POWER FOR ALL?
ELECTRICITY AND UNEVEN DEVELOPMENT IN NORTH CAROLINA

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ABSTRACT

Conor M. Harrison: Power for all? Electricity and Uneven Development in North Carolina
(Under the direction of Scott Kirsch)

Many towns in eastern North Carolina face a number of challenges common to the rural South, including high rates of poverty and diminishing employment opportunities. However, some residents of this region also confront a unique hardship—electricity prices that are vastly higher than those of surrounding areas. This dissertation examines the origins of pricing inequalities in the electricity market of eastern North Carolina—namely how such inequalities developed and their role in the production of racial and economic disparities in the South.

This dissertation examines the evolving relations between federal and state agencies, corporations, and electric utilities, and asks why these interactions produced varying social outcomes across different places and spatial settings. The research focuses on the origins and subsequent development of electric utilities in eastern North Carolina, and examines how electricity as a material technology interacted with geographies of race and class, as well as the dictates of capital accumulation. This approach enables a rethinking of several concepts that are rarely examined by scholars of electric utilities, most notably the monopoly service territory, which I argue served as a spatial fix to accumulation problems in the industry. Further, examining the way that electric utilities developed in North

Carolina during the 20th century brings to the forefront the at times contradictory relationships among systems of electricity provision, Jim Crow segregation, the Progressive Era, and the New Deal. Such a focus highlights the important role that the control of electricity provision played in shaping racial inequalities that continue to persist in the region. With most urban areas were electrified in the 1930s, the research also traces the electricity distribution lines as they moved out of cities through rural electrification programs, a shift that highlights the state as a multi-scalar and variegated actor that both aided and impeded electrification efforts by various institutional and corporate entities. Ultimately, I argue that the historical geography of electricity is a critical factor that must be considered in order to adequately understand and address the issues of inequality and poverty that continue to persist in the region.

ACKNOWLEDGEMENTS

When I decided to return to graduate school in 2008 I was basically clueless as to what success in academia entailed. Luckily, I had the support and guidance of a wonderful group of faculty and colleagues at both East Carolina University and the University of North Carolina at Chapel Hill. At East Carolina University I thank Daniel Marcucci for patiently introducing me to graduate-level research, Ron Mitchelson for his unique ability to find geography in numbers, and Burrell Montz for her support of my academic ambitions. I especially thank Jeff Popke for his careful critique of my writing (which I continue to need!), pushing me into the world of critical theory, and walking me through the process of academic publishing. At University of North Carolina, I thank John Pickles for forcing me to understand what a methodology really is, Alvaro Reyes for introducing me to the world of critical race theory, and Gaby Valdivia for our frequent conversations about materiality and energy. Finally, I owe a big thanks to Scott Kirsch for his guidance and seemingly unwavering confidence in my ability to write this dissertation.

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numerous times standing on chairs reaching for and opening dusty and long forgotten boxes. Some of these boxes held significant portions of Chapter Three.

My family has been critical to both the origins and completion of this project. Thanks to my mother in law, Sally St. John, who first inadvertently introduced me to the problem of energy poverty. Thank you to my own parents for their support and the huge and delicious Sunday night dinners that fueled numerous busy weeks. Also thanks to my Mom for asking me how my 'paper' was going. It is finally done, Mom.

My six years in graduate school were bookended by the birth of two children: Beatrice in 2009, and Meg in 2013. I never realized how much more productive I would be after having children, nor how much fun it would be to stop working and just play. A big thanks to them for putting graduate school in perspective! More than anyone else, though, the good parts of this dissertation are the result of my wife, Sayward. She inspired me to go back to school six years ago, and has read countless bad paper drafts and heard countless terrible practice presentations – all of which were immeasurably better after her help. I cannot thank her enough for putting her own life and aspirations on hold while I completed school, nor can I express how excited I am for the next chapter in our life together to begin.

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LIST OF ABBREVIATIONS

CP&L	Carolina Power and Light
CPCG	Citizens for Preservation of Constitutional Government
CWIP	Construction Work in Progress
EBASCO	Electric Bond and Share Company
EMC	Electric Membership Corporation
EPIC	Electric Power in the Carolinas
FPC	Federal Power Commission
FTC	Federal Trade Commission
GE	General Electric Company
NCEMPA	North Carolina Eastern Municipal Power Agency
NCMPA1	North Carolina Municipal Power Agency 1
NCREA	North Carolina Rural Electrification Authority
NRECA	National Rural Electric Cooperative Association
REA	Rural Electrification Administration
TVA	Tennessee Valley Authority
VEPCO	Virginia Electric Power Company

Chapter 1: Introduction: Energy and Uneven Development

On an early January evening in 1902 the formerly dimly lit Main Street of Rocky Mount, North Carolina, burst into light. Main Street merchants, many of whom had lobbied the town's Board of Commissioners for the lighting upgrade, kept stores open longer to take advantage of the crowds that had gathered to witness the lighting. Several of the Board of Commissioners were on hand, watching with some satisfaction as the municipally owned street lights extended daylight while the municipally owned power plant whirred and released its sooty smoke several blocks away. Within several years, the revenues from electricity sales would far outstrip costs, and these 'profits' would begin funding a substantial portion of municipal operations. To the Board, electric lighting was symbol of progress and the growing stature of a small agricultural crossroads as it rapidly industrialized and grew in the early 20th century, and proof that a municipality could provide these services. However, this progress and the provision of services was selective, as by the mid-1910s African Americans desiring electric lighting in their homes would be directly denied this service.

At the same time as the municipal system began in Rocky Mount, private electric companies were starting to provide service to towns all over North Carolina. In 1906, three such companies would merge in the city of Raleigh, the capital of North Carolina, located about 60 miles to the west of Rocky Mount. Backed by an off-

shoot of General Electric, Carolina Power and Light, as the new electric utility was called, began growing rapidly. By the mid-1920s, it was one of the largest power companies in North Carolina, and its stock, traded on the New York Stock Exchange, was among a group of rapidly growing public utility stocks taking Wall Street by storm. The company had residential and industrial customers throughout eastern and western North Carolina, and was obtaining franchises to serve cities and towns throughout the state. By the early 1930s, however, CP&L would be embroiled in scandal, with Congressional hearings investigating how its growth was enabled by years of financial chicanery.

Even while cities and towns across the state were beginning to be illuminated by a mix of private and municipal electric utilities, most rural areas did not have electricity. In fact, in 1930 only 3.2% of North Carolina farms had electricity service. The federally funded Rural Electrification Administration helped rural electric cooperatives form across the country in order to change this. Numerous electric cooperatives formed in North Carolina, and by the mid 1950s, most rural areas of North Carolina had electricity service and the program was considered an enormous success. Yet these accomplishments ignore how the process of electrification actually proceeded. Rather than the democratic and cooperative process rural electrification is often portrayed as being, the plans for rural electrification were driven by racially tinged statistical aggregations of territorial value.

Today all three types of electric utility – municipally owned, privately owned, and cooperatively owned - continue to operate in North Carolina. The story of North

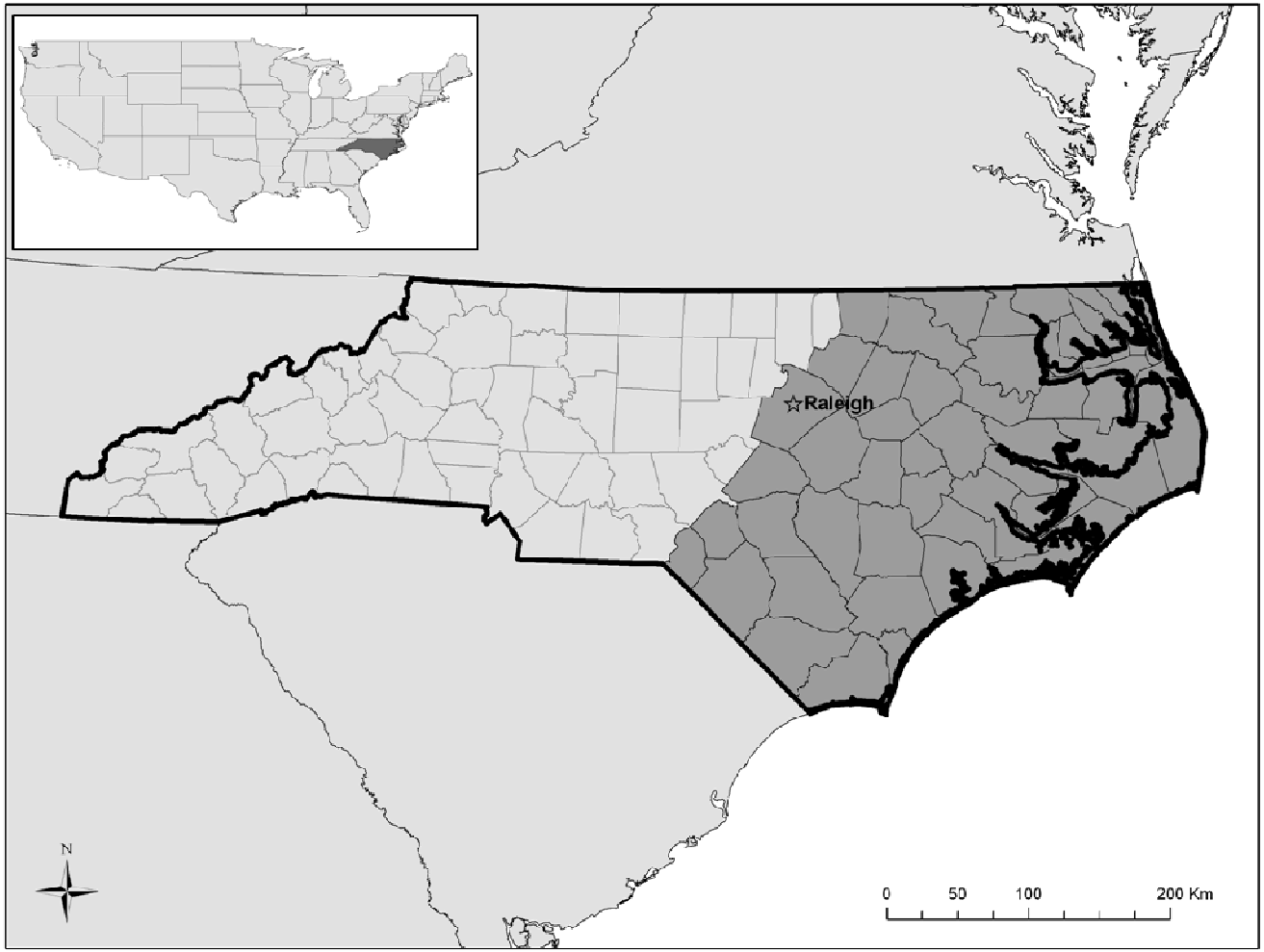
Carolina's electrification is often told as one of benevolent institutions striving to bring the 'gift' of electricity to an eager public (see for example Durden 2001; Beck 2002; Constantinos et al. 1985; Riley 1958). The typical narrative describes the price of electricity service decreasing from 1900-1965 as a result of technological improvements in electricity generation and distribution, meaning more and more customers were able to afford it. With greater electricity use, the argument continues, comes an increase in leisure, freedom, and prosperity. Electric utilities were portrayed the pillars of the community – reliable, trustworthy, and providing a necessity for modern life.

This dissertation presents an alternative view of the history of electricity in North Carolina, one in which electricity is not considered a neutral technology, but rather a material substance that interacts with the political economic forces of capital accumulation in a particularly racialized geographic setting. All of these forces interact to produce particular spatial and territorial configurations that have decidedly uneven impacts. In eastern North Carolina (Figure 1.1), the results of the over one hundred year history of electricity are significant differences in electricity price based on where you live, differentials that are causing significant harm to the health and overall well-being of thousands of people in the region.

1.1 The Electricity Landscape of North Carolina

The differences in electricity bills previously described arise in part due to the different types of electric utilities that operate in North Carolina. These can be divided into three categories: investor owned utilities, rural electric cooperatives, and municipal electric systems. Investor owned utilities, often referred to as private

Figure 1.1. Eastern North Carolina



utilities, are the largest electricity suppliers in North Carolina. As of March 2014, two private utilities operate in North Carolina: Duke Energy, which recently acquired Progress Energy, and Virginia Electric Power Company, which serves small portions of northeastern North Carolina under the name Dominion North Carolina Power. After its acquisition of Progress Energy in 2012, Duke Energy became the largest electric utility in the United States, operating across six states. It dominates the energy landscape in North Carolina, serving 75% of the customers and generating nearly 96% of the electricity produced. About 18% of this electricity is sold at wholesale to the rural electric cooperatives and the municipal electric systems (North Carolina Utilities Commission 2013).

Rural electric cooperatives, also called electric membership cooperatives (EMCs), were formed in the 1930s and 1940s with help from New Deal-era legislation designed to spread the availability of electricity into rural areas across the United States. There are 31 operating in North Carolina, 26 of which are headquartered within the state. The territory served by EMCs is generally rural and sparsely populated. While EMCs cover the largest geographic area in the state, they provide electricity to only around 13% of North Carolina residents (North Carolina Utilities Commission 2013). EMCs are non-profit and member owned. They have very little of their own generation capacity, but do have partial ownership stakes in several Duke Energy plants.

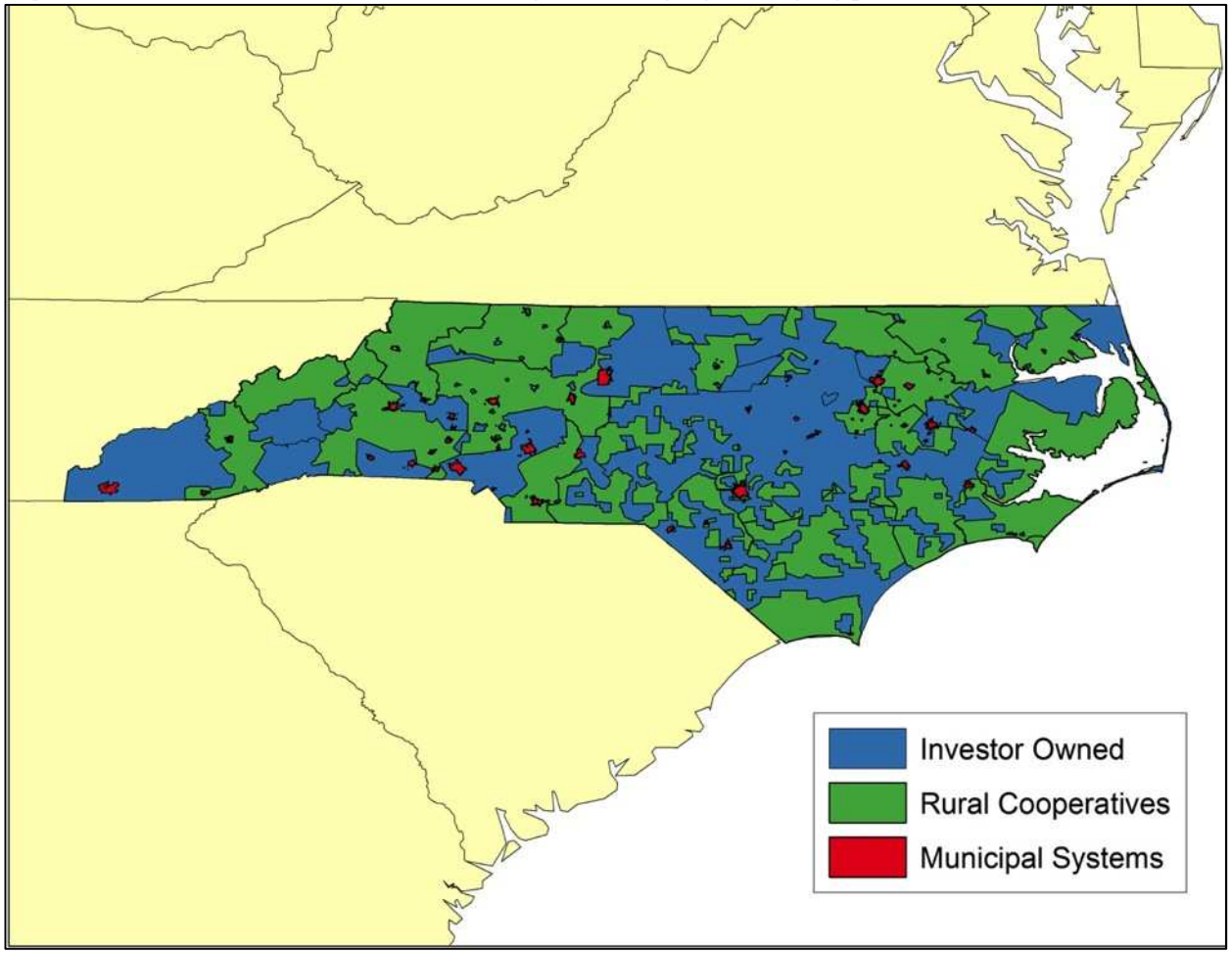
Finally, municipally owned systems provide electricity to their citizens, much as they would water and sewage service. In North Carolina, more than 70 municipalities perform this service, serving over 500,000 people (NC Public Power

2009), most of who reside within their municipal boundaries. These utilities are non-profit, but as mentioned many historically were operated at a 'profit' in order to fund overall municipal budgets. It is during the early periods of municipal utility operation that a number of operational practices were put into place that served the racial ideologies of white supremacy. While many of these towns initially had their own electricity generation capacity, most began buying power at wholesale from private utilities by the 1960s. In the late 1970s, several municipalities bought into several electricity generation facilities and it is in these towns, particularly those located in the eastern part of North Carolina, that people are facing such high electricity rates.

The electricity market in North Carolina is not deregulated; customers do not have a choice between providers. This makes retail electricity provision highly spatially ordered: the location of a particular home or business determines the electricity provider, and in most cases, the rates the customer must pay. Each type of electric utility in North Carolina has a specific non-competitive service territory[1], but also faces varying levels of regulation from a state utility commission. Private utilities are wholly regulated by the utility commission, which means that requests ranging from issuing stock to raising electricity rates must be approved. EMC and municipal system retail rates are not regulated by the state commission, but they do face regulation of their borrowing and wholesale electricity purchases by a variety of institutions and regulators.

[1] The term 'territory' is used by the utility industry to describe the spatially bounded areas in which they operate, and as such will be used throughout this dissertation.

Figure 1.2 North Carolina Electric Utility Territory by Utility Type



Source. Platt's Electric Power Data, 2011

Table 1.1 Aggregated Electric Utility Data by Type

	Avg Residential Rate (per 1,000 kWh)	Total Area (sq mi)	Total Residential Accounts	Accounts/ sq mi
IOUs	$ 97.68	22,704	3,274,000	144.2
EMCs	$ 115.55	26,659	900,666	33.8
Munis	$ 122.91	517	494,418	956.3

Source. Platt's Electric Power Data, 2011

Table 1.2 Rates and Demographics of Top 10 Highest Income Utility Territories

Company Name	Utility Type	Residential Rate (per 1000 kWh)	Percent African American	Median HH Income
Wake EMC	EMC	$ 117.97	16%	$ 84,693
Apex Municipal System	MUNI	$ 120.57	3%	$ 76,885
Union EMC	EMC	$ 108.61	11%	$ 67,449
Piedmont EMC	EMC	$ 128.48	15%	$ 64,547
Town of Walstonburg	MUNI	$ 129.48	7%	$ 61,250
EnergyUnited EMC	EMC	$ 96.07	6%	$ 56,318
Cornelius Muniicpal System	MUNI	$ 91.70	9%	$ 56,184
Carteret-Craven EMC	EMC	$ 107.88	9%	$ 52,161
Huntersville Municipal System	MUNI	$ 88.16	16%	$ 51,953
Duke Energy	IOU	$ 88.63	24%	$ 50,112

Source. Platt's Electric Power Data (2011) and United States Census ACS 5-Year Summary File, 2007-2012

Table 1.3 Rates and Demographics of Top 11 Lowest Income Utility Territories

Company Name	Utility Type	Residential Rate (per 1000 kWh)	Percent African American	Median HH Income
Louisberg Municipal System	MUNI	$ 140.09	28%	$ 25,821
Washington Municipal System	MUNI	$ 140.41	46%	$ 25,599
Hamilton Municipal System	MUNI	$ 147.44	55%	$ 24,250
Enfield Municipal System	MUNI	$ 142.82	83%	$ 23,935
Forest City Municipal System	MUNI	$ 107.53	29%	$ 21,750
Selma Municipal Light & Power System	MUNI	$ 136.40	41%	$ 21,205
Windsor Electric Light & Power	MUNI	$ 101.81	63%	$ 20,982
Fountain Electric Utility	MUNI	$ 160.63	33%	$ 20,298
Farmville Utility Dept.	MUNI	$ 154.48	70%	$ 20,192
Scotland Neck Municipal System	MUNI	$ 140.25	82%	$ 18,988
Belhaven Electric Dept.	MUNI	$ 143.93	67%	$ 18,179

Source. Platt's Electric Power Data (2011) and United States Census ACS 5-Year Summary File, 2007-2012

As a result of the varying levels of regulation, different size service territories, and different operational goals, a patchwork of electric utility distribution has emerged in North Carolina, with the rates charged by the different utilities varying widely. As Figure 1.2 and Table 1.1 show, the majority of North Carolina territory is served by EMCs, but the vast majority of residential customers are served by investor owned utilities. In terms of customer density, however, municipal systems lead the way despite serving only 517 square miles of territory. But in general, the retail electricity rates charged by the municipal systems are also significantly higher than those charged in the rest of the state. The uneven development of the distribution system is not just differentiated in terms of rates or area coverage, but can also seen in terms of the demographics of the customers in each territory. While the exact demographics of customers served by private utilities and EMCs are not available, it is possible to estimate by combining United States Census Data with utility territories using ArcGIS[2]. Tables 1.2 and 1.3 show the territories with the highest and lowest median household incomes. While the highest group shows a mix of utility types, two things stand out. First, the municipal systems that are included, particularly Apex, Cornelius, and Huntersville, are the beneficiaries of their proximity to major metropolitan regions. All three serve as bedroom communities to larger nearby cities and have experienced significant population growth in the last 25 years. The second is that the African American populations in these towns are fairly low, especially when they are compared with

