nuclear Power and Nuclear Waste in the American South, 1950-1990,” examines the political, social, cultural, economic, environmental, and technological dimensions of the nuclear industry in the American South. Today, the US South contains more nuclear reactors than any other region and much of the nation’s radioactive waste. In “Radioactive Dixie,” I argue that this regional distinction resulted from a decades-long effort by southern politicians, industry figures, and government officials to transform the American South into a nuclear-oriented region. Waving the atomic talisman, the nuclear industry served as one pivotal part in a larger project of regional modernization, which intended to transform the South’s economy and its identity. And yet, despite the promises of progress through nuclear things, the American South’s transformation into a new nuclear South met a surprising degree of resistance, prompting debates about energy, the environment, corporate and government accountability, and risk. While some historians have called for an end to southern history, “Radioactive Dixie” demonstrates the lasting relevance of regional frameworks, and why studying a region’s energy system informs national and global issues concerning energy and the environment. By studying the forces that shaped nuclear technology development in the South and uniting top-down perspectives with local experiences, this study illustrates the uneven, contested process of modernization in the region. “Radioactive Dixie” shifts the focus away from metropolitan areas to rural communities—to the people and the places near nuclear reactors that power sprawling, energy-hungry cities.

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## LIST OF ABBREVIATIONS

AEC .....	Atomic Energy Commission
APL.....	Arkansas Power & Light
BNFP.....	Barnwell Nuclear Fuel Plant
CRBR.....	Clinch River Breeder Reactor
EIS .....	Environmental Impact Statement
EPA.....	Environmental Protection Agency
ERDA .....	Energy Research Development Administration
FOIA.....	Freedom of Information Act
FERC .....	Federal Energy Regulatory Commission
LP&L.....	Louisiana Power & Light
MP&L.....	Mississippi Power & Light
NEPA.....	National Environmental Protection Act
NRC.....	Nuclear Regulatory Commission
MSU .....	Middle South Utilities
PSC .....	Public Service Commission
SINB .....	Southern Interstate Nuclear Board
SINC.....	Southern Interstate Nuclear Compact
SSEB.....	Southern States Energy Board
TVA.....	Tennessee Valley Authority

TMI.....Three Mile Island

## INTRODUCTION

All over Alabama, the Lamps are out.  
--James Agee, *Let Us Now Praise Famous Men*

The guards watched Darryl Malek-Wiley through binoculars on August 6, 1977. Standing in the searing Alabama heat, Wiley was the lone protestor in Dothan that day. The Catfish Alliance's solitary representative in southern Alabama embraced their motto of "No Nuke's Y'all" and put on his one man show. Standing across from Alabama Power & Light's Farley nuclear plant, Wiley released one-hundred balloons into the air. The plant's "beefed up security force" prepared for a storming of the gates that never occurred.<sup>1</sup> Instead, as Wiley described decades later, the event amounted to "just me and this trailer full of balloons."<sup>2</sup> On the anniversary of the atomic bombing of Hiroshima, Japan, anti-nuclear activists throughout the American South released colored balloons.<sup>3</sup> Activists affixed balloons with warnings about radiation and gathered outside of the region's nuclear power plants. Through the balloon release, activists observed past

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<sup>1</sup> "Balloons Released in Nuclear Protest," *The Tuscaloosa News*, August 7, 1977.

<sup>2</sup> Darryl Malek-Wiley, Interview by author, June 22, 2013 (recording in author's possession).

<sup>3</sup> Ibid.

horrors and protested an atomic powered future. This future seemed all too real in 1977. Across the region, nuclear power plants were under construction, with some already sending power to the grid. If advocates viewed nuclear reactors as a valuable source for employment and cheap, plentiful power, others saw an emerging tomb over the American South. Looking back, Wiley described the region's anti-nuclear dissenters as "young, idealistic, and didn't have a clue."<sup>1</sup> But in 1977, the atomic threat combined with a gnawing dread about a changing region. The South now had shopping malls, air conditioners, and shag carpet like everybody else, but these trappings rang hollow for some. The long-standing appeals to progress, modernity, and a "New South," the century-long call for regional redemption, suddenly appeared misguided and even a little sinister. The balloon spectacle in August 1977 meant more than a remembrance or a protest against an energy source then; the act was a battle cry in the fight over the modern South's future.

"Radioactive Dixie: A History of Nuclear Power and Nuclear Waste in the American South, 1950-1990," examines the political, social, cultural, economic, environmental, and technological dimensions of the nuclear industry in the American South. Today, the South contains more nuclear reactors than any other region and much of the nation's radioactive waste. I argue that this regional distinction resulted from a decades-long effort by southern politicians, industry figures, universities, and government officials to transform the American South into a nuclear-oriented region. Waving the atomic talisman, the nuclear industry served as one pivotal part in a larger project of

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<sup>1</sup> Darryl Malek-Wiley, Interview with author, June 22, 2013.

regional modernization. From this purview, bomb plants and nuclear reactors promised to expand the South's economy and help refashion its identity.

Technology, however, cannot make history itself. As historian David Nye has explained, machines are not “like meteors,” that “arrive unbidden” and bring about “impacts.”<sup>2</sup> Nuclear reactors and energy systems are shaped by a variety of forces—human and non-human. Society, politics, culture, and the environment all play important roles in the creation, management and regulation, and interpretation of nuclear technology.<sup>3</sup> The American South’s nuclear history matters not because reactors marched through the region wreaking havoc, but rather because, as David Nye put it, energy systems are “the outcomes of complex negotiations between ordinary people in the past.”<sup>4</sup>

Despite the promise of progress, the calls for a new, nuclear South met a surprising degree of resistance from citizens. Modern environmentalism and the energy crisis created ripples across the globe, and in the South, these trends combined with a growing sense of unease about the region’s embrace of “nuclear things” and its

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<sup>2</sup> David E. Nye, *Consuming Power: A Social History of American Energies* (Cambridge, Mass.: MIT Press, 1998); James C. Williams, “Understanding the Place of Humans in Nature,” in Stephen H. Cutcliffe and Martin Reuss, eds., *The Illusory Boundary: Environment and Technology in History* (Charlottesville: University of Virginia Press, 2010), 20-21; Wiebe E. Bijker, Thomas Parke Hughes, and T. J Pinch. *The Social Construction of Technological Systems New Directions in the Sociology and History of Technology*. Cambridge, Mass.: MIT Press, 1987.

<sup>3</sup> Nye. 5.

<sup>4</sup> Nye, *Consuming Power*, 11.

adjustment to larger transformations.<sup>5</sup> From the 1960s to 1980s, as utilities built more nuclear plants and industry buried more radioactive waste in the South, debates about energy and the environment became headline news, letters poured into the offices of elected officials, and South Carolina's nuclear waste dump even elicited a mention on *Saturday Night Live*. A new class of moderate southern governors, including Jimmy Carter and Bill Clinton, broke rank from their predecessors and challenged the pro-nuclear agenda from decades past. While the accident at Pennsylvania's Three Mile Island in 1979 is generally portrayed as the defining moment in the history of commercial nuclear power in the United States, in the American South, it shared the spotlight with the Barnwell Nuclear Fuel Plant, Grand Gulf Unit 1, and the Clinch River Breeder Reactor.

And yet, in recent years, historians have emphasized the “naturalization” of energy production, where power systems merge with landscapes in our mind.<sup>6</sup> Electricity comes from some unknown distant place, travels through the grid, and delivers a reliable product. Historians Richard Hirsh and Benjamin Sovacool have argued that electrical infrastructures “have essentially become invisible.”<sup>7</sup> Only when infrastructures fail do

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<sup>5</sup> Hecht, “The Power of Nuclear Things,” *Technology and Culture* 51, No. 1 (January 2010): 1-30.

<sup>6</sup> Richard F. Hirsh and Benjamin Sovacool, “Wind Turbines and Invisible Technology: Unarticulated Reasons for Local Opposition to Technology,” *Technology and Culture* 54, No. 4 (October 2013), 705-734. David Nye, *Consuming Power*, 7-8; James C. Williams, “Understanding the Place of Humans in Nature.”

<sup>7</sup> Richard F. Hirsh and Benjamin Sovacool, “Wind Turbines and Invisible Technology: Unarticulated Reasons for Local Opposition to Technology,” *Technology and Culture* 54, No. 4 (October 2013), 719.

these systems take on heightened visibility.<sup>8</sup> But as Paul Edwards notes, “mature technological systems,” like energy grids rarely have major hiccups, and in general, this encourages a kind of mental distance between power sources and power usage.<sup>9</sup> While this conceptualization might reflect contemporary attitudes, the past suggests a markedly different scenario. Hirsh and Sovacool have characterized more recent opposition to wind turbines as “unarticulated,” but history can offer rich and vivid articulations of popular attitudes about energy systems. “Radioactive Dixie” demonstrates that even southerners—not typically known for their engagement in such topics—engaged deeply in energy issues during the 1970s and 1980s. In fact, the energy crisis and nuclear power controversies produced a torrent of constituent correspondence and grassroots activism, dispelling any notion that energy systems in modern America have served as mere backdrops.

Studying the history of nuclear power and radioactive waste illustrates the ways in which energy infrastructure, and the disposal systems required by it, were hyper-visible for a period of time. In the American South, the massive nuclear building spree and a booming radioactive waste business, highlighted dilemmas about energy and the environment, but also provoked bigger conversations about democracy, risk, accountability, poverty, and power. Whether startled by rising electric bills or by the cooling tower next door, for a time, people in the South grappled with questions about energy, technology, and the environment. Undoubtedly, the risks surrounding nuclear

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<sup>8</sup> Paul N. Edwards, “Infrastructure and Modernity: Force, Time, and Social Organization in the History of Sociotechnical Systems,” in Thomas J. Misa, Philip Brey, and Andrew Feenberg, eds., *Modernity and Technology* (MIT Press, 2004).

power encouraged widespread fear and skepticism about its safety, far more pronounced during the industry's infancy than now.<sup>10</sup> But as this study shows, interpretations of the region's nuclear industry were also grounded in southern history and in local history. The South's nuclear controversies do share commonalities with other places—whether in California, France, or Russia, but they are arguably more meaningful when situated in local and regional contexts.

While some historians have called for an end to southern history, “Radioactive Dixie” demonstrates the lasting relevance of regional frameworks.<sup>11</sup> At the very least, the justification for a regional framework comes from historical actors themselves. Politicians, industry figures, and southern universities coordinated their efforts to obtain funding from the Atomic Energy Commission and laid the groundwork for the nuclear building spree that occurred in the 1970s. Those people and their institutions, as I demonstrate, viewed this project as a regional one, which promised to give the American South equality with other places, if not supremacy in certain areas. A favorable environment, with plentiful water and sparsely populated land, gave southern utility companies few initial barriers to constructing nuclear plants. In the 1950s, southern states banded together to attract industry but also to rewrite radiation regulatory laws in order to

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<sup>10</sup> The decrease in heightened fears may be attributable to the “technological momentum” achieved after decades of operation and broad similarities between reactors (although variation exists). See Thomas P. Hughes, “Technological Momentum,” in Merritt Roe Smith and Leo Marx, eds. *Does Technology Drive History?: The Dilemma of Technological Determinism* (Cambridge, Mass: MIT Press, 1994), 101-114; Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins University Press, 1983), 140-174.

<sup>11</sup> Matthew D. Lassiter, and Joseph Crespino, “The End of Southern History,” in Matthew Lassiter and Joseph Crespino, eds., *The Myth of Southern Exceptionalism* (Oxford University Press, 2010).

preserve “atomic rights.”<sup>12</sup> By the late 1970s, however, the southern president and nuclear expert, Jimmy Carter, devoted much of his presidency to stopping two nuclear projects in the South. Carter, along with governors Richard Riley (South Carolina), William Winter (Mississippi), and Bill Clinton (Arkansas), capitalized on the anti-nuclear moment, and called for more thoughtful and equitable approaches to nuclear power, radioactive waste disposal, and energy generally. Other formidable forces, such as Senator Ernest Hollings (South Carolina) and Senator Howard Baker (Tennessee), remained intractable in their devotion to nuclear projects, and as a result, the bitter contests over atomic issues gave opponents small victories, and the South ultimately found itself nuclear powered.

By studying the forces that shaped nuclear technology development in the South and uniting top-down perspectives with local experiences, this dissertation highlights the uneven, contested process of modernization. Histories of the American South after World War II focus predominantly on metropolitan areas, obscuring and distorting larger narratives of transformation and change. “Radioactive Dixie” shifts the focus away from urban and suburban areas to rural communities—to the people and the places near nuclear reactors that produced the power for sprawling, energy-hungry cities. To some extent, studying nuclear power offers a way to show the interactions between these places. Power lines connected the rural to the region’s growing metropolitan areas, but the controversies over nuclear power also demonstrate how large-scale, high-risk

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<sup>12</sup> “Atomic Rights are Stressed: States Advised to Take Action,” *Lexington-Herald*, June 12, 1968.

technology systems disperse power in very specific ways.<sup>13</sup> Risk assessment, rate setting, and siting decisions necessitate certain value judgments about whose lives and whose environments are “worth” more.

Living in a radiation plume exposure pathway reinforces a kind of hierarchy between the places that supply power and the people that use it. As Langdon Winner provocatively argued in 1980, “the things we call ‘technologies’ are ways of building order in our world.”<sup>14</sup> In tandem, Winner surmised that certain technologies, such as nuclear power, might entail an “ongoing social process in which scientific knowledge, technological invention, and corporate profit reinforce each other in deeply entrenched patterns that bear the unmistakable stamp of political and economic power.”<sup>15</sup> If artifacts do “have” politics, as Winner suggests, this is not to say that technologies themselves build order.<sup>16</sup> Rather, the systems humans develop for assessing where to build reactors, how to regulate them, and who pays for them, reflect particular arrangements of power. In the American South, nuclear power plants and radioactive waste disposal bore “the unmistakable stamp of political and economic power,” as Winner put it.

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<sup>13</sup> This does not suggest technologies act autonomously and disperse power, but rather the systems devised to distribute power, to manage technology, to regulate its risks, and calculate its benefits and downsides, offer types of order, or at least, reflect society and culture.

<sup>14</sup> Langdon Winner, “Do Artifacts Have Politics?” *Daedalus* 109, No. 1 (Winter, 1980): 127.

<sup>15</sup> Winner, 126-127.

<sup>16</sup> Winner’s views have been characterized as technological determinism, however, his ideas about power and ordering remain relevant, as long as a simple causal explanations are avoided. See Merritt Roe Smith, “Technological Determinism in American Culture,” *Does Technology Drive History? The Dilemma of Technological Determinism*, 2-35.

“Radioactive Dixie” contributes to several fields of scholarship. First, this study adds to twentieth century southern history, specifically the post-World War II era. Recent trends in this field have emphasized suburban political conservatism, Wal-Mart populism, the Civil Rights Movement and its aftermath, and the re-consideration of southern history in new frameworks: national, global, and Cold War. Fundamentally, this dissertation challenges prevailing trends in southern history by reorienting our focus to the region’s rural communities. As of late, historians have become enamored with a type of American South, one characterized by affluence, conservatism, and evangelical Christianity.<sup>17</sup> By disproportionately focusing on the “Americanization of Dixie,” and casting aside southern exceptionalism, the place of rural communities, the presence of poverty, and the new types of inequity created by technological and environmental

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<sup>17</sup> Matthew D. Lassiter and Kevin M. Kruse, “The Bulldozer: Suburbs and Southern History Since World War II,” *Journal of Southern History* 75, No. 3 (August 2009): 691-706. Since its publication, the focus on suburban spaces, conservatism, and an Americanized or even globalized region has increased. For a few examples, see Joseph Crespino, *In Search of Another Country: Mississippi and the Conservative Counterrevolution* (Princeton University Press, 2007); Kevin Kruse, *White Flight: Atlanta and the Making of Modern Conservatism* (Princeton University Press, 2005); Matthew D. Lassiter, *The Silent Majority: Suburban Politics in the Sunbelt South* (Princeton University Press, 2013); Michelle Nickerson and Darren Dochuk. *Sunbelt Rising: The Politics of Space, Place, and Region* (University of Pennsylvania Press, 2013). Bethany Moreton’s recent work considers Walmart’s brand of Christian free enterprise, along with the rural and working class populations it has historically appealed to and employs in its stores. See Moreton, *To Serve God and Wal-Mart: The Making of Christian Free Enterprise* (Cambridge, Mass: Harvard University Press, 2009).

choices, has become obscured. Studying nuclear power and radioactive waste helps illustrate how the modern American South became defined by certain geographies of power and risk.

Although this study emphasizes cultural attitudes about the environment more than providing a detailed history of environmental change, “Radioactive Dixie” adds to the growing field of southern environmental history and the proliferating field of the history of technology. Environmental histories of the American South have largely focused on periods prior to 1945, with a few notable exceptions. Recent works include studies of Georgia peach farming, PCB pollution in Alabama, the fire ant war, pesticides in southern agriculture, and Gulf Coast environments.<sup>18</sup> In the realm of energy and

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<sup>18</sup> Barbara L. Allen, *Uneasy Alchemy: Citizens and Experts in Louisiana's Chemical Corridor Disputes* (Cambridge, Mass: The MIT Press, 2003); Joshua Blu Buhs, *The Fire Ant Wars: Nature, Science, and Public Policy in Twentieth-Century America* (University of Chicago Press, 2004). Robert D. Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality*. 3rd ed. (Boulder, Colo: Westview Press, 2000); Craig E. Colten, ed. *Transforming New Orleans and Its Environs: Centuries of Change* (Pittsburgh: University of Pittsburgh Press, 2000); Craig E. Colten, *Perilous Place, Powerful Storms: Hurricane Protection In Coastal Louisiana*. (Jackson: University Press of Mississippi, 2009) Pete Daniel, *Toxic Drift: Pesticides and Health in the Post--World War II South* (Baton Rouge: LSU Press, 2007); Robert W. Hastings, *The Lakes of Pontchartrain: Their History and Environments* (Jackson: University Press of Mississippi, 2009); Christopher J. Manganiello, *Southern Water, Southern Power: How the Politics of Cheap Energy and Water Scarcity Shaped a Region* (Chapel Hill: The University of North Carolina Press, 2015); Martin V. Melosi and Joseph A. Pratt, eds. *Energy Metropolis: An Environmental History of Houston and the Gulf Coast* (Pittsburgh, Pa: University of Pittsburgh Press, 2007); Christopher Morris, "A More Southern Environmental History," *The Journal of Southern History* 75, no. 3 (August 2009): 581–598; Christopher Morris, *The Big Muddy: An Environmental History of the Mississippi and Its Peoples, from Hernando de Soto to Hurricane Katrina* (Oxford: Oxford University Press, 2012); Tom Okie, "Under the Trees: The Georgia Peach and the Quest for Labor in the Twentieth Century," *Agricultural History* 85, No. 1 (Winter 2011), 72-101; Ellen Griffith Spears *Baptized in PCBs Race, Pollution, and Justice in an All-American Town* (Chapel Hill: The University

atomic projects, scholars have produced substantial work on the Savannah River Site, atomic testing in Mississippi, and the relationship between energy and the environment in south Texas and southern Louisiana.<sup>19</sup> “Radioactive Dixie” builds upon these contributions, and more fundamentally, positions itself within a longer thread of southern political and cultural history.<sup>20</sup> Inevitably, the histories presented here also offer insight into the broader field of American political history.

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of North Carolina Press, 2014) Theodore Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America*. 2nd ed. (New York: Oxford University Press, 2006); Jeffrey K. Stine, *Mixing the Waters: Environment, Politics, and the Building of the Tennessee-Tombigbee Waterway*. 1st ed. (Akron, Ohio: University of Akron Press, 1993); Paul Sutter and Christopher J. Manganiello, eds. *Environmental History and the American South: A Reader* (Athens: University of Georgia Press, 2009).

<sup>19</sup> David Allen Burke, *Atomic Testing in Mississippi Project Dribble and the Quest for Nuclear Weapons Treaty Verification in the Cold War Era* (Baton Rouge: Louisiana State University Press, 2012); Kari A. Frederickson, *Cold War Dixie: Militarization and Modernization in the American South* (Athens: The University of Georgia Press, 2013); Martin V. Melosi and Joseph A. Pratt, eds. *Energy Metropolis: An Environmental History of Houston and the Gulf Coast* (Pittsburgh, Pa: University of Pittsburgh Press, 2007); Jason P. Theriot, *American Energy, Imperiled Coast: Oil and Gas Development in Louisiana's Wetlands. The Natural World of the Gulf South* (Baton Rouge: Louisiana State University Press, 2014);

<sup>20</sup> For a very brief selection, see Numan V. Bartley, *The New South, 1945-1980* (Baton Rouge: Louisiana State University Press, 1995); Jack Bass, *The Transformation of Southern Politics: Social Change and Political Consequences since 1945* (Athens: University of Georgia Press, 1995); James C. Cobb, *Away down South: A History of Southern Identity* (Oxford ; New York: Oxford University Press, 2005); Cobb, *Industrialization and Southern Society, 1877-1984* (Lexington, KY: University Press of Kentucky, 1984); Cobb, *The Selling of the South: The Southern Crusade for Industrial Development 1936-1990*. 2nd ed. (Urbana: University of Illinois Press, 1993); Karen L. Cox, *Dreaming of Dixie: How the South Was Created in American Popular Culture* (Chapel Hill: University of North Carolina Press, 2011); R. Douglas Hurt, ed. *The Rural South since World War II* (Baton Rouge: Louisiana State University Press, 1998); Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920-1960* (Baton Rouge: Louisiana State University Press, 1987); Bruce J. Schulman, *From Cotton Belt to*

While “Radioactive Dixie” might frustrate those looking for a more technically-oriented study, it nonetheless addresses a tendency by historians of technology to overlook the American South and rural places. For historians of technology and energy, this can hopefully offer ways to understand how southern politics, culture, and society shaped the development of the region’s nuclear industry, and how the local case studies intersect with a broader national and global story about nuclear power and radioactive waste.<sup>21</sup> The larger themes about risk, energy, and environment can inform the field more generally.

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*Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1938-1980* (Durham: Duke University Press, 1994).

<sup>21</sup> Richard F. Hirsh, *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System* (Cambridge, Mass: MIT Press, 1999); *Technology and Transformation in the American Electric Utility Industry* (Cambridge: Cambridge University Press, 1989); Thomas Parke Hughes. *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970* (Chicago: University of Chicago Press, 2004), *Networks of Power: Electrification in Western Society, 1880-1930*. (Baltimore: Johns Hopkins University Press, 1983); Christopher F. Jones, *Routes of Power: Energy and Modern America* (Cambridge, Massachusetts: Harvard University Press, 2014); Robert D. Lifset, *Power on the Hudson: Storm King Mountain and the Emergence of Modern American Environmentalism* (Baltimore, Maryland: Project Muse, 2014); George T. Mazuzan and J. Samuel Walker, *Controlling the Atom: The Beginnings of Nuclear Regulation, 1946-1962* (Berkeley: University of California Press, 1985); Andrew Needham, *Power Lines: Phoenix and the Making of the Modern Southwest* (Princeton, New Jersey ; Oxford, England: Princeton University Press, 2014); David E. Nye, *American Technological Sublime* (Cambridge, Mass: MIT Press, 1994), *Consuming Power: A Social History of American Energies* (Cambridge, Mass.: MIT Press, 1998); *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge, Mass.: MIT Press, 1992); Robert Pool, *Beyond Engineering: How Society Shapes Technology* (New York: Oxford University Press, 1997); James C. Williams, *Energy and the Making of Modern California* (University of Akron Press, 1997); J. Samuel Walker, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971* (University of California Press, 1992). For a sampling of nuclear-related history, see works by Kate Brown, *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet*

In chapter one, “Visions of a Nuclear South,” I analyze the political and cultural meanings of atomic energy in the region during the 1950s and 1960s, why nuclear power served as a powerful symbol for the South’s future, and how southern politicians refashioned “New South” rhetoric to sell their new, nuclear South. The chapter explores the coordinated effort among politicians, industry figures, federal officials, and southern universities to obtain subsidies from the Atomic Energy Commission (AEC) and to develop the commercial nuclear industry in the region. Leading the wave of interest, southern universities created nuclear engineering programs and sought funding from the AEC for experimental nuclear reactors. To attract industry, southern states and a special interest group, the Southern Interstate Nuclear Board, helped formulate legal agreements between the AEC and states for certain regulatory powers. These mechanisms preserved the “atomic rights” of southern states, while also providing an example of a cordial relationship between the federal government and the South. “Visions of a Nuclear South” traces the history of the region’s first nuclear plants and examines the forces that finally galvanized southern utilities to invest in nuclear power.

Chapters two and three explore the history of two nuclear power plants along the Mississippi River. “The Kudzu and The Reactor: Nuclear Power on the Mississippi

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*and American Plutonium Disasters* (Oxford: Oxford University Press, 2013); Jacob Darwin Hamblin, *Poison in the Well: Radioactive Waste in the Oceans at the Dawn of the Nuclear Age* (New Brunswick, N.J: Rutgers University Press, 2008); Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass: MIT Press, 1998); Paul R. Josephson, *Red Atom: Russia’s Nuclear Power Program from Stalin to Today* (New York: W.H. Freeman, 2000); Sara B. Pritchard, *Confluence: The Nature of Technology and the Remaking Of the Rhône* (Cambridge, Mass: Harvard University Press, 2011).

“River” analyzes the Grand Gulf nuclear plant in Mississippi, and “The Louisiana Way and the Reactor: Nuclear Power on the Mississippi River” examines the Waterford plant upriver from New Orleans. Both plants share a common owner, the utility conglomerate Entergy, and a common waterway, the Mississippi River, adjacent to both sites. Using Langdon Winner’s provocation about whether “technical artifacts have political qualities,” and why large-scale, high-risk projects offer ways of “building order in this world,” these chapters argue that the histories of Grand Gulf and Waterford are emblematic of the New South’s muddled legacy, where the declarations of modernity, progress, and economic opportunity rarely ignited the kinds of economic transformation promised in the communities most directly affected by nuclear power. Like first iteration of the “New South” in the late-Nineteenth Century, the corruption and political opportunism rife within Louisiana and Mississippi in the late-Twentieth Century shaped the development of both projects—down to the very concrete laid for the foundation.

In “The Kudzu and The Reactor,” I contextualize the story of Grand Gulf Unit 1 in the history of the community where it sits, detailing the interplay between the local history and the meanings attached to the nuclear plant. The chapter then examines Grand Gulf’s controversial history, where the plant triggered a major debate, led by Bill Clinton, about corporate power, utility rates, and poverty that extended into multiple states. Emphasizing the particular arrangements of power certain energy systems encourage, the chapter also traces the battle over Grand Gulf’s tax revenues and why Mississippi’s past remained ever present even as it adopted modern technology.

In chapter three, “The Louisiana Way and The Reactor,” I examine the history of Waterford 3, a nuclear power plant located twenty-miles away from New Orleans.

Located in St. Charles Parish, the Waterford unit sits upon a former sugar cane plantation now surrounded by pyro-chemical industry and oil refineries. Waterford's construction further highlighted the sense that southern Louisiana's willingness to attract any and all industry carried potentially deadly consequences. Waterford embodies the formation of Louisiana's new "technological disaster subculture," where older threats from nature combined with newer threats from engineering.<sup>22</sup> The public's fears were well-founded. Long accustomed to the "Louisiana way," LP&L's management of Waterford's construction proved deeply flawed, forcing a more stringent Nuclear Regulatory Committee (NRC) after Three Mile Island in 1979 to launch a major investigation into the plant's safety.

In chapter four, "The Nuclear Burden of Southern History," examines the history of a low-level radioactive waste facility in Barnwell, South Carolina. In the late 1970s, the Barnwell site received nearly eighty-five percent of the nation's nuclear waste, exposing the inequitable and the unresolved manner in which the United States dealt with the by-products of the nuclear industry. Even as contemporary observers pronounced the "Americanization of Dixie," and bemoaned disappearance of regional and local distinctions, anti-nuclear activists located a new form of regional identity through environmental inequity. The activists railed against the South's "disproportionate burden" produced by a broken system of waste disposal. While many in South Carolina deplored their state's role as the "nation's trash can," the people of Barnwell rallied in support of the local nuclear waste facility. This chapter analyzes why Barnwellians defended what

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<sup>22</sup> "Evacuation Behavior: Case Study of the Taft, Louisiana Chemical Tank Explosion Incident," Report for FEMA, May 1983, Disaster Research Center, Ohio State University, 17, F: WSES – Emer. Response, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137.

most communities scorned, storing over twenty-seven million cubic feet of radioactive waste. Finally, this chapter proposes that the South's new burden looms in its future, not in its past.

Chapter five, "Jimmy Carter and the Trouble with Expertise," sets Jimmy Carter's nuclear and energy policy in the context of the battles over the Clinch-River Breeder Reactor (CRBR) and the Barnwell Nuclear Fuel Plant (BNFP), two highly lucrative nuclear projects in the South. In terms of political consequences, the fate of BNFP and CRBR proved far more meaningful for shaping Carter's presidency than the accident at Three Mile Island. The chapter first analyzes a pivotal moment in Carter's energy policy in 1979 and then details his fight over CRBR and BNFP. I argue that Carter's propensity to master complex policy issues, and fashion himself as an energy expert and environmental steward, trapped him in a delicate political climate. While Carter touted his own expertise, his public criticisms of "red tape" and bureaucracy laid the groundwork for the anti-regulatory and anti-expert mood during Ronald Reagan's presidency. Through his stubborn battles over Clinch River and Barnwell Nuclear Fuel Plant, Carter, the native Southerner and "high-tech" President, challenged nearly three decades of regional nuclear optimism by wielding his nuclear expertise.

Chapter six, "The Mind of the Nuclear South," analyzes the anti-nuclear rebellion that emerged in the South in the 1970s and extended into the 1980s. This chapter places their critique of the nuclear industry within a long line of thinking about the region's path to modernity. As heirs to a tradition of "regional self-scrutiny," these dissenters organized a network of anti-nuclear groups across the region and helped shape a "mind" of the nuclear South, one fractured by their critiques but still "progress-haunted," as writer W.J.

Cash claimed decades earlier. The chapter analyzes the apocalyptic imagery and language activists employed, considering its significance in southern history. Southern anti-nuclear activists drew upon regional history, environmental discourse, and fears about out-of-control science and technology. In response to their critics, activists sought diverse coalitions and whistle-blowers, which reflected a larger cultural turn towards romanticizing the working-class, and intended to refute claims that activists only represented a fringe group. Using the jeremiad form, the region's anti-nuclear rebels issued dire warnings about a nuclear-powered future and advocated salvation in the form of decentralized, alternative power.

Chapter seven, “Nuclear Ghosts: Relics of the Tennessee Valley Authority’s Nuclear Program,” examines the TVA’s nuclear program, specifically an abandoned nuclear site in rural Hartsville, Tennessee. Locals mock the partially-constructed cooling tower as a “used beer can.”<sup>23</sup> This chapter contextualizes that empty, four hundred million dollar concrete shell within the history of TVA’s controversial nuclear program and the longer arc of regional modernization. It traces the interactions between the Hartsville community and the TVA, how the agency assessed land values and local history, and why TVA’s image as a benevolent force in the Tennessee Valley soured further in the 1970s. “Nuclear Ghosts,” like many of the chapters before it, brings readers to the rural South that persisted even after many other “rural worlds” were lost.<sup>24</sup> The chapter explores how nuclear power systems encouraged certain ways of valuing

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<sup>23</sup> Local resident and former nuclear activist Faith Young shared this with me during a visit to Hartsville in January 2015.

<sup>24</sup> Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920-1960* (Baton Rouge: Louisiana State University Press, 1987).

environments and communities, and why it reinforced a type of built order between rural and metropolitan places.

To be sure, “Radioactive Dixie” is by no means a comprehensive history of every nuclear power plant or every nuclear controversy in the American South. When C. Vann Woodward reflected upon his career-defining work, *Origins of the New South*, he expressed his relief upon seeing the definite article—“the”—dropped from the title.<sup>25</sup> Choosing the definite article, “a,” for this study suggests a more limited framework, one that chooses snap-shots of nuclear controversies instead. Likewise, the nuclear engineers behind the scenes figure little into this study. While their stories are important, those perspectives are for future historians to uncover. This history, generally speaking, emphasizes what happened outside the reactors rather than inside them and is driven by the question about how technology is “an extension of human lives.”<sup>26</sup>

When Henry Waring Ball of Greenville, Mississippi, stood before electric light one evening in 1895, he found himself moved by its splendor, or what David Nye has called “the technological sublime.”<sup>27</sup> He reckoned that fellow pedestrians must have “taken him for an idiot,” for the light was “so beautiful,” that he found himself transfixed by the sight.<sup>28</sup> Southerners of a different era found themselves transfixed by the sight of cooling towers several hundred feet tall, rising out from kudzu-covered river gullies and

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<sup>25</sup> *Looking Back*, 60.

<sup>26</sup> David Nye, *Electrifying America: Social Meanings of a New Technology* (Cambridge: MIT Press, 1990), ix,

<sup>27</sup> David E. Nye, *American Technological Sublime* (Cambridge, Mass: MIT Press, 1994).

<sup>28</sup> Edward L. Ayers, *The Promise of the New South: Life After Reconstruction*, 15th Anniversary Edition (Oxford University Press, 2007), 73.

the rolling Tennessee hills. Few, if any, described them as beautiful or magical. What an atomic powered future portended for the region remained unclear, and southerners wrestled with the full constellation of meaning attached to nuclear power. The conflicts between another New South and preserving an older South collided as reactors were built and nuclear waste was buried, and those collisions comprise the core of “Radioactive Dixie.”

## CHAPTER ONE

### VISIONS OF A NUCLEAR SOUTH AND ANOTHER “NEW SOUTH”

The South today is a marvelous mixture of romance and business, history and hurry, magnolias and steel mills, azaleas and acrilan, heaven and hell-bombs.<sup>1</sup>

--William T. Polk, 1953

In a 1952 article entitled “Dixie is Jumping,” the author J.L. Rhodes observed that “atomic energy is one of the biggest things in Dixie at the present time.”<sup>2</sup> The construction of Oak Ridge National Laboratory in 1943 and the Savannah River Plant in 1951 marked the beginning of the American South’s nuclear history—a history envisioned by some as “regional salvation,” and in subsequent decades, as regional annihilation.<sup>3</sup> Southern politicians and business leaders evangelized the atom’s grand possibilities, incorporating atomic energy into their vision of economic development after World War II. Perhaps the finest exposition of this early nuclear dream came from the

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<sup>1</sup> William T. Polk, *Southern Accent: From Uncle Remus to Oak Ridge* (New York: William Morrow and Company 1953), 25.

<sup>2</sup> J.L. Rhodes, “Dixie is Jumping,” *American Federationist* 59, No. 2, February 1952, 22, 29.

<sup>3</sup> Gabrielle Hecht uses this phrase to discuss two “nuclear regions” in France., see *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass: MIT Press, 1998), 7.

governor of Florida, LeRoy Collins, in a 1956 speech given fittingly in Atlanta, the long-standing beacon of New South optimism.

Drawing upon New South booster Henry Grady's story of the rural funeral held in Georgia following the Civil War, where nothing but the corpse and the hole in the ground were native, Collins peered into the region's future and predicted that if the South did not embrace nuclear power quickly, a similar fate would befall them:

I suppose a nuclear counterpart of Grady's tale of desolation would be a situation in which the South dug its valuable uranium and thorium deposits and shipped them off to Ohio for refining, while Illinois processed the material into fuel elements for use in California reactors. Then the 'waste,' the radioactive fission products, would perhaps be returned here for burial in the swamps of Florida. Could this be our role in nuclear energy 20 years from now? We must face the fact that it is not impossible. Be we southerners must not let it happen.<sup>1</sup>

Atomic energy presented a chance for "economic emancipation" and an opportunity to become a "true equalizer between the North and South." Collins called upon southerners to "bring the atom to the South" in a joint, interstate fashion.<sup>2</sup> In the same year the Southern Manifesto was issued, which upheld states' rights and white supremacy in the fight against civil rights progress, Governor Collins seemingly offered a path to regional redemption, one without the endless complications of dismantling Jim Crow segregation, the bedrock of Southern society. While the South's system of white

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<sup>1</sup> *Role of Atomic Energy in the South*, Southern Regional Education Board, Recommendations of the Work Conference on Nuclear Energy, St. Petersburg, Florida, August 1-4, 1956.

<sup>2</sup> *Role of Atomic Energy in the South*, Southern Regional Education Board, Recommendations of the Work Conference on Nuclear Energy, St. Petersburg, Florida, August 1-4, 1956.

supremacy increasingly appeared archaic and out-of-step with modern America, the atom symbolized modernity, progress, and a future of endless promise and economic opportunity.<sup>3</sup> In the 1950s, southern politicians, the nuclear industry, the Atomic Energy Commission (AEC), and the region's universities envisioned a new, nuclear South. Built upon a foundation of nuclear weapons production, which escalated as the Cold War heated up, southerners embraced atomic energy for many reasons. The expanding nuclear industry presented economic opportunity, the possibility to enhance the reputation and bolster the resources of southern universities, and to refashion the region's identity. Early successes occurred in the region's higher education system, as universities pursued funding from the AEC for nuclear engineering programs and other sciences. Only in the late 1960s, as utilities across the country became convinced about the commercial viability of nuclear power, did southern power companies embark upon a major effort to build nuclear power plants. Throughout the South, nuclear reactor projects were licensed and many were built. Despite the nuclear industry's descriptions of the South as a "nuclear region" today, that fate appeared far less certain in the late 1970s, when the

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<sup>3</sup> On regional identity in the twentieth century, see esp., Numan V. Bartley, *The New South, 1945-1980* (Baton Rouge: Louisiana State University Press, 1995), 151-260; James C. Cobb, *Away down South: A History of Southern Identity* (Oxford ; New York: Oxford University Press, 2005), 185-211; Karen L. Cox, *Dreaming of Dixie: How the South Was Created in American Popular Culture* (Chapel Hill: University of North Carolina Press, 2011); Jack Temple Kirby, *Media-Made Dixie: The South in the American Imagination* (Athens: University of Georgia Press, 1986); Angie Maxwell, *The Indicted South: Public Criticism, Southern Inferiority, and the Politics of Whiteness* (Chapel Hill: University of North Carolina Press, 2014); Neil R. McMillen ed. *Remaking Dixie: The Impact of World War II on the American South* (Jackson: University Press of Mississippi, 1997); John Shelton Reed, *The Enduring South: Subcultural Persistence in Mass Society* (Chapel Hill: University of North Carolina Press, 1974).

entire industry experienced an array of obstacles. Until then, however, the region's nuclear proponents celebrated an atomic-powered future.

Promoters of atomic energy in the American South came from a closely related network of elected officials, state agencies devoted to promoting atomic energy, the Atomic Energy Commission, defense installations, southern universities, and an emerging nuclear industry. While this trend largely materialized after World War II, the advocacy for nuclear power fits within a longer thread in southern history, beginning with the late nineteenth century efforts of southern boosters who sought industrialization, development, and modernization. In the post WWII period, those efforts accelerated as federal funds poured into defense and research-oriented projects.<sup>4</sup> Atomic energy promised an extension of those lucrative contracts and potentially private industry as well. Southerners also saw atomic energy as a political and cultural tool.<sup>5</sup> Anthropologist

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<sup>4</sup> Numan V. Bartley, *The New South, 1945-1980*; James C. Cobb, *Industrialization and Southern Society, 1877-1984* (Lexington, KY: University Press of Kentucky, 1984); *The Selling of the South: The Southern Crusade for Industrial Development 1936-1990*. 2nd ed. (Urbana: University of Illinois Press, 1993); Kari Frederickson, *Cold War Dixie* (Athens: University of Georgia Press, 2013); Bruce J. Schulman, *From Cotton Belt to Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1938-1980* (Durham: Duke University Press, 1994).

<sup>5</sup> On technological enthusiasm in American history, see David E. Nye, *American Technological Sublime* (Cambridge, Mass: MIT Press, 1994). For atomic enthusiasm, see Steven L. Del Sesto, "Wasn't the Future of Nuclear Engineering Wonderful?" in Joseph J. Corn, ed., *Imagining Tomorrow: History, Technology, and the American Future* (Cambridge: MIT Press, 1986). For cultural and social meanings of electricity in American history, see David E. Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge, Mass.: MIT Press, 1992). On technology and social progress, see Steven L. Goldman, *Science, Technology, and Social Progress* (Lehigh University Press, 1989).

Joseph Masco has argued that nuclear weapons engendered a banalization of mass death and nuclear ruination in the United States, which constituted a powerful form of “radioactive nation-building.”<sup>6</sup> The advocacy of nuclear development in the American South constituted a type of radioactive region-building, to borrow Masco’s phrase. Radioactive region-building took on heightened importance as the South’s *de jure* segregation faced increasing scrutiny in the 1950s. Similarly, the regional turn towards nuclear power occupied an important place in a broader history of energy and technology in the South driven by the project of modernization fueled by cheap electricity.<sup>7</sup> Electrical systems are not a “thing” separate from society and culture, nor do they merely have

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<sup>6</sup> Joseph Masco *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton, N.J: Princeton University Press, 2006), 25.

<sup>7</sup> For literature that discusses the relationship between energy, electricity, and modernization in the South, see: Raymond Arsenault, "The End of the Long Hot Summer; The Air Conditioner and Southern Culture," *Journal of Southern History* 50 (November 1984), 597-628. Edward L. Ayers, *The Promise of the New South: Life After Reconstruction - 15th Anniversary Edition* (Oxford University Press, 2007), 72-74. Christopher J. Manganiello, *Southern Water, Southern Power: How the Politics of Cheap Energy and Water Scarcity Shaped a Region* (Chapel Hill: The University of North Carolina Press, 2015); "Hitching the New South to 'White Coal': Water and Power, 1890-1933." *Journal of Southern History*, no. 2 (May 2012): 255-292; David Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge: MIT Press, 1990), 307-335; George Brown Tindall, *The Emergence of the New South, 1913-1945*. A History of the South, v. 10 (Baton Rouge: Louisiana State University Press, 1967), 71-75; J. Samuel Walker, "The South and Nuclear Energy, 1954-62." *Prologue* 13 (Fall 1981): 175-91. On the history of regional power systems and how society and culture shape our energy systems, see Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins Press, 1983).

“impact.” Rather, “social contexts” shape our energy systems, and the South’s position in the 1950s encouraged atomic advocacy.<sup>8</sup>

In the United States, commercial nuclear power plants rely upon two basic designs. Only boiling-water reactors (BWR) or pressurized water reactors (PWR) are used for commercial purposes in the US, and because of this, a commercial nuclear plant in Illinois broadly resembles one in Alabama, with differences occurring in manufacturers used for parts, design modifications according to the utility or environment, quality of management, operation, and structural integrity. Nonetheless, nuclear power plants in the American South are more than technological artifacts; as Gabrielle Hecht has shown, nuclear reactors are artifacts that possess a “social, political, and culture life,” which interact with the world around them.<sup>9</sup> For pro-nuclear advocates, nuclear power offered material advantages but also presented symbolic purposes. Nuclear boosters incorporated atomic energy into their “New South” rhetoric, harnessing the symbolic values of atomic energy, in addition to advertising the economic benefits.

Southern nuclear advocacy coincided with a broader effort after WWII to improve the South’s economy and to modernize the region, one spurred by wartime industries, research facilities, and federal funding.<sup>10</sup> And as LeRoy Collins’ speech detailed, atomic

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<sup>8</sup> Culture, politics, and environment also shape energy systems. David Nye, *Electrifying America*, ix. For examples in France, see Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass: MIT Press, 1998); Sara B. Pritchard, *Confluence: The Nature of Technology and the Remaking Of the Rhône* (Cambridge, Mass: Harvard University Press, 2011); For nuclear power in the Soviet Union, see Paul R. Josephson, *Red Atom: Russia’s Nuclear Power Program from Stalin to Today* (University of Pittsburgh Press, 2005).

<sup>9</sup> Gabrielle Hecht, *Radiance of France*, 5.

<sup>10</sup> See footnote 7.

evangelizing echoed earlier New South schemes articulated by Henry Grady, the editor of Atlanta's *Constitution*, and post-Reconstruction era southern boosters. The first iteration of the term "the New South" did not originate with Grady, although he proved to be an eloquent and popular spokesman for regional boosterism and a refashioning of southern identity. As early as 1862, a Union Officer "exhilarated by his army's capture of the sea islands in South Carolina and Georgia" started publishing *The New South*, a newspaper for Federal troops in the area and one that few southerners read.<sup>11</sup> The term, "the New South," reappeared five years after the Confederacy's defeat in the American Civil War, transformed by southerners searching for a positive symbol and "for a specific and indigenous movement of social, economic, and intellectual regeneration."<sup>12</sup> Following the Civil War, J.D.B. DeBow of *Debow's Review* and other like-minded southerners called for greater industrialization in the post-war South. Nineteenth century boosters envisioned a "New South," one capable of matching the North in its economic opportunities and able to capitalize on the region's many natural resources and pool of cheap labor.

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<sup>11</sup> Paul Gaston, *New South Creed: A Study in Southern Mythmaking* (Montgomery, AL, USA: New South, Incorporated, 2001, orig. published, 1970), 38. For more on efforts to make a "New South" before WWII, see Don Harrison Doyle, *New Men, New Cities, New South: Atlanta, Nashville, Charleston, Mobile, 1860-1910* (Chapel Hill: University of North Carolina Press, 1990); Gaines M. Foster, *Ghosts of the Confederacy: Defeat, the Lost Cause, and the Emergence of the New South, 1865 to 1913* (New York: Oxford University Press, 1987); Jonathan M. Wiener, *Social Origins of the New South: Alabama, 1860-1885* (Baton Rouge: Louisiana State University Press, 1978); C. Vann Woodward, *Origins of the New South, 1877-1913* (Baton Rouge: Louisiana State University Press, 1971).

<sup>12</sup> Gaston, 39.

But as C. Vann Woodward and Paul Gaston have noted, New South boosters also invented an “Old South” in their quest to remake the region’s identity.<sup>13</sup> By creating a kinder, gentler past, where the South’s system of slavery appeared benevolent, its people genteel, and Confederate soldiers resembled gallant heroes, southerners built the “New South” upon a romanticized retelling of southern history.<sup>14</sup> In doing so, what Woodward described as myths of “incalculable potentialities,” the creation of the mythical Old South laid the groundwork for the development of Jim Crow segregation and the convoluted logic of white supremacy in the “New South.”<sup>15</sup> While the myths surrounding the Old South reverberated well into the twentieth century and supported the “invented tradition” of segregation, what was actually “new” in the New South remained limited to pockets of industrialization, the slow creep of modern day consumerism, and the influx of a business-class into southern politics, one that challenged the political power of the older planter class.<sup>16</sup>

Despite the New South booster evangelism in the late nineteenth to early twentieth century, the region remained overwhelmingly poor with an agriculturally-based economy and sub-standard education system. As often mentioned, Franklin Roosevelt famously described the South as the “nation’s number one economic problem” in 1938.<sup>17</sup>

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<sup>13</sup> Woodward, *The Origins of the New South*, 154-155.

<sup>14</sup> Cobb, *Away Down South*, 73.

<sup>15</sup> Woodward, 154-155.

<sup>16</sup> Cobb, *The Selling of the South*, 67-98.

<sup>17</sup> Cobb, *The Selling of the South*, 1; Roosevelt, “Address at Barnesville, Georgia” August 11, 1938 <http://www.presidency.ucsb.edu/ws/?pid=15520>

To ameliorate crushing poverty and limited economic opportunities, the federal government's New Deal programs, such as the Rural Electrification Administration and the Tennessee Valley Authority, expanded access to electricity, exploited the Tennessee Valley's waterways for hydroelectricity, improved agricultural practices, and created employment opportunities. Not since Reconstruction had the federal government's presence in the South been as pronounced, and the incursion amounted to modest improvements, particularly in the Tennessee Valley region. More importantly, the New Deal reinforced the connection between federal funding, regional development, and cheap, readily available energy.<sup>18</sup>

From the 1930s onward, "the South's dependency on the federal government increased," as historian Bruce Schulman has documented.<sup>19</sup> The emphasis, however, shifted from social welfare to different federal projects, especially defense and research-

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<sup>18</sup> For TVA's history, see North Callahan *TVA: Bridge over Troubled Waters* (South Brunswick, [N.J.]: A. S. Barnes, 1980); Robert F. Durant, *When Government Regulates Itself: EPA, TVA, and Pollution Control in the 1970s* (Knoxville: University of Tennessee Press, 1985); Erwin C. Hargrove, *Prisoners of Myth: The Leadership of the Tennessee Valley Authority, 1933-1990* (Princeton, N.J.: Princeton University Press, 1994); Michael J. McDonald and John Muldowny. *TVA and the Dispossessed: The Resettlement of Population in the Norris Dam Area*. 1st ed. (Knoxville: University of Tennessee Press, 1982); Thomas K. McCraw, "Triumph and Irony – The TVA." *Proceedings of the IEEE* 64, no. 9 (September 1976): 1372; Zygmunt J. B. Plater, *The Snail Darter and the Dam: How Pork-Barrel Politics Endangered a Little Fish and Killed a River* (New Haven: Yale University Press, 2013); William Bruce Wheeler and Michael J. McDonald. *TVA and the Tellico Dam, 1936-1979: A Bureaucratic Crisis in Post-Industrial America* (Knoxville: University of Tennessee Press, 1986).

<sup>19</sup> Schulman, *From Cotton Belt to Sunbelt*, ix.

related installations.<sup>20</sup> Coinciding with this change, southern political power moved away from the older ruling class of planters and “low-wage industrialists” to “business progressives” who emerged in the 1950s.<sup>21</sup> The “new Whigs” of post-WWII southern politics retained their power by winning lucrative federal projects and funds that accelerated the region’s transformation.<sup>22</sup> With the triumph of the business progressives, the “New South” quickly became more than a creed. Following WWII, a rural exodus occurred, sprawling metropolitan areas like Charlotte and Atlanta supplanted older southern centers of commerce, and the once “Solid South” underwent a political realignment from solidly Democratic to Republican.<sup>23</sup> According to Numan Bartley, the South “possessed a modern economy” by 1960, and the region could be characterized as “predominately urban” with a majority of its population located in metropolitan areas.<sup>24</sup> The transition has been described by historians in various ways. C. Vann Woodward called the process the “Bulldozer Revolution,” Schulman succinctly phrased it “from cotton belt to sunbelt,” and James Cobb christened it “the selling of the South.” Whatever the name for the process, the second era of New South scheming visibly altered many

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<sup>20</sup> Schulman, *From Cotton Belt to Sunbelt*, ix.

<sup>21</sup> Ibid.

<sup>22</sup> Schulman, *From Cotton Belt to Sunbelt*, ix.

<sup>23</sup> Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920-1960* (Baton Rouge: Louisiana State University Press, 1987); “The Modernization of the South: The Lament for Rural Worlds Lost,” in Anthony J. Badger, *New Deal/New South : An Anthony J. Badger Reader* (Fayetteville, AR: The University of Arkansas Press, 2007).

<sup>24</sup> Numan Bartley, *The New South, 1945-1980* (LSU, 1995), 146.

places, but as in the nineteenth century, the promise of progress and economic development produced uneven benefits and created unintended consequences.

While military and nuclear weapons installations figure into narratives about regional transformation after WWII, they spurred a more widespread interest in atomic energy. In 1955, the Southern Governors' Conference initiated discussion about a "regional approach" to the nuclear industry, following this with a region-wide study about the feasibility of interstate compact between southern states, one committed to the "development of nuclear energy for the advancement of the region."<sup>25</sup> In the Southern Regional Education Board's (SREB) 1956 study, the report noted the recent trend of industry migrating to southern and western states, concluding that "atomic energy can help assure that continuance."<sup>26</sup> Unlike previous New South schemes, where the South "sought outside help," Governor LeRoy Collins viewed the region's quest to harness

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<sup>25</sup> *The Atom in the South: story of leadership and achievement; report to Southern Governors' Conference*, Hollywood-by-the-Sea, Florida, October 4, 1962 (Southern Interstate Nuclear Board, Atlanta 1962), 2; Statement of Gov. Ernest F. Hollings, Chairman, Nuclear Energy Committee of the Southern Governors' Conference, "Southern Interstate Nuclear Compact, Hearing Before Subcommittee No. 3 of Committee on the Judiciary House of Representatives," 87<sup>th</sup> Congress, July 13, 1961 (U.S Government Printing Office, Washington, 1962) in Folder: Nuclear Commission, Collection/Series Title: Secretary of State Tom Adams subject files, 1961-1970, Container: 00024, State of Florida Archives

<sup>26</sup> "The Place of Nuclear Energy in the South's Future: Background Material for the Second Planning Meeting for the Work Conference on Nuclear Energy," Raleigh, North Carolina, March 18-19, 1956, Southern Regional Education Board, Folder: Work Conference on Nuclear Energy, Raleigh, NC , March 18-19, 1956, Container 1, Division: Atomic Energy Commission, Correspondence & Notes, 1956-1958, Kentucky Department for Libraries and Archives (KDLA).

atomic energy differently. Instead, atomic energy represented a “talisman” for a better South, one able to ward off the albatross of segregation.<sup>27</sup>

And yet, even as nuclear advocates waved the atomic talisman, in the coming years, other southerners waved another symbol—the Confederate flag—signaling their defiance and commitment to preserving white supremacy. While other places heralded nuclear-related developments too, only in the American South did atomic energy’s symbolic possibilities compete with a foil of greater magnitude, at least in the United States. Even as this disjuncture occurred, the promise of science and technology seemingly smoothed over any barriers to remaking the region’s identity, and southerners set about finding ways to attract the nuclear industry to their towns, cities, and states.

Building upon these efforts, the Southern Regional Education Board (SREB) created a Regional Advisory Council on Nuclear Energy (RACNE) in 1957.<sup>28</sup> The council announced its intention to launch a “many-sided offensive” for the “creation of a favorable climate for the development of the atom’s potential” in southern states and across the region.<sup>29</sup> In order to achieve these objections, the council laid the groundwork for a nuclear-oriented interstate compact: the Southern Interstate Nuclear Compact. Represented by the Southern Interstate Nuclear Board, the SINB intended to facilitate

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<sup>27</sup> Ibid.

<sup>28</sup> Created in 1948, the SREB is an interstate compact committed to improving education in southern states. For reference, see Caroline N. Broun, Michael L. Buenger, *The Evolving Use and the Changing Role of Interstate Compacts: A Practitioner's Guide*, American Bar Association (2006), 480.

<sup>29</sup> “A Progress Report, with Recommendations, Concerning the Work of The Regional Advisory Council on Nuclear Energy,” the Southern Governors’ Conference, Sea Island, Georgia, September 25, 1957, Folder: Correspondence, 1958 RACNE, Container 1, Division: Atomic Energy Commission, Correspondence & Notes, 1956-1958, KDLA.

cooperation between southern states, act as a liaison between the region and the federal government, and to promote the nuclear industry.<sup>30</sup> Despite its unwieldy acronym, the SINB played a pivotal role shaping the region’s nuclear industry, the regulatory apparatus for atomic energy, and lobbying for federal funds. By 1962, due to the SINB’s efforts, Congress ratified the Southern Interstate Nuclear Compact, officially approving the SINB’s purpose to encourage development of atomic energy for the South’s economy and “the well-being of the region’s people.”<sup>31</sup> In an era of massive resistance, where southerners fought the Supreme Court’s 1954 ruling that segregation in public education was unconstitutional, and provoked stand-offs between the federal government and southern states, the SINB represented an example of a *cordial* relationship with the federal government. While the SINB’s publications never explicitly discuss race or the upheaval massive resistance produced, the organization fulfilled dual functions—promoting the nuclear industry and offering a counter-weight to the negative portrayal of the South as wholly hostile to the federal government and resistant to change.

Despite the enthusiasm surrounding atomic energy, early efforts by RACNE and SINB focused on education, research, regulations, and reactor design.<sup>32</sup> During the late 1950s, many southern utility companies viewed nuclear energy as an unnecessary source

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<sup>30</sup> Southern Interstate Nuclear Compact, <https://www.gpo.gov/fdsys/pkg/STATUTE-76/pdf/STATUTE-76-Pg249.pdf>

<sup>31</sup> Ibid.

<sup>32</sup> Redding S. Sugg, Jr., ed. *Nuclear Energy in the South* (LSU Press, 1957), 12-13; Southern Regional Education Board, “Work Conference on Nuclear Energy,” St. Petersburg, FL, August 1-4, 1956.

of power, one hampered by poor economics and a need for greater efficiency.<sup>33</sup> In a region of abundant fossil fuels, developing commercial nuclear power made little economic sense.<sup>34</sup> Moreover, concern existed about the financial liability from a catastrophic accident as major barrier to commercial nuclear power.<sup>35</sup> In a 1957 address on nuclear energy to the Southern Governors' conference, G.O. Robinson reminded the audience that atomic energy was not a "panacea" for the region's problems and cautioned that a "factual and realistic approach" was necessary "to put the atom to work."<sup>36</sup> Ten years later, southern utility companies embraced the promise of cheap electricity through nuclear power; but in the first decade of nuclear boosterism, southerners saw other avenues as more viable, particularly in terms of research and development.

Because of the barriers associated with nuclear power in the late 1950s, SINB directed their momentum towards atomic energy in research and education. Oak Ridge National Laboratory and the Savannah River Plant attracted engineers and scientists to the South, and early proponents viewed nuclear engineering as a way to bolster the reputation of southern universities and to attract federal funding for research facilities, particularly with experimental reactors, medical research, and agricultural programs. By expanding opportunities at southern universities, federal facilities, and other nuclear-

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<sup>33</sup> Redding S. Sugg, Jr., ed. *Nuclear Energy in the South* (LSU Press, 1957), 5.

<sup>34</sup> Redding S. Sugg, Jr., ed. *Nuclear Energy in the South* (LSU Press, 1957), 5.

<sup>35</sup> Sugg, 14.

<sup>36</sup> "Atomic Progress and Promise: The Challenge to the States" , address by G.O. Robinson, The Regional Advisory Council on Nuclear Energy," August 30, 1957, Williamsburg, VA , sponsored by the Southern Governors' Conference, Folder: Atomic Industrial Forum, 1956-1958-KACNE, Container 1, Division: Atomic Energy Commission, Correspondence & Notes, 1956-1958, KDLA.

related industries, the region could not only sustain its current influx of engineers and scientists, but also encourage more in-migration and possibly produce more native-born researchers and engineers. In 1950, the number of the engineers in the South lagged behind the national average, and the region's nuclear proponents sought to address the deficiency by attracting federal funding, specifically through the Atomic Energy Commission, for greater offerings in nuclear-related fields at southern universities.<sup>37</sup>

Following World War II, the Atomic Energy Commission subsidized research facilities throughout the South, contributing to the "growth of science" in the region.<sup>38</sup> The AEC funded nuclear programs through purchasing equipment, providing matching funds, and loaned uranium fuel for experimental reactors. Other entities, such as the Department of Defense, National Science Foundation and NASA, also made significant contributions to these programs. From 1946 to 1965, the AEC contributed over sixty-seven million dollars for operation and equipment to forty-universities in the South, with Duke University, Florida State University, the University of Virginia, and the University of Tennessee receiving the most substantial financial support.<sup>39</sup> Federal funding towards atomic energy research undergirded larger changes at southern universities after WWII, where institutions once viewed as "distinctly regional" in "character and tradition,"

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<sup>37</sup> Redding S. Sugg, Jr., ed. *Nuclear Energy in the South* (LSU Press, 1957), 106-118.

<sup>38</sup> William G. Pollard, *Atomic Energy and Southern Science* (Oak Ridge: Oak Ridge Universities, Inc. 1966), 28.

<sup>39</sup> William G. Pollard, *Atomic Energy and Southern Science* (Oak Ridge: Oak Ridge Universities, Inc. 1966 – check), 30-31. The University of Puerto Rico was also included in the statistics —receiving over ten million dollars in operating funds, second only to UTK.

became global centers of technological and scientific innovation.<sup>40</sup> Transforming southern institutions also meant larger societal and cultural changes. Fueled by education benefits for veterans after WWII, and an increase in federal funding, the region's educational institutions expanded, and atomic energy represented a burgeoning, lucrative opportunity for southern universities.

In 1966, one southern scientist, Dr. William Pollard, a leading figure at Oak Ridge National Laboratory, noted that among the many factors driving the “growth of science” in the region was the addition of “increasingly expensive research facilities,” and universities across the South welcomed costly, experimental nuclear reactors—in part because of subsidies from the Atomic Energy Commission.<sup>41</sup> ORNL possessed the world’s first “major research reactor,” an air-cooled natural uranium graphite reactor, which set the stage for a proliferation of experimental reactors in government facilities and at universities.<sup>42</sup> Government-subsidized experimental reactors provided prestige and attracted prominent scientists and engineers, but they also fulfilled other objectives too. When the AEC proposed building a particle accelerator in mid-1960s, William Pollard wrote to AEC Chairman Glenn Seaborg, lobbying for its placement in the South: “we feel that the South as a region deserves serious consideration. The number of universities in the South that pursue advanced research programs in the physical sciences has increased

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<sup>40</sup> Pollard, 11.

<sup>41</sup> Pollard, 17.

<sup>42</sup> Pollard, 17.

substantially in the last two decades.”<sup>43</sup> And yet, despite the growth in science at southern schools, Pollard conceded that research remained “small and substantially below other regions.” This regional difference, according to Pollard, contributed to the loss of the South’s “most important natural resource”: the “brilliant student” who either went untrained in the “frontier areas of physics” or sought “advanced education elsewhere, never to return to the region.” Continuing, Pollard argued that a particle accelerator might help the South achieve “equality” with other regions and better enable the nation to achieve a “balanced” scientific strength.” While “held back by its history,” Pollard noted that region now “is trying very hard to help itself.”<sup>44</sup> When the region scored a series of “firsts” in nuclear research, the South’s nuclear advocates proudly advertised them and eagerly sought out more funding opportunities.

Among those leading the way was Clifford K. Beck, a native of North Carolina, who earned a PhD in physics from the University of North Carolina in 1942, worked at the Oak Ridge Gaseous Diffusion Plant, and became the head of the physics department at North Carolina State University (NCSU), launching the first undergraduate and graduate programs in nuclear engineering.<sup>45</sup> Adding to these accomplishments, Beck directed the efforts to design “the first privately owned nuclear reactor” or the “first university research reactor” in the United States, constructed at NCSU and licensed in

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<sup>43</sup> Letter from William G. Pollard, Executive Director, Oak Ridge Institute of Studies to AEC Chairman Glenn Seaborg, May 21, 1965, Folder: Nuclear and Space Commission, Florida, Box 44, Collection: Governor Haydon Burns, Correspondence, 1965-1967, State of Florida Archives.

<sup>44</sup> Ibid.

<sup>45</sup> Walker, *Containing the Atom*, 119.

1953.<sup>46</sup> Following NCSU's lead, other southern schools soon acquired nuclear reactors.

Georgia Institute of Technology gained a heavy-water reactor and the University of Florida acquired a small-scale reactor, while other universities planned research reactors for the future and many schools purchased particle accelerators (Van de Graff generators).<sup>47</sup> Beck's triumphs at NCSU, and the gradual expansion of the South's nuclear programs, were echoed by other "firsts," which Southern Interstate Nuclear Board's 1962 report described under the banner "a region steps forward."<sup>48</sup>

Despite these notable southern firsts, in the late 1950s and 1960s, the Southern Interstate Nuclear Board's chief concern related to closing the education gap, citing the "firm knowledge" that "economic growth is inextricably linked to quality education."<sup>49</sup> Among the problems confronting the South, the region lagged behind in teacher pay, suffered from an outmigration of talented graduates, and produced only six percent of the nation's PhDs but possessed thirty percent of the nation's population.<sup>50</sup> Harnessing the atom's potential also required redressing the South's problems in education. For revenue poor states, federal funding in atomic energy provided a source of capital, which allowed universities to build cutting edge research facilities, lure scientists and engineers to

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<sup>46</sup> Pollard, 19. Walker, *Containing the Atom*, 119. In 1955, Beck then joined the AEC's staff, working in the regulatory division.

<sup>47</sup> Pollard, 20-21.

<sup>48</sup> *The Atom in the South: story of leadership and achievement; report to Southern Governors' Conference*, October 4, 1962 (Southern Interstate Nuclear Board, Atlanta 1962), 2.

<sup>49</sup> *The Atom in the South*, 6.

<sup>50</sup> *The Atom in the South*, 7.

southern schools, and potentially train southerners in high-paying, rapidly expanding nuclear-related fields. From 1961 to 1962, the region's private industry received over \$38 million dollars in contracts by the AEC and related contractors, giving further momentum to a growing network of industries tied to nuclear engineering and nuclear physics.<sup>51</sup> In less than two decades since the construction of "the secret city," Oak Ridge National Laboratory, in East Tennessee, atomic energy had become a significant source of federal funding, one that buoyed the region's private industry and educational institutions.

Pro-nuclear advocates claimed other regional victories. Besides ratifying the first nuclear-oriented regional compact, Texas and South Carolina launched development programs—the first of their kind, and the Port of Charleston became the first port "cleared to handle radioactive materials."<sup>52</sup> More importantly, in 1962, Kentucky became the first "agreement" state to receive some regulatory and licensing authority from the federal government.<sup>53</sup> As NRC historian J. Samuel Walker has noted, the South's interests in industrial growth, and exploiting atomic energy's potential, coincided with a long-standing commitment to "protecting states' rights from federal infringement," or "atomic rights," as one newspaper headline put it.<sup>54</sup> Kentucky's maneuvers to retain some control over regulating and licensing nuclear energy and radioactive materials set

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<sup>51</sup> *The Atom in the South*, 29-32.

<sup>52</sup> *The Atom in the South*, 2.

<sup>53</sup> *The Atom in the South: story of leadership and achievement; report to Southern Governors' Conference*, Hollywood-by-the-Sea, Florida, October 4, 1962 (Southern Interstate Nuclear Board, Atlanta 1962), 2.

<sup>54</sup> Walker, "The South and Nuclear Energy, 1954-1962" *Prologue* 13, Fall 1981, 175; "Atomic Rights Are Stressed," *Louisiana Herald*, June 12, 1958.

the template for agreements between states and the Atomic Energy Commission. Eight of the thirteen states to sign agreements with the AEC by 1966 hailed from the South, who justified wresting partial control from the AEC by citing concern for public health but also avoidance of “unduly restrictive” measures.<sup>55</sup> An editorial in the South Carolina newspaper praised the “foresight” of the South who had “outstripped the rest of nation in assuming their right role in nuclear regulation,” and contributed to a “rare spectacle of the federal government’s yielding...a large measure of control back the states.”<sup>56</sup> In this sense, the region’s history shaped its nuclear future; and in the case of Kentucky, vesting greater authority in the state contributed to the lax regulatory practices, which significantly contributed to the environmental contamination at the Maxey Flats radioactive waste repository in Hillsboro, Kentucky.

Even as atomic energy spurred growth at the region’s universities and federal facilities, commercial nuclear power attracted far more interest in the Midwest and Northeast, and California initially.<sup>57</sup> Plentiful coal, oil, and hydroelectricity discouraged investment in nuclear power by southern utilities, who were generally stand-offish about building reactors in the early 1960s.<sup>58</sup> Although southern utilities were slow to embrace nuclear power, the region’s first nuclear power plant was completed in 1962 and achieved

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<sup>55</sup> Walker, 187.

<sup>56</sup> “Backing Away from Progress,” *The State*, February 20, 1964.

<sup>57</sup> *The Atom in the South*, 42.

<sup>58</sup> *The Atom in the South*, 12.

criticality, or sustained a nuclear reaction, in March 1963.<sup>59</sup> A joint investment of \$29 million dollars by four companies, the Parr-Shoals plant, also known as the Carolinas-Virginia Tube Reactor (CVTR), was located in Fairfield County, South Carolina.<sup>60</sup>

The plant's arrival generated an enthusiastic response; an editorial in *The State* heralded South Carolina's entry into the "atomic age," describing nuclear power as "miraculous."<sup>61</sup> In the thrall of atomic energy, South Carolina Governor Ernest F. Hollings argued that "training for jobs in the nuclear age" was the "best way to lift" the state "from the bottom of the per capita income scale."<sup>62</sup> Another editorial praised the Parr Shoals reactor, located along one of the region's "historic rivers which once supported and carried the barges of cotton" and "now give us unbounded energy" with a "new and mysterious source of power."<sup>63</sup> While most reports offered little more than enthusiasm, other observers drew connections between the area's past and the nuclear (or soon to be) present.

The home of the new reactor, Parr Shoals, was situated along the Broad River, and had been the site of a coal-burning steam electric plant and later a hydro-electric plant built in 1914. Contemporary observers noted the area's history of power production

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<sup>59</sup> *The Atom in the South*, 12; "Power Reactor Information System," International Atomic Energy Agency (IAEA), <https://www.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=600>.

<sup>60</sup> *The Atom in the South*, 12-13. The four companies that invested in CVTR were Duke Power Company, Carolina Power & Light Company, South Carolina Electric & Gas Company, and Virginia Electric and Power Company.

<sup>61</sup> "A Host to the Atom," *The State*, September 2, 1962.

<sup>62</sup> "Charleston Rotary Hears Gov. Hollings," *The State*, February 14, 1962.

<sup>63</sup> "Surge to Success in Southeast: A Carolinian's Review," *The State*, May 23, 1965, 16-A.

and its connection to the river, with one writer claiming that Parr Shoals “will have become the only place on earth where so many types of energies—water, coal, and the atom—have been used to make electricity.”<sup>64</sup> The Parr Shoals plant produced an interplay between past and present, echoing broader connections between the new Nuclear South, the New South post-Reconstruction, and an even older history—one characterized by the Native American tribe, the Catawbas, who inhabited the area and “hunted in the pine forests” and “fished in Broad River.”<sup>65</sup> The plant created a place “strange contrasts” between the “primeval sound of the forest” and “the steel symphony of the bulldozer.”<sup>66</sup> Another writer similarly commented on the interplay between one energy system and another, noting that the “vanished” water powered mill had given way to the nuclear reactor with “spherical appendage like something out of a Buck Rogers world.”<sup>67</sup>

The meditations that new technology encouraged were not unique to nuclear power though. In 1914, at the opening of the Parr Shoals Generating Station, a hydroelectric plant on the Broad River, Mayor Lewis Griffith of Columbia, South Carolina also pointed to the area’s past, one characterized by “Congaree Indians, who lived by hunting and fishing,” and the men who “fought in our wars” and whose fame “was recorded in

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<sup>64</sup> “Parr Shoals: Life Remains Unchanged Despite the Coming of Atomic Power,” *The State and The Columbia Record*, February 5, 1961, 6-C.