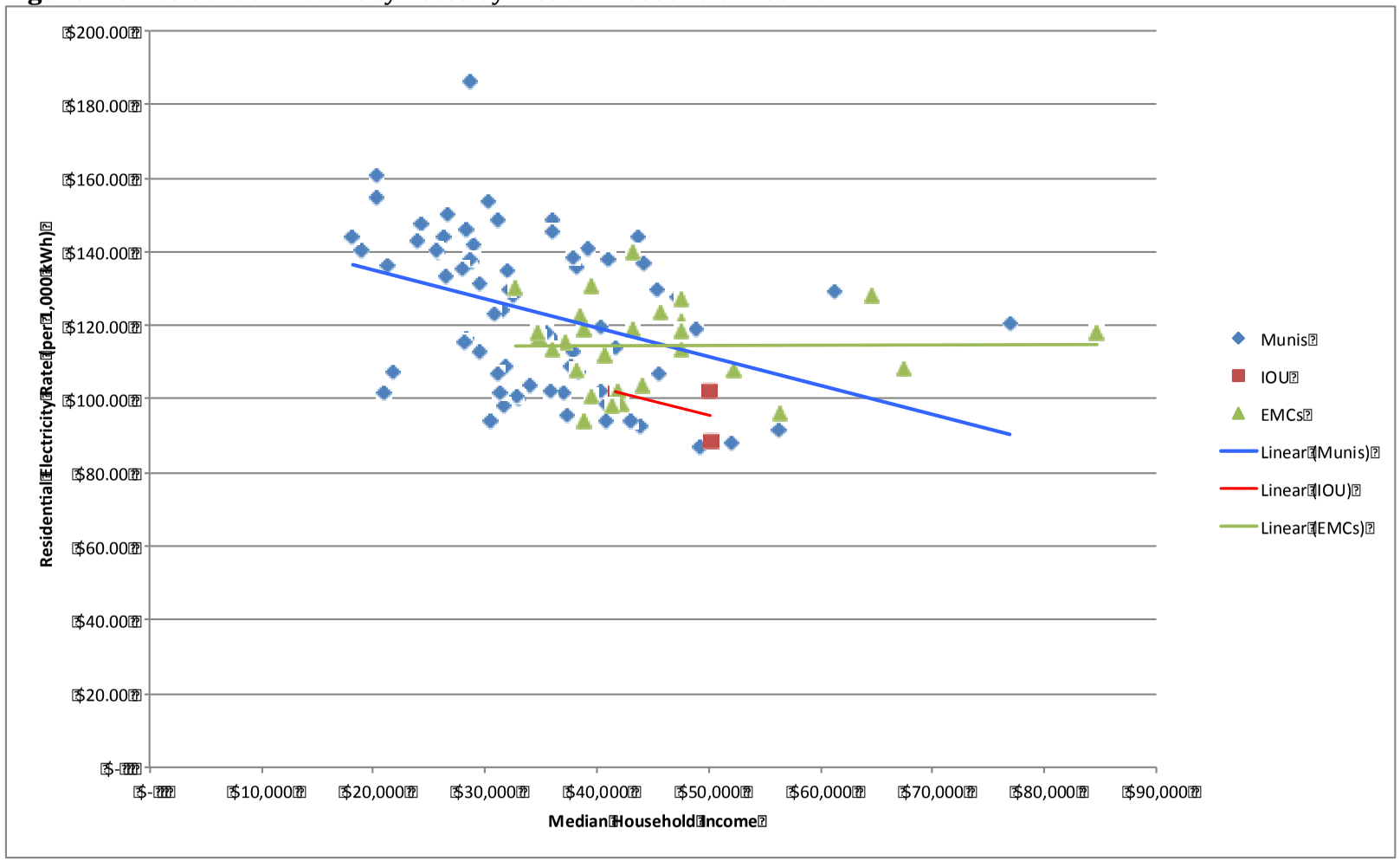
[2] Creating these estimates involved converting polygon census block group data to centroids before spatially joining. The results for municipal territory was checked against actual municipal demographic statistics, which indicated a suitable match.

the towns in Table 1.3. Table 1.3 is comprised entirely of municipal systems, and all of them are located in the eastern part of the state.

A quick look at the tables points to a third trend – it appears that electricity rates are lower in the wealthier territories than in their lower income counterparts. Figure 1.3 charts this relationship, showing a general trend among municipal utilities and investor owned utilities for the price of electricity to decrease as median household incomes in a utility's territory increases. This means that on the whole, regions with greater wealth are being charged less for their electricity. However, this trend does not exist among rural electric cooperatives – as wealth increases among different EMCs, the rates charged largely remain stable. Figure 1.4 relates electricity rates to the percentage of the territories' population that is African American. Again, a fairly consistent trend is evident among municipal systems: the more a city's population is comprised of African Americans, the higher the electricity rates charged tend to be. As in the case of incomes, differences in race appear to have little impact on the rates charged by EMCs.

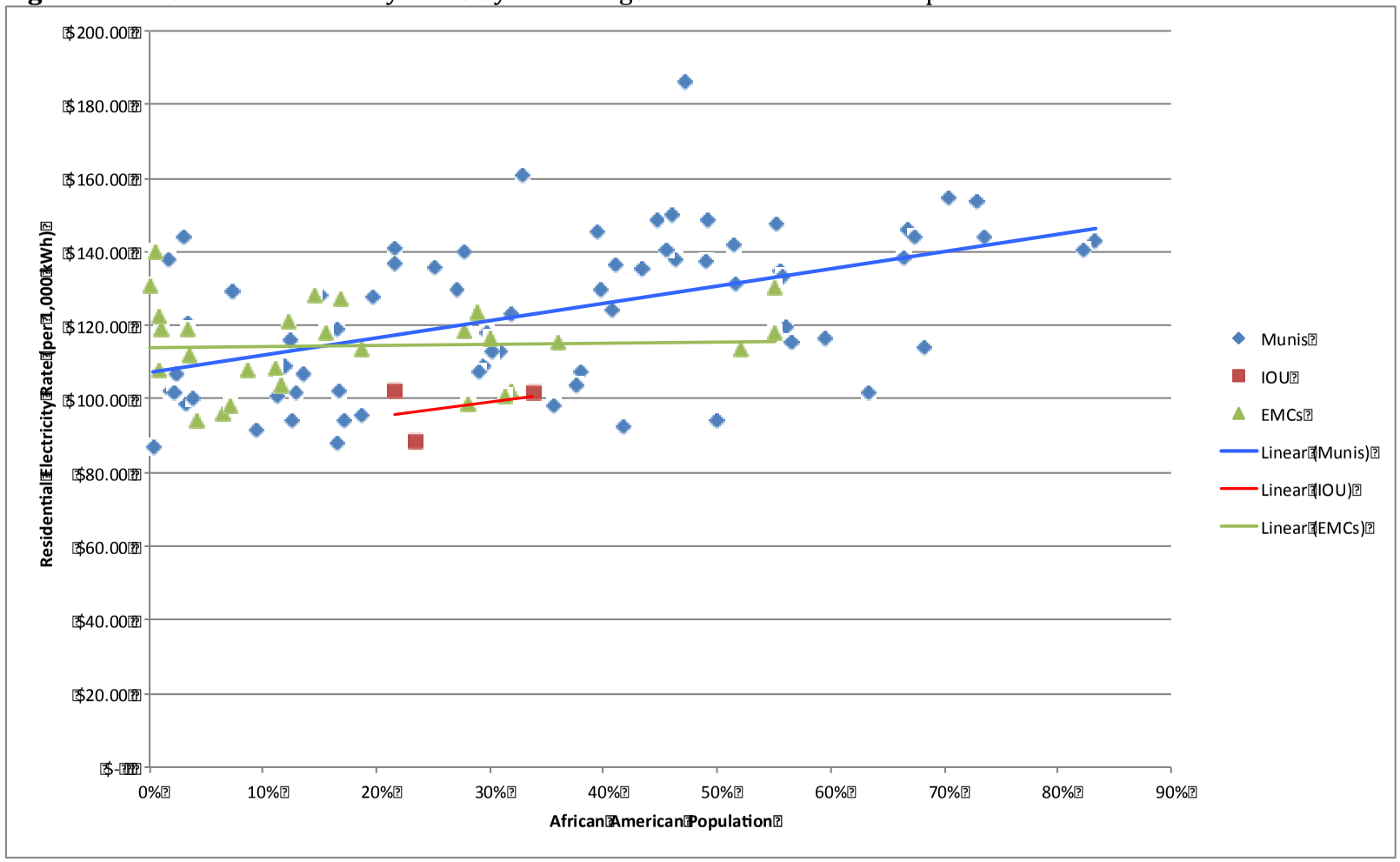
The preceding maps and figures raise significant questions about electricity provision in North Carolina. Why do some utilities charge rates that are significantly higher than others? And why do those utilities tend to have a higher proportion of African Americans living in them? In a very general way, we can answer the question of why electricity rates in the municipal systems are so high. The variance in cost can largely be attributed to an investment made by a group of 32 municipal electric utilities, like the one Rocky Mount, in the Shearon Harris nuclear power plant. The Shearon Harris plant (whose planning and construction phase lasted

Figure 1.3 Residential Electricity Rates by Median Household Income



Source. Platt's Electric Power Data (2011) and United States Census ACS 5-Year Summary File, 2007-2012

Figure 1.4 Residential Electricity Rates by Percentage of African American Population



Source. Platt's Electric Power Data (2011) and United States Census ACS 5-Year Summary File, 2007-2012

from 1970 to 1987) was jointly funded by these towns and Carolina Power and Light (CP&L), an investor-owned utility. Carolina Power and Light, as previously mentioned, started in Raleigh, North Carolina in 1906. During the course of Shearon Harris' construction, massive cost overruns left investing towns heavily indebted and forced to charge exorbitant electricity rates to pay down their debt. But while the current high electricity prices in the investing towns can be traced to this moment, there are a number of unanswered questions that remain about the development of North Carolina's geographical patchwork of energy provision and its implications today. This dissertation seeks to answer two sets of questions related to the production and consumption of electricity in eastern North Carolina.

The first set of questions concern the electric utility service territory and different utility ownership forms. As Figure 1.3 shows, three territorially bounded types of electric utilities control electricity provision in North Carolina. Why are electric utilities territorially bounded? Why are there three different types of electric utility, all serving their own unique territory? Why are some areas served by private utilities, while others by municipal systems? Why, or even how, were municipal systems able to persist even as private utilities began producing electricity for far cheaper and on a scale far greater than a single town could? Answering these questions involves understanding how electric utilities came to terms with a series of challenges to their profitability and viability, most notably the issue of high fixed costs and challenges related to the materiality of electricity. As Chapter Two shows, control over the production of space, as shown by the

development of the electric utility service territory, and the relationship between industrial and financial capital play a crucial role in overcoming these challenges.

The second of questions considers the temporal and geographic context in which North Carolina electric utilities developed. As utilities were starting up during the first decades of the 20th century, the racialized geographies of Jim Crow and the Progressive Era undoubtedly affected their development. How did the networked infrastructure of central station electric utility service, as directed and shaped by local and distant industrial, academic, and political elites, account for race, benefit from race, and even work to *produce* racial differentiation in eastern North Carolina? Following the mundane and everyday world of electric utility operations, and their connections to racial and electric power politics in Chapters Three and Four makes this possible.

Answering these questions requires a theoretical framework that is able to draw together thinking on energy as a material substance, issues of race, and the political economy of uneven development. Drawing together such a comprehensive and coherent framework poses a challenge. Marxist political economy, for example, has been critiqued for both its undertheorization on matters of race (e.g. Du Bois 1940; Wilson 2002) and for an anthropocentrism that denies the agency of non-human objects (e.g. Castree 2002; Bennett 2005). Actor network theory, on the other hand, has also been met with claims that it ignores issues of race (e.g. Harding 2008) and dismisses the role of political economy (e.g. Castree 2002). Postmodern accounts of race, on the other hand, have been dismissed as politically divisive and lacking the 'concrete' class-based political economic critique that is required to

foment social change (e.g. Harvey 1996; Castree 1999). The sections that follow represent an attempt to grapple with this challenge, ultimately pointing to several key themes that help to understand the place of energy and race in the capitalist mode of production, broadly conceived.

1.2 Energy and Historical-Geographical Materialism

Historical-geographical materialism starts with the viewpoint that historical transformations and processes are knowable and explainable based on material conditions, and that historical change should be understood as arising from contradictions embedded in the mode of production. While the mode of production can be defined in quite narrow terms that focuses solely on commodity production and exchange, Kirsch (2009) argues that our conception of production should be expanded to include the social, political, and cultural forms and institutions that are essential to the production and reproduction of capitalism as a process. By broadening our definition of production, historical geographical materialism can develop into something more akin to an approach for examining "the active construction and transformation of material environments (both physical and social)" (Harvey 1984: 6), a method that interrogates how space "acquires meaning, significance, resonance, even a particular form in and through the multiple relations with which it is infused and through which it becomes produced" (Swyngedouw 1999: 94). This broad conception recognizes that the reproduction of capitalism, which requires the production of a range of social, political, and cultural geographies, is the driver of the production of various uneven landscapes of development through processes that are neither static nor neutral. Further,

geographical space is conceptualized as "both a force and a materialized relation of production" (Swyngedouw 1992: 418) that produces and is produced by certain territorial forms of organization. The tensions and contradictions that arise from the mode of production give rise to uneven spaces and rounds of investment and disinvestment that are, in turn, essential to the reproduction of capitalism over time (Smith 2008).

These analyses thus build from one of Marx's (1990) key points: capital is not a static entity, rather it is a process made up of the flows, circulation, and movement of a variety of social actors, entities, and materials. But at the same time that there is great movement and flow, there is also the need for circulating capital to be transformed into material objects. This is among capital's central contradictions: it has a simultaneous need for both circulation and spatial fixity (Harvey 2006; 2010). This is most clear in the built environment, and particularly the infrastructures that allow for more rapid capitalist circulation. Roads, pipes, electricity distribution lines, and other forms of infrastructure provide productive benefits to all who have access. But the large-scale investment that is required for their production and maintenance is frequently beyond the means of an individual capitalist, thus the necessity for state action and intervention. This is a central feature of Lefebvre's 'state mode of production', which suggests that "states have come to play a key role in the management and maintenance of capitalist growth at all spatial scales" (Brenner and Elden 2009: 17). As such, to Lefebvre the crucial role of the state in supporting capitalist accumulation processes means that a critique of capitalism

requires that the role of the state in the reproduction of capitalism be fully examined.

Energy, and in particular fossil fuel based energy, has been essential to the shift from pre-capitalist to capitalist modes of production (Altvater 2007) and "is constitutive of what Henri Lefebvre referred to as the social production of space" (Huber 2013a: 8). This is particularly evident in the role of oil in forming the particular American spaces of suburban high consumption and neoliberalism. But it does more than that – oil also contributes to the production of ideologies and expectations, and is a force that shapes social reproduction and contributes to "the real subsumption of life under capital" (Huber 2013a: xix). In what follows, three key points that emerge from critical geographies of energy are discussed. The first is that the actual material properties of energy have a shaping effect on those spaces that are produced in conjunction with energy's extraction, distribution, and consumption. Second, energy production and distribution under capitalism pose particular challenges that require particular state, institutional, spatial, and scalar fixes to alleviate or postpone crises of production. Finally, and related to the first two points, energy extraction and provision are central to the production of very uneven social and cultural geographies.

1.3 Energy, Materiality, and Politics

Fossil fuels, and the connections that are formed in the course of their extraction, distribution, and consumption, have the potential to open up or close down different forms of democratic politics (Mitchell 2009). Following the carbon, as Mitchell urges us to do, makes it possible to trace the web of connections that

span from fossil fuels, principally how fossil fuels are converted into forms of socio-technical organization, financial circulation, and political power.

The view that forms of carbon extraction and consumption can give rise to certain political subjectivities has been taken up in depth by Valdivia, who argues that it is through the material and discursive properties of petroleum that a variety of political mobilizations have occurred in Ecuador (Valdivia 2008; Perreault and Valdivia 2010). Similar ideas have been brought to the United States context by Huber (2013b), who provides a historical analysis of the relationship between oil and the Fordist regime of accumulation. In doing so, Huber argues that the creation of the "high energy economy", one predicated on cheap and plentiful fossil fuels, was essential to the post WWII period of labor productivity gains and the growth of the consumer economy. Oil, in the form of gasoline, was central to this shift, fueling "a certain kind of mobility characterized by an individuated command over space" (Huber 2013a: x). This, he argues, provided the foundations for post-Fordism and neoliberalism, a shift that Huber describes as the entrepreneurial way of life.

The unique biophysical properties of oil are important to the production of particular political subjectivities and political economic formations. Oil is dense in energy content, meaning that the ratio of oil's 'ability to do work', as energy is often defined, versus its weight and volume is substantially higher than any other fuel. Further, oil has a propensity to flow, meaning that it can readily be transported long distances by pipelines more cheaply than an equivalent amount of coal, for example. Finally, oil has a remarkable chemical composition that allows for its refinement and combination into a wide variety of products aside from gasoline – anything from

plastics to fertilizers to petroleum jelly. But Huber also takes care to point out that oil is much more than this. While oil plays an important role in the production of absolute spaces[3], it is also important to enabling ways of living, feeling, and thinking (Huber 2013a).

Three key points from this work inform this dissertation. First is the importance of the material properties of energy, and the way in which each stage of its extraction, distribution, and consumption produces particular spaces. Following the oil (or the coal), as Mitchell (2009) advocates, allows for tracing of the web of connections that emerges from the 'thing'. This is not to say that the 'material' necessarily be determinative, or that a concern for the material take analytical precedence. Rather the point is that things matter, and that understanding the way in which things interact with cultural, political, and economic geographies is crucial to investigating material conditions (Kirsch 2013). Second, not only are *material* landscapes created through the 'social life' of energies like oil, but also *discursive* ones. Energy is an important part of the creation of an uneven political landscape, as evidenced by the co-existence of a high-energy democracy in the United States with the autocratic regimes of oil producing states in the Middle East. The same energy is central to the production of both. Finally, the material world of natural resources is full of contradictions and paradoxes that can both help and hinder the ability of commercial actors to generate and capture value from resources (Henderson 1998; Bridge 2009). The solution to these problems often involves some interaction of the

[3] Harvey (1985) refers to absolute space as essentially Cartesian space – that which can be readily measured and ordered.

state, which can operate to produce spatial formations beneficial to capital accumulation. The role of the state will be taken up in the section that follows.

1.4 Energy, the state, and territory

Writing about natural resources in 1933, American resource geographer Erich Zimmerman argued that "resources are not: they become" (cited in Bridge 2009:1220). Zimmerman captures in this statement a contradiction central to 'natural' resources: they obtain neither a use nor an exchange value until they undergo a transformation in order to solve a certain problem (i.e. production of steam, internal combustion, etc.). Energy very much fits this description, as oil or coal in the ground does very little underground until it is mobilized and employed within particular socio-technical arrangements[4].

As noted, because energy infrastructures are embedded in material and discursive landscapes, the development of and changes in energy extraction and provision has involved reconfiguring related patterns of economic and social activity (Bridge et al. 2013). Because these changes take place on very large scales, and because of the centrality of energy to modern capitalism (Altvater 2007; Huber 2013a), the state's scalar capacity – its "ability to mobilize landscapes and resources on a very large scale" (Bridge 2014: 120) – pushes it to the forefront in natural resource development. This necessity brings Lefebrve's concept of the state mode of production to the forefront, a pattern that is evident in the state involvement in the

[4] Although an argument can be made that oil underground, or the lack thereof, produces contested material and discursive landscapes around issues such as Peak Oil or drilling in Artic National Wildlife Refuge. However, without oil actually being extracted somewhere, these issues would be moot.

oil industry (Labban 2008), but also in hydropower developments across the world (Kaika 2006; Desbiens 2014).

A central state tactic to facilitating energy development is the creation of territorial solutions to solve, or at least delay, accumulation problems before crisis occurs. While much recent work on the concept of territory is focused on geopolitics (Elden 2010; Crampton 2011)[5], Brenner and Elden's (2009) reading of territory through the work of Lefebvre presents a more open consideration of other territorial formations, principally those that aid in the production of governable political economic formations. They argue for a conception of territory as a historically specific form of politico-spatial organization that enables the management of cyclical or acute economic crises. Territorial configurations, then, represent an attempt by the state, working with a range of actors, to create discrete, delineated, and bounded spaces that foster sustained economic growth. This is evident in the oil industry, which, for example, has complex rules about the governance of subterranean mineral rights (Huber 2013a).

Territories are produced using the particular spatial, political, and economic calculative rationalities (Crampton 2011), which can be directed by goals as diverse as profit-making or ethnic 'purity'. But it is important to note that territories face certain limits if deployed as a spatial fix to profitability problems (Harvey 2006; Brenner and Elden 2009). This dissertation closely considers the development of the electric utility service territory as a spatial fix for the utility industry, and one that is shaped by the biophysical properties of electricity that influence its modes of

[5] Raffestin and Butler's (2012) genealogy of territory and territoriality is a notable exception to this.

production and consumption. But it will also consider the ways in which the monopoly service territory is not a settled concept, rather it is contested and faces its own particular limits. This leads to new contradictions stemming from the state mode of production, which are especially evident when the state takes on conflicted projects itself (such as was the case with Progressivism and Jim Crow in the early 20th century discussed below). Papering over the cracks of capitalism by repeatedly producing territorial solutions and fixes leads to persistent and entrenched uneven geographical development (Swyngedouw 1992; Smith 2008).

1.5 Energy and the production of uneven geographies

Energy's importance to the capitalist mode of production means that it has the potential to contribute to uneven geographical development on a very large scale. This is evidenced by the uneven rise in standards of living made possible by the provision of cheap and abundant fossil fuel energy during Fordism. Increasing wages and more favorable working conditions were a phenomenon enjoyed almost exclusively by white, semiskilled workers, as rural Americans, and especially African Americans, were largely excluded from these improvements (Huber 2013a). This points to the ability of networked resources, such as energy or water, to produce uneven geographies of development (Graham and Marvin 2001). But networked infrastructure convey more than material necessities like water or energy. Once transformed into commodity form by human labor, natural resources become a carrier of not only past labor processes and exploitation, but also have the ability to 'act' in ways driven and shaped by human drives, desires, and imaginations (Swyngedouw 2006). This is evident in modernization projects, for example, where

the promise of emancipation and progress become embodied in a thing – for example water behind a massive dam, and related to this, its ample provision in dry and arid landscapes (Walker and Williams 1982; Swyngedouw 1999b; Kaika 2006). During the initial provision of networked infrastructures in cities, a period Kaika and Swyngedouw (2000) refer to as 'early modernity', connection to these networks was a symbol of prestige and authority. However, those that were excluded were also excluded from power, both literally and figuratively.[6]

The process of resource provision, then, interacts not only with the goals of capital accumulation, but also can work to produce and reinforce discursive and material inequality. In the American South, developing systems of networked infrastructure in the early 1900s meant interaction with legal, political and economic frameworks that were developed to institutionalize segregation and white supremacy (Woodward 1955; Steedman 2012; Cole et al. 2012). In cities and rural areas, local elites worked to shape and alter many political and economic goals and policies (Badger 2007), particularly those emerging from the nationwide Progressive movement. Progressivism encompassed a wide range of goals, ranging from anti-trust legislation and Taylorism designed to reshape the workplace, to movements for women's suffrage and Prohibition aimed at changing dominate social relations.

In aggregate, Wiebe (1967) has defined the Progressive Era as a quest for efficiency and order. In the South, the complex social and political economic ideas of Progressivism were confronted directly by the equally complex social, racial, and

[6] The issue of exclusion from networked resources is taken up in detail in Graham and Marvin's (2001) *Splintering Urbanism.*

political economic workings of Jim Crow segregation. In tandem, Progressivism and Jim Crow segregation operated as the central planning ideologies in many Southern cities during the early 20th century. With a segregation-led division of races on the one hand, and a simultaneous quest for efficiency and order on the other, these ideologies combined in often unpredictable ways to shape the emerging geographies of networked infrastructure in the South (Campbell 1986; Wilson 2002). Ideas of progress and efficiency were also shaped into more subtle methods for the control of races, what Connolly (2009) has referred to as 'technologies of racism'. These 'technologies' include many of the mundane and everyday practices involved in the governance of cities, including zoning, public transit, and building codes. What is important to recognize is that while these tactics were infused and shaped by racist ideologies, they also were employed to ensure conditions appropriate for capital accumulation (Marable 1983; Wilson 2005; Connolly 2009).

Detailed historical analyses have shown how the ideologies and social relations of Progressivism and Jim Crow were actually put into action in particular places. Clyde Woods (1998), for example, focuses on the workings of what he calls the plantation bloc in the Mississippi Valley, a group of former plantation owners that in addition to controlling agriculture, manufacturing, banking, and land also were active in local and state politics and financial policy. Over time, Woods argues, this group came into alliance with Northern capital, a term that describes groups interested in locating branch manufacturing plants, commercial and financial institutions, as well as electric utility interests (Campbell 1986), via a mutual desire to keep the work force non-union and low wage. While the plantation bloc worked

to maintain control over production, Wilson's (2005) examinations of consumption by African Americans during Jim Crow shows that while segregation did not completely prevent African Americans from consumption, it did serve as a spatial limit that could preclude them from the consumption of public goods. Evidence exists that public services were frequently denied to African Americans, even when the denial of services to one segment would harm the population as a whole (Colten 2002). However, the denial of service in the South must be seen as part of sustained efforts by the planter class to remain in power, and not solely a contradictory economic decision. In fact, evidence is clear that attempts to exclude African American access to public goods were part of deliberate attempts to devalue the assets of non-whites (Wacquant 2002; Wilson 2005; Marable 1983).

Historians of electricity, however, have been slow to incorporate ideas of social power and uneven development into their accounts of electrification[7]. While most historians describe the process of electrification in technological and economic terms that ascribe the spread of electricity to simple economic questions of rates and affordability, there are several notable exceptions to this trend. Tobey (1996), for example, charts the uneven spread of electricity in Riverside, California, pointing to the important role of race and class in directing its spread. In doing so, he questions the common modernist narratives of 'technology as freedom'. Nye (1990) also provides a more social history of American electricity, pointing to the various cultural and social interpretations of electricity in the realms of art, literature, and daily life. Kline (2000) argues that people did not always accept electricity with

[7] Morton Jr. (2002) argues that the electric power industry is lightly studied in general in light of its size and societal importance.

open arms, and provides substantial evidence of rural households only accepting electricity on their own terms.

Given the centrality of energy to the reproduction of capitalism, and the centrality of electricity as a form of energy, a deeper theorization of the relationship between electricity, capitalism, and racialized uneven development is essential. This dissertation is an effort to do this. But before proceeding, it is crucial to consider the materiality of electricity in particular.

1.6 The materiality of electricity

Electricity is different than coal or oil. An obvious point, but as a type of energy electricity can become bound up in discussions and analyses of energy more broadly. This section will consider the materiality of electricity in particular.

While electricity occurs naturally in the world (i.e. lightning or static electricity), the ability to control, manipulate, and direct electricity first emerged in the first part of the 19th century, and it was only in the latter quarter of the 19th century that electricity was applied to industrial processes (Mumford 1934). To produce electricity on large scales, an external fuel source is needed to turn the blades of a turbine in order to use magnets inside of a generator to create an electric charge[8]. A variety of 'fuels' can be used to do this, ranging from wind and falling water, both of which directly turn a turbine, to combustible substances such as oil, coal, and uranium that produce heat to boil water to produce steam or gas pressure that turns the turbine. Initially, falling water was the dominant form of producing electricity in the United States, but by the middle of the 20th century steam power,

[8] The exception to this is solar photovoltaic power, which uses silicon semiconducting chips to convert sunlight into an electric charge.

mostly produced from burning coal, became most prevalent. Coal and oil are part of the dead ecologies that power the dead labor of machinery that drove industrial capitalism starting in the mid 19th century (Huber 2013a). By the 1920s, no longer was the combustion of oil and coal directly driving machinery, rather it was being used to produce the *electricity* that powered industry.

In the factory, electric currents provide the link between the dead ecologies of coal and oil and the dead labor of machinery. But as a processed energy, electricity takes on different geographies than the fuels used to produce it. Oil and coal are unevenly distributed subterranean resources that require varying degrees of labor to extract; falling water is located at a particular point along a river; the sun shines more frequently in some places than others; and winds may be stronger and more consistent in a particular location. For electric utilities, as once was true of most industrial location, sites with significant waterpower potential are most desirable, pitting them in competition with one another for rights to a particular site. As steam powered electricity replaced hydropower, electricity production also became less tied to particular monopoly locations along rivers. In the course of these shifts, new geographies were created, with new locational capacities and modes of regulation emerging in order to 'fit' with the new spatial and technological ensembles (Swyngedouw 1992). For steam powered electricity, the shift away from hydropower locations were made possibly by the mobility and high energy density of fuels like coal and oil, which could be shipped by train or pipeline to the particular location of a power plant.

As networked electricity service became widely available, industrial location became less tied to a particular region. But electricity is produced for more than simply powering industry, although that was the primary focus of utilities until well into the 1920s. The distribution of electricity, particularly into the home, produces a set of geographies different from its supply. Rather than be transported via pipelines or trains, once electricity is produced it is transmitted out over a web of distribution lines to the end user. While electricity can productively be thought of as a networked resource emanating from several production points, unlike coal or oil it is not a commodity that can readily be purchased and stockpiled except in very small quantities (i.e. batteries). Once it is produced, electricity instantaneously moves out through transmission grids to its point of consumption. This is a critical point, and has important implications for the way that electric utilities have developed in the United States.

Once electricity comes into the home, the end user rarely interacts corporally with electricity. There is no fire to start, for example, nor coal to shovel into a furnace. As such, households do not use electricity for its own sake, but rather to accomplish social practices as mediated through a variety of electric appliances (DEMAND 2014). This means that electricity itself is not necessarily what a household desires, but rather lighting, heating, cleaning, or entertainment mediated by a lamp, a furnace, a vacuum cleaner, and a television, respectively. As a result of this, and in combination with the decreasing importance of location to electricity generation, territorial competition in the electricity industry is less about finding prime sites of *production* but instead finding prime sites of *consumption*. While

prime sites of consumption are subject to competition, the reverse is also true – sites with low consumption, or sites where dominant groups is society seek to keep electricity consumption low, are easily passed over.

The material properties of electricity have influenced the distinct territorial, industrial, and institutional forms that have emerged in the industry. Electricity cannot be produced on large scales without significant capital investment in costly turbines, generators, and fuels. While it will be discussed in detail throughout the dissertation, it is worth noting that its capital-intensive nature means that similar to the oil industry, a mix of private, state, and quasi-state organizations dominate the industry. Much of the United States electricity industry remains regulated, meaning that the guiding hand of the state looms large in utility operations[9]. In most states, electric utilities operate as 'natural' monopolies: they are granted non-competitive service territories, thereby producing distinctive geographies, as other have shown for other 'natural' monopolies such as water (Bakker 2003). This has implications for the way in which the capture of surplus occurs in the industry. Because producing and distributing electricity is a capital-intensive industry, dead labor, that is, previous labor processes embodied in machines (i.e. generators and wires), and the dead ecologies (Huber 2013a) of fossil fuels, make up a significant portion of capital investment. Because of its relatively small size compared to dead labor and dead ecologies, little surplus value is extracted from living labor, thus the importance of state regulation for utilities. In most cases, rather than allowing the

[9] Even in those states that currently have deregulated electricity sales to consumers, varying levels of local, state, and federal regulation still guide how and where electric utilities can operate.

price of electricity to be determined by the invisible hand of the market, electricity rates are determined by regulators charged with granting a 'reasonable' rate of return on overall investments in fixed capital investments, while also presumably guaranteeing fair rates for consumers.

Scarcity is central to effectively capturing surplus value. As has been shown in the case of oil (Huber 2011; Labban 2008; Bridge and Wood 2008), if a certain commodity does not have sufficient scarcity, it cannot be profitably produced. Electric utilities have a relationship with scarcity that varies considerably with that of the oil industry. Because most electric utilities have their own unique territory, they have the *ability* to produce only as much electricity as they wish, thus creating their own scarcity. For example, if a power plant with a one kilowatt generation capacity operated at full capacity for 24 hours a day for 365 days it would produce 8760 kilowatt-hours of electricity in a year[10]. However, demand for electricity is variable, meaning that while the full 1 kW capacity may be needed at particular times, there will be times when it runs below peak capacity. And because electricity cannot be stored in large quantities, any electricity produced during non-peak demand hours is effectively wasted. But electric utilities are regulated, and the rates charged customers are based on total utility capitalization rather than on the cost of producing electricity. As such, electric utilities have an *incentive* to over-build and produce a surplus capacity (Howell 2011). During periods when electricity use consistently increases (as it did during the first 70 years of the 20th century), this is an effective method of reaping continual profits. However, once growth ceases or

[10] 1 kW x 8760 hr/yr = 8760 kWh/yr

slows, the inability to achieve efficiencies by squeezing labor poses a significant challenge for utilities.

This brief overview of the materiality of electricity points to three themes that will carry through this dissertation. First, electric utilities, in conjunction with state regulators and financial capital, have produced spatial and territorial configurations that enabled rapid growth, and these are in part shaped by the material properties of electricity itself. This will be most evident in Chapter Two. Second, these territories are subject to competition, not only for sites of production, but also for prime sites of consumption. This will be clear in Chapter Five. Finally, territories, or parts of territories, with low rates of consumption are avoided with equal fervor, as will be shown in Chapter Three and Four.

1.7 The Plan for this Work

This introductory chapter began with a description of the complex pricing, profit, and regulatory patchwork of the electric utilities that serve the eastern part of North Carolina. Not only do the electricity prices that the utilities charge vary by location, but the demographic and economic make-up of the service territories are different as well. Understanding the uneven geographies of electricity in eastern North Carolina requires the close consideration of the interaction of electricity as a material substance with the various economic, cultural, racial, and political geographies of the region. In addition, the development of the electric utility industry in the state was part of national debates about segregation and state's rights, as well as issues of the environment and industrial development. With this in mind, and guided by the previously discussed theoretical underpinnings of this

dissertation, the chapters that follow seek to answer the following two sets of previously mentioned research questions.

First are concerns over the spatial forms and regulatory systems that shaped utilities. What function does the electric utility service territory serve, and how did it come to be? Related to this, how did the multiple forms of utility ownership come to be, and how is the state implicated in each of these various forms? The second of questions considers the context in which North Carolina electric utilities developed. Central to this is the interaction between electricity as a networked infrastructure and the racialized geographies of Jim Crow and the Progressive Era. How did electric utilities affect the racialized life of cities, and how was race central to the planning of electricity systems?

To address these questions, this dissertation examines the development of electricity in eastern North Carolina starting in the early twentieth century. The research that informs this work was conducted in ten archival collections across North Carolina and the United States[11]. Over the course of these visits, I have collected and analyzed internal utility financial and operations documents detailing day-to-day operations; survey data and external correspondence related to utility growth and development; the correspondence of private individuals and public office holders; and numerous maps, pamphlets, and textual materials produced by

[11] These include the Southern Historical Collection and North Carolina Collection in Chapel Hill, NC; the State Archives of North Carolina in Raleigh, NC; East Carolina University Special Collections in Greenville, NC. City Clerks offices in Rocky Mount and Kinston, NC; National Archives located in Kansas City, MO and College Park, MD; the Columbia Rare Book and Manuscript Collection in New York City; and the MiSci General Electric Collection in Schenectady, NY.

industry and state organizations. The data collected was analyzed using three primary methods: content analysis of documents; biography to follow key figures in the utility industry; and GIS mapping to trace territorial development, power plant and distribution line locations, and flows of investment. This data was used to assess the spatial, economic, and social calculus that guided utility development, and is placed in the context of the broader historical geographies of North Carolina and the American South.

The story that I tell in this dissertation is one of power – the power to control how networked infrastructure will be spread, the power to create new forms of spatial governance, and the power to assign, calculate, and rationalize the value placed on individual people. A similar process occurs in the archive, where archivists are charged with dispassionately assigning value to documents, fragments, and objects. Their work continues while making sure that these objects are shared while also protecting the value of those objects against charges of valuelessness (Creswell 2012). Often times the archive becomes viewed as a place where authenticity and history is judged, ignoring that the artifacts as collected and organized are fragmentary, messy, and accidental (Creswell 2012; Mills 2013). As a result, the archive is a site that "combines notions of power, durability, origins, place and authority" (Creswell 2012: 166), and that if not examined critically, provides evidence that enables the analyst the ability to discipline, erase, and otherwise minimize the agency of those whose artifacts are not preserved.

Despite the limits of the archive, it is possible to read the archives 'against the grain' to find stories of resistance and absence. Historian Robin Kelley, for

example, argues that "traditional documents, if used imaginatively, can be especially useful for reconstructing the ways in which workers exploited racial stereotypes to control the pace of work" (1993: 93). Citing the accounts of white managers that African Americans were unreliable or ignorant, Kelley posits that these actions of defiance were "not only misunderstood but were never supposed to be understood" (1993: 94) and as such represent key forms of resistance used against white supremacy. At the same time, archives can also be read 'with the grain' to understand how the powerful were able to make their claims to truth appear normal (Creswell 2012). By not only saving certain materials but also making them available to the public via archival collections, individuals, organizations, and state institutions are attempting to ascribe validity, value, and accuracy to artifacts. Archival objects can thus be read for the certain truth claims and rationalities their creators considered self evident – the application of a particular racial hierarchy by a government official, for example.

In this dissertation, I have attempted to read the archives both with and against the grain, to find absences and resistance but also to understand the way that the powerful enacted their particular visions of electrification. In places I have tried to provide accounts of African American agency and depictions of African American daily life, but these are limited in scope and provide only a small window into the undoubtedly active struggles being made to obtain services from networked infrastructure. In general, this work focuses more on the activities, rationalities, and calculations of the powerful. In large part this results from an overall focus on the realm of electricity production, which was overwhelmingly dominated the white

elite. The actions, opinions, and congregations of the white elite were more frequently recorded, and later archived, thus allowing a more detailed picture of their actions to be reconstructed.

The chapters that follow this introduction are arranged both chronologically and thematically. I begin in Chapter Two by considering the development of the monopoly service territory and its importance to the rapid growth of Carolina Power and Light between 1900 and 1930. Because of the capital-intensive nature of electricity production, the necessity of matching electricity demand and consumption, and the variability of demand across the day, most early electric utilities were unprofitable and unstable ventures. By actively seeking state regulation, early electric entrepreneurs such as Samuel Insull sought to stabilize the industry by courting state regulation. Emerging from regulation was the monopoly service territory, which served as a spatial fix that made the electric utilities far more attractive to potential investors. This, in turn, gave rise to utility holding companies, a speculative financial scheme designed to boost profitability at rates far faster than electricity consumption was increasing. Largely drawing on accounts from CP&L's official corporate history read against accounts from an 1929 Federal Trade Commission investigation, the chapter traces the rapid rise of private utilities such as Carolina Power and Light within holding company empires. This rapid rise was matched by the fall from grace that began with the Crash of 1929 and subsequent regulatory changes that showed the limits of the monopoly service territory and holding companies as a spatial and financial fix. Finally, drawing on the

papers of Greenville, North Carolina attorney Frank Wooten, Sr.[12], I show how municipal electric systems, developing alongside private systems, sought to confront the same material limits by an ultimately failed venture to interconnect their own territorially bounded systems.

In Chapter Two, the state, in the form of state regulatory commissions, is a central actor in producing the market conditions in which electric utilities can succeed. In Chapter Three the complex and variegated role of the state in electricity production and provision is evident. In this chapter, I examine a local municipal government, in this case Rocky Mount, North Carolina, that owns and operates its own electric utility. Drawing on the archival collections of the General Electric Company[13] as well as meeting minutes, financial reports, and other documents from the City of Rocky Mount City Clerks office, Chapter Three traces the changing role of electric power and light in the formation of the city, which experienced rapid population and industrial growth during the early 20th century. In particular, it follows the mundane, everyday world of electric power politics as it interacted with the guiding planning ideologies of Progressivism and Jim Crow segregation. By mapping where electric streetlight and service requests are or are not granted, how electric utility revenues are used in municipal budgets, and the racialized geographies of electricity bill non-payment, what emerges is a view of the

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[12] The Frank M. Wooten, Sr. Papers (#125) are housed at the East Carolina Manuscript Collection, J.Y. Joyner Library, East Carolina University, Greenville, North Carolina, USA.
[13] The bulk of this comes from the Hammond Papers at the MiSci Archives in Schenectady, New York, USA.

systematic use of electricity to benefit white residents of Rocky Mount, and particularly the white ruling class, at the expense of African Americans.

Racism and white supremacy in electrical operations was not limited to municipal utilities operating on a relatively small and local scale. While the actions of the Rocky Mount municipal utility between 1900 and 1930 involved a direct denial of service to African Americans, by the mid 1930s more subtle and 'scientific' methods were employed. In Chapter Four I follow electricity distribution lines as they move out of cities and into the sparsely populated rural areas of North Carolina. With only 3.2% of North Carolina farms electrified in the early 1930s, rural electrification became an important political issue in North Carolina. In 1934, a statewide rural electrification survey, with funding from the federal New Deal, was conducted in North Carolina to provide guidance on where electricity distribution lines could profitably be constructed. The State Archives of North Carolina have preserved the original completed survey instruments, maps, instructions to surveyors, and correspondence related to the survey[14], allowing for a detailed understanding of the survey processes and rationale. While the survey collected and mapped enormous amounts of data related to potential electricity use, the survey design employed race as a category to negatively adjust potential electricity consumption in a way that made it much less likely for African Americans to receive electricity. Chapter Four examines the survey in detail as an example of making rural territory 'knowable' for coming state intervention in electrification, but in

[14] The survey documents are located at the State Archives of North Carolina, Rural Electrification Authority, Letters and Information – 1934 Survey, Raleigh, North Carolina.

doing so provides an example of New Deal-era methods of calculating territorial value that employed prevailing ideologies of white supremacy.

While Chapters Three and Four show the methods and motivations electric utilities used to *exclude* undesirable portions of territory, Chapter Five examines battles for territory and territorial integrity between 1935 and 1965. The chapter begins where the 1934 rural electrification survey leaves off by considering competing efforts to electrify rural North Carolina. The multi-scalar and multi-faceted nature of the interactions between electric utility operations and the state again take center stage, this time examining the competing space-time projects of profit and area coverage as private and public utilities battle for control of unelectrified territory. In this chapter, I draw on the correspondence of North Carolina elected officials, the state Rural Electrification Authority, the federal Rural Electrification Administration, and the publications of the right-wing pro-private utility Citizens for Preservation of Constitutional Government. At issue are the profitability goals of private utilities, which focused on serving prime territories, and non-profits utilities seeking to serve all customers in a particular area, known as area coverage[15]. The nuanced and varied interactions of the state with the electric geo-economy come to the fore as a state regulatory commission beholden to private utilities comes into conflict with federal agencies supporting rural electric cooperatives. These conflicts play out in competing construction projects, courtroom battles over territorial rights, and through political organizations seeking to influence public opinion on electric power issues.

[15] Area coverage refers to the serving all customers within a particular territory, rather limiting service to only those areas that are particularly profitable.

Simmering in the background of territorial battles remains the issue of electricity generation – while private utilities generate the vast majority of electricity, non-profit utilities are eager to get involved. Chapter Six, the concluding chapter, returns to more contemporary times as it traces the years leading up to the eastern North Carolina municipal electric system's joint investment in the Shearon Harris nuclear power plant in 1980, resulting, we will see, in the higher electricity rates for Rocky Mount and other small towns described at the outset of this chapter. Rather than simply consider the investment a bad business decision on the part of municipalities, I place their decisions in the context of a nearly 80-year battle over electricity generation and territory.