<sup>65</sup> “Parr Shoals: Life Remains Unchanged Despite the Coming of Atomic Power,” *The State and The Columbia Record*, February 5, 1961, 6-C.

<sup>66</sup> Ibid.

<sup>67</sup> Henry Lesene, “The South Carolina Story of the 1960s,” *The State and The Columbia Record*, June 4, 1961, 1.

memory, history, and in monuments.”<sup>68</sup> South Carolinian R. Charlton Wright, a director of Parr Shoals Power Company, espoused the “civilizing” power of electricity, with the “consumption of kilowatts” as the “modern measure of civilization.”<sup>69</sup> According to Wright’s plans for harnessing the Broad River’s water power dated back to the “War Between the Sections,” when the city of Columbia was at its “lowest ebb,” and area residents embarked upon a “vigorous crusade” to produce energy using the river.<sup>70</sup> Efforts to harness the river’s power required environmental change, and the dam required for hydro-electric created the Parr Shoals reservoir, which originally encompassed 1,850 acres.<sup>71</sup> The arrival of hydro-power constituted the first major transformation in the Broad River, which has been widened continually over the course of the twentieth century through various energy-related projects.<sup>72</sup>

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<sup>68</sup> “Hydro-Electric Plant Starts up Parr Shoals Generating station is Opened,” *The State*, May 31, 1914, 7.

<sup>69</sup> R. Charlton Wright, “Power from Parr Shoals Delivered in Columbia,” *The State*, October 3, 1914, 1; *Poor’s Manual of Public Utilities; Street, Railway, Gas, Electric, Water, Power, Telephone and Telegraph Companies* (New York: Poor’s Railroad Manual Co., 1914), 1145.

<sup>70</sup> R. Charlton Wright, “Power from Parr Shoals Delivered in Columbia,” *The State*, October 3, 1914, 1.

<sup>71</sup> “Environmental Report for License Renewal: VC Summer Nuclear Station,” Docket Number 50/395, License Number NPF-12, SCE&G. NRC Library, pg. 12.  
<[pbadupws.nrc.gov/docs/ML0222/ML022280229.pdf](http://pbadupws.nrc.gov/docs/ML0222/ML022280229.pdf)>

<sup>72</sup> Parr Shoals Relicensing Project, Research by Kleinschmidt (a consulting firm that specializes in “engineering, regulatory, and ecological services” for hydroelectric and renewable sources of power—see <[kleinschmidtgroup.com](http://kleinschmidtgroup.com)>) for South Carolina Electric & Gas Company,  
<[parrfairfieldrelicense.com/documents/presentations/Parr%20Reservoir%20Sediment%20Presentation%20WQ%20TWC%209-10.pdf](http://parrfairfieldrelicense.com/documents/presentations/Parr%20Reservoir%20Sediment%20Presentation%20WQ%20TWC%209-10.pdf)>

Hydro-electricity constituted a renewable source of energy, one that would “flow perpetually,” long after other “fixed and definite” sources of energy, such as coal had been depleted.<sup>73</sup> And as historian Christopher Manganiello has noted, the region’s waterways possessed “social and cultural meaning.”<sup>74</sup> In 1914, the hydro-electric generating station represented a renewable energy source and a symbol of regional renewal. Like hydro-power, nuclear energy offered a potentially renewable source of power (particularly with breeder reactors) and served as a symbol for a New South, one quite different from its other image as backward, regressive, or broken. The Carolina-Virginia Tube Reactor was as an experimental, demonstration plant, and only operated from 1963 to 1967, but it signaled a growing interest in commercial nuclear power.

Decades earlier, southern utility executives downplayed the region’s need for nuclear power, and the 1956 study conducted by the Work Conference on Nuclear Energy and sponsored by the Southern Regional Education Board concluded that little immediate need existed for nuclear power in the South. The report predicted that by 1965 only a few southern states would experience a major impact by nuclear power plants: North Carolina, Georgia, Florida, Virginia, and Delaware (a member of the Southern Governor’s Conference). The study predicted an intermediate impact for South Carolina, Alabama, and Oklahoma (another member of the conference), and only a minor impact for the remaining states, particularly those with plentiful fossil fuels such as Texas,

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<sup>73</sup> Ibid.

<sup>74</sup> Christopher J. Manganiello *Southern Water, Southern Power: How the Politics of Cheap Energy and Water Scarcity Shaped a Region* (Chapel Hill, NC., University of North Carolina Press, 2015), 6.

Louisiana, and Kentucky.<sup>75</sup> In the 1950s, the conservative nature of utility companies resulted in an aversion to risk, in part because they attributed their success to “cautious business and engineering practices.”<sup>76</sup> Even after light-water nuclear technology proved more commercially feasible in the early 1960s; with a few exceptions, most major utility companies viewed nuclear power as an unnecessary financial risk.<sup>77</sup> In the South, this reluctance created a cautious climate where companies studied nuclear power as a future option but otherwise remained resistant to risking large sums of capital on a commercially unproven technology.

Several developments in the nuclear industry propelled the “great bandwagon market,” where utilities suddenly embraced nuclear power in the late 1960s. The bandwagon market rapidly changed the attitude towards commercial nuclear power in the South.<sup>78</sup> Among those developments, in 1964, utility Jersey Central published a report arguing that building a nuclear reactor in the Northeast was more financially lucrative than a coal plant.<sup>79</sup> While some challenged the validity of the report’s claims, others hailed it as a “economic breakthrough” for commercial nuclear power.<sup>80</sup> Other developments in the utility industry that further contributed to changing perceptions

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<sup>75</sup> *Work Conference on Nuclear Energy: St. Petersburg, Florida* (Southern Regional Education Board, Atomic Energy Section, August 1-4, 1956), 46.

<sup>76</sup> Walker, *Containing the Atom*, 27.

<sup>77</sup> Walker, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971* (University of California Press, 1992), 27-28.

<sup>78</sup> Walker, 31.

<sup>79</sup> Walker, 30.

<sup>80</sup> Walker, 30.

about nuclear power were “pooling arrangements,” which became popular after WWII.<sup>81</sup> Pooling arrangements between independent utility companies required joint investment in new facilities and power-sharing through “interconnections.”<sup>82</sup> By combining resources, utility companies increased capital resources and fostered a willingness to invest in more expensive facilities, often based on speculative estimates of future energy consumption.<sup>83</sup>

Moreover, a method called “design by extrapolation” where plant designers scaled “up” from smaller facility size to larger ones without practical experience operating large-scale reactors led to an uptick in proposed reactors.<sup>84</sup> And finally, despite the slow growth of the nuclear power in the South initially, the Tennessee Valley Authority’s 1966 announcement of its plans to build two nuclear reactors changed perspectives. If TVA, located in an area with abundant coal, found nuclear power viable, perhaps other utilities should too. TVA’s decision accelerated the arrival of the great bandwagon market, where utilities went from reluctant to enthusiastic about the prospects of nuclear power.<sup>85</sup> With TVA’s atomic declaration, and a host of other developments, utilities across the nation hopped on the nuclear bandwagon, with the market peaking in 1966-1967.<sup>86</sup> As LeRoy Collins envisioned a decade earlier, southern utility companies quickly pursued nuclear power plants as a viable option by the late 1960s. In the wake of

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<sup>81</sup> Walker, 28.

<sup>82</sup> Walker, 28.

<sup>83</sup> Walker, 28-32. Walker also noted the positive effect of turnkey contracts, see pp. 32.

<sup>84</sup> Walker, 32.

<sup>85</sup> Walker, 33.

<sup>86</sup> Walker, 33.

the bandwagon market, applications for nuclear plants proliferated throughout the US, but in the South, plans for nuclear power portended greater changes. According to one observer, the rapid adoption of nuclear power signaled a “new break of dawn,” after “a very dark night, the South is beginning to find itself a national leader.”<sup>87</sup>

Following a tumultuous, violent period that culminated in the demise of Jim Crow, atomic energy supplied imagery that evoked a high-tech, prosperous future for a region and a people that had appeared antiquated and even primitive in national media. In November 1965, Florida Power and Light announced plans to build the region’s first commercial reactor, and other utilities quickly followed suit.<sup>88</sup> The SINB’s annual report to the President christened 1966 as the “Year of Commitment” for the “development of the peaceful atom in the South.”<sup>89</sup> In 1966 and 1967, plans for sixteen nuclear reactors were announced in SINB member states, which the organization hailed as a “\$2.3 billion in twenty reactor generating units,” one that illustrated the South’s nuclear industry finally equaled and even surpassed other regions.<sup>90</sup> Moreover, on July 21, 1966, Delaware Governor Charles Terry signed the Southern Interstate Nuclear Compact, which completed the ratification process, and the Southern Interstate Nuclear Board (and

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<sup>87</sup> Reese Cleghorn, “The South is Now Harnessing the Atom,” *The Atlanta Journal*, February 23, 1966, Southern Interstate Nuclear Board, 1966 - Clippings, Correspondence, Memoranda, Reports, Box: 233, Folder: 5, John B. Breckinridge Papers, University of Kentucky Special Collections.

<sup>88</sup> “Nuclear and Space Technology: A New Dimension in Regional Economic Development,” (Southern Interstate Nuclear Board), 7.

<sup>89</sup> SINB’s Annual Report to the President, FF6, Box 44, Nuclear Commission, 1966, Governor Haydon Burns 1965-1967, State of Florida Archives.

<sup>90</sup> “Nuclear and Space Technology: A New Dimension in Regional Economic Development” (Southern Interstate Nuclear Board, 1968), 7-9.

compact) now represented seventeen southern states.<sup>91</sup> After a decade of studying and lobbying for atomic energy, the SINB's efforts materialized with significant financial investments and plans for nuclear power plants.

Of the South's forty-one currently operating commercial nuclear reactors, the NRC granted thirty-nine construction licenses between 1966-1976 (see figure one). The surge in regional interest resulted in ten reactors achieving criticality, or "going online," by 1976. By comparison, Midwestern and Northeastern states also vigorously pursued nuclear power. Before the mid-seventies, these regions had more operating reactors than the South, with nineteen reactors in the Midwest and eighteen in the Northeast.<sup>92</sup> The West lagged behind for a number of reasons, primarily due to environment reasons, particularly seismic risks and aridity, and robust anti-nuclear sentiment in certain states.<sup>93</sup>

Although TVA's aggressive pursuit of nuclear power accelerated the bandwagon market, the earliest operating reactors in the South were owned by a variety of utility companies and largely concentrated in states along the East Coast, such as Florida, Georgia, North Carolina, and South Carolina (see table one). By December 1975, ten nuclear reactors in the South achieved criticality—or went "online," with a five to eight year period from receiving the construction permit to beginning commercial operation.

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<sup>91</sup> SINB's Annual Report to the President, FF6, Box 44, Nuclear Commission, 1966, Governor Haydon Burns 1965-1967, State of Florida Archives.

<sup>92</sup> Nuclear Regulatory Commission, Information Digest, <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

<sup>93</sup> For nuclear controversies in California, see Thomas Raymond Wellock, *Critical Masses: Opposition to Nuclear Power in California, 1958-1978* (Madison: The University of Wisconsin Press, 1998).

After the first wave of reactors, the pace slowed from permit to operation, as regulations became more stringent and costs soared. From January 1976 to December 1980, nine reactors started commercial operation, with the average time spanning 7.5 years and at least three reactors requiring nine years from permit to operation. Of the remaining reactors in operation today, all twenty reactors received their construction permits between 1972 and 1977 but only began commercial operation from 1981 to 1996, with the average time from permit to operation increasing to nearly twelve years. TVA's Watts Bar Unit 1, the last commercial nuclear reactor received its permit in 1973, and after a long odyssey, achieved criticality in 1996.

While the pace slowed considerably from the early pre-1976 licensing blitz, the South (see table two) contains more nuclear reactors than any other region—a product of a conducive political environment, lobbying efforts, and efforts to cultivate nuclear-related programs at southern universities. If cancelled reactors are considered, the South would have surpassed other regions by an even greater degree (see figure three). This example of regional exceptionalism continues today. Since TVA's Watts Barr went online in 1996, the nation's only new reactors currently under construction or approaching commercial operation are located in the South. In Parr Shoals, South Carolina, where early proponents celebrated the arrival of hydroelectricity a century earlier, the first privately funded nuclear reactor operated from 1963 to 1967, and where the V.C Summer nuclear plant first began operation in 1984, two new reactors are under construction—V.C. Summer, Unit 2 and Unit 3. In 2016, TVA's Watts Bar Unit 2 is scheduled to finally achieve criticality, and Georgia's Vogtle Unit 3 and 4 are undergoing construction as well.

Spearheading the South's nuclear revival is the Southern States Energy Board (SSEB), the current-day iteration of the Southern Interstate Nuclear Board, renamed in the late 1970s to reflect a broader mission. Special interests groups like SINB and SSEB fly under the radar; they operate behind the scenes, orchestrating favorable legislation, subsidies, and act as well-financed coordinators and cheerleaders for an industry. These groups provide the mechanism where politicians, industry figures, academics, and federal officials coordinate the promotion, or at the very least, the existence of the region's nuclear power industry and energy production.

The SSEB's stated purpose is the development of the region's energy resources generally, but nuclear advocacy remains a priority. Signaling a nuclear power revival, the Southern States Energy Board released a forty-page document entitled "Nuclear Energy: Cornerstone of Southern Living, Today and Tomorrow" in 2006. Recycling an older argument that cheap electricity fuels economic growth, and pointing to concerns about climate change, the SSEB argued that the "South's thirst for electricity will require unprecedented growth in bulk power supply from nuclear and coal."<sup>94</sup> Echoing these themes, a March 2013 presentation given by the non-profit organization the Savannah River Site Community Reuse Organization and consulting firm, the Nuclear Worldwide Inc. (NWI), highlighted the South's assets, calling it a "Nuclear region," with a "nuclear friendly citizenry," and noting that the "southeastern US is the center of gravity for nuclear energy development."<sup>95</sup>

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<sup>94</sup> Southern States Energy Board, "Nuclear Energy: Cornerstone of Southern Living, Today and Tomorrow" (SSEB, 2006).

<sup>95</sup> Savannah River Site Community Reuse Organization and Nuclear Worldwide Inc. (NWI), "Community Perspective on Managing the Nuclear Fuel Cycle," March 14, 2013.

Despite the nuclear industry's recent rosy characterizations, and the celebratory declarations of the South's "new atomic age" in the 1950s and 1960s, the proliferation of nuclear power plants in southern states has been widely debated and highly controversial. Nuclear projects highlighted differences in power and place; they sat uneasily in a region lurching between the Old South and the New South. Touring the region in the 1950s, writer William Polk noted that while an older southern economy relied upon cotton and tobacco, the New South manufactured consumer items and bombs. The H-bomb plant "rising in the Savannah River" symbolized the New South, and the double-cannon "which couldn't hit a forest" in Athens, Georgia symbolized the past.<sup>96</sup> If the region appears to possess a more loyal "nuclear citizenry" than elsewhere, this destiny appeared uncertain in the 1970s and 1980s, and the following chapters examine the making of a radioactive Dixie and what this history tells us about the modern South.

TABLE 1.1: EARLY REACTORS IN THE US SOUTH

Reactor Name	Location	Company*	Construction License	Commercial Operation
Arkansas Nuclear Unit 1	London, AR	Entergy	12/06/1968	12/19/1974
Browns Ferry (Unit 1&2)	Limestone County, AL	Tennessee Valley Authority	5/10/1967	8/1/1974 (1); 3/1/1975 (2)
Brunswick (Unit 2)	Southport, NC	Carolina Power & Light	2/7/1970	11/3/1975
Hatch (Unit 1)	Vidalia, GA	Southern Nuclear Operating Co.	9/30/1969	12/31/1975

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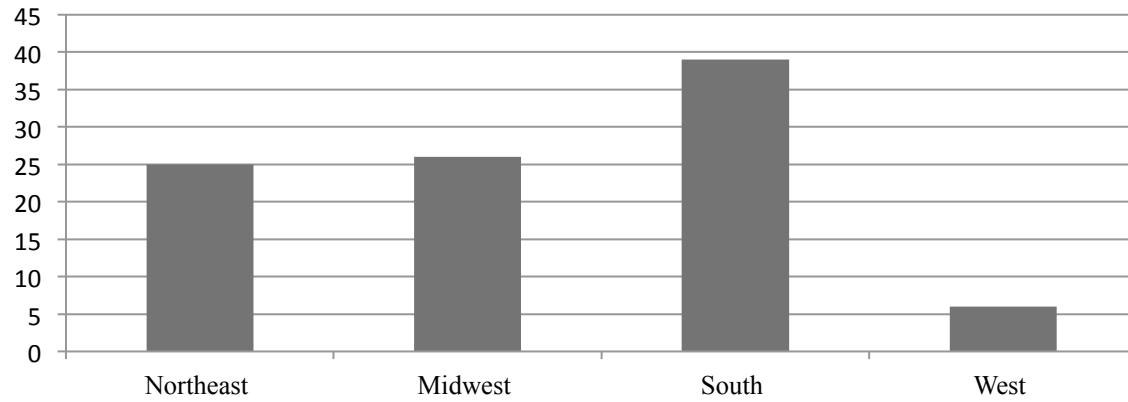
<sup>96</sup> Polk, 20-25.

Oconee (Unit 1, 2, and 3)	Seneca, SC	Duke Power	11/6/1967	7/15/1973; 9/9/1974; 12/16/1974
Turkey Point (Unit 3 & 4)	Homestead, FL	Florida Power and Light	4/27/1967	12/14/1972; 9/7/1973

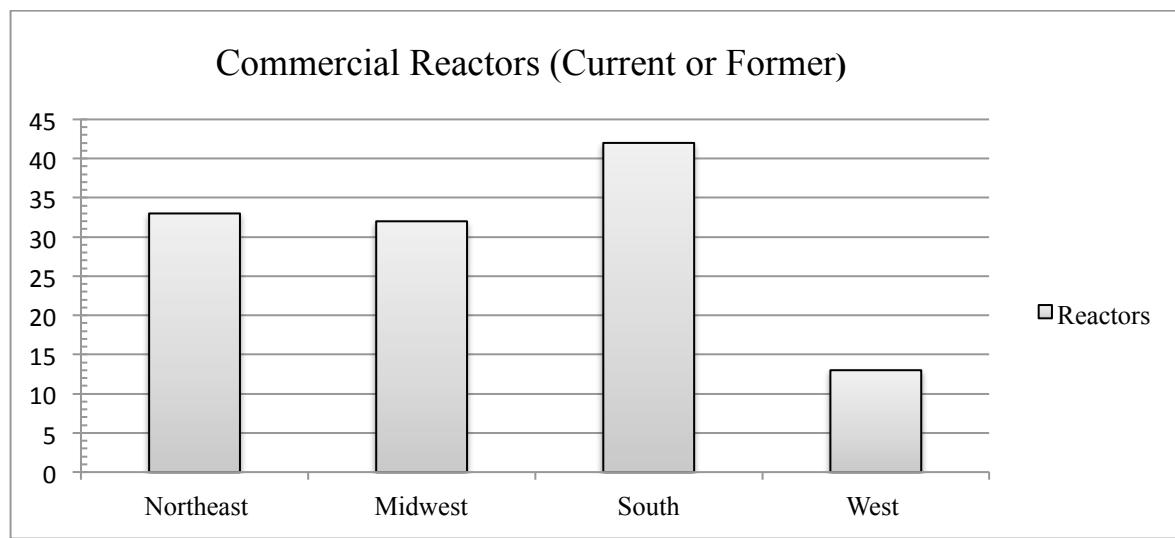
TABLE 1.2: REGIONAL CATEGORIES

Midwest	Northeast	South	West	States without Commercial Nuclear Power (Current or Former)
Illinois Missouri Nebraska Ohio Michigan Iowa Wisconsin Minnesota Kansas	Pennsylvania Maryland Connecticut New York New Jersey New Hampshire Vermont Maine Massachusetts Delaware*	Arkansas Alabama North Carolina South Carolina Texas Georgia Florida Virginia Tennessee Louisiana Mississippi	Washington California Arizona Oregon Washington	Alaska Colorado Hawaii Idaho Indiana Kentucky Montana Nevada New Mexico North Dakota South Dakota Rhode Island Utah West Virginia Wyoming

**Figure One: Construction Permit Licenses By Region,  
1966-1976 (Operating Reactors)**



**FIGURE 1. 1: CONSTRUCTION PERMIT LICENSES BY REGION**



**FIGURE 1.2: COMMERCIAL REACTORS BY REGION**

## CHAPTER TWO

### THE KUDZU AND THE REACTOR: NUCLEAR POWER ON THE MISSISSIPPI RIVER

These people are out in Mississippi trying to operate a nuclear plant –they’re not qualified to operate a car.<sup>1</sup>

I think I know how people feel in countries such as those that are memorialized in novels like *Animal Farm* and *1984*. You never know where you are. Power is total, arbitrary, and absolutely unconcerned with the interest of the ordinary citizens.

--Bill Clinton (1986)

Without wings, there are three ways to see the Grand Gulf cooling tower: by boat, by car, or by looking east across the Mississippi River from Louisiana. Enterprising travelers might take the historic Natchez Trace, cross through Port Gibson, a small, historic and hard-pressed community, and then over a series of rural roads that seem to lead nowhere. Mississippi’s only nuclear reactor sits in the outer reaches of sparsely populated Claiborne County (population, 9,000), towering over rich farmland and river gullies consumed by kudzu. Any vague notions of nuclear power as a symbol of modernity and technological triumph appear out of joint with the surroundings. Hunting down nuclear reactors in rural Mississippi brings visitors to a land that time forgot. From a car, a distant view of the cooling tower surfaces first, framed by trees draped with

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<sup>1</sup> Congressional staffer Richard Udell, quoted in Bryan Burrough, “Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South,” *Wall Street Journal*, June 15, 1984.

Spanish moss. Fortunate travelers might pass a few ambling cows wearing quizzical expressions, as if to ask why anyone would venture to this place. The power produced by the reactor leaves the kudzu landscape and moves elsewhere, to more populated, more developed towns and cities. That Grand Gulf tower, though, stands still, saturated in history, tragedy, and poverty.

The history of Grand Gulf emblemizes the New South's muddled legacy, where the declarations of modernity, progress, and economic opportunity rarely ignited the kinds of economic transformation promised in the communities near nuclear power plants. When Grand Gulf neared commercial operation, debates ignited over rising utility rates, tax revenue distribution, corporate accountability, and federal regulation. Grand Gulf appeared less as a beacon of progress and far more as a debacle—one that ensnared ratepayers in three states and stripped a poor, predominantly African-American county of its ability to tax nuclear plants. In response, Grand Gulf stirred a populist revolt, where a new class of moderate southern Democrats, including Bill Clinton, adopted the issue, producing politically well-timed but much needed critiques about poverty, inequality, and corporate power in post-Watergate America and in the “new” South.<sup>1</sup> In tandem, Public Service Commissions, rate-payers, and anti-nuclear activists joined the fray. The nuclear project hidden away in an isolated corner of Mississippi provoked a power grab in the South during the 1970s and 1980s.

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<sup>1</sup> Historian Thomas R. Wellock describes the battle over the San Joaquin Nuclear Plant in populist terms. See Wellock, “Stick It in L.A.! Community Control and Nuclear Power in California’s Central Valley,” *The Journal of American History* 84, No. 3 (December 1997): 942-978.

Whether studying a nuclear reactor in the former-Soviet Union or in the United States, technological artifacts—especially high-risk ones—offer “ways of building order in this world.”<sup>2</sup> In his 1980 article, “Do Artifacts Have Politics?,” Langdon Winner explored whether “technical things have political qualities,” and “can embody specific forms of power or authority.”<sup>3</sup> Winner drew upon Lewis Mumford’s earlier assertion that two types of technologies have existed “side-by-side” historically, one democratic, and another authoritarian.<sup>4</sup> Lewis Mumford’s binary between centralized, authoritarian technology and decentralized, democratic technology leaves little room for ambiguity, and historians of technology characterize his views as deterministic, albeit softened somewhat.<sup>5</sup> Winner’s article, and the groundbreaking work of Thomas Parke Hughes, animated a discussion about the political and cultural dimensions of technology. Hughes’s work encouraged historians of technology to interpret technological development as a product of internal and external dynamics, rather than viewing engineers or technology as impermeable from influence. In this sense, political, cultural, economic, and environmental contexts shape technology. While contemporary scholars generally avoid notions of technological determinism, where technology itself drives history, I agree with Winner’s contention that some technologies require or rely upon

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<sup>2</sup> Langdon Winner Do Artifacts Have Politics? *Daedalus*, Vol. 109, No. 1 (Winter, 1980): 121-136.

<sup>3</sup> Langdon Winner Do Artifacts Have Politics? *Daedalus*, Vol. 109, No. 1 (Winter, 1980): 121-136; 121.

<sup>4</sup> Lewis Mumford, “Authoritarian and Democratic Technics,” *Technology and Culture* Vol. 5, No. 1 (Winter 1964): 1-8.

<sup>5</sup> Merritt Roe Smith, “Technological Determinism in American Culture,” *Does Technology Drive History? The Dilemma of Technological Determinism*, 2-35.

complementary systems of power and knowledge distribution. This chapter examines how certain technologies, or rather the systems constructed to manage them, invite particular arrangements of power. If technologies are formed by external and internal dynamics, and offer ways of “building order” in our world, they can also embody political and cultural meanings grounded in specific local, regional, or national contexts. Technical artifacts often produce meaning in unexpected ways with considerable variance from one place to another, suggesting that even when structures are roughly the same, what these objects project may differ.

#### *Grand Gulf and the “Most Broken Country”*

The town of Grand Gulf largely exists as a ghost town today, dominated by Entergy’s plant and the Grand Gulf Military Park.<sup>6</sup> Long before white settlers traveled there, indigenous people inhabited the area, and the nuclear plant occupies land that once contained a large burial mound dating to 50 A.D. to 200 A.D..<sup>7</sup> Although two-thirds of the burial mound were bulldozed, and some were objects removed by “relic hunters,” archaeologists in the 1970s managed to excavate the mound, finding objects indicative of Hopewell culture, such as small pieces of pottery and pressed Copper.<sup>8</sup>

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<sup>6</sup> Mississippi Historical Society Vol. V (University Press, Oxford, MS., 1902), Grand Gulf Vertical Files, State of Mississippi Archives.

<sup>7</sup> Samuel O. Brookes, “The Grand Gulf Mound: Salvage Excavation of an Early Marksville Burial Mound in Claiborne County, Mississippi” (Mississippi Department of Archives and History, Jackson, Mississippi, 1976), 4-5.

<sup>8</sup> Ibid., 6.

Early white settlers named the area “Grand Gulph” for an eddy in the Mississippi River.<sup>9</sup> By the 1820s, Grand Gulf was a “flourishing” community along the river, supported by the cotton trade, slavery, and its convenient location. Decades later, misfortune visited Grand Gulf through illness, environmental disaster, and war. During the 1850s alone, the town suffered through a yellow fever outbreak, a major fire, and a tornado. Following these disasters, the river’s path moved westward, causing the “Caving of the Gulf,” where much of the town caved into the Mississippi. A community once home to at least 900 residents dwindled to less than two hundred, or as another observer put it, “the place was left to die.”<sup>10</sup>

With the onset of the American Civil War, Grand Gulf’s existence appeared precarious once again because of its prime location near the river and Vicksburg. As Union troops moved through the area in 1862, General Ulysses Grant allegedly described Grand Gulf and the surrounding land as “the most broken country I ever saw. The whole country is a series of irregular ridges, divided by impassable ravines grown up with heavy timber, undergrowth and cane.”<sup>11</sup> Despite the hostile terrain, Union forces routed Confederate troops in the spring of 1863. In a letter to General William Sherman, Grant again described the area as “extremely broken” and concluded ominously that “the road

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<sup>9</sup> Mississippi Historical Society Vol. V. (University Press, Oxford, MS., 1902), Grand Gulf Vertical Files, State of Mississippi Archives.

<sup>10</sup> Ibid.

<sup>11</sup> Katy McCaleb Headley (compiled by) *Claiborne County, Mississippi: The Promised Land* (Port Gibson-Claiborne County Historical Society, 1976), 358.

to Vicksburg is open.”<sup>12</sup> In December 1864, the *U.S.S. Rattler*, a Union gunboat patrolling the area, ran aground during a heavy gale and sank, but not before “the rebels had set her upper works on fire.”<sup>13</sup> Even if the *Rattler*’s demise granted Confederate troops momentary satisfaction, the calamities from war and from natural disasters doomed Grand Gulf. While the community never recovered from the trials of the mid-nineteenth century, its history found a resurrection of sorts a century later. In 1962, as white resistance to African-American civil rights reached a fever pitch in Mississippi, Governor Ross Barnett attended the dedication of the Grand Gulf Military Park, which continues to preserve the remnants of Grand Gulf—a historic church (not original to the area), scattered traces of the Civil War, and a crumbling cemetery mostly filled with victims of yellow fever. The park’s creation no doubt came from a revival of interest in the Civil War and southern history that coincided, not surprisingly, with the civil rights movement.

While the reactor sits nearby, ghosts, rather conveniently, remain unaffected by nuclear power. The predominately African-American community of Port Gibson, which General Grant purportedly described as “too beautiful to burn,” and the surrounding Claiborne County, live with a nuclear present. If not a ghost town, Claiborne County, like many other rural places, has experienced a slow decline in population and suffers from abysmally high poverty rates, with over thirty-three percent of residents living below the

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<sup>12</sup> Letter from Gen. Grant to General Sherman, May 3, 1863 (Grand Gulf, Mississippi) Grant (U.S. Papers), State of Mississippi Archives, Jackson, Mississippi.

<sup>13</sup> Letter from Lieutenant Commander E.Y. McCauley, January 1, 1865, *Official Records of the Union and Confederate Navies in the War of the Rebellion* Series I, Vol. 26 (U.S. Government Printing Office 1914), 769.

poverty line.<sup>14</sup> As historian Emilye Crosby has noted, slavery and sharecropping “shaped” interactions between black and white residents of Claiborne County “well into the twentieth century,” and the implications of those historic legacies remain visible today.<sup>15</sup> The history of Entergy’s Grand Gulf plant and its location in Claiborne County matter for many reasons, among them, it illustrates the dilemma of rural communities in the modern South, the shortcomings of nuclear power as an economic engine, and the complicated political terrain during the post-civil rights period.

In 1972, Mississippi Power & Light, (MP&L) which was then a subsidiary of Middle South Utilities System (which later became Entergy), announced plans to build two nuclear reactors in Claiborne County.<sup>16</sup> Because the financing of Grand Gulf exceeded the costs for one relatively small utility company, MSU created “Middle South Energy, Inc.,” which would technically own and pay for Grand Gulf, while MP&L would “design, construct, and operate” the plant.<sup>17</sup> For clarity, the chapter refers to MP&L and not the larger subsidiary, MSE (a subsidiary of MSU). At the time, MP&L served forty-four counties in Mississippi and over 200,000 customers. Like many other utilities during this period, MP&L’s plans for two reactors reflected the widespread belief that economic

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<sup>14</sup> Claiborne County, United States Census, 2010, [Quickfacts.census.gov/qfd/states/28/28021.html](http://Quickfacts.census.gov/qfd/states/28/28021.html).

<sup>15</sup> Emilye Crosby *Little Taste of Freedom: The Black Freedom Struggle in Claiborne County, Mississippi* (Chapel Hill: UNC Press, 2005), 3.

<sup>16</sup> Middle South Utilities System was a holding company that included five companies: Arkansas Power and Light, MP&L, Louisiana Power & Light, New Orleans Public Service, and Arkansas-Missouri Power Company.

<sup>17</sup> U.S. Supreme Court, *Mississippi Power v. Miss. Ex Rel Moore*, No. 86-1970, Argued, Feb. 22, 1988, Decided, June 24, 1988.

growth and cheap, abundant energy correlated closely with one another and bloated estimates of power consumption in the immediate future.

The planned site encompassed 2300 acres bordering the Mississippi River and the Grand Gulf Military Park. As part of the licensing process, MP&L conducted an environmental assessment, and the formal environmental impact statement depicts Grand Gulf's site as it existed in 1972. The flood plain of the river spanned sixty miles, flanked at its edges by loessial bluffs, which may have inspired Grant's description of the inhospitable terrain, an unpredictable mix of a powerful river and unstable bluffs.<sup>18</sup> Close to the river, the site also contained two lakes, swamp land, and pools of still water, which periodically disappeared during seasonal floods. Today, Grand Gulf's reactor occupies the eastern part of the site separated from the river by bluffs with steep slopes.

When MP&L surveyed the aquatic species potentially affected by Grand Gulf, they noted that while over one hundred species of commercial and sport fish were found in the lower Mississippi, in recent years, deadly fish kills had curtailed a once abundant source. In the early 1960s, as Pete Daniel has traced, a series of "massive and disturbing" fish kills occurred in the lower Mississippi—south of Memphis. A number of chemicals contributed to the problem, among them endrin, used as an insecticide and rodenticide.<sup>19</sup> The fish kills of the 1960s demonstrated the dangers of industrial and agricultural run-off, in addition to unregulated hazardous waste disposal. Moreover, the incidents exposed their far-reaching effects; potent chemicals released upstream not only traveled

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<sup>18</sup> MP&L, Environmental Report, Grand Gulf Nuclear Station (1972), 2.5-1.

<sup>19</sup> MP&L, Environmental Report, 2.7-1; Pete Daniel, *Toxic Drift: Pesticides and Health in the Post-War World II South* (LSU Press, 2007), 84-85.

downstream, but fish absorbed these chemicals in surprising quantities, leading to the jarring image of hundred pound gar and thigh-thick catfish bleeding from their gills and dying in large numbers. Comparatively, thermal pollution from a nuclear reactor appeared far more benign.

Forests, mainly bottomland hardwoods and loessial bluff hardwoods, such as sugar-berry and sweet-gum trees, occupied much of the site. During summer-time, the forest's understory revealed dewberries, while the bluffs put out poison ivy and Japanese honeysuckle, an invasive species that thrives in the warm climates.<sup>20</sup> Grand Gulf's forests and fauna were also home to over ninety-six avian species, as identified in 1972, ranging from Carolina chickadees to owls to bobwhite quail. The Middle Ground Island, in the site's western portion, welcomed thousands of blackbirds for roosting. Amidst the thriving bird population were an array of mammals, reptiles, and amphibians.<sup>21</sup> Even as natural and unnatural events left Grand Gulf bereft of humans, the terrain teemed with other life forms.

Like other environmental studies conducted in the early 1970s, the survey noted the possibility that certain rare or endangered species might inhabit the area: the red wolf (*canis rufous*), the puma (*felis concolor*), the American Alligator (*Alligator mississippiensis*), and the eskimo curlew (*Numenius borealis*).<sup>22</sup> While alleged sightings of cougars in the southeastern United States still occur, other species have since disappeared from the region. The last reported sighting of the avian species, the eskimo curlew, in the

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<sup>20</sup> MP&L, Environmental Report, 2.7-13.

<sup>21</sup> MP&L, Environmental Report, 2.7-13-26.

<sup>22</sup> Ibid., 2.7-26.

Southeast occurred in 1987. Near Grand Gulf, only one American Alligator was spotted during the survey, and no sightings of red wolves had been reported since 1946.<sup>23</sup>

In this regard, Grand Gulf's environmental impact statement (EIS) helps illustrate the site's environment as it existed in 1972, but it also pointed to an environment that existed only in the abstract or the imaginary—perhaps somewhere a cougar or red wolf roamed. Nothing in the site's two thousand acres constituted enough of an environmental jewel, according to MP&L and the federal government, to halt plans for Grand Gulf. After all, humans had abandoned much of the vine-swarmed river gullies a century prior. And unlike many other forms of industrial development, the large size of nuclear plant sites and relatively small portion of land used, in some ways, actually preserves the land from destruction.<sup>24</sup> For Grand Gulf, MP&L estimated only 300 acres, ninety-percent of which was forested, required clearing.<sup>25</sup>

While MP&L noted alternative sites in its EIS, Grand Gulf proved more appealing for environmental reasons and allegedly because of the economic benefits for Claiborne County. MP&L's EIS statement, which often included socioeconomic details, noted the county's decline in population and economic opportunities over the course of the twentieth-century, underlining the high employment rate, low per capita income, and percentage of residents receiving public assistance. As the EIS stated, Claiborne County

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<sup>23</sup> Ibid., 2.7-26.

<sup>24</sup> For example, see efforts by Duke Energy: <http://nuclear.duke-energy.com/2015/09/09/the-wild-side-of-nuclear-facilities/>; Joseph Masco, "Mutant Ecologies: Radioactive Life in Post-Cold War New Mexico," *Cultural Anthropology* 19, No. 4 (2004): 517-550.

<sup>25</sup> MP&L, Environmental Report, 4.1-2.

“has long been one of the most impoverished areas in the United States,” and the other alternative sites possessed more economic resources.<sup>26</sup> From MP&L’s perspective, Claiborne County offered an ideal setting for a nuclear plant. After several years of licensing procedures, and a public hearing that lasted only 17 and-a-half minutes, the Atomic Energy Commission granted MP&L a full authorization for construction in September 1974.<sup>27</sup>

At the ground-breaking ceremony one month later, Mississippi Governor William Waller extoled the moment; it provided “matchless evidence that Mississippi and her people are moving forward to a glorious destiny.”<sup>28</sup> The president of nearby Alcorn State University (one of Mississippi’s historically black colleges), Dr. Walter Washington, praised the plant’s potential to raise the standard of living for “all citizens,” and other locals expressed their hope that the plant would breath “new life and a new prosperity” into the area.<sup>29</sup> The ceremony, in some respects, resembled any other of its kind with vague platitudes about the future and the benefits of a project. Considering the area’s dire poverty and poor infrastructure though, a nuclear powered future meant tangible improvements and significant tax revenues. While the employment numbers touted by

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<sup>26</sup> Ibid., 8.3-9; 9.1.-1

<sup>27</sup> Mississippi Power & Light, “Helping Build Mississippi,” Promotional Materials (Winter 1974-1975), Folder: MP&L Grand Gulf Nuclear Plant 1975 (190), Box 3, Papers of John C. Stennis, Mississippi State University, Starkville, Mississippi; Bryan Burrough, “Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South,” *Wall Street Journal*, June 15, 1984.

<sup>28</sup> Mississippi Power & Light, “Helping Build Mississippi,” Promotional Materials (Winter 1974-1975), Folder: MP&L Grand Gulf Nuclear Plant 1975 (190), Box 3, Papers of John C. Stennis, Mississippi State University, Starkville, Mississippi.

<sup>29</sup> Ibid.

utility companies never guaranteed local jobs, particularly in the South where construction work was at least partially comprised of union labor and required some degree of skill, the other benefits offered enough to engender community support. Even if that entailed living in the shadow of a nuclear reactor, a bargain likely appeared better than the alternative.

Despite this, some observers expressed skepticism about the project's benefits for Claiborne County. In a pamphlet published by the Black Economic Research Center, which is undated but likely written before construction began, writer Joseph Huttie Jr. raised a number of concerns about Grand Gulf. Noting the county's poverty, Huttie surmised that local residents saw the "station as a guaranteed way to a better and more productive life," and because of this, posing questions to locals remained "difficult."<sup>30</sup> Huttie contrasted the gross disparities between the average per capita income for Claiborne County residents, approximately \$1,860 and the estimated wage for a Grand Gulf Construction worker—\$23,000 to \$26,000. Despite the promises made by MP&L officials, the pamphlet pointed to a study conducted by the utility itself, which conceded that construction workers would likely come from outside Claiborne County. In fact, as the document acutely notes, even the term "local" meant something different to MP&L; "local" translated to the nearby cities "Vicksburg, Natchez, or Jackson." Even if the county received increased tax revenue, nothing guaranteed any sort of long-term, widespread economic development in Claiborne County itself. While anti-nuclear activists would oppose Grand Gulf for other reasons in the coming years, the pamphlet

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<sup>30</sup> Joseph Huttie, Jr., "Grand Gulf: Some Unraised Questions," A Black Economic Research Center Publication (Black Economic Research Center, 1973).

redirected attention to equally relevant concerns. Among them, a project “with the magnitude of Grand Gulf” would soon occupy a predominantly black, impoverished county, where African-Americans had “historically been little more than second class citizens.”<sup>31</sup>

Even though the locations of nuclear plants in the South do not strongly correspond to racial demographics, and Claiborne County possessed exceptional characteristics regarding poverty and demographics in comparison to other sites, Huttie rightly contended that history could not be “ignored.”<sup>32</sup> In a place with few means, where equality and protection under federal law had routinely failed its black citizens, building a high-risk system of electrical generation raised serious questions. What guarantees would be made by local, state, and federal officials to guarantee the safety and the well-being of people whose safety and rights had been ignored or willfully neglected by such entities? Moreover, Huttie perceptively observed that even if the plant operated safely, Claiborne County’s future only offered minor changes, “in which the already rich get richer while the poor stay poor.”<sup>33</sup>

#### *Tornadoes, Toads, and Three Mile Island: Obstacles to Building Grand Gulf*

Like many nuclear plants under construction in the 1970s and 1980s, Grand Gulf encountered obstacles—both internally and externally produced. Beyond general issues that utility companies confronted, such as rising costs and a moving regulatory target, Grand Gulf’s problems also reflected a larger power struggle, spanning three states and

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<sup>31</sup> Ibid.

<sup>32</sup> Joseph Huttie Jr., “Grand Gulf: Some Unraised Questions.”

<sup>33</sup> Joseph Huttie Jr., “Grand Gulf: Some Unraised Questions.”

ensnaring consumers, laborers, politicians, utility executives, public utility commissions, and the federal government. Recent scholarship on energy systems has emphasized the hidden or invisible nature of electricity, and the disjunction between where energy is produced and what places receive that power.<sup>34</sup> To a great extent, Grand Gulf exemplifies the generally hidden nature of our energy systems, where rural communities or “the hinterlands” supply large and medium sized cities with power.<sup>35</sup> And yet, even though non-activists consumers rarely expressed concern for the places that contained coal or nuclear plants, debates about energy choices were highly visible in the 1970s and 1980s.

In part, the 1970s energy crisis and fears about nuclear accidents heightened concerns. As the debacle over Grand Gulf illustrates though, consumers in the late 1970s and 1980s confronted the threat of wildly escalating utility bills to pay for nuclear power plants. Unlike today, local *and* national media outlets covered these issues relentlessly, often portraying nuclear reactors as boondoggles and utility executives as exceedingly powerful, greedy, and irresponsible. If the environmental complexities, and metropolitan and rural inequities, were less perceptible to those outside of places like Claiborne County, consumers in Mississippi and elsewhere faced enormous rate increases, prompting widespread outrage about government and corporate accountability. Stories of faulty construction, neglect from regulators, and drug use at nuclear sites only

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<sup>34</sup> Richard F. Hirsh and Benjamin Sovacool, “Wind Turbines and Invisible Technology: Unarticulated Reasons for Local Opposition to Technology: *Technology and Culture* 54, No. 4 (October 2013), 705-734; Renate Mayntz, Thomas Parke Hughes, *The Development of Large Technical Systems*, v. 2 (Boulder, Colo: Westview Press, 1988); Andrew Needham, *Power Lines: Phoenix and the Making of the Modern Southwest* (Princeton, New Jersey: Princeton University Press, 2014). David E. Nye, *Consuming Power: A Social History of American Energies* (Cambridge, Mass: MIT Press, 1998).

<sup>35</sup> Needham, *Power Lines*, 5.

exacerbated the sense that utility companies had bungled their grand plans for nuclear power but hesitated little in asking for rate increases to pay for their mistakes. From the 1970s to early 1980s, economic, environmental, and energy crises converged, invigorating concerns about what America's energy future would look like, how it would affect the environment, and who would pay for it. These concerns reverberated in Mississippi, Arkansas, and Louisiana, as all three states found themselves with Grand Gulf's hefty price tag. Before the rate debacle occurred though, a series of other issues emerged during Grand Gulf's construction. While the problems do not warrant an extensive discussion, they illustrate why many people felt skeptical about nuclear power, the difficulty MP&L had adapting to an increasingly complicated regulatory landscape, and the reactions from Claiborne County residents.

Construction at Grand Gulf occurred for several years with little fanfare or media attention. Interest in the plant resurged in April 1978, when a tornado ripped through the Grand Gulf site. The tornado's path was 1,500 to 1,800 feet wide, with winds upward of 125 to 150 miles per hour.<sup>36</sup> Construction cranes toppled from the storm's force and collided into one cooling tower. The collision between the crane broke a large section from the upper section of the tower—an image that widely circulated and made the structure appear vulnerable.<sup>37</sup> The utility responded to the incident by asserting that damage only resulted from an unusual collision, one that would not occur during normal operation, but hired outside firms to inspect the damage. The event made a facility

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<sup>36</sup> Applicant's Environmental Report, Operating License Renewal Stage, Grand Gulf Nuclear Station (Nuclear Regulatory Commission, 2004), 2-131.

<sup>37</sup> Ibid., 2-131.

allegedly invulnerable to all natural disasters—barring truly exceptional events—seem vulnerable even to mid-range storm. Of more consequence than the repair costs or construction delays, the tornado reinserted Grand Gulf into the public mind and largely remained there for the next decade. Adding to the renewed interest, in the fall of 1978, a labor strike at Grand Gulf prompted a walk-out of over two hundred carpenters.<sup>38</sup> It was a small disruption but portended greater obstacles in the future for Mississippi Power & Light.

The March 1979 accident at Three Mile Island galvanized anti-nuclear activism across the United States. Grand Gulf, which had been immune to the large protests elsewhere, faced scrutiny from a small cluster of anti-nuclear organizations in Mississippi. While the accident at TMI loomed large in the public's mind (evidenced by archival sources and polling data), other recent events also drew skepticism from residents in western Mississippi.<sup>39</sup> A year earlier, a federal report named a number of possible sites for nuclear waste storage, among them were three sites in Mississippi. Residents in Richton, Mississippi reacted coolly, with one man asking “How would you like to live on top of an atomic bomb?...That is the ground my grandchildren are living on.”<sup>40</sup> While Governor Cliff Finch described the state’s position as “unalterably opposed,” the possibility for federal imposition—by the way of radioactive waste

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<sup>38</sup> “Bechtel drops \$1.3 million suit against strikers after agreement,” *The Clarion Ledger*, February 7, 1979.

<sup>39</sup> David Allen Burke, *Atomic Testing in Mississippi Project Dribble and the Quest for Nuclear Weapons Treaty Verification in the Cold War Era* (Baton Rouge: Louisiana State University Press, 2012), 153-156.

<sup>40</sup> Lea Anne Hester, “Most Richton Residents Cool To Waste Deposits,” *Laurel Leader Call*, June 1, 1978, 1.

storage—loomed into the 1980s and has been periodically suggested as a possibility in the past decade. The threat encouraged a small anti-nuclear movement in Mississippi, which intensified after the accident at Three Mile Island.

In the same month as TMI, Dr. Edmund Keiser, a University of Mississippi biologist discovered high levels of radiation in “deformed” toads near the Tatum salt dome, where underground nuclear testing had been conducted in the 1960s.<sup>41</sup> The biologist believed the toads were possibly exposed to tritium, the radionuclide often found in water sources near nuclear sites. Keiser disclosed his suspicions with a local Sierra Club member but cautioned against informing media outlets before further testing.<sup>42</sup> Testing showed high levels of radiation, specifically sodium-22, a radioactive isotope of sodium, but later investigations revealed that contaminated laboratory equipment produced abnormally high levels of radiation.<sup>43</sup> The radioactive toad scare may have passed, but even unproven nuclear controversies produced suspicion, hurting the industry’s credibility.

As fears swirled, three hundred protestors descended upon Port Gibson in June 1979.<sup>44</sup> Like many anti-nuclear protests, activists passed out anti-nuclear literature and

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<sup>41</sup> “Radiation: Hazards At Nuclear Test Site Not As Bad As First Thought,” *Laurel Leader Call*, May 29, 1979, 3.

<sup>42</sup> David Allen Burke, *Atomic Testing in Mississippi Project Dribble and the Quest for Nuclear Weapons Treaty Verification in the Cold War Era* (Baton Rouge: Louisiana State University Press, 2012), 153-156.

<sup>43</sup> “Radiation: Hazards At Nuclear Test Site Not As Bad As First Thought,” *Laurel-Call*, May 29, 1979, 3.

<sup>44</sup> David Kubissa, “The protestors came to rally...,” *The Clarion Ledger*, June 3, 1979, Grand Gulf Vertical Files, MDAH.

gave speeches about the dangers of nuclear power, advertising the slogan frequently used by southern anti-nuclear activists: “No Nuke’s Y’all.” Recycling a common anti-nuclear spectacle, protestors released five hundred balloons with a warning card affixed: “The winds would be carrying radioactive contamination to this point. YOU would be contaminated.”<sup>45</sup> Watching the protest, an electrician employed at Grand Gulf, levied a familiar critique at the anti-nuclear activists. Drawing a distinction between those who labored and those who protested, and underscoring the types of knowledge obtained from laboring onsite, the electrician urged the reporter to “take a look at these people around here,” and concluded that if protestors “worked for a living at this like I do, they wouldn’t be protesting.”<sup>46</sup> The activists, primarily from Jackson and Hattiesburg, viewed the event as a way to educate locals and to raise alarm about the dangers of nuclear power, but expressed a “little disappointment” that few Port Gibson residents joined the protest.

Locals, in fact, were no strangers to protest. During the 1960s, the NAACP helped orchestrate a boycott of white merchants in Port Gibson.<sup>47</sup> Even after Three Mile Island, the local stance towards Grand Gulf ranged from supportive to ambivalent. Sarah Pearson Crisler, publisher of the *Port Gibson Reveille*, described the plant as a “boon to the entire town,” and then underscored the difficulty outsiders might have of its upside: “You just have no idea what this plant means to us, economically.”<sup>48</sup> The town librarian, Nancy Batton, disclosed her growing skepticism of the plant’s safety after the tornado incident,

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<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> Emilye Crosby, *A Little Taste of Freedom*.

<sup>48</sup> Murphy Givens, “Grand Gulf: No ‘hysteria against’ nuke here,” *The Clarion Ledger*, April 1, 1979.

but also informed reporters that no patron had requested information on nuclear energy in three years, adding “that kind of tells you something about how worried people are in Port Gibson.”<sup>49</sup>

Others expressed an ambivalent view towards the plant. Reporters found resident Hicks McNair fishing at a pond near Grand Gulf, who aptly surmised, “Maybe it’s dangerous and maybe’s not.”<sup>50</sup> While the comment captured the kind of common sense interpretation that reporters gravitated towards, particularly when interviewing rural people fishing (an exhaustingly common trope), McNair’s observation also highlighted how attitudes towards technology shifted based on circumstance. The people of Claiborne County had few options for economic opportunity, and even as allegations and proven violations surfaced, the thread of ambivalence continued. While views for and against nuclear power are generally emphasized, McNair’s comment demonstrates the real albatross for the industry—an inability to remove the possibility of a severe accident, which led to neither strong support nor outright opposition in certain cases.

As the fervor around the tornado, TMI, and radioactive toads subsided, larger problems loomed for Mississippi Power & Light and its Grand Gulf plant. First, as a result of a general downturn in the nuclear industry, the company suspended construction on Grand Gulf’s second reactor unit in 1979.<sup>51</sup> Beyond this industry-wide trend, where demand for energy dropped and new reactors appeared unnecessary, a rate-controversy

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<sup>49</sup> Murphy Givens, “Grand Gulf: No ‘hysteria against’ nuke here,” *The Clarion Ledger*, April 1, 1979.

<sup>50</sup> Murphy Givens, “Grand Gulf: No ‘hysteria against’ nuke here,” *The Clarion Ledger*, April 1, 1979.

<sup>51</sup> “NRC Predicts Building Halt At Grand Gulf,” *Laurel Leader Call*, March 13, 1982, 3.

jeopardized Grand Gulf's future in the early 1980s, when it became unclear who would pay for the plant and who would buy the power it produced. Adding to this, reports of excessive violations, falsified documents, and shoddy construction seriously encumbered the final licensing process. In part, the nuclear industry spent much of the 1980s adjusting to a post-TMI regulatory landscape, where tightening regulations forced substandard or lax management to overhaul their practices.

More broadly, the problems occurred during transitional period for the entire utility industry. The 1970s energy crisis, inflation, the environmental and anti-nuclear movements, “technological stasis” in utility hardware, and new policies challenged the “utility consensus” of decades past.<sup>52</sup> During the early twentieth century, utility companies built “regional electric power empires,” which were poorly regulated and shakily financed.<sup>53</sup> In an attempt to ameliorate the abuses of utilities, Congress passed the Public Utility Holding Company Act in 1935, which “abolished most utility holding companies except those providing economies and efficiencies to geographically contiguous utilities.”<sup>54</sup> The act limited how utility companies were organized, and the New Deal programs like TVA and the Rural Electrification Agency also challenged the authority utility companies held. Despite these measures though, utility companies continued to operate through smaller holding companies, where the cost of building new power facilities often entailed “pooling” agreements between several smaller companies,

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<sup>52</sup> Richard F. Hirsh, *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System* (Cambridge, Mass: MIT Press, 1999), 9, 53-55.

<sup>53</sup> James Williams, “Strictly Business: Notes on Deregulating Electricity,” *Technology and Culture* 42, No. 3 (July 2001): 627.

<sup>54</sup> Richard Hirsh, *Power Loss*, 41.

sometimes in contiguous states. Moreover, utilities still operated as “natural monopolies,” whose arrangements were allowed because the product served the public good. Until the 1970s, utility companies pursued a “grow and build” strategy, which promoted electricity consumption “in order to justify building new, more productive power plants,” and consumers enjoyed low energy prices.<sup>55</sup>

In the late 1970s, the landscape also changed for utility companies due to Jimmy Carter’s National Energy Plan. The “cornerstone” of Jimmy Carter’s plan was a piece of legislation known as PURPA, the Public Utilities Regulatory Policy Act of 1978.<sup>56</sup> According to James Williams, PURPA “eliminated rate structures,” which favored large users of electricity, and it forced utilities to potentially buy electricity from industrial generators or small scale energy producers—such as a solar farm.<sup>57</sup> In practical terms, PURPA challenged the “grow and build” strategy utilities had long advocated, which encouraged unrestrained usage of electricity.<sup>58</sup> The legislation encouraged the presence of “soft energy” generators, which made it easier for generators of wind, solar, and other nontraditional forms of power generation to compete with traditional utility companies. PURPA also encouraged deregulation in the utility industry, one that has had some positive consequences with diversifying power sources, but also opened the door for disastrous deregulation that resulted in California’s electricity crisis in 2000 and 2001.<sup>59</sup>

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<sup>55</sup> Williams, “Strictly Business,” 627.

<sup>56</sup> Williams, “Strictly Business,” 628.

<sup>57</sup> Williams, “Strictly Business,” 628.

<sup>58</sup> Ibid., 627.

<sup>59</sup> James Williams, “Strictly Business.”

While many utility companies failed to anticipate the larger changes PURPA spurred, an executive from Mississippi Power & Light sent letters to mayors in their service area warning them of the dire consequences if PURPA passed: the “very survival of the United States as a free nation is [was] threatened by the bill.”<sup>60</sup> An uncertain political, economic, and regulatory climate placed utilities in a precarious position, and perhaps nowhere were these shifting sands more evident than with Grand Gulf’s rate debacle.

#### *Grand Gulf Becomes “Grand Goof”: Populist Outrage, Bill Clinton, and the Rate Crisis*

Like most nuclear plants undergoing construction in the late 1970s, MP&L repeatedly pushed back Grand Gulf’s completion date, and as delays occurred, construction costs soared. Suddenly, in the early 1980s, the “largest construction project in Mississippi” had far exceeded anticipated costs and forecasts for power consumption had declined, leaving MP&L desperately searching for a means to uphold a financial agreement from a decade prior—when the outlook about energy consumption and construction costs appeared very different. In the case of Grand Gulf, several smaller utilities within its parent company, Middle-South Utilities, were part of a system agreement to pay for Grand Gulf and to buy some of its power. System agreements offered companies a feasible way of financing large-scale projects, especially nuclear reactors, which even by early estimates cost upwards of five-hundred million dollars—per reactor. For Grand Gulf, Arkansas Power & Light, New Orleans Public Service, Inc., Louisiana Power & Light, and MP&L had committed, perhaps unknowingly, to pay for a certain percentage of Grand Gulf and to buy power from it in the future. Moreover,

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<sup>60</sup> Hirsh, *Power Loss*, 79.

MP&L officials allegedly informed Mississippi's Public Service Commission in 1974 that the utility's financial obligations for the plant only amounted to nineteen percent.<sup>61</sup>

The battle over who would pay for Grand Gulf ensnared utility companies, public service commissions, the Federal Energy Regulatory Commission (FERC), state and local governments, and consumers. Described by the *Wall Street Journal* as "one of the largest and most complicated" cases ever presented to FERC, the legal and political fight over funding Grand Gulf exposed the vulnerability of even well-established utilities. The fight revealed the extent to which electric rates were a hot-button political issue.<sup>62</sup> In tandem, the rate controversy underlined and acknowledged the ongoing problem of poverty, the former bread and butter of southern liberals that had been replaced by identity-politics and obscured by the so-called Americanization of Dixie. Even if the politicians and state officials who issued ominous warnings about the effects of thirty percent rate increases for poor constituents cared little about addressing ongoing, deep-seeded poverty in Arkansas, Mississippi, and Louisiana, they rightly inferred that dramatic rate increases were politically disastrous. While our energy systems appear "invisible" to many people today, the controversies surrounding nuclear power and the crisis within the utility business turned into a hyper-visible issue in the late 1970s and 1980s.

In 1974, Middle-South Utilities (MSU) developed the agreement for financing Grand Gulf, which divided the cost between its various subsidiaries located in

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<sup>61</sup> Mark Schleifstein, "MP&L Allocation already under study by feds," *Clarion Ledger*, December 4, 1982.

<sup>62</sup> Bryan Burrough, "Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South," *Wall Street Journal*, June 15, 1984.

Mississippi, Louisiana, and Arkansas. Later testimony by then Arkansas Governor Bill Clinton noted the surreptitious nature of the agreement; it was filed with the Securities and Exchange Commission but not published in the Federal Register—potentially leaving state public service commissions unaware of the implications.<sup>63</sup> Then in 1977, according to Clinton’s testimony, Middle South Utilities president Floyd Lewis testified before Arkansas’s Public Service Commission that the state’s ratepayers would not be financially responsible for Grand Gulf if the power proved unneeded.<sup>64</sup> Recalling the moment in 1986, Clinton stated that he would “never forget, if...[he lived] to be 100, the clear memory of ...[Lewis] raising his right hand and taking oath...that we would not have to pay for Grand Gulf if we built all the power plants he wanted us to build.”<sup>65</sup>

At some point during 1979 or 1980, documents surfaced that showed AP&L had committed to paying for part of Grand Gulf, even if the power provided by the new plant was unnecessary.<sup>66</sup> In 1980, Arkansas Power & Light left the agreement after the Arkansas Public Service Commission and then Attorney General Bill Clinton pressured Middle-South.<sup>67</sup> The other subsidiaries reportedly signed a memorandum agreeing to AP&L’s exit, which pleased Arkansans but alarmed ratepayers in Mississippi and Louisiana. However, a formal agreement forced AP&L to guarantee loans to finance the

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<sup>63</sup> Bill Clinton, *Hearing Before the Subcommittee on Water and Power*, S. 1149, July 23, 1986, 73. See also Bill Clinton, *My Life* (New York: Alfred A. Knopf, 2004), 353.

<sup>64</sup> Clinton, *Hearing*, 73.

<sup>65</sup> Clinton, *Hearing*, 58.

<sup>66</sup> Clinton, *Hearing* 78.

<sup>67</sup> Clinton, *Hearing* 74.

plant, but otherwise the arrangement still appeared amenable to Arkansas's PSC, who feared massive rate increases as a result of Grand Gulf.<sup>68</sup>

As the news about the arrangement surfaced, MP&L spokesmen presented the possibility for buying a greater share of Grand Gulf's power as a necessary measure to diversify a largely oil and natural-gas dependent regional energy system.<sup>69</sup> But reports placed the potential for rate increases in stark terms. If MP&L's allocation increased to over thirty-percent, a monthly electric bill that previously cost \$52 dollars might soar to \$113 dollars.<sup>70</sup> With the national economy still sputtering in 1980, and the uneven pattern of economic development in the South post-World War II, many of MP&L's customers could hardly afford a rate increase. In 1982, MSU's plan for power allocation, once Grand Gulf went online, went before the Federal Energy Regulatory Commission (FERC), while in that same year, Mississippi's Public Service Commission demanded a hearing over the new cost allocations and possible rate increases.<sup>71</sup>

The call for a hearing by Mississippi's Public Service Commission (MPSC) reflected the contentious and embittered relationship between MP&L and the MPSC, and

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<sup>68</sup> Clinton, *Hearing* 74.

<sup>69</sup> Douglas Demmons, "New Orleans wants out of Grand Gulf contract," *Clarion Ledger*, January 1983 (date missing), Grand Gulf Vertical Files, Mississippi Department of Archives and History (MDAH).

<sup>70</sup> Mark Schleifstein, "Customers to pay more for N-Power," *Clarion Ledger*, July 24, 1980.

<sup>71</sup> "How much will the Grand Gulf Nuclear Reactor Cost You?" *Capital Reporter*, December 25, 1980.

<sup>71</sup> Mark Schleifstein, "MP&L Nuclear Allocation already under study by feds," *Clarion Ledger*, December 4, 1982.

a more fundamental conflict between state officials and the federal government. MP&L attempted to evade a hearing, prompting condemnation from the state's Attorney General Bill Allain:

MP&L came down here to the...[MPSC]...and got the certificate to build the nuclear plant with the assurance to the commission that no more than 19 percent would be used by MP&L. Now they're running to Washington where they think they will get better treatment and are thumbing their nose at the commission.<sup>72</sup>

As Allain suggested, MP&L's lawyers claimed that only FERC "has exclusive jurisdiction" in this case and filed a motion to dismiss PSC's order for a hearing.<sup>73</sup> The stakes were much higher than increased rates; the fight over Grand Gulf threatened to permanently weaken the authority of states to regulate utilities. It also offered a chance for renewed consideration of corporate accountability and the stubborn issue of poverty. Attention to the latter had largely been superseded by interest in identity politics and social causes, but for a brief moment, the threat of increased rates prompted politicians to chip away at the Sunbelt façade of prosperity and progress.

Beyond official statements and testimony, other sources provide a good indication of MP&L's views about the battle over Grand Gulf. In 1988, a former MP&L employee, Donald Colmer, published a book-length defense of the company and the project itself. Colmer blamed MP&L's problems upon a shift in political winds, where certain gubernatorial administrations developed policies that reflected "regressive populism,"

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<sup>72</sup> "MP&L Acts to block state nuclear hearing," Mark Schleifstein, *Clarion Ledger*, December 31, 1982.

<sup>73</sup> Barbara Brumm, "Hearing on MP&L's participation in Grand Gulf," *Jackson Daily News*, January 5, 1983.

breaking several decades of aggressive efforts to attract industry.<sup>74</sup> With the gubernatorial election of Cliff Finch, a Mississippi Democrat who “sacked groceries...on his way to the Governor’s Mansion,” the presidential election of Jimmy Carter, and Bill Clinton’s gubernatorial victory in Arkansas, “populism was reborn with a vengeance.”<sup>75</sup> Following Cliff Finch’s term, the election of the anti-nuclear Democrat, William F. Winter, like the election of Richard Riley in South Carolina, assured closer scrutiny of the nuclear industry and utility companies generally. Following Clinton’s lead, Bill Allain’s battle against MP&L also won him political points, and he succeeded Winter in 1984. From Colmer’s perspective, and likely many others, the populist-infused critique of utility companies, specifically Middle-South Utilities, brought about larger economic changes. Colmer characterized Jimmy Carter’s election as the “greatest tragedy” for electric customers in the “southern tier of states,” and lamented the anti-growth policies of so-called populists who initiated the “heavy exodus of industry” from the United States.<sup>76</sup>

The populist fervor continued into 1983, when the Mississippi Public Service Commission, led by Lynn Havens, D.W. Snyder, and Norman Johnson, pressed MP&L for a public hearing on the issue, and after a series of legal skirmishes, a federal judge ruled backed MPSC’s request for a hearing.<sup>77</sup> While the PSC hearing would not occur until June 1983, hearings before the Federal Energy Regulatory Commission began in

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<sup>74</sup> W. Donald Colmer, *The Gammarae: A Story of the Grand Gulf Nuclear Station* (Diangello Publishers, 1989), 27-28.

<sup>75</sup> Colmer, 29.

<sup>76</sup> Colmer, 29-32.

<sup>77</sup> “Judge Clears Way for A-Plant Hearing,” *Clarion Ledger*, February 25, 1983.

March 1983. During those proceedings, public service commissions from Louisiana and Mississippi cited concerns about rate increases, in addition to MP&L and MSU's concerted efforts to side-step state authority.<sup>78</sup>

Like the public service commissions in Arkansas and Mississippi, Louisiana's state commission, along with the New Orleans City Council, expressed alarm at their financial obligation but also called for the return of Arkansas Power & Light to the agreement.<sup>79</sup> By November 1983 though, the citizen group, Save Our Wetlands, decried the willingness of the New Orleans City Council to consider a referendum giving Louisiana Power & Light and New Orleans Public Service (MSU companies) exclusive access to their market for sixty years, described by the group as a "conspiracy between the City Council and the utilities."<sup>80</sup> Despite the onslaught of criticism by public service commissions, citizen groups expressed doubt about their immunity from corruption. The suit alleged that an earlier referendum which ceded complete control of New Orleans Public Service to the Louisiana Public Service Commission was "the only referendum in American history to be underwritten by a private corporation."<sup>81</sup>

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<sup>78</sup> Dennis Camire, "State Groups accuse utility of evasion," *Clarion Ledger*, March 15, 1983.

<sup>79</sup> Dennis Camire, "Arkansas should share nuke cost, Louisiana PSC consultant tells feds," *Jackson Daily News*, March 31, 1983.

<sup>79</sup> Douglas Demmons, "New Orleans wants out of Grand Gulf contract," *Clarion Ledger*, January 1983 (date missing), Grand Gulf Vertical Files.

<sup>80</sup> "Group Fears Grand Gulf rates, opposes N.O. utility franchises," *Clarion Ledger*, November 4, 1983.

<sup>81</sup> Ibid.

The legal odyssey over cost-allocation and rate approvals required hearings before state public service commissions, primarily Mississippi's, the Federal Energy Regulatory Commission, and eventually the United States Supreme Court. In 1984, FERC's administrative law judge ruled that all four generating companies should bear the cost of Grand Gulf and recommended AP&L's allocation as thirty-six percent.<sup>82</sup> Responding to this ruling, infuriated Arkansans allegedly mailed "hundreds of thousands of post cards" to President Ronald Reagan, insisting that Secretary of Energy Donald Hodel "advocate the 'states' rights' position on this issue."<sup>83</sup> If Grand Gulf has faded from public memory today, in 1984, Arkansans named it the most important news story of the year.<sup>84</sup> Relishing in the furor, Governor Bill Clinton described the fight as "war," and any payments from Arkansans for Grand Gulf would occur "over his dead body."<sup>85</sup>

The frustration extended to Mississippi's Public Service Commission, who relentlessly pursued a clear justification for any possible rate increases in the future and doggedly fought for the PSC's right to intervene in such matters. After a series of bizarre hearings, where commissioners purposely mispronounced names, ridiculed one witness's hair, and were photographed asleep *during* the hearings, the PSC ordered an extensive

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<sup>82</sup> Legal Brief, December 7, 1985, Folder 16: General Correspondence, Box 12, Dale Bumpers Papers, University of Arkansas Special Collections, Fayetteville, AR; Clinton testimony, 75.

<sup>83</sup> Clinton, *Hearing*, 75.

<sup>84</sup> "Grand Gulf case named top story of '84 in Arkansas," *Jackson Daily News*, December 24, 1984.

<sup>85</sup> Bryan Burrough, "Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South," *Wall Street Journal*, June 15, 1984.

audit of Grand Gulf in September 1984.<sup>86</sup> Ignoring the recommendations by the Public Utilities Staff, the PSC selected Burkhalter and Company, an accounting firm based in Jackson, Mississippi, for the audit.<sup>87</sup> Receiving over two million dollars for the audit, Burkhalter & Company found MP&L largely blame-free for Grand Gulf's escalating costs, concluding that "factors causing major cost escalation and schedule slippage were industry-wide in nature and beyond the direct control of MP&L."<sup>88</sup>

While the audit gave the PSC more substantial justification for a rate increase, corruption ran rampant throughout, as later federal investigations determined. On August 11, 1987, the forty-year old lead auditor of Grand Gulf, David Charles, was found dead from carbon monoxide poisoning in the garage of his Jackson home.<sup>89</sup> However, the coroner officially ruled the cause of death "undetermined," and the FBI found his death suspicious enough to launch an investigation.<sup>90</sup> Charles had been a friend and campaign aide for the hard-charging PSC Commissioners, D.W. Snyder and Lynn Havens, and

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<sup>86</sup> "MP&L: PSC plan for cheaper power won't work," *Clarion Ledger*, August 5, 1983; Douglas Demmons, "Grand Gulf Plan linked to rate big," *Clarion Ledger*, June 24, 1983.

<sup>87</sup> Report to the Mississippi Legislature, Dec. 12, 1985, "A Limited Review," The PEER Committee, State Collection, MDAH.