By way of conclusion, I argue that the historical geography of electricity developed in the preceding chapters has important implications for current issues facing these towns and the region in general. The electric utility industry's search for fixes, be they spatial, technical, financial, or regulatory, continues in contemporary times. For example, a renewed interest in nuclear power among electric utilities as a solution to concerns about climate change shows the desire among utilities to maintain the centralized system of electricity generation that has brought them so much benefit. But the recent trend of mergers and acquisitions in the utility industry is also a consequence of the limits of territory as a solution to the problems of electric utilities. Further, the wide range of challenges facing most of the 32 municipal investors in the Shearon Harris stems from their deliberate underdevelopment through the processes of segregation and exclusion. As this dissertation is being completed, Duke Energy is entering into advanced negotiations

with the 32 municipal electric utilities to buy back their portion of the Shearon Harris plant. To date, these towns have paid down their debt $1.5 billion, which costs the cities an average of $240 million in additional electricity bills each year (Stith 2012). Yet it appears that any potential deal would lock the towns into a further long-term agreement to purchase electricity from Duke Energy.

By tracing the relations between electric power and social power, this dissertation asks if the system of electric utilities as it developed, and as it exists today, is a beneficial one to all. The chapters that follow show that it undoubtedly is not.

Chapter 2: Electric utilities, finance, and the natural barriers to accumulation

2.1. Introduction

On April 8, 1926, the shareholders of Carolina Power and Light, Yadkin River Power Company, Asheville Power and Light Company, and the Pigeon River Power Company approved the merger of the companies under the new name Carolina Power and Light Company ("Carolina Power and Light" 1926). Given that the voting stock of the four electric utilities, which served portions of North and South Carolina, was almost entirely owned by the electric utility holding company Electric Bond and Share Company (EBASCO), a New York-based company that controlled nearly a quarter of the electricity generation in the United States by the mid-1920s (Hughes 1983), this approval was no surprise. Under the terms of the merger, the common stock of the 'new' Carolina Power and Light (CP&L) would be entirely owned by National Power and Light, an intermediary company set up by EBASCO to manage several 'operating' utilities, that is, electric utilities that actually generated and sold electricity to customers. While CP&L generated revenue by selling an actual commodity, in contrast, National Power and Light made money by collecting dividend payments from CP&L. By virtue of that fact that National Power and Light's own common stock was largely owned by EBASCO, its earnings were simply passed one level up the pyramid to EBASCO.

This arrangement was not unusual among private electric utilities in the United States during 1920s. In fact by 1927, at the peak of the holding company craze, there were 180 different holding companies that controlled 4,409 operating electric utilities (Hyman et al. 2000). The benefits of the holding company form were numerous, but can basically be boiled down to this: the assets and operations of holding companies were difficult to properly value, and by clever accounting, these companies could be made to look extremely successful and secure. The promise of secure dividend payments attracted outside investors to the preferred stock and bonds that holding companies issued. Sales of these issuances raised the funds needed for the holding companies to obtain additional operating utilities, expand its service territories, and build additional generating equipment. The holding company owners would retain possession of the voting common stock in the various companies, a move that kept operations firmly under their control. In effect, through a minimal investment of their own money, they would control the utilities and authorize generous dividends payments on the common stock they owned (Hughes 1983; Hyman et al. 2000).

At the same time in Greenville, North Carolina, Frank W. Wooten, a prominent attorney, had become convinced of the need to obtain cheaper electricity in order to attract industrial development to eastern North Carolina. To accomplish this, Wooten attempted to combine the electricity demand of a number of eastern North Carolina towns, thus eliminating the municipal boundaries that limited demand growth. By deterritorializing electricity demand from within municipal boundaries and increasing the overall combined demand, Wooten saw the potential

to take advantage of the economies of scale in power production that were being developed by near-by investor owned utilities like CP&L.

Though they first appeared in the 1890s, electric utility holding companies became increasingly common and influential during the first and second decades of the twentieth century. In this chapter, I argue that the timing of their emergence coincides with a number of developments related to the materiality of electricity, principally the necessity that electricity production and consumption be matched. While this material limit posed a significant *barrier* to capital accumulation in the early years of electric utilities, it also represented an accumulation *opportunity* for financial capital operating in the form of the holding company. The non-competitive service territory that was enabled by state regulation, when combined with investment from holding companies, emerged as a spatial fix that enabled the material limits of electricity to be overcome. However, like all fixes to the contradictions embedded in a particular accumulation process, this arrangement proved to be temporary and was later replaced by others. Municipal electric utilities in eastern North Carolina were not peripheral figures in this development. Rather, they faced their own spatial limits, and also sought their own spatial fixes.

This chapter proceeds in four parts. First, I briefly review the insights on fixed capital, credit, and the built environment provided by David Harvey (1982) in *The Limits to Capital* (hereafter *Limits*). This work, while providing important insights into credit's ability to direct production, has been extended in two important ways. The first is theorization on the 'natural' limits of capital accumulation, especially the work of Henderson (1998). The second extension

comes from a more robust theorization of the role of the state in solving capitalist crises, something Harvey points to in *Limits* on numerous occasions, but never considers fully. To do this, I turn to a framework put forward by Jones and Ward (2004) that posits some ideas of how to accomplish this.

Using insights gleaned from the above literature, in the second section I reexamine the work of historians of technology on the origins of electric utilities. First, following Henderson (1998), I examine the way early utilities were hindered by the natural properties of electricity, but point to the shifting of this barrier into an opportunity via innovations in utility cost accounting. Second, employing the framework put forward by Jones and Ward (2004) I examine the advent of state regulation and the establishment the electric utility service territory. I argue that this development, which effectively eliminated competition, provided a spatial fix that shifted the natural barrier to accumulation by electric utilities into an opportunity for innovations in the realm of financial capital, namely the utility holding company.

The third part of the chapter considers the way in which the spatial and temporal fixes provided by holding companies, like all fixes to capitalism's contradiction (Harvey 1982), were only temporary. To do this I briefly focus on the operating utility previously introduced, CP&L. CP&L's rapid spatial expansion throughout the 1920s, which occurred under the supervision of the highly leveraged holding company giant EBASCO, was quickly brought to a halt, however, after the Crash of 1929. The financial problems of CP&L and other private utilities during the

1930s opened up the possibility for a new form of electric utility – the federally-funded rural electric cooperatives – to begin operations.

In part four, I examine how the same natural limits of electricity production that challenged investor owned utilities were confronted by municipally-owned utilities. In particular, I examine the effort by several eastern North Carolina municipalities during the latter part of the 1920s to join together in a production venture. Like the utility holding company, the ultimate failure of this venture was again based in an inability to produce the types of spaces necessary for their survival. The municipal city boundary in particular, so essential to maintaining order and legibility in the city, operated as a barrier limiting municipal electric utilities from taking advantage of the cheaper electricity large power plants could produce.

2.2 Fixed capital, materialities, and the state

David Harvey's *The Limits to Capital* (2006), a book Walker has described as "still the best thing ever written on the logic of capitalist credit and fixed capital" (2004: 435), offers an extended discussion on fixed capital, finance, and built environment. Harvey's crucial insight, Walker (2004) argues, is that credit is not just a way of making money, but rather it is integral to the entire capitalist productive scheme. Fixed capital, while often operating outside of a specific commodity production process (i.e. producing computers or picture frames), acts to decrease barriers and costs to production. In this sense, we can think of the role that ports, roads, aqueducts, and in our case, electricity generation and distribution infrastructure, all play in the realm of production. While control over the

configuration of the built environment (which is the sum of all fixed capital projects) is among the keys to the further expansion of capital accumulation, the production of large scale fixed capital projects places a significant burden on the capitalist. This is due to the need for substantial upfront outlays of money, equipment, and materials for the construction of projects, which is further complicated by the slow rate of return that these projects often entail. While this barrier has often shifted the responsibility of large infrastructure projects to the state, most electricity generation in the United States has remained in the private sector. This has occurred with the help of financial capital and credit.

For Marx, money permits the separation of sales and purchases in space and time by acting as the equivalent of a particular commodity (Marx 1990). Credit, then, allows for the temporary extension of the role of money, enabling the time-space separation of transactions to be extended. This enables further flexibility in the exchange process because of credit's ability to be extended for a particular purpose and then paid back in increments as surplus value is realized from the particular production process. Credit, in other words, anticipates the production of surplus value (Gough 2004), allowing money to be extended before production occurs, a function essential to constructing large infrastructure projects. However, the extension of credit entails several risks: (1) future labor and extraction of surplus value must occur, and at the anticipated rate of exploitation of labor, otherwise the capital advanced is lost; (2) the large project to be funded is subject to devaluation due to wear and tear as well as a number of social determinants including regulation, taxation regimes, other technological innovations, or changes

in consumer preferences; and (3) a loss of the liquidity and flexibility of money as it is tied down to specific use values, essentially becoming 'fixed' in a particular built environment and unable to be used for other purposes (Harvey 2006).

Because of these risks, many large projects are less appealing to traditional financing mechanisms, such as bank loans. Harvey points to two solutions that have emerged to this problem: involvement by the state and the formation of joint stock companies. I will first examine the role of the state.

The State and Fixed Capital

Despite *Limits* pointing to some important roles that the state can play in coordinating spatial fixes and capital switching, the work has frequently has been criticized for not offering a more robust theory of the state (Jessop 2004; Jones and Ward 2004).[16] In a short essay that explicitly discusses *Limits*, Jones and Ward (2004) take some insights from Harvey (2006) and attempt to establish a framework for incorporating the state into a theory of capitalist production. Their contribution draws on the work of the regulation approach (Aglietta 1979; Boyer 1990; Jessop 1997), which they argue helps to understand how what they term accumulation systems (modes of production and consumption) are coupled with modes of regulation (which includes institutional actors like the state as well as the capital-labor relationship, activities of the central bank, and patterns of competition) to form a relatively stable phase of capital accumulation. Despite

[16] As Jessop (2004) points out, much of Harvey's lack of theorization of the state in *Limits* can be attributed to his close following of the work of Marx, who had planned, but never completed, a book on the capitalist state. Harvey's later works, particularly those examining the 2007-08 financial crisis, do contain a more robust theorization of the state.

offering insights into how certain arrangements that offer sustained accumulation are stabilized, Jones and Ward (2004) find the regulation approach to be plagued by an inability to fully integrate theories of the state, and turn to the work of the Frankfurt School, particularly Offe (1984).

In Offe's (1984) work Jones and Ward (2004) see the state conceptualized as "continually snared within the multiple contradictions of capitalism. On the one hand, states have to ensure the continued accumulation of capital; on the other hand, they have to appear neutral arbiters of interests to preserve their legitimacy." (Jones and Ward 2004: 506). The state attempts to do this in several ways, including developing new internal structures, new scales and locations of intervention, and the inclusion of new actors into governing processes. How these strategies are mobilized, and which groups are included, are subject to political and social struggle that give rise to a "spatial selectivity" (Jones and Ward 2004: 507) that privileges certain places, regions, and scales in order to contain a particular crisis, but not others. In Section 3, the role of the state in electric utility regulation, and the rise of the non-competitive service territory as the selected scale of regulation, will be discussed. In Section 4 I will push this even further by taking up the role of the state, in the form of municipally owned electric utilities, in directly producing electricity.

Joint Stock Companies

The second fix presented by Harvey to the risks associated with fixed infrastructure projects is the creation of joint stock companies. Joint stock companies, instead of depending solely on traditional bank loans, sell stock to raise

money directly, as "the buying and selling of stocks and shares permits money owners to preserve flexibility and liquidity while share prices can adjust to the variations in surplus value production" (Harvey 2006: 268). Variations in stock prices can in effect be viewed as a reflection of the shifting value of fixed capital as it responds to the social determinants of its value. In the same way that money is lent by financial institutions in expectation of future surplus value creation, stock investors hold shares of the company that are a symbol of the ownership of a portion of future surplus value production. The price of shares is modified by the general supply and demand for money capital, as well as the ease of marketability, the security of the particular investment, the terms of holding, and the particular taxation requirements ownership entails.

In *Limits*, Harvey raises an important question related to this: what does the price of a share of stock represent in reality? Put simply, "in the case of joint stock companies, real capital … does indeed exist, and the title of ownership that yields a dividend (interest) is backed to some degree or other by a real capacity to produce surplus value" (2006: 277). That said, "the problem is to discern the firmness of the backing, and this can be known to investors only if full disclosure of company finances is required. Otherwise corporations can find ways to make it seem as if they are in a far stronger (or weaker) position than they really are and to manipulate the prices of their stock accordingly" (2006: 277). In other words, the stock price is meant to represent the ability of the company to actually produce surplus value, either presently, or at some date in the future. However, it is difficult to figure out what a company's actual capacity is, especially when companies create

convoluted structures that deliberately obscure their finances. In the subsequent section that reexamines the history of electricity, it will be evident that public utility holding companies were particularly adept at this.

2.3 Rematerializing the history of electricity

Harvey's (2006) work on fixed capital and finance provides important insights into the limits, contradictions, and risks involved with investment in the built environment. However, this analysis is by necessity an abstraction, which leads to its need to be further developed in specific geographic contexts and time periods that also take into account the materiality of the particular fixed capital under examination – in this case, those related to electric utilities. Recent work by geographers has done this extremely well by taking seriously the material properties of non-human things, be it water (Swyngedouw 2004; Bakker 2003; Gandy 2002), ecosystems (Robertson 2004; 2006), mining and extraction (Bridge 2000; Mitchell 2009), or agriculture (Henderson 1998) by considering how the 'nature' of those processes impacts production and consumption processes. Through this research, it is evident that the way a material flows (Swyngedouw 2004), the way its resists commodification (Bakker 2003; Robertson 2006), or the temporality of its growth (Henderson 1998) can serve as both a barrier and an opportunity to capital accumulation. At the same time, Kirsch and Mitchell (2004), using the concept of dead labor ossified in machines, caution against developing a fetish of the material that sees power as only a relational effect brought into being by the non-human, and not directed by the dictates of capital accumulation. With this caution in mind, the following considers how the materiality of electricity has

served as both a barrier and an opportunity to capital accumulation, and linking to the previous sections, how innovations in state governance (the establishment of non-competitive service territories) and financial capital (in the form of the utility holding company) have helped to establish a spatial-temporal fix to the problem.

In thinking about relationship between the materiality of a commodity and financial capital, the work of Henderson (1998) is particularly instructive. Henderson (1998) traces the way in which credit, as provided by a range of financial institutions and branch banks, helped to overcome a disunity in the production and working times that arise in agriculture production due to the temporal separation between planting and harvest. Henderson effectively argues that "what have been construed as obstacles have in fact comprised distinctive opportunities for capitalist investment and appropriations" (1998: 73), particularly for financial capital. This work provides a simple two-part framework for analyzing the materiality of electricity and its resulting relationship to financial capital. First, what material barriers to capital accumulation are posed? Second, how are these barriers turned into an opportunity, and particularly for financial capital?

Material barriers and the need for investment

The production and consumption of electricity is largely shaped by a single 'natural' barrier: once it is produced, it is very difficult and costly to store large amounts of electricity. This means that there must be a nearly instantaneous match between when electricity is in demand and when it is produced. However, the demand for electricity is not constant, varying both seasonally and throughout the day. In most cases, it is typically lowest in the overnight hours and peaks in the early

evening. This fundamental reality has and continues to pose many challenges to the production of electricity[17]. To function effectively, electric utilities must be able to meet the peaks of demand. This requires that a large generating capacity be available even if it is only used at full capacity for a short period of time. As a result, utilities are forced to run power plants at less than full capacity for significant portions of the day, meaning that their investments in fixed capital are frequently underutilized and operating inefficiently.

In the late 19th century, electric utilities were still working to figure out how to price the electricity they were attempting to sell. Edison, for example, chose to charge on a per fixture basis, which worked in his favor as a producer of (at the time) costly light bulbs (Hughes 1983). Yet many electric utilities were finding that despite increases in the total amount of electricity they sold, profits were not increasing in step. The most significant advancement in utility economics came from John Hopkinson, a British engineer who segmented the costs of producing electricity into two groups. First were fixed costs, which were related to the land, equipment, and buildings needed for electricity production. Second were operating costs, which included the cost of fuel, labor, and maintenance. What Hopkinson realized is that fixed costs were just that – they did not change regardless of how much electricity was produced. So even when the plant was idle during periods of low demand, fixed costs still needed to be paid for (Hirsh 1989).

[17]Current challenges include how to store power produced by intermittent renewable energy sources, typically wind and solar, for use when electricity demand peaks.

By segmenting these costs, Hopkinson was able to make the argument that for maximum profitability, electric generating equipment needed to be running at full capacity for as long a period as possible. To accomplish this, he developed the concept of the 'load factor'. Load factor is the ratio of average daily (or monthly or yearly) use of electricity to the maximum load sustained during the same period. The ideal load factor would be as close to one as possible, which means that the average load and the peak load were very close to equal. Arthur Wright, a British utility manager, took up Hopkinson's ideas and extended them further. Wright recognized that the key factor in determining electricity costs was the maximum annual load that a power plant could provide, as the most costly portion of fixed capital was situated in the power plant itself. The way to overcome this, Wright argued, was to find a diversity of heavy power users that used power at different times of the day. For example, electric street railways would use considerable power during morning and evening commutes, while a factory may use most of its power during the middle part of the day (or even overnight as second and third shifts were enabled by electric lighting). By spreading the load in this way, the power plants were used more frequently, thus spreading the fixed costs across a larger group of customers (Hirsh 1989).

These ideas were quickly taken up by Samuel Insull who translated them into the United States context. Insull, who came to the United States from England to work as Thomas Edison's personal secretary, had struck out on his own to form Chicago Edison, what would become the largest electric utility in the United States in the early 20th century (Hughes 1979). Using Wright's insights about the benefits

of a diversity of users, Insull aggressively courted industrial customers and street railways by offering them very low electricity rates[18]. This move was especially important because during the early 20th century high power users could feasibly operate their own power plants. By bringing them in as customers, even if they were paying only marginally profitable rates, Insull was able to cover a majority of his fixed and operating costs, which converted the more intermittent demand of the residential sector into a profit center (Platt 1991). To ultimately be successful with this strategy, however, Insull needed the protection from the competition that was plaguing the nascent electric utility industry.

Electricity, regulation, and the state

Early electricity operations in the United States faced considerable difficultly in funding large infrastructure projects (Hausmann and Neufeld 2002). Among the reasons for this includes the fact that electric utilities in the late 19th and early 20th century faced considerable competition (Hughes 1983; McGuire, Grannoveter & Shultz 1993; Nye 1998). Gas powered street and house lighting, as well as small-scale generators that powered individual homes or small neighborhoods, were as or more prevalent than Edison's central station electricity generators at the turn of the 20th century. Aside from competition from other forms of power, the electric utility industry was marked by cutthroat competition between privately owned utilities. Cities would grant franchises to multiple companies to provide electric service, meaning multiple utilities were competing for limited investment capital to serve the same streets and neighborhoods. The effect of the competition was ruinous for

[18]This is an example of systemic 'bias' among technological systems, wherein the system itself supports particular outcomes.

their bottom lines, and profit rates began to decline (McGuire 1989). The instability of the market, in combination with the ideologies of white supremacy that will be examined in Chapter Three, also led to many municipalities producing their own electricity.

Insull, who was aggressively looking to diversify his customer base and expand his system, recognized that the competition between electric utilities in the same city was not only decreasing profits, but also making it difficult to attract the investment capital needed to grow electric utilities. Insull's preferred solution involved the state, which had previously only acted to grant franchises to electric utilities. After initially declaring an interest in state regulation in 1896, Insull used his influence in the National Electric Light Association and the National Civic Federation to lay out the following framework for state intervention (McGuire 1989). First, state commissions would grant electric utilities non-competitive service territories in which to operate, effectively eliminating direct competition. Electric utilities would be termed 'natural monopolies', a term that describes a market failure in which for structural reasons only one firm finds it profitable to produce (Mosca 2008). Second, in exchange for non-competitive territories, independent state regulatory commissions would set electricity rates at a level that ensured utilities' a 'fair' rate of return.

After years of lobbying, and in concert with the Progressive Movement that was especially strong in Wisconsin and New York, Insull and his collaborators were able to win state regulation and monopoly status in most states between 1907 and 1917 (McGuire 1989; Hughes 1983; Howell 2011). In a speech given to the

Engineer's Club of Dayton Ohio in 1914, Insull made clear the importance of state regulation to successful management of the problems associated with the load curve. "Monopoly," he argued, "is not a political question … Monopoly is an engineering question … It is a question of how we can get the largest possible amount of earning capacity out of the dollars of wealth that this country possesses" (Insull and Kelly 1924: 3-4). As such, Insull advocated regulated monopolies not for the protection of customers from monopoly pricing, but rather because of the physical properties of electricity production and the challenges they created for investors.

State regulation of the electric utility industry had two primary effects. First, state regulation aided in the growth of utilities by legitimating the position of electric utilities as the preferred lighting and power provider – not small household generators, and not gas providers. Second, in most cases, regulation would allow for a guaranteed rate of profit based on rates approved by a regulatory committee. These rates, in turn, were based on the total utility capitalization. As a result, if a utility needed additional investment capital to build new plants or distribution wires, they also required sufficient income to be considered an attractive investment (Howell 2011). All of this had the effect of shifting a considerable burden from the electric utility to the state regulators – in effect, the state was now integral to the success of public utilities by ensuring a 'reasonable' profit margin that would assist the utility in attracting financing for expanded service (McGuire 1989). In combination, these two factors made utilities more attractive to investors that could provide the capital they needed to grow (Hausmann and Neufeld 2002).

The involvement of state regulators in electric utilities fits well within the framework for the capitalist state that Jones and Ward (2004) advocate. The capitalist state, in setting electricity rates and determining non-competitive service territories, acts as both a guarantor for stable patterns of accumulation by electric utilities, but also retains its appearance as a neutral body by working to set 'fair' electricity rates for customers. In addition, the development of state regulatory commissions involved a considerable amount of spatial selectivity that determined which actors and scales of intervention would be allowed. The desire for state regulation stemmed not from the general public, but largely from an elite class of utility executives cognizant of the stability and legitimacy state involvement in their business would give. These utility executives acted not only to legitimate electricity as the power and lighting of choice, but also to assure the place of for-profit ownership of electric utilities in the face of a burgeoning movement of municipally owned, not-for-profit electric utilities (McGuire 1989).

Insull's vision for electric utilities did not stop at the local municipal level, rather he had a distinctly expansionary vision of a system of electric utilities made up of many interconnected power plants linked by transmission wires that served a variety of communities in different locations, all with a diversity of loads (Hughes 1979). In a 1915 speech given to the National Association of Railway Commissioners (many of whom were also involved in electric utility regulation), Insull argued that electric utilities' development "should not be limited by the narrow borders of a single municipality if distribution over a wider area will give more economical results for that municipality and the territory surrounding it"

(Insull and Kelly 1924: 31). The key to growth for Insull was to expand systems spatially into surrounding territory, gaining a diversity of users, and "filling up the valleys in our load curves", thus "keep[ing] the dollars invested earning a return for more hours of the year than would otherwise be the case" (Insull and Kelly 1924: 3). As Section Five will show, the inability to follow the path of territorial expansion advocated by Insull ultimately proved to be a spatial limit for municipal electric systems.

What Insull's vision points to is the need for constant investment in fixed capital order to build the large plants needed to meet growing demand, and for the substations, transmission and distribution wires needed to distribute electricity to a growing number of customers in disparate locations. Despite their rapid growth, having generally figured out their economic and accounting models, and being buffered by the stability provided by state regulation, electric utilities were not able to fund their growth out of retained earnings. Hausman and Neufeld's (2002) study of early electric utility economic difficulties is particularly instructive in this regard. Between 1882 and 1902, they calculate that $483 million was invested in construction and equipment in private utilities in the United States, but total revenues were topping out at $79 million annually with profits around $16 million annually. In the first two decades of the 20th century, electric utilities were the most capital-intensive industry in the United States, requiring almost twice as much capital investment to achieve the same profit as steam railroads, and ten times as much as general manufacturing. In order to continue their rapid growth, innovation in the financing of electric utilities was needed.

The Rise of the Utility Holding Company

State regulation, which effectively guaranteed utility profits, had the effect of solidifying electric utilities as an investment. While innovation in generation and transmission technology aided utility growth in this period, the corporate organizational form of the holding company, which was designed to attract investment, was just as important. The case of EBASCO, a utility holding company that began as a subsidiary of the General Electric Company (GE), is indicative of its importance.

In the late 19th century, many start-up utilities, which were prospective clients of GE, lacked the funds necessary to purchase costly equipment. In what was a common practice among manufacturers, GE accepted issuances of stock in the local utility in lieu of cash payments for equipment. However, due to the small size of the utilities and the unsure nature of the electric utility business in general, this stock tended to appreciate little value. During the period of economic depression that lasted from 1893-1896, the utility stock proved to be a lag on GE's performance, and it became unwilling to trade stock for equipment, which meant that many local utilities grew very little (Hughes 1983). The question that emerged was how to finance the huge investments required to build and grow electric utilities? Enter the joint stock company.

EBASCO, headed by S.Z. Mitchell, was formed by GE in 1905, and then 'sold' its own securities to GE in exchange for the unmarketable utility stock held by GE (Hughes 1979). The idea was to increase the availability of financial capital to utilities by creating "a strategy that would assist existing and would-be clients to sell

stock in their companies while also helping GE unload its many shares of unprofitable stock that were left from … earlier policies" (Freidlander 1996: 79). This strategy involved establishing a service contract with local 'operating' utilities, basically an annual fee for engineering, management, and, importantly, assistance obtaining financing. Initially this meant that EBASCO was not directly implicated as a holding company, rather it was merely an advisor. This changed as EBASCO established a number of intermediary holding companies that would take an actual financial position in operating companies (many of which it started or bought out of bankruptcy) via control of common stock. The holding companies, working in concert with EBASCO, advised the local operating utilities towards similar financial positions and streams of investment capital (McGuire 1989). As a result, operating utilities took on a similar capitalization practice: 60% of the utility was capitalized as bonds sold to the public; 20-25% as preferred stock to the public; and 20-25% was in common stock held by the holding company. In addition, a 'sponsor' from EBASCO's offices in New York City would be placed on the 'local' utility's board, although in practice much of the board was filled by non-local EBASCO representatives (Hughes 1979; 1983).

This arrangement was deemed necessary due to EBASCO's growth ambitions and the capital-intensive nature of the electric utilities. EBASCO president S.Z. Mitchell, well aware of the large upfront capital outlays necessary to build electric utilities, calculated that for every $4-6 invested in fixed capital, the utility would receive $1 in yearly gross revenue. Further, Mitchell anticipated a great need for investment to capture future electricity business, frequently stating that $50 in

investment capital was needed for every child born in the United States (Hughes 1979).

As they grew, and the need for investment capital expanded, the holding companies took on the 'pyramid' form, with a bottom layer of operating utilities supporting multiple layers of intermediary holding companies, with EBASCO residing at the top. Portions of the profits moved upward in the pyramid in the form of common stock dividends, with the operating utility paying dividends to its holding company, and that holding company paying dividends to its own holder. The net effect was a heavily leveraged system with tremendous amounts of outstanding stocks, bonds, and financial obligations. The system of holders and intermediaries was highly convoluted, making it difficult to track the associations between companies, and even more difficult to trace the movements of stock issuances, valuations, board memberships, and ultimately revenues and total capitalization. This served to obfuscate the view of state regulators working to set 'fair' rates based on utility capitalization and revenues (Hyman et al. 2000).

The convoluted form of the holding company emerged with the assistance of a number of innovations that helped utilities overcome a variety of temporal and spatial barriers posed by the nature of electricity. Developing an understanding of the load curve encouraged utility managers to seek out a diversity of users in order to smooth out demand. Gaining additional customers drove up electricity demand, and at the same time, electrical equipment manufacturers were making advances in generating technology. New, more efficient power plants enabled older plants to be replaced or converted into substations, which in turn provided surplus electricity

that could be sold to increasingly distant new customers because of advances in transmission lines. The ability to take advantage of these technological advancements was based on the availability of sufficient investment to purchase the increasingly large and expensive plants and wires. Investment was provided en masse by the holding company, which was enabled by the regulated, non-competitive electric utility service territory. Monopoly service territories, by clearing a particular area of competition, enabled large industrial customers to be signed up without competition. Investment in new generation was suddenly much safer, as state utility commissions essentially guaranteed profits for investors. The utility holding company and monopoly service territory, acting in concert with state regulators, were able to combine novel forms of governance and financing to obtain investment capital, which in effect shifted a 'natural' barrier to capital accumulation to an opportunity for financial capital.

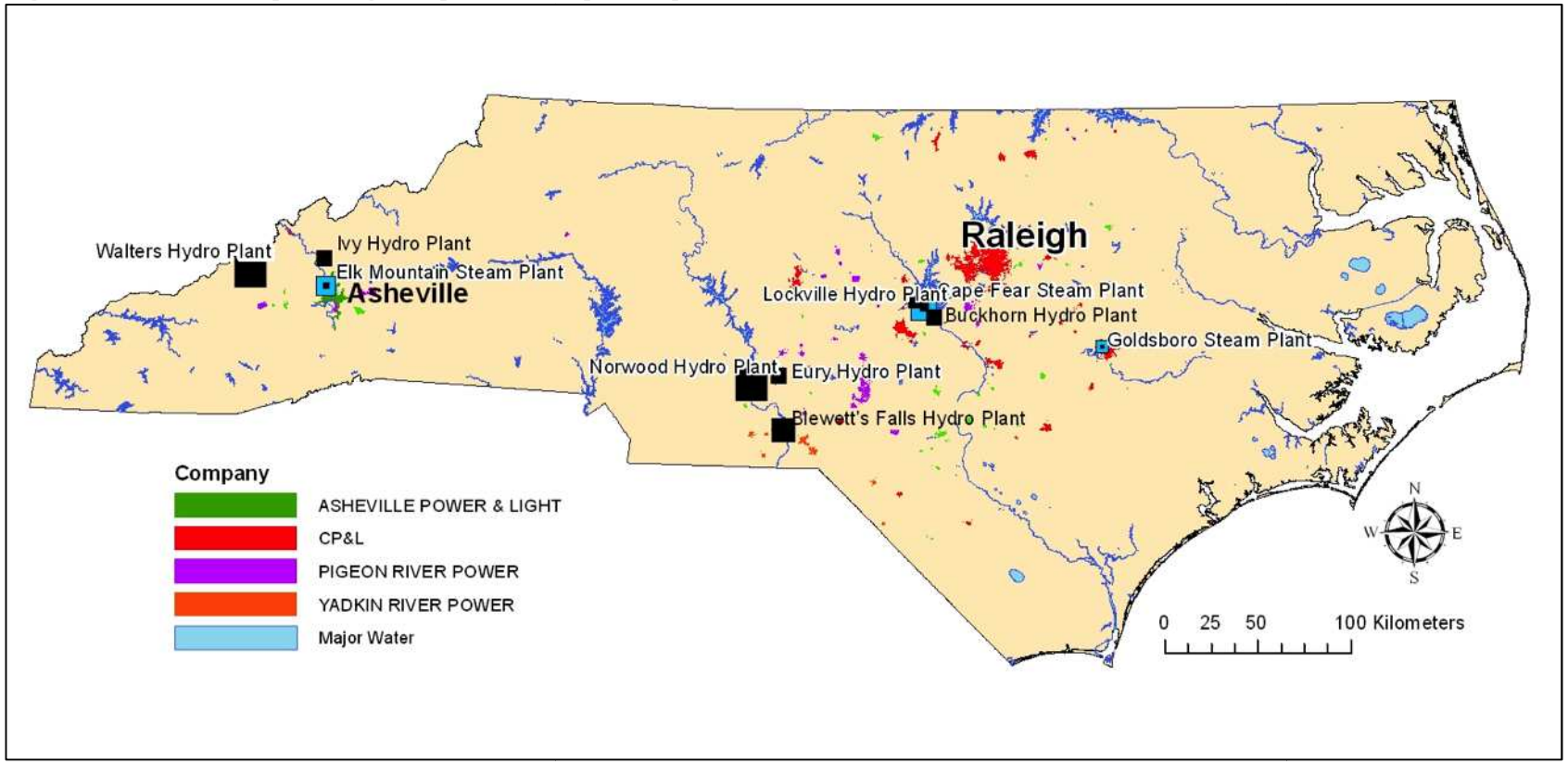
The non-competitive service territory acted as a spatial fix for the electric utility industry. By offsetting the contradictions inherent in electricity production and consumption, the service territory functioned to create a governable politico-spatial formation as well as a space ripe for utilities to capture surplus value (Brenner and Elden 2009). The establishment of a discrete, bounded, and governed space required an economic, political, and spatial calculus, which are clear in the actions of Insull and S.Z. Mitchell. However, like all spatial fixes, the service territory's position as a solution has limits, and in what follows I will examine these using the case of Carolina Power and Light (CP&L).

2.4 Carolina Power & Light and the limits of the territorial fix

The 'original' CP&L was formed in Raleigh in 1908 when transmission lines physically tied three companies together: Raleigh Electric Company, Consumers Power and Light Company, and Central Carolina Power Company. Equally important was the financial link between the three, with EBASCO taking control of the common stock of CP&L. As an electric utility within the EBASCO framework CP&L performed a dual role: it was both an operating utility, in the Raleigh geographic area, as well as a holding company for Asheville Electric Company, Yadkin River Power Company, and later the Pigeon River Power Company (see Figure 2.1). These companies were organized around either a potential customer base, in the case of CP&L and Asheville Electric Company, or near planned or potential hydropower generation, as in the case of Yadkin River Power, which was organized around the Blewett's Falls dam. Though EBASCO was initially peripherally involved in the construction of this dam, after financial problems beset the project in 1911 the initial investment group was brought wholly under the control of EBASCO and reorganized as Yadkin River Power Company. A year later it was placed under the control of CP&L (again acting as a holding company) and connected to Raleigh via a substation in the small town of Method, just south of Raleigh (Riley 1958). The physical interconnection of multiple generating plants was key to holding companies, allowing them to shift power throughout its system to a diversity of loads, thus smoothing the valleys of the load curve.

In 1913, the North Carolina General Assembly voted to place electric utilities under the oversight of the North Carolina Corporations Commission, establishing

Figure 2.1 EBASCO operating companies and power plants in North Carolina, 1925

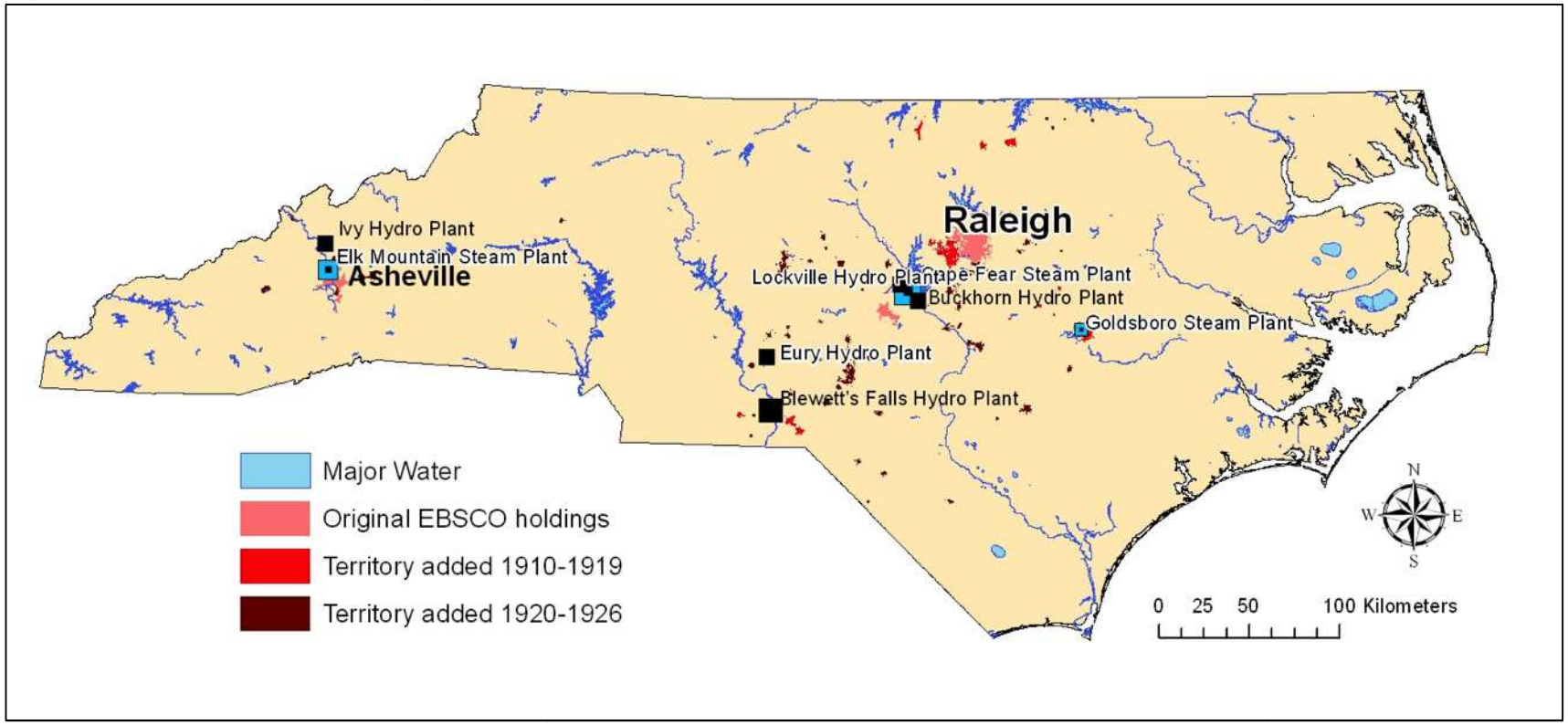


Source. Riley (1958)

electric utilities as natural monopolies. While this allowed CP&L to serve an increasing number of communities between 1908 and 1920, its retained revenues were not sufficient to fund this costly expansion. While the costs of individual transmission wires, distribution networks, and substations are not generally reported in the company's annual reports, several examples of the high capital costs are evident. In 1914, CP&L constructed a new gas plant in Raleigh (CP&L was also involved in the gas business until 1930s), which on completion cost $111,000. Despite net revenues of $611,396 in 1914, after paying expenses, interest due on bonds, dividends on preferred stock, and setting aside money for depreciation, CP&L only had cash totaling on $67,464. This would have only paid for half of the gas plant, not to mention the 23.5 mile transmission line and substation that were built the same year (Carolina Power & Light Company 1915). This points to the need for outside investment in order for CP&L to grow.

After a decrease in growth brought on by the tightening of capital during and immediately after World War One, a period beginning in 1923 marked the beginning of rapid expansion for CP&L. A large steam plant (30,000 kw) was built in Moncure and numerous small local municipal and private utilities were acquired in 1923. At the same time, the Pigeon River Power Company was formed and used to acquire several power producing companies in the North Carolina mountains. Taking advantage of loose capital in the mid 1920s, CP&L, via the Pigeon River Power Company, was also able to snap up a number of other small operating utilities across the state in 1924, as Figure 2.2 makes clear (Riley 1958).

Figure 2.2 Carolina Power and Light Territorial Growth, 1910-1926



Source. Riley (1958)

By 1924 the CP&L system had expanded tremendously, with increases in the number of CP&L customers by 837% (from 4,517 to 42,321) and its power output (including purchases from other EBASCO companies) by 1337% compared to 1911. During the period of 1916-1924, CP&L's total utility plant increased by nearly $17.8 million. Its total capitalization increased during the same period by almost $20.3 million, $10.6 million of which came from issuing additional common and preferred stock. However, during the same period, after payment of bond interest, dividends, and depreciation, CP&L only retained slightly more than $2.6 million during the period, nowhere near the amount required to finance the aggressive growth the company experienced. The boom in financing that CP&L incurred in 1923 and 1924 is evident in the rapid increase in the amount of preferred stocks (85.6%) and bonds (43.6%) sold[19]. Faith in CP&L, and public utility stocks in general, was high, and its stock prices overall were climbing (White 1990). CP&L common stock had become something of a darling on Wall Street, with an astronomical 567% increase in stock price between 1923 and 1925, ending May 14, 1925 at an all-time high of $400/share[20].

With stock prices peaking, in May of 1925 plans began to emerge for the consolidation of CP&L and the companies it held, into a single organization. Some analysts saw this as part of EBASCO's plan to create a 'Superpower' giant, a single electric utility that stretched from New York down the entire East and Gulf Coasts to

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[19] This financial analysis is based on figures from CP&L Annual Reports between 1911-1926, an unpublished dissertation by Fletcher (1938), and evidence presented at U.S. Federal Trade Commission (1930) hearings.
[20] CP&L stock prices were found quarterly as reported in the *New York Times* financial pages between 1923 and 1925.

Texas[21] ("Gulf to Niagara", 1925). What emerged in the short term, however, was more capable of generating the investment capital needed for further spatial expansion in North Carolina.

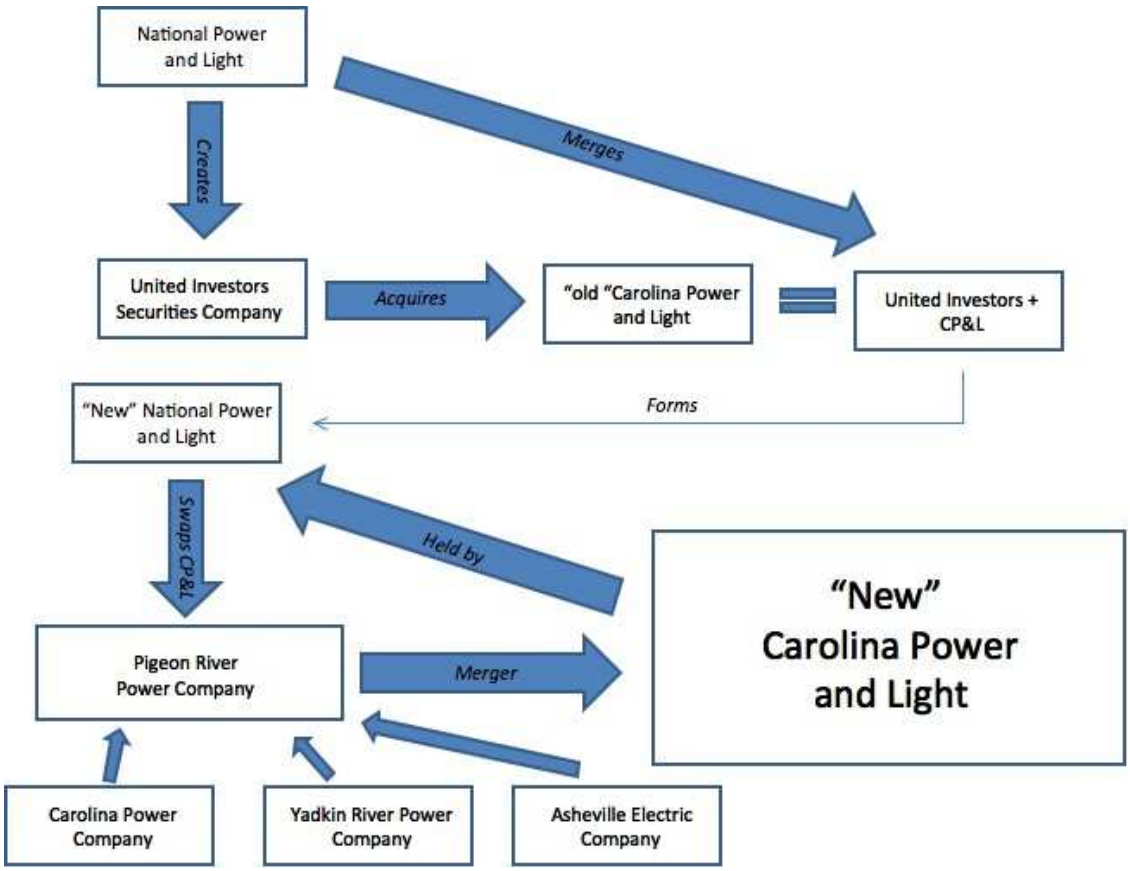
The birth of the 'new' CP&L

As mentioned in the introduction to this chapter, the 'new' Carolina Power & Light was formed during the early months of 1926 following a series of complex financial maneuvers (see Figure 2.3 for an attempt to simplify this transaction). The new CP&L was to be held by National Power and Light Company, one of several holding companies directly under EBASCO in the pyramid structure. Using its improved ability to attract finance capital (as evidenced by a new $18 million bond issue), CP&L quickly began construction on two generation plants to power current and speculative customers in the central and western parts of North Carolina. However, CP&L had also become even more heavily leveraged, with the pace of new common stock issuances far outstripping its revenues. In 1924, the last Annual Report before the consolidation reported a total common stock valuation of slightly more the $9.6 million. After the consolidation in 1926, common stock was valued at more than $37 million, nearly all of it held by EBASCO pyramid.