<sup>88</sup> Grand Gulf Construction Audit, Prepared for Mississippi Public Service Commission, Jointly Prepared by Decision management Company, Inc. (Laguna Hills, CA) and Burkhalter & Company, Jackson, MS April 1985, MDAH.

<sup>89</sup> Jerry Mitchell, "FBI is probing Grand Gulf Auditor's Death," *Clarion Ledger*, April 16, 1989.

<sup>90</sup> I filed a FOIA request with the FBI for any files related to David Charles, but they were unable to locate any information in their database.

those ties presumably led the PSC to ignore other viable bids for the audit.<sup>91</sup> Less than a year earlier, Snyder and Havens were indicted by a federal grand jury on charges of plotting to stall MP&L rate approval. According to the federal charges, Snyder and Havens attempted to force MP&L to settle a suit with United Gas Pipe Line Company, threatening that without an amendable settlement, MP&L would not receive a rate increase to pay for Grand Gulf. Havens and Snyder were allegedly bribed by Travis Ward, a Texas oilman, who provided free trips to Havens and Snyder, and possibly paid for David Charles's trip to the Super Bowl in 1984. The core issue for federal investigators was whether the audit fraudulently ignored evidence of MP&L's role in forcing "imprudent costs" onto consumers. Although family members cited Charles suffered from narcolepsy and may have fallen asleep in his vehicle, others expressed doubts. One friend, Barclay Rader, shared with reporters that Charles allegedly once said, "If they say I committed suicide, find the one who pulled the trigger."<sup>92</sup> The indictment of Haven and Snyder, along with the suspicious death of David Charles, call not only the audit's conclusions into question but also taints the entire fight between the PSC and MP&L over rate increases.

In 1985 though, no corruption had yet surfaced in the Grand Gulf debacle, and there were more immediate concerns. Among them, the plant itself inched closer to officially going online and finally producing power. While MP&L and MSU officials sought rate relief approval, engineers readied Grand Gulf for its commercial debut, which

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<sup>91</sup> Jerry Mitchell, "FBI is probing Grand Gulf Auditor's Death," *Clarion Ledger*, April 16, 1989.

<sup>92</sup> Jerry Mitchell, "FBI is probing Grand Gulf Auditor's Death," *Clarion Ledger*, April 16, 1989.

had been long-delayed after a series of obstacles and missteps. In 1982, the NRC granted MP&L a low-power license, and Unit One achieved criticality or “went online,” albeit on a much smaller scale than during commercial operation. However, due to a series of unresolved problems, the agency ordered the reactor to remain shut down until MP&L addressed the issues.<sup>93</sup> For example, the NRC belatedly realized that technical specifications for Grand Gulf were borrowed from a model drawn from another plant, and thus, surveillance and safety procedures were not based upon Grand Gulf’s actual specifications.<sup>94</sup> Grand Gulf employs a “Mark III” containment structure, which no operating commercial plant had at the time, so the discrepancy mattered.<sup>95</sup> Only in September 1983 did the NRC grant permission for low-power operation, although a fire in the backup diesel generator delayed achieving criticality for another two weeks.<sup>96</sup> A month later, the NRC revealed its investigation into allegations that MP&L falsified training data for workers at Grand Gulf. To MP&L’s credit, they self-reported the issue and then recertified workers, but they nonetheless ignored necessary worker

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<sup>93</sup> Robert Ourlian, “Grand Gulf Set to Fire Up This Weekend,” *Clarion Ledger*, September 24, 1983.

<sup>94</sup> Bryan Burrough, “Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South,” *Wall Street Journal*, June 15, 1984.

<sup>95</sup> Several other plants that began operation in the mid-1980s also have Mark III containment structures: River Bend, Clinton, and Perry. It’s unclear which plant the design specifications came from. It is possible MP&L used River Bend specifications because both plants were owned by the same holding company, MSU.

<sup>96</sup> Robert Ourlian, “Grand Gulf Set to Fire Up This Weekend,” *Clarion Ledger*, September 24, 1983.

qualifications.<sup>97</sup> Adding to problems, that same year, the NRC levied a \$20,000 fine on MP&L after NRC inspector found a security guard asleep—while on duty.<sup>98</sup> Compounding the growing list of mistakes, the NRC levied another \$12,000 fine on MP&L after the company allegedly failed to follow the proper administrative procedure after the diesel generator fire. The procedure ensured adequate communication about what had been done in the aftermath, a vital aspect to managing a complex, high-risk technology.<sup>99</sup>

The violations or mishaps were not entirely unique to Grand Gulf, as media coverage from the period indicates. To be fair, some of the incidents covered by journalists were often minor in nature and were largely more illustrative of a complicated and evolving regulatory system created to govern complex technology than an imminent threat. Regulatory standards were a moving target, and turnover within the NRC also made expectations unpredictable. After the accident at Three Mile Island, the nuclear industry and the NRC underwent a period of increased scrutiny, and plants still under construction in the early 1980s were perhaps more likely to have aberrations or mishaps detected or reported. Nonetheless, some believed that Grand Gulf's problems were exceptional, particularly from the anti-nuclear camp. In 1984, Congressional staffer Richard Udell, working for Rep. Edmund Markey (D-MA), claimed that “these people

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<sup>97</sup> Robert Ourlian, “MP&L Accused of Falsifying Training Data,” *Clarion Ledger*, November 30, 1983; Bryan Burrough, “Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South,” *Wall Street Journal*, June 15, 1984.

<sup>98</sup> Barbara Brumm, “NRC Orders MP&L to Pay \$20,000 Fine,” *Jackson Daily News*, August 25, 1983.

<sup>99</sup> Robert Ourlian, “Nuke Agency Asks MP&L to Pay fine,” *Clarion Ledger*, December 22, 1983.

are out in Mississippi trying to operate a nuclear plant –they’re not qualified to operate a car.”<sup>100</sup>

The denunciation prompted a swift response. Led by Rep. Jerry Huckaby (D-LA), twenty-four members of the Congressional Interior Committee complained to Chairman Morris Udall (D-AZ) that Udell’s remark was a “blatant slur aimed at Southerners.”<sup>101</sup> For MP&L, the accusations of incompetence from Udell and others implied more a slur on southerners; it disparaged a great accomplishment. MP&L’s Donald Lutken described Grand Gulf as the “eighth wonder of the modern world,” while former employee Donald Comer likened the plant to “Jack’s beanstalk,” which “sprang up in Claiborne County when grinding poverty hovered over the land like a perverse giant.”<sup>102</sup> Whether Grand Gulf constituted the world’s “eighth wonder” or a “Grand Goof,” as labeled by critics, the NRC eventually granted MP&L a full-power license, and the plant began commercial operation in July 1985.<sup>103</sup> And yet, Grand Gulf’s entry into producing power, despite the previous hiccups, was overshadowed by the ongoing controversy surrounding rate increases.

By 1985, MP&L’s financial crisis spiraled further out of control. On June 13, 1985, the Federal Energy Regulatory Commission (FERC) sustained the ruling that all four generating companies (AP&L, NOPSI, MP&L, LP&L) should share the cost of

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<sup>100</sup> Bryan Burrough, “Nuclear Fission: A Huge Atomic Plant, Long Ignored, Stirs Up Fight at Middle South,” *Wall Street Journal*, June 15, 1984.

<sup>101</sup> “Consultant’s remarks irks panel: Comment Critical of officials at nuclear plant.” *Lawrence Journal-World*, June 27, 1984

<sup>102</sup> Burrough, “Nuclear Fission;” Donald Colmer, *The Gammarae*, 1.

<sup>103</sup> Robert Ourlian, “Grand Gulf Turns up the Juice,” *Clarion Ledger*, June 30, 1985.

Grand Gulf.<sup>104</sup> In practical terms, the ruling meant rate increases for consumers. While FERC alleviated some of the pressure on MP&L, purportedly on the verge of bankruptcy, MSU's subsidiaries called for rate increases.<sup>105</sup> Despite their previously staunch resistance, in September 1985, Mississippi's Public Service Commission granted MP&L a three-year rate increase.<sup>106</sup> Meanwhile, the 8<sup>th</sup> Circuit Court dealt a blow to Arkansans by ruling that AP&L could seek a rate increase, one that allowed the subsidiary to pay for Grand Gulf *and* recover profit for its shareholders.<sup>107</sup> Like MPSC, Arkansas's Public Service Commission also settled with AP&L, and granted rate relief, in part motivated by a desire to avoid federal intervention and larger rate-increase.<sup>108</sup> Senator Dale Bumpers (D-AR) expressed dire warnings that rate increases would make "a Sahara out of my state," and contemporary observers pointed to Reynolds Metals closing two aluminum plants days after the rate hike as evidence of its effects.<sup>109</sup>

To be sure, the rate increases disrupted a long-standing benefit touted by southern politicians: cheap electricity. And yet, like professional sports teams who hold metropolitan areas hostage with their demands for expensive facilities, Reynolds Metals escaped the villainous portrayals that MP&L experienced. The very product that utilities

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<sup>104</sup> Bill Clinton, *Hearing*, 75.

<sup>105</sup> *Mississippi Power & Light Co. v. Mississippi ex rel. Moore*, 487 U.S. 354 (1988); "Stock Plummets," *Clarion Ledger*, August 18, 1985.

<sup>106</sup> "PSC Will Ok Hike For MP&L," *Lauren Leader Call*, September 11, 1985.

<sup>107</sup> Bill Clinton, *Hearing*, 76.

<sup>108</sup> Alan Nogee, "Playing the Utilities Game," *Environmental Action* (January/February 1986): 21-23.

<sup>109</sup> Alan Nogee, "Playing the Utilities Game," *Environmental Action* (January/February 1986): 21-23.

provided, one that had allowed the companies to exist as “natural monopolies” since they served the public good, heightened scrutiny directed at their practices—which other corporations ducked. Amidst a deregulatory, free trade climate, corporations somehow remained unscathed, and southern politicians—both Republican and Democrat—had become so accustomed to offering corporate incentives that when companies like Reynolds laid off 1,000 workers in Arkansas, only Middle-South Utilities appeared as the boogeyman.

Nonetheless, Arkansas politicians drove efforts to enhance the powers of state public service commissions. Even before FERC’s official ruling in July 1985, Senator Dale Bumpers (D-AR) and Senator David Pryor (D-AR) cosponsored legislation to address the limited means state commissions possessed in setting rates. The Ratepayer Protection Act of 1985 lingered before Congressional committees and never passed. More notable was the testimony of an aspiring politician, Bill Clinton, who supported the bill and whose personal history with the Grand Gulf controversy began in 1977.

In his testimony, given in July 1986, Clinton articulated the fundamental issues at stake, while also detailing how the fight over Grand Gulf shaped his own outlook on power, corporate accountability, and poverty. Stating the controversy had “consumed a fair amount” of his public life, Clinton blamed his trust in the assurances of MSU President Floyd Lewis on naivety and youthfulness, concluding that he “believed [then] that you could believe anybody’s word if they gave it under oath and realized that they could perjure themselves if they did not tell the truth.”<sup>110</sup> While some satirized Clinton’s fight against MSU as a “thinly veiled political aid,” his testimony and other public

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<sup>110</sup> Clinton, *Hearing*, 58.

statements highlighted issues of long-standing importance to the American South but also about the nature of corporate regulation in the United States.<sup>111</sup> For Clinton, removing the states' authority to regulate utilities and to intervene when companies betrayed their promises or acted imprudently, disproportionately skewed the balance of power towards the federal government, or worse, private interests. According to Clinton, the effect of this imbalance and corporate favoritism was disorienting:

I think I know how people feel in countries such as those that are memorialized in novels like *Animal Farm* and *1984*. You never know where you are. Power is total, arbitrary, and absolutely unconcerned with the interest of the ordinary citizens.<sup>112</sup>

Whatever his motivations, Clinton articulated a populist message aimed at the contradictions within the federal government and Ronald Reagan's administration. Calling the Grand Gulf debacle a "profoundly disturbing harbinger," Clinton goaded Reagan's administration, citing the dispute as "real chance" to "get the federal government off our backs."<sup>113</sup> The new sources of power, as Clinton stated, now appeared abstract and total in their authority.

During his testimony, Clinton chiseled away at the acceptance of greed as a *best practice* and the indifference of the federal government. More striking, the testimony, in its revelation of the region's endemic poverty, challenged a vision of the modern South, one characterized by metropolitan growth, southern lifestyle magazines, and embrace of the hallmarks of the 1980s economy—technology, real estate, finance, and defense

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<sup>111</sup> Cartoon, *Arkansas Democrat Gazette*, September 15, 1985, Folder: General Materials, 1982-1985, Box 12, Dale Bumpers Papers, University of Arkansas Special Collections.

<sup>112</sup> Clinton, *Hearing*, 59.

<sup>113</sup> Prepared Statement of Governor Bill Clinton, "The Lessons of Grand Gulf," (pp. 1, 9), *Hearing Before the Subcommittee on Water and Power*, S. 1149, July 23, 1986.

spending. Clinton's testimony alleged that underneath the glossy surface, one that rate increases of twenty or thirty percent threatened to expose, existed a very different reality, where some people could barely afford to pay their bills at their current rate:

So what we have here is a case where, in the case of Middle South, the poorest people in the United States of America, in States with higher than average unemployment rates, higher than average poverty rates, and how higher than average utility bills, are being told you are a second-class citizen. You cannot come to Washington and have your concerns heard. Nobody knows what you are living like out there...maybe living on \$200 a month...We do not care what happens to you. We are going to give the utility its money no matter how stupid the decision was, how arrogant it was, or what your State was promised.<sup>114</sup>

As historian Judith Stein has detailed, both major political parties failed to address major shifts in American economy during the 1970s—changes they were partly responsible for. While Reagan-era cuts towards social-welfare programs hurt impoverished communities, more damaging was the decline in manufacturing and labor unions, acquiescence to corporate greed, and federal policies that encouraged deindustrialization and limited investment into sectors of production—all patterns that politicians in the 1970s addressed inadequately.<sup>115</sup> To be poor in the eighties, as Clinton's testimony underscored, implied a kind of statelessness, where the government colluded with corporations, the chasm between the powerful and the seemingly powerless grew, and those with power appeared blithely unaware of the repercussions.

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<sup>114</sup> Clinton, *Hearing*, 59.

<sup>115</sup> Judith Stein, *Pivotal Decade: How the United States Traded Factories for Finance in the Seventies* (New Haven: Yale University Press, 2010).

Confirming Clinton's suspicions, the US Supreme Court ruled on the Grand Gulf case in 1988. Prior to the ruling, in 1985, Mississippi's Public Service Commission granted MP&L a rate increase, supported by the audit led by David Charles, who died of carbon monoxide poisoning two months after the Supreme Court's ruling. The state's attorney general and several consumer groups challenged MPSC's authority to increase rates, charging that the grounds of prudence were not sufficiently shown. The case went before the Mississippi Supreme Court, who agreed that "prudence" in avoiding excessive cost had not been demonstrated, challenging FERC's ability to "pre-emptively" rule on questions of rates or determine prudence. Resisting this view, the US Supreme Court ruled that "Mississippi's effort to invade the province of federal authority must be rejected" and reversed the ruling. Historically, Mississippians had crafted a variety of ways to "invade" or curtail federal authority but for less noble purposes. Nonetheless, after the ruling, further negotiations over what form rate increases would take, and how much power each subsidiary would buy occurred over the next several years.

#### *Race, Taxes, and the Distribution of Power*

As the rate controversy continued, another issue surfaced regarding the distribution of tax payments from Grand Gulf. While not as closely followed as the rate controversy, which affected consumers in three states, the massive tax payments from Grand Gulf produced very similar questions about poverty, inequality, corruption, and greed. In the early 1970s, when MP&L sought to build Grand Gulf, among the benefits cited for Claiborne County were increased tax revenues. Generally, nuclear plants offer revenue-poor rural areas a significant, long-term means of improving local infrastructure, public services, and schools. Living near a nuclear plant poses a risk to local populations,

and one important means of off-setting that risk entails boosting the county's coffers with large tax payments. In 1983, some Mississippi state legislators, believing that Claiborne County, despite its poverty and limited opportunities, was "getting too much a 'good thing,'" introduced a measure to redistribute property tax payments from Grand Gulf.<sup>116</sup>

Similar measures had been introduced in previous years, but legislators continued their pursuit. Instead of Claiborne County receiving most of the property tax payments from Grand Gulf, legislators proposed "redistributing" the wealth to all of MP&L's service counties, conveniently ignoring the fact that those communities did not live *by* the nuclear reactor. The initial measure proposed redistributing seventy-five percent of property tax paid by MP&L to all service counties.<sup>117</sup> Rep. Fred Banks, Jr. of Jackson questioned "why should one small county have all that property to tax far beyond the needs of that county." Legislators proposed redistribution occur based upon how much electricity counties consumed, and in the case of Rep. Banks's constituents, Hinds County, where the city of Jackson is located, stood to gain the most from the redistribution. Echoing Banks, Rep. Dick Hall of Jackson mused, "We're talking about totally different numbers than we have before. We're talking about 21<sup>st</sup> century legislation. We never dreamed of values like this."<sup>118</sup>

While some legislators salivated over millions of dollars in added tax revenue, others expressed their frustration and near bewilderment at the situation. Rep. Charles Sheppard of Lorman, a small town near Grand Gulf, declared that a county's ability to

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<sup>116</sup> Cliff Trevens, "Grand Gulf tax dollar controversy," *Clarion Ledger*, February 8, 1983.

<sup>117</sup> Ibid.

<sup>118</sup> Ibid.

tax property within its borders was “a Constitutional right,” and that the measure exposed divisions between rural communities and urban areas. Evan Doss, Claiborne County’s tax assessor, and the state’s first African-American elected to the position in 1973, concluded that the legislators’ maneuvering was “a racist thing simply because black people are controlling the money.”<sup>119</sup> Doss, not immune to corruptive influences either, underscored the pressing needs of Claiborne County residents: “We’re on the bottom right now. We’ve got poverty running rampant...Oh God, there are so many things we need to do.”<sup>120</sup>

The numbers bore out a slightly different picture, although not one of prosperity. In 1982 alone, Claiborne County received ten million dollars in tax payments from Grand Gulf. Moreover, due to the plant’s construction, the local economy had grown and unemployment reduced, dropping from over 12.4 percent in 1971 to 7.6 percent in 1981, and the median family income improved from \$4,583 in 1969 to \$13,904 in 1979.<sup>121</sup> The country’s wealth in terms of tax collection grew considerably, but the employment and income statistics were illusory. With the boost, Claiborne County climbed county rankings in income. However, what those rankings actually suggested was not that Claiborne County’s problems had disappeared, but that many Mississippians still lived in abject poverty. Once temporary construction worked ended, the local economy faced a downturn, and the long-standing problems of poverty in a predominantly rural community remained.

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<sup>119</sup> Ibid.

<sup>120</sup> Ibid.

<sup>121</sup> Ibid.

The legislation failed in 1983, but legislators doggedly reintroduced the measure until it passed. In part, the threat of increased rates for all MP&L consumers supported their logic that Claiborne County needed to share its newfound wealth.<sup>122</sup> In 1986, the House Ways and Means Committee approved a bill that exempted Grand Gulf from *local* property taxes, approximately \$14 million annually, and instead imposed “a state charge of 2 percent of the value,” or approximately \$16 million. From this measure, Claiborne County would receive fifty percent of the payments in 1987, with a five percent reduction annually until 1991 and receive thirty percent after that date. The new bill required ten percent to go into state’s general fund, and the remaining money redistributed to the other forty-four counties—on the basis of their electricity consumption.<sup>123</sup> Ironically, Governor Bill Allain, who crusaded against MP&L as attorney general and governor, signed the bill into law in April 1986—and the spirit of “populist vengeance” withered in political compromise. Then in June 1986, Mississippians voted on a referendum, one that would further diminish Claiborne County’s power to tax. In a narrow approval, 50.6 percent of voters approved a constitutional amendment, Section 112, that essentially stripped the ability of local governments to tax nuclear power plants and gave the state legislature those powers instead.<sup>124</sup> Referendum opponents in Claiborne County charged the amendment violated the Civil Rights Act of 1965 and levied accusations of racial

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<sup>122</sup> “Tax Bonanza: Grand Gulf Taxes Should Be Shared,” *Clarion Ledger*, April 15, 1988.

<sup>123</sup> “House Gets Grand Gulf Tax-Split Bill,” Jackson Daily News, 2-6-1986, C2., “Bill Settles Grand Gulf Tax Payments,” AP, No date, Grand Gulf Vertical Files, MDAH.

<sup>124</sup> “Grand Gulf Issue Based on Money, Legislators Say,” *Clarion Ledger*, November 26, 1986.

motivations.<sup>125</sup> Like the rate controversy, the issue lingered in Mississippi courts, and attorneys for Claiborne County fought for a more equitable settlement until 1990, while tax revenue accumulated undispersed.

Finally, on June 26, 1990, Governor Ray Mabus (Dem.) signed into law an official settlement. The bill raised the revenue Grand Gulf's owners would pay from \$16 million to \$20 million and required reimbursement to Claiborne County, the city of Port Gibson, the school system, and the state for loss of property taxes (in lieu of). From the \$20 million, the bills dictated that Claiborne County receive \$8 million annually, Port Gibson receive \$640,000 annually, the state of Mississippi receive \$1.2 million, and the rest of the funds would be distributed to MP&L's remaining service counties. Of \$17 million in an escrow fund that accumulated during the protracted litigation, Claiborne County received \$2 million and an additional \$500,000 went to an emergency management agency in case of a nuclear accident.<sup>126</sup> The settlement guaranteed a still sizable amount of revenue for Claiborne County, but the ability to tax nuclear plants within their borders ultimately became the purview of the state. The battle over distributing tax revenue, while less glamorous than other topics, captured the struggle over power in a changing political landscape, one with new political actors and perhaps older lingering suspicions about African-American political power, fading paternalist tendencies, and a pot of money too large for an anti-tax state to ignore.

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<sup>125</sup> “Grand Gulf Issue Based on Money, Legislators Say,” *Clarion Ledger*, November 26, 1986.

<sup>126</sup> “Mabus signs Grand Gulf Settlement,” *Laurel Leader-Call*, June 27, 1990.

Despite denials from legislators, Mississippi's history made the cries of poverty, inequality, and race in the tax dispute difficult to deny. A poor, rural, predominantly black county had its power to tax certain property within its own borders removed and legally enshrined in the state's constitution. Echoing a past where white southerners used arcane legal loopholes to deny African-Americans the rights of citizenship, legislators had pursued—since 1972—control of Grand Gulf's tax revenue. In the Grand Gulf tax controversy, vestiges of the South's past confronted a new era, where the “search for equality” gave way to the “search for usable political power,” which sometimes entailed betraying your own community.<sup>127</sup>

During his long term as Claiborne County's tax assessor from 1972 to 1995, Evan Doss, Jr., gained political power and financial resources from his position. In 1996, Mississippi's Office of the State Auditor (OSA) demanded repayment of \$260,600 from Doss, stating that as tax assessor, he misappropriated funds. Attorney General Mike Moore then filed charges stating that Doss, in fact, embezzled \$652,368 from Claiborne County tax collections from 1993 to 1996 (even after his period as assessor). Doss repeatedly denied the allegations, describing the charges as a “slap in [his] face.”<sup>128</sup> The evidence, however, suggested that Doss had engaged in a “lapping scheme,” where tax records appear in order, but bank deposits show missing sums of money. These schemes can go undetected for long periods of time until the source of income covering the

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<sup>127</sup> Kent B. Germany, “The Politics of Poverty and History: Racial Inequality and the Long Prelude to Katrina,” *The Journal of American History* (December 2007), 749.

<sup>128</sup> James R. Crockett, *Hands in the Till : Embezzlement of Public Monies in Mississippi*. (Jackson: University Press of Mississippi, 2007), 67.

shortages disappears, or in Doss's case, he stepped down from the position to run for office, disrupting the scheme.

Doss's problems continued with a federal indictment. He decried the accusations as politically-motivated—not an unreasonable position. Whatever the motivations, the evidence against Doss's actions was staggering; he robbed the people of Claiborne County for years, despite his protestations to the contrary. Phil Bryant, the state auditor in 1997, concluded that “the citizens of Claiborne County were not well served by Evan Doss. His violation of the trust placed in him is legendary in Mississippi.”<sup>129</sup> In May 1997, a jury convicted Doss on all nine counts, and a judge sentenced him to four years in prison and fined him \$186,000 dollars.<sup>130</sup>

Even with the evidence clearly stacked against his innocence, Doss claimed the prosecutors were racially-motivated, a charge they denied. Judge David Bramlette (appointed by George H. Bush) cited character, not race, as the reason for Doss's convictions, concluding that “this defendant served himself” instead of Claiborne County.<sup>131</sup> Doss's white collar crimes haunted him even in prison, after he and his sister, Leola Dickey, attempted to illegally conceal assets after declaring bankruptcy.<sup>132</sup> Although Doss's innocence seems unlikely, dislodging race entirely from the investigation and his prosecution is difficult, but those forms of prejudice and hostility operate in subtle ways that are more challenging to prove. In recent years, Doss has

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<sup>129</sup> Crockett, 69.

<sup>130</sup> Crockett, 73.

<sup>131</sup> Crockett, 73.

<sup>132</sup> Crockett, 74.

resurrected himself, at least to some extent, serving as the president of the NAACP's local chapter and participating in local Nuclear Regulatory Commission hearings, advocating perhaps for the people of Claiborne County.

As for the Grand Gulf nuclear plant, it continues to operate today, perched above a place defined by tragedy and decay. Newspaper reports in the 1960s, before MP&L announced its plans, described Grand Gulf as a "ghost town" but celebrated the recent arrival of the newly christened Grand Gulf Military Park, whose creation commemorated the "glory of Grand Gulf."<sup>133</sup> In 1962, glorifying American Civil War history reeked of subtext, one infused by the growing threats to white supremacy by the civil rights movement. Decades later, when former MP&L employee Donald Colmer waxed nostalgic about Grand Gulf's nuclear reactor, he characterized the plant's prominent cooling tower in surprisingly stark terms: "in one of the poorest counties of the poorest of states stands a towering symbol of power."<sup>134</sup>

Nearly thirty years later, the statement needs little revision. If not the poorest county in Mississippi, Claiborne County suffers from high poverty, and anywhere from thirty to forty percent of residents live below the poverty line. Signs of the impoverished present, with its vacant businesses and dilapidated homes, sit uncomfortably alongside vestiges of the past. Visitors might come to see Port Gibson's First Presbyterian Church (c. 1859), with its iconic hand perched atop the steeple, or explore the crumbling headstones of Grand Gulf's cemetery. After that, they might drive a few miles further,

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<sup>133</sup> Ray Thompson, "The Story of the Glory of Grand Gulf," *The Daily Herald*, January 6, 1962.

<sup>134</sup> Donald Colmer, *The Gammarae*, 1.

along winding back roads that stretch deep into the piney woods to find the “Ruins of Windsor,” where the charred columns of a former plantation display another towering symbol of power—opulence built upon a troubled history. More likely, visitors seek the ruins of Windsor for what local guides describe as a window into the “glorious” southern past.

Nuclear power plants produce discordant scenery, or perhaps make traces of the past and the present more visible, and these symbols of power transform in different contexts. In 1974, scholar Langdon Winner visited Diablo Canyon in central California, where construction for the Diablo Canyon nuclear plant had begun years earlier. Against the backdrop of the Pacific coast, with its spectacular jagged rocks and “blanket of surf,” stood the future nuclear reactors housed in two giant domes that “looked slightly obscene like breasts protruding from some oversized goddess.”<sup>135</sup> Looking beyond the site, Winner spotted a California grey whale, which “shot a tall stream of vapor from its blow hole and into the air and then disappeared into the ocean.”<sup>136</sup> What Winner described as a “chance juxtaposition” set into stark relief two symbols: “the power of nature and of human artifice.”<sup>137</sup> For Winner, and likely the thousands of protestors arrested at Diablo Canyon in the 1980s, nuclear reactors had no place along a beautiful stretch of Pacific coastline, especially one where potential seismic activity posed a terrifying worst case scenario. Grand Gulf, tucked between river gullies and kudzu vines, and on the banks of

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<sup>135</sup> Langdon Winner, *The Whale and the Reactor : A Search for Limits in an Age of High Technology* (Chicago, IL, USA: University of Chicago Press, 1986), 165. This account originally appeared as "The Whale and the Reactor: A Personal Memoir," *Journal Of American Culture*, no. 3 (Fall 80 1980): 446-455.

<sup>136</sup> Ibid., 165-166.

<sup>137</sup> Ibid., 168.

the “big muddy,” perhaps strikes some as less spectacular. There are no jagged ocean coves or whales spouting vapor, but ghosts linger in the ravines of what General Ulysses Grant called “the most broken country” he ever saw. These are the kinds of places that outsiders might find unspectacular, and yet, the sight of a heron, alone and pensive, along the banks of the Mississippi captures those two symbols of power—nature and technology jostling for position—just as well.

## CHAPTER THREE

### THE LOUISIANA WAY AND THE REACTOR: NUCLEAR POWER ON THE MISSISSIPPI RIVER

Two hundred miles south, Waterford Unit 3, one of two nuclear reactors in Louisiana, sits squarely between the Mississippi River and Lake Pontchartrain, and twenty-five miles north of New Orleans. St. Charles Parish, where Waterford is located, contains a larger population (approximately 50,000) and greater industry than Claiborne County. Nestled between chemical plants and pipelines, the area, and river parishes like it, have been dubbed “cancer alley” due to the high rate of industrial emissions and cancer among its residents. And like the stretch between Vicksburg and Natchez, Mississippi, where visitors can follow the “Blues Trail” along Highway 51, or gawk at historic plantation homes, St. Charles Parish and the adjacent areas also contain traces of the past, with many of its former sugar plantations restored, while others remain buried beneath the industrial present. Waterford, like Grand Gulf, occupy in-between spaces, where vestiges of an older history confront New South schemes, and the short twenty five miles between New Orleans and Waterford seems better measured in time and culture than by distance on a map.

Grand Gulf and Waterford share a common river and a common owner, the utility conglomerate Entergy, and both are situated in places deeply embedded in southern history. Waterford’s single reactor helps power the vast industrial corridor between Baton

Rouge and New Orleans and generates electricity for consumers throughout Entergy's service area. Like Grand Gulf, the Waterford site and surrounding area contains a rich history, one forged in an older economy built upon insatiable appetites and human bondage. And like Grand Gulf, the history of Waterford demonstrates the ways in which energy systems, or rather the systems humans devise, build order in our world.<sup>1</sup>

As Langdon Winner contended, social and political orders can bear their imprint upon technologies, and large-scale, high risk technologies invite these imprints. Nuclear power plants, while federally regulated, still require coordination between local and state governments, and the utilities themselves. Waterford, if roughly similar to other reactors, bore the marks of the "Louisiana way," where corporations received lavish incentives from the state and expected little scrutiny of their methods. Waterford's history, like Grand Gulf, illustrates a vast regulatory system adjusting to a post-Three Mile Island world and the difficulties of managing large-scale engineering projects.

Waterford Unit 3, a nuclear reactor placed in one of the most vulnerable areas in the country—to both "natural" and unnatural disasters, offers a window into an evolving and imperfect system of risk assessment. Long before Hurricane Katrina made landfall in 2005, the construction of Waterford highlighted a growing "technological disaster subculture" in southern Louisiana.<sup>2</sup> Even if residents in the river parishes and New

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<sup>1</sup> Langdon Winner, "Do Artifacts Have Politics?" *Daedalus* 109, No. 1 (Winter, 1980): 127.

<sup>2</sup> Evacuation Behavior: Case Study of the Taft, Louisiana Chemical Tank Explosion Incident," Report for FEMA, May 1983, Disaster Research Center, Ohio State University, 17, Folder: WSES – Emer. Response, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137.

Orleans had become accustomed to oil spills and hazardous chemical releases, the introduction of a nuclear plant forced many to reckon with a variety of worst case scenarios. As Ted Steinberg has observed, “natural” disasters or “acts of God,” in modern America are rarely disasters solely of divine providence but rather a collision between man-made and natural forces.<sup>3</sup> As Waterford’s history shows, the systems for assessing risk and locating nuclear reactors reflect value judgments about people, places, and ultimately, what our society and government chooses to save from “acts of God,” or in the case of nuclear power, from human error or “normal accidents.”<sup>4</sup>

The Waterford plant is located in Killona, a census-designated place in St. Charles Parish, one of the many “river parishes” adjacent to the Mississippi River.<sup>5</sup> Like the other river parishes between Baton Rouge and New Orleans, industry, especially petrochemical

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<sup>3</sup> Theodore Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America*. 2nd ed. (New York: Oxford University Press, 2006).

<sup>4</sup> Charles Perrow argued that certain high-risk technological systems, like nuclear power, will inevitably have accidents—because of special characteristic within their systems. Components within large-scale technological systems interact with another in such a way during failure scenarios as to make accidents “normal.” In other words, Perrow argued that no matter what “fixes” humans invent for systems like nuclear power plants, accidents are unavoidable due to their very nature. See Perrow, *Normal Accidents: Living with High-Risk Technologies* (New York: Basic Books, 1984). More recently, journalist Eric Schlosser has explored this concept in *Command and Control: Nuclear Weapons, The Damascus Accident, and the Illusion of Safety* (New York: Penguin Press, 2013). See also Bill Luckin’s review essay about J. Samuel Walker’s *Three Mile Island* and overview of how scholars have conceptualized risk: Luckin, “Nuclear Meltdown and the Culture of Risk,” *Technology & Culture* 46, No. 2 (April 2005): 393-399; Scott Gabriel Knowles, “Learning from Disaster?: The History of Technology and the Future of Disaster Research,” *Technology and Culture* 55, No. 4 (October 2014): 773-784.

<sup>5</sup> Newspaper articles often place Waterford 3’s location in Taft, Louisiana, another CDP, comprised almost entirely of industry. The plant’s location is between Killona and Taft.

industries, have become a well-established part of the landscape. Along the corridor, the presence of both heavy industry and historic rural communities create what scholar Barbara Allen calls a “strange juxtaposition.”<sup>6</sup> Directly across from Waterford, the Bonnet Carré spillway diverts floodwaters from the Mississippi River into Lake Pontchartrain when necessary. Built after the Great Flood in 1927, the spillway and the levees along the river offer another reminder of an uneasy alliance between man, nature, and technology.<sup>7</sup>

The site surrounding Waterford was once known as the “German Coast,” coined after Germans first settled the area in the early 18<sup>th</sup> century.<sup>8</sup> Karl Friedrich d’Arensbourg, led establishment of a German community in the area, which included

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<sup>6</sup> Barbara L. Allen, *Uneasy Alchemy: Citizens and Experts in Louisiana’s Chemical Corridor Disputes* (Cambridge, Mass: The MIT Press, 2003), xii; Craig E. Colten, *Transforming New Orleans and Its Environs : Centuries of Change* (Pittsburgh: University of Pittsburgh Press, 2000).

<sup>7</sup> Albert E. Cowdrey, *This Land, This South An Environmental History*. 2nd ed. (Lexington: The University Press of Kentucky, 2015), 150-151; Robert W. Hastings, *The Lakes of Pontchartrain: Their History and Environments* (Jackson: University Press of Mississippi, 2009); Ari Kelman, *A River and Its City: The Nature of Landscape in New Orleans* (Berkeley: University of California Press, 2003), 158-196; Christopher Morris *The Big Muddy: An Environmental History of the Mississippi and Its Peoples, from Hernando de Soto to Hurricane Katrina* (Oxford: Oxford University Press, 2012); More generally, see Craig E. Colten, *Perilous Place, Powerful Storms: Hurricane Protection In Coastal Louisiana* (Jackson: University Press of Mississippi, 2009); Theodore Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America*. 2nd ed. (New York: Oxford University Press, 2006); Christof Mauch and Thomas Zeller, eds. *Rivers in History: Perspectives on Waterways in Europe and North America* (Pittsburgh, Pa: University of Pittsburgh Press, 2008).

<sup>8</sup> Mary Ann. Sternberg, *Along the River Road : Past and Present on Louisiana's Historic Byway*, (Baton Rouge, LA, USA: Louisiana State University Press, 2013), 300.

building his own residence near the Waterford site.<sup>9</sup> Descendants of the D'Arensbourgs owned the land until 1849, when the land was purchased by William B. Whitehead and Company. The documentary record and archaeology surveys suggest that sugar cane cultivation began as early as 1828 on site, and several plantations were likely consolidated in the mid-19<sup>th</sup> century. In 1879, Richard Milliken officially named the property the Waterford Plantation. A year later, black workers from Waterford and the nearby Dugan Plantation (Killona) joined together in a labor strike for higher wages. Strikes spread to eighteen plantations, and federal troops eventually intervened.<sup>10</sup> But otherwise, the Waterford site quietly operated as a sugar mill until 1951.

Waterford's three thousand acre site was typical of former sugar cane plantations, with the northern section's environment formerly used to cultivate sugar cane, while the southern half remained "uncultivated," wooded swamp and marshland.<sup>11</sup> The site's environment resembled other marshland and swamps in the area, with oaks forests and cypress gum trees, a diverse avian population, amphibians, and many reptiles, including the American alligator, considered an endangered species until 1987.<sup>12</sup> In 1963,

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<sup>9</sup> Sternberg, *Along the River Road*, 302.

<sup>10</sup> Sternberg, *Along the River Road*, 304.

<sup>11</sup> Final Environmental Statement, related to construction of Waterford Steam Electric Station Unit 3, Louisiana Power and Light Company, Docket No. 50-382, March 1973, United States Atomic Energy Commission.

<sup>12</sup> More recently, alligator populations have rebounded, and in 2000, a female alligator at the Waterford site chased after workers who approached her nest. After hunters "lassoed" her, she was relocated to a nearby swamp, and her eggs taken to a wildlife refuge, see "Nuclear Plant Workers Run From Nesting 'Gator,'" *Rome News Tribune*, June 28, 2000;

Louisiana Power & Light (LPL) bought the Waterford site, built two steam generator plants and then began construction on the Waterford nuclear plant in the 1970s. While fragments of the site's history remain, including sections of the overseer's home and tenant housing built after the Civil War, the most-intact marker of Waterford's past is the "plantation bell," which was donated to LP&L and is now preserved on site. The plantation bell and the nuclear reactor capture the river corridor landscape, with its "bizarre backdrop," to borrow Barbara Allen's phrase, where the plantation past meets an industrial present.<sup>13</sup>

Decades earlier, Louisiana's growing oil industry attracted industry to the area, but by the mid-twentieth, heavy industry also flocked towards the river corridor, with companies buying former plantation land for petro-chemical plants and other industrial purposes.<sup>14</sup> This stretch of river also contains the Port of South Louisiana, which extends fifty-four miles long and ranks among the top five ports in the country for tonnage.<sup>15</sup>

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Final Environmental Statement, related to construction of Waterford Steam Electric Station Unit 3, Louisiana Power and Light Company, Docket No. 50-382, March 1973, United States Atomic Energy Commission, XII-8, 11-20, II-16.

<sup>13</sup> Allen, *Uneasy Alchemy*, xii.

<sup>14</sup> Barbara Allen, "Cradle of a Revolution: The Industrial Transformation of Louisiana's Lower Mississippi River," *Technology & Culture* 47, No. 1 (January 2006): 112-119; Allen, *Uneasy Alchemy*; Craig Colten, "The Rusting of the Chemical Corridor," *Technology & Culture* 47, No. 1 (January 2006): 95-101.

<sup>15</sup> John Wilds Charles L. Dufour, and Walter G. Cowan, *Louisiana, Yesterday and Today: A Historical Guide to The State* (Baton Rouge: Louisiana State University Press, 1996).

Because of lucrative incentives, including ten year tax exemptions from property tax and easy access for shipping, industries streamed into the river parishes.<sup>16</sup> By the early 1970s, numerous chemical companies were located near the site. Less than a mile from Waterford, Hooker Chemical manufactured caustic sodas and chlorine, with a capacity to produce nearly one billion pounds of chlorine annually. Other facilities included the Union Carbide plant, which produced organic chemicals, and as late as 1981, could store up to 482 million pounds of hazardous materials. In addition to chemical and petrochemical facilities, according to a 1981 safety evaluation, forty-three major pipelines, described as “potentially hazardous,” carrying industrial liquids and gases were located within five miles of the Waterford site.”<sup>17</sup>

Living near the industrial matrix were several small communities. Killona, a predominantly African-American community with approximately one thousand residents circa 1977, sits a mile from Waterford.<sup>18</sup> Across the river, the community of Norco contained several thousand residents living near a major Shell refinery. Twenty-five miles south was the city of New Orleans. But like other rural places, urban areas located twenty or thirty miles away often seem much further, and that perception of distance has undoubtedly only grown. The contrast between a small, rural community like Killona and

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<sup>16</sup> Final Environmental Statement, Waterford Unit 3, NUREG-0779 (Nuclear Regulatory Commission, 1981), 5-26.

<sup>17</sup> *Safety Evaluation Report, related to the operation of Waterford Steam Electric Station, Unit No. 3, Docket No. 50-382, NUREG-0787* (U.S. Nuclear Regulatory Commission, July 1981).

<sup>18</sup> The latest census shows a population decrease.

New Orleans make the two places seem worlds apart. Connecting those worlds are power lines, flowing from rural spaces into energy-hungry metropolitan areas.

Efforts to attract nuclear-related business, and industry generally, accelerated in the 1950s and 1960s. Louisiana and other southern states engaged in a “race to the bottom” promising lavish-tax incentives, less stringent pollution controls, and passing right-to-work laws in order to attract industry to their states.<sup>19</sup> Seizing the nuclear momentum, the state of Louisiana ratified the Southern Interstate Nuclear Compact in 1960. Two years later, the state legislature passed the Nuclear Energy Act, which created a Division of Radiation Control, an agency that regulated the use of radiation and radioactive materials within the state, and transferred certain regulatory responsibilities from the federal government to the state of Louisiana.<sup>20</sup> To promote nuclear-oriented development, the act also created a Board of Nuclear Energy in 1962.<sup>21</sup> Led by Clarence “Taddy” Aycock, who served three consecutive terms as lieutenant governor from 1960-72, the Board initially advertised Louisiana’s amenable climate for businesses using radiation, promising “the advantages offered” were “unequaled by any other state.”<sup>22</sup> Among those advantages, the state lured industry by offering an exemption for a total of ten years from local property taxes, while another legislative measure ensured industries would receive “fair tax treatment” afterwards. Still other measures further incentivized

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<sup>19</sup> Colten, *Transforming New Orleans and Its Environs*, 143.

<sup>20</sup> Promotional Pamphlet, Folder: Kentucky Science and Technology Commission, State Nuclear Energy Developments - News Releases, Reports 1967-1968, Box 7, Papers of John B. Breckinridge, University of Kentucky, Special Collections, Lexington, KY.

<sup>21</sup> Ibid.

<sup>22</sup>Ibid.

businesses by offering natural gas at lower rates, and allowed “political subdivisions” to issue bonds to construct plants for new manufacturers.<sup>23</sup>

Utilities also benefited from these inducements. Joining the nuclear band-wagon, Louisiana Power & Light announced their plans to build the Waterford nuclear plant in 1970.<sup>24</sup> Two years later, the AEC granted LP&L a construction exemption that allowed the company to begin excavation below the levee onsite, part of the massive series of levees constructed by the U.S. Army Corps of Engineers.<sup>25</sup> By 1973, LP&L submitted their “final” environmental impact statement, although another more detailed EIS would be published in 1981.

The licensing process moved slowly though. Congressman David Treen, the first Republican representative from Louisiana elected since the turn of the century (and a future governor), represented the district where Waterford was located and wrote to AEC Chairwoman Dixie Lee Ray, to “strongly request that the application process be expedited” because Louisiana Power & Light was “entitled to prompt action.”<sup>26</sup> The AEC

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<sup>23</sup> Promotional Pamphlet, Folder: Kentucky Science and Technology Commission, State Nuclear Energy Developments - News Releases, Reports 1967-1968, Box 7, Papers of John B. Breckinridge, University of Kentucky, Special Collections, Lexington, KY.

<sup>24</sup> “LP&L Plans Nuclear Power Plant at Taft,” *Hammond Daily Star*, September 17, 1970.

<sup>25</sup> Final Environmental Statement, related to construction of Waterford Steam Electric Station Unit 3, Louisiana Power and Light Company, Docket No. 50-382, March 1973, United States Atomic Energy Commission, I-6.

<sup>26</sup> Rep. David Treen to Chairwoman Dixie Lee Ray, Atomic Energy Commission, August 3, 1973, Folder: Louisiana Power & Light, Waterford Station, Box 195, David Treen Papers, Louisiana Research Collection, Tulane University, New Orleans, Louisiana.

responded coolly to Treen's request, and four years after LP&L's initial announcement, on February 19, 1974, a public hearing finally occurred—the final step before receiving a full construction permit. Unlike Grand Gulf's hearing, which reportedly lasted for seventeen minutes and generated little opposition initially, concerns about Waterford were more prevalent, particularly from residents in New Orleans.

The opposition reflected growing concerns about water quality and industrial pollution in Louisiana. The city of New Orleans drew its drinking water from the Mississippi River, and industries frequently discharged their contaminants into the river, essentially treating the river as a “sink” for industrial waste.<sup>27</sup> In fact, Waterford's safety analysis report, describe the river as the “ultimate heat sink,” where heat is discharged into the river to cool the plant.<sup>28</sup> During the late 1960s, the problem had grown to such an extent that treatment facilities were unable to rid the city's drinking water of “chemical” and “oily” tastes.<sup>29</sup> Given this context, Waterford's location and reliance upon the river understandably made some residents nervous. LP&L's Waterford design employs a “once through” system, which draws and discharges water directly from and into the Mississippi River, compared to a system that requires a cooling tower and reuses water

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<sup>27</sup> See chapter nine, “Too Much of a Good Thing: Industrial Pollution in the Lower Mississippi River,” in Colten, *Transforming New Orleans*. On the long history of urban pollution, see Joel Arthur Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (University of Akron Press, 1996).

<sup>28</sup> This is a generic term, but nonetheless illustrates how waterways were viewed. *Safety Evaluation Report, related to the operation of Waterford Steam Electric Station*, Unit No. 3, Docket No. 50-382, Louisiana Power & Light Company, U.S. Nuclear Regulatory Commission, Office of Nuclear Reaction Regulation, July 1981, 2-20.

<sup>29</sup> Colten, *Transforming New Orleans*, 153.

for cooling purposes.<sup>30</sup> Some feared that Waterford's release of radiation might harm aquatic species and further pollute an already severely polluted section of the Mississippi River.<sup>31</sup>

Among those expressing their concerns, the hearing featured one formal intervenor, Robert Head, publisher of a local alternative newspaper, *Nola Express*, and his lawyer. Head's interventions addressed a number of issues, including radiation monitoring, technical design issues, and the effects upon aquatic biota.<sup>32</sup> In addition to Head, the NRC granted thirty-eight individuals "limited appearances," which allowed for brief statements.<sup>33</sup> Local environmental organizations embraced the opportunity, despite their doubts about the Atomic Energy Commission's desire to incorporate the public's input into their decision making. Although some pointed to Waterford-specific issues, others used the hearing for a broader platform. Ross Vincent, president of the Ecology Center of Louisiana, argued that technical issues obscured the "real issues" at stake. According to Vincent, the debates surrounding Waterford extended far beyond radiation

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<sup>30</sup> [http://www.entropy-nuclear.com/plant\\_information/waterford\\_3.aspx](http://www.entropy-nuclear.com/plant_information/waterford_3.aspx); "Preliminary Safety Analysis Report (PSAR) and Environmental Report," September 19, 1972, LP&L, Folder: Waterford, #3, 1971-76, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Louisiana State Archives (LSA), Baton Rouge, Louisiana.

<sup>31</sup> "Nuclear Power; How Critical?," *Delta Sierran*, February 1974, Vol. 7, No. 2, Folder: Waterford, #3, 1971-76, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, LSA.

<sup>32</sup> "Nuclear Power; How Critical?," *Delta Sierran*, February 1974, Vol. 7, No. 2, Folder: Waterford, #3, 1971-76, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, State of Louisiana Archives.

<sup>33</sup> "New Power Plant Can Help Crisis," *Hammond Daily Star*, January 10, 1974, 14; Les Brumfield, "Taft Nuclear Plant Under Way," *States Item*, February 19, 1974.

monitoring or design schematics: “people here in Louisiana are beginning to raise questions about high-ways and bridges, about development in the wetlands, about excessive energy consumption and the need for facilities such as Waterford.”<sup>34</sup> In this sense, debates about nuclear power intersected with an array of other concerns about energy and the environment, which refracted onto one another. Simplified further, Vincent laid bare the fundamental question Waterford raised; it involved “the way in which people in this area perceive their collective future.”<sup>35</sup> For a growing number of people, a better collective future required greater care for an interconnected environment and more public input about local energy systems.

The public hearings were intended to counter accusations that the nuclear industry and the federal government were overly secretive and ignored community input, and reflected an effort to establish greater credibility with the public. While the hearings rarely satisfied activists, they nonetheless allowed limited public participation and put pressure on utility companies and regulatory agencies, particularly with environmental issues, evacuation plans, and other safety concerns. With the hearings finished, the Atomic Energy Commission finally issued LP&L a construction permit on November 14, 1974, and full-scale construction began.<sup>36</sup>

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<sup>34</sup> Statement of J. Ross Vincent, Ecology Center of Louisiana, Feb. 19, 1974, Hearing Before An Atomic Safety and Licensing Board of the U.S. Atomic Energy Commission, Folder: Waterford, #3, 1971-76, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, State of Louisiana Archives (LSA).

<sup>35</sup> Statement of J. Ross Vincent, Ecology Center of Louisiana, Feb. 19, 1974, Hearing Before An Atomic Safety and Licensing Board of the U.S. Atomic Energy Commission, Folder: Waterford, #3, 1971-76, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, State of Louisiana Archives.

<sup>36</sup> “LP&L Gets Permit for Atomic Plant,” *The Ruston Daily Leader*, November 20, 1974.

Like many other nuclear plants built during the late 1970s, obtaining a construction permit rarely portended an obstacle-free path and opposition to the plant continued. The opposition took three forms: formal legal interventions, organized protest, and small-scale, individual expressions through letters to Louisiana's leaders. A number of local organizations including Save Our Wetlands, the Oystershell Alliance, the Sierra Club's New Orleans branch and Delta Chapter, and the Louisiana Ecology Center, actively protested or heartily scrutinized Waterford 3. Public protests occurred in 1978 and 1979, with later protests slightly more invigorated by the accident at Three Mile Island. In May 1978, local media reported that a motorcade of seventy-five cars drove from New Orleans to the Waterford site, and two-hundred protestors held a three hour event, delivering speeches, chanting "No Nukes!," and carrying anti-nuclear signs.<sup>37</sup> Days after TMI, in April 1979, protestors, led by the Oystershell gathered outside city hall in New Orleans, "trying to get Mayor Ernest Morial to oppose construction" of Waterford.<sup>38</sup> In their signature slogan, protestors in New Orleans nodded to the area's culinary heritage and a terrifying nuclear powered future: "How do you like your oysters? Raw, Fried, or Radioactive?"<sup>39</sup>

On the legal front, Save Our Wetlands (SOWL), a local organization, filed several lawsuits, which usually represented a collective effort with other local, anti-nuclear and environmental groups.<sup>40</sup> In December 1977, the group filed a lawsuit against LP&L and

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<sup>37</sup> "Nuclear Project at Taft Protested," *Morning Advocate*, May 1, 1978.

<sup>38</sup> Group Protests Nuclear Plant Location in La.," *States Item*, April 5, 1979.

<sup>39</sup> Group Protests Nuclear Plant Location in La.," *States Item*, April 5, 1979.

the Nuclear Regulatory Commission, which contended that Waterford had lowered property values for several developments near Lake Pontchartrain and that the Price-Anderson Act, which initially set liability for a nuclear accident at \$560 million dollars, inadequately protected residents from any financial losses incurred from nuclear accidents.<sup>41</sup> SOWL has gained notoriety in recent years for another lawsuit they filed in 1977. Uniting a broad base of opposition in St. Tammany parish, SOWL filed suit against the US Army Corps of Engineers for their barrier plan, “which included levees and structures to impede a storm surge from entering Lake Pontchartrain.”<sup>42</sup>

When Hurricane Betsy arrived onshore in September 1965, massive flooding occurred in New Orleans. In response, Congress authorized funding for a barrier plan.<sup>43</sup> With the passage of the National Environmental Protection Act (NEPA) in 1969 and the added requirement of filing an environmental impact statement, opponents to the barrier plan gained the ability to more effectively halt developments that potentially endangered the environment.<sup>44</sup> The court issued an injunction against certain components of the barrier plan, due to an “inadequate environmental impact statement,” and the Corps shifted their focus from the barrier plan to a “high-level option,” which Craig Colten has argued was more acceptable to the public and less damaging to the environment.

Residents in St. Tammany opposed having storm water diverted into their community,

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<sup>41</sup> “Environmentalists seek halt to nuclear plant,” *Hattiesburg American*, December 15, 1977.

<sup>42</sup> Craig E. Colten, *Perilous Place, Powerful Storms: Hurricane Protection in Coastal Louisiana* (Jackson, MS, USA: University Press of Mississippi, 2009), 51.

<sup>43</sup> Ibid, 51.

<sup>44</sup> Ibid, 51.

while environmentalists worried the barrier plan encouraged unimpeded development in local wetlands.<sup>45</sup> The new plan focused on preventing “overtopping of the outfall canals,” which required higher levees, and “not keeping the storm surge” out of Lake Pontchartrain.<sup>46</sup> Over the next several decades, the plan had various levels of completion, faced delays in environmental assessment, continued public opposition to local impacts, and other complications. After the levees broke following Hurricane Katrina in 2005, conservative media quickly latched onto the 1977 lawsuit, claiming that environmentalists caused the devastating flooding that occurred in New Orleans. It was a convenient scapegoat for a much more complicated problem, which obscured the broad-based opposition to the barrier plan in the 1970s, the flawed approach of the Corps of Engineers, the vast environmental changes development had produced in southern Louisiana, and an array of other factors that made the city vulnerable to catastrophic flooding.<sup>47</sup>

While SOWL’s 1977 lawsuits might appear unrelated, they reflected a growing awareness that southern Louisiana’s fragile ecosystems and large bodies of water made not only its environment vulnerable but also underscored the vulnerability of people living there too. Moreover, there were no easy answers to these problems. Beyond the court room, anti-nuclear and environmental organizations, along with residents generally, expressed other concerns about rate increases, thermal pollution, and evacuation measures. Regarding the latter, residents living near Waterford 3, whether in the river

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<sup>45</sup> Ibid., 73-74.

<sup>46</sup> Ibid., 74.

<sup>47</sup> Colten, *Perilous Place*, 112-135.

parishes or twenty-five miles southeast in New Orleans, feared LP&L and the NRC had not properly planned for a full-scale evacuation. In part, Hurricane Betsy in 1965 dramatically showed how natural disasters could undermine man-made protections against flooding.

*In Case of Emergency: Louisiana's "Disaster Subculture"*

More fundamentally though, driving across the vast expanse of water and bayous into New Orleans visually reinforces the difficulty of evacuation and the city's vulnerability. The knowledge that the Mississippi River might swell her banks, break the levees, and terrify "her silly children back into humility," as William Alexander Percy once wrote, loomed large despite efforts by the US Army Corps of Engineers to create a better flood protection system.<sup>48</sup> Natural disasters, whether through river floods or hurricanes, only further demonstrated the precarious state in which the city existed, and one that residents were well-acquainted with. Other nuclear plants prompted concerns about evacuation, but perhaps nowhere else was it more pronounced than with the Waterford plant. Adding to the fears about nuclear accidents or catastrophic flooding, the burgeoning petro and chemical industry along the river lent another layer of gravity to the situation, one that LP&L and the NRC acknowledged as a legitimate danger.<sup>49</sup> The

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<sup>48</sup> William Alexander Percy, *Lanterns on the Levee* (Knopf, 1941), 24; On the Great Flood of 1927, see John M. Barry, *Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America* (New York: Simon & Schuster, 1998).

<sup>49</sup> Final Environmental Statement, related to construction of Waterford Steam Electric Station Unit 3, Louisiana Power and Light Company, Docket No. 50-382 (United States Atomic Energy Commission, March 1973), II-7; *Safety Evaluation Report, related to the operation of Waterford Steam Electric Station*, Unit No. 3, Docket No. 50-382, Louisiana Power & Light Company (U.S. Nuclear Regulatory Commission, Office of Nuclear Reaction Regulation, July 1981), 2-7.

construction of Waterford and hazardous industries along the Mississippi combined with older, natural threats—very much the embodiment of a risk society that straddled long-standing risks with new, manufactured risks.<sup>50</sup>

With the accident at Three Mile Island on March 28, 1979, fears of inadequate evacuation plans heightened, especially for those living in New Orleans. Early plans only included evacuating residents from a ten-mile radius, and the New Orleans metropolitan area sat twenty-five miles downriver with no easy means of evacuating. In the days following the accident, New Orleans Mayor Ernest Morial assuaged few fears, candidly stating that “due to limited road capacity” it was “not possible to evacuate the entire metropolitan area in short period of time.”<sup>51</sup> According to Morial, the City Office of Civil Defense prepared another solution: housing up to “900,000 persons in the city’s fallout shelters for two weeks.”<sup>52</sup> When writers for Baton Rouge’s alternative publication *Gris Gris* called Orleans Parish’s Civil Defense Director Charles Erdmann about the fallout plan, he “laughed into the phone,” and asked the staff, “Where would you put a million people?”<sup>53</sup> Fears of inadequate evacuation plans and entrapment lingered in the years following TMI. Writing in 1982, a resident of Vacherie, north of Waterford, noted the confluence of environment, industry, and dense populations that made evacuation especially difficult: “...with bayou lands and wet lands to the rear. All surrounding areas,

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<sup>50</sup> Ulrich Beck, *Risk Society: Towards a New Modernity* (London: SAGE Publications, Inc, 1992).

<sup>51</sup> “Orleanians can’t evacuate,” *States Item*, April 6, 1979.

<sup>52</sup> “Orleanians can’t evacuate,” *States Item*, April 6, 1979.

<sup>53</sup> Marsanne Golsby, “Dealing With The Impossible,” *Gris Gris*, April 30-May 6, 1979.

except the wet lands, are densely populated, industrialized and evacuation is greatly limited.”<sup>54</sup>

To the NRC’s credit, their 1981 safety assessment of Waterford reflects a concerted effort by the agency following TMI which required utilities, particularly for units under construction, to revise their environmental impact statements and safety evaluations. In the assessment, they concluded that the flood potential at Waterford could occur from three different scenarios: storm surge from a “probable maximum hurricane,” levee failures during Mississippi River floods, and local “intense” precipitation.<sup>55</sup> Of the possible hurricane paths, the NRC considered a hurricane approach from the Head of Passes, or the mouth of the Mississippi River, to be the most critical. Even with a levee failure and maximum probable hurricane, the NRC determined that that site’s flood protection, which gave Waterford’s nuclear island an additional thirty-feet barrier from flood waters, as adequate.<sup>56</sup> While the NRC deemed Waterford’s system as largely hurricane proof, the NRC was less convinced about the site’s adequacy for a probable maximum flood-induced levee failure. The agency found that if a severe flooding scenario occurred, a possibility existed that levees would be topped near the Waterford site, and called for LP&L to provide a more thorough analysis and consideration of a

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<sup>54</sup> Mrs. S.R. Campbell, M.D., to Atomic Safety Licensing Board, May 9, 1982, Folder: Waterford, #3, 1971-76, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137, LSA.

<sup>55</sup> *Safety Evaluation Report, related to the operation of Waterford Steam Electric Station*, Unit No. 3, Docket No. 50-382, Louisiana Power & Light Company, U.S. Nuclear Regulatory Commission, Office of Nuclear Reaction Regulation, July 1981, 2-16.

<sup>56</sup> *Ibid.*, 2-16.

“nearly instantaneous failure of the levee,” and characterized LP&L’s estimate for flooding scenarios as conservative.<sup>57</sup>

Regarding evacuation plans, the safety assessment gives little insight into what an evacuation would look like in practice, detailing instead the federal, state, and local agencies involved and noting the necessity of emergency drills. The NRC had, in fact, required LP&L to revise their emergency plans, but even in a post-TMI world, the plans only obliquely hinted at what that process would entail. Due a law passed by the Louisiana state legislature, Act 449, the primary responsibility for emergency plans and coordinating actions between agencies resided with the Assistant Secretary of the Office of Environmental Affairs. Commenting on the tangled regulatory matrix, one New Orleans resident lamented that the state and local authorities “charged with protecting our safety” were “simply accepting the questionable federal contention hook, line, and sinker!”<sup>58</sup> In other words, faith in Waterford’s safety required faith in the state’s ability to not only prepare adequately but also to execute those plans accordingly.<sup>59</sup> Calls for a better evacuation plan, did however, encourage state agencies to provide a more detailed strategy, and in 1982, officials announced that if a serious nuclear accident occurred, school buses would transport populations from St. John Parish to East Baton Rouge

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<sup>57</sup> Ibid., 2-17.

<sup>58</sup> Charles E. Bachman to Louisiana Attorney General William Guste, Jr., April 17, 1982, Folder: Waterford 3, Memo 4/4/1982, Intervention, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, State of Louisiana Archives, Baton Rouge, Louisiana.

<sup>59</sup> Ibid., 13-12—13-28.

Parish, temporarily housing evacuees in Baton Rouge's Centroplex.<sup>60</sup> While plans for evacuating populations in the more immediate St. Charles Parish, where the plant was located, were not mentioned, the image of school buses hastily carrying large numbers of people away from the "plume exposure pathway," appears absurd in a post-Katrina world, but residents then felt skeptical too. Writing to Congresswoman Lindy Boggs (D-LA), one New Orleans resident asked, "Please help stop licensing of Waterford 3—Help us make our lives a little more secure."<sup>61</sup>

A series of industrial mishaps in St. Charles Parish no doubt added to residents' skepticism towards high-risk technology and hazardous industries. In one study conducted for FEMA in 1983, sociologists from Ohio State described how St. Charles Parish, grounded in a long history of natural disasters, had been more recently shaped by the "acceleration" of technological accidents. The study's authors concluded that recent events strengthened a local "technological disaster subculture," while surmising that "whatever the balance between the natural and the technological, it does appear that some there is some kind of disaster subculture in this part of Louisiana."<sup>62</sup> Prompting the study, on December 11, 1982, a chemical storage tank exploded at the Union Carbide plant in

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<sup>60</sup> "LP&L evacuation plan nearly done," *State-Items*, July 29, 1982.

<sup>61</sup> Leslie Lesperance (last name unclear), to Rep. Lindy Boggs, Folder: 1984, Nuclear Regulatory Commission, Waterford 3, Box 1616, Lindy Boggs Papers, LaRC, Tulane University.

<sup>62</sup> "Evacuation Behavior: Case Study of the Taft, Louisiana Chemical Tank Explosion Incident," Report for FEMA, May 1983, Disaster Research Center, Ohio State University, 17, F: WSES – Emer. Response, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137.

Taft, located less than two miles away from Waterford.<sup>63</sup> The tank contained approximately 45,000 gallons of acrolein, a highly toxic, flammable, and colorless liquid.<sup>64</sup> The only major property damage occurred onsite, but a period of risk to public health required the evacuation of an estimated 17,000 people.

Other recent disasters and accidents only reinforced the claim of one local official, who described St. Charles as the “most high disaster risk location in the state.”<sup>65</sup> Two years earlier, a tank truck carrying ammonia, a chemical of which the parish reportedly had the highest concentration of in “the free world,” crashed into a train, killing three people after they suffocated from inhaling the gas. Adding to the tally, in 1981, a train transporting hydrocarbon derailed near a major refinery, forcing the evacuation of people nearby. The following year numerous accidents occurred, including a Norwegian tanker spilling ammonia into the Mississippi River, a major fertilizer spill on the “river road” (the main road that runs along the Mississippi River), a gas and water spill from a 140,000 barrel storage tank at a petroleum company, chlorine escaped from a pipeline, flammable propylene gas leaked from major refinery’s dock, and a nearby refinery’s pipeline erupted into flames and spilled oil. Finally, in March 1982, a Liberian tanker crashed into a tugboat, spilling four thousand gallons of crude oil into the river and causing a massive fire, where flames soared 100 feet high.<sup>66</sup> And even though the 1983 study found St. Charles parish authorities generally well-prepared and communicative

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<sup>63</sup> “Evacuation Behavior,” 1.

<sup>64</sup> Ibid., 24.

<sup>65</sup> Ibid., 13.

<sup>66</sup> Ibid., 14-16.

about emergency plans, the fact remained that people living near the industrial corridor, or downriver from it, had good reason to feel skepticism towards industry and high-risk technology.

*Building a Nuclear Reactor the Louisiana Way: Incompetence, Corruption, and the Construction of Waterford*

For LP&L, revising evacuation plans likely appeared secondary to more immediate, pressing internal complications. Although Grand Gulf suffered from safety issues, the rate controversy elicited far more attention. Waterford's situation reversed the two. Rate increases posed a small challenge, and technical problems occupied center stage. As early as 1979, an external audit indicated that LP&L's ability to monitor construction and technical quality was severely limited by a lack of staff. Describing the technical staff as "extremely lean," LP&L had four engineers and one technician monitoring the construction of Waterford 3.<sup>67</sup> The report's authors were aware of no "other nuclear project in the country wherein construction" had such limited monitoring, and warned that despite the presence of four "hardworking, dedicated, and loyal individuals" assigned to the job, they could not "adequately cover those facets of construction that should be covered."<sup>68</sup> In part, Waterford's growing list of problems occurred, according to the report, because the individuals hired to monitor construction spent more time dealing with paperwork and attending meetings than actively observing

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<sup>67</sup> Management Analysis Company, July 31, 1979, F: WSES Gen Info, Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137, LSA.

<sup>68</sup> Management Analysis Company, July 31, 1979, F: WSES Gen Info, Box 2.

and problem-solving onsite. Employees spent more time approving order contracts than providing guidance with technical issues. Moreover, nuclear plants generally relied upon contract companies, in this case, EBASCO, to supply labor, employees, or engineering feedback, and this decentralized piece-meal method posed problems during construction, both at Waterford and elsewhere. The report concluded that while employees from contract firms generally tried to serve the interests of their company and LP&L, “potential conflicts of corporate interests” existed and carried serious financial ramifications, since LP&L ultimately paid the bill for construction costs.<sup>69</sup> In tandem, the review also strongly encouraged LP&L to better coordinate with EBASCO for NRC inspections, or else their credibility would “start to erode” with the agency.<sup>70</sup> The obstacles Waterford faced broadly resembled other nuclear plants, but as the external review indicated, understaffing and lack of expertise in vital areas of plant construction, such as LP&L having a well-trained electrical engineer to better oversee cable pulling, made the plant uniquely troubled.

The depth of Waterford’s issues emerged when LP&L pursued a power license in the early 1980s. After reviewing LP&L’s application for an operating license, the NRC announced in July 1981 that the company could only receive a power license after resolving a “number of outstanding items.”<sup>71</sup> The NRC then published an interim report that detailed Waterford’s numerous, unresolved problems, among them, “the lack of nuclear experience throughout the organization and the apparent lack of appreciation by

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<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> Nuclear Regulatory Commission release, July 27, 1981.

high-level management of the magnitude of the project it is undertaking.”<sup>72</sup> More daunting, the NRC argued that preparing LP&L’s management and staff for Waterford’s operation would require an “extraordinary effort.”<sup>73</sup> The agency’s heightened sense of urgency reflected the seriousness of LP&L’s situation, but it also showed the NRC’s desire to regain lost credibility too. By the NRC’s own admission, its predecessor, the Atomic Energy Commission, “performed little inspection,” at nuclear plants under construction before 1968, and “only minimal guidance was available.”<sup>74</sup> Regulatory oversight tightened in the 1972 and 1973, but “major changes” occurred after Three Mile Island.<sup>75</sup> In this changing climate, the NRC revised its own procedures, and its interactions with LP&L show the improvements made in safety inspections but also persistent shortcomings.

Less than a year after the agency’s stern warning, the situation had seemingly improved, and the NRC expressed their confidence in LP&L’s overhaul of managerial and safety issues, stating there was “reasonable assurance” Waterford could be operated

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<sup>72</sup> NRC, August 11, 1981, Interim Report on the Waterford Steam Electric Station Unit 3.

<sup>73</sup> NRC, August 11, 1981, Interim Report.

<sup>74</sup> NRC Q&A Materials, Folder: 1984, Nuclear Regulatory Commission, Waterford 3. Box 1616, Lindy Boggs Papers, LaRC.

<sup>75</sup> NRC Q&A, Folder: 1984, Nuclear Regulatory Commission, Waterford 3. See also J. Samuel Walker, *Three Mile Island: A Nuclear Crisis in Historical Perspective* (Berkeley : University of California Press), 2004.

“without undue risk.”<sup>76</sup> In December 1982, the NRC proposed issuing LP&L a \$20,000 fine for alleged violations involving the “failure of LP&L to sufficiently control” their quality assurance program that oversaw the plant’s four emergency core cooling systems. To LP&L’s credit, their prime contractor, EBASCO had violated NRC regulations in their development of the cooling systems, and LP&L reported the problem after an audit and investigation. NRC only detected the severity of the problem after LP&L’s self-reporting and a subsequent on-site visit. The problems with the onsite cooling systems extended beyond documentation, and an NRC inspector concluded that the system’s “built condition” also contained “numerous” deficiencies and discrepancies.<sup>77</sup> According to the NRC, the problems resulted from LP&L’s minimal staffing to quality assurance and inadequate oversight over its contractors, as the external review warned in 1979.<sup>78</sup> This resulted in emergency core cooling system components that contained installation errors and schematics that did not match “actual field installation.” Or in other words, not only were critical safety features incorrectly installed, but there were also gross gaps in records and installation work out of compliance with regulations.<sup>79</sup> The revelations in 1982 hinted at larger, deep-seeded problems, which seemingly reached into every facet of the plant’s operation.