EBASCO president S.Z. Mitchell felt there was no need to worry, even as stock prices climbed at rates far faster than revenues. The holding company structure, he felt, would help to spread the risk: "Floods may come and wipe it out; cyclones may hurl it down; crops may fail; business depressions there may be acute". However, if numerous men combine their investments onto a larger scale, with numerous

[21] As Chapter Five shows, interest among public and private electric utilities in developing regional scale production capacity continued well into the 1970s.

Figure 2.3 CP&L's Convoluted Consolidation



Source. U.S. Federal Trade Commission (1930)

interconnected plants, "widely diversified geographically, the floods will never come all at once; the failure of crops will never come all at once; a depression in business is unlikely to come all at once, if diversity is widely made" (Mitchell 1960: 84-85 quoted in Hughes 1979: 159). The stock market crash of 1929 proved that this confidence was significantly misplaced.

Electric Utilities and the Crash of 1929

Throughout the 1920s the US economy grew at a rapid pace, in large part because the issuance of industrial securities, like those of the power companies, had become a more widespread and accepted practice. By 1929, however, public utility stocks were a large part of the speculative bubble building on Wall Street, as increases in share prices for utility stock were far outstripping increases in dividend payouts (White 1990). This, of course, suited EBASCO just fine, as most of its own holdings were in common stock, with preferred stocks and bonds held by the public. With the market peaking in 1929, stock prices that had been propping up the heavily leveraged utilities collapsed. Investors lost millions, and several holding companies failed. Samuel Insull, head of Chicago Edison and once lionized as among the sharpest industrial minds in the world, was chased out of the United States (Hughes 1979). Investors blamed the electric utilities, among others, for their losses, and utility practices came in for close examination by the Federal Trade Commission (FTC), with hearings beginning in 1930. The CP&L merger was among those investigated.

The FTC had a laundry list of concerns with utility holding companies: the pyramid corporate form that encouraged the excessive issuance of securities;

holding companies that charged operating utilities excessive fees for consulting services that were passed on to customers; interstate contracts and operations that made regulation impossible by state regulatory commissions; and finally, utility security values that could be 'written-up', or in other words, arbitrarily increased, thus increasing a utility's capitalization that allowed them to claim the need for higher rates of return (Hughes 1983). On this final count CP&L was called forth to defend itself.

In a testimony that lasted two days, and following an investigation of CP&L's accounting books lasting over three years, the convoluted events of early 1926 that led to its consolidation were recounted. At issue was the write-up in value of 'old' CP&L stock after its initial purchase by United Investors Securities Co., an intermediary company set up by EBASCO that, in the words of Carl H. Depue, the FTC accountant that investigated CP&L's books, "seemed to have been created for the sole purpose of acquiring the stock … and … it had no other assets at all when it was merged with the old National Power and Light Co. and became part of the new National Power and Light Co." (U.S. Federal Trade Commission 1930: 9). The write-up resulted in a $400 per share increase in the old CP&L stock that was then maintained throughout the rest of the merger. CP&L presented no evidence that the write-up was based on any appraisal or evidence, and Depue claimed that it was facilitated by the "circuitous exchanges and reorganizations involved" (U.S. Federal Trade Commission 1930: 21). Of CP&L's total value of nearly $80,000,000 on December 31, 1928, Depue claimed a full $19,000,000 could be attributed to this write-up.

It is important to note that the case of CP&L was not an isolated incident. Over the course of the FTC hearings into electric utilities, many companies in the EBASCO empire, as well those in other holding companies, were called to testify. Most had engaged in some sort of illegal behavior, including arbitrary write-ups in value. White (1990) argues that public utility stocks were a favorite of speculators leading up the stock market Crash, and as such were a central feature of the bubble that built up in 1928 and 1929. A primary reason for this, he argues, was the difficulty in assessing the market fundamentals of an industry that was deliberately obscuring earnings, expenses, and operating structure. The comments of FTC accountant Depue on the manner in which CP&L's consolidation occurred is supportive of White's (1990) claim: The "inflation was accomplished by methods which are indefensible", with "provisions in the merger agreement … which not only do but evidently were intended to preclude good accounting practice and distort the facts" (U.S. Federal Trade Commission 1930: 43). The state regulatory commission was at a significant handicap due to CP&L practices, as aside from overstating its valuation CP&L also understated the net income of its operations. A further challenge, and perhaps even the root cause of the entire FTC investigation, was the difficulty CP&L's accounting practices created for potential investors.

CP&L in the 1930s

The 1930s were largely a decade of hardship for CP&L. EBASCO and its subsidiaries lost tremendous amounts of value in the Crash of 1929. The Depression resulted in dwindling electricity demand from consumers and industry, and CP&L was unable to pay investor's dividends between 1933 and 1936. The investigation

also brought to light previously unknown or misunderstood elements of the relationship between EBASCO and CP&L. Editorials in Raleigh newspaper the *News and Observer* described EBASCO as "parasites", noting that the 'supervisory' fees charged by EBASCO cost CP&L 10% of net income in 1933, a year in which it failed to pay dividends. The paper further argued "that the many sins of the utilities ought to be placed at the door, not of the operating utilities which sell power to the people, but of the holding companies, which have dominated the operating utilities for a profit which sometimes approximated plunder" ("Remote Control Costly" 1934).

The investigation of CP&L and other electric utilities by the FTC provided an impetus for the passage of the Public Utility Holding Company Act of 1935 (Hughes 1983). The Act did several things. First, it forbade utilities for operating in multiple states unless its territories were contiguous, and for holding companies that did operate in multiple states, put its operations under the close scrutiny of the Securities and Exchange Commission and Federal Power Commission (Hyman et al. 2000). This was designed to allow for more effective state regulation. Second, the Act kept utilities from engaging in non-utility businesses like the ice factories and streetcar companies many utilities used to obscure its assets and profits. Finally, the Act 'flattened' the corporate structure of holding companies, eliminating the unnecessary layers that served mostly to obfuscate its activities, but also to increase the price of electricity to end consumers (Hughes 1983; Hyman et al. 2000).

The Public Utility Holding Company Act coincided with the passage of another that showed the widespread distrust in privately owned utilities, the Rural Electrification Act (REA) of 1935. The REA set up a federal agency to provide

financial, management, and technical expertise to non-profit cooperative organizations that would bring electricity to rural areas previously ignored by private utilities. While the formation of the REA and their operations will be examined in more detail in Chapters Four and Five, it is worth noting that the program was enormously successful, with most of the rural areas of the United States being electrified by the early 1960s. As a result of its financial troubles and the development of a viable alternative way of spreading electricity in the REA, CP&L territory grew very little in the 1930s, and its territory would largely be confined to that of the early 1930s, save one merger in the 1950s. The finance that had fueled its growth largely dried up during the 1930s, which made it impossible to continue its expansion.

The start of World War Two finally began to lift CP&L out of its malaise. The defense industry grew rapidly up in the United States South, and the heavy power needs of defense contractors boosted CP&L's demand. In 1941, however, CP&L's write-up during its consolidation came back to haunt them. New hearings were opened, this time by the Federal Power Commission (FPC), and stretched on for nine months. The FPC argued that CP&L was guilty of inflation of plant accounts, that the close relationship between CP&L and EBASCO precluded 'arms length bargaining' in the merger ("Editorial" 1942a; "Editorial" 1942b), and that CP&L had falsified its accounts in order to make the company appear more attractive to investors and able to charge consumers higher rates ("Editorial" 1941).

The entire incident was finally resolved in 1943. One of the net effects of the Public Utility Holding Company Act of 1935 was the so-called 'death sentence', a

clause that required the dismantling of non-contiguous holding company systems and elimination of intermediate holding companies (Hyman et al. 2000). CP&L was ordered to reduce its book value by the $18,648,638 write-up, and under the death sentence clause, National Power and Light, CP&L's immediate 'holder' in EBASCO's pyramid, was to be dissolved. The North Carolina Utilities Commission ordered CP&L to cancel nearly 1.5 million shares of common stock held by National Power and Light ("Editorial" 1943; Riley 1958), and several years later EBASCO also divested its remaining shares of CP&L[22]. After the divestment, CP&L, for the first time since its inception, was no longer associated with EBASCO. Its growth was now to be more closely regulated by the North Carolina Utilities Commission.

As mentioned in the introduction to this chapter, CP&L was not the only electric utility operating in eastern North Carolina during the period. Municipal electric utilities were also operating in small and medium size towns across the region. While the formation of municipal utilities will be examined in more detail in Chapter Three, it is worth considering how the same natural limits endemic to electricity production – the need to temporally match electricity production and demand – that plagued CP&L affected these utilities as well. While the utility holding company and state regulation provided a spatial and technological fix for investor owned utilities, the nature of municipal ownership meant that these options would not be available to municipal electric utilities. The next section will examine how

[22] In the case of EBASCO, the shares did not go far, as the shares were paid out as a dividends to EBASCO's common stockholders (Wall Street Journal, November 19, 1948).

these towns attempted, ultimately unsuccessfully, to develop their own spatial fixes during the late 1920s.

2.5 Frank M. Wooten and Joint Municipal Electricity Production

As previously described, by the mid 1920's CP&L was rapidly acquiring territory and electrical systems across North Carolina. The holding company formation was providing the financial capital needed to purchase systems, construct plants, and extend transmission lines to connect the increasingly distant parts of its system. At the same time, numerous small-to-medium sized towns in Eastern North Carolina remained just outside of their grasp. The larger towns of Rocky Mount, Wilson, Kinston, Tarboro, and Greenville were each powered by municipally owned electric utilities complete with a power plant and local distribution system. Instead of issuing franchises to a private company to provide the town's electricity, these towns kept the franchise for themselves. While they were not subject to state regulation by the Utilities Commission, each town's municipal boundaries represented the extent of the territory in which they were allowed to sell electricity (although this would become a matter of some debate).

By the mid 1920s, the municipal utilities had become extremely important to the municipal budgets of the towns they served. The reasons for this will be discussed in more detail in Chapter Three, but at this point it is important to note that each of these towns ran their electric utility at a 'profit', essentially charging more for the electricity they sold than it cost to produce. The 'profits' would then be shifted around inside of the municipal budget to make up for shortfalls in other

areas. This practice provided an important tool for municipal leaders eager to decrease property taxes and attract businesses to the town.

During the 1920s these towns were growing rapidly (see Table 2.1). In rural areas, fluctuating agricultural commodity prices were the norm due to chronic overproduction on farms, and the challenging life of tenant farming was becoming the norm. Most population growth in cities was an effort to escape this life, with thousands of people leaving farms for the draw of jobs in the fast growing textile and manufacturing sectors. The growth in population and industry was mirrored by increased electricity use, a trend that was not lost on CP&L. In August 1926, flush with cash after their consolidation and filled with bravado after numerous successful municipal system takeovers, CP&L general manager Paul Tillery made their aspirations clear: "Many of the larger towns of Eastern North Carolina have been without sources of power supply other than small municipally operated steam plants" (Riley 1958: 191). This, Tillery argued, put industry there at a disadvantage, as they needed the assurance of a continually expanding power supply, the regulation of rates charged, and most importantly in CP&L's case, "to deal with privately-owned enterprises rather than those that are municipally-owned and politically managed" (Riley 1958: 191). Tillery was then bold enough to name CP&L's takeover targets:

> The power companies are in position to serve the Eastern Section of the State and are now knocking at the door. Power transmission lines are being extended to Rocky Mount, Tarboro, Wilson, Scotland Neck, Enfield, Elizabeth City and Edenton, and these cities and towns will for the first time have the potentialities of future development. (Riley 1958: 191)

Table 2.1 Eastern North Carolina Town Populations, 1900-1930

Town	1900	1910	1920	1930
Kinston	4,106	6,995	11,676	14,763
Elizabeth City	6,348	8,412	9,994	11,518
Wilson	3,525	6,717	13,569	17,580
Rocky Mount	2,937	8,051	18,098	25,726
New Bern	10,724	11,405	13,756	14,080
Greenville	7,323	8,558	11,229	15,386

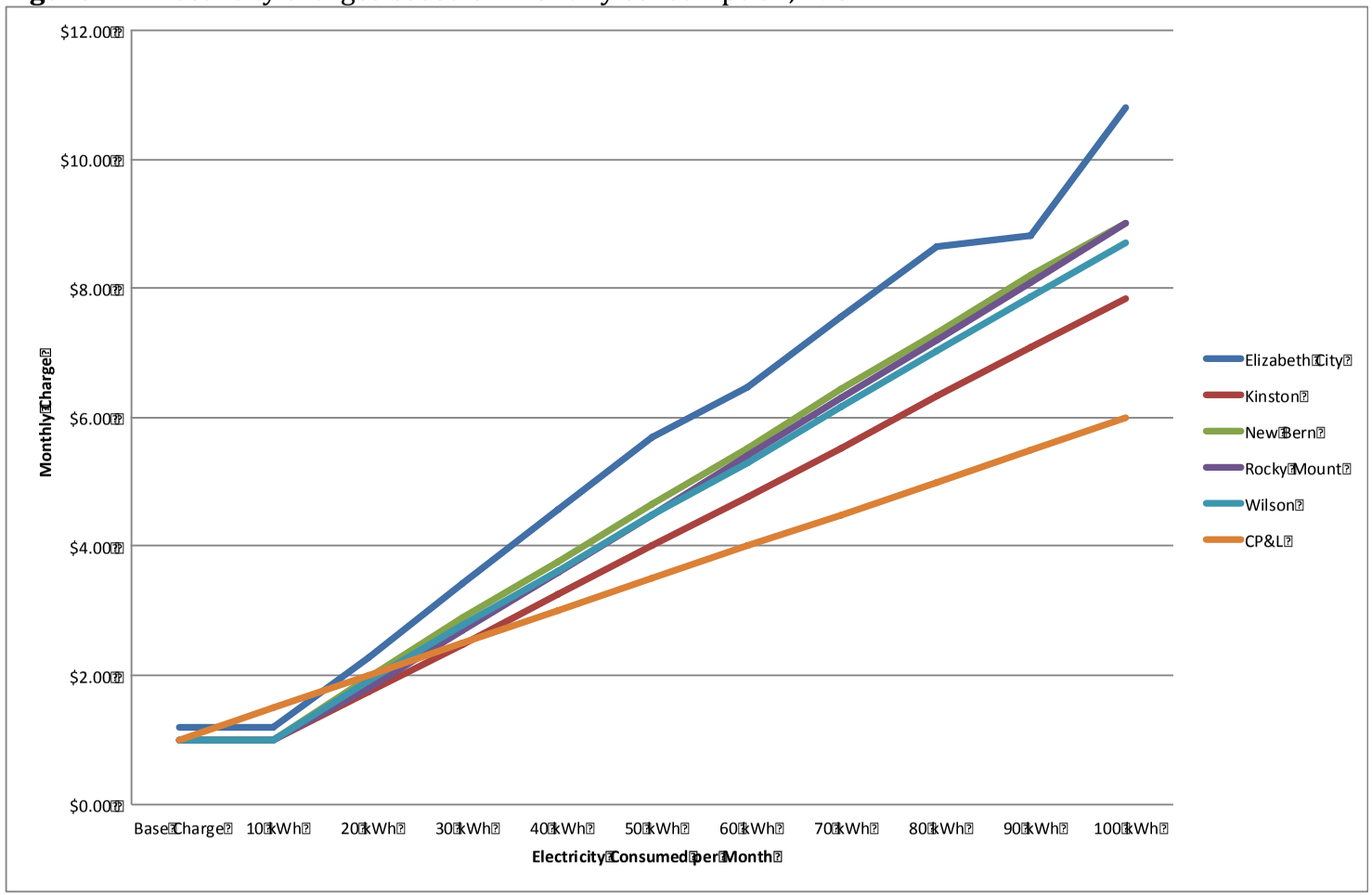
Sources. United States Decennial Census (1900; 1910; 1920; 1930)

Table 2.2 Electricity charges based on monthly consumption, 1932

Town	Base Charge	10 kWh	20 kWh	30 kWh	40 kWh	50 kWh	60 kWh	70 kWh	80 kWh	90 kWh	100 kWh
Elizabeth City	$1.20	$1.20	$2.28	$3.42	$4.56	$5.70	$6.48	$7.56	$8.64	$8.82	$10.80
Kinston	$1.00	$1.00	$1.74	$2.49	$3.26	$4.01	$4.78	$5.53	$6.32	$7.09	$7.85
New Bern	$1.00	$1.00	$1.96	$2.90	$3.77	$4.65	$5.53	$6.44	$7.32	$8.19	$9.00
Rocky Mount	$1.00	$1.00	$1.80	$2.70	$3.60	$4.50	$5.40	$6.30	$7.20	$8.10	$9.00
Wilson	$1.00	$1.00	$1.92	$2.78	$3.62	$4.48	$5.31	$6.16	$7.02	$7.88	$8.71
CP&L	$1.00	$1.50	$2.00	$2.50	$3.00	$3.50	$4.00	$4.50	$5.00	$5.50	$6.00

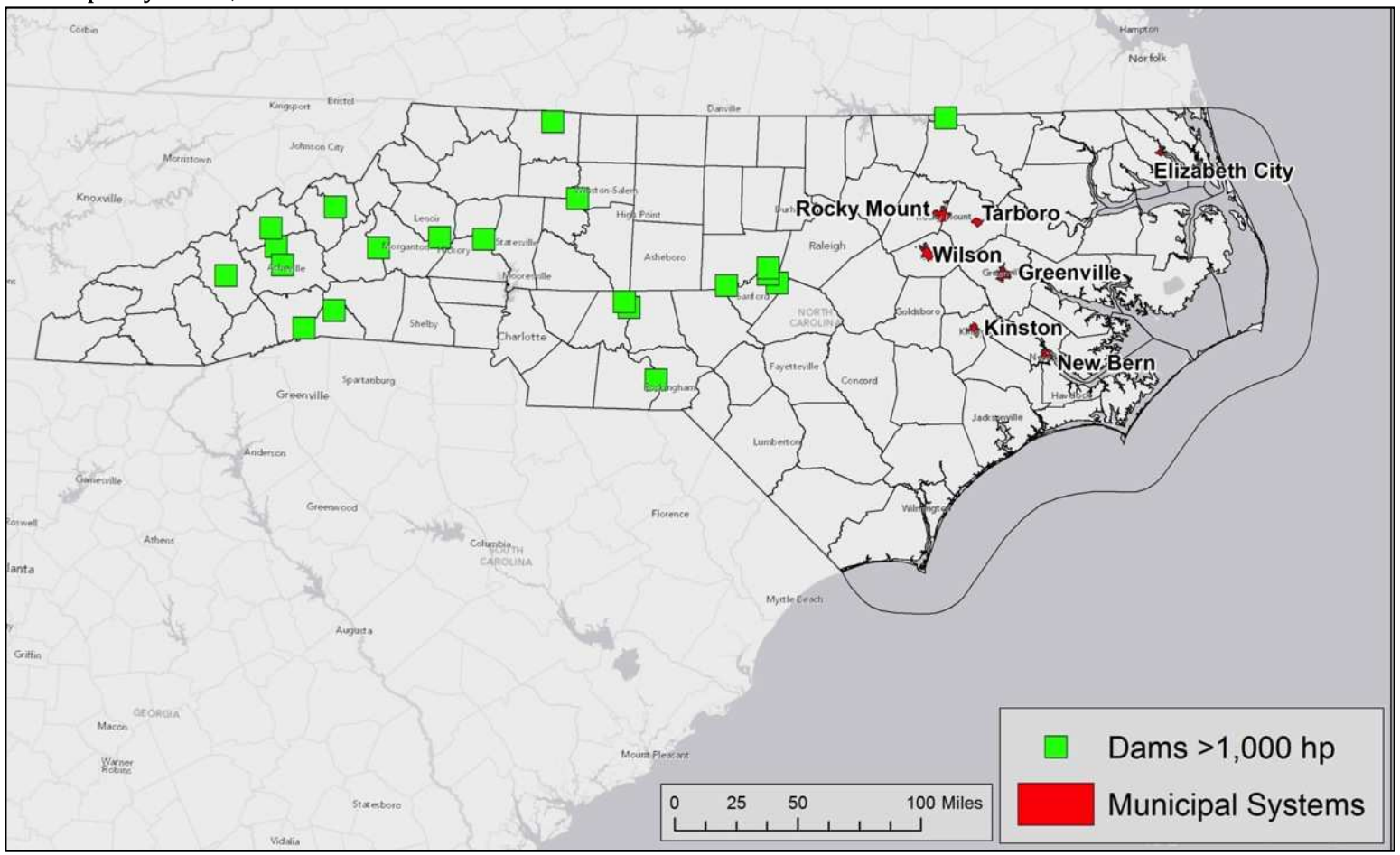
Source. Waddell (1932) Report No. 158 Public Utilities Rate Study for North Carolina Corporation Commission
Note. CP&L rate based on RL-3 rate in effect in Goldsboro, a city similar in size and makeup to those listed above.

Figure 2.4 Electricity charges based on monthly consumption, 1932



Source. Waddell (1932) Report No. 158 Public Utilities Rate Study for North Carolina Corporation Commission
Note. CP&L rate based on RL-3 rate in effect in Goldsboro, a city similar in size and makeup to those listed above.