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<sup>76</sup> P. Shermon, Chairman, Advisory Committee on Reactor Safeguards, to Dr. Nunzio Palladino, Chairman, NRC Regulatory Commission, March 9, 1982. F: Nuclear Regulatory Commission, Waterford 3, 1982, Box 1581, Lindy Boggs Papers, LaRC.

<sup>77</sup> NRC News Release, December 6, 1982, Folder: 1982, N.R.C., Box 1581, Lindy Boggs Papers, LaRC.

<sup>78</sup> NRC, December 6, 1982.

<sup>79</sup> NRC, December 6, 1982.

As LP&L sought to redress the NRC's recommendations, more allegations surfaced in 1983 and 1984. After a series of articles in *The Gambit*, a New Orleans weekly newspaper, revealed the findings of the external audits in the 1970s, and former employees publicly alleged poor quality assurance and compromises in plant safety, LP&L found itself mired in controversy again. Central to Waterford's new scandal was the plant's very foundation—down to the concrete poured. The nuclear reactor, the containment shield, and other essential components for creating nuclear power are built upon a so-called “nuclear island,” an industry term for the part of the plant located on a substantial concrete base-mat with reinforcing shields where the most sensitive aspects of a nuclear plant are held. Nuclear islands are constructed, in theory, to withstand aerial bombardments, high winds, floods, and the thick concrete base mats underneath are intended to withstand seismic activity and other “unusual events,” to use the NRC’s terminology.

Reports about Waterford’s concrete problems first appeared in 1979. Workers discovered “honeycombing” as they constructed the reactor containment structure.<sup>80</sup> Honeycombing, the mottled appearance concrete gets when its improperly mixed or poured (inefficient vibrations causes separation), can signal deeper structural weaknesses. This problem appeared around the same time as the NRC dismissed claims of shoddy construction by a former contract employee, Robert Liesen. While LP&L described Liesen as a “disgruntled employee,” he claimed otherwise, alleging the company fired him for insisting upon quality control. The NRC rejected his claims.<sup>81</sup> Behind the scenes,

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<sup>80</sup> “Concrete Problem halts work in Taft,” *Morning Advocate*, August 21, 1979.

<sup>81</sup> “NRC Rejects Claims about LP&L Plant,” September 6, 1979, *Morning Advocate*.

of course, the external review conducted in the same year supported his complaints—at least in terms of quality control. And in 1981, the NRC also admonished LP&L for those same issues, but in 1979, the agency had yet to overhaul their approach.

Even before publicized reports appeared, cracks in the reactor building’s concrete base mat in the reactor building were discovered in 1977, but the NRC determined those cracks would close with the placement of the reactor building (on top of the basemat).<sup>82</sup> One EBASCO engineer onsite dismissed the cracks as serious but conceded “that part was unanticipated.”<sup>83</sup> For some, ordinary construction hiccups like these possessed an exaggerated quality in the context of nuclear power, and newspapers frequently reported on minor issues during the late 1970s and 1980s.

More troubling, in May 1983, local journalist Ron Ridenhour, best known as the Army soldier whose investigation broke open the story of the 1968 My Lai Massacre in South Vietnam, reported that cracks in the foundation continued, along with water seepage, describing the problem as a “serious design flaw” which “may threaten the integrity of the nuclear reactor itself.”<sup>84</sup> Ridenhour pointed to the area’s so-called “jelly ground” near the Mississippi River, or “water-charged sand,” which now held a, “enormous, concrete and steel boat,” as the culprit.<sup>85</sup> In the months thereafter, the NRC

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<sup>82</sup> NRC, Box 3, No Folder, Louisiana State Archives, Dec. 14, 2015  
Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984  
Accession Number: P1991-137.

<sup>83</sup> Ibid.

<sup>84</sup> Ron Ridenhour, “Cracking Foundations at Waterford III,” *Gambit*, May 21, 1983.

<sup>85</sup> Ibid.

sent a team to investigate the cracks further, determining the weight from structures on the base mat caused the cracks, but that “the foundation provides adequate support.”<sup>86</sup>

Despite the NRC’s conclusions, the concrete controversy persisted into 1984, as LP&L desperately sought an operating license. From a series of special inspections and evaluations, a more thorough picture of why cracks appeared in Waterford’s base mat emerged. According to NRC documents, during the initial concrete pouring, violations of “specification requirements,” such as using substandard concrete, occurred. In May 1984, an independent consultant, however, concluded that construction was “adequate” and the violations were inconsequential to the base mat’s structural integrity, and in fact, exceeded the standards required by the American Concrete Institute.<sup>87</sup>

Looking at the correspondence and records today, the public scrutiny of nearly every aspect of Waterford’s construction is astounding; no mistake appeared too small for intervenors or local journalists, who made much ado about concrete, pipes, and everything in-between. Given the array of industrial mishaps, Three Mile Island, and the ever-present environmental vulnerability in southern Louisiana though, this concern, while not wholly unique to Waterford, makes sense. Living in a place where floods, hurricanes, and chemical explosions were not uncommon only intensified the

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<sup>86</sup> NRC Staff’s Answers to Joint Intervenors’ Motions to Reopen Contentions 8/9 and 22, November 28, 1983, 12., Box. 3, No Folder, Louisiana State Archives.

<sup>87</sup> 8527, Memorandum to Dennis Crutchfield, Special Waterford Team Leader from L.C. Shaeo, Deputy Director of Division of Engineering Technology, May 21, 1984, Folder: WSES – NRC Investigation, Box 1, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137.

“consequences of modernity.”<sup>88</sup> With trust in institutions and expertise eroding, and risk seemingly proliferating, public scrutiny of mundane details, like concrete, became newsworthy. The NRC had launched their own investigation as well, sending a team to Waterford to inspect further.

This heightened scrutiny, from the public and the NRC, frustrated LP&L’s executives to no end. In response to the NRC’s special investigation into Waterford, NRC officials held a meeting with LP&L’s top brass in Bethesda in June 1984. LP&L executive R.S. “Mike” Leddick complained about the “process...where so time and effort is spent protecting the allegers, many of who which I would have pinned a medal on if I could have identified them, for telling me in a timely fashion what problems I might have had, that it’s been hard, hard to communicate.”<sup>89</sup> The “process” Leddick referred to, in this case, included the NRC’s team directly seeking out people at Waterford to discuss issues, conducting field inspections, going through documents on site. This level of involvement was new for the NRC. By their own admission, detecting problems late in the construction stage usually involved “a situation where someone brings us a box of allegations or a box of affidavits” and says, “those are my allegations.”<sup>90</sup> While local

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<sup>88</sup> Anthony Giddens, *The Consequences of Modernity* (Stanford University Press, 1990).

<sup>89</sup> Transcript of Meeting, June 8, 1984, Folder: WSES – NRC Investigation, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137, L: 19723, Box 1, LSA.

<sup>90</sup> NRC Transcript, Folder: WSES – NRC Investigation, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137, L: 19723, Box 1, LSA.

activists accused the NRC of a “regulatory cover-up,” the reality was more complicated.<sup>91</sup> From NRC documents and the meeting transcript, they were not as complicit as critics charged.

The NRC’s team identified a number of problems with LP&L’s management of Waterford. Among them, the agency found the credentials, backgrounds, and education of quality control inspectors had not been properly verified, nor did it meet federal standards. Adding to this, LP&L’s system of record keeping either suffered from complete disorganization, neglect, or more troubling, deliberate concealment. The NRC admonished LP&L executives for missing non-conformance reports, which document any unusual or non-standard occurrences, claiming that at least twelve reports “had either been destroyed, thrown away or couldn’t be located.” These reports, according to agency officials, contained the plant’s “historical record” and made it “very difficult” to determine the impact on “the integrity or the safety of the system.” Darryl Eisenhut, the Director of NRC Licensing, chided LP&L’s representatives further, urging them to “be a lot more sensitive to...what does this all tell you about what’s been going on in...quality control at your plant for the last few years...you really need to look at the root cause of these problems.”<sup>92</sup> Adding to the chorus was NRC official Harold Denton, a native North Carolinian, graduate in nuclear engineering from North Carolina State, and Jimmy Carter’s go-to NRC official during the TMI crisis in 1979.<sup>93</sup> Scolding LP&L’s executives

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<sup>91</sup> Sierra Club, Delta Chapter, New Orleans Group, June 3, 1984, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137, L: 19723, Box 1, Folder: WSES – NRC Investigation, LSA.

<sup>92</sup> NRC Transcript, 37.

<sup>93</sup> Walker, *Three Mile Island*, 119-121.

at the June 1984 meeting, Denton reminded the company of their failure to meet the NRC's standards in a "number of areas," and that those problems "had been kicking around for sometime and have not been faced up to."<sup>94</sup>

If LP&L could grease the palms of Louisiana politicians, or at the very least create a favorable regulatory climate at the state level, the NRC after Three Mile Island represented a new challenge. The company's failure to adequately address long-standing issues, and respect the gravity of the situation, seems more egregious in light of the fact that they paid no property taxes for the first ten years of Waterford's construction.

Less than a year after the meeting between the NRC and LP&L, on March 16, 1985, the agency gave LP&L an operating license, but commercial operation remained delayed. Several months later, the agency issued a major civil penalty of \$130,000 for violations discovered during inspection and older problems associated with the company's Quality Assurance Program. Although NRC fines often seem comically small compared to the billions of dollars spent on nuclear plants, the civil penalty underscored the seriousness of the violations, and at the very least, made for poor publicity. NRC extended LP&L's response period from thirty to sixty days because of the "extensive" nature of the violations.<sup>95</sup> The penalties represented the end of a fifteen-year odyssey, a settling of scores before Waterford began operation commercially, which finally occurred on September 24, 1985. Louisiana's other nuclear reactor, River Bend Unit 1, also owned

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<sup>94</sup> NRC Transcript, 44.

<sup>95</sup> NRC to LP&L, May 24, 1985, Folder: WSES NRC Penalties, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137.

by LP&L (and Middle-South or later Entergy), began operation a month later near the town of St. Francisville about 100 miles northwest of Waterford.

Like so many other nuclear plants, Waterford 3 emerged from the controversy-laden, highly fractious climate of the 1970s and early 1980s, and then quietly operated, sending power to the grid and generally raising few eyebrows. While Waterford's operation has not been without problems, or temporary shut-downs, like many others, the nuclear plants so feared and hotly contested in decades prior have largely receded into the backdrop. Except for the communities living near nuclear plants, and the remnants of the anti-nuclear movement, most Americans spend little, if any, time thinking about the reactors in our midst. This "invisibility" perhaps reflects a broader cognitive dissonance between energy production and energy consumption. It also reflects the massive overhaul within the nuclear industry and the Nuclear Regulatory Commission after Three Mile Island. In tandem, public pressure and dogged reporting by journalists, at both local and national media outlets, no doubt contributed to a safer and more reliable system—at least when compared to the gross failings in the late 1960s and 1970s. Early watchdogs, within and outside the inner circle, have shaped the nuclear industry and helped transform unprepared and arguably neglectful regulatory apparatus for the massive challenges building nuclear reactors posed.

On August 29, 2005, Hurricane Katrina made landfall in southern Louisiana, and three nuclear reactors—all owned by Entergy—laid in its path: Waterford, River Bend, and Grand Gulf. Waterford's location made it the most vulnerable to the storm's wind and rain; the levees only promised thirty feet of protection from floodwaters if they held. In a story characterized by failures to prepare, to engineer sound flood protection, and to

provide for society's least able to evacuate, Waterford rode out the storm without catastrophe. The plan coordinated between the NRC and LP&L worked. As Katrina churned, officials and employees prepared Waterford for the worst-case scenario, and one day before landfall, LP&L shut the reactor down. Phone lines stopped working after local flooding occurred, but staff onsite continued communication with officials through satellite phones and maintained necessary power through diesel generators after losing connection to the power grid. The nuclear industry and LP&L issued self-congratulatory statements following the disaster, capitalizing on a moment of colossal failures from every other end. Of course, they benefited from not experiencing catastrophic levee ruptures or massive flooding; the worst case scenario happened twenty-five miles south in New Orleans. There was no great plan for the poor, the elderly, or the poor *and* black in a city 80 percent underwater.<sup>96</sup> No steel and concrete nuclear island shielded them from the wind, the rain, and the flood.

Writing in the 1990s, sociologists Anthony Giddens and Ulrich Beck explored the relationship between risk and modernity in *The Consequences of Modernity* and *Risk Society: Towards A New Modernity*, respectively. The interpretations diverge in certain areas, but both scholars argued that certain risks, such as radiation, superseded class

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<sup>96</sup> Scott Frickel also explores the vast amount of other chemicals, liquids, and waste that combined in the flood waters, and the difficulty of determining the full extent of the problem, see Frickel, "On Missing New Orleans: Lost Knowledge and Knowledge Gaps in an Urban Hazardscape," *Environmental History* 13 (October 2008): 643-650. For other post-Katrina analyses, see Carolyn Kolb, "Crescent City, Post-Apocalypse," *Technology & Culture* 47, No. 1 (January 2006): 108-111; Kent B. Germany, "The Politics of Poverty and History: Racial Inequality and the Long Prelude to Katrina," *The Journal of American History* (December 2007), 743-751; Christopher Morris, *The Big Muddy*, 204-224. Martin Reuss, "Searching for Sophocles on Bourbon Street," *Technology & Culture* 47, No. 1 (January 2006): 349-356; Ted Steinberg, *Acts of God*.

distinctions and otherness. Although Giddens and Beck conceded that the less privileged experience risk differently, the consequences of modernity, whether “atomic fallout or ecological disaster,” left humanity with a more egalitarian form of risk, one that Beck argued would “boomerang” back to even the “rich and powerful.”<sup>97</sup> As climate change threatens, the “world risk society” Beck saw developing seems close to the mark. The widespread fears of radiation and inadequate evacuation measures during Waterford’s construction underscore the generalized sense of risk, that extended across lines of class, race and ethnicity, and sex. But as Giddens and Beck noted, distribution of risk matters, and there are “always losers” and “winners” in risk societies.<sup>98</sup>

When presidential hopeful Jesse Jackson delivered a speech at Tulane University in 1984, he outlined those differences. Jackson lamented the recent controversies with Waterford and feared the effects of nuclear accident upon the impoverished, stating: “The poor already cannot afford to buy water, and the air is not for sale...yet!”<sup>99</sup> Continuing on, Jackson argued that the “real obscenity” was the “millions of dollars” supporting racist regimes in South Africa, and criticized Middle South Utilities for using the uranium mined “by tens of thousands of black men held in virtual slavery by the most abhorrent government on the face of the earth—the white supremacist government in Pretoria.”

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<sup>97</sup> Beck, *Risk Society: Towards A New Modernity* (London: SAGE Publications, 1992), 23.

<sup>98</sup> Giddens, *The Consequences of Modernity*; Beck, *Risk Society*, 23.

<sup>99</sup> Jesse Jackson, speech, May 4<sup>th</sup>, 1984, Tulane University, Folder: WSES Safety Inves., Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984. Accession Number: P1991-137.

Jackson alleged the utilities companies justified their actions by its cheap price but never managed to ask why South Africa's uranium remained cheap. The answer, Jackson argued, was "the same reason cotton was king in the Old South."<sup>100</sup> Nuclear power systems "offer ways of building order" in our world, from the people who mine uranium and live with its dangerous by-products to the rural places that house nuclear reactors.<sup>101</sup> Today, Waterford churns out power atop a former sugar cane plantation, where modern appetites for electricity meet a past driven by an insatiable appetite for sugar. Risk looms over everyone in southern Louisiana, whether from natural or unnatural means, but the ordering continues—same as it ever was.

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<sup>100</sup> Jesse Jackson, speech, May 4<sup>th</sup>, 1984, Tulane University, Folder: WSES Safety Inves., Box 2, Department of Justice, Matter of Louisiana Power & Light, Co. 1971-1984, Accession Number: P1991-137.

<sup>101</sup> Winner, 127.

## CHAPTER FOUR

### THE NUCLEAR BURDEN OF SOUTHERN HISTORY: RADIOACTIVE WASTE AND ENVIRONMENTAL IDENTITIES

Kreeg Antwoord: I think...the big story will be the disappearance of the Barnwell, South Carolina nuclear dump...

Mitzi Molnar: But don't you think the Debbie Boone kidnapping will be a bigger story than the nuclear dump disappearance? After all, the public is more interested in people disappearing than dumps!" ---*Saturday Night Live* (April 22, 1978)<sup>1</sup>

In the late 1970s and early 1980s, rural Barnwell, South Carolina sat at the center of the nuclear waste debate, and not only because it became, at one point, the dumping ground for approximately 85 percent of the nation's radioactive garbage.<sup>2</sup> While the Savannah River Site, which occupies parts of Aiken, Allendale, and Barnwell counties, has garnered more scholarly attention, the Barnwell community nearly achieved the nuclear trifecta of being the site of major investment in defense technology, nuclear

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<sup>1</sup> "Next Week in Review," *Saturday Night Live*, Season 3, Episode 18, April 22, 1978.

<sup>2</sup> "South Carolina Governor Orders Curb of 50% in Nuclear Dumping," *New York Times*, Nov 1, 1979, A18.

reprocessing, and waste disposal.<sup>1</sup> While the plans for all three never fully materialized the initial vision for expanding upon what SRS started in 1951 resembles the “technology corridors” aggressively pursued today; except for its rural location.<sup>2</sup> Barnwell’s low-level radioactive waste site (LLW) exemplifies South Carolina’s investment in the nuclear industry, where according to one observer, “ ‘King Cotton’ was deposed only have been replaced by another king: Plutonium.”<sup>3</sup> Owned by the corporation Chem-Nuclear, the LLW repository was part of a larger effort to transform a rural agricultural economy into a high-tech industrial one—a Nuclear Valley in the US South.<sup>4</sup>

The history of Barnwell’s waste facility is, on one hand, very much a local history. It is the story of one community’s support for a radioactive burial ground amidst vociferous opposition. On the other hand, this micro-history is about a national problem and a regional quest for nuclear industry. Barnwell’s LLW site underscores a fundamental issue surrounding “nuclear things;” radioactive materials require a permanent burial repository, and few communities or politicians willingly allow them in

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<sup>1</sup> The Savannah River Site was known as Savannah River Plant until 1989. For clarity, I refer to it as SRS. For a history of SRS situated within the context of southern history, see: Kari Frederickson, *Cold War Dixie: Militarization and Modernization in the American South* (Athens: The University of Georgia Press, 2013).

<sup>2</sup> The LLW site is located in the town of Snelling in Barnwell county, approximately five miles from the city of Barnwell. Historically, the site has been associated with “Barnwell” generally, far more than its technical location in Snelling, and I use “Barnwell” to refer to the site location and surrounding community.

<sup>3</sup> “Savannah River Women’s Peace Encampment,” *Great Speckled Bird*, Vol. 10, No. 3, (July 1984), Georgia State University Library; <http://digitalcollections.library.gsu.edu>.

<sup>4</sup> Chem-Nuclear is now a subsidiary of Energy Solutions.

their backyards.<sup>5</sup> Studying Barnwell's LLW facility illuminates a hidden history of waste in post-World War II America, one that shaped rural environs and spurred serious consideration about balancing economic and environmental needs.<sup>6</sup> This chapter analyzes the political processes, economic visions, and policy failures that facilitated the establishment of the low-level waste site in South Carolina and an inequitable system of waste disposal where three (now four) states are responsible for burying the nation's low-level nuclear waste and much of their high-level waste.<sup>7</sup> By shifting the scholarly focus to the eastern United States from the more well-documented western nuclear story, the history of Barnwell's repository demonstrates how America's nuclear legacy has embedded itself in communities and in landscapes across the country, transforming rural

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<sup>5</sup> For phrase, see Gabrielle Hecht, "The Power of Nuclear Things," *Technology and Culture* 51, No. 1 (January 2010): 1-30.

<sup>6</sup> For the best historical analysis of waste in America, see Martin V. Melosi, *Garbage In The Cities: Refuse Reform and the Environment*. (University of Pittsburgh Pre, 2004).

<sup>7</sup> On nuclear waste, see Donald L. Barlett and James B. Steele, *Forevermore, Nuclear Waste in America* (New York: W.W. Norton, 1985.); Robert J. Duffy, *Nuclear Politics in America: A History and Theory of Government Regulation* (Lawrence, Kan: University Press of Kansas, 1997); Kristin Shrader-Frechette, *Burying Uncertainty: Risk and the Case against Geological Disposal of Nuclear Waste* (Berkeley: University of California Press, 1993); Jacob Darwin Hamblin, *Poison in the Well: Radioactive Waste in the Oceans at the Dawn of the Nuclear Age* (New Brunswick, N.J: Rutgers University Press, 2008); Gerald Jacob, *Site Unseen: The Politics of Siting a Nuclear Waste Repository* (Pittsburgh, Pa: University of Pittsburgh Press, 1990) ; Valerie Kuletz, *The Tainted Desert: Environmental Ruin in the American West* (Psychology Press, 1998); Richard B. Stewart and Jane Stewart, *Fuel Cycle to Nowhere: U.S. Law and Policy on Nuclear Waste* (Nashville: Vanderbilt University Press, 2011); Walker, *The Road to Yucca Mountain*.

<sup>7</sup> Stewart and Stewart, *Fuel Cycle to Nowhere*, 146.

spaces into radioactive environments.<sup>8</sup> Finally, Barnwell's history is part of a regional story—a radioactive Dixie, where twenty-seven million cubic feet of nuclear waste now decays in South Carolina.<sup>9</sup> If the older “burden of southern history,” as C. Vann

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<sup>8</sup> For nuclear history in the US with attention to environment, see esp., Len Ackland, *Making a Real Killing: Rocky Flats and the Nuclear West* (Albuquerque: University of New Mexico Press, 1999); Stephen Bocking, “Ecosystems, Ecologists, and the Atom: Environmental Research at Oak Ridge National Laboratory,” *Journal of the History of Biology* 28, No. 1 (Spring, 1995): 1-47; Kate Brown, *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (Oxford University Press, 2013); Ryan H. Edgington *Range Wars: The Environmental Contest for White Sands Missile Range* (University of Nebraska Press, 2014). John M. Findlay and Bruce William Hevly. *Atomic Frontier Days: Hanford And the American West*. (Seattle: Center for the Study of the Pacific Northwest in association with University of Washington Press, 2011); Jacob Darwin Hamblin, *Poison in the Well: Radioactive Waste in the Oceans at the Dawn of the Nuclear Age* (New Brunswick, N.J: Rutgers University Press, 2008)

Valerie Kuletz, *The Tainted Desert: Environmental Ruin in the American West* (Psychology Press, 1998); Joseph Masco, *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico* (Princeton, N.J: Princeton University Press, 2006); Max Singleton Power, *America's Nuclear Wastelands: Politics, Accountability, and Cleanup* (Pullman, Wash: Washington State University Press, 2008); Traci Brynne Voyles, *Wastelanding: Legacies of Uranium Mining in Navajo Country* (Minneapolis: University of Minnesota Press, 2015); J. Samuel Walker, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971* (University of California Press, 1992); Thomas Raymond Wellock, *Critical Masses: Opposition to Nuclear Power in California, 1958-1978* (Madison: The University of Wisconsin Press, 1998). For non-western examples, see David Allen Burke, *Atomic Testing in Mississippi Project Dribble and the Quest for Nuclear Weapons Treaty Verification in the Cold War Era* (Baton Rouge: Louisiana State University Press, 2012); Kari Frederickson, *Cold War Dixie* (Athens: University of Georgia Press, 2013); Andrew Jenks, “Model City USA: The Environmental Cost of Victory in World War II and the Cold War,” *Environmental History* 12 (July 2007): 552-77.

<sup>9</sup> Jim Overton, ed., “Tower of Babel: A Special Report on the Nuclear Industry,” *Southern Exposure* 7, No. 4 (Winter 1979); Samuel. Walker, “The South and Nuclear Energy, 1954-62.” *Prologue* 13 (Fall 1981): 175-91

Woodward put it, manifested itself through the past, a new burden requires monitoring Barnwell's nuclear waste for centuries ahead.

In the late 1970s, an uproar ignited over South Carolina's nuclear trade. Anti-nuclear activists in the state characterized it in regional terms, deeming it the South's "disproportionate burden."<sup>10</sup> Many other South Carolinians expressed outrage about their state serving as the nation's trash can. In response, the rural community of Barnwell supported Chem-Nuclear's facility more strongly than before, and in doing so, they transformed a marker of environmental inequality into a marker of pride.<sup>11</sup> While others feared radioactive waste, many in Barnwell proudly extolled its virtues and denied the

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<sup>10</sup> Palmetto Alliance materials, Folder: Topical Files: Barnwell, Nuclear Reprocessing Plant, 1979, Box 24, Palmetto Alliance Papers, South Caroliniana Library, University of South Carolina.

<sup>11</sup> For studies of environmental inequity after WWII, see esp. Barbara L. Allen, *Uneasy Alchemy: Citizens and Experts in Louisiana's Chemical Corridor Disputes* (Cambridge, Mass: The MIT Press, 2003); Joyce M. Barry, *Standing Our Ground: Women, Environmental Justice, and the Fight to End Mountaintop Removal* (Athens, Ohio: Ohio University Press, 2012); Robert Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality*. 3rd ed. (Boulder, Colo: Westview Press, 2000), William D. Bryan, "Poverty, Industry, and Environmental Quality: Weighing Paths to Economic Development at the Dawn of the Environmental Era." *Environmental History* 16 (July 2011): 492–522, Andrew Hurley, *Environmental Inequalities: Class, Race, and Industrial Pollution in Gary, Indiana, 1945-1980*. (Chapel Hill: University of North Carolina Press, 1995); Ellen Griffith Spears, *Baptized in PCBs Race, Pollution ,and Justice in an All-American Town* (Chapel Hill: The University of North Carolina Press, 2014); Eileen McGurty, *Transforming Environmentalism: Warren County, PCBs, and the Origins of Environmental Justice* (New Brunswick, N.J: Rutgers University Press, 2007); For rural examples, see Pete Daniel, *Toxic Drift: Pesticides and Health in the Post-World War II South* (Louisiana State University Press, 2007); Linda Nash, *Inescapable Ecologies* (Berkeley, US: University of California Press, 2007). For global scope with poverty as framework, see Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, Mass: Harvard University Press, 2011).

risks the nuclear industry entailed. As activists and non-activists alike bemoaned the state and the region's new identity as radioactive places, Barnwell touted an environmental identity others loathed.

The conflict between the struggling rural community of Barnwell and the rest of South Carolina provides a compelling portrait of how the industrialization and commercialization of the South, along with the rise of modern environmentalism, presented poverty stricken areas with a conundrum: How could rural communities survive without accepting federal or corporate development—particularly risky industries?<sup>12</sup> The voices of Barnwell residents illustrate the dilemmas faced in rural communities as independent farming became financially unfeasible, families migrated to booming metropolitan areas, and jobs hemorrhaged. For these residents, economic needs as well as social and cultural values, dictated their position, superseding modern environmental values.<sup>13</sup> To others, the Chem-Nuclear site appeared as a Faustian bargain; it was, as one South Carolinian argued, better to have “poverty than pestilence.”<sup>14</sup> Barnwell’s story is a history of that bargain and its place in the economic, social, and environmental transformation of the South from “Cotton Belt to Sunbelt.”<sup>15</sup>

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<sup>12</sup> For a broad overview of the dilemma between economic growth and environmental concerns in the 1970s, see James Cobb, “Natural and Environmental Resources and Industrial Development,” in *Industrialization and Southern Society, 1877-1984. New Perspectives on the South* (Lexington, Ky: University Press of Kentucky, 1984): 121-135.

<sup>14</sup> Letter from Robert A. Clardy to Richard Riley, April 5, 1979, Richard Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, South Carolina Department of Archives and History.

<sup>15</sup> For literature on the transformation of the U.S. South in the 20<sup>th</sup> century, see Numan V. Bartley *The New South, 1945-1980. A History of the South*, v. 11. Baton Rouge: Louisiana State University Press, 1995. James Cobb, *The Selling of the South: The*

Before moving into the origins of Barnwell's contested terrain, the complicated matrix of waste by-products demands clarification. Two broad categories divide radioactive waste: high and low-level waste (HLW or LLW). Low-level waste ranges from innocuous medical scrubs to more highly-radioactive remnants of nuclear power production, which underscores the imprecise nature of the system. The United States currently has four low-level waste sites, and each of these sites has its own parameters for what it accepts, where it accepts it from, and how much it accepts. Untangling even these knots is complex—never mind the more vexing question of where high-level waste goes. Depending on who is assessing the risks of radioactive waste, the spectrum between high and low level can vary.

From the public's perception, waste categories merge into an amorphous one, thus making any and all nuclear waste appear equally dangerous. For those in the nuclear industry or the NRC, the gradient is more distilled, with certain types of waste presenting real hazards and others negligible. These discrepancies have historically created a chasm

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*Southern Crusade for Industrial Development, 1936-1980* (Baton Rouge: Louisiana State University Press, 1982); James C. Cobb and William Stueck, eds. *Globalization and the American South* (University of Georgia Press, 2005); John Egerton, *The Americanization of Dixie: The Southernization of America*, 1st ed. (New York: Harper's Magazine Press, 1974); Larry J. Griffin and Don H. Doyle, *The South as an American Problem* (University of Georgia Press, 1996); Bruce J. Schulman *From Cotton Belt to Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1938-1980* (Duke University Press, 1994). For specific studies of the rural South, see Pete Daniel, *Breaking the Land: The Transformation of Cotton, Tobacco, and Rice Cultures Since 1880* (University of Illinois Press, 1985) and *Toxic Drift: Pesticides and Health in the Post-World War II South* (Louisiana State University Press, 2007); Gilbert Fite, *Cotton Fields No More: Southern Agriculture, 1865-1980* (University of Kentucky Press, 1984); Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920-1960* (Louisiana State University Press, 1987); Jeannie Whayne, *Delta Empire: Lee Wilson and the Transformation of Agriculture in the New South* (Louisiana State University Press, 2011).

between policy-makers, industry experts, activists, and the public. In Barnwell's case, approximately 75 percent of the waste is defined as "fuel-cycle" (i.e. from nuclear power production) and 25 percent came from non-fuel cycle purposes (i.e. research and medicine).<sup>16</sup>

South Carolina's entrée into the nuclear waste business began with the development of the Savannah River Site (SRS). Built in 1951, SRS became one of many Cold War military installation projects churning out the necessary components for expanding the nation's nuclear arsenal. SRS served as the state's largest employer in the mid-twentieth century, and functioned as a symbol of American technological supremacy, Cold War demands, and regional modernization.<sup>17</sup> Moreover, SRS's development launched the state's friendly relationship with all things nuclear. Today, SRS houses high-level nuclear waste, primarily due to a lack of suitable disposal sites elsewhere. With the delay in opening the long-awaited high-level depository at Yucca Mountain in Nevada, high-level waste remains in disposal purgatory: no use and no place for burial either. South Carolina's investment in a nuclear economy provided economic benefits coupled with long-term environmental risks.

The development of the Savannah River Site transformed Aiken County, an area bordering South Carolina and Georgia. Even today, a drive through Barnwell county

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<sup>16</sup> Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, "Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility," NUREG-0879, completed November 1981, published January 1982.

<sup>17</sup> Kari A. Frederickson, *Cold War Dixie: Militarization and Modernization in the American South* (Athens: The University of Georgia Press, 2013).

suggests that the region's transformation only extended so far, leaving large swaths of land unscathed from the hallmarks of twentieth century development: suburbanization and sprawl. Despite its proximity to SRS, Barnwell County remains rural, dotted with bucolic pastures and a few chain stores present in many small towns. Thus, Barnwell's landscape is defined by competing claims – one to an agrarian past and the other to an aspirational suburban landscape. Already home to part of the Savannah River Site, and with ample land available, Barnwell County welcomed the nuclear industry as perhaps its most important lever for economic development, and encouraged the siting of the low-level radioactive waste site and a controversial nuclear reprocessing plant built by Allied-General but never operational.<sup>18</sup>

Chem-Nuclear's pursuit of the Barnwell site began in the late 1960s, and was soon followed by a two year long licensing process, a brief delay compared to later licensing odysseys of countless nuclear power plants. The initial reaction to the disposal site was one of muted concern, and some politicians questioned the wisdom of South Carolina's seemingly breezy acceptance of radioactive waste. Former chemical engineer and State Senator Gilbert E. McMillan (R-Aiken) warned his colleagues of such dangers in March 1970: "I know when you pollute with atomic waste you pollute forever, and I submit that South Carolina should not become a dumping ground for atomic waste."<sup>19</sup> Still, the public hearing for the repository received little attention, and no one opposed to

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<sup>18</sup> See Kari Frederickson, *Cold War Dixie*.

<sup>19</sup> *The State*, March 4, 1970.

the site attended the one and only hearing.<sup>20</sup> Originally, the proposed facility consisted of a seventeen-acre area in Barnwell, which no doubt appeared minuscule contrasted with SRS's expansive reach (SRS occupies approximately 198,344 acres). Unlike SRS, with its massive relocation program that dislocated an entire community, Chem-Nuclear required far less land and promised additional revenue for the rural county.<sup>21</sup>

In 1971, Chem-Nuclear Inc., entered into a 99-year lease (at \$50 a year) with the state of South Carolina, after undergoing a two-year licensing process.<sup>22</sup> A bargain by any metric, it included various tax payments to both the state and to Barnwell County and financial contributions to an "extended care fund."<sup>23</sup> These terms have been modified, to some extent, over the following decades, but the fundamental agreement remains the same.

For the first five years of operation, the site occupied the original seventeen acres but vastly expanded in 1975 to 235 acres. In conjunction, the initial 99-year lease soon extended to 2075. The expansion occurred for three reasons. First, the amount of low-level radioactive waste had sharply increased, thus requiring more land for disposal and opportunities for greater profit. Second, tritium plumes, bodies of radioactive water and vapor which can affect water aquifers, at the Barnwell site necessitated a greater amount

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<sup>20</sup> Audio Recording, March 4, 1971, Barnwell, SC, DHEC Records, South Carolina State Archives, Columbia, South Carolina.

<sup>21</sup> Louise Cassels, *The Unexpected Exodus: How the Cold War Displaced One Southern Town* Paperback ed. (Columbia, S.C: University of South Carolina Press, 2007).

<sup>22</sup> South Carolina Department of Health and Environmental Control (DHEC), "Commercial Low-Level Radioactive Waste Disposal in South Carolina," March 2007, [http://www.scdhec.gov/HomeAndEnvironment/Docs/commercial\\_low\\_level.pdf](http://www.scdhec.gov/HomeAndEnvironment/Docs/commercial_low_level.pdf).

<sup>23</sup> A decommissioning trust fund was established in 1981.

of land as well. And finally, multiple commercial low-level waste sites closed: Maxey Flats in Kentucky (1977), West Valley in New York (1975), and Sheffield in Illinois (1978).<sup>24</sup> What started as a small disposal site transformed into a sizeable estate of radioactive garbage. The volume of nuclear waste skyrocketed, growing from 50,219 cubic feet in volume to over 600,000 cubic feet in 1975. By 1979, Barnwell's nuclear site contained over two million cubic feet of low-level nuclear waste, all buried in shallow trenches.<sup>25</sup> Today, the ground beneath those 235 acres contains approximately twenty-eight million cubic feet of nuclear waste. By comparison, the Empire State Building has a volume of thirty-seven million cubic feet. With the addition of SRS's nuclear waste, perhaps the entire building would be filled to capacity.

In a brief period of three years, with three commercial nuclear waste sites closing, South Carolina, Washington, and Nevada remained the only states willing to bury the nation's low-level radioactive waste.<sup>26</sup> This sharp inequity set off a political, and arguably environmental, crisis on a national scale. A democratic nation had inadvertently become inegalitarian in its waste disposal, raising the question of whether democratic means offered any resolution to the crisis, and how much input the public should have, if any, in the storage of radioactive waste.<sup>27</sup> Coinciding with the low-level waste dilemma

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<sup>24</sup> See "Site History and Environmental Monitoring Report for Sheffield Low-Level Radioactive Waste Disposal Site," State of Illinois, Illinois Emergency Management Agency, 2009, <http://www.illinois.gov/iema/NRS/Documents/SheffieldReport.pdf>.

<sup>25</sup> DHEC, "Commercial Low-Level Radioactive Waste Disposal in South Carolina."

<sup>26</sup> Walker, *Yucca Mountain*, 125, 128-131.

<sup>27</sup> See Langdon Winner's "Do Artifacts Have Politics?" *Daedalus* 109, no. 1, Modern Technology: Problem or Opportunity? (Winter, 1980): 121-136.

in the 1970s-1980s, the Department of Energy faced the difficult task of finding repositories for high-level radioactive waste from nuclear weapons production, further highlighting the problem of siting and community input.<sup>28</sup>

The looming nuclear waste crisis illustrated the difficulties of managing the need for burial, while negating the political fall-out. For the governors of South Carolina, Washington, and Nevada, this posed a serious problem, for themselves and for their constituents. The issues surrounding high and low-level waste demanded federal, state, and local governments work together effectively; a challenging prospect for any problem much less one as complicated and fraught with controversy as radioactive waste. A haphazardly organized means of disposal, one that relegated waste to a few states, no longer sufficed.

As others have observed, no coherent policy had been adopted to effectively handle the increasing amounts of radioactive waste the United States produced.<sup>29</sup> Without a clear agenda for waste disposal, a potentially manageable problem evolved into a full-fledged national controversy, with South Carolina at the forefront. In a 1976 congressional hearing, George D. Debuchananne of the U.S. Geologic Survey, concluded, “The question then may well be asked: Why don't we have, systematic site selection criteria? The answer, if it is to be found, lies within the failure of any Federal Government agency directly or, indirectly involved in disposal site criteria study and determination to step forward and provide energetic leadership in a critical area of public

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<sup>28</sup> Among the possible sites of interest were salt domes in Louisiana, Mississippi, and Texas. See “Possible Waste Sites Listed,” *New York Times*, March 30, 1983, A18.

<sup>29</sup> Walker, *Road to Yucca Mountain*; Richard B. Stewart and Jane Stewart, *Fuel Cycle to Nowhere: U.S. Law and Policy on Nuclear Waste*.

policy.”<sup>30</sup> Debuchananne’s comment underscored the general stance towards nuclear waste policy: not now, later.

Further complicating matters, by the late seventies, the public’s heightened sense of environmental awareness and general uneasiness about the nuclear industry created a policy log-jam of sorts, with the intended goal of a more equitable system. If possible in the abstract (a creation of policy wonks), the regional compact system would prove more difficult to carry out. In 1978, the nuclear crisis remained unresolved, and the temporary closings of the Beatty, Nevada and Richland, Washington low-level sites, resulted in an enormous influx of nuclear waste importation to Chem-Nuclear’s Barnwell site. For Chem-Nuclear, the political crisis elsewhere created a boon. By the late seventies, South Carolina received approximately 77-85 percent of the nation’s low-level nuclear waste, and in 1978, the numbers soared even further.<sup>31</sup>

Even as Chem-Nuclear’s site vastly expanded in the mid-seventies, and the waste volume increased, Barnwell residents welcomed it. While the industry’s presence generated jobs, Barnwell County received much needed tax revenue from the site. As a rural county with few resources and a small tax base, the Chem-Nuclear site promised additional funding for local schools, parks, and other government services. By entrenching themselves in the community, the company reinforced their advertising slogan, “We’re the good guys,” an unconcealed public relations campaign to ward off

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<sup>30</sup> Hearing on Low-Level Radioactive Waste Disposal, HRG-1976-OPH-0019 , Before the Conservation, Energy and Natural Resources Subcommittee on Conservation, Energy, and Natural Resources, Committee on Government Operations. House; Committee on Government Operations, February 23, 1976, Mar. 12, Apr. 6, 1976.

<sup>31</sup> “South Carolina Governor Orders Curb of 50% in Nuclear Dumping,” *New York Times*, Nov 1, 1979.

accusations of corporate malevolence.<sup>32</sup> When Barnwell stood poised to become home to Allied-General's nuclear reprocessing facility in the 1970s, residents strongly supported a project that others deemed unsafe and unnecessary. Amidst pastures and Confederate memorials, the nuclear industry seemingly promised the same kind of growth that neighboring county, Aiken, experienced decades earlier with the Savannah River Site.

The political situation in South Carolina proved favorable for Chem-Nuclear and Barnwell county for several years. During his tenure as governor from 1975 to 1979, James B. Edwards, an oral surgeon who was the first Republican elected governor in the Palmetto State since Reconstruction and who was later appointed as Secretary of Energy under the Reagan administration, staunchly supported the state's nuclear industry. Testifying before the Senate in 1978, Edwards reminded the committee of the nuclear industry's economic significance for South Carolina:

I might just add to expand a little bit on the job situation, when \$1.235 billion worth of new industry moves into South Carolina this year, you know that is a big figure. I can't even translate that, being an old country boy, how much money that is...If we have not had nuclear energy to give us that opportunity, we would not have jobs for people.<sup>33</sup>

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<sup>32</sup> Chem-Nuclear Advertisement, Folder: Kelly, Nuclear, Facilities, Barnwell, Chem-Nuclear, Box 6, Mary Kelly Collection, University of South Carolina, Modern Political Collections.

<sup>33</sup> Hearing on Nuclear Waste Management, HRG-1978-SGA-0021, Before the Subcommittee on Energy, Nuclear Proliferation, and Federal Services, Committee on Governmental Affairs. Senate; Committee on Governmental Affairs. Senate Sudoc Number: Y4.G74/9:N88/5, Jul. 25-27, 1978.

While Edwards acknowledged the need for a comprehensive plan for radioactive waste disposal, he reinforced South Carolina's commitment to the nuclear industry.<sup>34</sup>

Like many southern boosters before him, jobs and revenue superseded other concerns. Even though his claims to "being an old country boy" were given in jest, Edwards skillfully deferred any further knowledge about the nuclear related industries by aligning himself not with industry experts, but rather with laymen—a form of pro-nuclear populism perhaps.

Two years later, the political winds shifted due to a change in leadership, the proliferating amount of waste shipped to South Carolina, the election of Richard Riley as governor of the state (at the time, governors could not be re-elected), and most importantly, Three Mile Island (TMI). Although the accident at Three Mile Island in 1979 wrought major changes in safety and regulation in the commercial nuclear industry, the event also invigorated the nuclear waste debate in South Carolina. Calling for a reappraisal of the state's nuclear waste intake and its blind-eye to the consequences of the nuclear industry, Richard Riley, a Democrat who later served as Bill Clinton's Secretary of Education, disrupted a long-standing pattern toward unencumbered regional development, Panglossian in its ethos.

Until the catastrophe at Chernobyl in 1986, the reactor meltdown at the Three Mile Island nuclear plant in Central Pennsylvania was the most prominent accident in

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<sup>34</sup> Hearing on Nuclear Waste Disposal, Part 1, HRG-1978-CST-0011 Before Subcommittee on Science, Technology, and Space, Committee on Commerce, Science, and Transportation. Senate; Committee on Commerce, Science, and Transportation. Senate Committee Serial Number: Committee on Commerce, Science, and Transportation, Sudoc Number: Y4.C73/7:95-136/pt.1, Aug. 9-10, 16, 1978.

commercial nuclear power.<sup>35</sup> Three Mile Island (TMI) vividly demonstrated the dangers of nuclear technology gone awry, shook the nation's tenuous faith in the safety of nuclear energy, and gave vigor to anti-nuclear activism.<sup>36</sup> Plans to ship TMI's high-level nuclear waste to the Savannah River Site jeopardized South Carolina's friendliness with the industry, after the public became alarmed by the news. For Governor Richard Riley, the event proved politically expedient.<sup>37</sup> Instead of accepting TMI's waste, Riley appeared as a hero, successfully blocking other states' radioactive waste. Riley justified his decision by addressing the South Carolina's larger nuclear waste problem. Citing the large volume of high level and low-level waste buried in the state, Riley asserted, "South Carolina can no longer be the path of least resistance in seeking the national answer to nuclear waste disposal."<sup>38</sup>

For nearly a decade, Chem-Nuclear quietly operated the facilities with little complaint, although it drew the ire of anti-nuclear activists.<sup>39</sup> Anti-nuclear activists had been embroiled in a decade-long movement against the proliferation of nuclear power and defense technology in the state, but these groups were still largely outside the mainstream until the late seventies, when the anti-nuclear movement gained a wider following. Despite the increased efforts by activists, including public protests in 1978,

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<sup>35</sup> For a comprehensive analysis of the event, see: Samuel J. Walker, *Three Mile Island: A Nuclear Crisis in Historical Perspective* (University of California Press, 2006).

<sup>36</sup> Samuel Hays, *Beauty, Health, and Permanence*, 179.

<sup>37</sup> Richard Riley, "Why South Carolina Said No," *The Washington Post*, Monday April 23, 1979.

<sup>38</sup> Ibid.

<sup>39</sup> Two state based anti-nuclear organizations were Palmetto Inc. and Energy Research Foundation.

and a slow stream of news reports on the site, the issue essentially remained dormant until Gov. Richard Riley's well-publicized refusal to accept high-level nuclear waste from the Three Mile Island (TMI) nuclear meltdown in April 1979. What to do with TMI's nuclear by-products set off a battle over nuclear waste in South Carolina.

Richard Riley's stance brought greater awareness to the increased volume of low-level radioactive waste in the state, gripping South Carolinians' attention. Adding to the furor, a number of environmental catastrophes, including the Love Canal toxic saga in New York, triggered anxiety about industrial pollution and hazardous waste.<sup>40</sup> The visible presence of commercial nuclear power plants, federal defense sites, and high and low-level nuclear waste in the state, in addition to the increased coverage of environmental disasters, made many South Carolinians anxious about the future and the consequences of living in a nuclear state. Moreover, Riley's public refusal exposed the Chem-Nuclear site's central problem. Due to the *Interstate Commerce Clause*, if South Carolina accepted radioactive waste from one state, any other state could bury their nuclear garbage within its borders.<sup>41</sup> By presenting South Carolina as a victim of federal incursion rather than as the product of its own design, Riley's refusal aroused public support, even as it undermined serious appraisals of the state's shortsightedness in 1971.

Sparked by Gov. Riley's well-publicized invocation of state pride, and its continued use by the media, other state politicians, and national activist organizations,

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<sup>40</sup> For a historical overview of these events and their impact, see, Samuel Hays, "The Toxic Environment, in *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge University Press, 1989), 171-206.

<sup>41</sup> Richard Stewart and Jane Stewart, *Fuel Cycle to Nowhere*, 63.

South Carolinians readily employed similar rhetoric.<sup>42</sup> The wholesale acceptance of the nation's low-level nuclear waste became an affront to South Carolinians' pride. The debacle transformed *their* state into the "nation's sacrificial lamb."<sup>43</sup> Upon congratulating Gov. Riley's efforts in April 1979, South Carolinian Stephanie Connor declared: "South Carolina is not a garbage can for the rest of the United States!"<sup>44</sup> Shocked by the ruinous implications of their state's burgeoning nuclear-waste industry, South Carolinians demanded equitable distribution of low-level nuclear waste.

In one letter to Governor Riley, an infuriated Camellia Lane of Surfside, SC, asserted: "Why does S.C. have to be the 'dumping ground'? When I read articles such as the enclosed I get furious! And I'm not alone – just 1 of thousands. I'm middle class, 42 yr old, a wife...I'm not a nut either."<sup>45</sup> If middle class, middle aged wives were angered, the political implications for Richard Riley and others loomed that much larger. By the late seventies, the Barnwell issue extended beyond local anti-nuclear groups and became a key issue adopted by South Carolina's chapter of the League of Women Voters,

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<sup>42</sup> South Carolina politicians Harriet Keyserling and Butler Derrick also employed this rhetoric.

<sup>43</sup> Statement to S.C. Delegation, January 8, 1982, Mary Kelly, Box 27, League of Women Voters of South Carolina Collection, Folder: Program Files, Natural Resources Correspondence, 1980-1981, South Carolina Political Collections, University of South Carolina.

<sup>44</sup> Letter to Richard Riley from Stephanie Connor, April 21, 1979, Riley Papers, S. S554003. Energy Files, 1979-80, Box 1, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>45</sup> Letter to Richard Riley from Camellia Lane, June 11, 1979, Riley Papers, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

spearheaded by state politician Harriet Keyserling and LWV member Mary Kelly. Those groups also effectively broadened interest in the issue—particularly with female voters and mothers especially.<sup>46</sup>

While other environmental inequities remained largely hidden or ignored by the public, the perception that South Carolina had been unduly assigned the role of nation's garbage can for radioactive waste stirred people from complacency.<sup>47</sup> Richard Riley's popular appeal, efforts by a diverse coalition of citizen groups and anti-nuclear organizations, and a national spotlight sparked interest among formerly disinterested citizens. Adding to the uproar, a *20/20* news program on the state's nuclear waste woes vexed South Carolinians, and many immediately wrote to Gov. Riley about their concerns after seeing the broadcast.<sup>48-49</sup> The dramatization of low-level nuclear waste likely compelled residents to enter the fracas. In her letter to Gov. Richard Riley, South Carolinian Novella Garrison expressed her dismay: "I have just seen a television program which has me outraged. The program revealed that South Carolina is the dumping ground

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<sup>46</sup> For more see Harriet Keyserling and Mary Kelly's papers in the South Carolina Political Collection, University of South Carolina, Columbia, and Harriet Keyserling, *Against the Tide: One Woman's Political Struggle* (University of South Carolina Press, 1998).

<sup>47</sup> Letter to Richard Riley from Stephanie Connor, April 21, 1979, Gov. Richard Riley Papers, S. S554003. Energy Files, 1979-80, Box 1, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>48</sup> Historian Samuel Hays has argued that, "publications in environmental organizations focus on the limited issues in which they are interested in to rally their members to action. The mass media, on the other hand, prefer only the dramatic and the sensational and hence miss the more mundane news that is often far more important." Samuel P. Hays, *Explorations In Environmental History* (University of Pittsburgh Press, 1998), 384.

for the nuclear waste of not only the United States, but also other countries.”<sup>50</sup> Harriet B. Vinson of Greenville, expressed a similar sense of urgency: “Last night I watched 20/20 on Channel 12, WLOS, Asheville, and I knew that today I MUST write to you to find out what I can do to get this stopped.”<sup>51</sup> The national broadcast served as another painful reminder of the state’s role as the nation’s dumping ground, the cost of industrial development, and the failure of policy-makers to create an equitable system for waste disposal.

The crisis also sparked rumination about South Carolina’s natural beauty and economic potential from residents, as they wrestled with the problems of poverty and preserving the environment. Sheila McClaine, resident of rural North, South Carolina, warned that with unfettered development the state could “become just as homely and unsightly as some of the less fortunate states than our own.”<sup>52</sup> By comparing South Carolina to the rest of the nation, many citizens expressed a holistic view of the state’s environment, linking the majestic coastal areas to Barnwell and the southeastern lowlands. Stephanie Connor, the sophomore at Georgetown University, implored Gov. Riley to protect the state’s natural beauty, linking the state’s aesthetic appeal to the character of its people:

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<sup>50</sup> Letter from Novella Garrison to Richard Riley, July 26, 1979, Richard Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>51</sup> Letter from Harriet B. Vinson to Richard Riley, July 27, 1979, Box 1, Richard Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>52</sup> Letter from Sheila McClaine to Richard Riley, March 7, 1984, Riley Papers, S. 554011, Box 2, Folder: Natural Resources, Natural Resources and Environmental Council Letters, SCDAH.

South Carolina is a beautiful state and one of the few states left which is developing and moving forward, instead of stagnating and decaying. I think you agree that progress should be encouraged, but tempered so that we do not sacrifice the beauty of the state and the unharried friendliness of the people.<sup>53</sup>

Fears of radiation, a strong attachment to place, and a sense of injustice compelled many of the state's residents to call for better waste disposal policies. Constituent correspondence written during the crisis underscored a desire to preserve some redeemable form of the past through preserving the environment.

As they considered their state's trade in radioactive waste, South Carolinians weighed the consequences of industrial development. Conflicted about the greater costs of unchecked growth, Robert Clardy of Pelzer, South Carolina, professed that he, "Mr. Average Citizen," preferred "poverty to pestilence."<sup>54</sup> Clardy found it mysterious that the state "could trade a status as one of the poorest states in the nation to one of the most dangerous."<sup>55</sup> Deborah Johnson mused, "We must be incredibly desperate, uninformed, or stupid." Johnson continued, "I would hate to see South Carolina commit themselves to becoming the nuclear dumping ground of the nation, simply because they had been sold the line that this was an economic boondoggle."<sup>56</sup> Sheila McClaine, of North, South Carolina, questioned industry's unimpeded march through the state, while underscoring

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<sup>53</sup> Letter from Stephanie Conner to Richard Riley, April 21, 1979, Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>54</sup> Letter from Robert A. Clardy to Richard Riley, April 5, 1979, Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>55</sup> Ibid.

<sup>56</sup> Letter from Deborah Johnson to Butler Derrick, June 8, 1977, Butler Derrick Papers, Box 4, Folder: Pub, Gen, 1977, Energy, Nuclear, General, South Carolina Modern Political Collections (SCPC).

the need for economic growth: “There can be no denying the need for industry and productivity in our growing state, but again, some of the construction seems totally unneeded. For example, the new mall being built in Orangeburg seems to serve no life-saving purpose.”<sup>57</sup> While the nuclear waste issue intersected with specific concerns about environmental and health risks, it also highlighted more general dilemmas about economic development: how could one of the “poorest states” give its citizens better opportunities without committing themselves to “pestilence”?<sup>58</sup>

Even as South Carolinians acknowledged the economic benefits of industrial development, a strong current of anxiety remained. The passionate response following Governor Riley’s refusal to accept Three Mile Island’s nuclear waste reflected concerns about environmental contamination and the public health risks associated with radiation. The fears expressed by South Carolinians mirrored an upswing in national concerns about nuclear power and radioactive waste. As historian Samuel Hays has noted, “little thought had been given by either industry or the AEC [Atomic Energy Commission] to the disposal of radioactive waste” until the last half of the 1970s.<sup>59</sup> As public concern increased, nuclear enthusiasts faced the difficult task of assuaging fears.<sup>60</sup> In a letter to Congressman Butler Derrick of South Carolina’s Third District, Frances Rodgers envisioned an eerie future: “No humans, no animals, might as well blow us up...We will

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<sup>57</sup> Letter from Sheila McClaine to Richard Riley, March 7, 1984, Riley Papers, SCDAH.

<sup>58</sup> Letter from Robert A. Clardy to Richard Riley, April 5, 1979, Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>59</sup> Hays, *Beauty, Health, and Permanence*, 181.

<sup>60</sup> Hays, *Beauty, Health, and Permanence*, 181.

all die of cancer.”<sup>61</sup> Another resident, Deborah Johnson, characterized the public as “zombie-like,” and feared the capitol lawn would be littered with “malformed babies, sterile men and women, and lethally irradiated bodies.” Johnson wondered what horrible tragedy would have to occur “before the nuclear risk” was “taken seriously in this state.”<sup>62</sup> The threat of radioactivity, invisible and seemingly uncontrollable, powerfully underscored the dilemma between economic growth and maintaining proper regulation for the environment and public health.

In Barnwell, economic development and community preservation took precedence over environmental and public health concerns, placing them at odds with anti-nuclear activists and many others in South Carolina. Surrounded by critics, the people of Barnwell clung tighter to the nuclear waste site, recasting a marker of environmental inequity into a point of pride. Living near a radioactive waste repository produced a stigma different from ordinary landfills or even hazardous waste sites. Radiation conjured images of mutation, defective genes, and deformed children. A community living with twenty-seven million cubic feet of nuclear waste invited new categories of difference. To live in Barnwell carried the weight of uncertainty—never knowing what made you sick, why relatives died of cancer, or children had birth defects.<sup>63</sup> A nuclear economy requires a commitment to uncertainty and accepting an

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<sup>61</sup> Letter from Frances Rodgers to Butler Derrick, June 12, 1985, Butler Derrick Papers, Box 25, Gen, 1985, Energy, Nuclear, South Carolina Political Collections (SCPC), University of South Carolina, Columbia.

<sup>62</sup> Letter from Deborah Johnson, April 2, 1979, Folder: Nuclear Waste Correspondence, Box 1, Richard Riley Papers, Energy Files, 1979-80, SCDAH.

<sup>63</sup> On uncertainty, health, and the environment, see Scott Kirsch, “Harold Knapp and the Geography of Normal Controversy: Radioiodine in the Historical Environment,” *Osiris*

inability to find solid explanations for mortal or ordinary occurrences like cancer. Even as SRS officials, Chem-Nuclear employees, and state officials monitored the area's nuclear sites and promised a safe operation, the scale of Barnwell's radioactive waste repository made it nearly impossible to separate the community's identity from its atomic trade. In response, locals transformed their albatross.

At the forefront of the Barnwell debate, aging state representative Solomon Blatt tenaciously fought the nuclear waste opposition even as his health failed. Blatt's political power, forged over five decades, gave Barnwell County and its municipality a stiff rebuttal to the anti-Chem Nuclear opposition. In 1985, a year before his death, a ninety year-old Blatt offered a fiery proclamation:

We live on top of the dump, as they call it. We call it a fine industry serving not only South Carolina but the nation... Why would you want to interfere with what we're doing down there if we like it? Why do you want to run the little county of Barnwell and tell us what industry we have and we won't?<sup>64</sup>

Blatt, the ever-savvy politician, reversed the David and Goliath in the nuclear waste debate. Barnwell appeared as "the little county," bullied by certain political factions and their environmentalist allies. For Blatt and the people of Barnwell, local autonomy reigned over other matters.

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19 (2004): 167-81; Gregg Mitman, Michelle Murphy, and Christopher Sellers, "A Cloud Over History," *Osiris* 19 (2004): 1-17; Jody A. Roberts and Nancy Langston, "Toxic Bodies/Toxic Environments: An Interdisciplinary Forum," *Environmental History* 13 (October 2008): 629-635; Adriana Petryna, "Biological Citizenship: The Science and Politics of Chernobyl-Exposed Populations," *Osiris* 19 (2004): 250-265.

<sup>64</sup>"Nuclear Facilities, Barnwell Closing," *The State*, March 21, 1985, Mary Kelly Collection, Box 7, SCPC.

In a curious brand of localism, Blatt and other pro-Chem Nuclear supporters to the area, welcomed “newcomers” so long as they supported the dump, and resisted outsiders, those who posed a danger to Barnwell’s identity and economic viability. In a letter to Barnwell city council chairman, T.E. Richardson, Blatt expressed his desire to protect local residents “from a large group of obnoxious and unworthy citizens spilling themselves over us in our section of the state.”<sup>65</sup> Blatt welcomed “newcomers,” with ties to industry, reflecting upon the benefits of these additions to the community, “Our town and county is a better town and county for the newcomers who have moved in and lived among us. Barnwell is making progress as the result of these industries being in our midst.”<sup>66</sup> Blatt even insisted he knew “no one” in the community that opposed the industry.<sup>67</sup> Pro-Chem Nuclear supporters delineated boundaries between “us” and “them” and carved those lines more aggressively as protests and national attention threatened greater scrutiny of Chem-Nuclear’s operation. As the public pushed for greater oversight and stricter regulations, pro-nuclear forces in Barnwell called for greater autonomy in their county’s industrial development.

Many Barnwell citizens, and residents from adjacent Aiken County, firmly supported Chem-Nuclear and the nuclear industry. Drew Wilder, of the Barnwell Chamber of Commerce, seemed encouraged by the pro-nuclear sentiment in the area,

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<sup>65</sup> Letter from Solomon Blatt to T.E. Richardson. September 28, 1979, Box 2, Solomon Blatt Papers, Box 2, Folder: Public, Topical, Barnwell County, General, 1970-1979, SCPC.

<sup>66</sup> Letter from Solomon Blatt to Larry M. Dickens, September 11, 1985, Blatt Papers, Box 5, Public, Topical, Energy, Nuclear, General, SCPC.

<sup>67</sup> Ibid.

despite the “anti-nuclear mood of the country.”<sup>68</sup> Wilder asserted the citizenry, “which has lived with the industry for nearly thirty years,” still “overwhelmingly” supported it.<sup>69</sup> According to the Chamber of Commerce’s survey, nearly eighty-three percent of Barnwell residents favored continued nuclear development and presumably the Chem-Nuclear site, while forty-one percent considered themselves “NOT well informed on the subject.”<sup>70</sup> The letter gives no indication of how many residents the council surveyed, but others expressed similar sentiments. One hundred Barnwell and Aiken County residents petitioned for the continued development of the nuclear industry, citing its importance to the area.<sup>71</sup> Barnwell resident Dennis Hutto doubted the legitimacy of environmentalists, describing them as a “very small minority of people” who “want to save a bird or tree from some type of harm that they don’t even know would be harmed in the first place.”<sup>72</sup> Hutto felt activists overlooked cases “where people actually froze to death from lack of heat.”<sup>73</sup> For many locals, Barnwell’s economic life or death hinged upon the nuclear

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<sup>68</sup> Letter Barnwell Chamber of Commerce, Drew Wilder, to Solomon Blatt, October 25, 1980, Box 5, Public, Topical, Energy, Nuclear, General, Blatt Papers, SCPC.

<sup>69</sup> Letter Barnwell Chamber of Commerce, Drew Wilder, to Solomon Blatt, October 25, 1980, Box 5, Public, Topical, Energy, Nuclear, General, SCPC.

<sup>70</sup> Ibid.

<sup>71</sup> Petition from residents of Aiken and Barnwell Counties to Pres. Jimmy Carter, April 13, 1977, Folder: Pub, Gen, 1977, Energy, Nuclear, General, Box 4, Butler Derrick Papers, SCPC.

<sup>72</sup> Letter from Dennis Hutto to Butler Derrick, April 4, 1977, Butler Derrick Papers, Box 4, Folder: Pub, Gen, 1977, Energy, Nuclear, General, SCPC.

<sup>73</sup> Letter from Dennis Hutto to Butler Derrick, April 4, 1977, Butler Derrick Papers, Box 4, Folder: Pub, Gen, 1977, Energy, Nuclear, General, SCPC.

industry.<sup>74</sup> Without Chem-Nuclear, some Barnwell residents feared the community's disappearance altogether. B.D. Plexico Jr., the last remaining new car dealer in town, bemoaned its disintegration: "there are many businesses that have been closed up. The town which I love and grew up in is rapidly becoming a ghost town."<sup>75</sup> An area farmer, skeptical of Barnwell's safety, nonetheless confirmed that many Barnwellians, "felt it [Chem-Nuclear] was a salvation then for people to be able to remain in the area and have a decent job."<sup>76</sup> Chem-Nuclear appeared as vital life support for a hemorrhaging rural community.

For those living in Barnwell, Chem-Nuclear's presence translated into employment opportunities and greater revenue for the county. The site, at its peak, employed somewhere between 200-300 people approximately.<sup>77</sup> In recent years, employment figures have dwindled to less than one hundred.<sup>78</sup> Moreover, in 1985 alone, Barnwell County, "received \$575,000 in fees and property taxes from Chem-Nuclear; the

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<sup>74</sup> On the conflicts between environmentalists and the working-class, see Richard White, "Do You Work for a Living?," Cronon, William, ed., *Uncommon Ground: Rethinking the Human Place in Nature*. New York: W.W. Norton & Co, 1996.

<sup>75</sup> Letter from B.D. Plexico, Jr. to Butler Derrick, August 19, 1983, Butler Derrick Papers, Box 20, Pub, Gen, 1983, Energy, Nuclear, Gen., SCPC.

<sup>76</sup> "Barnwell Area Farmers Express Concern About Waste," Folder: Topical Files: Barnwell, Nuclear Reprocessing Plant, 1979, Box 24, Palmetto Alliance Papers, South Caroliniana Library, University of South Carolina.

<sup>77</sup> "Residents want Barnwell to Remain Open," *Fayetteville Times*, 1-25-1987, Tim Bass, CASH papers, Southern History Collection, UNC-Chapel Hill. In 2004, the number of employees had dwindled to sixty. See, Andrew Jacobs, "In One Small Town, Radioactive Waste is a Welcome sight," *New York Times*, March 29, 2004.

<sup>78</sup> Andrew Jacobs, "In One Small Town, Radioactive Waste is a Welcome sight," *New York Times*, March 29, 2004; Sammy Fretwell, "S.C. Nuke Dump Deal on Table," *The State*, February 28, 2015.

town of Snelling (population 150) gained \$50,000; and the state of South Carolina put more than 9 million into its treasury.”<sup>79</sup> The benefits were tangible. Barnwell’s school system received approximately \$500,000 over a period of five years in the late seventies, funding a variety of projects for new facilities.<sup>80</sup> Because of the community’s small size, Chem-Nuclear’s impact in Barnwell was highly visible, benefiting the company as well. When outsiders attacked Chem-Nuclear, many perceived it as an attack upon their community too. According to Dennis Shepard of South Carolina’s Department of Health and Environmental Control (DHEC), “a lot of the community sort of laughs [and laughed] at the outsiders who want to say how bad it is...This community has no more excess deaths from cancer, leukemia, any of the normal causes of death, than any other community would have.”<sup>81</sup> Paradoxically, Barnwell’s radioactive garbage appeared as one way to extend the life of a rural town rather than a source of death and disease.

Unlike many other rural communities, Barnwell experienced a population growth during the seventies, with an approximately 25 percent increase.<sup>82</sup> Before Chem-Nuclear opened the site, a housing survey in 1970 estimated that nearly 30 percent of housing in Barnwell was sub-standard, and at least an equal number lacked one or more plumbing

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<sup>79</sup> “Residents want Barnwell to Remain Open,” *Fayetteville Times*, 1-25-1987, Tim Bass, CASH papers, Southern Historical Collection, UNC-Chapel Hill.

<sup>80</sup> “Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility,” NUREG-0879, completed November 1981, published January 1982: 103, 3-27.

<sup>81</sup> “Residents want Barnwell to Remain Open,” *Fayetteville Times*, 1-25-1987, Tim Bass, CASH papers, Southern Historical Collection, UNC-Chapel Hill.

<sup>82</sup> Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility,” NUREG-0879: 92, 3-11.

facilities and were overcrowded.<sup>83</sup> Spurred by the construction of Allied-General's nuclear reprocessing site and Chem-Nuclear's presence, the county experienced a housing boom over the decade, growing from 5,384 dwellings to 7,282, a 35 percent increase.<sup>84</sup> Unemployment, however, remained stubbornly high. In 1989, Barnwell county's unemployment rate ranked eighth in the state.<sup>85</sup> And thus, the benefits were more akin to a "boom-town" than a sustained economic engine, one that would substantially boost employment and raise the standard of living in the way that SRS had done for Aiken county. Despite this, the Barnwell community arguably viewed even slight improvements as better than other alternatives and certainly good enough for hosting a LLW site.

Although few Barnwell residents voiced trepidation about Chem-Nuclear's repository, the accident at Three Mile Island provoked some anxiety among locals about environmental contamination. Mary Moore wrote to Gov. Riley that the accident "upset many of us in South Carolina, especially in Barnwell County."<sup>86</sup> Written in April 1979, the same month as the Three Mile Island accident, DeWitt Norwood Jr. echoed Moore's sentiment. Norwood requested Riley prevent the importation of the site's waste, and professed his belief that "most of the people in Barnwell County think as I do about the

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<sup>83</sup> "Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility," NUREG-0879: 92, 3-16.

<sup>84</sup> "Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility," NUREG-0879: 93, 3-17.

<sup>85</sup> Bob Stuart, "Barnwell After Site Benefits," *The State*, April 2, 1989.

<sup>86</sup> Letter from Mary Moore to Gov. Riley, April 1979, Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

matter.”<sup>87</sup> To be sure, both writers were concerned with waste from Three Mile Island, not the more benign low-level waste shipped into the Chem-Nuclear facilities. The increasingly publicized nature of environmental disasters and risks gave incidents like Three Mile Island greater visibility and intensity and rattled the nerves of even some Barnwell residents.

In 1985, as the nuclear waste debate returned to the headlines, Susan Owen of Barnwell conceded the need for “economy,” but not an “economy that may one day make Barnwell a ghost town.”<sup>88</sup> Owen, like B.D. Plexico Jr., envisioned Barnwell’s ghost town fate; however, environmental degradation would be the cause. Similarly, Owen urged Rep. Butler Derrick to preserve her community, by ending nuclear waste importation, not through its continuation. Owen’s conception of history and the future influenced her opinion, “My husband’s grandfather, spent his life helping Barnwell become a better place to live, for his family and friends. Now I fear for the future of my family living in this town.”<sup>89</sup> Another Barnwellian, R.J. Baxley surmised, “If the thing starts leaking, it’ll contaminate everything to the ocean...The thing about it is, no matter where you’re going with it, the money man wants it. But, buddy, what good is a payroll when you’ve done and killed everybody around?”<sup>90</sup> Darkly humorous and candid, Baxley’s comment

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<sup>87</sup> Letter from DeWitt Norwood to Richard Riley, April 12, 1979, Riley Papers, Box 1, Energy Files, 1979-80, Folder: Nuclear Waste Correspondence, SCDAH.

<sup>88</sup> Letter from Susan Owen to Butler Derrick, April 18, 1985, Derrick Papers, Gen, 1985, Energy, Nuclear, Gen., SCDAH.

<sup>89</sup> Letter from Susan Owen to Butler Derrick, April 18, 1985, Derrick Papers, Gen, 1985, Energy, Nuclear, Gen., SCDAH.

<sup>90</sup> Tim Bass, “Residents want Barnwell to remain open,” *Fayetteville Times*, January 25, 1987.

underscores the central predicament for a community and a state which staked its future upon the nuclear industry.