Figure 2.5 Location of hydroelectric facilities with greater than 1,000 hp capacity in relation to eastern North Carolina municipal systems, 1925



Source. North Carolina Department of Conservation and Development (1925)

Just over a year prior, Frank M. Wooten, a prominent attorney in Greenville, North Carolina, had contacted Tillery on behalf of several municipalities seeking cheaper electricity. Wooten's vision was for the towns of Eastern North Carolina to join together and jointly seek electricity service from either a large plant owned and operated collectively by the towns, or to jointly buy power at wholesale from CP&L. In his letter to Tillery, he makes clear that the municipalities would be interested in securing competitive bids for providing power for not just one town, but for all of them together (Wooten 1925a). This letter represents the starting point of a nearly five-year effort on the part of Wooten to bring municipal electric utilities together in Eastern North Carolina. As Chapter Five shows, the idea of electrically interconnected eastern North Carolina would loom large in the spatial imaginaries of Eastern North Carolina municipal utilities well into the 1970s.

The Municipal Limits to Electricity Production

Like the regulated monopoly service territory, municipal boundaries effectively eliminated competition from electricity service in towns. In the early part of the twentieth century, this solidified the industry in the eyes of potential investors. As a result, municipalities could issue bonds to obtain the capital needed to build power plants. In order to show their credit worthiness, towns were sometimes required to have a census taken of their populations so that it could be reported accurately to potential bond purchasers. However, once a town had proven its credit worthiness, bonds became an effective method for financing municipal improvements.

In the early part of the 20th century electricity demand was generally low, and expectations for the time that service was available was also limited. As a result, a small power plant could easily meet the demand. As populations and demand grew, however, power plants needed to grow larger. In Rocky Mount, for example, the first power plant built in 1902 had a capacity of 90 kW. It was replaced and expanded in 1908 to a 400 kW plant, and again in 1914 to 900 kW. The next major expansion occurred in 1928, when its capacity was increased to about 7,500 kW (Beck 2002). While the coal powered steam plant increased in size with each replacement or addition, during the same period the largest new power plant could easily produce far more electricity for far cheaper than these small-to-medium sized towns could produce. For example between 1913 and 1923, CP&L's largest steam plant would increase from a 1000 kW plant in Raleigh to a 30,000 kW plant in Moncure – substantially larger than the plant in Rocky Mount (Riley 1958). Further, advances in long distance electricity transmission meant that power produced at hydroelectric plants could be shifted over further distances. Because hydroelectricity was far less expensive than that produced by steam, it was extremely desirable, especially in Eastern North Carolina. However, the flat topography of the region meant few rivers could be harnessed for hydropower, leading to the use of more costly steam power locally, while towns in the central and western parts of the state had access to hydropower (see Figure 2.5).

Ultimately, electricity could be procured more cheaply from these larger plants, but only if they were being run at full capacity a majority of the time. Because their electricity demand was insufficient to approach the plant's capacity, it was not

feasible for the towns to invest in one of the new giant plants. Unlike investor owned utilities, these towns could not seek out new customers, as they were limited by the size of the population residing within their municipal boundaries. Table 2.2 (or Figure 2.4) compares the residential price of electricity between CP&L and a number of eastern North Carolina towns with electricity generating capacity. While the 1932 data is from slightly after the period in discussion, the significant discrepancy in costs between the two groups is clear, especially as more electricity is consumed. What is clear is that towns were becoming increasingly less competitive in terms of price. In light of this fact, some people like Frank W. Wooten sought to find a solution.

Joint Municipal Action

In October of 1925, only one month after contacting CP&L on their behalf, Frank M. Wooten again contacted elected officials and municipal plant supervisors across eastern North Carolina. In addition to working as an attorney in Greenville, Wooten was active in the Pitt County Democratic part and would later serve as Superior Court judge and member of the North Carolina General Assembly. In his letters, Wooten appealed for joint action between the towns in order to build a large centralized plant that would provide electricity to each of the towns. The initial response was enthusiastic, with several respondents noting that the lack of cheap power was "holding back the progress of Eastern North Carolina" (Bullock 1925). A letter from L.L. Gravely, mayor of Rocky Mount, reported that because of the cheap power available from private companies Rocky Mount had recently lowered its electricity rate in order to make it competitive (Gravely 1925). Despite the overall

optimistic response, there were challenges to be faced as several towns had recently installed new production equipment and were reluctant to abandon them (Coburn 1925).

Aside from elected officials, the project also had support from several engineers, most of whom were already working with municipal electric systems. William Olsen of Consulting Engineers was particularly interested. He had recently proposed a similar plan that included "the construction of a central power station for the entire section located at a point that would be suitable so far as load center" to be funded by "a joint bond issue for the construction of such a plant and that the proposition should be gotten up in a manner similar to that in which private undertakings of a similar nature of funded." Essentially, Olsen was suggesting the formation of a municipal stock company, with towns funding the operations and sharing the profits based on their investment and yearly consumption. Olsen, aware of the role electricity revenues played in municipal budgets, promised to sell the electricity at "a minimum rate, comparable with the best rates to be had from the Power Companies in other localities, such rate permitting the municipalities to retail current for lighting and power at a profit" (Olsen 1925). To support his efforts, Wooten hired Lucy Cherry Crisp to ghost author articles for local newspaper to publicize the project (Crisp 1925).

In response to this initial show of enthusiasm, in December 11 of 1925, Wooten assembled municipal leaders from a number of towns in Greenville, NC to discuss the feasibility of interconnecting their systems. Reporting on the conference, Wooten felt that "such circuit is practical, that it would be economical and would

furnish all the electric power that might be needed for any size enterprise or factory" and "That the details of a working agreement could be actually and equitably worked out to the mutual advantage of the several towns and rural sections producing and using the power" (Wooten 1925b). In the months that followed, Wooten directed Crisp in a publicity plan that included articles about the feasibility and value of the plan and pamphlets that showed the benefits of municipal ownership (Crisp 1926a; Crisp 1926b). However, several obstacles began to appear on the horizon.

The first obstacle was legal. It was not entirely clear if municipal electricity providers could legally sell electricity outside of their city limits. This would remain an ongoing problem, and would again rear its head as state and federal rural electrification efforts became formalized in the mid 1930s (see Chapters Four and Five). The second challenge came from the distance between towns and the cost of transmission. Some towns, especially those further from the center of the project area, were reluctant to hook up to the system due to the cost of long transmission lines. L.R. Mills of Scotland Neck, for example, wrote that "the towns off of the edges (like ours) will probably be slower to hook up due to the costs but would eventually do so" (Mills 1926). The third challenge was a lack of interest. R.J. Grantham, the mayor of the town of Wilson, supported the project but felt that some members of the Board of Alderman were luke warm on the project (Grantham 1926). The ambivalence of some towns about the project was possibly due to the increasing activity of private power companies attempting to buy up municipal systems.

Wooten was actively engaged in trying to persuade municipalities not to sell their systems. For example, in June of 1926, the town of Tarboro was considering selling their own plant. In an impassioned letter sent to the Tarboro Board of Alderman, Wooten argued against the sale of the system. In making a decision of "vast importance to Tarboro, Edgecombe County, and that section of East Carolina between the Roanoke and Neuse Rivers", Wooten felt the town must consider several factors. First, the plant was now profitable and bringing money into the community, but only by keeping the ownership local would the funds continue to flow into the town. Second, Wooten questioned the central argument of the private power companies. Echoing the sentiments of CP&L's Tillery, private power companies claimed that large-scale manufacturing would only locate in places with private ownership of the electric utility. Based on the example of several towns whose systems were municipally owned, Wooten questioned whether this was the case. Further, Wooten argued for the importance of recognizing that "our group of towns and the counties are permanently and primarily agricultural, and to this great advantage manufacturing may be added as an incidental or secondary line of work." Because of this, Wooten urged the town not to sell, and to "build for the future as our ancestors built for us, that restraining contracts may not interfere with our development continuing" (Wooten 1926a). Wooten's letter writing was evidently effective, as the sale of the system was blocked, with one member writing to Wooten stating that it was his letter that convinced him to oppose the sale (Bridgers 1926). In replying to this letter, Wooten employed a term that would shape his actions for the next several years. Because the "towns are now sufficiently developed to

contribute to the development of the country districts", Wooten argued, "We can now develop an enormous 'Decentralize [sic] City' in Eastern North Carolina" (Wooten 1926b).

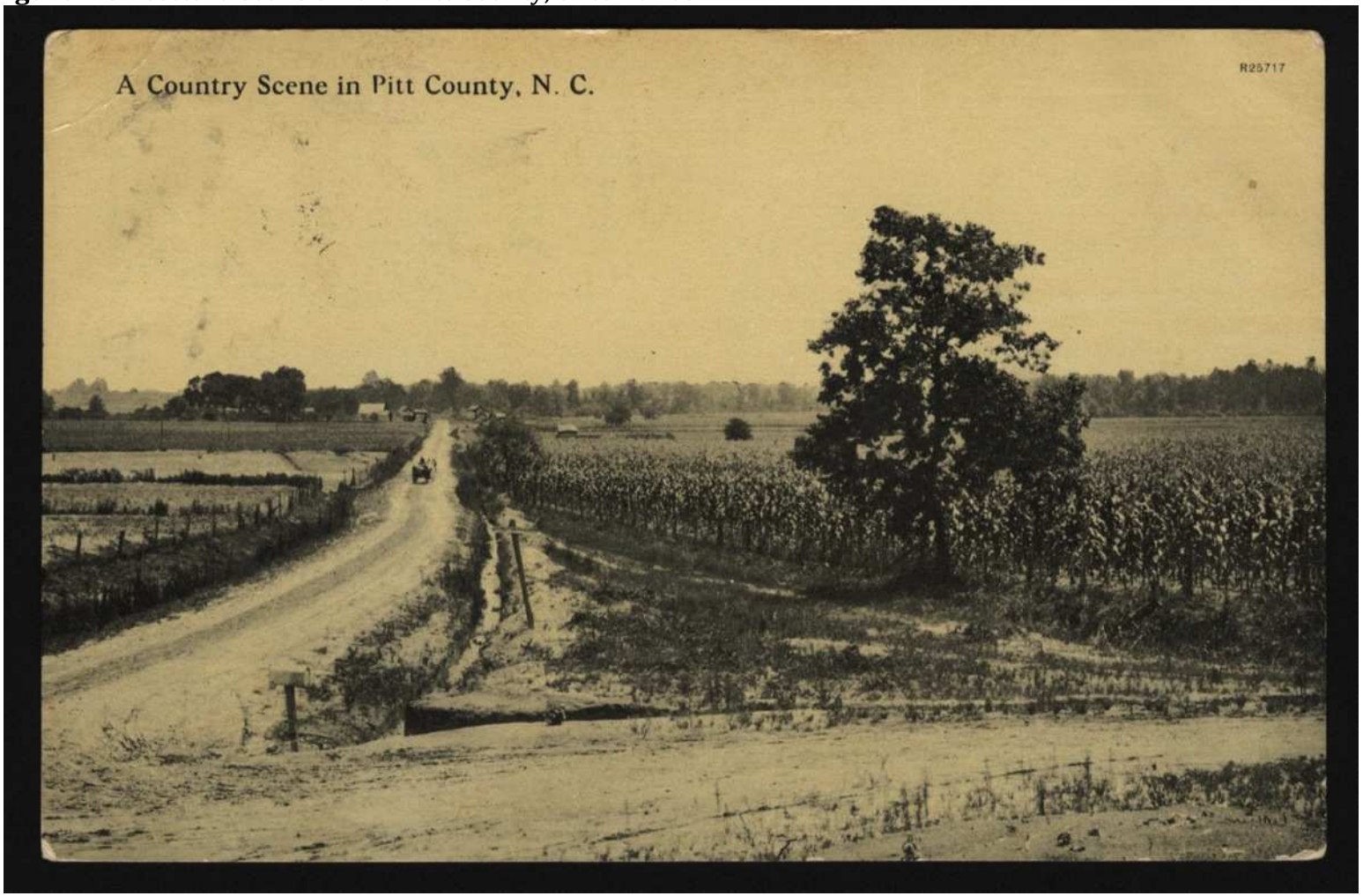
The Decentralized City

The Decentralized City became Wooten's guiding idea in trying to boost the idea of a joint municipal electric system. In describing the policy of Greenville's municipal electric system, Wooten outlined a vision for electricity in Eastern North Carolina that mixed an entrepreneurial municipal service, Edenic rural life, and a long-term regional development outlook (see Figures 2.6 and 2.7):

> Greenville's policy is to extend its electric power service throughout Pitt County as far as practical, following the paved roads, generally, in an effort to develop a decentralized city, permitting the residents of the county the privilege of living on such size parcel of land as he may choose to own and have all the practical conveniences common to the ordinary town lot. Greenville expects no direct return in the way of profit from such country service, but does aim to develop the entire county and there from receive an indirect benefit and profit from such service (Wooten 1926c).

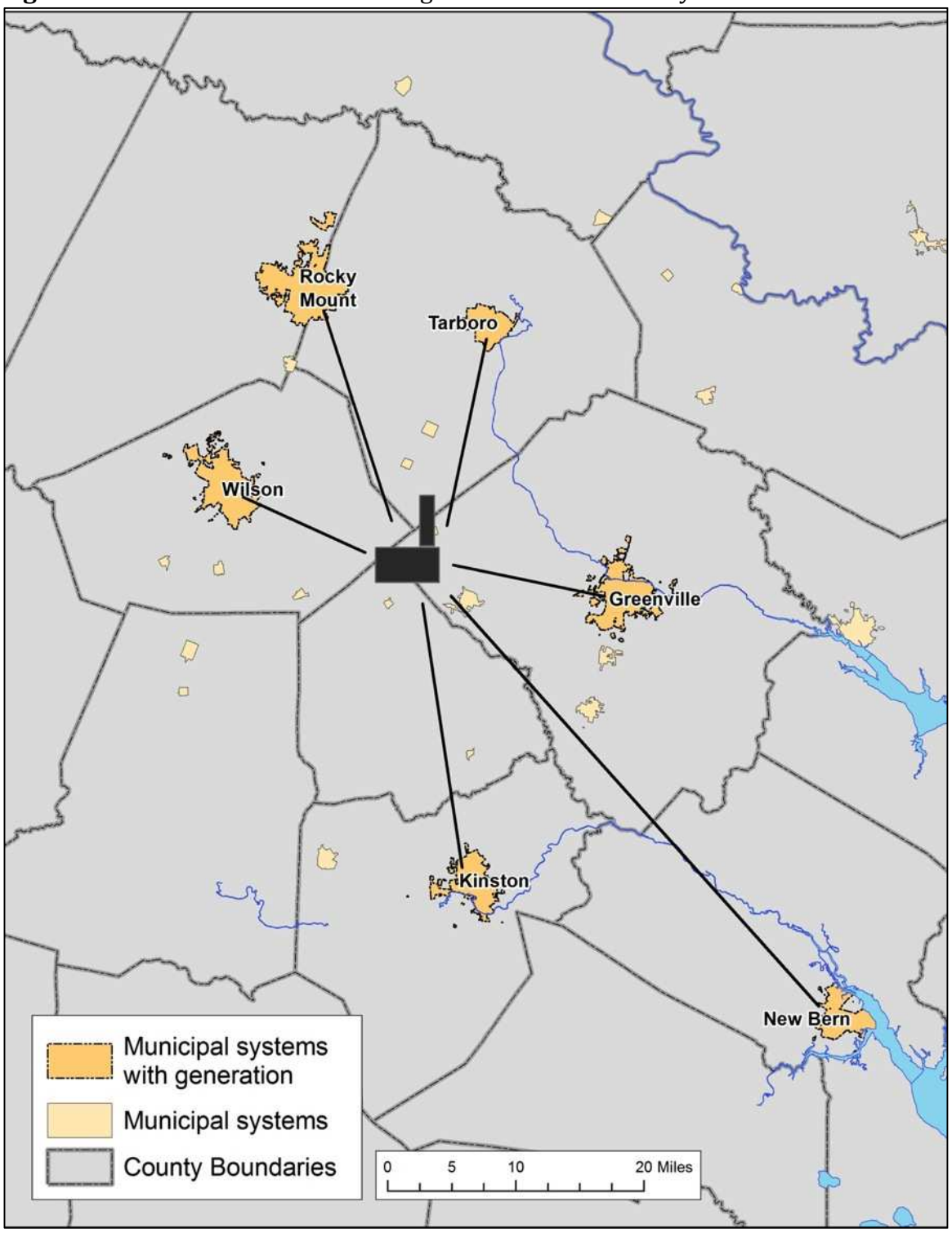
In a letter congratulating a Kinston official on the rejection of a private bid for their plant, Wooten further outlined the decentralized city ideology that would be made possible by joint municipal action. Because the "municipal electric power plant is the real HEART of municipal commerce, convenience, and growth" (emphasis in original), by extending service to rural areas it is possible to "make a country grow in every desirable way: home life on small farms capable of supporting a small family each, can be made most attractive." Ignoring the fact that many farm households were poor tenant farms unable to escape their landlords

Figure 2.6 Postcard scene of rural Pitt County, circa 1910s



Source. "Country scene in Pitt County, N.C." (1910-1920)

Figure 2.7 Frank M. Wooten Sr.'s Imagined Decentralized City



control, Wooten reiterated that via his electricity-led plan "commerce, convenience and growth in Eastern Carolina" would "exceed, in reality, the Garden of Eden in fancy and description" (Wooten 1926d). Only municipal plants were in position to offer this sort of development because "municipal plants are not under supervision of the corporation commission. They do not have to pay taxes, and are in truth real public service corporations. No other corporation can compete with them in rendering their service in question" (Wooten 1927). Despite the idealistic scenarios laid out by Wooten, it took nearly 60 years for some (ultimately doomed) version of this plan to come to fruition[23]. What did occur was increasing pressure for municipal systems to sell out to investor owned utilities.

Increasing Pressure

In 1928 the FTC opened an investigation into the actions of private utilities attempting to sway local opinion against municipal ownership (Johnson 1928). Though the city of Greenville reported no illegal actions being taken by IOUs, Wooten believed that some private power companies had town representatives on their pay roll in order to "shape and guide public sentiment away from municipal ownership" (Wooten 1930). In addition, Eastern North Carolina towns were subject to a steady stream of inquiries and offers from IOUs. Industrial recruiters, possibly operating under the influence of private utilities, contacted numerous eastern North Carolina towns to argue in favor of privately owned electric utilities. In one such

[23] As Chapter 6 shows, joint eastern North Carolina municipal investment in electricity generation finally occurred in 1981, and with disastrous consequences for the town's inhabitants, when 32 municipalities purchased 16% of the Shearon Harris nuclear power plant.

letter to the Chairman of Greenville's Industrial Committee, an industrial recruiter argued that Greenville's system cannot compete with "the great public utility interests which are out to make the Southeast an industrial empire" nor "the prestige, friendships, business relations, advertising, and other influences which are rightfully exerted by public utility companies in extension of their business" (Gilbert 1929).

By September of 1930, interest from IOUs was making Wooten increasingly worried. Reports were coming in from plant superintendents that "the Power Companies are getting ready to make a drive for these plants, in eastern N.C." (Godfrey 1930). An agent from the Citizens Public Utilities Company, headquartered in New York City, was contacting numerous systems with an eye towards acquiring their properties. Their agent stated that "there is right now in the South a decided drift from Municipal ownership to private control", and towns should be less weary about discussing his matter (Graham 1930). Despite this intense pressure between 1926 and 1930, none of the municipal systems sold their plants, and nor were any IOUs given franchises. But Wooten's dream of a centralized power plant to electrify the decentralized city did not come to fruition either, despite the initiation of the East Carolina Municipal Association as a formalized mode cooperation between towns. However, the groundwork for joint municipal action on electric utility matters had been laid.

2.6 The work that territory does

For investor owned utilities, the non-competitive territory, which was enabled by state regulation, had combined with the holding company to attract

investment for spatial expansion, all with an eye towards smoothing the load curve. However, as the holding companies were disbanded, investment dried up. In fact, by 1933 financing for utility projects nationally had nearly stopped (Kellogg, 1939). Without necessary revenues to fund its further expansion, CP&L and other utilities needed to find new ways to increase profits rates within its existing territory. The non-competitive service territory, which had once assured CP&L of its ability to attract investment and expand, was now acting to restrict its growth. CP&L, and the investor owned electric utility industry in general, needed a new fix that would allow it to increase its profits.

Municipal boundaries, which were the spatial fix of municipal electric systems, also hampered their expansion. Because electricity could be obtained more cheaply by building larger plants, investor owned utilities, whose powers of territorial expansion were far greater than a municipally owned system, gravitated towards their construction. Municipal electric systems, on the other hand, did not have the ability to spatially expand beyond current boundaries to find new demand. Wooten's goal was for towns to circumvent these municipal limits, to join together, and take advantage of the cheap power a larger plant could provide. Without the demand, however, any additional production capacity would be wasted. The issue of the materiality of electricity goes some way towards explaining why municipally owned systems could not build bigger plants, and why investor owned utilities were ultimately unable to take them over. However, it does not go far enough. Why, even when power could be purchased at wholesale, were municipal electric utilities so reluctant to sell? Was it only because of the reasons Wooten cited, or were their

other benefits to municipal ownership? As Chapter Three will show, the municipal utility helped to support ideology and material realities of a town ordered around white supremacy.

For investor owned utilities, the new fix to profitability problems came in two interrelated parts. As Chapters Five and Six trace, technological innovations in the post World War II period enabled larger and increasingly efficient steam turbines to be constructed (Hirsh 1989). These new plants, when operated at full capacity, enabled electricity to be produced more cheaply and for less efficient, older plants to be closed. The cost of electricity eventually became so low that municipal systems interconnected with CP&L and began purchasing their electricity at wholesale and resold it to their own customers. Armed with the ability to sell electricity at ever-decreasing prices, and in combination with new forms of consumer finance, both types of electric utilities began aggressive marketing programs to increase individual household's use of electricity (Nye 1998). CP&L and municipal systems deployed a combination of 'inducement rates' (electric rates that declined with higher consumption), appliance sales programs, and programs that paid contractors to build all-electric homes (houses that heated, cooled, and cooked with electricity) to boost demand in their territories to per capita levels higher than most of the United States (Riley 1958). What had been a spatial fix based on territorial expansion shifted to one based on the intensification of use in place. The new fix proved effective, and with the demand for electricity skyrocketing across North Carolina, CP&L would find easy access to investment capital for the next 30 years.