While the Barnwell controversy reached a crescendo in 1979, the debate continued well into the next decade, as state and federal officials negotiated a complicated nexus of environmental policy regulations. The Low-Level Nuclear Radioactive Policy Act (1980) and the Nuclear Waste Policy Act (1982) allowed states to circumvent the Interstate Commerce Clause if they entered into a compact agreement with other states. As legal scholars Richard Stewart and Jane Stewart have noted, the compact system yielded a “regional approach” to nuclear-waste disposal rather than a centralized, federal one.<sup>91</sup>

In 1986, South Carolina then joined the Southeastern Waste Compact with eight other states, buoyed by North Carolina’s assurance that a nuclear waste site would be completed by 1992. The growing backlash against nuclear waste in North Carolina, along the curiously slow progress securing a site, led to South Carolina’s withdrawal from the compact in 1996, and North Carolina’s ban from using Chem-Nuclear’s Barnwell facility. The resistance to fulfilling the state’s obligation, despite its nuclear reactors and Triangle-research facilities, could best summarized by Wilber Register, a Bladen County, NC County Board Commissioner, “It’s kind of like everybody wants to go to heaven, but nobody wants to die.”<sup>92</sup> Widespread public apprehension, along with earlier examples of

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<sup>91</sup> Richard B. Stewart and Jane Stewart, *Fuel Cycle to Nowhere: U.S. Law and Policy on Nuclear Waste* (Nashville: Vanderbilt University Press, 2011).

<sup>92</sup> “Residents want Barnwell to Remain Open,” *Fayetteville Times*, 1-25-1987, Tim Bass, CASH papers, Southern Historical Collection, UNC-Chapel Hill.

poor management, thwarted any attempts to make nuclear waste disposal more equitable.<sup>93</sup>

Today, Washington, South Carolina, and Utah harbor most of the nation's nuclear waste. More recently, a LLW facility has opened in Andrews, Texas, located in the arid western part of the state, but the "compact" to which Texas belongs only includes Vermont; and thus, one could reasonably conclude that the facility exists primarily for Texas generators.<sup>94</sup> Over thirty years after the passage of a series of nuclear-waste related acts, little has changed, and the high-level waste repository Yucca Mountain (NV) has been officially stalled, most recently by President Obama's administration—no doubt fueled by Senator Harry Reid's political power.<sup>95</sup>

For South Carolina, the policy developments of the eighties alleviated a grossly disproportionate burden, but nonetheless left many questions unanswered, among them when the Barnwell facility might close. Other measures included the increase in a perpetual maintenance fee, forcing generators to pay a fair price for not simply waste disposal but also for the cost of decommissioning the site, going from the original fee of eight cents (per cubic foot) to over two dollars more recently.<sup>96</sup> While this did not quiet the most vociferous critics, it assuaged a more widespread feeling of outrage among the public. Renewed support from the South Carolina Republican leaders in the 1990s, and

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<sup>93</sup> Walker, *Yucca Mountain* 135-141.

<sup>94</sup> Stewart and Stewart, *Fuel Cycle to Nowhere: U.S. Law and Policy on Nuclear Waste*, 151.

<sup>95</sup> Ibid.

<sup>96</sup> Virgil Autry, DHEC, Bureau of Radiological Health, "License Restrictions at Barnwell," <http://www.energy.sc.gov/files/BarnwellLicenseRestrictions.pdf>.

powerful nuclear waste lobby, ensured continued operation of the Barnwell site. In 1998, South Carolina joined a new compact, the Atlantic compact, thus limiting the number of states that can dispose of waste in Barnwell. Although the current influx of waste is significantly less than in previous decades, the importation of so-called low-level waste continues.

In 2002, the South Carolina General Assembly transferred nearly \$50 million dollars from Barnwell's Extended Care Fund, one of two funds created for monitoring and maintaining the site in the future, to the state's general fund to meet a budget shortfall.<sup>97</sup> Despite the legality of such a transfer, the ethics of it are less clear. Although the state of South Carolina has paid back the funds, it nonetheless used money demarcated for decommissioning and maintaining the Barnwell site over the long-term—a vital aspect in protecting the public and the environment from approximately twenty-eight million cubic feet of nuclear waste—to address budgetary missteps, raising questions about government accountability, especially as the Extended Care Fund balance has increased to over \$145 million dollars.<sup>98</sup> A skeptical observer might reasonably conclude that the funds remain vulnerable to future machinations.

As the environmentally disastrous situation at the former LLW site Maxey Flats demonstrated, low-level radioactive waste site can pose a significant threat to the surrounding ecosystem and to public health. Of greatest concern is the migration of

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<sup>97</sup> Bradburne, Briller & Johnson, LLC., Final Report, "Evaluation of the Extended Care Fund, Barnwell, LLRW Disposal Facility," Commissioned by South Carolina Budget and Control Board, August 2002.

<sup>98</sup> Chem-Nuclear/Energy Solutions Presentation, "Barnwell Complex Update," Presented at SC Governor's Nuclear Advisory Council, January 9, 2014,  
<http://www.energy.sc.gov/files/gnac/BarnwellGNACJan2014.pdf>

radioactive elements into the water supply. While Barnwell County proved more suitable than other areas, the disposal method, a technique called shallow land burial, left the area vulnerable to groundwater leaching into the shallow pits and then into other sources of water. Despite the waste's high-tech origins, shallow-land burial techniques are rather simple, although not quite as crude as some might imagine. Disposal trenches, approximately five meters deep and two hundred meters in length, are, in fact, engineered pits, reinforced by sand, cement, and other materials to stabilize each trench and designed to minimize the effects of groundwater. Casks of nuclear waste, both from the fuel-cycle and non-fuel cycle materials (typically segregated), are laid atop one another in the trenches, stacked hierarchically depending on the level of radiation, so that more radioactive materials are buried deeper. Our own renderings of waste sites, either in the imagination or popular culture, evoke a different kind of disposal practice, one closer to a landfill than what lies beneath the grassy surface of Chem-Nuclear's grounds. While Chem-Nuclear employee Michael Benjamin has conceded that burial practices have improved over the years, regulators have characterized the Barnwell site as well-managed, especially when compared to notoriously ill-managed sites like Maxey Flats and Sheffield.<sup>99</sup> As a 1981 Environmental Assessment noted, "operating experience at many of the commercial low-level waste (LLW) disposal has been less than desirable. However...the Barnwell facility has been operated at the forefront of technology."<sup>100</sup>

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<sup>99</sup> Michael Benjamin, Chem-Nuclear Employee, Interview by Caroline Peyton, recording in author's possession, May 2013. The interview accompanied a tour of the Barnwell facility.

<sup>100</sup> Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility," NUREG\_0879.

Despite commendable management practices and forecast modeling, the nuclear industry produces risks, and the very nature of radioactive materials creates the possibility for unintended consequences, some not immediately visible.

In any disposal site, groundwater is one of the primary, if not the primary, cause for concern. As groundwater seeps into trenches, it creates the potential for radionuclides, specifically tritium and strontium-90, to spread into neighboring water sources, vegetation, and possibly expose humans to radiation. The presence of tritium and strontium-90 at disposal sites, while expected and arguably unavoidable by those within the nuclear industry, has been a source of criticism for anti-nuclear groups and concerned citizens, although claims of increased cancer rates, thyroid disorders, or leukemia are often speculative, generally contentious, and with occasionally suspect, independently generated data. And yet, the NRC and DHEC concluded in 1981 that “long term migration” was the “most important identified” problem with the Barnwell site.<sup>101</sup>

Tritium, a radioactive isotope of hydrogen, is the radionuclide most likely to migrate from groundwater into the water table, an area of saturated soil that exists at different depths beneath the surface depending on the location. If tritium leaches into the water table, it can create a “tritium plume,” a body of tritiated water and vapor moving through water aquifers that must be monitored regularly.<sup>102</sup> Because tritium is considered the “heaviest isotope of hydrogen” it moves much like water through the ground, and

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<sup>101</sup> Ibid.

<sup>102</sup> Raymond L. Murray, *Understanding Radioactive Waste* (Columbus: Battelle Press, 1994):113-114.

thus, its rate of migration is easier to predict but also difficult to contain.<sup>103</sup> At the Barnwell LLW site, tritium plumes have been located, which have been monitored and documented over the past several decades. In recent years, DHEC and Chem-Nuclear have created a more open dialogue with the public, making maps of plume-locations and radiation activity available for access.

While the public's concern is one of a more immediate nature—the invisibility of radiation and the risks to public health, the larger question confronting South Carolina and Chem-Nuclear is the matter of not only controlling tritium plumes but also remediation. The ground beneath Barnwell, if not a highly dangerous environmental threat, must be monitored, controlled, and remediated for years to come. Tritium plumes present an expensive project at the very least. The costs of a LLW site continue for hundreds of years after waste disposal ends, and based upon a 2008 report, tritium remediation will cost anywhere from \$23 to \$140 million dollars and conceivably costs could increase.<sup>104</sup> For now, the Barnwell “extended care fund” which Chem-Nuclear has contributed to since its inception will cover the costs of remediation, along with decommissioning and monitoring at least for several hundred years.<sup>105</sup> Central to the dilemma about Barnwell's low-level waste site, and nuclear controversies generally, is the unique time-scale of radioactive waste. In our own lives, the length of our contractual commitments is often much shorter, but nuclear power and waste, along with utilizing

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<sup>103</sup> Ibid., 114.

<sup>104</sup> URS Corporation, III-17, URS-39400333-1, “Cost Projections for Post-Closure Custodial Care of the Barnwell Radioactive Waste Disposal Facility,” Commissioned by the SC Budget and Control Board and State Energy Office, October 2008, xii-xiv.

<sup>105</sup> Ibid.

radiation for research and medicine, require long-term commitments that extend beyond our lifetimes and into future generations. South Carolina's commitment to low-level waste began in the seventies and will extend far beyond the lives of the politicians, developers, and citizens that made it initially possible.

The outcry against South Carolina's perceived role as the nation's dumping ground typically prompted the solution: each state should bury their own waste. Proponents of this solution arguably failed to consider the political, economic, and cultural values of states less inclined to harbor nuclear waste dumps; and perhaps more importantly, failed to address the politics of waste. Barnwell resident Susan Owen questioned the decision to bury nuclear waste "where people's lives and futures are not in jeopardy."<sup>106</sup> Owen then proposed this solution: "There's plenty of unpopulated [underline Owen's] wasteland that will not even grow weeds." For Owen, Barnwell, South Carolina, was a *populated* place, despite its rural location and small number of residents. America's wasteland, presumably in the deserts of the Southwest and Western regions, historically had been the dumping ground for nuclear waste, and Owen's response proposed more of the same. South Carolinians opposed to the Barnwell dump perceived their state as decidedly non-wasteland but possibly underestimated outside perceptions. For the states refusing to bury their own nuclear waste, much less any other state's, reflects a larger problem at stake. To outsiders, Barnwell, South Carolina may have seemed like a wasteland too.

The furor surrounding low-level nuclear waste demonstrates the problem with contemporary views surrounding the environment: the waste can always go somewhere

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<sup>106</sup> Letter from Susan Owen, Barnwell, SC, Folder: Gen, 1985 Energy, Nuclear, Gen., Box 25, Butler Derrick Papers, SCPC.

else. Those on either side of the debate continually missed a central issue behind the geography of waste disposal: the cost of consumption in the modern United States. Activists and non-activists alike, ignored what now seems readily apparent. Even if the location changed, football-field sized trenches of radioactive waste would still multiple. Because consumptive habits faced little criticism, simply shunting other states' nuclear waste elsewhere appeared justifiable. Susan Owen's solution, ship the nuclear waste to a so-called ecological "dead zone," is less striking for its scientific inaccuracy than for its implications for the area that must contain radioactive waste. In her consideration of the environmental havoc wreaked by nuclear weapons in the West, writer Marilynne Robinson has defined wilderness as the place "where things can be done that would be intolerable in populous landscape... If is no longer to be found in one place, we assume it exists in other places. So the loss of wilderness always seems only relative, and this somewhat mitigates any specific instance of abuse."<sup>107</sup> If not "wild" in the popular conception of wilderness, a place unaltered by human means, then Barnwell's landscape fits Robinson's definition rather well.

Located in the Atlantic Coastal Plains, the rolling hills of Barnwell and Aiken have long since been used, whether for farming, the ever-expansive SRS, or other industries such as pulp wood logging. Because of the SRS, according to a 1981 report, the federal government owns the majority of the land, while forests and agriculture also dominate the landscape.<sup>108</sup> Multiple rivers and water sources are in close proximity to the

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<sup>107</sup> Marilynne Robinson, "Wilderness," *Death of Adam: Essays on Modern Thought* (Picador: New York, 1998): 246-247

<sup>108</sup> Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility," NUREG 0879, 3-31.

site, namely the Savannah River, the Salkehatchie River, and the Lower Three Runs Creek.<sup>109</sup> Ranging from sandy soils to swamps, abundant pine forests cover the land surrounding the site and mostly deer, foxes, and small lizards, snakes, and birds populate the local ecosystem. At one time, other species such as eastern cougars possibly roamed the area, but by the time the Barnwell site opened in 1971, a great number of species, both animal and plant, were either eradicated, rare, or endangered in Barnwell county.<sup>110</sup> The site itself was used for pulpwood production and farming before Chem-Nuclear leased the land, so it had long been utilized for some form of industry.<sup>111</sup> And now, it contains a vast and inconceivable amount of radioactive waste beneath layers of soil, clay, and sand—“intolerable in populous landscape.”<sup>112</sup>

Rural America, not simply the western United States, carries the burden of our radioactive past, present, and future. In a 1980 hearing before a Senate committee, Senator Patrick Leahy (D-VT) underscored this stark inequity, stating that “vast quantities of nuclear waste” are “scattered across rural America....Rural America will most likely become the repository for all of the country's nuclear wastes...”<sup>113</sup>

Geographies of waste are complex, ranging from hazardous chemicals to landfills, where

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<sup>109</sup> Ibid.,3-25

<sup>110</sup> Ibid.

<sup>111</sup> Ibid., 3-51.

<sup>112</sup> Marilynne Robinson, *The Death of Adam*, 246-247.

<sup>113</sup> Hearing on Socioeconomic Effects of a Nuclear Waste Storage Site on Rural Areas and Small Communities, Subcommittee on Rural Development, Committee on Agriculture, Nutrition, and Forestry, Senate; Committee on Agriculture, Nutrition, and Forestry. Aug. 26, 1980 Senate Sudoc Number: Y4.Ag8/3:N88, 2.

trash of all varieties is forgotten, ignored, or as in developing countries, scoured for valuable (and dangerous) metals. For the people of Barnwell, and those dissecting the remnants of our discarded devices, waste takes on new meaning, a meaning quite different from those not well-attuned to the economic and social reasons for these bargains. Across the rural US South, the fears of Barnwell's people have materialized: populations dwindled, houses and farms sold, and rural residents grasped for economic opportunities that would salvage the vestiges of the towns they loved. Sprawling metropolitan areas thrived, while ghost towns dotted the rural South. Barnwell's last new car salesman, B.D. Plexico Jr., does not appear as someone who has been "sold a line," but rather as someone who weighed the costs of the nuclear industry and decided preservation of his community overruled the risks.

Historian C. Vann Woodward described the vast changes afoot as the "Bulldozer Revolution."<sup>114</sup> The sprawling reordering of the South, combined with the toppling of "old monuments of regional distinctiveness" bound to white supremacy and human bondage, left people wondering if an American South existed at all. For Woodward, the "burden of southern history," namely defeat and poverty, gave the region ongoing markers of difference. As much as the South appeared Americanized, a history of failure, guilt, and poverty defined the region and its people.<sup>115</sup> Southerners, in Woodward's estimation, did not share the same can-do attitude so engrained in American culture. While the region has neither a monopoly on poverty or radioactive waste, the South has new burdens—not necessarily defined by exceptionalism—but by a nuclear future. When

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<sup>114</sup> C. Vann. Woodward, *The Burden of Southern History*. 3rd ed. (Baton Rouge: Louisiana State University Press, 1993, orig. published in 1969), 6.

<sup>115</sup> *Ibid.*, 5.

all the old monuments have crumbled, radionuclides beneath South Carolina's soil will decay far more slowly, requiring centuries of environmental stewardship and new monuments of warning.

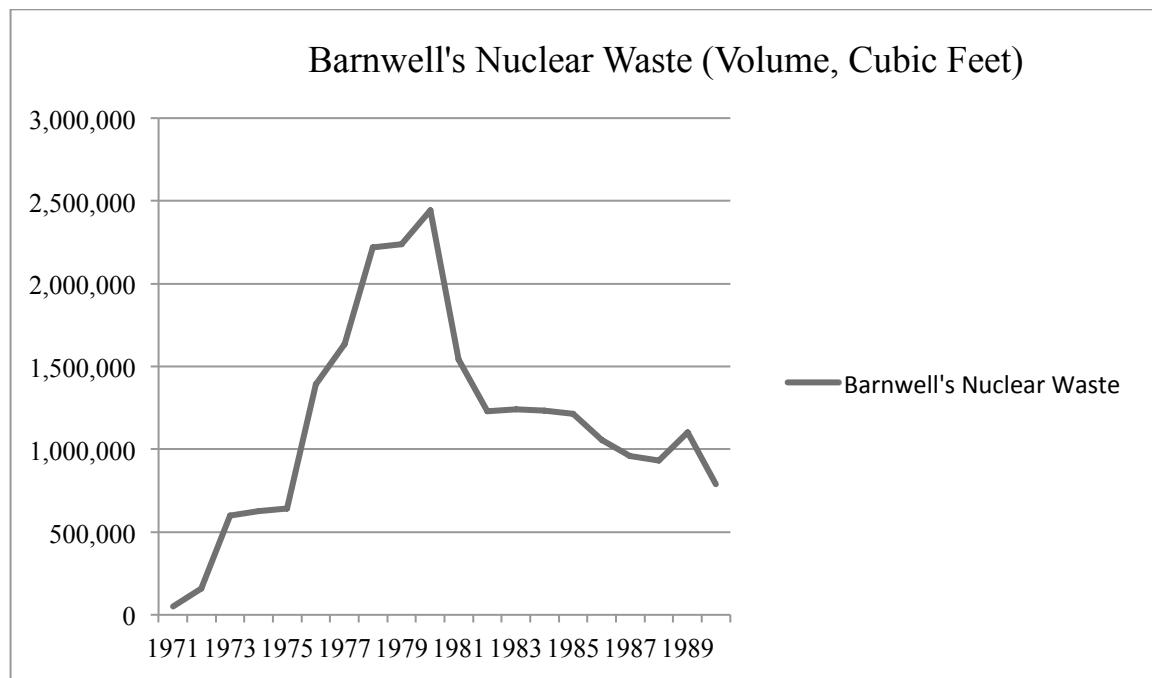


FIGURE 4.1: BARNWELL'S NUCLEAR WASTE

## CHAPTER FIVE

### JIMMY CARTER AND THE TROUBLE WITH EXPERTISE

Jimmy's got more sides than the Pentagon and may prove nearly as dangerous. He's as hard to get a handle on as a greased pig, which is as elusive as a lightning bug.”<sup>1</sup> ---Larry L. King (1976)

...the President apparently felt he had to fish or cut bait between energy and environment. He chose to cut environment.

---Unnamed Carter Administration Official (1979)

On April 1, 1979, after attending Sunday school, President Jimmy Carter and First Lady Rosalyn Carter ventured into the control room of the Three Mile Island (TMI) nuclear power plant, where days earlier a “chain of events” caused the worst commercial nuclear accident in American history.<sup>2</sup> Photographs from the Carters’ TMI tour showed the couple wearing rumpled, unfashionable yellow disposal shoe-covers and lacking presidential airs. While Carter’s willingness to investigate the accident himself and “learn firsthand from the scientists” demonstrated his deep-seeded commitment to the

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<sup>1</sup> Larry L. King, “We Ain’t Trash No More,” *Esquire* November 1976, 155.

<sup>2</sup> Jimmy Carter, *White House Diary* (New York: Farrar, Straus and Giroux, 2010), 310; J. Samuel Walker, *Three Mile Island: A Nuclear Crisis in Historical Perspective* (Berkeley: University of California Press, 2006), 72.

nation's energy issues, the popular television series *Saturday Night Live* found an abundance of comic material in Jimmy and Rosalyn Carter's trip.<sup>1</sup> A week after the partial meltdown at TMI, SNL lampooned the accident, and the Carters, in a skit entitled "The Pepsi Syndrome."<sup>2</sup>

Offering an antidote to the widespread fears surrounding the accident, the gloomy anti-nuclear message of the recently released film *The China Syndrome*, and the media uproar over TMI, "The Pepsi Syndrome" depicts nuclear engineers as comically incompetent, overlooking the large "no soft drinks in the control room sign," only to set off a nuclear meltdown after an engineer, played by Bill Murray, spills the soft-drink Pepsi on the reactor controls. A smarmy spin-doctor represents the nuclear industry, describing the core meltdown as a "surprise" and no worse than having a "chest x-ray over, and over, and over." The Carters, played by Dan Akroyd and Laraine Newman, sheepishly enter the control room, wearing yellow hard-hats with their names emblazoned. While Rosalyn begs the president to tour the Hershey Factory instead, a hapless Jimmy Carter, reminds the plant employees of his nuclear expertise and his protective "yellow boots," inspecting the "surprise" himself and unwittingly transforming into the 90 foot tall "amazing colossal president." Even after his growth spurt, Carter remains the same – bumbling and ineffective in the face of calamity. A pointed parody of his southern roots, the ninety-foot tall Jimmy Carter then announces his newfound love for the similarly-tall janitor, an African-American woman (played by Garrett Morris),

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<sup>1</sup> Jimmy Carter, *White House Diary* (New York: Farrar, Straus and Giroux, 2010), 310.

<sup>2</sup> "The Pepsi Syndrome," *Saturday Night Live*, Season 4, Episode 16, aired April 7, 1979. For transcript, see <http://snltranscripts.jt.org/78/78p.phtml>.

who mutates after the engineers asked her to clean a “spill” in the nuclear reactor chamber.<sup>3</sup> “The Pepsi Syndrome” accurately captured the public’s perception of Carter and of nuclear power, even as it exaggerated elements of the TMI accident.

Despite efforts to portray Carter as a “nuclear expert,” and his reputation for “technocratic precision,” the President’s claims to expertise worked as a double-edge sword, influencing how Americans responded to Carter’s presidency and his energy policy.<sup>4</sup> Jimmy Carter found himself trapped between his desire for mastering policy issues, devising the best solutions in a rancorous political climate, and his public image as an energy expert and environmental steward. Embodying these dilemmas, Carter’s stance on two nuclear projects in the American South, the Barnwell Nuclear Fuel Reprocessing Plant (BNFP) and the Clinch River Breeder Reactor Project (CRBR), tested the president’s claims to nuclear expertise and his abilities to translate his knowledge into effective solutions.

To a great extent, BNFP and Clinch River represented the nuclear industry’s precarious future and a philosophy that had driven nuclear developments over several decades. Both projects represented technological solutions for the problems presented by the nuclear fuel cycle, reducing waste and creating a more efficient reactor. In terms of political consequences, the fate of BNFP and CRBR proved far more meaningful for shaping Carter’s presidency than the accident at Three Mile Island.

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<sup>3</sup> Ibid.

<sup>4</sup> Frye Gaillard, *Prophet from the Plains: Jimmy Carter and His Legacy* (University of Georgia Press, 2007), 3.

Nuclear controversies of this sort provoked Jimmy Carter's ire for their wastefulness and for their inherent risks, which he continually emphasized. Although Carter rightly interceded in the matter of nuclear reprocessing, on nuclear issues generally, he waffled from characterizing nuclear power as a "last resort" to actually supporting shorter licensing periods for nuclear plants. Even though he possessed more familiarity in terms of technical and scientific knowledge than his predecessors, Carter never fully crafted a coherent nuclear policy. Historian Bruce Schulman has argued that Carter "represented the nation's attachment to a high-technology future," and that as a southerner, he embodied that "faith" because "the hunger for research and development funds had emerged early in the South."<sup>5</sup> Lukewarm in his support for nuclear power, the southern president with nuclear engineering experience, ironically, cast doubt upon the South's nuclear visions and contributed to a declining enthusiasm for such projects as Clinch River and BNFP. Carter, in fact, used his presidential authority to challenge that faith rather than sustain it.

Contrary to popular depictions, Jimmy Carter's background in nuclear engineering was not as extensive many believe, but his experiences in the field profoundly shaped him and his presidency. One of the turning points in Carter's life occurred during an interview for a position in Naval Captain Hyman Rickover's nuclear submarine program. At the time, Rickover was one of the world's "leading experts" on atomic energy.<sup>6</sup> In the interview, Rickover asked Carter if he had done "his best" while at

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<sup>5</sup> Bruce J. Schulman, *From Cotton Belt to Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1938-1980* (Durham: Duke University Press, 1994), 166.

<sup>6</sup> Jimmy Carter, *A Full Life: Reflections at Ninety* (Simon and Schuster, 2015), 61.

the Naval Academy, where he graduated fifty-ninth in a class of 820. Carter, at first confirmed that yes, he had done his best but then quickly realized otherwise. Despairing, Carter then conceded that he had not done his best, to which Rickover replied, “Why not?” Although Carter left the interview convinced of his poor performance, Rickover accepted him into the nuclear program, a decision that Carter attributed to his honest self-reflection.<sup>7</sup> The story, recycled frequently, figures prominently in Carter’s memoirs, and the experience informed his approach to his presidency, and especially to energy and nuclear policy. For Carter, “doing your best,” required a commitment to mastering complex issues—and sometimes outsmarting the experts themselves.

Jimmy Carter’s time in the nuclear submarine program under the command of Captain Hyman Rickover bolstered these tendencies. Serving under Rickover, whose opinion he valued deeply, gave Carter a sense of insider status in the nuclear industry.<sup>8</sup> From 1952 to 1953, Carter was assigned to the AEC’s Division of Nuclear Reactor Development and worked with General Electric to develop the *USS Sea Wolf*, a nuclear submarine. During this time, Carter took two graduate level courses in physics. He also served as part of the team that disassembled an experimental reactor core in Canada, which suffered a partial meltdown in 1952.<sup>9</sup> Reminiscing about his service, Carter opined that “few people at that time were as knowledgeable as we were about this new

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<sup>7</sup> Carter, *A Full Life*, 62-63.

<sup>8</sup> Peter G. Bourne, *Jimmy Carter: A Comprehensive Biography from Plains to Post-Presidency* (New York, A Lisa Drew Book/Scribner, 1997), 72-73.

<sup>9</sup> Ibid., 74; Walker, *Three Mile Island*, 132.

technology.”<sup>10</sup> In October 1953, Carter received an honorable discharge for the navy and returned home to Plains, Georgia, choosing to fill the void left by his father’s recent death.<sup>11</sup> Because of this, Carter’s nuclear engineering amounted to a brief, but informative, period. However, as J. Samuel Walker has noted, Carter’s experience “did not steer him to clear position on nuclear power as president.”<sup>12</sup> It did, however, give Carter confidence in his ability to tackle complex policy issues, one that would define his presidency.

Returning home to Georgia, Jimmy Carter confronted new challenges managing his recently deceased father’s farm, which according to Carter, made his “previous navy life—even helping to design and build an original nuclear power plant—seem simple.”<sup>13</sup> The “peanut farmer” from Plains, Georgia then entered politics, winning his first election in 1962 for a seat in the Georgia Senate, where he served two terms from 1963 to 1966.<sup>14</sup> His early political experiences in Georgia, according to Frye Gaillard, “stamped and circumscribed” Carter’s presidency and contributed to his self-professed “outsider” status.<sup>15</sup> After a defeat in his 1965 gubernatorial campaign, which caused Carter to fall into a period of depression, he became a “born-again” Christian, a transformation that

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<sup>10</sup> Jimmy Carter, *A Full Life: Reflections at Ninety* (Simon and Schuster, 2015), 64.

<sup>11</sup> Bourne, 78-82.

<sup>12</sup> Walker, 132.

<sup>13</sup> Carter, *A Full Life*, 70.

<sup>14</sup> Burton Ira Kaufman and Scott Kaufman, *The Presidency of James Earl Carter, Jr.* (Lawrence, Kan: University Press of Kansas, 1993), 8.

<sup>15</sup> Gaillard, *Prophet from the Plains: Jimmy Carter and His Legacy* (University of Georgia Press, 2007), 26.

influenced his view of public service as “wedding to a gospel of service based on his strong religious convictions.”<sup>16</sup> Despite his newly devout identity, one that paralleled the growth of evangelical Christianity in both the Sunbelt South and US, Carter embarked upon a gubernatorial campaign in 1970, where he “acted with ruthlessness and disregard of principle,” kowtowing to white supremacists in Georgia to win votes.<sup>17</sup> Once in office, however, Carter adopted a moderate stance towards race, increased the number of African-American state employees, and helped pass a number of progressive measures that included environmental protection, tax and welfare reform, and improving the state’s mental health services.<sup>18</sup>

Only a year after his election, Carter appeared on the cover of *Time*, as part of a story on a new wave of southern political leaders who embraced racial moderation and a “progressive response to economic and social change” in the region.<sup>19</sup> The shift in political leadership, lead by a number of moderate New South governors, including Dale Bumpers (D-AR), Reubin Askew (D-FL), and Winfield Dunn (D-TN), represented a broader transformation in the South, from “Cotton Belt to Sunbelt,” where “skyscrapers” replaced “run-down shacks.”<sup>20</sup> With Carter’s victory in the 1976 presidential election,

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<sup>16</sup> Kaufman, 8.

<sup>17</sup> Kaufman, 9.

<sup>18</sup> Kaufman, 9.

<sup>19</sup> Kaufman, 10.

<sup>20</sup> Numan V. Bartley, *The New South, 1945-1980* (Baton Rouge: Louisiana State University Press, 1995), 399-404; Gordon Harvey, *A Question of Justice: New South Governors and Education, 1968-1976*, second ed. (Tuscaloosa: University Alabama Press, 2002); Bruce J. Schulman, *The Seventies: The Great Shift in American Culture, Society, and Politics* (De Capo Press, 2002), 121; Judith Stein, *Pivotal Decade: How the*

southerners “savored a moment of vindication,” one signified by a growing national fascination with a commodified-version of southern culture.<sup>21</sup>

And yet, Carter and the victorious South rang hollow for some. In November 1976, writer Larry King lampooned the triumphant South and “good ol’ boys” declaring “We ain’t trash no more” after Carter’s election, noting that the new president “never was” trash, and “he weren’t [sic] even tacky.”<sup>22</sup> Rather, Jimmy Carter’s southern shtick obscured his position of privilege, hailing from a family with vast real estate holdings and an education that included the elite U.S Naval Academy, “in keeping with genteel Southern tradition.”<sup>23</sup> More presciently, King expressed his suspicions that underneath the “soft spiritual goop” Carter publicly espoused was a “vengeful Old Testament God,” which colored his perspective of the world as a “hard and serious place.”<sup>24</sup> Underlying King’s brash, dark humor and salty language was cutting political commentary, capturing Jimmy Carter’s contradictions, his personality, and a world-view that influenced his approach to the nation’s many problems.

Those contradictions run throughout the commentary on Jimmy Carter’s presidency. After his exit from the White House, many commentators characterized

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*United States Traded Factories for Finance in the Seventies* (Yale University Press, 2010), 61.

<sup>21</sup> Dewey W. Grantham, *The Life and Death of the Solid South: A Political History* (Lexington: The University Press of Kentucky, 2015, orig. published 1988), 86.

<sup>22</sup> King, 90.

<sup>23</sup> King, 90.

<sup>24</sup> King, 90.

Carter's presidency as a failure.<sup>25</sup> One scholar accused Carter of a "passionless Presidency," one lacking any "basic philosophy."<sup>26</sup> Others questioned Carter's decision to include members of his "Peanut Brigade" and "Georgia Mafia," a home-grown network of supporters and campaign staff, in his presidential administration, citing their inexperience in national politics as yet another reason for Carter's alleged failure.<sup>27</sup> In recent years, a wave of Carter revisionism has contested the predominantly negative interpretations of his presidency. The illustrious record of Carter's post-presidency, particularly his humanitarian record, has contributed to the revival.<sup>28</sup> Scholars have also closely analyzed his success in the White House, challenging the widely held perception that Carter's administration achieved fewer victories than Johnson or Kennedy.<sup>29</sup> Political scientist Erwin Hargrove concluded that Carter was a "highly conscientious leader" who faced "disjointed and recalcitrant political structures."<sup>30</sup> Put another way, Carter advisor

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<sup>25</sup> For an overview of scholarly interpretations of Carter's presidency, see John Dumbrell, *The Carter Presidency: A Reevaluation* (Manchester University Press, 1993), 9-23.

<sup>26</sup> According to Dumbrell, Joseph Califano, a former Lyndon Johnson aide, characterized the Carter presidency as "rudderless," with no "ideological fire in its belly." John Dumbrell, *The Carter Presidency: A Reevaluation* (Manchester University Press, 1993), 10.

<sup>27</sup> Dumbrell, 37-39. On Carter's "outsider" identity and his staff, see also Betty Glad, *An Outsider in the White House: Jimmy Carter, His Advisors, and the Making of American Foreign Policy* (Cornell University Press, 2009).

<sup>28</sup> Douglas Brinkley, *The Unfinished Presidency: Jimmy Carter's Journey Beyond the White House* (Viking, 1998); Brinkley, "The Rising Stock of Jimmy Carter: The 'Hands on' Legacy of Our Thirty-Ninth President," *Diplomatic History* 20, No. 4 (Fall 1996).

<sup>29</sup> Dumbrell, 43-45.

<sup>30</sup> Dumbrell, 17; Erwin Hargrove, *Jimmy Carter as President: Leadership and the Politics of the Public Good* (LSU Press, 1988).

Stu Eiznstat's encapsulated the administration's difficult circumstances in biblical terms: "Moses would have had problems getting the Ten Commandments through Congress unscathed."<sup>31</sup> Historian Michael Camp has argued that while Congress added to Carter's difficulties, his "inability to understand and account for the divergent interest groups" in the nation's energy economy created further problems.<sup>32</sup> By analyzing Carter's battles over BNFP and CRBR, and his evolution in energy policy, the tendency to place his presidency in either the "failure" camp, or within the more forgiving revisionist school of thought, appears overly narrow. Carter's record of achievements and defeats on these issues remains sprawling and contradictory enough to render either characterization as inadequate, and helps explain why Carter became saddled with his own claims to expertise and his high-moralist approach to the presidency.

#### *Jimmy Carter and his National Energy Policy*

Carter's approach to nuclear policy, and specific projects like BNFP and CRBR, are difficult to fully assess without a broader consideration of his National Energy Policy—a sprawling, complicated, and often contradictory agenda for addressing the nation's energy issues.<sup>33</sup> As scholar Burton Kaufman has noted, even Carter's toughest critics acknowledge that the president in 1977 "faced a herculean task," which would

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<sup>31</sup> Dumbrell, 17, 39.

<sup>32</sup> Michael Camp, "Carter's Energy Insecurity: The Political Economy of Coal in the 1970s," *The Journal of Policy History* 26, No. 4 (October 2014): 461.

<sup>33</sup> Daniel Horowitz, *Jimmy Carter and the Energy Crisis of the 1970s* (Bedford St. Martins, 2005).

have challenged even the ablest politician.<sup>34</sup> Crafting and enacting a successful NEP posed a difficult task, and arguably, no other president has devoted more time to analyzing the nation’s energy issues than Jimmy Carter. Scholar John Barrow has argued that Carter’s “somewhat quixotic quest” for a NEP “defined his presidency,” illuminating both his strengths and weaknesses.<sup>35</sup> Carter’s principled aversion to lobbyist influence, propensity to micromanage, and a “willingness to tackle inherently difficult” issues undergirded his commitment to NEP.<sup>36</sup> However, as Barrow and others have noted, Carter failed to gain political support within the Democratic Party, struggled to create cross-party alliances, and “inspire confidence.”<sup>37</sup> Moreover, Carter cast himself as an expert, and in doing so, inadvertently hurt his own credibility by not offering more satisfactory or transformative solutions.

As writer Larry L. King depicted, Carter had “more sides than the Pentagon,” seen vividly in his efforts to craft a coherent national energy policy. While Carter proved forward-thinking on alternative sources of energy, he undercut his own commitment to energy conservation and environmental preservation by proposing a series of measures which dangerously vowed to eliminate bureaucratic hurdles for nuclear licensing, oil

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<sup>34</sup> Burton I. Kaufman and Scott Kaufman, *The Presidency of James Earl Carter, Jr.* (Lawrence: University of Kansas Press, 1993), 1.

<sup>35</sup> John C. Barrow, “An Age of Limits: Jimmy Carter and the Quest for a National Energy Policy,” in *The Carter Presidency: Policy Choices in the Post-New Deal Era*, editors Gary M Fink and Hugh Davis Graham (University Press of Kansas, 1998), 158-159.

<sup>36</sup> Barrow, 158-159; Douglas Brinkley, “The Rising Stock of Jimmy Carter: The Hands On Legacy of Our Thirty-Ninth President,” *Diplomatic History* 20, No. 4 (Fall 1996), 514.

<sup>37</sup> Barrow, 158-159.

pipelines, coal mining, and other energy-related projects. Although Carter and Ronald Reagan's policies towards energy and the environment are often presented as a study in opposites, a closer look at Carter's proposals and rhetoric demonstrates how his administration, in many ways, laid the groundwork for Reagan's anti-regulatory agenda, albeit inadvertently. Carter's bid to convince the American people and Congress in the realm of energy further contributed to the dethroning of experts in matters of energy and the environment during the 1970s and 1980s, even as he achieved numerous successes in environmental and energy-related legislation.

After an intensive and secretive 90-day period, Carter and a select group of advisors crafted the National Energy Plan (NEP). Recounting the experience, Stuart "Stu" Eizenstat, Carter's chief domestic policy advisor, described the 90 days as an "inordinate time demand."<sup>38</sup> The new president failed, according to Eizenstat, to appreciate the "degree of difficulty" his expectations imposed on his staff, made all the more difficult because Carter's presidential campaign emphasized the economy and *not* energy.<sup>39</sup> Suddenly, Carter's administration confronted the sizable task of shaping a national energy policy on a "crash basis."<sup>40</sup> Moreover, Carter's insisted upon "utter and complete secrecy" during the formation of NEP, keeping the policy proposals "very close to his vest."<sup>41</sup> Nearly sixty days into the process, Carter finally shared more details

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<sup>38</sup> Stuart Eizenstat, Interview, Miller Center, University of Virginia, Jimmy Carter Presidential Oral History Project, January 29, 1982, 25.

<sup>39</sup> Ibid.

<sup>40</sup> Ibid.

<sup>41</sup> Eizenstat, 26.

about NEP with Stu Eizenstat, only to direct him to “not share with anyone including your own staff.”<sup>42</sup> Defying the orders, Eizenstat found it “totally out of the question for my own energy person [Kitty Schirmer] to not see it.”<sup>43</sup> In Carter’s first hundred days, his desire for mastering policy issues, which gave him more control, weakened his ability to build essential, long-term support for his proposals—even from his own administration.

A month before unveiling NEP though, expectations ran high among Carter’s administration. Frank Press emphasized its historic potential, advising Carter that his energy message could become “one of the most important statements of your Presidency.”<sup>44</sup> On April 18, 1977, Carter gave his televised address to the nation, which detailed his National Energy Plan.<sup>45</sup> The speech begins with a dour Carter characterizing the address as an “unpleasant talk” with the American people. The speech pointed to the ways in which the nation’s energy problems threatened future generations and warned that certain proposals would be unpopular and require sacrifice—the “moral equivalent of war.” Noting the rapid depletion of natural gas and oil, Carter called for greater conservation, coal mining, and alternative sources of energy, particularly solar power. If calls for conservation went unheeded, the temptation to “plunder the environment” and to build more nuclear plants, to drill offshore, and to strip-mine would only grow.<sup>46</sup>

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<sup>42</sup> Ibid., 26.

<sup>43</sup> Ibid., 26.

<sup>44</sup> Frank Press to Carter, March 22, 1977, Folder: Nuclear Economics, Box 25, Carlton Neville Papers, JCL.

<sup>45</sup> Jimmy Carter, "The President's Proposed Energy Policy," April 18, 1977, *Vital Speeches of the Day*, Vol. XXXXIII, No. 14, May 1, 1977, 418-420.

<sup>46</sup> Ibid.

Compared to his “crisis of confidence” speech in July 1979, Carter’s first address on energy appears far more environmentally minded, although his calls for increased coal usage might jar readers today in light of global warming. Nuclear energy plays a minimal role in the first speech, with Carter mentioning it only twice (oil is mentioned 28 times, coal is mentioned 8 times). Conservation occupied a central role in 1977 and 1979, and yet, other aspects and emphases of Carter’s energy policy evolved in troubling ways. Some commentators have hailed Carter’s energy policies as prescient, and this observation is true in two respects. It foretold an aggressive anti-regulatory attitude and a more high-minded vision of the future powered by solar energy and conservation.

From 1977 to 1979, Carter’s administration increasingly found itself navigating the interests of the nuclear industry, oil, coal and the Congressional representatives that represented fuel-producing states. These entanglements, along with Carter’s own hostility towards bureaucracy, contributed to the evolution in his energy policy. While Carter’s administration begrudgingly fostered dialogue with leaders of utilities and industry, the proposed policies from Carter in 1979 are alarming in their contradictions—with calls for conservation but also giving potentially unlimited power to overrun environmental regulations for oil, gas, and coal production.

Likewise, Carter remained lukewarm to nuclear power even as he recommended reducing the licensing process for new plants. Greater public participation, in addition to the requirement that utilities produce an environmental impact statement, resulted in a lengthier licensing process. In this sense, Carter’s proposal to cut licensing time appears contradictory to his expressed concern about environmental protections and building safe nuclear plants. However contradictory, these proposals are less surprising in light of

Carter's highly technocratic and often single-minded approach. As a believer in expertise and a self-appointed nuclear expert, a stream-lined licensing process may have limited public participation, although Carter's administration never clearly delineated how their proposals would reduce licensing time.

In the months preceding Carter's two major addresses in April and July 1979, his administration grappled with how to revive Carter's presidency. As the hostage crisis in Iran contributed to yet another "energy crisis," one that many Americans doubted actually existed. Rather, skeptics surmised that rising energy prices reflected a scheme by oil companies and a result of Carter's inefficacy. In March 1979, Senator David Boren sent Carter a "blunt" memo signed by twenty-one senators, although Boren suggested more signatures were attainable. The memo, according to Boren, was offered in "friendship."<sup>47</sup> What Boren and his fellow senators proposed soon became part of Carter's second series of energy related proposals and reflected the interests of oil and coal producing states. Boren warned Carter that "deep discontent and bitter frustration" existed in the country.<sup>48</sup> According to the memo, the American people wanted "government off [their] backs" and many felt the current administration had done nothing to address the nation's energy problems.<sup>49</sup> Moreover, the memo delivered an ominous warning that, without bold action, "disillusionment with the entire political process" might occur. To better address the problems before Carter, the memo recommended a

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<sup>47</sup> From David L. Boren to Carter, March 24, 1979, Energy, 3/3/79-3/24/79, Collection: David Rubenstein's Files, Domestic Policy Staff, Box 96, JCL.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

“bold, Truman, meat-axe approach,” arguing that the American people wanted a president with “a firm hand on the tiller.”<sup>50</sup>

The memo’s authors argued that two problems existed: the energy crisis and the bureaucratic crisis. In addressing these two alleged crises, the memorandum laid the groundwork for reducing regulations and concentrating power into an “energy production council” comprised of private sector figures and vaguely similar to the War Production Board from World War II. Alarmingly, with presidential approval, the council could “take emergency action” to authorize the construction of any facility “to produce, use, or transport any form of energy immediately and without delay notwithstanding any rule or regulation or the jurisdiction of any other federal or state agency.”<sup>51</sup> While this proposal primarily targeted oil, coal, and natural gas, the memo’s implications are worth exploring, particularly because Carter soon incorporated their ideas and retreated from many of his earlier commitments to an environmentally conscious energy future.

Less than ten days after the Boren memo, Carter gave his the first of two major energy-related addresses in 1979, a speech that illustrates a notable shift in tone.<sup>52</sup> Carter continued his advocacy for conservation and called for less wasteful consumption, even as he railed against the “federal bureaucracy and red tape.”<sup>53</sup> Noting the recent accident at

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<sup>50</sup> Ibid.

<sup>51</sup> Boren to Carter, March 24, 1979, JCL.

<sup>52</sup> Judith Stein, *Pivotal Decade: How the United States Traded Factories for Finance in the Seventies* (Yale University Press, 2010) 197.

<sup>53</sup> Jimmy Carter, “Energy Address to the Nation,” April 5, 1979, online by Gerhard Peters and John T. Woolley, *The American Presidency*, <http://www.presidency.ucsb.edu/ws/?pid=32159>.

Three Mile Island, Carter informed Americans of his presidential commission to investigate and produce a “full accounting,” called for greater use of coal and solar energy, and pointed to “American genius” as one of the many ways the country’s energy problems could be solved.<sup>54</sup> Although Carter devoted attention predominately to oil and ending federal price controls, he also noted his recent executive order, Order 12129, which “will set strict deadlines for cutting through Federal red tape on important new energy projects, such as pipelines...”<sup>55</sup> Carter then discussed his “windfall profits tax” proposal, which would have diverted a percentage of oil profits into an “energy security fund” and encouraged research and development for solar power, mass transportation, and developing cleaner alternative energy sources.<sup>56</sup>

Carter’s evolving energy policy reflected the escalating situation in Iran, rising oil prices, and fears of depleted resources. It also illustrated the president’s advocacy of alternative energy development, his commitment to build and to operate safer nuclear plants, and ongoing commitment to conservation. And yet, the April address also indicated the growing influence of energy-producing states and Carter’s own distaste for bureaucracy and regulations—even those intended for much-needed environmental protection. According to White House documents, Carter’s hostility towards bureaucracy

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<sup>54</sup> Jimmy Carter, “Energy Address to the Nation,” April 5, 1979, online by Gerhard Peters and John T. Woolley, *The American Presidency*, <http://www.presidency.ucsb.edu/ws/?pid=32159>.

<sup>55</sup> For Executive Order 12129, see Jimmy Carter, “Executive Order 12129 – Critical Energy Facility Program,” April 5, 1979, online by Gerhard Peters and John T. Woolley, *The American Presidency Project*, <http://www.presidency.ucsb.edu/ws/?pid=32160>.

<sup>56</sup> Jimmy Carter, “Energy Address to the Nation,” April 5, 1979, online by Gerhard Peters and John T. Woolley, *The American Presidency*, <http://www.presidency.ucsb.edu/ws/?pid=32159>.

manifested itself early in his presidency. Commenting on a document submitted by Stu Eizenstat on the number of reserve oil barrels, Carter left a handwritten note, “Stu, this is bureaucratic b.s. All I asked for were a) estimates of reserves b) How many barrels in cubic mil.”<sup>57</sup> As Carter’s note demonstrates, he sought efficiency and disliked the information deluge produced by certain government agencies, but failed to appreciate how streamlining approval for energy related facilities created dangerous openings for utilities, oil, gas, and coal companies to exploit the environment and to defang the Environmental Protection Agency.

The note also pointed to Carter’s tendency to chastise his staff, correcting minor issues and even offering editorial feedback on non-speech materials. The traces of Carter’s intense involvement at many levels of policy formation and staff activities can be seen throughout his correspondence and his administration’s papers. In June 1979, as fuel shortages loomed, Carter issued a memo to his administration executives that whenever he “designated a situation as a crisis or special problem...everyone must submit to a greater degree of discipline.”<sup>58</sup> During his presidential campaign, Carter admonished Stu Eizenstat, who was frequently on the receiving end of such feedback, about a daily publication produced by his campaign: “Stu, this is of poor quality – serves no purpose & is potential embarrassment. Early ‘warning’ (?) —misspelled names, etc.

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<sup>57</sup> Carter to Stu Eizenstat, April 16, 1977, 5613, Folder: Energy, 3/77-8/77, Box 101, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL.

<sup>58</sup> Carter to staff, June 23, 1979, F: Kemeny Commission, 6/79-11/19/79, Box 103, JCL.

Stop it.”<sup>59</sup> Carter’s staff largely tip-toed around the issues, reluctantly tolerating these tendencies even as it became politically disadvantageous. Before Carter’s first debate, he returned briefing books—not known for their slim size—to his staff, “having read every single page and corrected typographical errors and grammatical mistakes,” as Eizenstat recounted. When Eizenstat and several Carter advisors tried to prevent him from being “over-briefed,” Carter refused to go through a debate rehearsal and instead relied upon his ability absorb the briefing materials.<sup>60</sup>

Carter’s propensity to micromanage and desire for mastery over issues went hand in hand. In his 1982 memoir, *Keeping the Faith*, which detailed his experiences as president, Carter appropriately titled the first chapter, “A Graduate Course in America.”<sup>61</sup> Even after his exit from the White House, Carter viewed the presidency as not simply a learning process, but as an opportunity to become more knowledgeable than the average president. Stu Eizenstat attributed it to Carter’s “utter self-confidence,” but one might also go back to his formative moment with Hyman Rickover.<sup>62</sup> For Carter, doing his “best,” meant continually accepting new challenges to analyze complex issues. James Schlesinger, who served as Carter’s advisor and as Secretary of Energy from 1977 to

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<sup>59</sup> Carter to Eizenstat, June 25, 1976 , Folder: Nuclear Power & Energy, Box 127, Collection: David Rubenstein’s Files, Domestic Policy Staff.

<sup>60</sup> Eizenstat Interview, Miller Center, 12.

<sup>61</sup> Jimmy Carter, *Keeping Faith: Memoirs of a President* (University of Arkansas Press, 2013, orig. published 1982).

<sup>62</sup> Eizenstat Interview, 12.

1979, described Carter as having a “very high degree of expertise” in domestic matters.<sup>63</sup> Carter, perhaps naively, believed that expertise granted him political power and strengthened his persuasive abilities, which sometimes backfired. For a meeting with four American auto executives about pollution, Carter had prepared to such an extent that he “knew ten times as much” as nearly anyone else at the meeting. Remembering the incident, Schlesinger bluntly characterized Carter’s performance as a “tour de force,” but one that made him wonder, “What in God’s name is the President of the United States sitting up hour after hour, day after day, reading these briefing papers on various methods to control automobile pollution?”<sup>64</sup>

In the wake of Carter’s first of two energy addresses in 1979, his administration grappled with falling approval ratings, ongoing conflicts with Congress, internal frustration, and diminishing credibility in energy-related matters. According to one memo, an NBC survey reported that only 25 percent of Americans believed an oil shortage existed, which Carter’s staff characterized as a “plausibility gap.”<sup>65</sup> Contending with a growing belief that no energy crisis existed, the administration underlined the importance of establishing greater authority, noting that maintaining the president’s “energy credibility” remained vital if calls for sacrifice occurred.<sup>66</sup> Carter’s

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<sup>63</sup> James Schlesinger, Interview, Miller Center, University of Virginia, Jimmy Carter Presidential Oral History Project, July 19-20, 1984, 17-18.

<sup>64</sup> James Schlesinger Interview, 17-18.

<sup>65</sup> “Energy Conservation Outreach Task Force,” June 5, 1979 F: Energy, 6/21/79-6/30/79, Box 98, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL.

<sup>66</sup> “Energy Conservation Outreach Task Force,” June 5, 1979 F: Energy, 6/21/79-6/30/79, Box 98, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL; June 28, 1979 Gordon Wynne to Stu Eizesntat and David Rubenstein, June 28, 1979, F: Energy,

administration desperately sought new strategies, noting that “old jawboning was ineffective” and failed to convince the American people.<sup>67</sup>

Writing in June 1979, Si Lazarus, the associate director of Carter’s Domestic Policy Staff, urged Stu Eizenstat to cut the president’s planned stop-over in Hawaii. Emphasizing the general “nastiness” of attitudes towards Carter, Lazarus stated “I don’t care how tired he is – the time for taking off for visible, nationally televised relaxation is plainly not at hand.” Regarding the energy crisis, Lazarus reminded Eizenstat and David Rubenstein that Carter need to “illuminate a credible path” to solving the nation’s problems rather than serving merely as the bearer of bad news.<sup>68</sup> Only a few months earlier, the Chairman of the Democratic National Committee, John C. White, professed hope that energy might be Carter’s “domestic bag,” but by July 1979, his approval ratings sank even lower with a dismal 28% approval rating.<sup>69</sup> In response, Secretary of Energy James Schlesinger, only a few days before resigning from Carter’s cabinet, urged the president to devise an energy program—both “bold and credible.”<sup>70</sup>

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6/21/79-6/30/79, Box 98, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL.

<sup>67</sup> Memo, June 4, 1979, F: Energy, 6/1/79-6/20/79, Box 98, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL.

<sup>68</sup> Lazarus to Eizenstat and Rubenstein, June 27, 1979, Folder: Energy, 6/21/79-6/30/79, JCL.

<sup>69</sup> John C. White to Gerald Rafshoon, March 27, 1979, Folder: Energy, 3/26/79-3/28/79, Box 97, JCL.

<sup>70</sup> Schlesinger to Carter, July 13, 1979, JCL.

Seeking to revive his presidency, Carter “retreated” to Camp David in July 1979 instead of giving another speech on energy.<sup>71</sup> After ten days of consultation and mediation, Carter delivered his “malaise speech” where he called upon the American people to collectively sacrifice in order to rebuild the nation’s strength and argued that a “crisis of confidence” threatened America’s future.<sup>72</sup> The speech also pointed to the “battleground of energy” as the primary test for uniting the country and emphasized that the energy crisis was indeed *real*. Moreover, Carter described his time at Camp David as a period of reconnecting with people from “almost every segment of society,” an act he described as listening to the “voices of America.”<sup>73</sup> On matters of energy, however, the Camp David summit appears less democratic than Carter claimed.

Domestic policy staff documents give a more complete picture of the figures Carter consulted during his retreat, and why his energy policy drifted further away from its original iteration in 1977. On July 9, 1979, Carter convened a meeting with Congressional leaders to discuss energy. While the representatives from the House came from a wide range of states, the Senators invited to the summit, not surprisingly, largely

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<sup>71</sup> Dan F. Hahn, “Flailing the Profligate: Carter’s Energy Sermon of 1979,” *Presidential Studies Quarterly*, Vol. 10, No. 4, Inaugurating the President and the Vice President (Fall, 1980): 583-587; Judith Stein, *Pivotal Decade: How the United States Traded Factories for Finance in the Seventies* (Yale University Press, 2010), 216-217; Daniel Horowitz, *The Anxieties of Affluence Critiques of American Consumer Society* (University of Massachusetts Press, 2004).

<sup>72</sup> Jimmy Carter, “Address to the Nation on Energy and National Goals: ‘The Malaise Speech,’ July 15, 1979. Online by Gerhard Peters and John T. Woolley. *The American Presidency Project*. <http://www.presidency.ucsb.ws/?pid=32596>. The speech, incidentally, did not include the word *malaise*.

<sup>73</sup> Jimmy Carter, “Address to the Nation on Energy and National Goals: ‘The Malaise Speech,’ July 15, 1979. Online by Gerhard Peters and John T. Woolley. *The American Presidency Project*. <http://www.presidency.ucsb.ws/?pid=32596>.

represented energy-producing states: Henry Jackson (D-WA), J. Bennett Johnston (D-LA), Lloyd Bentsen (D-TX), Dale Bumpers (D-AR), Wendell Ford (D-KY), Russell B. Long (D-LA), Robert Byrd (D-WV), Daniel Moynihan (D-NY). Of those senators, Bumpers may have been the most environmentally-minded, but Bumpers, Long, Byrd, Ford, Johnston, and Bentsen clearly sought policies beneficial to oil, coal, and natural gas companies and their states. Although Carter pressed for alternatives fuels such as solar power, and even proposed a “solar bank” in his malaise speech, he also announced a plan for creating the “Energy Mobilization Board,” a strikingly similar idea to the one proposed in David Boren’s memo in March 1979, and if enacted, a policy with the potential to encourage a major crash program of energy-related drilling and mining in states like Kentucky, Louisiana, and Texas—and exactly the type of “crash program” Carter warned about in 1977. Among the Camp David attendees, Senator Lloyd Bentsen signed the Boren memo and possibly others.<sup>74</sup> As one unnamed official from Carter’s administration commented after his address, “the President apparently felt he had to fish or cut bait between energy and environment. He chose to cut environment.”<sup>75</sup>

In June 1980, the House of Representatives defeated Carter’s proposal for the Energy Mobilization Board by a 232-131 vote (roll-call vote). Democrats split their votes (107 against, 122 for), and Republicans (125 against, 9 for) largely opposed the EMB’s potential for disproportionately shifting power from states to the federal government in

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<sup>74</sup> Boren to Carter, March 24, 1979 and Memo to Carter March 20, 1979, Folder: Energy, 3/26/79-3/28/79, Box 97, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL. The copy in Carter’s papers consulted for this chapter had several pages of signatures missing, but ten senators have been confirmed.

<sup>75</sup> Philip Shabecoff, “Environmentalists Fear A Retrenching by Carter,” *The New York Times*, July 17, 1979.

matters of energy.<sup>76</sup> Ultimately, the EMB constituted only one proposal among a sea of proposals created by Carter's administration. Evaluating Carter's success in crafting a coherent, effective National Energy Policy, and persuading Congress to pass such legislation, is a difficult task. Scholars have been quite generous to Carter in their interpretations of his energy policy, arguably because his successor Ronald Reagan's policies appear far less progressive comparatively.<sup>77</sup> In particular, some have noted that Carter's achievements in price decontrol with oil and natural gas buoyed some of the economic recovery in the 1980s and eventually helped usher in cheaper oil prices.<sup>78</sup> Despite Carter's environmentally unsound proposals for the EMB, his calls for conservation, synthetic fuels, and solar power resonant as especially forward-thinking in an era of global warming.

*Jimmy Carter as Chief Nuclear Expert*

One essential part of Carter's energy policy, an area he expended vital political capital on, was the nuclear industry. When Jimmy Carter launched his 1976 presidential campaign, nuclear power had come under increasing scrutiny. In the wake of Vietnam and Watergate, a diminishing American faith in government contributed to this sense of unease. Moreover, the emergence of the environmental movement drew the public's attention to corporate malfeasance and government neglect towards issues like hazardous wastes and pollution. During the 1960s and 1970s, a licensing spree occurred in the

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<sup>76</sup> "Vote on Energy Board," *The New York Times*, June 28, 1980, 26.

<sup>77</sup> Brinkley, "The Rising Stock of Jimmy Carter"; John C. Barrow, "An Age of Limits: Jimmy Carter and the Quest for a National Energy Policy," *The Carter Presidency: Policy Choices in the Post-New Deal Era*, 158-178.

<sup>78</sup> Brinkley, "The Rising Stock of Jimmy Carter;" Stein, *Pivotal Decade*, 218.

nuclear industry, with utilities jumping on the “bandwagon market” to build nuclear power plants.<sup>79</sup> The licensing spree coincided with the public’s growing concern about radiation, catastrophic accidents, along with a lack of consensus among the experts, huge cost-overruns which then affected ratepayers, nuclear waste, and the Atomic Energy Commission’s troubled attempts to regulate an industry it also actively promoted. The industry’s credibility gap threatened to turn the public against nuclear technology altogether.<sup>80</sup>

In response to this, Congress passed a number of measures that sought to enhance the nuclear industry’s credibility and by extension the federal government—allowing for greater public participation, transparency, and more stringent regulations, all while maintaining a commitment to nuclear power. The nuclear industry and its regulatory apparatus begrudgingly attempted to win public approval back – knowing that the industry needed an improved public image but also fearing the delays and potential controversy these measures would bring. Since the passage of the Atomic Energy Act in 1954 any “person whose interest may be affected” could intervene in the licensing process, but the opportunities for public involvement grew considerably during the late 1960s and 1970s.

Some policy measures were intentionally created to deal with the nuclear industry’s credibility issue – such as the Energy Reorganization Act (passed in 1974),

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<sup>79</sup> J. Samuel Walker, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971* (Berkeley: University of California Press, 1992), 18-36.

<sup>80</sup> Robert J. Duffy, *Nuclear Politics in America: A History and Theory of Government Regulation* (Lawrence, Kan: University Press of Kansas, 1997).

which finally ended the Atomic Energy Commission's reign, and split the agency's twin purposes of promotion and regulation into two new agencies: the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC). The act also required the industry to report "abnormal occurrences" to the public within a specific timeframe. Other measures, such as National Environmental Protection Act (NEPA) and Freedom of Information Act (FOIA), inadvertently or indirectly opened space for public involvement and greater access to the inner-workings of nuclear plants, and expanded jurisdiction over nuclear power to other government agencies and Congressional subcommittees. In 1971, the Supreme Court ruling in the *Calvert Cliffs* case dictated that utility companies were required to submit Environmental Impact Statements for nuclear power plants, a landmark victory for both environmentalists and anti-nuclear activists.<sup>81</sup> After twenty-years of insulation from the outside, the nuclear industry and its regulatory apparatus confronted a different landscape, which required public hearings, environmental impact statements, and FOIA requests for documents.

Despite the crisis within the nuclear industry though, public opinion, as J. Samuel Walker has noted, remained ambivalent about nuclear power. A survey in 1976 cited 61 percent of those surveyed favored nuclear power, while 22% opposed, and 17% were unsure.<sup>82</sup> Even in April 1979, after the accident at TMI, 44% of Americans surveyed

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<sup>81</sup> Robert J. Duffy, *Nuclear Politics in America: A History and Theory of Government Regulation* (Lawrence, Kan: University Press of Kansas, 1997); Walker, J. Samuel, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971* (Berkeley: University of California Press, 1992); Walker, *Three Mile Island: A Nuclear Crisis in Historical Perspective* (Berkeley: University of California Press, 2006).

<sup>82</sup> Ebasco Services Inc.. Nuclear Power Development, Jul, 1976 [survey question]. USHARRIS.762628.R07A. Louis Harris & Associates [producer]. Storrs, CT:Roper Center for Public Opinion Research, iPOLL; ABC News/Louis Harris and Associates.

approved of nuclear power, while 43% disapproved. Although the percentage of favorable responses slightly decreased, the more significant number is the percentage of those who moved from the “unsure” to opposed category. American support for nuclear power continued after Three Mile Island for two major reasons: the desire for energy independence and the fear of energy shortages. Others viewed the continuation of nuclear power as a vital part of American superiority, to stall development would mean an abdication of progress through technology.

For President Carter, claims to nuclear expertise cut both ways, either reinforcing his views or further damaging his credibility. In 1976, as Jimmy Carter campaigned for the presidency, California and Oregon both had similar initiatives on the ballot concerning nuclear power. Advisor Carlton Neville outlined Carter’s inconsistency on nuclear issues, commenting that he had adopted “both sides of an issue” by opposing California’s referendum but supporting Oregon’s, and that “Jimmy Carter Nuclear Expert cannot afford to appear “wrong” on a nuclear issue.”<sup>83</sup> Carter’s image as nuclear expert, high-moralist, and environmental steward constrained his ability to modify his positions and hamstrung him on the campaign trail and in the White House. Carter’s “outsider” status also prevented him from taking credit for the kinds of “horse-trading” other politicians proudly advertised. Considering these limitations, advisor James Schlesinger compared Carter to the ultimate political dealer: “Lyndon Johnson could buy in votes left

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ABC News/Harris Survey, Apr, 1979 [survey question]. USABCHS.053179.R1. ABC News/Louis Harris and Associates [producer]. Storrs, CT:Roper Center for Public Opinion Research, iPOLL.

<sup>83</sup> Carlton Neville to Jimmy Carter, Folder: Nuclear Issues Box 25, Collection: Carlton Neville, JCL.

and right...and everyone would talk about Super Lyndon...Jimmy Carter indulges in the same thing and they are all over him.”<sup>84</sup>

While his predecessors Richard Nixon and Gerald Ford supported the expansion of nuclear power, Carter positioned himself all over the spectrum. He viewed nuclear power as a “last resort,” opposed reprocessing, and alienated pork-loving southerners with his war on the Clinch River Breeder Reactor. At the same time, he wanted to accelerate the licensing process for reactors, striving to cut “unnecessary bureaucratic red tape and uncertainty and shave off four to six years” for nuclear power plant construction.<sup>85</sup> Carter’s nuclear policy vacillated throughout his time in the White House, leaving industry, Congress, and anti-nuclear activists unsatisfied. According to political scientist Robert Duffy, the nuclear industry “never forgot, or forgave, him for these transgressions.”<sup>86</sup> Carter’s legacy on nuclear issues, and energy generally, is exceedingly difficult to characterize as wholly successful or unsuccessful, primarily because those metrics fail to account for vastly complicated policy issues. However, advisor and Secretary of Energy James Schlesinger described Carter as “unduly interested” in the nuclear industry, and that his actions prompted the nuclear industry to hate him from 1977 onwards.<sup>87</sup> Carter’s interventions in commercial nuclear reprocessing

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<sup>84</sup> Schlesinger Interview, 103.

<sup>85</sup> Memorandum, with proposed draft, read by Carter and returned to Stu Eizenstat, Frank Moore, and Secretary Jim Schlesinger; March 8, 1978, Folder: AT 1/20/77-12/31/78, Box 1: White House Central Subject File, Atomic Nuclear Energy, JCL.

<sup>86</sup> Robert J. Duffy, *Nuclear Politics in America: A History and Theory of Government Regulation* (Lawrence, Kan: University Press of Kansas, 1997), 160.

<sup>87</sup> James Schlesinger, 17.

and the Clinch River Breeder reactor largely appear justifiable and reasonable, but the fight over the Barnwell plant (BNFP) and CRBR incurred tremendous political costs and may have harmed Carter's broader agenda.

#### *Barnwell Nuclear Fuel Plant*

One of Carter's first maneuvers as president was the indefinite deferral of commercial nuclear reprocessing, which he announced in April 1977. The announcement primarily affected the Barnwell Nuclear Fuel Plant, then under construction in Barnwell, South Carolina. Plans for the facility began in 1968, when Allied-General Nuclear Services (AGNS) applied for a construction permit from the AEC for a commercial nuclear reprocessing facility.<sup>88</sup> On abandoned farmland—some tracts purchased decades earlier for the Savannah River Plant—Allied-General envisioned a large-scale, state of the art facility in rural Barnwell. Local politicians viewed Allied-General's arrival as an essential part of the area's economic designs, where an agricultural region further transformed into a technology-oriented one. Once completed, the "South Carolina Advanced Technology Park" would host AGNS's Barnwell Nuclear Fuel Plant (BNFP), Chem-Nuclear's radioactive waste disposal site, and potentially other companies.<sup>89</sup>

According to the original plans, AGNS sought to process "irradiated nuclear power reactor fuel consisting of uranium oxide, or a mixture of plutonium oxide and

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<sup>88</sup> Suzanne Hughes Rhodes, "Unresolved Environmental Issues Associated with the Barnwell Nuclear Fuel Plant in South Carolina" (Master's Thesis, University of South Carolina, 1979), 18.

<sup>89</sup> Jim McNeil, Technical Evaluation Report for the Termination of South Carolina Radioactive License Number 144, NRC Library, <http://pbstrupws.nrc.gov/docs/ML0037/ML003723186.pdf>.

uranium oxide, clad in stainless steel or zirconium alloys,” commonly known as the PUREX process where uranium is derived from spent-nuclear fuel. Adding to these plans, the company also envisioned recovering plutonium for “new light water reactors or breeder reactors”—two technological possibilities that seemingly promised more efficient and more economical nuclear power.<sup>90</sup>

Reprocessing spent fuel, particularly uranium and plutonium, through various chemical processes, had been used for defense purposes at Hanford, Savannah River, and other defense sites as early as the late 1940s. Despite breezy assurances from the AEC and nuclear experts, reprocessing spent fuel produced highly toxic, liquid waste products and occasionally caused criticality accidents—usually during the transfer of solutions with uranium or plutonium into another vessel. Despite the dangers involved, reprocessing remained one of many “solutions” for solving gaps in the nuclear fuel cycle—both in terms of supply of nuclear materials and reducing nuclear waste.

The fuel cycle concept, in theory, envisioned a clear beginning and end. Starting the process, uranium or thorium are extracted, then processed and used to power nuclear reactors, and depending on the nation, those wastes are either reprocessed—extracting materials for future generation, or the materials are spent fuel in need of disposal.<sup>91</sup> In the abstract, the fuel cycle appears like a simple diagram, but in practice, other complications

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<sup>90</sup> *Safety Evaluation by the Division of Materials Licensing, U.S. Atomic Energy Commission in the Matter of Allied-Gulf Nuclear Services*, Docket 50-332, September 18, 1970, 1.

<sup>91</sup> Shoaib Usman, “Uranium-Plutonium Nuclear Fuel Cycle,” in Thomas B. Kingery, ed. *Nuclear Energy Encyclopedia: Science, Technology, and Applications* (John Wiley & Sons, 2011), 129.

such as barriers to disposal or reprocessing bans have always challenged this neat conceptualization. Nonetheless, visions of breeder reactors and new reactors fueled with mixed-oxide fuel, made from plutonium and uranium, encouraged investment in reprocessing facilities. Beyond defense facilities, in the United States, three commercial reprocessing facilities were built, and only one commercial site ever reprocessed spent fuel. Located in Ashford, New York, and operated by Nuclear Fuel Services until 1976, the facility closed after encountering numerous problems – ranging from issues of worker safety to tighter regulations. In 1980, the Department of Energy embarked upon a massive effort to remove nuclear waste, decontaminate, and decommission the site, a process that has taken three decades.<sup>92</sup>

When the AEC evaluated the safety of BNFP in 1970, they concluded the facility could be operated without “undue risk to the health and safety of the public.”<sup>93</sup> In the AEC’s assessment, the environmental and technological risks associated with reprocessing facilities were “well defined,” and the agency emphasized that processes such as releasing low-level radioactivity—such as vapors containing tritium into the environment would occur under “controlled conditions.”<sup>94</sup> Other risks, such as natural disasters or theft of nuclear materials, appeared as manageable problems with simple solutions. To prevent theft or unauthorized entry into BNFP, the AEC approved of

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<sup>92</sup> J. Samuel Walker, *The Road to Yucca Mountain: The Development of Radioactive Waste Policy in the United States* (Berkeley: University of California Press, 2009); West Valley Demonstration Project, Department of Energy, <http://www.wv.doe.gov>.

<sup>93</sup> *Safety Evaluation by the Division of Materials Licensing, U.S. Atomic Energy Commission in the Matter of Allied-Gulf Nuclear Services*, 3.

<sup>94</sup> *Ibid.*, 5.

AGNS's security measures: "a chain-link fence topped with barbed wire," an additional fence surrounding the perimeter of the 1730 acre site, and concluded "access to the plant will be controlled."<sup>95</sup> From the AEC's 1970 safety evaluation, nuclear non-proliferation barely registers as a threat, and chain-link fences offered sufficient protection against the theft of nuclear materials.<sup>96</sup>

In 1974, the nuclear nonchalance stopped, as India ratcheted up its regional struggle with Pakistan and entered the nuclear club by exploding their own nuclear device. Only a year earlier, a report by the AEC downplayed the dangers of using mixed-oxide fuel in nuclear reactors.<sup>97</sup> Despite the government and the nuclear industry's efforts to sever any connection between atomic bombs and nuclear power in the public's mind, heightened proliferation concerns muddled those connections again. While requiring environmental impact statements and safety evaluations provided greater accountability and encouraged public input in nuclear licensing, early reports reeked of pro-nuclear bias. The threat of intrusion or theft could be rendered a non-threat with a guard post and barbed wire, and similarly, the ground beneath the site, "potentially susceptible to liquefaction" posed few worries for the report's authors.<sup>98</sup>

In 1971, three years after the initial application for a construction permit, Allied-General broke ground on the BNFP site, although the Atomic Energy Commission

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<sup>95</sup>Ibid., 6.

<sup>96</sup> *Safety Evaluation by the Division of Materials Licensing, U.S. Atomic Energy Commission in the Matter of Allied-Gulf Nuclear Services,*

<sup>97</sup> NRC, *Generic Environmental Statement on the Use of Recycle Plutonium in Mixed Oxide Fuel in Light Water Cooled Reactors*, NUREG-002, July 1974, 85.

<sup>98</sup> *Safety Evaluation*, 10.

warned the corporation that all financial risks were the company's own, "pending the outcome" of a future NEPA hearing.<sup>99</sup> Thus, Allied-General embarked upon a risky venture with fair warning that political winds could shift against the company's plans, and by the late 1970s, they did, as nuclear proliferation fears, problems at the commercial reprocessing facility, commonly known as West Valley, in Ashford, New York, and rising costs affected the entire nuclear industry.

The connections between nuclear weapons and nuclear power solidified further during the 1976 presidential election, as Jimmy Carter "stressed the linkage between nuclear technology exports and nuclear non-proliferation."<sup>100</sup> As scholar J. Michael Martinez has detailed, Carter altered the conversation surrounding nuclear proliferation by emphasizing the risks of reprocessing spent fuel.<sup>101</sup> In doing so, Carter's stance also enhanced his "credibility with representatives of the blossoming environmental movement."<sup>102</sup> Responding to the shift, on October 28, 1976, President Gerald Ford further dampened the nuclear enthusiasm of previous decades, stating that "no single nation, not even the United States, can realistically hope--by itself--to control effectively the spread of reprocessing technology and the resulting availability of plutonium."<sup>103</sup>

After Carter defeated Gerald Ford in the 1976 election, he acted quickly on the

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<sup>99</sup> Rhodes, *Barnwell*, 19.

<sup>100</sup> J. Michael Martinez, "The Carter Administration and the Evolution of American Nonproliferation Policy, 1977-1981," *Journal of Policy History* 14, No. 3, 2002): 265.

<sup>101</sup> *Ibid.*, 265.

<sup>102</sup> Martinez, 263.

<sup>103</sup> Gerald Ford, Statement on Nuclear Policy, October 28, 1976,  
<http://www.presidency.ucsb.edu/ws/?pid=6561>.

nuclear reprocessing, which simultaneously addressed energy and nuclear proliferation, two central issues for his administration. On April 7, 1977, Carter issued a statement declaring the “indefinite” deferral of commercial reprocessing, noting specifically that the Barnwell facility would receive “neither federal encouragement” or funding.<sup>104</sup> Indefinitely deferring reprocessing did not end the debate over BNFP, even if it temporarily stymied AGNS’s plans for recovering uranium and plutonium for commercial purposes.

In South Carolina, anti-nuclear activists opposed to BNFP achieved a small victory but also realized the fight over the facility’s purpose nonetheless loomed ahead. Others, in the pro-nuclear camp questioned the decision and sought more definitive answers from Carter’s administration about alternative uses, particularly because the plant’s alleged value had soared to 250 million dollars.<sup>105</sup> For a president who abhorred wastefulness, ironically, his deferral potentially implied the abandonment of BNFP, leaving an enormously expensive facility to corrode in a rural pasture.

In response, one Barnwell resident, Mrs. James W. Dixon, commented that “if I had known he [Carter] was going to do this I wouldn’t have voted for him.”<sup>106</sup> Asked if they would scrap BNFP if future nuclear wars were prevented, many in Barnwell offered

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<sup>104</sup> Anthony Andrews, “Nuclear Fuel Reprocessing: U.S. Policy Development,” Congressional Research Service, Report for Congress, <https://www.fas.org/sgp/crs/nuke/RS22542.pdf>; J. Michael Martinez, “The Carter Administration and the Evolution of American Nonproliferation Policy, 1977-1981,” *Journal of Policy History* 14, No. 3 (2002): 261-292, 268.

<sup>105</sup> Wallace C. Hitchcock, “Carter’s Popularity Drops in Barnwell,” *The State*, April 15, 1977, 18-A.

<sup>106</sup> Ibid.

a tentative, “yes,” but also doubted Carter’s ability to “sell his ideas to the rest of the world.”<sup>107</sup> And like Chem-Nuclear’s radioactive waste site, BNFP produced clear economic benefits: employing 300 people “with an annual payroll in excess of \$5 million.”<sup>108</sup> Likewise, in 1976, AGNS’s tax payments—\$407, 775 in total—funded county schools.<sup>109</sup> For a revenue poor county, the benefits were tangible, while Carter’s plans for nuclear proliferation offered a more abstract, principled vision of the future, one largely disconnected from everyday realities.

More significant for Carter’s political fortunes, his approach towards high-risk, “uneconomical” technologies, especially commercial nuclear reprocessing and breeder reactors, put him at odds with many southern politicians, who wanted the nuclear gravy train to continue – by way of Allied-General, the Clinch River Breeder Reactor, and similar projects. A month after Carter’s deferral announcement, his staff navigated the political repercussions, arranging at least one meeting with Rep. Butler Derrick, Jr. (D-SC). Described by Carter’s congressional liaison Frank Moore as the “point man in the House on water projects,” Derrick wanted greater consideration for alternative uses for BNFP; and in return, the president might gain much needed support for his controversial water-project agenda, which threatened to pull federal funding for 117 water projects and disgruntled western and southern members of Congress.<sup>110</sup> Senators Ernest Hollings and

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<sup>107</sup> Ibid.

<sup>108</sup> Ibid.

<sup>109</sup> Ibid.

<sup>110</sup> Frank Moore, May 31, 1977, Briefing, Folder: AT 5/17/77-6/10/77, JCL; Jeffrey K. Stine, “Environmental Policy during the Carter Presidency,” *The Carter Presidency*:

Strom Thurmond both denounced Carter's decision, although Hollings conceded that a temporary delay was "logical and even desirable."<sup>111</sup> But Senator Hollings ultimately supported Barnwell for "safety, for control, for needed energy," characterizing Carter's non-proliferation policy as an "ostrich" policy.<sup>112</sup> Going further, Hollings questioned Carter's "utopian rhetoric" in light of the fact that "we are sitting over here fat and happy with nuclear as our principal defense," and concluded that "the nuclear genie is out of the bottle and the President can't put it back in."<sup>113</sup>

Responding to these concerns, Carter's chief energy advisor and later Secretary of Energy, James Schlesinger, drafted a letter to Strom Thurmond, emphasizing the importance of halting nuclear proliferation. Carter, however, added a handwritten post-script: "P.S. Reprocessing at this time is just not necessary. Other functions may perhaps be performed at Barnwell."<sup>114</sup> In the fiercely hierarchical world of Washington, Carter's post-script appears strikingly patronizing to a politician over twenty-years his senior. Undoubtedly, Carter's lack of political acumen has been noted before, but the letter further illustrates two aspects of his presidency. On the one hand, Carter's commitment to

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*Policy Choices in the Post-New Deal Era*, ed. Gary M. Fink and Hugh Davis Graham (Lawrence: University of Kansas, 1998)

<sup>111</sup> Lee Bandy, "Barnwell Plant Future on Line: Carter May Delay Fuel Reprocessing," *The State*, April 7, 1977, 1.

<sup>112</sup> The Fritz Hollings Report, May 1977, Folder: Moore, W.M.R. Thurmond, Strom, 10946, Box 1, South Caroliniana Library, University of South Carolina.

<sup>113</sup> Ibid.

<sup>114</sup> Carter to Thurmond, , 6-15-77, Folder: AT 6/11/77-8/31/77, Box 1: White House Central Subject File, Atomic Nuclear Energy, JCL.

analyzing energy-related issues seemingly had no bounds, and as the AEC's lax safety evaluation of BNFP demonstrated, Carter's deferral of commercial nuclear reprocessing was prescient and justifiable. Despite the pleas of nuclear-friendly politicians and industry-figures, Carter's stern and occasionally unforgiving personality paid great dividends in terms of stopping a risky-endeavor by ANGS. More importantly, Carter's principled stance to nuclear proliferation, an agenda couched in moral terms, arguably enabled him to not vacillate in the face of corporate pressure—at least on the issue of reprocessing.

The evolution of the Barnwell debate illustrates how Jimmy Carter and his administration's approach to nuclear issues, and energy more broadly, never satisfied any camp, leaving environmentalists to cheer one day, only to scratch their heads at Carter's decision shortly thereafter. In 1978, a year after the deferral announcement, Carter's advisors circulated a series of memos which examined transforming BNFP into an AFR facility, known as Away-From-Reactor storage, where spent nuclear fuel would be stored temporarily. Anti-nuclear activists feared that an AFR site would only encourage the federal government and the nuclear industry to delay finding permanent storage for radioactive waste. If that occurred, South Carolina would find itself housing an even greater amount of nuclear waste. While a number of South Carolina politicians desired an alternative use for BNFP, few supported adapting the site for AFR storage. Stu Eizenstat and Katherine "Kitty" Schirmer, both members of Carter's staff, advised the president to proceed with caution, and warned that James Schlesinger may have underestimated the controversial nature of Barnwell's fate and its potential to become an "explosive issue" in

South Carolina's gubernatorial elections.<sup>115</sup> Furthermore, using Barnwell as an AFR, potentially required the newly created Department of Energy to purchase the facility from Allied-General, which Schirmer and Eizenstat argued might appear as a "federal bailout."<sup>116</sup> In fact, BNFP already received federal funding for its non-reprocessing operations, and Carter strongly opposed extending financial support to the facility in the 1979 budget. Even though James Schlesinger recommended exploring the AFR possibility, at least for political reasons, Carter opposed a "federal takeover."<sup>117</sup>

Despite President Carter's ban on commercial nuclear reprocessing in 1977, public fears heightened as many grew concerned that the BNFP facility would be used as a federally-managed reprocessing site or an AFR storage site, even though Carter opposed such actions publicly. Opposition to the plant emerged early in the project's planning and construction stage and would continue to grow throughout the 1970s, as South Carolinians increasingly questioned the wisdom of their state's commitment to a nuclear-fueled economy. The worst fears of the 1,500 activists who gathered at Barnwell in 1978 never materialized, and while Ronald Reagan's administration flirted with the

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<sup>115</sup> Stu Eizenstat and Kitty Schirmer to Carter, July 31, 1978, Box 97, Folder: energy, 3/26/79-3/28/79, Collection: David Rubenstein's Files, Domestic Policy Staff, JCL; Stu E. and Kitty Schirmer, April 10, 1978, Folder AT: 1/1/78-6-30-78, Box 2, White House Central Subject File, Atomic Nuclear Energy, JCL.

<sup>116</sup> Ibid.

<sup>117</sup> Stu Eizenstat and Jim Schlesinger to Carter, February 27, 1978, F: Energy, 10/77-3/78,B102, Collection: David Rubenstein's Files, Domestic Policy Staff.

idea of federally-managed reprocessing or AFR storage at BNFP, ultimately they continued Carter's ban on commercial reprocessing.<sup>118</sup>

However, from 1976 to 1983, the site was used for testing natural uranium as a "surrogate," and for research using plutonium and other transuranic wastes, for commercial and for contract work by the Department of Energy.<sup>119</sup> Although the plant was "decontaminated" in 1983, significant radioactive contamination remained – in glove-boxes, fume-hoods, and in three underground, high-level waste tanks containing 300,000 gallons of rainwater and contaminated liquid.<sup>120</sup> One tank contained 300 kilograms of uranium mixed with 5000 gallons of mixed waste. All said—decontaminating or "decommissioning" of BNFP has been one of the largest undertakings in South Carolina's nuclear projects yet.<sup>121</sup>

#### *Clinch River Breeder Reactor*

For Carter, the decision to defer commercial reprocessing, which hampered AGNS's plans and Barnwell's larger economic designs, drew the ire of some South Carolina politicians, but largely remains one of the more positive achievements of his

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<sup>118</sup> Reagan's administration transferred authority over reprocessing to the federal government and continued the restrictions on commercial reprocessing. See Robert D. Hershey Jr., "Allied's Nuclear Write-Off: Closing Down Next October," *New York Times*, October 19, 1981, D3.

<sup>119</sup> Technical Evaluation Report for the Termination of South Carolina Radioactive License Number 144, NRC Library,  
<http://pbadupws.nrc.gov/docs/ML0037/ML003723186.pdf>

<sup>120</sup> Jim McNeil, "The Decommissioning of the Barnwell Nuclear Fuel Plant, Waste Management Conference, February 27-March 2, 2000.

<sup>121</sup> Jim McNeil, "The Final Chapter: Planning the Decommissioning of the Barnwell Nuclear Fuel Plant," *Radwaste Solutions* (May/June 1999): 51-57.

presidency, even if he gained little political capital from it. What leverage Carter managed to obtain rapidly depleted as he entered a series of lengthy battles with Congress, one of which centered around the controversial Clinch River Breeder Reactor Project (referred to as CRBR henceforth). In 1972, AEC Chairman James R. Schlesinger, who later served as Carter's advisor and Secretary of Energy, and Tennessee Valley Authority Chairman, Aubrey Wagner, officially announced that a demonstration model of a fast breeder reactor would be built along the Clinch River in East Tennessee, near Knoxville and Oak Ridge.<sup>122</sup> In subsequent years, as with many nuclear facilities, forecasts for the length and the cost to complete CRBR increased, but many in Congress doggedly supported funding appropriations for the project nonetheless. Like the pork-barrel water projects, Carter devoted a tremendous amount of time and resources to end federal funding for CRBR. Even after years of fighting Clinch River, in 1979, the president informed his advisor that he would "rather go down swinging" on the issue, a tactic which proved divisive and alienating, and jeopardized the three-decades long pursuit for all things nuclear by southern politicians. Moreover, while federal funding for CRBR only ceased in 1983, Carter's attack on the project marked the death-knell of breeder technology for commercial purposes in the US.

During the 1950s and 1960s, the fast breeder reactor represented what scholar Maja Fjaestad has described as a "technological vision," and industry figures advocated breeder-reactors as a more efficient form of nuclear power because of "its ability to

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<sup>122</sup> "A Commercial Breeder Reactor To Be Built With Aid of T.V.A.," *The New York Times*, August 8, 1972, 10. Authorized by Congress in 1970, CR4, Robert L. Civiak, "Breeder Reactors: The Clinch River Project," August 9, 1977, updated January, 2, 1983, Issue Brief Number IB77088, Science Policy Research Division, Congressional Research Service.

produce more nuclear fuel than it consumes.”<sup>123</sup> When the nucleus of uranium or plutonium undergoes the fissioning process, two neutrons are released, one sustains the nuclear reaction, while the other neutron could be captured by the nucleus of enriched uranium or thorium. If successfully “captured,” more fissionable material is created, and thus, breeder reactors quite literally “breed” fissionable material.<sup>124</sup> Because many anticipated uranium shortages and rising costs, in addition to broader anxieties about resource depletion that culminated in the 1970s, the breeder appeared as a viable option for the technological future.<sup>125</sup> But as Fjaestad has noted, the breeder “is an example of a technological future that did not meet its industrial expectations,” and her study traces the failure to transform the breeder into a commercially viable power-source in Sweden.<sup>126</sup> Like the Swedes, a number of other nations invested substantial resources into developing their own breeder reactors, including Japan, Germany, France, and the Soviet Union, with each hoping to curtail energy shortages in the future, bolster economic growth through cheap energy, and possibly attain national prestige through technological innovation.<sup>127</sup>

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<sup>123</sup> Maja Fjaestad, “Fast Breeder Reactors in Sweden: Vision and Reality,” *Technology and Culture*, Vol. 56, No. 1, January 2015, 86.

<sup>124</sup> George T. Mazuzan and J. Samuel Walker, *Controlling the Atom: The Beginnings of Nuclear Regulation, 1946-1962* (University of California Press, 1985), 16.

<sup>125</sup> Ibid., George T. Mazuzan and J. Samuel Walker, *Controlling the Atom: The Beginnings of Nuclear Regulation, 1946-1962* (University of California Press, 1985), 16.

<sup>126</sup> Ibid.

<sup>127</sup> Fjaestad, 95-96; Paul R. Josephson, *Red Atom: Russia’s Nuclear Power Program from Stalin to Today* (University of Pittsburgh Press, 2005), 47-80.

In the US, the first “fast” reactor, “Clementine,” operated at Los Alamos Scientific Laboratory from 1946 to 1953, and was the first reactor to be fueled by plutonium and to use a liquid metal coolant: mercury. Clementine had two purposes, one of which was to further development of fast reactors, and the other purpose was to advance nuclear weapons research. The reactor’s high energy neutrons provided a missing link for nuclear weapons design. Before Clementine, researchers at Los Alamos had no capabilities of producing such high-intensity neutrons.<sup>128</sup>

Similar to Clementine, other early developments in fast reactors occurred at federally-funded, defense oriented national laboratories, such as Argonne in Illinois and Hanford in Washington.<sup>129</sup> The “first prototype breeder reactor,” informally known as Fermi and located in Monroe, Michigan, achieved “criticality” or sustained its first nuclear reaction in August 1963.<sup>130</sup> The breeder’s fortunes, at least in the US, soured as early as 1966, when the Fermi 1 experienced a serious accident—a partial meltdown—inspiring John Fuller’s *We Almost Lost Detroit* (1975), a popular, investigative account of the accident.<sup>131</sup> Although Fermi 1 restarted again three years after the meltdown, by 1972, the reactor’s “outmoded” technology and financial drawbacks contributed to its decommissioning.

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<sup>128</sup> Merle E. Bunker, “Early Reactors: From Fermi’s Water Boiler to Novel Power Prototypes,” *Los Alamos Science* (Winter/Spring 1983): 124-131.

<sup>129</sup> Robert L. Civiak “Breeder Reactors: The Clinch River Project,” Issue Brief Number IB77088, Science Policy Research Division, Congressional Research Service.

<sup>130</sup> Femi Unit 1, Nuclear Regulatory Commission, [www.nrc.gov/info-finder/decommissioning/power-reactor/enrico-fermi-atomic-power-plant-unit-1.html](http://www.nrc.gov/info-finder/decommissioning/power-reactor/enrico-fermi-atomic-power-plant-unit-1.html)

<sup>131</sup> Fjaestad, 96.

Adding to the negative publicity surrounding breeders from anti-nuclear activists and fiscal conservatives, Fuller's account also served an essential text for the anti-nuclear movement and encouraged fears that breeder reactors could "explode like an atomic bomb."<sup>132</sup> The risks associated with breeder reactors encouraged development of an experimental reactor, the Southwest Experimental Fast Oxide Reactor (SEFOR), located in the mountains of rural Northwest Arkansas. The chief objective for SEFOR was "to demonstrate how fast reactors would respond to accidental rapid increases in power," and the reactor operated for this purpose from 1969-1972.<sup>133</sup> SEFOR and other experimental reactors made considerable advances in developing breeder technology, even though certain issues remained, particularly how to translate experimental breeders into reactors for the private sector.

Despite the initial difficulties, the energy crisis of 1973, along with predictions of resource depletion and bloated forecasts for energy needs, spurred further research and development funding for breeder prototypes with the objective to create a commercially viable breeder reactor. From 1967 to 1983, the federal government "spent over 6.5 billion dollars" on Liquid Metal Fast Breeder Reactor (LMFBR) development. Breeder technology, according to Richard Nixon in 1971, represented the nation's "best hope" for "economical cheap energy;"<sup>134</sup> and according to scholar Michael J. Graetz, the AEC,

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<sup>132</sup> Fjaestad, 108.

<sup>133</sup> Robert L. Civiak "Breeder Reactors: The Clinch River Project," Issue Brief Number IB77088, Science Policy Research Division, Congressional Research Service.

<sup>134</sup> Michael J. Graetz, *End of Energy : The Unmaking of America's Environment, Security, and Independence* (Cambridge, MA, USA: MIT Press, 2011), 75.

Nixon, and Gerald Ford viewed the breeder as the “holy-grail of energy policy.”<sup>135</sup> The breeder offered a technological solution to America’s growing energy insecurity, and for a time, Congress backed appropriations for fast reactor research even as the costs escalated considerably. Carter’s election in 1976 threatened the endless stream of appropriations for breeder development and the future of nuclear energy more broadly.

In February 1977, shortly after taking office, Carter announced a \$200 million cut to the breeder reactor program, which commentators interpreted as a concerted move away from nuclear energy towards energy-conservation, coal, and building strategic oil reserves. More importantly, Carter’s energy policy seemed to privilege short-term solutions rather than long-term energy development.<sup>136</sup> And like Barnwell’s reprocessing facility, the administration’s proposal to kill the Clinch River project fit within his non-proliferation agenda. Defending his decision, in April 1977, Carter stated there was “no need to enter the plutonium age by licensing or building a fast breeder reactor such as the proposed demonstration plant at Clinch River.”<sup>137</sup> James Schlesinger surmised that Carter saw the breeder “as the single most important source” of nuclear proliferation, which distracted him from more pressing issues.<sup>138</sup> Ultimately, the maneuver pitted the new chief executive against the majority of Congress, launching a fight over CRBR that extended throughout Carter’s term.

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<sup>135</sup> Ibid., 75.

<sup>136</sup> Edward Cowan, “Carter seeks to cut \$200 million from breeder reactor program,” *New York Times*, February 23, 1977, 51. Carter announced the cut on February 22, 1977.

<sup>137</sup> Transcript of Speech by Carter on Energy Program at Joint Session of Congress, *New York Times*, April 21, 1977, 34.

<sup>138</sup> James Schlesinger Interview, 18.

Although Carter stubbornly fought to end CRBR, in his correspondence and in his budget proposals, he *supported* further research and development in breeder reactors. In a September 1977 letter drafted to Congressman John Brademas (D-IN), Carter detailed his stance towards breeder reactors, arguing that contrary to what many believed, his vote against CRBR did not reflect an anti-breeder stance.<sup>139</sup> Continuing on, Carter argued that the CRBR was “an expensive, uneconomical and technically out of date facility...and not a necessary component of an effective R&D program.”<sup>140</sup> While Carter professed supported for breeder research, in November 1977, he vetoed an appropriations bill for ERDA, which included funds for Clinch River. In order to justify the veto, Carter addressed Senate, reiterating his objective to end CRBR and his intention to “analyze still available options...to ensure that no further necessary expenditures” were made.<sup>141</sup>

When defending his position on CRBR, Carter consistently pointed to the project’s unnecessary nature, describing it as “technologically obsolete,” or as his staff put it, a “technological dinosaur.”<sup>142</sup> And while nuclear experts may have influenced his views, Carter often emphasized his own analysis and his review of the information available —the chief technocrat in the executive office. Tellingly, after an assembling an expert panel on nuclear issues, members of Carter’s staff pressed for the meeting’s

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<sup>139</sup> Carter to John Brademas, Sept. 13 1977, Folder: 9/1/77-12/31/77, Box 2, White House Central Subject File, Atomic Nuclear Energy, JCL.

<sup>140</sup> Carter to John Brademas, Sept. 13 1977, JCL.

<sup>141</sup> Carter, November 5, 1977, Folder: AT 1/20/77-12/31/78, Box 1: White House Central Subject File, Atomic Nuclear Energy, JCL.

<sup>142</sup> Ibid., Draft for Carter by Greg Scheiders and David Rubenstein, May 3, 1979, F: Energy, 5/1/79-5/15/79, Box 97, Collection: David Rubenstein’s Files, Domestic Policy Staff, JCL.

extension, arguing that the president could benefit from a longer discussion.<sup>143</sup> But as his personal diary attests, Carter fiercely guarded his time, and not surprisingly, seemed more comfortable assessing policy issues in less collaborative settings.<sup>144</sup> In this regard, Carter is arguably unique among American presidents because of his deep involvement with research and development policy, where his slight expertise in nuclear matters morphed into an ability to dissect the particularities of breeder reactor projects. Writing to Iowa Congressman Berkley Bedell (D-IA) in August 1977, Carter reaffirmed his commitment to eliminating pork-barrel projects and reserving support for the breeder “only when it is needed” and when “we are sure of the best design,” asking Bedell to “stick” with him in the “continuing struggle.”<sup>145</sup> As his November 1977 address illustrates, Carter’s knack for alienating Congress surfaced early in his presidency, particularly as he reminded Senate of his intentions to thoroughly analyze and to locate any unnecessary expenditures—which resulted in Carter appearing more as a watchful parent or teacher than as a much-needed leader on energy-related issues.

Despite Carter’s veto, appropriations for CRBR continued in subsequent years, which contemporary commentators characterized as Congressional defiance, and demonstrated the political efficacy of Tennessee Senator Howard Baker (R-TN) and Congressional Representative Marilyn Lloyd (D-TN), both of whom lobbied for the Clinch River during and after Carter’s presidency. As early as March 1978, Carter’s

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<sup>143</sup> Jessica Tuchman to Zbigniew Brzezinski, March 10, 1977, Folder: AT 1/20/77-3/31/77, Box 1: White House Central Subject File, Atomic Nuclear Energy, JCL.

<sup>144</sup> Jimmy Carter, *White House Diary* (Macmillan, 2010).

<sup>145</sup> Carter to Bedell, August 2, 1977, Folder: AT 6/11/77-8/31/77, Box 1, White House Central Subject File, Atomic Nuclear Energy.

advisors fretted over gaining Congressional support, warning Carter that failure to compromise might lead to a second veto over ERDA's funding, and acknowledged that CRBR represented a "highly visible symbol" of support for the nuclear industry. To gain support from key Congressional figures, Rep. Olin Teague (D-TX) and Rep. Walter Flowers (D-AL), Carter needed a "substitute symbol," one that enabled the largely pro-nuclear Teague and Flowers to preserve "their credibility and position on nuclear issues."<sup>146</sup> In doing so, however, the compromise threatened Carter's own credibility, who had seemingly back-pedaled from his earlier stance that nuclear power was a "last resort."<sup>147</sup>

Carter's wavering on nuclear issues prompted Rep. Olin Teague's "urgent, personal request for a useful discussion" with the president. Teague warned Carter that neither industry nor Congress believed his assurances that the present administration was committed to a strong breeder reactor, and he pointed to an "intense uncertainty" about Carter's intentions.<sup>148</sup> The uncertainty surrounding Carter's stance reflected the increasingly polarized landscape of energy and environmental policy, which gave a figure like Carter, who offered complicated and occasionally contradictory solutions to America's energy problems, a very narrow platform of either "anti-nuclear" or "pro-nuclear" and left little room for complexity. As Carter had stated in 1977, he supported

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<sup>146</sup> Memo to Carter from Jim Schlesinger, Stu Eizenstat, and Frank Moore, March 8, 1978, Folder: AT 1/20/77-12/31/78 , Box 1, JCL.

<sup>147</sup> Ibid.

<sup>148</sup> Olin Teague to Carter, May 25, 1978, Folder AT: 1/1/78-6-30-78, Box 2, White House Central Subject File, Atomic Nuclear Energy, JCL.

breeder reactor research but not the CRBR—admittedly a slight nuance, and yet, one easily subsumed by the labyrinthine National Energy Policy. In this regard, Carter flailed on the issue of public perception.

By November 1978, the fight over CRBR continued, and Carter's advisors weighed future options. Writing to James Talmadge McIntyre, Jr., then director of the OMB, Frank Press acknowledged that "after eighteen months, we have still not succeeded in implementing this policy," which had become "a very contentious matter," and one that "jeopardized" the administration's ability to ensure its non-proliferation objectives at home and abroad.<sup>149</sup> Essentially, the options before Carter followed several trajectories. One option required the administration to "take administrative action" and cancel CRBR, which Press warned would provoke a "long and bitter lawsuit," and the GAO concluded there was "no ground for such action."<sup>150</sup> Another possibility included a series of negotiations and attempts to persuade Congress to accept the cancellation of CRBR if funding for breeder research continued, also known as the McClure compromise. The least attractive path required the administration to "acquiesce to the will of Congress and complete construction of CRBR."<sup>151</sup> Admittedly, none of the proposed options represented an ideal situation for Carter, particularly because his initial opposition created a wedge between himself, and according to Press, what "has to date

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<sup>149</sup> Memo from Frank Press to McIntrye, November 15, 1978, Folder: AT 9/16/78-12/31/78, Box 2, White House Central Subject File, Atomic Nuclear Energy, JCL.

<sup>150</sup> Ibid.

<sup>151</sup> Memo from Frank Press to McIntrye, November 15, 1978, Folder: AT 9/16/78-12/31/78, Box 2, White House Central Subject File, Atomic Nuclear Energy, JCL.

been the majority of Congress.”<sup>152</sup> Cancelling CRBR constituted a fraction of NEP, paid few dividends, and seriously threatened the president’s larger agenda, but Carter remained stubbornly wedded to his opposition. In a letter to Speaker of the House Tip O’Neill, written in April 1979, Carter stated he had reviewed the matter again and remained “convinced that completion of the project would not be in the national interest.”<sup>153</sup>

Convinced that CRBR was uneconomical, technologically obsolete, and would weaken the nation’s non-proliferation agenda, Carter’s administration fought for the project’s cancellation in 1979 and 1980.<sup>154</sup> By most accounts, CRBR’s cost overruns were tremendous, requiring approximately \$15 million a month by 1979 from Carter’s perspective and CRBR critics, the project’s proposed “loop” design appeared increasingly outdated as the French nuclear program adopted a “pool” design for their breeder reactors.<sup>155</sup> Even if CRBR had transformed from once cutting edge to a “technological turkey,” Carter underestimated the hunger for pork-barrel projects in Congress and the disastrous effects of opposing certain projects. Moreover, Carter’s attack upon Clinch River challenged a decades-long quest by southerners to develop not

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<sup>152</sup> Ibid.

<sup>153</sup> Letter to O’Neill from Carter, April 24, 1979, Folder: AT Executive 3/1/79-5/31/79, Box 3, JCL.

<sup>154</sup> Linda R. Cohen and Roger G. Noll, “The Clinch River Breeder Reactor,” *The Technology Pork Barrel* (Brookings Institute, 1991), 237.

<sup>155</sup> On French breeder reactors, see Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass: MIT Press, 1998); Mycle Schneider, “Fast Breeder Reactors in France,” *Science and Global Security* 17 (2009): 36-53.

only lucrative defense-contracts but also nuclear-related projects, which provided a mix of high-paying engineering positions and temporary construction work, and promised additional revenue for state and local governments.

While Congressional support had been steady throughout Carter's administration, it waned after Ronald Reagan took office in 1981. Reagan, in fact, supported Clinch River, as did his Secretary of Energy, James B. Edwards, the aggressively pro-nuclear former governor of South Carolina.<sup>156</sup> When Congress resisted Reagan's desire to do away with the Department of Energy, he responded by appointing Edwards, the former dentist as his Secretary of Energy, which one scholar described as "the most significant watershed in modern U.S. energy policy."<sup>157</sup>

According to Edwards, Clinch River "fit into the administration's energy policy because it was a 'long term high risk R&D venture,' enhanced national security, and it contributed to non-proliferation goals."<sup>158</sup> From this perspective, if the US dominated the field of breeder technology, the American position to better dictate international control of nuclear materials and technology would improve. After the administration encouraged the NRC to license the facility, site excavation finally began in 1982. In a strange twist of events, the long and divisive conflict over CRBR came to a sudden end in 1983, as a joint

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<sup>156</sup> Allan Pulsipher, "Watershed, Aberration, and Hallucination: The Last Twenty Years," *The Energy Crisis: Unresolved Issues and Enduring Legacies*, edited by David Lewis Feldman (The Johns Hopkins University Press, 1996), 73.

<sup>157</sup> Ibid.

<sup>158</sup> Linda R. Cohen and Roger G. Noll, "The Clinch River Breeder Reactor," *The Technology Pork Barrel* (Brookings Institute, 1991), 237.

effort by fiscal conservatives and environmentalists successfully cut federal funding for the project.<sup>159</sup>

At opposing ends of the CRBR debate in Congress were two southern senators: Dale Bumpers (D-AR) and Howard Baker (R-TN). Senator Baker's clever maneuvers saved the project for over a decade and paralleled his efforts with TVA's controversial Tellico Dam. But as a lame-duck in 1984, Baker no longer wielded the same power in Congress, and fiscal conservatives in his own party found CRBR unfeasible. Bumpers, an advocate for the environment, gained support from environmental activists who had long opposed Clinch River because of the risks it posed. After a long, protracted battle, the "stake through the heart of the breeder" came from two southerners.<sup>160</sup>

### *Conclusion*

Viewed holistically, Carter was an advocate for the environment and for a forward-thinking energy future, but revisionists have also glossed over his more hare-brained schemes—particularly the EMB and his calls for greater usage of coal. Curiously, some revisionists have painted his anti-regulatory, anti-bureaucracy rhetoric as benign, but unlike Ronald Reagan, Carter adopted the mantle of expert technocrat; and therefore, his calls for overriding regulations for pipelines and energy facilities seem more dangerous. The precise, president-engineer found "red tape" stifling the nation's energy future and inadvertently gave intellectual backing to the environmentally-hostile Reagan

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<sup>159</sup> Ibid., 238; Judith Miller, "Excavation is Begun for Breeder Reactor," *New York Times*, September 23, 1982.

<sup>160</sup> David Shribman, "Senate Kills Funds for Breeder Reactor in Passing Energy-Water Bill," *New York Times*, June 23, 1983; Martin Tolchin, "Senate Vote Virtually Kills Clinch River Atom Reactor," *New York Times*, October 27, 1983; "The Clinch River Rathole," *New York Times*, September 21, 1983.

administration. In evaluating Carter's presidency, over-simplifying Carter as a great champion of the environment and alternative energy obscures his evolution in energy policy. By 1979, Carter's tone and proposals had shifted and acknowledging that change complicates the perception of him as a high-moralist, impervious to influence. In a more desperate political climate, Carter went to Camp David not as a biblical figure in search of prophetic vision, but as an increasingly hardened politician searching for leverage and a chance to salvage his political career.

Revisionist scholars have emphasized Carter's accomplishments in pro-environment legislation, rightly noting the important legislative measures enacted during his presidency.<sup>161</sup> On environmental issues, the Carter administration's greatest victories occurred with the passage of the Comprehensive Environmental Response, Compensation, and Liability Act (the "Superfund" Act) in 1980, which gave the Environmental Protection Agency (EPA) authority to remediate sites of hazardous environmental contamination and "argue in court who should pay the cost," and the Alaska National Interest Conservation Act (1980) which "set aside 105 million acres of Alaskan wilderness."<sup>162</sup> Under the Carter administration, legislative measures addressing the environmental impact of surface and strip mining were passed, along with

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<sup>161</sup> Brinkley, "The Rising Stock of Jimmy Carter; Jeffrey K. Stine, "Environmental Policy during the Carter Presidency," *The Carter Presidency: Policy Choices in the Post-New Deal Era*, ed. Gary M. Fink and Hugh Davis Graham (Lawrence: University of Kansas, 1998), 180.

<sup>162</sup> Jimmy Carter, Public Papers of the Presidents of the United States: Jimmy Carter, 1980-1981, ( Best Books, 1981), 2381; Jeffrey K. Stine, "Environmental Policy during the Carter Presidency," *The Carter Presidency: Policy Choices in the Post-New Deal Era*, ed. Gary M. Fink and Hugh Davis Graham, 180.

amendments to the Clean Air and Water Acts.<sup>163</sup> Carter’s fight over wasteful and environmentally damaging water projects cost him politically, but offers another example of his commitment to fiscal responsibility and environmental conservation.<sup>164</sup> Adding these accomplishments, Carter’s administration highlighted climate change and humanity’s role in it. The National Climate Program Act of 1978 “doubled” the budget for research about climate change, and Carter publicly noted that “the risk that man’s own activities—might adversely affect the earth’s environment and ecosystem” and warned that a greater understanding of these issues was necessary “before changes are irreversible or the consequences inevitable.”<sup>165</sup>

Writing to advisor Stu Eizenstat in March 1980, Carter expressed his “deep” concern about “the acid rain problem,” which Congress “must be warned about.”<sup>166</sup> Carter’s advocacy for environmental issues and the seriousness upon which he viewed them, is quite clear, but his stubbornness still abounded. Finding it difficult to shake old habits, Carter told Eizenstat that “data must be presented to the public,” despite repeated

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<sup>163</sup> Byron W. Daynes and Glen Sussman, Joseph V. Hughes Jr. and Holly O. Hughes, *White House Politics and the Environment: Franklin D. Roosevelt to George W. Bush* (College Station, TX, USA: Texas A&M University Press, 2010), 93.

<sup>164</sup> Jeffrey K. Stine, “Environmental Policy during the Carter Presidency,” *The Carter Presidency: Policy Choices in the Post-New Deal Era*, ed. Gary M. Fink and Hugh Davis Graham, 180; Christopher J. Manganiello, *Southern Water, Southern Power : How the Politics of Cheap Energy and Water Scarcity Shaped a Region* (Chapel Hill: University of North Carolina Press, 2015), 161-163; Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water*, Revised edition (New York, NY: Penguin Books, 1993).

<sup>165</sup> Public Papers of the Presidents of the United States: Jimmy Carter (1979), 537.

<sup>166</sup> Handwritten note, Jimmy Carter to Stu Eizenstat, March 4, 1980, F: Energy, 3/80-4/80, B101, David Rubenstein’s Files, Domestic Policy Staff.

warnings by the administration that the American public had abdicated, or least grown weary, of data and expertise. Reflecting on his presidency in 1982, Carter described the piece-meal nature of getting energy legislation passed as “despairing and tedious, like chewing on a rock that lasted four whole years,” and then surmised that the public wasn’t interested and were instead “aggravated every time I went on TV.”<sup>167</sup> As Carter realized, expertise went extinct in the 1970s, and Americans gravitated towards fewer details not more. Reagan, in Carter’s words, capitalized on this moment and “deliberately [excluded] other conflicting or confusing issues” for a “single minded purpose.”<sup>168</sup> Despite Carter’s environmental victories, the tide had turned against scientific authority and perhaps even the necessity of proof itself.

In the realm of nuclear technology and non-proliferation, Carter scored bigger victories, even though the battle over Clinch River cost him politically. By indefinitely deferring commercial nuclear reprocessing, Carter intervened in a project with potentially catastrophic risks, and neither Allied-General nor the federal government had fully elucidated or considered questions of adequate security, or occupational and environmental hazards. In the process, the community of Barnwell, South Carolina lost a long-term source of revenue and employment, and although the facility operated for several years, the South Carolina Advanced Technology Park never expanded into what many envisioned. However, other activities at the site also produced a significant amount of contamination with natural uranium and other materials, which has remained largely

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<sup>167</sup> Jimmy Carter Interview, Miller Center, University of Virginia, Jimmy Carter Presidential Oral History Project, November 29, 1982, 23.

<sup>168</sup> Ibid.

hidden from the public view and further demonstrates the importance of Carter's intervention.

Beyond the deferral of commercial nuclear reprocessing, Carter's response to the accident at Three Mile Island encouraged reform within the nuclear industry. By creating the Kemeny Commission, which investigated the TMI meltdown and proposed steps for moving forward, Carter's administration spearheaded an effort that helped Americans and the nuclear industry understand what occurred at TMI, provided transparency, and also led to the Nuclear Regulatory Commission changing its own practices. The nuclear industry and the NRC "adopted wide-ranging reforms" which have significantly contributed to safer practices and more stringent regulations.<sup>169</sup> The American nuclear power industry reached a crisis point in the late 1970s and early 1980s, with mass cancellations and TMI, but in subsequent years, output from existing nuclear plants has increased and better performance has arguably narrowed the industry's credibility gap with the American public.

Like the Kemeny Commission, Carter's administration used the independent-study approach to address nuclear waste disposal, forming the "Interagency Review Group on Nuclear Waste Management (IRG)" in 1978.<sup>170</sup> A year later, the IRG released their report, offering tempered support for the feasibility of permanent storage, while acknowledging the political and environmental barriers persisted.<sup>171</sup> Responding to the

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<sup>169</sup> J. Samuel Walker, *Three Mile Island: A Nuclear Crisis in Historical Perspective* (Berkeley, CA: University of California Press, 2004): 243.

<sup>170</sup> Walker, *The Road to Yucca Mountain*, 119.

<sup>171</sup> Walker, *The Road to Yucca Mountain*, 120-121.

report, Carter's new policy statement on nuclear waste created a "State Planning Council" lead by South Carolina Governor Richard Riley, who diverged from long-standing patterns of pro-nuclear sentiment in the state.<sup>172</sup> As J. Samuel Walker has noted, Carter's statement was "a milestone in efforts to manage radioactive waste because of both its visibility and its thoughtful, substantive proposals to address the technical and political aspects of the problem," but it failed to transcend the "stalemate" of overcoming public fears and finding adequate solutions for "inherently unresolvable waste issues."<sup>173</sup> Moreover, the IRG's recommendation of creating regional compacts for greater inequity in waste disposal never worked as planned.

More broadly, Carter's tepid support of nuclear power and his fight against Clinch River Breeder Reactor paralleled a general decline in enthusiasm over nuclear power. With Clinch River's cancellation, hopes for commercial breeder reactors to operate in the US by the early twenty-first century largely dissipated.<sup>174</sup> While Carter publicly supported funding other breeder projects in an abstract sense, in practice, the federal government's invested in breeder technology subsided.<sup>175</sup> In tandem, widespread cancellations of planned or partially built commercial nuclear reactors coincided with

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<sup>172</sup> Walker, *The Road to Yucca Mountain*, 122.

<sup>173</sup> Walker, *The Road to Yucca Mountain*, 123-124.

<sup>174</sup> Linda R. Cohen and Roger G. Noll, "The Clinch River Breeder Reactor," *The Technology Pork Barrel* (Brookings Institute, 1991).

<sup>175</sup> Thomas B. Cochran, Harold A. Feiveson, and Frank Von Hippel, "Fast Reactor Development in the United States," in Thomas B. Cochran, Harold A. Feiveson, Walt Patterson, Gennadi Pshakin, M.V. Ramana, Mycle Schneider, Tatsujiro, Frank Von Hippel, "Fast Breeder Reactor Programs: History and Status" (February 2010 ): 89-111, fissilematerials.org

Carter's presidency and for several years afterward. From 1977 to 1984, twenty four reactor projects (individual reactors) were cancelled in the US South.<sup>176</sup> Although numerous factors conspired against the nuclear industry, the wave of cancellations, demise of CRBR, indefinite deferral of commercial reprocessing, and radioactive waste stalemate challenged nearly three decades of regional nuclear optimism, which paradoxically occurred under the watch of "Jimmy Carter nuclear expert" and native southerner.<sup>177</sup> Carter vacillated on many aspects of nuclear technology, but he never wavered in highlighting the dangers of proliferation, a stance that disrupted a long trajectory of downplaying the risks associated with harnessing nuclear technologies for generation and destruction.

Despite Jimmy Carter's accomplishments in energy, environment, and non-proliferation, the American public remained skeptical, even if periods of initial optimism occurred (as in July 1979). Although Carter promised equity in energy sacrifices, for some Americans, the burden of sacrifice and conservation rested upon the average citizen, and elected officials seemingly paid lip-service to the idea but failed to conserve energy in practice. One Florida couple, Mr. & Mrs. John Wyman, commented, "Carter, with all his travels, fishing trips, etc does not seem to be doing much of the conserving he wants the public to do."<sup>178</sup> Others echoed that sentiment, noting that "Amy & Rosalyn are

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<sup>176</sup> See appendix for more details.

<sup>177</sup> Carlton Neville to Jimmy Carter, Folder: Nuclear Issues Box 25, Collection: Carlton Neville, JCL.

<sup>178</sup> Mr. & Mrs. John Wyman to Senator Richard Stone, June 11, 1979, Folder: Oil Price Decontrol (Anti, 1979), Senator Richard Stone Papers, State Archives of Florida, Tallahassee.

traipsing around Switzerland...Carter's flying all over looking for 1980 votes."<sup>179</sup> Like his advisors warned, Carter appeared Janus-faced and tone-deaf to many, as one constituent lamented, "I for one am getting a little tired of having Carter talk out of both sides of his mouth at the same time."<sup>180</sup> Other Americans blamed Congress for its failure to regulate nuclear plants and deal with the energy crisis because policy-makers were "so busy increasing its own pay and benefits."<sup>181</sup> The decade's economic and energy turmoil undergirded a sense of inequality and perhaps an aversion towards conservation. And faith in technological solutions continued, as another Floridian argued, "We have the expertise in this country to solve any problems if we want to."<sup>182</sup>

American faith in Jimmy Carter's ability to solve, or at the very least improve, the nation's energy problems had once been robust. In December 1976, after Carter's victory over Gerald Ford, one survey reported that nearly 76 percent of Americans believed the new president was "very likely" or "fairly likely" to create an effective national energy policy, an issue which Carter, ironically, had devoted little attention to in his

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<sup>179</sup> Unsigned, Folder: ME Oil – Reducing Dependency – Pro, Senator Richard Stone Papers, 1974-1981, State Archives of Florida, Tallahassee.

<sup>180</sup> Mr. and Mrs. Howard Rose to Senator Stone, May 21, 1979, Folder: Oil Price Decontrol (Anti, 1979), Senator Richard Stone Papers, 1974-1981, State Archives of Florida, Tallahassee. The nuclear industry also complained that Carter was Janus-faced on nuclear issues. See Walker, *Three Mile Island*, 132.

<sup>181</sup> Arthur Chesser to Senator Stone, June 30, 1979, Folder: Correspondence: Nuclear Energy (Anti) 1979, Senator Richard Stone Papers, 1974-1981, State Archives of Florida, Tallahassee.

<sup>182</sup> Lucille and Marvin Lied to Senator Stone, May 24, 1979, Folder: Correspondence: Nuclear Energy (Pro) 1979, Senator Richard Stone Papers, 1974-1981, State Archives of Florida, Tallahassee.

campaign.<sup>183</sup> The “outsider” from Plains, Georgia committed to serving the “public good” brought insider knowledge on nuclear issues and an engineer’s mind to Washington, which generated an extraordinary commitment to analyzing policy issues but also obscured contradictions, particularly in terms of environmental protection and a better energy future.<sup>184</sup> Like his ill-fated attempt to run a six mile race in 1979, where an exhausted Carter required assistance off the course after four miles, the president staggered into the 1980 election, unable to match Ronald Reagan’s assurances to make “America great again.”<sup>185</sup> By September 1980, one poll reported that 54% of Americans surveyed disapproved of Carter’s energy policy, and another concluded that 75% characterized Carter’s performance in handling the nation’s energy problems as “poor” or “only fair.”<sup>186</sup> During the 1980 election, Americans continued to express greater faith in Carter’s approach versus Reagan’s, but expertise and “technocratic precision” gave way to an administration that exuberantly rejected the need for detailed analysis by the chief executive. Reagan’s Secretary of Energy, the pro-nuclear, former governor of South

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<sup>183</sup> Opinion Research Corporation. ORC Public Opinion Index, November, 1976, USORC.76DEC1.R14. Opinion Research Corporation (Storrs, CT: Roper Center for Public Opinion Research), iPOLL.

<sup>184</sup> Frye Gaillard, *Prophet From the Plains*; Erwin Hargrove, *Jimmy Carter as President: Leadership and the Politics of the Public Good* (LSU Press, 1988).

<sup>185</sup> Frye Gaillard, 31.

<sup>186</sup> Center for Political Studies, University of Michigan. American National Election Study 1980 (Pre- Election), Sep, 1980 [survey question]. USCPS.80PREE.QK22. Center for Political Studies, University of Michigan [producer]. Storrs, CT:Roper Center for Public Opinion Research, iPOLL [distributor]; NBC News/Associated Press. NBC News/Associated Press Poll, Aug, 1980 [survey question]. USNBCAP.58.R11. NBC News/Associated Press [producer]. Storrs, CT:Roper Center for Public Opinion Research, iPOLL [distributor].

Carolina James B. Edwards, pointedly *reminded* an audience of his limited knowledge in 1977:

I am not a nuclear expert...for that matter, I am not a professional politician. Before running for office, I was an oral surgeon. When the conversation reaches strontium and thorium and some of the technical nuclear terms, such as: mixed blend, co-processing, I only know what these mean to our people in terms of job opportunities and a prosperous life.<sup>187</sup>

And this disavowal of expertise characterized the new administration—free enterprise superseded close scrutiny of policy issues.<sup>188</sup>

Carter, defeated in 1980, no longer appeared as “Moses who will lead us out of our post-Watergate desert, through the Red Sea of red tape, into the promised land of personal salvation and good feeling,” nor did he resemble *Saturday Night Live’s* “amazing colossal president.”<sup>189</sup> For a politician considered an integral part of the “New South,” where Sun-Belt optimism and moderate politics redefined regional identity; as president, Carter offered an older tradition in southern culture—the grim sermons of the past, which warned sinners to repent or else.<sup>190</sup> Despite his many accomplishments,

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<sup>187</sup> James B. Edwards, “The Energy Trap,” Southern Interstate Nuclear Board Meeting, Nashville, Tennessee, May 15-18, 1977 (SINB, 1977), 89-96.

<sup>188</sup> On Reagan’s administration, see Jonathan Lash, Katherine Gillman, and David Sheridan, *A Season of Spoils: The Reagan Administration’s Attack on the Environment* (New York: Pantheon Books, 1984); Rick Perlstein, *The Invisible Bridge: The Fall of Nixon and the Rise of Reagan* (New York: Simon & Schuster, 2014) Sean Wilentz, *The Age of Reagan: A History, 1974-2008* (New York: Harper, 2008).

<sup>189</sup> Cliff Kuhn, “All About,” *Great Speckled Bird* 9, No. 4 (May 1976): 6; “The Pepsi Syndrome,” *Saturday Night Live*, Season 4, Episode 16, aired April 7, 1979. For transcript, see <http://snltranscripts.jt.org/78/78p.phtml>.

<sup>190</sup> Daniel Horowitz, *Anxiety of Affluence*; Marshall Frady, “Gone With the Wind,” *Newsweek* 86 (July 28, 1975): 11.

Carter never effectively communicated a coherent platform, resisting the trend towards an increasingly polarized, partisan rhetoric concerning energy and the environment. Like a “greased pig,” Carter provided complicated and contradictory solutions to complex issues, failing to see that his forward-thinking vision on alternative energy, justified stance against wasteful pork-barrel projects, and unwavering attitude towards non-proliferation could be tempered by his cries against red-tape, federal bureaucracy, and regulations.<sup>191</sup> Writing in 1988, Carter described the natural world as “fragile and lovely,” noting that Henry David Thoreau’s observation that “wilderness is the salvation of mankind” remained “more true than ever,” an indication of his deep affinity for the preserving the environment against the unscrupulous activities of man.<sup>192</sup> In light of this, one wonders why Carter betrayed his faith in “wilderness as the salvation of mankind” in 1979, accepting political peanuts from the vested interests he disdained—appearing “elusive as a lightning bug” yet again.<sup>193</sup>

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<sup>191</sup> Larry L. King, “We Ain’t Trash No More,” *Esquire* November 1976, 155.

<sup>192</sup> Carter, *An Outdoor Journal: Adventures and Reflections* (University of Arkansas Press, 1994), 16. Also discussed in Byron W. Daynes and Sussman, Glen. Joseph V. Hughes Jr. and Holly O. Hughes, *White House Politics and the Environment : Franklin D. Roosevelt to George W. Bush* (College Station, TX, USA: Texas A&M University Press, 2010), 100.

<sup>193</sup> Larry L. King, “We Ain’t Trash No More,” *Esquire* November 1976, 155.

## CHAPTER SIX

### THE MIND OF THE NUCLEAR SOUTH: ANTI-NUCLEAR THINKING AND THE DILEMMAS OF TECHNOLOGY AND PROGRESS

But if the passion for actual building assumed tremendous proportions, the passion for dream building and for speculating upon that dream building, as it developed in the extravagant, romantic, and Progress-haunted South, was Gargantuan. For every real new factory, for every real new skyscraper plastered with mortgages, ten imaginary ones leaped up.<sup>1</sup>

--W. J. Cash, *The Mind of the South* (1941)

The roads are now of concrete or gravel and there are thousands of miles of ugly wires crossing the landscape bearing messages of light... We have gone forward our progress is ever so evident. And the river? It is changed and eternally the same.<sup>2</sup>

--William Alexander Percy, *Lanterns on the Levee*

By the early 1970s, commercial nuclear power was no longer a technocratic dream. It had become a widespread, visible reality. It sparked admiration and it instilled fear. And it led to a regional uprising of sorts over the meanings of technology and progress. An emergent anti-nuclear rebellion sparked rancorous debates and grassroots

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<sup>1</sup> W.J. Cash, *The Mind of the South* (New York: Vintage Books, 1941), 262.

<sup>2</sup> William Alexander Percy, *Lanterns on the Levee, Recollections of a Planter's Son* (New York: Alfred A. Knopf, 1975, c. 1941), 13.

protests. Their warnings about a nuclear present and future were central to the decade's larger discussions about energy production, environmental fragility, and technological risk. In their rebellion against nuclear power, anti-nuclear activists organized public protests, engaged in legal battles, encouraged whistle-blowers within the nuclear industry, aspired for a diverse coalition across class and racial lines, and challenged nuclear experts, vigorously fighting the region's growing number of nuclear plants from the early 1970s to the mid-1980s. Peaking in 1978, a year before the accident at Three Mile Island, the South's largest anti-nuclear rally occurred in Barnwell, South Carolina, drawing protestors from across the region. Over 1500 people gathered in opposition to the Barnwell Nuclear Fuel Plant, the global nuclear economy, and what they perceived as the "South's disproportionate burden," seen most visibly in South Carolina, where the state's nuclear complex included the Savannah River Site, a low-level radioactive waste repository, a number of operating or planned nuclear reactors, and an under-construction nuclear fuel reprocessing facility.<sup>1</sup> Nowhere had the atomic aspirations of the region's mid-century boosters developed so fully as in the Palmetto State, or as some called it, the "Plutonium State."<sup>2</sup> From the Oystershell Alliance in New Orleans to the Catfish Alliance in Alabama, anti-nuclear rebels formed local groups and built a regional network dedicated to challenging the nuclear industry and offering alternative visions for the South's future. These activists helped shape a nuclear "mind of the South," to borrow the provocative phrase of Wilbur J. Cash.

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<sup>1</sup> Palmetto Alliance materials, Folder: Topical Files: Barnwell, Nuclear Reprocessing Plant, 1979, Box 24, Palmetto Alliance Papers, South Caroliniana Library, University of South Carolina.

<sup>2</sup> Dave Mullis, Letter to Editor, *The State*, August 23, 1978.

In their shaping of the South's thinking about the nuclear world, the region's anti-nuclear activists were the heirs to a tradition of "regional self-scrutiny" that reached its pinnacle during the 1930s to 1950s. If they lacked the eloquence of writers like William Faulkner or Lillian Smith, these rebels nonetheless shared a place in a long line of thinking about progress, modernity, ignorance, and change in southern history. At the heart of that tradition is Wilbur J. Cash's *The Mind of the South*, published in 1941. Part indictment and part reflection, Cash portrayed the southern mind as stubbornly solid, violently wedded to tradition, and in the twentieth century, enraptured by a sort of crass materialism. Southerners, in Cash's view, paid lip service to "Progress" and a "New South" but were unable to free themselves from racism, class exploitation, and willful ignorance. As scholar Robert Brinkmeyer describes, Cash saw southerners not as "prisoners of authoritarian forces," but rather as "prisoners of their own thoughtlessness and their determination *not* to analyze."<sup>3</sup>

Critics in subsequent decades found fault with much of Cash's interpretation. Cash's vision appeared too homogenous, it over-simplified black southerners and poor whites, and it imbued southern planters with a guilt out of sync with historical reality. Despite its shortcomings, *The Mind of the South*, as Richard King asserts, remains "a quintessential expression of the regional self-scrutiny," one that found good company during the southern literary "Renaissance" in the 1930s to 1950s.<sup>4</sup> Writers like William Alexander Percy, William Faulkner, Lillian Smith, James Agee, Thomas Wolfe, and the

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<sup>3</sup> Robert H. Brinkmeyer, *The Fourth Ghost: White Southern Writers and European Fascism, 1930-1950* (Baton Rouge: Louisiana State University Press, 2009), 73.

<sup>4</sup> Richard H. King, *Southern Renaissance : The Cultural Awakening of the American South, 1930-1955* (Cary, NC, USA: Oxford University Press, 1980), 146.

Nashville Agrarians, produced meditations on the South, its history and its identity, while also exploring their own roots. In the process, many of these writers looked at the changing world around them, as the flawed region they loved stood at the precipice of the “Bulldozer Revolution,” to use C. Vann Woodward’s phrase.<sup>5</sup> Even before Will Percy lamented the “thousands of miles of ugly wires crossing the landscape,” other writers, like W.E.B. Du Bois expressed skepticism and ambivalence towards the promises of “Progress.” Traveling back to his old haunts in Tennessee, Du Bois looked upon the former site of a log schoolhouse, where “in its place stood Progress,” and Progress, and he understood it, was “necessarily ugly.”<sup>6</sup> Of course, southerners have no monopoly on impugning modernity or the façade of Progress, but these critics rarely disentangled those views from a regional context.

However tempting it may be to interpret the South’s anti-nuclear rebellion in national or even global frameworks (and those links exist) that mode risks short-circuiting their critiques to a narrow time-span, where the only meaningful connections occur at the specific historical moment. In other words, by divorcing the anti-nuclear critique from a longer historical trajectory, grounded in southern history, a good deal of meaning is lost. The region’s anti-nuclear activists found inspiration and resembled movements elsewhere, but their power came from a slightly different well, one that rebelled against a southern way of suppressing dissent, encouraging conformity, and kneeling at the altar of Progress and New South schemes. It chiseled away and further

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<sup>5</sup> C. Vann. Woodward, *The Burden of Southern History*. 3rd ed. (Baton Rouge: Louisiana State University Press, 1993).

<sup>6</sup> W.E.B. Du Bois, *The Souls of Black Folk* (New York: Dover, 1994, orig. published 1903), 43.

fractured what Cash saw as a mind of the South, solid and total in its ability to keep certain people in their place and reinforced older, dangerous tendencies. In this sense, the mind of the modern, nuclear, South is fragmented; with the determination “*not to analyze*,” foundering, but still Progress-haunted as ever.<sup>7</sup>

The mind of the nuclear South, in its fragmentation, left room for an ongoing commitment to Progress, material advancement, and technological euphoria, and the region’s anti-nuclear rebellion produced critics, who viewed their activism as anti-progress, hysterical, and overly paranoid. Faced with nuclear controversies in his home state, South Carolina Senator Strom Thurmond (R-SC) lamented anti-nuclear activism as “most illogical.” To the 75-year-old politician, the movement’s “frequent forecasts of doom” were “the product of unthinking opposition to progress.” The “miracle of modern technology” had turned “our nuclear sword into a nuclear plowshare.” Leaving that plow idle, he warned constituents, was a dangerous thing.<sup>8</sup> Thurmond’s reference to nuclear plowshares merely recycled the language of the Atomic Energy Commission’s experimental “Project Plowshare,” the agency’s attempt to utilize atomic energy for peaceful purposes.<sup>9</sup> Thurmond’s biblical language would have resonated with his constituents and further underscored the New South’s long-standing gospel of growth—the doctrine that espoused industrial progress as a means of regional advancement and

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<sup>7</sup> Brinkmeyer, 73.

<sup>8</sup> “Nuclear Plowshare,” Strom Thurmond Reports to the People, April 25, 1977, Vol. XXIII, No. 5 ; Folder: Moore, W.M.R. Thurmond, Strom, 10946, Box 1, Papers of William Reid Moore, South Caroliniana Library (SCL), University of South Carolina.

<sup>9</sup> Scott Kaufman, *Project Plowshare: The Peaceful Use of Nuclear Explosives in Cold War America* (Ithaca: Cornell University Press, 2013).

that stretched back almost a century.<sup>10</sup> Anti-nuclear activism challenged that New South creed, that boosterish way of thinking that emphasized industry, progress, development, and an optimism that glossed over the deep issues of inequality and corruption facing the region.

The history of the post-WWII South, has often been cast as a tragic tale of hasty development, wherein the “Bulldozer Revolution” steamrolls cultural tradition and rural life. Eager boosters and Sunbelt politicians play the part of villain, bargaining with the federal government and corporations for development at any cost, and southerners serve as hapless by-standers, politically inert and disengaged with the transformation of their region. The South was “sold,” and by most accounts, despite a few writers and scholars penning Dixie’s epitaph, the rest of the region’s citizens embraced economic and technological development at any cost.<sup>11</sup> In the case of the nuclear industry’s development, historian James Cobb has argued that “many southerners expressed little doubt about the safety of nuclear facilities, choosing instead to accept at face value the assurances of utility officials that such operations promised more jobs and a better

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<sup>10</sup> Gaston, *The New South Creed*.

<sup>11</sup> Numan V. Bartley, *The New South, 1945-1980*; James C. Cobb, *Industrialization and Southern Society, 1877-1984* (Lexington, KY: University Press of Kentucky, 1984); *The Selling of the South: The Southern Crusade for Industrial Development 1936-1990*. 2nd ed. (Urbana: University of Illinois Press, 1993); Kari Frederickson, *Cold War Dixie* (Athens: University of Georgia Press, 2013); Bruce J. Schulman, *From Cotton Belt to Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1938-1980* (Durham: Duke University Press, 1994); C. Vann Woodward, “The Search for Southern Identity,” in Woodward, *The Burden of Southern History* 3<sup>rd</sup> ed. (Baton Rouge: LSU Press, 2008, org. published 1960). John Shelton Reed has found continuity in southern maintenance of certain traditions and beliefs, see John Shelton Reed, *The Enduring South: Subcultural Persistence in Mass Society* (Chapel Hill: University of North Carolina Press, 1974).

standard of living and were far more of a blessing than a threat.”<sup>12</sup> Perhaps unintentionally, the masses appear much in the way W.J. Cash portrayed them, concerned with material things and acquiescent in the maneuvers of a more powerful class.

To be sure, popular accounts of southern economic development have contributed significantly to our understanding of the American South’s industry and economy and its relationship to the federal government and military. And yet, by their very focus, a top-down narrative emphasis on groups like state economic development boards has obscured the grassroots rebellion that occurred in the 1970s-1980s, one that fostered widespread debate about energy, the environment, and technology. Responding to these debates, anti-nuclear activists delivered jeremiads that offered another perspective on a changing South, replacing what writer Marshall Frady called the “old fierce tragic theologies” of the region’s past with newer warnings of ecological doom, nuclear meltdowns, and grave threats to public health. Anti-nuclear activists supplied the region’s “old fierce tragic theologies,” and like any good old-time religion, their work forecast foreboding for the future. Their vision of the next-New South ran counter to the prevailing feel-good regional identity prompted by the growth of the Sunbelt South and its newly affluent, sprawling metropolitan areas like Atlanta and Charlotte.<sup>13</sup> The “mind” of the nuclear South, then, offers historians a more complex picture of how southerners viewed technological and environmental change, in addition to placing anti-nuclear activism

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<sup>12</sup> James C. Cobb, *Away down South: A History of Southern Identity* (Oxford ; New York: Oxford University Press, 2005), 132.

<sup>13</sup> Cobb, *Away Down South*, 247; Marshall Frady, “Gone With the Wind,” *Newsweek* 86 (July 28, 1975), 11

within a longer-trajectory of southerners who sharpened their own swords against the region they loved.

*Anti-Nuclear Jeremiads as “Old, fierce tragic” sermons in the Prosperous and Bland*

*South*

Southern anti-nuclear activists drew upon regional history, environmental discourse, and fears about out-of-control science and technology rooted in long-standing suspicions. Their apocalyptic tone resembled anti-nuclear screeds elsewhere, but their jeremiad also contained distinctly “southern” elements, bound explicitly to the region’s history and its New South quest. Activists recast the region’s lust for development, progress, and cheap energy as a morality tale, where nuclear power constituted the final chapter in a century-long drive toward modernity and economic development at seemingly any cost.<sup>14</sup> From their correspondence, newsletters, speeches, protests, and imagery used, anti-nuclear thinking appears not only fragmented, but also deeply

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<sup>14</sup> For apocalyptic thinking and jeremiad form in environmentalism, see Millennial Ecology: The Apocalyptic Narrative From *Silent Spring* to *Global Warming*,” M. Jimmie Killingsworth and Jacqueline S. Palmer, in *Green Culture: Environmental Rhetoric in Contemporary America*, edited by Carl G. Herndl and Stuart C. Brown; Michael Egan, *Barry Commoner and the Science of Survival: The Remaking of American Environmentalism* (MIT Press, 2007), 99. <sup>14</sup> Lawrence Buell, *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture* (Cambridge: Harvard University Press, 1995). For apocalyptic thinking and “nuclear fear” in American culture, see

Paul Boyer, *When Time Shall Be No More: Prophecy Belief in Modern American Culture*, Harvard University Press, 1992), *By the Bomb’s Early Light: American Thought and Culture at the Dawn of the Atomic Age* (Chapel Hill: University of North Carolina Press, 1994); Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge, Mass: Harvard University Press, 1988), Daniel, Wojcik “Secular Apocalyptic Themes in the Nuclear Era,” *The End of the World as We Know It: Faith, Fatalism, and Apocalypse in America* (New York : New York University Press, 1997).

troubled by the consequences of modernity. In part, activists likely exaggerated the menace as a rhetorical strategy, and yet, their devotion to fighting nuclear projects suggests they sincerely feared the destructive possibilities and a future South defined by technological risk, environmental degradation, and untrammeled development.

The South's most prominent critics of modernity lived in a pre-nuclear world, or at the very least, wrote at the dawning of the nuclear age. Some, like William Faulkner and James Agee, grappled with the atomic bomb, but nearly all passed away before the commercial nuclear industry developed in the South. Companies might blight the air with smoke-stacks, or ruin the landscape with transmission lines, but atomic energy and nuclear technology offered a new threat to infuse southern perspectives on modernity and progress. While these threats were and *are* global in nature, and have transformed our planet fundamentally, those changes also reverberated and altered the form of “regional scrutiny” propagated by southern observers in the past.<sup>15</sup> Southerners constructed anti-

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<sup>15</sup> Anna Gyorgy, *No Nukes: Everyone's Guide to Nuclear Power* (Boston, MA: South End Press, 1979); Gabrielle Hecht, *The Radiance of France*, 228, 238. On conservative Catholic critics of atomic energy in France, see David Pace, “Old Wine –New Bottles: Atomic Energy and the Ideology of Science in Postwar France,” *French Historical Studies* Vol. 17, No. 1 (Spring 1991); Stephen Milder, “Today the Fish, Tomorrow Us:” Anti-Nuclear Activism in the Rhine Valley and Beyond, 1970-1979 (PhD Diss, UNC-Chapel Hill, 2012); James M. Jasper, *Nuclear Politics: Energy and the State in the United States, Sweden, and France* (Princeton, N.J: Princeton University Press, 1990); Christian Joppke, *Mobilizing against Nuclear Energy: A Comparison of Germany and the United States* (Berkeley: University of California Press, 1992); Dorothy Nelkin and Michael Pollak, *The Atom Besieged: Extraparliamentary Dissent in France and Germany* (Cambridge, Mass: MIT Press, 1981), Wellock, Thomas Raymond *Critical Masses: Opposition to Nuclear Power in California, 1958-1978* (Madison: The University of Wisconsin Press, 1998).

nuclear jeremiads which incorporated broader fears of nuclear catastrophe with older themes.

Anti-nuclear activists gravitated towards this confluence of apocalypse and southern history. For instance, William Reed Moore, a Georgia native and early nuclear opponent, inveighed against South Carolina's leaders for their greed and blind faith in all things atomic, warning that "deadly radioactive fission garbage" would put "future generations of South Carolinians, and to the people of neighboring states" at too much risk for the "short term profits for the industry and the utilities."<sup>16</sup> Moore served as president for one anti-nuclear and environmental organization—Environmental Inc., and like many of his peers, exhaustively wrote letters to politicians and newspapers. Moore's letters warned of the doom brought about by greed, and his writings are riddled with references to biblical passages that criticized the "perverse disputings of men of corrupt minds...supposing that gain is godliness," and pointed readers to passages in the New Testament that cautioned against a "love of money and greed."<sup>17</sup> While Moore's anti-nuclear activism possessed a greater religious tone than other activists, the underlying critique resembled popular portrayals of utility executives as oversized, gluttonous tycoons and southern politicians as swindlers and peddlers of radioactive death—in both anti-nuclear publications and political cartoons.

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<sup>16</sup> William Reid Moore, Civilian Nuclear Fission Power Plants and the Alternatives, Fission-Free Energy Technologies, Folder 10946, Biographical and after writings, Box 1, South Caroliniana Library.

<sup>17</sup> Letter from William R. Moore to the Editor of The State, December 13, 1971, Folder, Moore, W.M. R. Papers, 1968-1971, Box 1, SCL.

Echoing these themes, the left-leaning publication *Southern Exposure* published a special issue dedicated to the region's nuclear industry in 1979, tracing the connections between utility executives and southern politicians, denouncing another New South scheme, and hinting at impending disaster:

The South has long fallen prey to the purveyor of the simple solution, the savior who would lift the region from economic stagnation to new heights of prosperity and national prestige. Our history is littered with such demagogues, and though we now sneer at them with New South sophistication, we are still often blinded by the Big Promise of renewed fame and fortune. Witness the uncritical acceptance—and prideful defense—of Jimmy Carter by even the liberal minded Southerner. More importantly, witness the region's love affair with nuclear power.

Every day brings new revelations of the dangers and mismanagement of nuclear technology. It is not our primary purpose to add to that overwhelming evidence, but rather to reveal the score of the industry in the South and the importance of the region to the larger nuclear dream/nightmare.<sup>18</sup>

In this rendering, the South no longer faced some sort of cosmic retribution for slavery, but rather for its unthinking acceptance of industry at all costs. Cheap energy, specifically nuclear energy, assumed the role of savior—a new Christ swathed in radioactive linens—in the eyes of southern boosters and politicians. For many anti-nuclear activists, cheap energy was “false salvation,” devoid of any substantial economic virtues and carried with it unimaginable risks.<sup>19</sup> The Tower of Babel allusion, if somewhat debatable in its interpretation, nonetheless carried the weight of an old fire and

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<sup>18</sup> Jim Overton, ed., “Tower of Babel: A Special Report on the Nuclear Industry,” *Southern Exposure* 7, No. 4 (Winter 1979) : 25-26.

<sup>19</sup> See Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass: MIT Press, 1998), 230.

brimstone sermon. The less than subtle subtext of biblical language in this context warned audiences that without action the region's quest for nuclear supremacy would end in a fashion worthy of the Old Testament.

Accordingly, visions of apocalypse and catastrophic accidents pervaded anti-nuclear materials published by groups in the region, and while these imaginings were shaped by larger discourses, they remained grounded in a specific sense of place, a fear of permanent alteration or even mass exodus. In this sense, anti-nuclear writing and imagery echoed the sense of loss incurred by modernity's encroachment, seen perhaps most vividly in Will Percy's *Lanterns on the Levee* or the Nashville Agrarians' manifesto *I'll Take My Stand*, but the threat of nuclear annihilation or mutation from radiation added a menacing, dystopian quality. The "imagination of disaster," as Susan Sontag put it, changed the warp and woof of regional self-scrutiny.<sup>20</sup> Employing this imagery, one of South Carolina's major anti-nuclear organizations, the Palmetto Alliance, warned the public about the dangers of the Barnwell Nuclear Fuel Plant, a proposed commercial nuclear fuel reprocessing facility:

You don't have to be a nuclear engineer to understand the dangers associated with nuclear fuel reprocessing...such an accident could require the EVACUATION OF MAJOR CITIES ON THE EAST COAST AND LEAVE SOUTH CAROLINA UNINHABITABLE FOR MILLENNIA.<sup>21</sup>

For the alliance, nuclear reprocessing technology represented a threat not only to the Barnwell community but to the entire East Coast, one that possessed catastrophic

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<sup>20</sup> Susan Sontag, *Against Interpretation* (London: Vintage, 2001), 209-225.

<sup>21</sup> Palmetto Alliance Materials, Folder: Administrative Papers, Promotional Literature, No Date, Box 1, Papers of Palmetto Alliance, Inc., SCL.

potential unimaginable in a pre-nuclear era. Like the Palmetto Alliance, the North Carolina-based group, Coalition for Alternatives to Shearon Harris (C.A.S.H), described that state's battles over the nuclear industry in apocalyptic terms, characterizing the fight as one against "the 4 Horsemen of our region's nuclear apocalypse."<sup>22</sup> Likewise, locals living near the Shearon Harris nuclear plant, then under construction and located outside the Tri-Cities area in North Carolina, saw the site in menacing ways. Cecil Morris, a farmer living nearby, described the cooling tower as a "tombstone over Wake and Chatham Counties."<sup>23</sup> Another local resident, Teresa Dixon, told reporters she planned to buy her family gas masks and radiation suits.<sup>24</sup> The fears and anxieties of people like Morris and Dixon gave activists fodder for their anti-nuclear publications, which often mixed serious reporting with dark-apocalyptic tinged humor.

In their fight against the Shearon Harris nuclear plant, CASH produced flyers and pamphlets that starkly portrayed the issue as one of life or death, but they reserved the most horrifying imagery for mothers. Radiation from the Shearon Harris plant, according to the organization, could cause "birth defects" and "spontaneous abortions," effectively rendering a vision of the future where the disabled and deformed were no longer

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<sup>22</sup> Wells Eddleman, "The Harris Plant's A Loser, So Let's Be Winners," July 19, 1986, Second CASH Regional Assembly, Folder: The Harris Plant's a Loser, So Let's Be Winners, Wells Eddleman Speech to Second Cash Regional Assembly, Box 5, Coalition for Alternatives to Shearon Harris Records, Southern Historical Collection (SHC), The Wilson Library, University of North Carolina at Chapel Hill.

<sup>23</sup> "Neighbors Leery of Harris Nuclear Power Plant," Undated, F: Neighbors Leery of Harris Nuclear Power Plant, Box 6, CASH Records, SHC, UNC-CH.

<sup>24</sup> Ibid.

outliers.<sup>25</sup> Living in a risk society thus created a trade-off of cosmic retribution; the Faustian bargain of nuclear power would reap devastating consequences for all. This image, of course, served as a vivid contrast to the depiction of a future with alternative energy. Through solar and wind power, and conservation, the ugliness of disability and death would be diminished in the utopian landscape. Central to CASH's construction of a nuclear controversy, mutation, disability, and aborted radiated fetuses, appealed to maternal anxiety and a broader fear of a society plagued with poor health. Good mothers opposed nuclear power.

Conjuring images of mutated babies and environmental catastrophe served as one way to terrify people into opposing nuclear power, but they also spoke to deeper fears about modernity and technological risk, where the “imagination of disaster” left the big screen and became visibly imprinted upon the region’s environment and their way of thinking. When Will Percy looked at the ugly transmission lines, he feared losing a way of life defined by southern gentility, and a brutally reimagined landscape perhaps. The power of nuclear warfare only visibly materialized three years after his death in 1942. Greenville, Mississippi might be transformed but not obliterated by newly powerful weapons or abandoned for hundreds of years after a catastrophic nuclear accident. These dark possibilities haunted the mind of the nuclear South and no doubt encouraged impassioned, creative warnings. In North Carolina, activist Wells Eddleman offered a revised, nuclear-infused version of “Jingle Bells” that encapsulates the mixture of

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<sup>25</sup> “Be Aware,” Folder: Be Aware Cash (Undated ), Box 5, Coalition for Alternatives to Shearon Harris Records, 1981-1987, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

gallows humor and sincere horror in anti-nuclear thinking: “Dashing through the glow, of atomic waste/ Running for our lives, fleeing our home place.”<sup>26</sup> Another activist, Bo Lozoff, wrote an inspired version of “Downtown,” originally recorded by Petula Clark:

And de first backup system maybe go on de fritz and not do what it's for;  
Meltdown!

When all the backup systems fail to cool off the container,  
Executives evacuate with lawyers on retainer...

You might miss seeing Apex wiped off of the map, from a MELTDOWN! Consumers can hardly wait, MELTDOWN! I hear it lowers de monthly rate, MELTDOWN! It's gonna be such a great show!<sup>27</sup>

Both songs emphasize a loss of place, whether by a nuclear accident wiping Apex “off the map” or residents fleeing for their lives. Scholar Ursula Heise has explored the detachment from local places and customs, the disappearance of a sense of place in light of risks created by large-scale technological systems, and others have explored similar questions in the face of climate change and living in a risk society more generally.<sup>28</sup> In the 1970s and 1980s, a more distinct southern regional identity had begun to slip away, as cities like Atlanta and Charlotte embodied a newer South, one more connected to

<sup>26</sup> Jingle, Wells Eddleman, Dec. 18, 1986, "Flash For Cash," Folder 10, Flash from CASH, Box 1, Cecelia Conway papers, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

<sup>27</sup> Song by Bo Lozoff, Zan McLeod, 1986, Folder 10, Flash from CASH, Box 1, Cecelia Conway papers, Southern Historical Collection, The Wilson Library, University of North Carolina at Chapel Hill.

<sup>28</sup> Ursula Heise, "Afterglow: Chernobyl and the Everyday," in Catrin Gersdorf and Sylvia Mayer, eds., *Nature, Culture, and Literature* Vol. 3 (Amsterdam: Rodopi, 2006), 183.

suburban Los Angeles and Phoenix than the Mississippi Delta or South Carolina Lowcountry. How fitting then, that Lozoff and Eddleman's nuclear songs imagine a literal loss of place, where people are forced to abandon their homes and lose their connection to North Carolina, and more broadly, the South.

While imagining disaster was central to anti-nuclear thinking generally, activists found other ways to critique the region's nuclear build-up. Even as activists acknowledged the battles over the nuclear industry were global, going so far as to phrase the fight as planetary in significance, anti-nuclear opponents harnessed meaningful symbols from southern history and culture to ground their commentary on environmental inequity, showing how risk supplanted other markers of regional identity. The modern South's theology may have shifted from one of "old fierce tragic theologies" to a "feel-good" evangelical Christianity, but anti-nuclear activists offered another reading of the region's future—where doom and destruction still loomed but redemptive possibilities existed too.

In April and May of 1978, the largest anti-nuclear rally in the US South occurred, a demonstration against the Barnwell Nuclear Fuel Plant (BNFP) and nuclear power, attracting approximately 1500 protestors, and a slew of high-profile critics of nuclear power, including Drs. John Gofman, Helen Caldicott, the controversial Ernest Sternglass, and musician Jackson Browne. Of those attending, 280 protestors were arrested as they approached the gates of Barnwell Nuclear Fuel Plant, a nuclear reprocessing facility under construction, and refused to leave until Allied-General Nuclear Services officials met with them.<sup>29</sup> Holding hands and singing "Love each other as ourselves, for we are

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<sup>29</sup> "280 Demonstrators Arrested," *The State*, Tuesday, May 2, 1978.

one,” the anti-nuclear protestors deliberately fashioned their spectacle to counter a nuclear industry many perceived as destructive, violent, and part of a machismo culture that threatened not only human life but “mother earth” as well.<sup>30</sup> The anti-nuclear organization, the Palmetto Alliance, spearheaded the opposition to BNFP. The group’s organizational materials shows how anti-nuclear thinking in the South embodied both a global consciousness but also a locally grounded perspective; and in this sense, it spoke to a tension that nuclear power provoked – even as local and regional distinctions eroded, to the point that some would call the region the “No South,” activists spoke of planetary destruction but also employed rhetoric and imagery that placed nuclear technologies in a regional context. Thus, in Palmetto Alliance newsletters, writers compared Barnwell’s climate to the French reprocessing facility, La Hague, but also characterized their actions as “southerners mobilizing for survival” and deplored the region’s political leaders who chose “radioactivity over the sun’s warm rays, cancer over health, death over life.”<sup>31</sup>

When Ronald Reagan’s administration considered using the facility for either a federally managed reprocessing center or an Away-From-Reactor storage facility, activists again appealed to southerners using familiar language invoked many times in the past, emphasizing the importance of states’ rights and claiming such action “usurps the

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<sup>30</sup> “280 Demonstrators Arrested,” *The State*, Tuesday, May 2, 1978.

<sup>31</sup> Palmetto Alliance Materials, Folder: Administrative Papers, Promotional Literature, No Date, Box 1, Papers of Palmetto Alliance, Inc., SCL; “Southerners Mobilizing for Survival,” Folder: Topical Files, Barnwell Nuc. Reprocessing Plant, 1978, Box 24, Palmetto Alliance, SCL.

rights of the citizens of South Carolina.”<sup>32</sup> In their opposition to nuclear power, the Palmetto Alliance readily re-appropriated the language of southern demagogues, looking back into the region’s past while also envisioning catastrophe reaching far into the future. Similarly, Alliance activists cited their opposition to subsidizing BNFP’s future by characterizing such a bill as a “blatant violation of states rights,” one that according to the Palmetto Alliance, South Carolinians “never asked the federal government to dictate the use of a major section of South Carolina real estate for hundreds of years.”<sup>33</sup> Echoing southern political leaders railing against an expansive federal government, the Alliance declared that “the people of South Carolina, not bureaucrats in some federal agency should decide if we want to become an area of national sacrifice.”<sup>34</sup> No doubt the activists’ strategy was, in part, a rhetorical one, aimed at galvanizing South Carolinians who might otherwise be suspicious of groups that appeared radical or fringe.

Palmetto Alliance publications also reached further into the past, evoking South Carolina’s dubious honor as the first state to secede from the Union in 1861, and challenging the federal government’s prerogative to force South Carolina to accept spent nuclear fuel: “Denying a South Carolina Governor the right to disapprove a federal site for spent nuclear fuel –in this state?? Why, it practically calls for another secession!”<sup>35</sup>

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<sup>32</sup> “Federal Bill Threatens States Rights,” July 29, 1980, Folder: Administrative Papers, Promotional Literature, No Date, Box 1, Palmetto Alliance, SCL

<sup>33</sup> Ibid.

<sup>34</sup> Ibid.

<sup>35</sup> “Senate Committee Tries Blocking S.C. Governor’s Right to Veto Waste Siting,” Folder: Topical Files: Barnwell, Nuclear Reprocessing Plant, 1979, Box 24, Palmetto Alliance, SCL.

While the calls for secession were tongue-in-cheek, it nonetheless drew from the state and the region's past, and relied upon a deeply embedded resentment to federal intrusion, one long associated with slavery and civil rights. In one photo of Barnwell protestors, a larger banner depicts the Grimke' sisters, the 19<sup>th</sup> century abolitionists from South Carolina.<sup>36</sup> In this sense, the references to a southern past contained mixed messages, incorporating language of white supremacists but also imagery of another, more redemptive history.

Like the gallows humor evoked by activists, anti-nuclear groups also employed southern symbols in a comedic manner that also delivered serious commentary. The Oystershell Alliance, an anti-nuclear group in Louisiana, encouraged protestors to attend a mass demonstration in Barnwell, describing the protest as a “south-wide event” and a “fertile meeting” ground for “clean energy people all over the South,” calling on southerners to “flex your grits.”<sup>37</sup> Thus, the publication not only emphasized the event’s regional nature, one where like-minded southerners converged, but also pointed to a staple of southern cuisine, transforming a southern symbol into one that conveyed strength and a different sort of unity. C.A.S.H activist, Wells Eddleman used another southern trope, derived from the expression “bless her heart” or “bless his/her soul,” in a

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<sup>36</sup> Photo, Folder: Topical Files: Barnwell, Nuclear Reprocessing Plant, 1979, Box 24, Palmetto Alliance, SCL.

<sup>37</sup> Materials, March 10, 1978, Box 85, Folder 7, Nuclear Energy, General Info #7, 1978, Ecology Center of Louisiana Papers, Loyola Library, Special Collections, New Orleans, LA.

letter to the editor that criticized the *Raleigh News & Observer*'s coverage of nuclear issues: "Bless your editors! ...I'm sure the editors will give up their space, and some more, for the 'blessings' of this wacky waste. 'Blessings' include huge Duke Power rate hikes, possible leaks, waste transportation on our roads and maybe disease and mutations down the road."<sup>38</sup>

Likewise, an Oystershell Alliance publication pointed to the long history of negative perceptions of southerners as ignorant and poor, citing the high number of cancelled or deferred nuclear plants in Louisiana as proof that "Us ignorant, dumb Southern folks will buy anything; just as long as it's in the name of progress!"<sup>39</sup> Significantly, the writer's usage of "us" implicates the activists as well, instead of creating a division between the anti-nuclear forces and other southerners. Moreover, the publication pointed to the region's history of accepting projects of questionable value in the name of progress and modernity. Another Oystershell newsletter infused their critique of the nuclear industry and Louisiana's friendliness to polluting industries with a nod to southern customs and language:

How has our own State of Louisiana government protected us? Our politicians, besides winking at all the poisonous wastes produced here in Louisiana, have now

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<sup>38</sup> Wells Eddleman, Durham, Letter to Editor, *Raleigh News & Observer*, October 7, 1986, Folder: Bless Observer (Raleigh N & O) With Nuclear Waste – Raleigh N & O 10-7-86, Box 2, CASH Papers, SHC, Wilson Library, UNC-CH.

<sup>39</sup> Nuclear Watch, Vol. 1, No. 3, Newsletter for Stop Nuclear Power Plants, March 18, 1975, Box 86, Collection 32, Folder 8, Nuclear Energy: Louisiana Info, 1970, 1972, 1974-75 1977-79, Ecology Center of Louisiana Papers, Loyola University, Special Collections, New Orleans.

made this state a *national* dumping ground, inviting every polluter in the country to bring their garbage down here! Southern hospitality, y'all.<sup>40</sup>

With the same biting humor present in many anti-nuclear publications, the Oystershell's criticism emphasized the environmental costs of the state's pro-industry, anti-regulation attitudes and the calculated ignorance of southern politicians, while also illustrating the disjunction between the "commodified vision of southernness" and an uglier reality.<sup>41</sup> The South depicted in *Southern Living*, the magazine created in 1966 that quickly became the handbook for southern women and southern hospitality, showed a region where educated, affluent southerners nonetheless maintained a more-benign version of southern identity, where Frito-Pie and using the term "y'all" constituted regional charm not markers of inferiority.<sup>42</sup> For the region's anti-nuclear and environmental activists, the region's badge of exceptionalism had shifted from Jim Crow segregation to one defined by gross environmental inequity and an acceptance of technological risk.

For the South's anti-nuclear activists, the nuclear industry presented an urgent situation that threatened the public's health and the environment. These feelings sometimes appeared acutely localized, bound by one community or state borders. As Palmetto Alliance publication stated, "In every state of the nation, nuclear power is a controversial issue. In South Carolina, it is an emergency."<sup>43</sup> If the statement lacked

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<sup>40</sup> "A Call to Action," Box 82, Folder 7, Oystershell Alliance, 1974, Ecology Center of Louisiana Papers, Loyola University, Special Collections, New Orleans.

<sup>41</sup> Cobb, *Away Down South*, 223.

<sup>42</sup>Ibid.

<sup>43</sup> Alliance Brochure, Folder: Administrative Papers, Promotional Literature, No Date, Box 1, Palmetto Alliance, SCL.

verifiable accuracy, it underscored a larger sense of crisis, where certain people and places were more susceptible to high-risk, technological systems. While the notable presence of the nuclear industry in South Carolina encouraged activists to highlight the state's disproportionate burden, the Palmetto Alliance also highlighted the problem in a regional framework. According to Alliance members, the South bore the "burden of the most diversified and the most concentrated collection of Nukes," and was "the nuclear dumping ground for the world."<sup>44</sup> We increasingly credit systems like nuclear power for giving way to a more global sense of connectedness and vulnerability (and a detachment from a localized sense of place), and controversies like the Barnwell Fuel Plant heightened an awareness of the ways nuclear technologies carried risks beyond state and national borders. In the words of a Palmetto Alliance publication, there was "no where [sic] to hide."<sup>45</sup> These systems encouraged a type of mediation from communities that utilized local or regional symbols language but also found new ways to define a "sense of place" through inequities and risks. If the Dixie had experienced an "Americanization" of sorts, prompting some to write an epitaph for the region's identity or describe the region as the "No South," activists found new ways to define the South's identity, one that starkly contrasted the commercially viable "southern" identity sold on television, in magazines, and in stores.<sup>46</sup>

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<sup>44</sup> Alliance Materials, Folder: Topical Files: Barnwell, Nuclear Reprocessing Plant, 1979, SCL.

<sup>45</sup> Alliance Materials, Folder: Administrative Papers, Promotional Literature, No Date, SCL.

<sup>46</sup> Cobb, *Away Down South*; Karen L. Cox, *Dreaming of Dixie: How the South Was Created in American Popular Culture* (Chapel Hill: University of North Carolina Press,

Critics of the movement levied a series of invectives against anti-nuclear groups, often portraying activists as paranoid, hysterical, and unrealistic about necessity of nuclear power. In one screed against the Kudzu Alliance, an anti-nuclear group in North Carolina, John Graham of the American Nuclear Society described the Alliance's members as "sore losers" and "outraged rebels" who believed "they were performing a democratic act, when actually they were doing the opposite."<sup>47</sup> Another critic, Scott Greig, writing for the *Daily Tar Heel* (UNC's student paper) caustically lampooned protestors of the Shearon Harris plant. Noting the uproarious nature of public hearings and the vitriolic exchanges between Carolina Power & Light officials and C.A.S.H. activists, Grieg proposed, in jest, that a journalist like "Hunter S. Thompson who'd probably be drinking Wild Turkey over ice" watching the two groups "go at it verbally with everything but knives and the Municipal Building's folder chairs." Grieg wondered if CASH's supporters were opposed to Shearon Harris, a plant located approximately 25 miles from Chapel-Hill, merely because of a "paranoid reaction to Chernobyl" or a "cosmic embalance [sic]" that prevented the protestors from playing their Bob Dylan or Grateful Dead albums on a turntable powered by nuclear energy.<sup>48</sup> Grieg's portrayal of

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2011); Jack Temple Kirby, *Media-Made Dixie: The South in the American Imagination*. Rev. ed. (Athens: University of Georgia Press, 1986).

<sup>47</sup> John Graham, "Save the Kudzu?," *Nuclear News*, March 1987 , Folder : Save the Kudzu? Nuclear News, March 1987, Pro nuclear article, Comments on January 8 NRC/ Shearon Harris Hearing , John Graham, American Nuclear Society, Box 6, CASH Papers, SHC, Wilson Library, UNC-CH.

<sup>48</sup> Scott Grieg, "Who is Shearon Harris & What Has She Done?" *Daily Tar Heel*, June 19, 1986, F: Who is Shearon Harris & What Has She Done? Daily Tar Heel, 6-19-86 (Pro-Shearon Harris), Box 6, CASH Papers, SHC, Wilson Library, UNC-CH.

CASH activists as aged hippies fighting battles of days gone by, while comical, is perhaps more representative of hostile views towards anti-nuclear groups and environmentalists in general.

Others found anti-nuclear activists dangerously anti-progress, weak-hearted, hysterical, and incapable of understanding different perspectives. James Davis of South Carolina, a hot-bed of nuclear opposition but also pro-nuclear sentiment, surmised that if the anti-nuclear Palmetto Alliance had existed in the 19<sup>th</sup> century, “the wagon trains might never have rolled Westward.”<sup>49</sup> Davis accused Ralph Nader and his followers for the “Chicken Little Syndrome” “taking over,” and worried that “such faint-heartedness” held “ominous implications” for the United States, who might “become a ‘pitiful, helpless giant.’”<sup>50</sup> For Davis, Uncle Sam “must stand up and fight like a man, not hide in the closet, fearful of taking any risks.” Others echoed Davis, like Roy Mendelson of Columbia, South Carolina, who warned the such a “faint hear[t]” would lead America back to the “dark ages,” unable to confront the Soviets “with boundless energy supplies.”<sup>51</sup> Both letters, written in April 1979, responded to the calls for a nuclear

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<sup>49</sup> 13. Letter from James Davis to Senator Hollings, April 11, 1979, Folder; Hollings, Public, Senate, Top., 96th, Energy, Nuclear, Gen., Box 271, Legislative Files and Constituent Correspondence, Senate Papers, 1977-1986, South Carolina Political Collections, University of South Carolina.

<sup>50</sup> Ibid.

<sup>51</sup> Roy Mendelson, April 24, 1979, Folder: ; Hollings, Public, Senate, Top., 96<sup>th</sup>, Energy, Nuclear, Three Mile Island, NY, Box 271, Legislative Files and Constituent Correspondence, Senate Papers, 1977-1986, South Carolina Political Collections, University of South Carolina.

moratorium in the aftermath of Three Mile Island, but also underscored a deeper fear that the nation's supremacy could be undercut by dwindling energy supplies and a more general "crisis of confidence" that Jimmy Carter addressed in July 1979.

Still others assailed anti-nuclear activists as unthinking radicals who failed to represent the majority of Americans or southerners alike. One South Carolinian expressed his "firm belief" that a large pro-nuclear "silent majority" existed in the state. Floridian Jeffery Shulman described anti-nuclear activists as "the product of leftist political elements who appeal to sensationalism and rely on widespread ignorance."<sup>52</sup> Shulman warned that "freedom has never been gained without risk," and "without nuclear power, we compromise our strength, independence and assertiveness." Another letter described activists as "unthinking anti-nuclear freaks," while another questioned whether or not Americans wanted to become a "second-rate nation because of a few protestors that get all the publicity?"<sup>53</sup> To be sure, many people felt undecided about nuclear power, and in fact, found themselves as neither pro or anti-nuclear power, but the letters nonetheless testify to the perception of activists as unrepresentative of the average person and bent on reducing the nation to "second-rate" status. These views resonated with Americans generally, but they also pointed to a strand of continuity in the southern mind, where dissent or questioning larger systems of authority appeared heretical and hysterical.

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<sup>52</sup> Jeffrey Shulman to Senator Richard Stone, Folder: Correspondence: Nuclear Energy (Pro) 1979, Collection/Series Title: Senator Richard B. Stone papers, 1974-1981, Container: 00237, State of Florida Archives.

<sup>53</sup> Willard & Martha Denning to Senator Stone, June 5, 1979, Folder: Correspondence: Nuclear Energy (Pro) 1979, Collection/Series Title: Senator Richard B. Stone papers, 1974-1981, Container: 00237; Ed Basta to Senator Stone, Jacksonville, FL

To counter negative portrayals of anti-nuclear forces as a fringe minority, and perhaps to further undermine the South's history of conservatism and exclusion, southern anti-nuclear groups advocated for diversity within their organizations. From archival sources and interviews, it seems that southern anti-nuclear groups aspired for greater diversity than they ever achieved, but hope for a movement that cut across class and racial and ethnic lines is evident. In a 1978 memo to South Carolina Senator Ernest Hollings, a staffer warned him of the "broad base of political support" anti-nuclear groups had garnered, describing the coalition as one comprised of "people typically aligned with various liberal causes –folks involved in ACLU, women's rights, conservationists, and various community activists, as well as moderate, middle-class types who are scared to death of anything nuclear."<sup>54</sup> Continuing further, the staffer described the widely publicized anti-nuclear events in the state, which attracted high-profile musicians and reached national television:

Furthermore, a fund-raiser rock concert was held in Columbia last Friday, starring Jackson Browne and John Sebastian. While these names may not mean anything to you, they are top-level rock stars, and raised a great deal of money for this effort.

The point being, Barnwell is taking on national significance. It was even mentioned on Saturday Night Live on television, this past weekend.<sup>55</sup>

Hollings, must have remained unconvinced, because in 1980, he promised one political supporter that "We are going do everything to keep Duke Power and nuclear power

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<sup>54</sup> Memo from "Deb," April 25, 1978, Folder: Hollings, Public, Senate, Top. 95th, Energy, Nuclear, Gen. 2 of 2; Box 232, E.F. Hollings, Legislative Files and Constituent Correspondence, Senate Papers, 1977-1986, SCPC.

<sup>55</sup> Ibid.

growing and growing.”<sup>56</sup> If southern anti-nuclear activists seemed paranoid to some, they were right in their suspicions that many politicians shared close alliances with utility executives.

In their efforts to fight pro-nuclear attitudes, groups across the South sought broader participation, expanding beyond the white, middle-class, and well-educated activists that typically comprised anti-nuclear groups in the South and elsewhere.<sup>57</sup> The Oystershell Alliance, an anti-nuclear group in Louisiana, envisioned fundraisers with “different kinds of music for different kinds of people. Black music for blacks, Cajun music for Cajuns, c\*un\*try music for country folks. Poor white boy music for Po\*boys. ETC.”<sup>58</sup> Commenting on the reluctance for locals in Barnwell, South Carolina to align with activists protesting the Allied-General Nuclear Reprocessing facility and Chem-Nuclear’s low-level waste site, a contributor to the Palmetto Alliance’s newsletter wrote, “Some of them still distrust the activists, some of them come up to the Natural Guard members on the street, and whisper, ‘Can’t say anything in public, but I’m with you all the way.’” The writer then noted the sympathetic disposition of Barnwell police officers towards anti-nuclear activists and envisioned a day when officers would “sit down by the

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<sup>56</sup> Letter from Hollings to Ted Jones, January 25, 1980, Folder; Hollings, Public, Senate, Top., 96<sup>th</sup>, Energy, Nuclear, Gen., Box 271, SCPC.

<sup>57</sup> Ethan M. Cohen, *Ideology, Interest Group Formation, and the New Left: The Case of the Clamshell Alliance* (New York: Garland, 1988); Thomas Wellock discusses opposition by California farmers in *Critical Masses: Opposition to Nuclear Power in California, 1958-1978* (Madison: The University of Wisconsin Press, 1998).

<sup>58</sup> Oystershell Materials, Box 86, Collection 32, Folder 8, Nuclear Energy: Louisiana Info, 1970, 1972, 1974-75, 1977-79, Ecology Center of Louisiana, Loyola University, Special Collections, New Orleans.

fences and in the roads with us.”<sup>59</sup> Local residents in rural communities, police officers, construction crews, minorities, and Third World groups represented a large and amorphous presence for the anti-nuclear movement, and activists likely exaggerated the diversity of the movement to combat popular stereotypes of activists as a small group of radicals detached from reality.

Anti-nuclear organizations, in the South and presumably elsewhere, eagerly sought information from workers within the nuclear industry, particularly those on construction crews (which would satisfy the working class credentials). In part, this desire to glean information from “the inside” spoke to a need for legitimacy. If activists were limited to outsider status, their jeremiads about the dangers of nuclear power, while provocative and potentially terrifying, lacked the authenticity of workers building the plants and measuring radiation levels. Some scholars have argued that the commercial nuclear industry’s credibility was damaged from dissension within the community of nuclear experts, but this is only one reason why Americans doubted the safety of nuclear power.<sup>60</sup> Studying anti-nuclear groups from a local vantage point illustrates the ways in which activists utilized the expertise of scientists and engineers, but also how they sought the observations of less-high profile figures, such as construction workers and health physicists.

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<sup>59</sup> Oystershell Digest, October 1979, Box 148, Folder 4, Oystershell Digest (nuclear power), Ecology Center of Louisiana, Loyola University, Special Collections, New Orleans.

<sup>60</sup> Brian Balogh, *Chain Reaction: Expert Debate and Public Participation in American Commercial Nuclear Power, 1945-1975* (Cambridge: Cambridge University Press, 1991).

In other cases, activists sought employment at local power plants with the objective of discovering information about safety violations. Activist Darryl Malek-Wiley, one of the chief organizers of the Catfish Alliance, was hired at a Alabama nuclear plant and absconded with documents, an act of mischief and political protest.<sup>61</sup> Karen Silkwood became an anti-nuclear icon not simply because her story exposed unsafe practices within the industry. The blue collar revival in American culture helped transform her into a working class hero, although not in the same vein as Archie Bunker.<sup>62</sup> Enlisting working class insiders was an important maneuver for a movement that attracted the upwardly mobile, the college educated, and the ecologically sensitive. And in the eyes of activists, the problems surrounding the nuclear industry were matters of life and death that affected everyone, even if the problems disproportionately impacted some communities more than others.

In building their nuclear controversies, activists interviewed “whistle-blowers” who generally focused on construction-related issues such as improper welding and radiation monitoring for currently operating sites. Stories of whistle-blowers found their way into newspapers across the US during the 1970s and 1980s—scandalous exposés of lax standards, drug use among workers, and shoddy construction were not a southern phenomenon but frequently appeared in local papers (and were encouraged by anti-nuclear groups). One alleged employee on the construction crew at Shearon Harris reported that workers widely abused “downers” and “even the supervisors were drunk” in

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<sup>61</sup> Darryl Malek-Wiley, Interview with Author, June 22, 2013.

<sup>62</sup> Jefferson R.Cowie, *Stayin’ Alive: The 1970s and the Last Days of the Working Class* (New York: The New Press, 2012).

a feature with the ominous headline “A Disaster Waiting to Happen.”<sup>63</sup> Finding whistle-blowers and portraying the movement as diverse served as vital strategies both in terms of countering their critics but also fit within a larger cultural fetishism of the working-class and attack of the so-called “nuclear priesthood” that activists accused of shrouding industry misdeeds in secrecy and using their expertise as a cudgel over lay people.<sup>64</sup>

The South’s anti-nuclear rebellion reached small towns in Mississippi, flourished in well-heeled places like Chapel Hill, and meandered its way into the hills of western North Carolina. To some extent, the expansive nature demonstrated how far-reaching the region’s embrace of nuclear industry had become—as activists warned, there was “no where [sic] to hide.” No place appeared too remote for the nuclear industry’s reach. Capturing the many themes shaping the mind of the nuclear South, the small community of Beaverdam, North Carolina sprung to life after plans for storing nuclear waste threatened their township and their mountain-homes.

In 1986, the same year as the disaster at Chernobyl, the Department of Energy investigated the feasibility of housing a high-level nuclear waste site, one that would store spent fuel rods and military wastes, in western North Carolina, near the township of Beaverdam. In one report the DOE’s plans included: “condemning up to 20,000 acres of surface area, constructing a 400 acre facility, building 200 miles of tunnels, 1500-3000 feet below the surface, burying 77,000 metric tons of spent fuel rods and military wastes

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<sup>63</sup>“A Disaster Waiting to Happen,” NC Students Magazine, Folder: Shearon Harris ...A Disaster Waiting to Happen – EMS ( NC Students Magazine – Undated), Box 6, CASH, SHC, Wilson Library, UNC-CH.

<sup>64</sup> Weart, *Nuclear Fear*, 303.

and then isolating this area for the next 10,000 years.”<sup>65</sup> This “prospecting” mission by the DOE galvanized the community to organize an opposition movement, which resulted in the formation of the group “Beaverdam Against Nuclear Dumping,” or BAND, with meetings held at several local churches.<sup>66</sup> In a speech by Rev. Kyles Wallace of Beaverdam Methodist Church, an “expert” on his own turf, holding a Masters in Theology from Duke and a Doctorate from Emory, he pointedly questioned the infallibility of the DOE’s methods and their knowledge of the area, while also underscoring theological reasons for the community’s opposition.

Perhaps in response to the growing anti-environmental, anti-regulatory rhetoric of the 1980s by the New Right, Wallace opens his speech, with the assurance that the people of Beaverdam “are *for* a great deal more than we are *against*,” and continued to “let the record show” that the township was for the lives of those living now and in the future, the responsible use of the earth’s resources, for “those places where we gather to worship freely the God who gave us this earth and entrusted us with it,” and for the “tracts of land which contain the remains of our families and loved ones.” Continuing, Wallace warned that the township would “stand toe to toe if need be” in opposition to DOE policy for siting high-level nuclear waste. Citing the DOE’s own study, Wallace noted the seismic risk in the area, along with the potential for contamination of shallow groundwater, and

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<sup>65</sup> Rev. Kyles Wallace, Speech, *Western North Carolina Alliance Accent*, Folder: Accent, Western North Carolina Alliance, Spring 1986, 17, Box 2, SHC, Wilson Library, UNC-CH.

<sup>66</sup> “Beaverdam Against Dumping,” *Western North Carolina Alliance Accent* Folder: Accent Western North Carolina Alliance, Summer 1986, No. 5 16. Newsletter, 0377-0381, Box 2, SHC, UNC-CH.

the proximity to Asheville, North Carolina. Moreover, Wallace vocalized the community's concerns about how a high-level waste repository would damage the area's agricultural sector, in addition to harming any mountain-related tourism and recreation. Going further, Wallace pierced the gospel of growth, noting that any jobs created by the waste facility would be "short-level" and urged the DOE to consider the "potential consequences for now and our future lives in the name of a high-salary for a short duration." Wallace lamented the short period of time the "lay people" of Beaverdam had to prove "scientifically what we already believe emotionally."<sup>67</sup>

Concluding his speech, Wallace again pointed to the earth as God's creation, and reminded his audience of their responsibility in protecting the "water, soil, plants, animal life, and human beings," and the value and irreplaceable nature of each. Wallace mused, "*what is the price of a person's life or a family heritage in Beaverdam township?*" and then declared "*You cannot buy people's lives off, we consider Beaverdam township justifiably worth keeping...On the basis of scientific data, civil outcry, and rational, intelligent protest, we in Beaverdam township will persist, endure and stay put...so help us God.*"<sup>68</sup> As seen in other nuclear controversies, Wallace's speech depicted a system of gross inequity, where certain communities paid an unspeakable price for the nation's commitment to nuclear power and weapons (in this case, high-level radioactive waste from the military). For Wallace and those involved in BAND, no "price" could substitute

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<sup>67</sup> Rev. Kyles Wallace, Speech, *Western North Carolina Alliance Accent*, Folder: Accent, Western North Carolina Alliance, Spring 1986, 17, Box 2, SHC, Wilson Library, UNC-CH.

<sup>68</sup> Rev. Kyles Wallace, Speech, *Western North Carolina Alliance Accent*, Folder: Accent, Western North Carolina Alliance, Spring 1986, 17, Box 2, SHC, Wilson Library, UNC-CH.

for the preservation of the area's heritage and its people; they rejected the trade-off model that government officials and corporations readily espouse. The calls for persistence and endurance, as well as the warning that the DOE could not "buy people's lives off," challenged the authority of the federal government and its experts, in addition to demonstrating how the rural community perceived these incursions. The South's Bulldozer Revolution, rather than steamrolling public opinion into acquiescence, often encouraged unexpected opposition. While many in Barnwell, South Carolina clamored for Chem-Nuclear's low-level waste site, residents living in the mountains of western North Carolina recognized the value in their environment for several reasons. Among them, angry citizens foresaw the negative effects, whether because of actual contamination or imagined dangers, of radioactive material in the caverns of the Appalachian mountains.

At stake then, as Rev. Wallace carefully outlined, were the lives of Beaverdam residents but also a sense of place, one threatened by a powerful government agency with experts, an agenda, and little knowledge of why this place mattered to the people that lived there. If the anti-nuclear movement was given, on occasion, to exaggerated apocalyptic imaginings, this way of thinking coincided with a tempered, yet forceful commentary on a changing, Progress-haunted region, one that W.J. Cash indicted for its inability to question and its ever-fixedness. The buildings and the landscapes changed, but Cash saw an immutability in southern thinking—in the southern mind—that left little room for hope. Anti-nuclear activists challenged an older southern "mind" and embraced the model of regional self-scrutiny.

### *Conclusion*

The mind of the nuclear South is fragmented, torn between impulses of rebellion, preservation, and New South scheming. Walker Percy's short story, "Young Nuclear Physicist," originally written in 1937, captures the contradictory impulses of the nuclear South. The protagonist, Ralph, hails from Arkansas, but studies nuclear physics in New York. Ralph worships at the altar of pure science and believes that nuclear physics offers an escape from his past, his heritage, and his region. It is only at the end of the story when Ralph realizes, in order to impress a young bohemian woman, that "pure science" endears him to no one, and performing a series of folk-songs from Arkansas will give him the cultural legitimacy he sorely needs. The songs of "sourwood trees and the stillness of the mountains" represent his past, which despite his best efforts, he can never abandon.<sup>69</sup>

Few other southern writers in the mid-twentieth century explored the possibilities of nuclear physics or atomic energy at length; the writers of the Southern Renaissance gave halting, attenuated renderings of a world transformed by scientific discovery and technology. In her memoir *Killers of the Dream*, Lillian Smith only hints at the transformative qualities of atomic energy, Albert Einstein's theories, and of "men in laboratories," who "wrapped their invisible theories" around the world, making it appear "so small a thing" humanity could "not believe it."<sup>70</sup> Recounting a play performed by children at a summer camp, Smith noted the children chose four traveling companions for the little Prince, inspired by Antoine de Saint Exupery's *The Little Prince*. "Conscience,

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<sup>69</sup> Walker Percy, "Young Nuclear Physicist," in Rick Bragg and Marc Smirnoff, eds. *Best of the Oxford American: Ten Years from the Southern Magazine of Good Writing* (Hill Street Press, 2002), 221-246.

<sup>70</sup> Lillian Eugenia Smith, *Killers of the Dream* (New York, N.Y: Norton, 1994, orig. published 1949), 42-43.

Southern Tradition, Religion, and Science,” who had only one “ardent defender,” a “quiet, withdrawn” girl. The defender of Science “asserted “we live in an age of science,” and warned that it was “too dangerous” to leave the Prince with only conscience, Southern Tradition, and Religion as his companions through the universe, for Science implied a “search for the truth.”<sup>71</sup> In the end, the question “twisting in their minds,” the ghosts of racism and segregation in the South, prompts the children into a debate about equality and love for all mankind, with the “young scientists” overturning Conscience’s argument that science is only “good for making bombs and planes,” and banding together with Religion to oust Southern Tradition and Conscience—the two forces denying the Prince a better universe.

Similar to Smith, W.J. Cash contrasted the southern mind with a “modern mind,” one presumably transformed by casting off tradition, and perhaps guilt, in the search for truth. Others, like James Agee, reacted in horror to the atomic bombing of Nagasaki and Hiroshima. In what historian Paul Boyer has described as a “five thousand word fragment,” Agee left his atomic-bomb novel incomplete, leaving only a brief snapshot called “Dedication Day.”<sup>72</sup> As the title suggests, Agee depicts a dedication day for a “uranium fused” arch in Washington D.C., built to commemorate the atomic bomb. Underneath the arch burns an “Eternal Fuse,” powered by chemically-treated cotton, grown by “members of a Sharecropper Rehabilitation Project in one of the richest of the condemned areas of the Delta,” with bales of cotton furnish “alternately, by a white and a

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<sup>71</sup> Because they act as characters in the children’s play, Smith capitalizes Science, Southern Tradition, Conscience, and Religion. Smith, *Killers of the Dream*, 43.

<sup>72</sup> Paul Boyer, *By the Bomb’s Early Light*, 243.

Negro family.”<sup>73</sup> Even after humanity created a weapon of apocalyptic magnitude, the bales of cotton remained segregated. Workers toiled beneath the Arch keeping the Eternal Fuse lit. Among them, a scientist whose intellect helped create the atomic bomb, agonized over his guilt, and after pleading to have the ceremonial honors on dedication day, he commits suicide shortly thereafter, as a “sacrifice” for the “triumphant moment.” Buried with military honors at Alamogordo, New Mexico, where the first successful nuclear test, “the Trinity test,” occurred in July 1945, the atomic scientist’s body decays—no doubt with a much shorter half-life than the radiation left behind.

Like Agee, William Faulkner’s 1950 Nobel Prize speech probed the central question in an atomic world: “When will I be blown up?”<sup>74</sup> Lamenting the “general and universal physical fear,” Faulkner observed the problems of modern society were “no longer problems of the spirit” but far simpler questions about when the end would come. Rejecting the “basest of all fears,” and “leaving no room in his workshop for anything but the old verities and truths of the heart,” Faulkner believed mankind would “prevail.” Faulkner’s speech is perhaps more famous for his conclusion—an optimistic rendering of humanity’s fate as not inevitably doomed. Faulkner’s speech, fusing the menacing with faith in the human spirit, embodies the roots from which the mind of the nuclear South sprung.

Atomic energy’s destructive possibilities infused southern perspectives after World War II. The thoughts of nuclear meltdown or annihilation combined with a growing sense of larger transformation. For over a century, the New South crusade

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<sup>73</sup> James Agee, “Dedication Day,” *Politics*, no. 13, April 1946, 121-125.

<sup>74</sup> William Faulkner, Nobel Prize Acceptance Speech, 1950.

reconfigured the region's environment, contributed to an exodus from rural communities, and uprooted a sense of place. And yet, none of this occurred uncontested or in the sweeping fashion as commonly depicted. Throughout the South, people looked at changes afoot and asked if southerners could do better and if the bargains paid for "Progress" were worth it after all. When writer Dennis Covington searched the hills of northern Alabama for snake handlers, he found the hallmarks of the bland, modern South in the form of civic centers, but he also found a countryside "littered with burned-out house trailers, automobile graveyards, collapsed chicken farms, and those ubiquitous totems of cultural anomie—tanning beds and late-night video stores."<sup>75</sup> Like Will Percy, who bemoaned those dreaded transmission wires, or the protagonist of John Kennedy Toole's *A Confederacy of Dunces*, Ignatius J. Reilly, whose disdain for fluorescent lights prompts him to wonder if the world "will someday get him on some ludicrous pretext...and drag me to some air-conditioned dungeon and leave me there beneath the fluorescent lights," the South's gigantic cooling towers, electrical systems, and low-brow commercialism mutated the once rural landscape.<sup>76</sup>

These broader changes, along with the new threats nuclear things evoked, sparked the anti-nuclear rebellion. It was a continuation of older themes, reminiscent of the Nashville Agrarian's manifesto against the modernity's assault upon the region, but one that lacked their nostalgia for pastoralism bound by white supremacy and older southern

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<sup>75</sup> Dennis Covington, *Salvation on Sand Mountain: Snake Handling and Redemption in Southern Appalachia* (De Capo Press, 1995), 24.

<sup>76</sup> John Kennedy Toole, *A Confederacy of Dunces* (Grove/Atlantic, Inc., 2007, orig. published 1980), 230.

traditions. The South's anti-nuclear rebels envisioned a different future, with decentralized forms of energy and a more conscientious relationship with the environment, and sought to preserve other aspects of heritage and tradition. Following in James Agee's footsteps, perhaps the South's finest documentarian voyeur, Ross McElwee's documentary *Sherman's March* (1986) captures the region's anti-nuclear spirit by way of Jackie, the filmmaker's former paramour and activist in South Carolina. Jackie explained her activism by citing her deep ties to the state; her roots made it impossible for her to ignore the nuclear threat. These roots also prompted her to consider leaving South Carolina and head westward instead: "I'm trying to get out of here and go to California. Here...I'm compelled to say something...being of this place – out there...real shallow roots out there – everybody lives in a yogurt cup."<sup>77</sup> Westerners were no strangers to anti-nuclear activism, and California had its own share of nuclear controversies, but for Jackie, her sense of place kept her ensnared. "Men in laboratories" made the world "smaller and smaller," changing our sense of perspective and highlighting the fragility of our planet, but roots and ties to a place, despite arguments to the contrary, did not uproot southerners entirely. "Being of this place," as Jackie said, implied a state of consciousness that made imagining disaster a global project but also one of an intensely local and even regional nature. Like the "backwoods prophets" of another era, the South's anti-nuclear rebels preached their own sermons, issuing forth dire warnings, while pointing towards another kind of salvation, only found by renouncing

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<sup>77</sup> *Sherman's March*, directed by Ross McElwee (First Run Features, 1986).

crass materialism, the false promises of progress, and harnessing alternative energy.<sup>78</sup> In this, they shaped a mind of the nuclear South—not solid—but one more able to sustain dissent, foster inclusivity, question authority, and challenge unsavory southern traditions.

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<sup>78</sup> Flannery O'Connor quoted in, Michael Odom, “Dennis Covington’s Salvation on Sand Mountain: Descent and Vision in the Southern Memoir,” *The Southern Literary Journal* 46, No. 1 (Fall 2013): 100.

## CHAPTER SEVEN

### NUCLEAR GHOSTS: RELICS OF THE TENNESSEE VALLEY AUTHORITY'S NUCLEAR PROGRAM

The people fell before the word, like corn before a storm of wind,  
and many rose from the dust with a divine glory shining in their countenances.<sup>1</sup>  
---John McGee (1821)

Along Highway 25, near Hartsville, Tennessee, a cooling tower looms over the pastoral landscape. Locals derisively call the giant, concrete tube a “used beer can”— a fitting label for an object that seems discarded and conspicuously out of place.<sup>2</sup> In 1973, the Tennessee Valley Authority announced their plans to build the “world’s largest nuclear plant,” a massive four reactor complex in rural Hartsville. For over six years, construction proceeded, and crews bulldozed the home of John McGee, one of the area’s first settlers, and then exhumed his body from his grave. In its place, a cooling tower and partially built containment structures emerged, unsettling the land along the Cumberland River. Despite TVA’s bold intentions, external and internal factors conspired against the agency’s nuclear program. In 1979, TVA deferred two of Hartsville’s four reactor units, eventually cancelling the project entirely in 1984, after spending four hundred million

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<sup>1</sup> John B. Boles, *The Great Revival: Beginnings of the Bible Belt* (Lexington: The University Press of Kentucky, 1996), 57.

<sup>2</sup> When I visited Hartsville in January 2015, local Faith Young wisecracked about how people in Hartsville described the tower as a “used beer can.”

dollars. Of the seventeen reactors planned for the nuclear division, only six operate today.<sup>1</sup> Some cancelled reactors exist only as blueprints, while others are fragments dotting the valley's landscape—curious monuments of metal, concrete, and vegetation. When southern writer Dennis Covington searched for snake handlers in rural Alabama, his journey began in “a ghost town in the shadow of the twin cooling towers” at TVA’s partially constructed, idle Bellefonte nuclear plant.<sup>2</sup> In those shadows, where modern technology and rural spaces meet, Covington found a primeval brand of Christianity practiced by people revolting against contemporary society. TVA’s nuclear relics symbolize the uneven process of “modernizing” the Tennessee Valley, and by extension, the American South.

Like Barnwell and Grand Gulf, the history of Hartsville’s abandoned nuclear plant is a local story. As with other rural communities affected by nuclear developments, the arrival of a costly, high-risk energy system illustrated the divide between a rural and urban South, where power flowed from the periphery to growing metropolitan communities with ravenous appetites for electricity.<sup>3</sup> Nuclear power plants, while

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<sup>1</sup> If Watts Bar Unit 2 (Rhea County, Tennessee) goes online this year as planned, TVA will have seven operating reactors. For a list of cancelled reactors in the US, see “Cancelled US Commercial Nuclear Power Plant Reactors,” Nuclear Regulatory Commission, NRC Information Digest, NUREG-1350 Vol. 26., <[nrc.gov](http://nrc.gov)>. For operating reactors, see “Operating Nuclear Reactors,” at <[nrc.gov](http://nrc.gov)>, where the NRC regularly updates reactor statuses.

<sup>2</sup> Dennis Covington, *Salvation on Sand Mountain: Snake Handling and Redemption in Southern Appalachia* (De Capo Press, 1995), 27.

<sup>3</sup> For an examination of the dynamics between rural and metropolitan areas, energy consumption, and power production in the Southwest, see Andrew Needham, *Power Lines: Phoenix and the Making of the Modern Southwest* (Princeton; Princeton University Press, 2014). For historical studies of energy production in the US, see

promising economic benefits and increased revenue, also threatened to disrupt “the individual’s relationship to the local.”<sup>4</sup> Although some residents, including area native and former Vice President Al Gore, supported the plant’s construction, others opposed it. To some degree, common fears about radiation and catastrophic accidents provoked opposition, but local residents also viewed the project as destructive in more subtle ways.<sup>5</sup> If nuclear power threatened lives, the plant also threatened a way of life, one intimately connected to the environment and to Hartsville’s history. In their quest to build the “world’s largest nuclear plant,” TVA planners discounted local environmental knowledge, the area’s history, and a community’s values.

More broadly, Hartsville’s nuclear ruins intersect with a regional and an institutional history. Harnessing and distributing affordable electricity proved central to

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<sup>4</sup> Ursula Heise. “Afterglow: Chernobyl and the Everyday,” in Catrin Gersdorf and Sylvia Mayer, eds., *Nature, Culture, and Literature* Vol. 3. (Amsterdam: Rodopi, 2006), 183.

<sup>5</sup> On nuclear politics, see Brian Balogh, *Chain Reaction: Expert Debate and Public Participation in American Commercial Nuclear Power, 1945-1975* (Cambridge [England]: Cambridge University Press, 1991); Robert J. Duffy, *Nuclear Politics in America: A History and Theory of Government Regulation* (Lawrence, Kan: University Press of Kansas, 1997); Christian Joppke, *Mobilizing against Nuclear Energy: A Comparison of Germany and the United States* (Berkeley: University of California Press, 1992); J. Samuel Walker, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971* (Berkeley: University of California Press, 1992), *Three Mile Island: A Nuclear Crisis in Historical Perspective* (Berkeley: University of California Press; Nuclear Regulatory Commission, 2004). Thomas Raymond Wellock, (*Critical Masses: Opposition to Nuclear Power in California, 1958-1978* (Madison: The University of Wisconsin Press, 1998); Winner, Langdon. “Do Artifacts Have Politics?” *Daedalus* 109, no. 1 (Winter, 1980): 121-136.

the project of modernization in the American South.<sup>6</sup> For many, modernity, progress, and “regional salvation,” especially in the Tennessee Valley, were closely connected with energy production, first seen with the TVA’s development of hydroelectricity, then coal, and later atomic energy.<sup>7</sup> From its inception in 1933, TVA embraced the principle of

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<sup>6</sup> For literature that discusses the relationship between energy, electricity, and modernization in the South, see Raymond Arsenault, "The End of the Long Hot Summer; The Air Conditioner and Southern Culture," *Journal of Southern History* 50 (November 1984), 597-628. Edward L. Ayers, *The Promise of the New South: Life After Reconstruction - 15th Anniversary Edition* (Oxford University Press, 2007), 72-74. Christopher J. Manganiello, *Southern Water, Southern Power: How the Politics of Cheap Energy and Water Scarcity Shaped a Region* (Chapel Hill: The University of North Carolina Press, 2015); "Hitching the New South to 'White Coal': Water and Power, 1890-1933." *Journal of Southern History*, no. 2 (May 2012): 255-292; David Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge: MIT Press, 1990), 307-335; George Brown Tindall, *The Emergence of the New South, 1913-1945. A History of the South*, v. 10 (Baton Rouge: Louisiana State University Press, 1967), 71-75; J. Samuel Walker, "The South and Nuclear Energy, 1954-62." *Prologue* 13 (Fall 1981): 175-91. On the history of regional power systems and how society and culture shape our energy systems, see Thomas P. Hughes, *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins Press, 1983).

<sup>7</sup> Here, I borrow Gabriel Hecht's phrase, "regional salvation." Hecht employs the term to describe appeals to residents in France's two "nuclear regions," where technocrats promised nuclear power plants would "blend tradition and modernity," thereby recapturing the grandeur of France after WWII with technological achievement but also seamlessly incorporate plants into the agrarian regions. In the context of the American South, "regional salvation" applies to quixotic and occasionally troubling efforts to make a "New South," that also promised a modern economy while maintaining southern "tradition." For Hecht, see *The Radiance of France: Nuclear Power and National Identity After World War II*, paperback edition (The MIT Press, 2009).

For more on the making of the "New South," see James C. Cobb, *Industrialization and Southern Society, 1877-1984* (Lexington, KY: University Press of Kentucky, 1984); *The Selling of the South: The Southern Crusade for Industrial Development 1936-1990*. 2nd ed. (Urbana: University of Illinois Press, 1993); Paul M. Gaston, *The New South Creed: A Study in Southern Mythmaking*, 1st ed (New York: Alfred A. Knopf, 1970). Bruce J.

cheap, widely accessible energy as a means for economic development and improving the quality of life for Valley residents.<sup>8</sup> Leading the nuclear charge, the Tennessee Valley Authority built some of the region's earliest nuclear reactors but soon found itself embroiled in controversy in the 1970s. TVA's nuclear program faced serious budgetary, management, and safety issues; it became *the thorn in the institution's side*, and by the 1980s, TVA's nuclear agenda stood tottering on the brink of extinction. Capturing this moment of crisis, TVA executive John G. Stewart lamented, "The problem is not that [the] TVA has made mistakes (although that, too, has happened). The problem is with the perception that TVA as an institution is a failure...It is more serious because it calls into

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Schulman, *From Cotton Belt to Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1938-1980* (Durham: Duke University Press, 1994); George Brown Tindall, *The Emergence of the New South, 1913-1945. A History of the South*, v. 10. (Baton Rouge: Louisiana State University Press, 1967). C. Vann Woodward, *Origins of the New South, 1877-1913: A History of the South*. Revised edition (LSU Press, 1971).

<sup>8</sup> For TVA's history, see North Callahan, *TVA: Bridge over Troubled Waters* (South Brunswick, [N.J.]: A. S. Barnes, 1980); Robert F. Durant, *When Government Regulates Itself: EPA, TVA, and Pollution Control in the 1970s* (Knoxville: University of Tennessee Press, 1985); Erwin C. Hargrove, *Prisoners of Myth: The Leadership of the Tennessee Valley Authority, 1933-1990* (Princeton, N.J: Princeton University Press, 1994); Michael J. McDonald and John Muldowny. *TVA and the Dispossessed: The Resettlement of Population in the Norris Dam Area*. 1st ed. (Knoxville: University of Tennessee Press, 1982); Thomas K. McCraw, "Triumph and Irony – The TVA." *Proceedings of the IEEE* 64, no. 9 (September 1976): 1372; Zygmunt J. B. Plater, *The Snail Darter and the Dam: How Pork-Barrel Politics Endangered a Little Fish and Killed a River* (New Haven: Yale University Press, 2013); William Bruce Wheeler and Michael J. McDonald. *TVA and the Tellico Dam, 1936-1979: A Bureaucratic Crisis in Post-Industrial America*. 1st ed. (Knoxville: University of Tennessee Press, 1986).

question the reasons for TVA's very existence.”<sup>9</sup> TVA’s approach to the Hartsville project embodied the agency’s institutional crisis. In many ways, TVA’s practices resembled other utility companies, but they strove to appear as something more than their rivals—as a benevolent force in the valley. The disjuncture between TVA’s mythic image and its practices no doubt heightened the sense of injustice from Hartsville residents, forced to rearrange their lives for a failed project that altered the environment, erased local history, and left residents with that giant “used beer can.”

With the passage of the Tennessee Valley Authority Act in 1933, TVA rapidly pursued its goals of producing cheap and plentiful electricity, improving river navigation and flood control, along with a host of other aims.<sup>10</sup> Guided by Arthur Morgan, who served on TVA’s original Board of Directors and espoused “physical and human engineering,” and Franklin Roosevelt administration’s observation that the South remained the nation’s “number one economic problem,” TVA’s identity was tightly bound to a New Deal ethos, one that imbued the federally owned corporation with loftier objectives. Regionalism and technocracy, both strong currents in social science in the 1920s and 1930s, characterized TVA’s early years. As historian Thomas Hughes has observed, the era’s technocrats viewed electricity as the technological agent for regional

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<sup>9</sup> Memorandum from John G. Stewart to W.F. Willis and Richard Freeman, August 20, 1985, Board of Directors’ Correspondence, Director Richard M. Freeman’s Correspondence Files, 1977-1986, Box 37, Folder: Public Relations, 1982-1985, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>10</sup> George Brown Tindall. *The Emergence of the New South, 1913-1945: A History of the South* (Baton Rouge: LSU Press, 1967), 446-457.

transformation, and nowhere was this belief more strongly directed than at the American South.<sup>11</sup>

TVA's leadership differed with respect to how the agency would transform the Valley. Arthur Morgan viewed electricity as a means "to create a new society," where TVA operated as a "social planner."<sup>12</sup> The other original board members, David Lilienthal and Harcourt Morgan, adherents to a "Jeffersonian ideal of grass-roots of democracy," saw TVA's role as vital for improving infrastructure that would subsequently encourage "private initiative."<sup>13</sup> With Morgan's resignation in 1938, the agency directed its attention towards power production and resource development rather than social engineering.<sup>14</sup> Even as TVA planners forced Valley residents from their homes, many supported TVA in the 1930s because the agency offered potential employment and promised a better quality of life. Although TVA garnered criticism from its inception, its identity in the 1930s and 1940s strongly reflected a New Deal theme: "the heroic worker back on the job and the benefits of new technologies."<sup>15</sup>

Writing in 1944, David Lilienthal detailed the TVA's objectives and guiding philosophy in his book *Democracy on the March*. Lilienthal underscored the agency's belief in technology and technocrats as instruments for regional transformation and

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<sup>11</sup> Thomas Parke Hughes, *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970* (Chicago: University of Chicago Press, 2004), 360.

<sup>12</sup> David E. Nye *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge, Mass: MIT Press, 1990), 309.

<sup>13</sup> Nye, 309.

<sup>14</sup> Nye, 310.

<sup>15</sup> Nye, 314.

democratic aims. Imbued with a moral, democratic purpose, TVA existed in a loftier realm than ordinary power companies. “Indeed,” Lilienthal mused, “this valley even in the brief span of twenty years, supports a conviction that when the use of technology has a moral purpose and when its methods are thoroughly democratic, far from forcing the surrender of individual freedom and the things of the spirit to the machine, the machine can be made to promote those very ends.”<sup>16</sup>

Lilienthal advocated a moral technocracy, one in which TVA’s “dreamers with shovels” would use technology as a means of sweeping societal and economic change.<sup>17</sup> Lilienthal and TVA planners eagerly crafted a narrative where the agency stood apart from “the smooth-talking centralizers, the managerial elite, cynical politicians, everyone without faith in the capacities of the people.”<sup>18</sup> These efforts to shape TVA’s public image offered a rebuttal to contemporary critics who characterized TVA as state-sponsored socialism.<sup>19</sup> Describing the agency’s planners as “dreamers with shovels,” however, posed a problem for TVA in subsequent decades, as it wrestled with the grandiose ideals of a different era in a new political climate.

By the 1950s, TVA expanded its power division from primarily hydroelectric to include nuclear power, and it purchased land throughout the Tennessee Valley for this

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<sup>16</sup> David Lilienthal, *TVA; Democracy on the March* (New York: Harper, 1953, orig. published in 1944), 223.

<sup>17</sup> Lilienthal, 224.

<sup>18</sup> Ibid., 224-225.

<sup>19</sup> Christopher J. Manganiello, *Southern Water, Southern Power: How the Politics of Cheap Energy and Water Scarcity Shaped a Region* (Chapel Hill: The University of North Carolina Press, 2015), 84-85.

purpose, first scouting property in Alabama in 1953. Breaking from earlier aspirations, director Aubrey Wagner narrowed TVA's mission to producing cheap, plentiful power. The maneuver required a diversification in power sources, and in response, TVA first increased its coal-fired plants. In 1950, TVA drew only 15 percent of its power from coal. By 1960, coal plants supplied 67 percent and increased further a decade later.<sup>20</sup> Next, TVA ambitiously committed to nuclear power, envisioning that eventually 80-90 percent of any new generating capacity would be nuclear powered.<sup>21</sup> Acting on this, by 1974, TVA's estimated investment towards nuclear power hovered at six billion dollars, which was, according to one study, "the largest commitment in the entire United States by a single utility to nuclear power generation."<sup>22</sup> TVA hedged their bet upon estimated "first-cost" investments, which forecast that coal plants required more capital investment than nuclear over the long term.<sup>23</sup>

TVA's first nuclear power reactor, Brown's Ferry, went online in August 1974 in Limestone, Alabama. By the time the first reactor began operation, TVA's potential nuclear projects dotted the valley, with construction permits issued for at least twelve more reactors during the 1970s. In order to fund this building frenzy, Congress raised

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<sup>20</sup> Hans Knopp, ed. *The Tennessee Valley Authority Experience, Proceedings of the First Conference on Case Studies of Large Scale Planning Projects*, October 28-November 1, 1974, Vol. 1, CP 76-2 (International Institute for Applied Systems Analysis, Laxenburg, Austria) 337.

<sup>21</sup> Ibid., 275.

<sup>22</sup> Ibid., 297.

<sup>23</sup> Ibid., 274-275.

TVA's debt limit –from \$1.75 billion before 1970 to \$15 billion in 1976.<sup>24</sup> As one journalist described, TVA had “long treated by Congress as a child to be seen but not heard,” asking few questions about their rapid expansion and its financial requirements. Moreover, “projected load growth,” which forecast electricity consumption over several decades, supported TVA’s expansion. Writing to Congress in 1975, TVA chair Aubrey Wagner justified the agency’s commitment to building new facilities by rehashing the connection between economic growth and affordable electricity. Wagner assured Congress the facilities were “essential” for the “economy and creation of jobs,” and without an increasing in borrowing authority, TVA could not “carry out its responsibility to meet the needs for electricity in its area.”<sup>25</sup>

The gospel of growth drove TVA’s nuclear program until the bubble burst in the 1980s. As Erwin Hargrove has noted, “for most of the past half-century in the mid-South, there was an almost religious belief in the growth of electric power as a measure of progress, and the generating plants of the Tennessee Valley Authority were the tabernacles of the faith.”<sup>26</sup> The belief in the agency’s vital role in transforming the valley’s economy reinforced its generally positive image until the late 1960s.

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<sup>24</sup> Erwin C. Hargrove, *Prisoners of Myth: The Leadership of TVA, 1933-1990* (Princeton University Press, 1994), 188.

<sup>25</sup> Aubrey Wagner to Vice President Nelson Rockefeller and US Senate, September 3, 1975, Senate Report, 94-61,  
<https://www.fordlibrarymuseum.gov/library/document/0055/1669132.pdf>, 14, original found in Box 33, folder “11/28/75 HR9472 Tennessee Valley Authority Bond Increase,” White House Records Office: Legislation Case Files, Gerald R. Ford Presidential Library.

<sup>26</sup> Wendell Rawls Jr., “T.V.A. Defers Nuclear Plants but Debate goes on,” *New York Times*, March 14, 1982, 30.

Although not the first TVA project to provoke opposition, the Tellico Dam controversy signaled a marked shift in the relationship between TVA, valley residents, and the public. Critics argued the project made little economic sense, displaced a community, and threatened one of the last “wild” rivers, the Little Tennessee River. Southerners, historically less vocal about environmental protection than their western peers, joined the growing number of Americans who found pollution and reckless development alarming.<sup>27</sup> The controversy also spoke to other anxieties about the “bland,” modern South, where southerners felt disconnected from nature and from a sense of place, seen most vividly in James Dickey’s novel *Deliverance*, where four men, attempting to escape the complacency and boredom that characterize their lives, canoe down a wild river before it is dammed and new lakeside properties are parceled into time-shares.<sup>28</sup> In part, the Little Tennessee River embodied a disappearing southern landscape.

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<sup>27</sup> For southern environmentalism and environmental controversies in the US South post-WWII, see Barbara L. Allen, *Uneasy Alchemy: Citizens and Experts in Louisiana’s Chemical Corridor Disputes* (Cambridge, Mass: The MIT Press, 2003); William D. Bryan, “Poverty, Industry, and Environmental Quality: Weighing Paths to Economic Development at the Dawn of the Environmental Era.” *Environmental History* 16 (July 2011): 492–522; Robert D. Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality*, 3rd ed. (Boulder, Colo: Westview Press, 2000); Ellen Griffith Spears, *Baptized in PCBs: Race, Pollution, and Justice in an All-American Town* (Chapel Hill: University of North Carolina Press, 2014). Jeffrey K. Stine, *Mixing the Waters: Environment, Politics, and the Building of the Tennessee-Tombigbee Waterway* (Akron: University of Akron Press, 1993) .

<sup>28</sup> “Successful, Optimistic, Prosperous, and Bland”: Telling About the No South,” in James Cobb, *Away Down South: A History of Southern Identity*, Reprint edition (Oxford: Oxford University Press, 2007), 236-260; James Dickey, *Deliverance*, Reprint edition (Boston: Delta, 1994).

While the Tellico Dam drew ire from area residents, the discovery of the snail darter, an endangered species of fish found in the Little Tennessee River, transformed it into a national debate over the environmental impact of dams.<sup>29</sup> Some dismissed the fight over the tiny snail darter's habitat as the absurd logic of extreme environmentalists given to blocking any and all development. But as Marc Reisner has argued, with or without the snail darter, one could still characterize Tellico as "a bad project proposed by a dinosaurian bureaucracy; a needless destruction of one of the last wild rivers in the East; usurpation of a quiet valley; and a cynical Congress sneaking around one of its own laws."<sup>30</sup> Even though TVA prevailed through Senators Howard Baker and James Duncan's machinations, the Tellico controversy put the organization on notice. No longer could TVA expect to have its projects rubber-stamped by Congress, subvert environmental law, steam-roll communities under the guise of "progress, jobs, and modernity" and avoid public scrutiny. The Tellico Dam controversy portended future conflicts, as valley residents found themselves questioning TVA's haphazard nuclear program.

In the late 1960s, TVA began scouting land for a future nuclear plant in middle Tennessee, eventually acquiring land in Trousdale County and Smith County for the Hartsville nuclear project. TVA planned a four reactor plant, making the plant the

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<sup>29</sup> Zygmunt J. B. Plater, *The Snail Darter and the Dam: How Pork-Barrel Politics Endangered a Little Fish and Killed a River* (New Haven: Yale University Press, 2013); William Bruce Wheeler and Michael J. McDonald. *TVA and the Tellico Dam, 1936-1979: A Bureaucratic Crisis in Post-Industrial America*. 1st ed. (Knoxville: University of Tennessee Press, 1986).

<sup>30</sup> Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water*, Revised edition (New York, N.Y., U.S.A: Penguin Books, 1993), 328.

“world’s largest,” as at least one billboard in town advertised.<sup>31</sup> Because building a nuclear power plant is neither simple nor fast, communities with nuclear projects could count on potential job growth during construction, tax payments during its operation, and additional revenue for rural areas with limited funds. Initial studies conducted by TVA indicated that 65 percent of Hartsville residents were in favor of the plant, while 25 percent opposed the plant, and another 10 percent were undecided.<sup>32</sup> The study showed cautious support, but even a minority of opposition could slow the licensing process down, one that TVA planners ignored. Despite the Tellico showdown, TVA’s history suggested that squelching even fierce opponents simply required a capable legal team and powerful political allies.

TVA, however, encountered numerous obstacles in the licensing process. TVA management failed to adjust to a new regulatory landscape, one that more closely considered environmental impacts and allowed public input.<sup>33</sup> Even in the 1970s, licensing a nuclear reactor required detailed consideration of environmental, socioeconomic, technical, and safety issues. Almost immediately, TVA confronted resistance for the Hartsville nuclear site. During the licensing process, no less than nine attorneys representing 59 individuals intervened. It was the TVA’s most intense licensing

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<sup>31</sup> Photograph, Folder: 319 Nuclear Power Plants (A-Z); Box 5, Records of the Chairmen and Members of the Board of Directors Director William L. Jenkins, 1972-78, TVA, NARA.

<sup>32</sup> Consultants from the University of Tennessee, Oak Ridge National Laboratory, *Citizens Views about the Proposed Hartsville Nuclear Power Plant: A Preliminary Report of Potential Social Impacts* (ORNL, May 1975), viii.

<sup>33</sup> Duffy, *Nuclear Politics*; Walker, *Containing the Atom*.

struggle yet, foreshadowing a troubled future for their nuclear program.<sup>34</sup> Among the complaints levied, a petition submitted on behalf of the state of Tennessee, suggested that TVA had overestimated future needs for electricity and appeared financially unqualified to build multiple reactors simultaneously.<sup>35</sup> Governor Winfield Dunn's administration demanded sounder justification for building so many nuclear reactors, and questioned the wisdom of relying upon forecasts that predicted future energy consumption. If those forecasts or cost estimates were wrong, ratepayers might suffer exorbitant rate increases. Their chief objections proved prescient, as TVA conceded a decade later.

The most sustained and meaningful resistance came from the Hartsville community, and like state officials, residents opposed to the project or to aspects of the plant's siting wasted little time expressing their concerns. Even in TVA's golden years, when its mission seemed firmly connected to the New Deal's higher purpose, the removal of valley communities for dams, reservoirs, and recreational areas aroused hostility between agency planners and local people.<sup>36</sup> Dams permanently alter the landscape with their construction; flooding the land irrevocably wipes away the homes, habitats, and

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<sup>34</sup> Memo From Robert Marquis, January 25, 1975, Folder :Licensing Hearings III (1 of 2) ; B 66: Office of Engineering Design and Construction, Chief Engineer's Files / Office Of Manager's Records, 1933-1980, Hartsville Nuclear Plant License Hearings IV (2 of 3 & 3 of 3) through License Hearings III, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>35</sup> Attorney General, R.A. Ashley, Jr., November 22, 1974, Folder: Licensing Hearings III (1 of 2) , B 66: Office of Engineering Design and Construction, Chief Engineer's Files / Office Of Manager's Records, 1933-1980, Hartsville Nuclear Plant License Hearings IV (2 of 3 & 3 of 3) through License Hearings III, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>36</sup> For another example, see John Egerton's account about the Land Between the Lakes, "Land No More Time For Milk and Honey," in *The Americanization of Dixie: The Southernization of America*. 1st ed. (New York: Harper's Magazine Press, 1974).

history of a place. The construction of nuclear plants is less imposing but does require large tracts of land. In Hartsville's case, the nearly two thousand acres contained valuable farmland, forests, 19<sup>th</sup> century homes, and several graves. For some residents, TVA's assessment of property values, historic sites, and environmental impact largely served as a self-serving charade. As an institution, TVA acted very much like an ordinary utility company, employing a hard-nosed legal team to achieve its objectives and overrule community objections. Despite this, TVA's leadership, and even its employees, remained attached to an image of TVA as a force for public good.

Pasture and farmland dominated the Hartsville site, with woodland areas interspersed, possibly home to "a myriad of songbirds, reptiles, and small mammals."<sup>37</sup> In the adjacent Cumberland River, many fish species thrived, ranging from walleye to catfish. According to Hartsville resident, Tom P. Thompson Jr., ducks and geese regularly flocked to the area, and hunters frequented the site.<sup>38</sup> While not pristine wilderness, TVA had poached viable farmland, woodlands, and riverside areas, which local families had used for centuries prior.

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<sup>37</sup> EIS, 2-17. U.S. Nuclear Regulatory Commission, and Office of Nuclear Reactor Regulation. *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*. (Washington; Springfield, Va.: NRC ; National Technical Information Service, 1975), 2-17.

<sup>38</sup> Letter to Asst. Gen Counsel, David Power, TVA from Tom P. Thompson, Jr. of Thompson & Thompson Law Offices, Hartsville, Tennessee Feb. 3, 1975, in U.S. Nuclear Regulatory Commission, and Office of Nuclear Reactor Regulation. *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*. (Washington; Springfield, Va.: NRC ; National Technical Information Service, 1975),

The nearly two thousand-acre acquisition yielded, among other things, several homes dating to the early nineteenth century. TVA's purchase included land once settled by John McGee (1763-1836), one of the state's earliest Methodist ministers. McGee traveled from North Carolina to Tennessee, leading revivals along the way, impressing congregations with his "unreined emotionalism" that led to parishioners to believe "God himself was at work."<sup>39</sup> Settling near present day Hartsville, John McGee built a home along the Cumberland River, perhaps sometime after 1816. Until his death on June 16, 1836, McGee lived in this home and was buried on the same property. For over two hundred years, McGee's home and grave remained relatively undisturbed, surviving the American Civil War and the wiles of modernity. By TVA's own admission, the house remained in "good condition, although substantially altered since its construction."<sup>40</sup> As a piece of local and state history, the property represented something distinctive about Hartsville in an era of eroding distinctions and disappearing rural communities.<sup>41</sup>

During the licensing process, TVA assessed John McGee's significance, along with his home, and proved at odds with those who saw the home as worthy of preservation despite the changes to its architecture. Enlisting the help of an architectural historian, TVA concluded that based upon Dr. James Patrick's study and "their own

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<sup>39</sup> Boles, *The Great Revival*, 54.

<sup>40</sup> US Nuclear Regulatory Commission, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, 2-5.

<sup>41</sup> James C. Cobb, *Away down South: A History of Southern Identity* (Oxford: Oxford University Press, 2005); R. Douglas Hurt ed., *The Rural South since World War II* (Baton Rouge: Louisiana State University Press, 1998); Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920-1960* (Baton Rouge: Louisiana State University Press, 1987).

investigations” McGee’s home was a “fine example of a brick farm house of its period, but architecturally... not unique,” and argued that the “historical relationship of this site is only associated with the activities of John McGee.”<sup>42</sup> TVA ruled that because the home possessed no unique architectural qualities, and had no direct relationship to John McGee’s religious activists, which were ironically – immaterial – as his role in the religious revival movement came through itinerant preaching, that the house could be demolished.<sup>43</sup> The agency promptly bulldozed McGee’s home and then exhumed his body.

TVA’s plans for McGee’s new grave including adding a historical marker at a “suitable site” for “appropriate recognition.”<sup>44</sup> For several decades prior, TVA exhumed the bodies of countless individuals for their projects. When exhumation was deemed unnecessary, TVA catalogued the graves on purchased land, producing a vast record of gravesites across the valley—over thirty thousand bodies approximately.<sup>45</sup> By comparison to earlier projects, TVA’s nuclear sites intersected with very few burial sites. According to TVA’s records, only Brown’s Ferry (10 graves) and Hartsville (4) contained burial sites. Nonetheless, if TVA’s projects intruded upon people’s lives and their livelihoods, they also intruded into their afterlives, and McGee was no exception. In

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<sup>42</sup> U.S. Nuclear Regulatory Commission, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, 2-5.

<sup>43</sup> Ibid., 2-5.

<sup>44</sup> *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, 4-8.

<sup>45</sup> TVA Cemetery Data, <https://www.tva.gov/Environment/Environmental-Stewardship/Land-Management/Cultural-%252B-Historic-Preservation/Relocated-Cemeteries>.

1976, TVA moved McGee's body to the Hartsville Methodist cemetery and four others to nearby Dixon Springs.

Among those dissenting, the State of Tennessee's Office of Urban and Federal Affairs and local attorney Tom P. Thompson each wrote letters to TVA in 1975, urging the agency to reconsider John McGee as historically significant enough to warrant the home's preservation.<sup>46</sup> In response, TVA defended their choices, concluding that McGee's influence in the state's Methodist history occurred years before the home was built, and the building had no relationship to his role in history. In their approach, TVA differed little from other government agencies or private companies pursuing construction permits. Arguably the difference lies in TVA's desire to reinforce the image that the agency was something *more*, and strove to develop strong relationships with the people in the valley, value their history and play a pivotal role in it. Eminent domain laws gave TVA an unusual degree of power; and coupled with their appeals to progress, economic development, and modernity, the agency could freely take land, demolish buildings they ruled insignificant, and exhume bodies whose location interfered with their designs. The "dreamers with shovels," once bearers of light, transformed into plunderer, fundamentally altering the valley's landscape and erasing remnants of the area's history. The Hartsville plant threatened more than local history; it also threatened a way of life.

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<sup>46</sup> Letter to Asst. Gen Counsel, David Power, TVA from Tom P. Thompson, Jr. of Thompson & Thompson Law Offices, Hartsville TN Feb. 3, 1975; State of Tennessee Office of Urban and Federal Affairs, from Grant Review Coordinator, Stephen H. Norris, Feb 11 1975 to M.I. Foster, Director Division of Nav. Dev. and Regional studies TVA., *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority Vol. 2.*

Writing in 1975, local lawyer Tom P. Thompson Jr. expressed concern about TVA's draft environmental statement, listing forty-seven different points of contention. Thompson's extensive engagement with TVA's environmental assessment, cost-benefit analysis, and alleged distortion of property values reveals a deep suspicion of the agency and the licensing process generally. Through its dismissal of local, lay knowledge, TVA widened the chasm between the agency and the Hartsville community.<sup>47</sup> Thompson's correspondence also illustrates the porous nature of property lines in the Hartsville community versus TVA's approach to land as inventory. To be sure, Thompson represented the landowners forced to sell their land for the Hartsville plant, and his appeals reflected his professional interests as well. But Thompson, an area native, who lives on a farm in Hartsville to this day, gave an impassioned plea that far exceeded the bounds of legal wrangling and demonstrated his close connection to the community.<sup>48</sup>

Throughout Thompson's correspondence, he underlined how construction of the plant threatened, beyond the life and limb of residents, a particular way of life , one bound to local traditions for men in the community. His letters shed light upon the complexities of TVA's relationship with Hartsville residents, and how the agency approached purchasing land and assessing environmental impact. According to

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<sup>47</sup> For another example of nuclear issues and lay-expert interactions, see Brian Wynne, "For May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide," *Risk, Environment and Modernity: Towards a New Ecology*, Brian Wynne, Bronislaw Szerszynski, and Scott Lash, eds. (London: SAGE Publications Ltd, 1996). On the perception of risk and living in a "risk society," see Ulrich Beck, *Risk Society: Towards a New Modernity* (London; Newbury Park, CA: Sage Publications, 1992); Mary Douglas and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers* (Berkeley: University of California Press, 1982).

<sup>48</sup> I met with Tom Thompson, Jr. in January 2015.

Thompson, the 1,940 acres TVA set to purchase had long hosted local hunters, and he implored the agency to include this aspect of Hartsville life in their cost-benefit analysis: “Quantify the loss of hunting land (as recreational costs). The wooded areas have long been hunted for squirrel and the pastures for rabbits and birds. The river areas have been used to hunt ducks by the local residents.”<sup>49</sup> Thompson questioned TVA’s knowledge of waterfowl habits, pointing out that construction would significantly alter the patterns of ducks and geese in the area, further underscoring his point that the land was “one of the best duck hunting and goose hunting areas in the county.”<sup>50</sup> For Thompson, despite TVA’s vast resources, they failed to understand how waterfowl behaved and what value such spaces held for the area’s residents. In response to Thompson’s concerns, TVA conceded that the area may have been “one of the best duck hunting sections in the county,” but emphasized that goose hunting was illegal in the area, another reminder that the agency’s way of “seeing” conflicted with local practices.<sup>51</sup> Duck hunting and duck hunting clubs have long been part of southern culture and a rite of passage for young men in the South. Of the many things at stake then was arguably southern manhood – one that

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<sup>49</sup> Letter to Asst. Gen Counsel, David Power, TVA from Tom P. Thompson, Jr. of Thompson & Thompson Law Offices, Hartsville TN Feb. 3, 1975, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority Vol 2.*

<sup>50</sup> Ibid.

<sup>51</sup> While TVA’s activities in the Tennessee Valley are clearly not analogous to collectivization or authoritarian programs of modernization, there are very broad thematic links between local knowledge and so-called themes of improvement seen here. James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1999).

had a direct connection to soil, to blood, and to the Cumberland River.<sup>52</sup> Nuclear power represented something precise, sterile, and opposed to local practices, knowledge, and values, and TVA stood in stark contrast to the lingering vestiges of rural and southern life.

TVA's arrival meant a new way of life, one with enforced boundaries. As Thompson's description of local hunting practices indicates, property lines often bled into one another, particularly for collective activities such as hunting. For some, the Hartsville project spelled more substantive changes to local practices and local ways of being. For Linda Gentry, "born and raised in Macon county," directly north of the nuclear plant, TVA's incursions threatened the "blessings" of a rural existence:

At night, you still sit outside and listen to the whippoorwill [sic] call. You can still see owls and chase 'possums, rabbits, and raccoons. Maybe the area behind your house or across the road is a meadow with wildflowers...Your children can still wander over the hill and explore for themselves...Many doors are left unlocked in the country...This is a fast-dying tradition. As urban sprawl hit Macon County, so will the prospect of a locked up experience.<sup>53</sup>

As she states elsewhere, the well-known risks associated with nuclear power, while relevant, only represented one component to her opposition. Large-scale, high-risk technological systems reordered environments and rural practices. Local wildlife and

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<sup>52</sup> Craig Thompson Friend, *Southern Masculinity: Perspectives on Manhood in the South Since Reconstruction* (Athens: University of Georgia Press, 2009); Ted Ownby, *Subduing Satan: Religion, Recreation, and Manhood in the Rural South, 1865-1920* (Chapel Hill: University Of North Carolina Press, 1993); Trent Watts, *White Masculinity in the Recent South* (Baton Rouge: Louisiana State University Press, 2008).

<sup>53</sup> Linda McClannahan Gentry, letter to the editor, *Macon County Times*, June 2, 1975.

rural people faced a “locked up experience;” one that restricted movement, curiosity, and potentially altered their very being.

At nearly every turn, TVA approached Hartsville like other utility companies: relying upon cost-benefit analysis, marshaling forth expertise, and exploiting legal loopholes. The emotional ties the community held with certain areas or homes, along with their anxiety surrounding the changes the Hartsville site would bring, carried little weight in the face of a sprawling organization with a powerful legal team. Borne out of New Deal idealism, TVA’s leaders struggled to rectify their actions with their roots. In TVA’s dealings with rural communities, the agency appeared like a wolf in sheep’s clothing, bringing promises and then betraying the trust of local people.

As the licensing process for Hartsville continued, debates ensued over property values and adequate compensation for landowners. Beyond the question of economics and legality, these concerns took on new meaning in the context of a rural community with different values. TVA’s cost-benefit analysis lacked the capacity to factor in the largely intangible consequences of eminent domain practices. Writing to TVA chairman Aubrey Wagner in February 1975, Tom Thompson, the Hartsville native and legal counsel for the landowners, detailed the sense of loss, both financial and emotional:

the land that you are taking is the best farming area of our county...It is with great difficulty that these men are having to accept the fact that they are losing their ability to earn a living from agriculture in this county.<sup>54</sup>

Continuing on, Thompson underscored the feelings of injustice, stating “...if you [TVA] had come into this area and paid the farmers what this land was worth then 70% of your

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<sup>54</sup> Letter from Tom P. Thompson Jr. to Aubrey Wagner, February 28, 1975, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority Vol 2, 1-2.*

opposition would have fallen to the wayside.”<sup>55</sup> If the condemnation of the land was inevitable due to the sweeping powers allotted to state and federal government through eminent domain laws and definitions of “public good,” Thompson’s clients hoped for a fair price, one that reflected more than their loss of land and homes but also their livelihood. Thompson noted the disparity between TVA offering farmers “pitifully low prices for his land while...they have no qualms about paying a large industry to wit.”<sup>56</sup> Ed Gregory, a farmer who owned 200 acres on the future Hartsville site, complained about TVA’s appraisal of land value, noting that while the agency quoted \$840 per acre, he deemed the land more valuable, “at least \$1500 per acre,” in part because the land included his brick home which Gregory considered “to be of great value.”<sup>57</sup> Others echoed these sentiments but also underlined, again, the precarious nature of southern manhood with its ties to land ownership and the ability to cultivate it: “2100 acres of the best crop and grassland of the county will be taken out of production. Some of this land has been in the same family for many years. Neither gold nor silver would purchase this

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<sup>55</sup> (1-2) Letter from Tom P. Thompson Jr. to Aubrey Wagner, February 28, 1975, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority* Vol 2, 1-2.

<sup>56</sup> Letter to Asst. Gen Counsel, David Power, TVA from Tom P. Thompson, Jr. of Thompson & Thompson Law Offices, Hartsville TN Feb. 3, 1975, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority* Vol 2.

<sup>57</sup> “TVA Begins Land Acquisition at Dixon Springs Nuclear Site,” *Macon County Times*, February 14, 1974, in Betty C. Meadows Scott, *A Newspaper and Magazine Account of the Hartsville Nuclear Plant and Louisiana Energy Systems* (Ridge Runner Publications, 2007). Scott, an area local, collected newspaper and magazine articles for a Daughters of the American revolution project and self-published the collection. All newspaper articles cited from *Macon County Times*, *Hartsville Vidette*, and *The Tennessean* are found in this collection, located in a few libraries in Middle Tennessee.

land...A man's home is his castle that is valued greater than diamonds and pearls."<sup>58</sup> In 1975, the twenty-four landowners settled with TVA, and the agency paid a total of \$1,425,900 dollars.<sup>59</sup> Today, the land's value has risen to over two million dollars, even after TVA sold a small parcel, while one portion of the land has no reported value.<sup>60</sup>

Again, at odds with the realities on the ground was TVA's cost-benefit analysis, which critics charged inflated Hartsville's benefits, while diminishing the project's drawbacks for the Hartsville plant. TVA argued that "electric power was a tool for economic development," one that "has helped ease the burdens of drudgery; provided more jobs and more productive employment; brought the amenities of life to an ever increasing number of people."<sup>61</sup> In its cost-benefit analysis, the agency described the plant as a lever for economic growth and a source of "increased payments to local governments," but Tom Thompson alleged the payments were barely more than property taxes.<sup>62</sup> One could reasonably predict that cheap electricity might encourage economic growth, but electricity is not necessarily a "local" resource. TVA acknowledged their plan to sell excess electricity via transmission corridors, which connected to other utility

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<sup>58</sup> T.J. Merryman, letters to the editor, *Hartsville Vidette* January 30, 1975, 37.

<sup>59</sup> "TVA To Pay Land Owners \$1,425,900 For N-Plant Site," *Hartsville Vidette*, July 31, 1975.

<sup>60</sup> State of Tennessee Property Viewer, OIR-GIS Services, <http://tnmap.tn.gov/assessment/>.

<sup>61</sup> *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, 8-1.

<sup>62</sup> *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, Vol 2., 8-1. 8-2.

companies. Moreover, even if the plant created jobs, local economic benefits would be tempered by its proximity to the Nashville metropolitan area, only forty-five miles away.

Finally, TVA's environmental assessment largely overlooks the consequences of major accidents, giving the reader or local residents little, if any, indication of how a serious mishap could impact the surrounding area. Nearly every reactor in the region received its construction permit before Three Mile Island, and the nuclear industry tightened safety measures following TMI in 1979. Thus, the major gaps in environmental statements indicate, to some extent, the more cavalier attitude toward nuclear technology so prevalent before 1979.

Tom Thompson urged TVA to reconsider how they measured the effects of serious accidents. Noting that nuclear power necessitated rural or less populated locations, Thompson argued that TVA valued the lives of rural populations less than others, and that this value judgment should be stated explicitly. In its response to Thompson, TVA surmised that "because of the low probability of the occurrence of these accidents...no significant hazard to the persons residing in the vicinity of the Hartsville Nuclear Plant exists."<sup>63</sup> If socioeconomic cost and benefits of nuclear power could be measured, as the EIS attempted to do, then not measuring the human cost also challenged TVA's image as a benevolent force in the rural South.<sup>64</sup> TVA could uproot bodies buried

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<sup>63</sup> TVA Response Tom P. Thompson Jr., *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, Vol 2, 10-19.

<sup>64</sup> Letter to Asst. Gen Counsel, David Power, TVA from Tom P. Thompson, Jr. of Thompson & Thompson Law Offices, Hartsville TN, Feb. 3, 1975, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, Vol 2.

for over two hundred years, but the agency avoided articulating what would happen to the bodies of the living if an accident occurred.

In tandem, TVA dismissed Thompson's concerns about an adequate flood plan, by defining major floods as "an extremely rare occurrence." While acknowledging that at least twenty-percent of the site sat below flood level, TVA believed it could shut the plant down in case of a major flood. In March 1975, a month after Thompson's correspondence occurred, Nashville and the surrounding areas experienced a major flood, as the Cumberland River swelled to over 47 feet, over seven feet above flood stage, causing extensive damage. This environmental reality underlined the depth of local knowledge and the extent to which TVA's risk analysis faced shortcomings. The "bureaucratic logic" of TVA's analysis, to borrow James Scott's phrase, impeded more thorough assessments of the area's climate and susceptibility to flood.<sup>65</sup> Today, FEMA flood maps highlight a portion of the site in the flood zone.<sup>66</sup> Adding further credence to Thompson's concerns decades earlier, in 2010, the Nashville area and surrounding counties, including Hartsville, experienced a 1000 year flood, which according to NOAA has a .01% chance of occurring in any given year.<sup>67</sup> To be sure, TVA's plans including locating the reactors at an elevation of 520 feet, over fifty feet above estimated hundred-year flood levels.<sup>68</sup>

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<sup>65</sup> James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1999.

<sup>66</sup> For flood maps, see Federal Emergency Management Agency's Flood Map Service Center, <https://msc.fema.gov/portal>.

<sup>67</sup> Information on 2010 Floods, National Oceanic and Atmospheric Administration, National Weather Service, <http://www.srh.noaa.gov/ohx/?n=may2010epicfloodevent>

<sup>68</sup> EIS Statement, 13. TVA Response, *Final Environmental Statement Related to Construction of Hartsville Nuclear Plants of the Tennessee Valley Authority*, 13.

Flooding remains a serious concern for nuclear sites, and in 2011, the Nuclear Regulatory Commission issued forth new recommendations regarding flood risk and dam failures.<sup>69</sup>

The plant's construction also prompted organized resistance, spearheaded by William and Faith Young, whose historic home and farm were located across from the Hartsville site. To fight the plant, the Youngs formally intervened in the licensing process and organized an anti-nuclear group: Concerned Citizens of Tennessee. Built in the late 1780s, their home, "Dixona," was named after the original owner – Tilman Dixon. The "long famed stopping place" had hosted a number of visitors, including Louis Phillippe, Duke of Orleans and later King of France in 1797.<sup>70</sup> The Hartsville plant, with its four imposing cooling towers planned, threatened as Faith Young pointedly argued, "the beauty and integrity of the historic, rural vicinity, a treasure for future generations, so long preserved with care and pride," and concluded that TVA's plans were the "ultimate act of insensitivity and hostility to man, his surrounding, and his physical, aesthetic, and emotional needs."<sup>71</sup> Although TVA planners gestured towards a consideration of non-economic and non-energy related needs in their cost-analysis, visiting the area today raises questions about why the agency found the site suitable for the "world's largest

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<sup>69</sup> Michelle Bensi, Richard Perkins, Jacob Philip, Selim Sancaktar, "Screening Analysis for the Proposed Generic Issue on Flooding of Nuclear Power Plant Sites Following Upstream Dam Failures," U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Division of Risk Analysis, July 2011. <http://pbadupws.nrc.gov/docs/ML1218/ML12188A239.pdf>

<sup>70</sup> Dixona Pamphlet, courtesy of Faith Young, Dixon Springs, TN, January 2015.

<sup>71</sup> "Citizens Group Asks National Help in Nuclear Plant Halt," *Hartsville Vidette*, January 20, 1975.

nuclear plant.” TVA’s approach to siting appears wildly out of sync with shifting cultural and environmental values in the 1960s and 1970s.

William and Faith Young’s first legal challenge to the Hartsville project contended that the Hartsville site was not located on the Tennessee River or any of its tributaries, violating the original intention of the TVA Act in 1933.<sup>72</sup> In 1977, one year after construction began, a court ruled in favor of TVA, a decision that no doubt made many further question the agency’s motives and potential misuse of federal power.

The second legal challenge initiated by the couple concerned an endangered species residing in Cumberland River’s warm waters: the *Lampsilis orbiculata*, or the pink mucket mussel.<sup>73</sup> Classified as an endangered species in 1976, the pink mucket is one of many freshwater mussels in the Tennessee Valley threatened or eradicated by human activity, particularly dams and man-made reservoirs, which flood mussel habitats.<sup>74</sup> TVA’s projects significantly contributed to the decline in riverine mussel populations. For hundreds of years, humans harvested mussels for their pearls and shells, which decreased local populations, but the rivers remained wild, allowing mussel beds to grow again. Only when large-scale human intervention occurred did the freshwater

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<sup>72</sup> “Judge Rules TVA Plant Site Legal,” *Hartsville Vidette*, January 20, 1977.

<sup>73</sup> “Brief in Support of the Tennessee Valley Authority’s Motion For Leave to Reply to the Answer of William N. Young, Et Al., to Applicant’s Motion for Summary Disposition,” June 21, 1978, Box 63: Office of Engineering Design and Construction, Chief Engineer’s Files / Office Of Manager’s Records, 1933-1980, Hartsville Nuclear Plant Licensing, Folder: Licensing 3, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>74</sup> “Pink Mucket,” US Fish and Wildlife Service,  
<https://www.fws.gov/midwest/endangered/clams/pdf/pink-mucket.pdf>

mussel population in the valley plummet.<sup>75</sup> According to Donald Edward Davis, the “TVA system of reservoirs collectively destroyed hundreds of miles of important mussel waters.”<sup>76</sup> In many ways, mussels are a more apt symbol for the vast ecological changes produced by TVA’s manipulation of the valley’s environment than the snail darter, but the Hartsville case offered less clear cut evidence that the nuclear plant’s thermal discharge would irrevocably harm local mussel species.<sup>77</sup>

While neither legal intervention proved successful, they demonstrate how anti-nuclear and environmental activists used the new regulatory landscape to, at the very least, slow the licensing process down and highlight neglected environmental impacts. Moreover, these lawsuits underscored the vulnerability of TVA and the nuclear industry generally. The industry needed some semblance of public transparency to successfully site plants anywhere—a necessary public relations measure to assure anxious residents. These openings in the licensing procedure for public involvement created headaches for power companies because nuclear power generated more interest than many other risk-laden industries.

Legal interventions, while vital to opposing nuclear plants, comprised only one part of a larger anti-nuclear playbook. In Hartsville, Faith and William Young

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<sup>75</sup> Donald Edward Davis, *Where There Are Mountains: An Environmental History of the Southern Appalachians* (Athens: University of Georgia Press, 2000), 190-192.

<sup>76</sup> Davis, 191.

<sup>77</sup> For more on the thermal pollution and nuclear power, see J. Samuel Walker, "Nuclear Power and the Environment: The Atomic Energy Commission and Thermal Pollution, 1965-1971," *Technology and Culture* 30 (October 1989): 964-92. In 2001, divers discovered no local populations of mussels were present, see Environmental Assessment and Finding of No Significant Impact," Hartsville Nuclear Plant Site, Tennessee Valley Authority, March 2002, 22, NRC Library, <nrc.gov>.

spearheaded public protests against the Hartsville plant with their organization Concerned Citizens of Tennessee (CCT). Although some applauded their efforts, local plant supporters, who looked forward to employment opportunities and increased local funding, drew connections between anti-nuclear activities and other sources of polarization. Even sleepy, rural enclaves in the South proved vulnerable to the aftershocks of the 1960s and 1970s, where Watergate, Vietnam, the civil rights movement, and the myriad of other changes seeped into unexpected places. Leading the anti-nuclear charge, Faith Young helped organize a local collection of books and pamphlets on nuclear power and gathered signatures for a nuclear moratorium in 1974.<sup>78</sup> The opposition to Hartsville had a strong, local base, but it also attracted protestors from Nashville, the Farm in Summertown – a left-leaning commune, and from anti-nuclear groups in surrounding states.<sup>79</sup> After Three Mile Island in 1979, public demonstrations occurred in Hartsville, with CCT holding “truth days” outside the site.<sup>80</sup>

Early on, William and Faith Young grounded their opposition in terms of truth, credibility, and fraud. Their appeals covered many issues, but trust and “truth” remained central, and rural communities, from their perspective, lacked the means to uncover the truth or challenge claims from experts or industry figures. In 1975, Faith Young denounced a public opinion survey conducted by Oak Ridge National Laboratory, which

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<sup>78</sup> “Nuclear Moratorium Signers Near 5,000 Mark,” *Macon County Times*, July 10, 1974; “Books, Papers Available on Nuclear Hazards,” *The Hartsville Vidette*, April 11, 1974.

<sup>79</sup> Martha Highers, “Urge Shutdown of Hartsville Facility, N-Plant Demonstrators ‘Orderly,’” *The Tennessean*, June 4, 1979.

<sup>80</sup> “Anti-nuclear demonstration Set Sunday, August 5<sup>th</sup> at Plant,” *Hartsville Vidette*, July 19, 1979.

showed most residents in favor of the plant, calling the survey a “ ‘fraud on the people’ and a coercion and intimidation of a politically unsophisticated populace.”<sup>81</sup> Two years later, Young again concluded, “isn’t it a shame to have the wool pulled over the eyes of us poor, uneducated, rural, old people living near a nuclear plant?”<sup>82</sup> Faith Young was neither poor nor uneducated; she attended the University of North Carolina-Chapel Hill and lived in New York and France before moving to the area. Faith Young’s values and experiences marked her as an “outsider,” even when she considered herself to be a “local” too. Like many area residents though, Faith and William Young lived on a working farm, albeit one with an exceptional historic home. In response to their antinuclear activism, one Hartsville resident complained: “This is the same crowd that was against the war in Vietnam. We were for the war in Vietnam; we wanted to win it.”<sup>83</sup>

The issues surrounding nuclear power blurred with other polarizing events, especially the war in Vietnam; protestors’ concerns appeared unpatriotic or anti-progress. One resident found the media’s attention to anti-nuclear activists had obscured a supportive majority, likening the situation to Vietnam: “You remember the Vietnam war and other wars...there were only a few that made the headlines in the news media while the 99 percent were true American citizens who fought the wars and carried the flag.”<sup>84</sup> In response to critics, William Young, Jr., legitimated his anti-nuclear stance with his

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<sup>81</sup> “CCT Labels Survey ‘Fraud on the People,’” *Hartsville Vidette*, May 22, 1975.

<sup>82</sup> Faith Young, letter to the editor, *Hartsville Vidette*, January 20, 1977.

<sup>83</sup> Martha Highers, “Urge Shutdown of Hartsville Facility, N-Plant Demonstrators ‘Orderly,’” *The Tennessean*, June 4, 1979.

<sup>84</sup> “A Concerned Trousdale County, Flag Waving Veteran,” letter to the editor, *Hartsville Vidette*, Thursday February 27, 1975.

military service, “I’ve been under fire before but never in as much danger or as real danger as from this proposed nuclear plant.”<sup>85</sup> Others, such as Mrs. Andrew Welch, found her opposition to the plant placed her in the unpatriotic category of locals, to which she responded:

I was unaware that objecting to a government agency’s attempt to take land, that is not for sale at any price, with a non-negotiable bid of less than current market value is unpatriotic. I was unaware that asking for proof of the need for a \$2.5 billion expenditure to supply power in this area is unpatriotic. I was unaware that wishing to maintain our rural community rather than converting to an industrialized area is unpatriotic. I was unaware that question the safety of nuclear power is unpatriotic.<sup>86</sup>

Opposition and support for nuclear power, at least in the US, was not a strictly partisan issue, and this likely stems from the very clear catastrophic threat people feared, along with the rising anxiety about health effects from radiation exposure.<sup>87</sup> Moreover, nuclear power generally increased utility rates, which made it less appealing, particularly as the American economy tanked in the 1970s. In Hartsville, support for the plant came, disproportionately, from the local business community, elected officials, and those who believed economic development outweighed the downsides. Writing in 1975, state representative Hugh Dixon, disapproved of TVA’s hunger for land and their propensity for under-valuing that land, but expressed a dim view of those opposed to the plant, arguing that, “most environmentalists are people who have never worked for a living. They have had everything given to them all their lives and have no experience at

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<sup>85</sup> W.M Young, letter to the editor, *Hartsville Vidette*, March 13, 1975.

<sup>86</sup> Mrs. Andrew Welch, letter to the editor, *Hartsville Vidette*, March 6, 1975.

<sup>87</sup> Wellock, *Critical Masses: Opposition to Nuclear Power in California, 1958-1978*; Weart, *Nuclear Fear*; Walker, *Containing the Atom*.

anything,” a common if unfair representation.<sup>88</sup> Dixon’s assault overly generalized what was often a diverse group of people, but his words reveal the ways “work” became a coded term that differentiated many activists with the laborers on site and local farmers.<sup>89</sup> The debate about Hartsville also demonstrates how environmental and technological issues intersected with the era’s other polarizing events, and to some, environmental and anti-nuclear organizations appeared anti-progress, anti-jobs, and anti-American.

Despite the opposition, construction began in April 1976—later than anticipated and only with a limited work authorization initially.<sup>90</sup> For five years, construction at the “future home of the world’s largest nuclear facility” continued, even as TVA continually revised the site’s anticipated completion date. Early in the construction stage, TVA betrayed the touted benefits promised to the Hartsville community through its hiring practices, straining an already unsteady relationship between TVA and local people. Residents in Hartsville and the surrounding rural counties anticipated that in exchange for their land and their dutiful tolerance of the risks associated with nuclear power, they would find steady work for at least a decade. To some, TVA had a greater moral obligation, unlike other utilities, to train locals and to raise the standard of living by direct benefits: i.e. jobs. This problem first appeared after construction began in 1976, when TVA began its hiring process. TVA assured residents that the Hartsville project “would not be a closed shop,” primarily because union membership posed a hurdle for

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<sup>88</sup> Rep. Hugh Dixon, letter to the editor, *Hartsville Vidette*, January 20, 1975,

<sup>89</sup> Richard White, “Do You Work for a Living?” in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W. W. Norton & Co., 1995 ), 171-185.

<sup>90</sup> “TVA Power Report,” 1977, ML073440309, 13, NRC Library, <nrc.gov>

economically disadvantaged residents.<sup>91</sup> As the project proceeded, the very definition of “local” came under scrutiny, with the agency and residents in the five-county area (those immediately adjacent or containing the plant) defined “local” in very different ways. For TVA, “local” workers included anyone from a sixteen county area, a broad and expansive definition, whereas residents living near the plant defined “local” as those in Trousdale, Smith, Macon, Sumner, and Wilson county.<sup>92</sup> TVA vacillated on the question of union labor, promising to consider non-union workers, while also assuring the Tennessee Trades & Labor Council preference to union workers.<sup>93</sup> The labor issue reflected larger changes in the American economy in the 1970s, where manual labor jobs operated in a boom, bust cycle that gave the working class little stability.<sup>94</sup> Moreover, TVA’s equivocation on labor matters reflected a general inconsistency with the agency’s promises and their actual practices.

TVA’s early difficulties with the Hartsville project were symptomatic of larger problems. The agency’s aggressive, foolhardy strategy towards building power facilities, coupled with internal dysfunction, inflation, and tightening regulations, created a cataclysmic situation. By the late 1970s, construction costs soared, demand for power dropped, and in a post-Three Mile Island world, the Nuclear Regulatory Commission

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<sup>91</sup> “TVA to Define ‘Local’ Worker,” *Hartsville Vidette*, July 22, 1976.

<sup>92</sup> Ibid.

<sup>93</sup> Ibid.

<sup>94</sup> Jefferson R. Cowie, *Stayin’ Alive: The 1970s and the Last Days of the Working Class* (New York: The New Press, 2012); Judith Stein, *Pivotal Decade: How the United States Traded Factories for Finance in the Seventies* (New Haven Conn.: Yale University Press, 2011).

reevaluated standards for ensuring plant safety. Although utilities across the nation faced similar circumstances, TVA's sites were perhaps the most beleaguered in terms of safety issues, which slowed construction and allowed costs to soar upward.

When construction began in 1976, TVA moved the goal operation date for Hartsville to 1983-1984.<sup>95</sup> By May 1979, TVA's Board voted to defer four units in the nuclear program: two at Hartsville (B-1: 17% complete, B2: 7%), one at Yellow Creek (MS), and another at Phipps Bend (TN).<sup>96</sup> The estimated date of operation for Hartsville's other two reactors, by 1980, extended into 1987-1989. In light of the deferrals, TVA board member S. David Freeman attempted to assure the public that the agency would not turn their "backs on investments of billions," even as the forecast for nuclear power darkened.<sup>97</sup>

In subsequent years, between the initial decision to defer two units at Hartsville in 1979 and to defer all units in 1982, TVA's board and high-ranking employees wrestled with the decision to defer or cancel the units at Hartsville, Yellow Creek, and Phipps Bend. Initially TVA cited a decline in energy demands and construction costs as the primary reasons for deferral.<sup>98</sup> At stake, beyond TVA's reputation, was the considerable

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<sup>95</sup> TVA Power Report, 1976, ML073440310, 25, NRC Library, <nrc.gov>

<sup>96</sup> TVA Power Report Vol. 1, 1980, ML073610032, 23. NRC Library, <nrc.gov>

<sup>97</sup> Howell Raines "TVA's Chief: After First Year," *New York Times*, May 29, 1979, p. D1.

<sup>98</sup> "The Impact of Reducing the Scope of TVA's Nuclear Construction," Program, January 27, 1981, Box 7, Robert N. Clement, Records of the Chairman and the Members of the Board of Directors, 8/2/1979-6/18/81, Folder: Nuclear Power Plants, 319, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

investment, hovering around two billion dollars, in unfinished nuclear projects.

Responding escalating crisis, director Robert “Bob” Clement asked, “Has our nuclear program gone too far to turn this cost picture around? If not, this is one of the most serious issues facing TVA today.”<sup>99</sup>

As early as August 1981, TVA officials started planning their exit strategy, which included draft “options” papers detailing possibly approaches to cancellations, deferrals, and possible mitigation efforts for affected communities.<sup>100</sup> Less than two years after S. David Freeman’s assurances that nuclear power remained a viable option, internal memorandum displayed a different picture. A changing energy outlook forecast lower consumption demands for the next decade.<sup>101</sup> When coupled with an inability to accurately predict construction costs, in addition to other issues, all signs pointed to a grim prognosis for TVA’s once lofty nuclear ambitions.

By late 1981 and early 1982, an options paper laid out the central issues clearly:

The important issue which TVA faces is whether to continue to borrow and spend an additional \$8.2 billion to complete three nuclear units ... These numbers reflect the staggering increases in construction costs that have occurred as the

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<sup>99</sup> Robert Clement, comment, memo from H.G. Parris to W.F. Willis, March 10, 1981, Box 7, Robert N. Clement, Records of the Chairman and the Members of the Board of Directors, 8/2/1979-6/18/81, Folder: Nuclear Power Plants, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>100</sup> “Mitigation Options, Phipps Bend, Yellow Creek, and Hartsville,” September 4, 1981, Folder: Nuclear Power Plants, 1981, Box 50, General Manager’s files, Director Richard M. Freeman’s Correspondence Files, 1977-1986, , Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>101</sup> Richard F. Hirsh, *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System* (Cambridge, Mass: The MIT Press, 1999), 69.

impact of inflation has been multiplied by very long construction times and by record high interest rates.<sup>102</sup>

These were industry-wide problems, and utilities cancelled nuclear projects across the country in response. And yet, TVA's situation stood apart because it represented something different than the average utility company. Duke, SCE&G, Middle-South—all of these utilities received public scrutiny over increases in rates and their nuclear plants, but few people held these companies in the same regard as TVA. Perhaps more importantly, changes in the American economy and the nation's energy outlook forced TVA to reconsider a fundamental principle that had driven the agency's decisions for decades: cheap electricity and economic growth strongly correlated to one another.<sup>103</sup> This principle of cheap and plentiful electricity propelling economic growth intersected with TVA's mission to improve the quality of life for Valley residents. As TVA scaled back their nuclear ambitions, the socioeconomic effects of those decisions and the communities affected by them proved a formidable challenge, which strained political alliances and further damaged their public image. Rather than the prodigal son returning

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<sup>102</sup> Review of TVA Load Growth/ Plant Construction Situation, February 4, 1982, 4, Folder: 319 Nuclear Power Plants, 1982 (Feb 1-10), Options Paper, Records of the Chairmen and Members of the Board of Directors Records of S. David Freeman, 1977-78 and 1981-84, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>103</sup> Review of TVA Load Growth/ Plant Construction Situation, February 4, 1982, 15, Folder: 319 Nuclear Power Plants, 1982 (Feb 1-10), Options Paper, Records of the Chairmen and Members of the Board of Directors Records of S. David Freeman, 1977-78 and 1981-84, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

home, lessons learned and forgiveness afforded, the agency's nuclear program cast a permanent shadow on its legacy and image.

From TVA's vantage point, scaling back their nuclear division required slight adjustments in the local government budget, some out-migration from workers, and creating certain temporary mitigation efforts such as job training to ease the socioeconomic costs of stopping construction. According to TVA estimates, deferring the two additional reactors at Hartsville resulted in a loss of approximately 1,962 jobs.<sup>104</sup> TVA drew workers from essentially a five-county area: Smith, Trousdale, Macon, Wilson, and Sumner. Smith and Trousdale comprised the counties where the plant property was located; and thus, those counties in many ways served as the most critical in terms of mitigation. Bordering Nashville, the other two counties, Wilson and Sumner, underwent major growth during the 1970s and 1980s. Surrounding rural counties experienced declining populations or limited growth, making this a tale of the two Souths: one rural, one metropolitan.

For Smith and Trousdale counties, TVA anticipated laying off over two hundred local workers, a small but visible portion of the labor force, considering the community's sacrifices.<sup>105</sup> After the first wave of deferrals and cancellations in 1979, residents pressed the agency to lay off local workers last, with one stating, "It's not right for people who

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<sup>104</sup> "Mitigation Options, Phipps Bend, Yellow Creek, and Hartsville," September 4, 1981, Folder: Nuclear Power Plants, 1981, Box 50, General Manager's files, Director Richard M. Freeman's Correspondence Files, 1977-1986, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>105</sup> "Mitigation Options, Phipps Bend, Yellow Creek, and Hartsville," September 4, 1981, Folder: Nuclear Power Plants, 1981, Box 50, General Manager's files, Director Richard M. Freeman's Correspondence Files, 1977-1986, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

have to live in this county, right under the plant, not to be able to work for it.”<sup>106</sup> As it planned for the deferrals, TVA considered the extent of its obligation to the affected communities, questioning the social and economic planning ethos of an earlier period: “Should TVA try to address the short-term problems caused by the construction cutbacks....or should TVA strive for long-term improvements...recognizing that these improvements will not resolve the project impacts?”<sup>107</sup> Centrally, TVA’s troubled nuclear program underscored the agency’s personality crisis. Did TVA have a “moral responsibility” to local communities affected by their half-finished projects?<sup>108</sup>

In January 1982, the death knell sounded for the Hartsville project. With the release of the “options paper,” TVA officials laid out various paths for cancelling, deferring, or transforming the sites into coal-fired plants. A risky move politically, the agency endangered their alliances with members of Congress, state, and local governments. Governor Lamar Alexander acknowledged “the numbers might not work,” but proposed to TVA board member Richard Freeman that “if the laws need to be changed to make it work, then let’s try to change the laws,” a move possibly inspired by

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<sup>106</sup> “Local Residents Seek Preference, Hartsville Layoff Procedure Decried,” *The Tennessean*, September 18, 1979.

<sup>107</sup> Mitigation Options, Phipps Bend, Yellow Creek, and Hartsville,” September 4, 1981, Folder: Nuclear Power Plants, 1981, Box 50, General Manager’s files, Director Richard M. Freeman’s Correspondence Files, 1977-1986, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>108</sup> Resolution, Commissioners of the Town of Hartsville, January 4, 1982, Folder: Hartsville, Box 51, General Manager’s Files, Director Richard M. Freeman’s Correspondence Files, 1977-1986, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

Senator Howard Baker's sleight of hand with the Tellico Dam.<sup>109</sup> Al Gore Jr., then a Congressional representative for Tennessee's 4<sup>th</sup> district (which included Gore's hometown of Carthage and nearby Hartsville), disputed the very nature of TVA's options paper, concluding "TVA's analysis appears to be not so much an option paper as a blueprint to justify a predetermined judgment to defer construction," and warned the agency of the "grave consequences" of such action.<sup>110</sup> For Gore, beyond the problem of job loss in his Congressional district, stalled nuclear projects threatened the valley's economy, and he affirmed his faith in the connection between power supply and economic growth.<sup>111</sup> Gore chastised the agency's about-face move, recalling TVA's vigorous defense of their nuclear program only one year earlier, finding the change in policy "disturbing."<sup>112</sup> TVA's relationship with southern politicians, both Democratic and Republican, provided crucial leverage in Congress; and in return, an expectation of reciprocity existed. If not stated explicitly, in return for projects in their district or state,

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<sup>109</sup> Letter from Lamar Alexander to Richard Freeman, February 26, 1982, Box 50, General Manager's files, Director Richard M. Freeman's Correspondence Files, 1977-1986, Folder: Jan-Feb. 1982, Nuclear Power Plants, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>110</sup> "A Special Report from Congressman Albert Gore Jr.," January 29, 1982, Folder: 319 Nuclear Power Plants, 1982 (Feb 1-10), Records of the Chairmen and Members of the Board of Directors Records of S. David Freeman, 1977-78 and 1981-84, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>111</sup> "A Special Report from Congressman Albert Gore Jr.," January 29, 1982, Folder: 319 Nuclear Power Plants, 1982 (Feb 1-10), Records of the Chairmen and Members of the Board of Directors Records of S. David Freeman, 1977-78 and 1981-84, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>112</sup> Ibid.

the agency gained political support. TVA's waffling endangered a long-standing symbiosis.

Two months after releasing the options paper, TVA's Board of Directors voted to defer, indefinitely, the remaining two reactors at Hartsville and cancel the two previously deferred reactors, and passed similar measures for Yellow Creek in Mississippi. With a period of suspension over, the reckoning began, as the local community and the agency's political allies reeled over the decision. Residents in Hartsville and the surrounding community, along with prominent Tennessee politicians, sought recourse from TVA: lost jobs and lost revenue created a headache for locals and their elected representatives. State legislators in Tennessee feared what the deferrals and eventual cancellation would do to their state revenue.<sup>113</sup> In the 1981 fiscal year, the state of Tennessee received \$87.4 million dollars in payments. Backing utility projects, especially nuclear power, while less desirable for rate-payers and ultimately damaging to TVA's bottom line, generated increase revenue and reduced unemployment—albeit temporarily. With the onslaught of TVA projects stalled, the cycle of construction projects and increased revenue reached an untimely end for the area's elected officials.

For Hartsville locals, the deferral and eventual cancellation, brought the sting of lost employment and feelings of betrayal.<sup>114</sup> James Donoho, Mayor of Hartsville, wrote

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<sup>113</sup> "TVA Situation 'Not Bad,' " *Daily Journal*, Tupelo, Mississippi , March 3, 1982, Box 41: Records of the Chairmen and Members of the Board of Directors; Records of S. David Freeman, 1977-1978 and 1981-1984 , Folder 319: Yellow Creek, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>114</sup> W.F. Willis to TVA Board, [GM] February 12, 1982, Box 50, General Manager's files, Director Richard M. Freeman's Correspondence Files, 1977-1986, Folder: Jan-Feb.

TVA's board in 1982 after the second wave of deferrals, acknowledging TVA's "awesome responsibility" to provide power, and noting TVA's past record of encouraging industrialization and improving quality of life. Despite giving credit to TVA, Donoho emphasized the large-scale investment of Hartsville locals, at the behest of TVA according to Donoho, thus underscoring TVA's obligation to help the community even as it jumped shipped with their nuclear reactors:

In a large area around the Hartsville plant several people made investments in trailer parks, apartment houses, garages, road side markets, homes, etc., to serve TVA workers, many of these investments being at the direct request or suggestion of TVA because they were promised that construction would continue for 10 to 15 years. The closing of this plant now will cause great loss and damage to these investors and further damage to TVA's credibility which is low enough.<sup>115</sup>

Then U.S. Congressman, Al Gore Jr., publicly opposed the shutdown, and like Donoho, reminded the board of the "the "human impact" of TVA's decision to halt construction of its Hartsville Nuclear Facility, and of TVA's "clear responsibility to the workers, businessmen, and county leaders who changed their lives and planned their futures based on what once seemed to be an unchangeable decision to build the Hartsville plant."<sup>116</sup> While TVA continued to employ a reduced workforce after the 1982 deferral,

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1982, Nuclear Power Plants, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>115</sup> "A Statement By James Donoho, Mayor of Hartsville to the Board of Directors of the Tennessee Valley Authority, January 23, 1982, Folder: Hartsville, Box 41: Records of the Chairmen and Members of the Board of Directors; Records of S. David Freeman, 1977-1978 and 1981-1984, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>116</sup> Correspondence from Al Gore Jr. to Charles "Chili" Dean, May 19, 1982; "A Special Report from Congressman Al Gore Jr., March 26, 1982, Folder: Hartsville, Box 41: Records of the Chairmen and Members of the Board of Directors; Records of S. David

and offered some funding for economic mitigation, it nonetheless committed an unpardonable sin in the eyes of many. TVA acquired and modified the land, leaving behind partially built containment structures and cooling towers, and retaining the land for possible use. One Trousdale county official wrote in 1983 wrote to Chairman “Chili” Dean, in what would soon become a common request, to use the land for some other type of industry in order to offset high unemployment.<sup>117</sup>

In August 1984, TVA officially cancelled the Hartsville and Yellow Creek projects, after investing 4 billion dollars.<sup>118</sup> TVA estimated it would cost 6.5 billion to finish the project, which seemed economically untenable and unreasonable as demand for power dropped. Some applauded this decision, due to anti-nuclear sentiment and growing concern about utility rate increases. By the end of the 1980s, TVA’s reactors at Brown’s Ferry and Sequoyah (Chattanooga) had successfully gone online, while work on one reactor, Watts Bar reactor 1 (Spring City, TN) continued but was plagued with problems.

Other projects were cancelled or permanently deferred, leaving the once ambitious nuclear program tattered, with visible nuclear ruins looming in the valley landscape. With a major stall in its nuclear program, TVA knew the problem extended beyond resolving financial matters, the agency had an image problem—once a beacon of progress and enlightened regional planning (with all its loaded meanings) in the Valley

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Freeman, 1977-1978 and 1981-1984, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>117</sup> Letter, from G.W. Oldham, Trousdale County Executive to Chairman Dean September 12, 1983, Folder: ICD 10 (Hartsville, TN) Industrial Parks, Box 031912 , Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>118</sup> “TVA Cancels Four Reactors,” *New York Times*, August 30, 1984, D4.

and nation at large, TVA now seemed like another unwieldy, cumbersome institution, far removed from its innovative beginnings. TVA's Board spent much of the 1980s trying to reshape their mission and public image, save the nuclear division, and justify the agency's existence. An internal memo captured the feeling among the board well:

There appears to be a growing perception among certain academics, journalists, public officials, and students of public policy that TVA has "failed." This view replacing the earlier opinion among many of the same people that TVA was one of the few grand governmental experiments that "worked."...There may have also been changes to TVA's organizational style, values, and attitudes...the experimental, open, progressive spirit, that was attributed to TVA in its first two or three decades has progressively been replaced by a defensive, legalistic, cover-your-ass, don't cause any trouble and mind-your-own business mentality.<sup>119</sup>

Publicly, TVA acknowledged their "mistakes," albeit in vague terms, but as late as 1985, they whitewashed a damning safety record in their nuclear plants. Behind the scenes, TVA correspondence reflected a far more candid view. Still, TVA's board vacillated between identifying actual problems and focusing on how to change public perception. The failures of the agency's nuclear program posed a serious problem, especially because President Ronald Reagan's administration sought to reduce TVA's role to power production exclusively, aiming for eventual privatization.<sup>120</sup> As a symbolic

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<sup>119</sup> John C. Stewart, "Improving Relations With Intellectuals and Public Opinion Makers," Folder, Public Relations, 1982-1985, Box 37, General Manager's Files, Director Richard M. Freeman's Correspondence Files, 1977-1986, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>120</sup> Reagan's disdain for TVA had been long-standing, see Rick Perlstein, *The Invisible Bridge: The Fall of Nixon and the Rise of Reagan* (New York: Simon & Schuster, 2014), 386, 402. For the Reagan administration's stance towards TVA, Hearing on Tennessee Valley Authority Oversight, July 30, 1985, Subcommittee on Regional and Community Development, Committee on Environment and Public Works. Senate; Committee on

engine of development, progress, and modernity, TVA's disastrous nuclear program, if not entirely damaging its legacy, certainly complicated the public's perception and its viability in Washington.

Beyond an image problem though, safety issues ensnared TVA's nuclear program, and the agency tangled with the NRC in the late 1970s and 1980s over technical problems and violations. In March 1975, a fire at the Brown's Ferry nuclear plant in Alabama caused a stir among the public and generated alarming headlines, among them "How We Almost Lost Alabama."<sup>121</sup> Publicly, TVA blamed its safety problems on the agency's salary cap because no TVA employee could be paid more than a member of Congress, and they argued that their inability to keep effective management hindered the nuclear program.<sup>122</sup> Despite this, TVA's records indicate a lax attitude towards safety existed among employees. TVA executives acknowledged that "poor attitudes towards safety/quality still prevail, even after the Brown's Ferry fire."<sup>123</sup> After cancellations and

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Environment and Public Works, HRG-1985-PWO-0022, S. Hrg. 99-239, Y4.P96/10:S.hrg.99-239.

<sup>121</sup> David Comey, "16 Hours of Nuclear Mayhem: How We Almost Lost Alabama," *Chicago Tribune*, August 31, 1974, Folder: Licensing Two, Box 63: Office of Engineering Design and Construction, Chief Engineer's Files / Office Of Manager's Records, 1933-1980, Hartsville Nuclear Plant Licensing, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta. The article's title plays upon John Fuller's popular exposé of the 1966 Fermi 1 nuclear meltdown, *We Almost Lost Detroit*, published in 1975.

<sup>122</sup> Hearing on Tennessee Valley Authority Oversight, July 30, 1985, Subcommittee on Regional and Community Development, Committee on Environment and Public Works. Senate; Committee on Environment and Public Works, HRG-1985-PWO-0022, S. Hrg. 99-239, Y4.P96/10:S.hrg.99-239.

<sup>123</sup> "Reflection on TVA Nuclear Program, 1980-1984, Factors Contributing to Poor Performance," May 1, 1984, Folder, May-June 1984, Nuclear Power Plants, Box 48,

increased scrutiny, TVA issued what appears to be an internal memo listing the factors “contributing to poor performance” in their nuclear program, among them: “high turnover,” “poor attitudes towards safety/quality,” “poor definition of work requirements,” “management problems,” and “lack of recognition by management that performance was inadequate.”<sup>124</sup>

In 1985, TVA shut down its entire nuclear operation for several years, leaving the only operating plants, Brown’s Ferry and Sequoyah, in a temporary holding pattern while the agency addressed a litany of problems. With this, TVA reached a bitter interregnum, one that left its once ambitious nuclear program damaged and endangered the agency’s future. The nuclear program restarted in 1988, and finally, in 1996, the long-delayed Watts Bar Unit 1 went online—twenty-three years after receiving a construction permit. More recently, TVA has led the way in the recent nuclear revival, invigorated by increasing concerns about climate change, and Watts Bar Unit 2 should go online in 2016.

Today, remnants of what TVA once heralded as the “world’s largest nuclear plant” slowly decay in rural middle Tennessee.<sup>125</sup> The site’s scattered warehouses function as TVA’s storage unit, a glorified closet for miscellaneous parts the agency periodically auctions, and the agency categorizes the land as “inventory.” While the majority of the site remains in TVA’s possession, in 2002, the agency sold 554 acres to

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General Manager’s files, Director Richard M. Freeman’s Correspondence Files, 1977-1986, Tennessee Valley Authority Records, Record Group 142, National Archives and Records Administration—Atlanta.

<sup>124</sup> Ibid.

<sup>125</sup> TVA denied my request to visit the site, citing “active maintenance.”

the Four Lake Regional Industrial Development Authority, now known as Tennessee Central Economic Alliance.<sup>126</sup> The organization, TCAE, orchestrated the development of the land into an industrial center, and soon thereafter, a new conflict emerged when Louisiana Energy Services (LES) sought to build a uranium enrichment facility on the recently purchased land. The local community reacted swiftly, pointing out the absurdity of placing the facility on the banks of the Cumberland River. Echoing criticisms from an earlier era, one resident lamented the inequity:

I know in today's climate that any job is a good job, but can't the Tennessee Economic and Community Development office find jobs for Trousdale county residents that don't involve mopping floors or cleaning toilets? This would be a much safer choice than a uranium enrichment plant.<sup>127</sup>

While LES's plans for the enrichment facility failed, more recently TCAE attracted Correctional Corporations of America (CCA) to build a prison on the site.<sup>128</sup> Over forty years later, rural communities like Hartsville continue to search for means of survival, even if that entails choosing mass incarceration over uranium enrichment.

For those born in the region after World War II, accustomed to the region's sprawling metropolitan areas, the presence of a cooling tower in an otherwise rural, bucolic setting thwarts expectations. Its presence feels wrong, taking with it a certifiable and authentic southern landscape not yet occupied by the hallmarks of modernity. As a sense of place grounded in the environment disappears, perhaps the desire for locating a more authentic South, amplifies the disorientation produced by Hartsville's nuclear ruins. The lone cooling tower begs for the folly parable, where man toils relentlessly for an

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<sup>126</sup> For more on TCEA, see <[http://tennesseecentral.org/about\\_us/history](http://tennesseecentral.org/about_us/history)>

<sup>127</sup> Kimberly Potts, letter to editor, *The Tennessean*, September 20, 2002, 18A.

<sup>128</sup> CCA was founded in Nashville, TN in 1983.

unrealized goal that brings unforeseen costs. The tower's presence evokes the uneven process of "modernizing" the Tennessee Valley, and by extension, the American South.

While not yet canonized in southern history, the cooling tower memorializes TVA's sprawling restructuring of the landscape and a period in which an overriding faith in the relationship between cheap electricity and economic growth energized the nuclear boom. By bulldozing local history and replacing it with an idle cooling tower, TVA left Hartsville with nuclear ruins and nuclear ghosts. Over the course of its existence, TVA's reordering of the Valley has required tabulating over thirty-thousand human graves, some moved and others merely recorded—never mind the waterways, the vegetation, environments destroyed or permanently altered, the wildlife forced into new habitats, and communities submerged underwater.

The locals, decades later, still feel betrayed, and some are suspicious of TVA's project. From a pragmatic perspective, TVA's continued ownership of the land and the scattered warehouses are merely a product of bureaucracy and business. TVA maintains the land as an asset, thereby boosting its financial picture, while justifying its continued existence in Hartsville by storing inventory in the site's warehouses. But at least one local, suspects otherwise, and believes the Hartsville site is part of a larger government conspiracy, where helicopters cloaked in darkness move covertly around the site, strange humming noises infiltrate local airwaves, and electrical problems suggest a secret agenda—all occurring behind the site's gates.<sup>129</sup> If most locals dismiss the cooling tower as a "used beer can," and more likely, dismiss TVA, others spin yarn, desperately searching for other explanations. The history of nuclear power, and the complicated

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<sup>129</sup> Ted Randall, "Hartsville Nuclear Plant Incident,  
<http://www.usufocenter.com/ufologist/general/hartsville2.html>.

relationship people had with it during this period, is characterized by more than fears of radiation or rising utility bills. Hartsville's history suggests that debates about nuclear power also exposed a rural and urban divide, and a complicated matrix of bureaucratic, legal, and political forces that subordinated local autonomy, knowledge, and history for another New South scheme.

## CONCLUSION

Still, comrade, the running of beasts and the ruining heaven

Still captive the old wild king.

---James Agee, *Let Us Now Praise Famous Men*

I've lived in at least two Souths. One is an affluent South, with slick shopping centers, gated communities, and feel-good religion. The other is a dirt-poor South in eastern Tennessee. In that South, I spent time in manufactured homes, found nothing unusual about defunct cars in front-yards, and swam in abandoned quarries filled with unnatural, milky blue-green water. I became well-acquainted with poor, white people who lived hard and died sooner than the rest of us. While I had the benefit of privilege, the strange geography of south Knoxville, Tennessee meant neat, middle-class homes mixed with trailer parks and Superfund sites. Less than a mile away from my childhood home were two sites of staggering industrial contamination.<sup>1</sup>

One, the David Witherspoon, Inc. site, located in a dilapidated section of south Knoxville known as Vestal, operated as an "industrial landfill."<sup>2</sup> From the 1950s to 1974, the landfill legally operated, but evidence suggests illegal dumping activities continued until 1983. From 1966 to 1969, the Atomic Energy Commission licensed the David Witherspoon company to receive radioactive metal from the weapons installation

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<sup>1</sup> The site not discussed here is the Smokey [sic] Mountain Smelter.  
<https://cumulis.epa.gov/supercpad/cursites/csinfo.cfm?id=0406753>

<sup>2</sup> The Witherspoon site is comprised of three "individual" sites adjacent or close to one another.

complex in nearby Oak Ridge, Tennessee.<sup>1</sup> Over two decades, a slow, incremental process of environmental contamination occurred, or rather, what scholar Rob Nixon has called “slow violence.”<sup>2</sup> An assortment of toxic contaminants, like PCB, lead, and mercury consorted with the radioactive isotopes of enriched uranium and thorium. What the people living around the landfill had suspected for years became publicized after a former Witherspoon employee, Dorothy Hunley, died from a rare type of bone cancer.<sup>3</sup> Sparked by Hunley’s death, some members of the community formed “Project Witherspoon,” and in 1990, the group and approximately one hundred people, held a “March Against Toxic Waste” in Vestal. Future Vice President and Tennessee Senator Al Gore Jr. (D-TN) attended the event and echoed the calls for action.<sup>4</sup>

Because the Witherspoon site did not fulfill the EPA’s requirements for a Superfund site, the responsibility for remediating the area fell to the state of Tennessee. Like many other cases of hazardous industry run amuck, the entities so willing to ship their waste to sites, were rarely willing to take responsibility for the cleanup unless legally compelled to do so. In 1992, David Witherspoon claimed his company could not pay for the site remediation, and the Department of Energy begrudgingly removed 232

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<sup>1</sup> Department of Energy, “Work Plan for the Radiological Survey for the David Witherspoon, Inc. Landfill, 1630 Site, Knoxville, Tennessee (DOE, July 1996); John Nolt, “Injustice in the Handling of Nuclear Weapons Waste: The Case of David Witherspoon, Inc.,” in Michele Morrone and Geoffrey L. Buckley, eds. *Mountains of Injustice: Social and Environmental Justice in Appalachia* (Athens: Ohio University Press, 2011).

<sup>2</sup> Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, Mass: Harvard University Press, 2011).

<sup>3</sup> John Holt, “Injustice in Handling Nuclear Weapons,” 126.

<sup>4</sup> Ibid., 132.

drums of waste from the site.<sup>5</sup> After years of sporadic action and nearly thirty-two million dollars spent, officials declared the Witherspoon site cleanup complete in 2009. The DOE shipped 15,647 truckloads of materials from Witherspoon back to Oak Ridge for disposal.<sup>6</sup>

The history of Vestal's atomic landfill resembles others in the environmental justice oeuvre, but in this case, I lived near it. As a child, I had a vague notion it was polluted, but it seemed unremarkable—simply another junkyard in a place full of trash, biker bars, and run-down buildings. Like the “strange juxtaposition” of Louisiana’s chemical corridor and former sugar cane plantations, I knew a dirt-poor South, where objects of supreme ugliness nested in the foothills of the Appalachian mountains and along the banks of the Tennessee River.<sup>7</sup>

The recent trend in southern history post-World War II, with some exceptions, has emphasized another South: affluent or middle-class, Republican, suburban, metropolitan, and evangelical.<sup>8</sup> These studies are important, but they only tell part of the story. The transformation of the modern South only reached so far. Look twenty or thirty miles beyond the edges of Atlanta or Charlotte, or travel to the decrepit corners of post-

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<sup>5</sup> Holt, 135.

<sup>6</sup> “David Witherspoon Cleanup Completed,” <http://www.oakridge.doe.gov/em/ssab/Publications/Advocates/10-09.pdf>

<sup>7</sup> Barbara L. Allen, *Uneasy Alchemy: Citizens and Experts in Louisiana’s Chemical Corridor Disputes* (Cambridge, Mass: The MIT Press, 2003).

<sup>8</sup> For review essay on topic, see Matthew D. Lassiter and Kevin M. Kruse, “The Bulldozer: Suburbs and Southern History Since World War II,” *Journal of Southern History* 75, No. 3 (August 2009): 691-706. Paradoxically, the authors call for more suburban oriented histories, but the field has grown since 2009.

industrial Appalachian cities, and the absurdity of the modern South appears fully on display.

In that vein, the impetus for “Radioactive Dixie” came after reading about Barnwell’s nuclear waste site. Barnwell piqued my interest because it defied expectations; a community not only wanted a radioactive waste dump, they expressed pride in their twenty-seven million cubic feet of atomic garbage. The reasons for their stance appeared more complicated than the accusations of ignorance levied at them. Barnwell’s history suggested that the rural South still existed and still mattered after 1945. Those histories, however, have largely fallen out of favor as the “Dixie Rising” narrative has come to dominate.<sup>9</sup>

Grand Gulf and Port Gibson, St. Charles Parish, Hartsville, and Barnwell comprise, if not a counter-narrative, an important addition to modern southern history. They are the kinds of places where cooling towers are built and discarded with little care, and more importantly, where the rural, sparsely populated areas located near nuclear plants and radioactive waste disposal sites are mostly ignored. Studying the region’s nuclear sites further illustrates how technological and environmental risks reflect an ordering of sorts, and how the systems devised to manage, to tax, and to regulate these large-scale, high-risk technologies bear the “imprint” of society, culture, and politics.<sup>10</sup> The power plants and the communities studied here tell us about these arrangements of power, one that many groups sought to reorder to their benefit.

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<sup>9</sup> Peter Applebome, *Dixie Rising: How the South Is Shaping American Values, Politics, and Culture* (Crown/Archetype, 2012).

<sup>10</sup> Langdon Winner, “Do Artifacts Have Politics?” *Daedalus* 109, No. 1 (Winter, 1980): 126-127.

Beginning in the 1950s, southern politicians, industry figures, federal officials, and the region's universities sought power through atomic energy. They sought to wrest power from the federal government in nuclear regulation, pursued subsidies from the Atomic Energy Commission to better compete with other regions, and wanted to wave the "atomic talisman" to ward off perceptions of a backwards, anti-modern South. During the 1970s and 1980s, a new class of moderate, southern governors, led by Jimmy Carter and Bill Clinton, challenged the region's nuclear enthusiasm. Those battles sometimes proved politically expedient and paved the way for future political success, while others backfired, as Carter's fight over the Clinch River Breeder Reactor and the Barnwell Nuclear Fuel Plant shows. Buoying these efforts, the South's anti-nuclear rebels never shared the numbers of anti-nuclear groups in California or Germany, but they offered an important critique of unmitigated development and unchecked technology. Their efforts, along with the journalists who relentlessly covered the period's utility scandals, helped expose shoddy construction, substandard safety assurance measures, and encouraged greater accountability from energy conglomerates.

Nuclear power survived two decades of controversy, albeit not unscathed, but continues to send power to the grid today. In South Carolina, nuclear power supplies approximately fifty percent of the state's electricity. Growing concerns about climate change and federal subsidy programs supported by the administrations of George W. Bush and President Barack Obama encouraged a small nuclear power revival in the past decade. While a number of utilities sought new reactor licenses, the resurgence has been tempered by construction costs.<sup>11</sup> Despite those obstacles, the South's nuclear reputation

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holds true; the only new reactors currently under construction or nearing commercial operation are located in Tennessee, South Carolina, and Georgia.

When nuclear revival began in 2003, Entergy reconsidered finishing Grand Gulf Unit 2 in Claiborne County, Mississippi, and the community largely supported the announcement. Mayor Imelda Arnold told reporters that Grand Gulf’s presence offered Claiborne County “tremendous help,” and concluded “it would be very hard to live here without the tax money.”<sup>12</sup> However, in 2009, Entergy suspended its plans, and so today, Grand Gulf Unit 1 quietly operates alone, powering Jackson, Vicksburg, and the other forty plus service counties.

Even as the plant quietly operates, the road to Grand Gulf is dotted with evacuation signs, reminding visitors and residents alike that danger lurks. At a split in the road, one sign points drivers to Grand Gulf Unit 1, while another sign directs drivers to the Grand Gulf Military Park. When the sun goes down in Grand Gulf, amidst the nuclear plant’s blinking lights and the crumbling remains of an older, tragic place, no doubt it appears “progress-haunted.”<sup>13</sup> In *The Mind of the South*, W.J. Cash juxtaposed the New South’s skyscrapers with the image of Confederate ghosts, in the oft-cited line: “Softly; do you not hear behind that the gallop of Jeb Stuart’s cavalrymen?”<sup>14</sup> When C. Vann Woodward reviewed the book in 1941, he found W.J. Cash’s claims about a progress-haunted South overwrought, and slyly responded that no skyscraper had “called up any

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<sup>12</sup> Ivan Dylko and Jamesetta Walker, “Few Oppose Reactor Expansion,” *Clarion Ledger*, May 30, 2003.

<sup>13</sup> W.J. Cash, *The Mind of the South* (New York: Knopf, 1941), 262.

<sup>14</sup> Cash, 219.

such ghostly echoes.”<sup>15</sup> If only Woodward had stood before Grand Gulf Unit 1, surrounded by the “most broken country” General Ulysses Grant ever saw, he too might have heard the gallop, softly behind, the whirring of machines.<sup>16</sup>

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<sup>15</sup> C. Vann Woodward, review of *The Mind of the South*, by W.J. Cash, *Journal of Southern History* 7, No. 3 (August, 1941): 400-401.

<sup>16</sup> Cash, 219.

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