Before proceeding to the following chapter, it is worth noting the varying roles that the state has played thus far. Far from being a monolithic entity, the state acts and governs at various scales. To properly understand the electricity landscape in North Carolina, it is important to carefully parse these activities. For the investor owned utilities, state intervention, in the form of the state utilities commission, served to stabilize and legitimize the industry in North Carolina during the 1910s. This stability brought an influx of investment capital, and set the conditions that allowed for the rapid growth of the 1920s. But the state government played a different role than municipal governments, which in some towns produced and sold electricity to the townspeople. This practice will be examined in more detail in Chapter Three. But for the time being, I want to underline the importance of the state to both forms of utility, a point that the investor owned utilities will conveniently attempt to forget in Chapter Five.

Chapter 3: Extending the 'White Way': Municipal Electric Utilities and Race, 1900-1930

3.1 Introduction

In 1915, the Chamber of Commerce in Rocky Mount, North Carolina requested that the city council install a 'White Way' along Main Street, the central commercial corridor of the town (Rocky Mount Board of Commissioners 3 June 1915). The White Way was to be a stretch of electric lighting that would illuminate the sidewalks along the street, attracting people to shopping and entertainment after the sun had set. The term White Way, and the use of electric lighting to boost commerce, was based on Broadway in New York, which by the 1890s was referred to as "the Great White Way" because of the expanse of illuminated advertising that lit up over 20 blocks at night. Between 1912 and 1930, in an attempt to mimic Broadway, many cities and towns across the United States installed a General Electric street lighting system known as the White Way (Nye 1990).

In Rocky Mount, as in New York City, it is impossible today to consider the term 'White Way' without considering the underlying racial language. During the same period that White Ways were being installed across the United States, cities in the United States were experiencing tremendous spatial and demographic change marked by rural to urban migration as well as a massive movement of African Americans from rural areas into Southern and Northern cities. New arrivals in these

cities were increasingly being met by new forms of spatial, social, and demographic control designed to segregate cities based on race. Jim Crow laws, in combination with social codes and norms, legalized the separation of people based on race, and provided one guiding ideology for the development of cities.

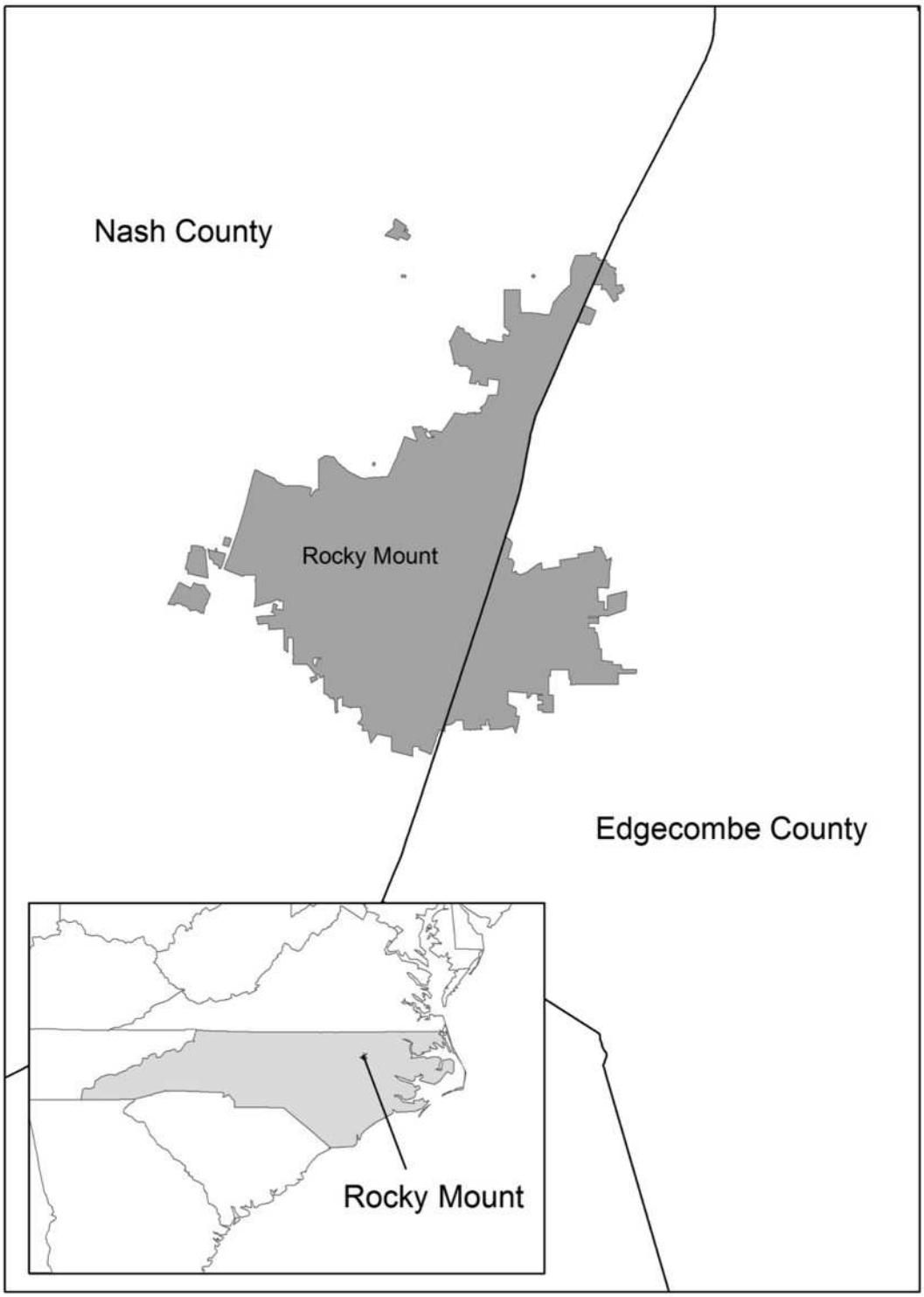
A second guide consisted of Progressive Era ideologies of order and efficiency that dictated the reorganization of cities into spaces of cleanliness, safety and economic efficiency. Urban reformers during the Progressive Era believed that urban misery was not a permanent condition, and as such sought ways to bring about an end to the crime, poverty, and poor health that had defined urban areas (Hofstadter 1960; Wiebe 1967; Grantham 1983; Ayers 1993). The belief was that by reorganizing cities, clearing slum housing, and encouraging education and culture, many of the ills of city life could be eliminated. In most cities improvement was at least in part predicated upon the availability of networked urban infrastructures: water and sewage systems to alleviate water borne disease; road and rail service to connect labor and employer in a growing city; and electric illumination and power in homes, stores, and factories (Tarr and Dupuy 1988). Access to these technologies became a key component of success in the cities.

As previous chapters have shown, electricity is much more than a commodity. In the home, electricity is central to providing energy services, things like lighting, ironing, and cooking. The production and distribution of electricity as a commodity is supported by an array of financial and territorial infrastructures. While electricity service in Western cities is a given today, in the early part of the 20th century it was a technology whose conspicuous consumption was a status

symbol for both individuals and towns. In addition to providing energy services, the illumination of Main Streets marked towns as progressive and modern. In factories electricity meant higher quality light and more flexible production, but it also contributed to extending the working day while enabling faster assembly lines and more precision work. When streaming as light out of household windows at night, electricity was a symbol of an individual's status and wealth.

Not long after its introduction, electricity in cities also became noticeable in its absence. While Main Streets were illuminated with ever brighter artificial lighting, poor residential streets remained poorly lit, and the windows of the homes that lined them would flicker only with candle or gas lamps. If bright displays of electricity were markers of wealth and progress, the absence of electricity meant poverty and backwardness. This chapter examines this dichotomy between spaces of darkness and spaces of light, and traces the uneven development of illumination and electricity service in Rocky Mount, North Carolina. Then a rapidly growing town in eastern North Carolina, race has always been an important part of Rocky Mount's history. A city bisected by the Edgecombe and Nash County border (see Figure 3.1), Rocky Mount is located in what was one of the primary cotton growing areas in the state. After the Civil War, Edgecombe County was one of just five out of one hundred North Carolina counties with a population that was a majority African American. By the early 20th century, Rocky Mount and numerous other eastern North Carolina towns were emerging from their agricultural pasts and rapidly urbanizing due to the arrival of textile and other manufacturing industries. The population of Rocky Mount grew dramatically during this period, emerging from a small crossroads of

Figure 3.1. Rocky Mount locator map, 2013 municipal boundaries



several hundred people in 1880 into a fully-fledged town of 25,000 by 1930 (Hill Directory Company 1930).

The electric utility in Rocky Mount went into operation in 1902. Municipally owned and operated, the day-to-day operations of the utility were controlled by the Rocky Mount Board of Commissioners, whose meeting minutes were recorded in publicly accessible ledgers and later recounted in newspaper accounts. The availability of this data provides an opportunity to trace the growth of Rocky Mount as a city alongside the development of its electric utility in order to understand the role that electricity played in shaping its development. But in tracing this development it is imperative to consider the context in which it occurred. Despite the presence of 'progressive' leaders, the growth of Rocky Mount, the attempts of town elites to attract a certain type of low wage and non-union industry, the laws that were passed, and the shape that its neighborhoods ultimately took were part of a project of social and demographic control, and not solely the result of an economic geography of progress and efficiency.

To return to the anecdote that opened this introduction, in this chapter I will consider the development of the White Way system of lighting in Rocky Mount not only as the introduction of a lighting technology, but also as a system of lighting that helped shape a particular racialized outlook and way of viewing particular spaces and the people that lived there. How did the municipal electric utility in Rocky Mount, and the creation of the White Way, serve to further the other White Way – that is, the dominant norms of white supremacy and patriarchy that continued to

shape the US South after the Civil War and Reconstruction? This chapter considers that question in three ways.

After providing an overview of North Carolina and Rocky Mount's racial history, I first examine the question of street lighting. For most people in Rocky Mount, their primary interaction with electricity in years immediately following the start of the electric utility would be through the nighttime illumination of streets. Where was street lighting, where was it desired, and what kind of work did it do? I examine this by tracing the development of street lighting as an industry, and by examining how the segregation of street lighting styles sold by manufacturers such as General Electric (GE) began to mirror the growing ordering and segregation of the city itself. I then use the insights derived from the street lighting literature of the early 20th century to examine the geographical diffusion of street lighting in Rocky Mount between 1900 and 1930 in relation to historically white and black neighborhoods.

Electricity service in the home has a very different meaning than lighting on streets. As such, we will see that the geography of requests for electricity service takes on a very different character than that of street lighting. In the second section, I examine the spread of electric street lighting and electricity service requests in Rocky Mount between 1902 and 1930 by mapping the location of requests made before the Board of Commissioners in relation to the location of historically white and black neighborhoods. In combination with newspaper accounts, I show that the Rocky Mount Board of Commissioners pursued a policy that deliberately steered

electricity to white areas of town even when spreading electricity more broadly would have been economically 'rational'.

Finally, I trace how the existence of a specifically *municipally* owned electric utility allowed for certain benefits to accrue to the town's white ruling class. This group of landowners, farmers, and industrialists greatly benefited from electricity, both in the benefits it provided to their businesses directly, but also from the indirect benefits that the electric utility, under municipal ownership, provided in the form of decreasing property tax burdens. I examine this in two ways. First, I trace the way in which electricity changed factory production, enabling more flexible factory configurations that boosted throughput, and for many factories, profits. Second, using municipal budgets between 1902 and 1930 I examine the growing importance of electric utility revenues to the overall municipal budget. By running the supposedly non-profit utility at a profit, the local board was able to keep property taxes low. But at the same time, electricity was priced at higher levels than it needed to be, a condition that made electricity unaffordable to many. The unaffordability of electricity takes on a distinctly racialized character, as evidenced by a 1932 list of charge-offs, a term that denotes an account deemed uncollectable by the utility.

3.2 North Carolina racial politics, 1865-1900

The town of Rocky Mount today straddles the border of Edgecombe and Nash Counties in the largely rural northeastern North Carolina (see Figure 3.1). Located on the western edge of the coastal plain, this region, and especially Edgecombe County, was home to some the wealthiest antebellum planters in North Carolina,

and was one of only five counties in North Carolina that had more than 10,000 slaves (Weiler 1991). In the late 19th and early 20th centuries, agriculture remained exceedingly important to Edgecombe County: in 1860, it was the largest cotton producer in the state, and cotton remained the driver of the local economy until the 1890s, when a drop in cotton prices brought about a shift towards tobacco. In subsequent years, farmers tended to switch their emphasis back and forth between cotton and tobacco depending on prevailing prices, but by the 1920s tobacco was king (Weiler 1991).

As would be expected in a plantation economy, slaves performed the overwhelming majority of pre-Civil War agricultural labor in Edgecombe County. After Emancipation, the traditional ruling white planter class found themselves outnumbered by freed blacks and their ruling power circumscribed by Federal troops and Reconstruction laws. In the years after the Civil War local politics dramatically changed, with numerous blacks holding local, state, and federal offices. In North Carolina this period, often termed 'Radical Reconstruction', was shortlived. By 1870 the conservative Democratic Party had retaken control of the state legislature, and by 1875 state and county politics were largely back in the control of a minority of white landowners. A series of reconfigured county borders and new laws enabled the majority white state legislature to regain control over majority black counties like Edgecombe County. First, the Edgecombe – Nash County border was moved several miles eastward in 1871 to divide the town of Rocky Mount in half, meaning that a substantial population of blacks were now gerrymandered into the majority white Nash County where their political influence was dampened. Four

years later, the Democratic controlled state legislature continued to strip majority black counties of their political power by granting the authority to appoint County Commissioners to the state legislature, thereby eliminating their popular election. County Commissioners had wide authority over the operations and taxation of counties, and were also in charge of vote counting. Not surprisingly, numerous elections appeared to have been fixed in subsequent years (Weiler 1991; Southern 2005).

Between 1880 and 1900, voting rights for blacks were gradually eroded via the selective implementation of literacy tests, landholding requirements, and poll taxes at the local level. In conjunction with the overall decline in black population in the Edgecombe County (a decrease of nearly 3,500 people between 1880-1890), the Republican Party grip on local politics began to decline. In the mid-1890s, however, the statewide emergence of populism took hold in Edgecombe County. Across North Carolina, 'fusion' party politics saw Populists and Republicans, whose supporters included both poor whites and blacks, work together where possible to form joint electoral tickets. In the lead-up to the heavily contested 1898 elections Democratic newspapers across the state began pushing the issue of race to the forefront of elections, and the Populists sustained numerous narrow losses. In the wake of the 1898 elections, race riots sprung up across the state and were violently put down by a mix of state militias and newly formed 'White Supremacy' clubs. These trends were helped along by a resurgence in the official membership of the Ku Klux Klan (Cunningham 2012). Now firmly under Democratic control, the state legislature in 1900 introduced a constitutional amendment that effectively stripped the right to

vote from blacks. The return of whites to their unquestioned position atop the political, economic, and social hierarchy was known as 'Redemption'. Subsequent efforts to induce industrialization in the South and move away from the agricultural dominance of the past gave birth to what was called the 'New South' (Weiler 1991; Beckel 2011).

A New South? 1900-1930

A central question in trying to understand the New South was just how much power former plantation owners had retained after Reconstruction. Prominent Southern historian C. Van Woodward (1955) argued that the New South was largely controlled by a new class separate from old planter families, but this view has more recently been refuted. For example, Clyde Woods' (2000) analysis of the Mississippi Delta found that remnants of the planter class, through an alliance with northern capital eager to take advantage of the cheap labor and land in the South, have maintained dominance over African Americans and poor whites until present times. Billings (1979) argues that because so few Confederate leaders actually lost land, nor the valuable social connections to important political institutions, a striking continuity of control in places such as Nash and Edgecombe County exists.

This continuity of control is evident in Rocky Mount. Among the largest slaveholders in the two counties were the Battle's and the Braswell's, two families whose members would go on to achieve prominence in both local and state politics, and also exert strong control over the processes of urbanization in Rocky Mount. For example, the nephew of William Battle, who owned 232 slaves before the Civil War and started the Rocky Mount Cotton Mills, was Thomas H. Battle. Thomas H.

Battle would go on to exert a large amount of social, political, and economic control over Rocky Mount through his ownership of Rocky Mount Mills (the largest manufacturing company in the region), two banks, and real estate company. Battle would also serve ten years as mayor, more than 15 years on the Board of Commissioners, and 34 years as the chairman of the Board of Rocky Mount Schools. Thomas H. Battle's contemporary and friend, James Craig Braswell, was the grandson of a prominent planter. Braswell would found Planters Bank, several manufacturing facilities and tobacco warehouses, serve as president of the North Carolina Bankers Association, and serve 18 years on the Board of Commissioners of Rocky Mount (Weiler 1991; Fleming 2013). Both Battle and Braswell could also draw on a myriad of important family and personal connections across the state, with Battle's father Kemp serving as President of the University of North Carolina between 1876 and 1891 (Powell 1996)

While Battle, Braswell, or their contemporaries do not appear to have direct links to the Ku Klux Klan, it is worth noting that the period between 1915 and the late 1920s saw an upsurge of Klan membership nationally. North Carolina was very much part of that trend. In 1925, it is estimated that North Carolina had 86 organized Klan groups with a total membership approaching 50,000. The North Carolina Klan also had friends in high places – North Carolina's Grand Dragon during the 1920s, Henry Grady of Clinton in Sampson County, was a judge on the State Superior Court (Cunningham 2012). Even as the formal Klan disbanded in the late 1920s, reports from Rocky Mount in 1930 show that a local Klan organization gave financial support to a poor white family during the annual Christmas drive put

on by the Salvation Army (Hazirjian 2003). Klan membership, of course, was not a requirement for the practice of white supremacy.

Battle is emblematic of the leaders of the New South, viewing his role as distancing himself from his planter past, but also maintaining the same paternalistic modes of dealing with those he deemed his inferiors. In an analysis of Battle's letters to his family, Weiler (1991) notes his frequent dismay at the lack of quality people in Rocky Mount, as well as his concern over the overall poor status of the town in the late 1890s. As such,

> The dichotomy between Battle's private expression of disdain and disrespect for his environment and the citizens he led, and his many public offices and 'good works' can only be understood when it is remembered that Battle, like other New South industrialists, was also guided by a sense of duty, a paternalism based on a combination of 'good management' and a residual sense of moral duty. (Weiler 1991: 181)

Thomas H. Battle and James C. Braswell, as well as their contemporaries on the Rocky Mount Board of Commissioners, would exert immense influence over the patterns of development in Rocky Mount. One of the most important tools available in their control over the town was lighting.

3.3 Street Lighting in Rocky Mount

Street lighting in Rocky Mount began as early as 1881 when the Board of Commissioners of Rocky Mount hired a constable to collect taxes and light the gas lamps located around the town. The constable's pay, as was common at the time, would be 5% of the taxes they collected on a quarterly basis (Rocky Mount Board of Commissioners Meeting Minutes [hereafter RMBOC], 6 May, 1881). In subsequent years, a street lamp lighter was hired, and a streets committee was formed to,

among other things, dictate the placement of new gas streetlights across the city (RMBOC, December 1883; RMBOC, 21 May, 1884). At times lamp placement was discussed at the full meetings of the Town Commissioners, and the decisions showed the street lights were placed most frequently near the property of wealthy Rocky Mount citizens – for example Robert Gay, who had involvement in local hardware store, ice company, and a commercial building and loan operation; B.B. Williford, a prominent local farmer; and the Episcopal Church, of which numerous local elites were members (RMBOC 20 January, 1885; RMBOC 4 February, 1885; RMBOC 4 March, 1885; RMBOC 3 April, 1885). What these mundane details of the day-to-day activities of city governance point to is the control over town affairs that the early town council had. Decisions on roads, buildings to be built, and even businesses to be started were made by a group of five and later ten semi-democratically elected men[24].

Electric lighting emerged as an alternative to gas lighting in the late 19th century, as it offered two primary advantages: it burned cleaner, leaving no smells or soot, and, it did not flicker, therefore providing a more even, higher quality of light (Nye 1990). The first attempt to start an electric utility in Rocky Mount was by S.K. Fountain, who appeared before the board in 1897 to request a franchise to operate an electric light plant and illuminate the town with arc lights. Fountain, a telegraph operator for the Atlantic Coast Line Railroad in Rocky Mount, was known as a local inventor and tinkerer who would later go on to start the first telephone

[24] I use the term 'semi-democratically' because of the methods of exclusion employed to limit universal suffrage. These include poll taxes, literacy tests, and gender exclusions, among others.

service in the town. While the electric franchise was granted, no plant was ever built by Fountain (Fleming 2013; RMBOC 6 July, 1897). As evidence of the competition electric lighting faced as the lighting of choice, several months later the town granted a franchise to Maurie Thomas and D.H. Whitehead to build an acetylene gas plant in the town to provide street lighting. A provision in the franchise, however, granted the city the right to buy the plant at any time for an agreed upon price (RMBOC 2 February, 1898).

Not long after Thomas and Whitehead were granted their franchise, the town council began investigating forming a municipally owned electricity system on their own. To do so would require raising funds through the sale of municipal bonds, which at the time required the approval of the state legislature. Two prominent members of Rocky Mount, the aforementioned Battle and Braswell, were sent to the state capitol in Raleigh to try to secure passage of a bill allowing the bond issuance, which would then be put to a local vote for approval. The bonds would include funds for the electric light and sewerage system, and the vote was cleverly tied into a bond issuance that would establish public graded schools in the town (Beck 2002). After securing state legislative approval, a referendum was held on March 19, 1901 on whether to approve the sale of bonds to fund these projects. It secured overwhelming support, and the town quickly began searching for a location to build the plant and a contractor to build it, as well as a bank to issue the bonds (Beck 2002).

D.J. Rose, a member of the Board of Commissioners, was granted the contract to build the plant whose generator would be purchased from General Electric

(RMBOC, 19 March, 1901; RMBOC 3 April, 1901; RMBOC 10 April, 1901; RMBOC 20 April, 1901). In June of 1901 construction began on the plant, with up to 50 convicts from the local prison hired to do much of the labor. This was a common practice in the South, with state frequently incarcerating blacks on trumped up charges in order to rent them out as laborers (Lichtenstein 1996). By September of 1901 construction was going well enough that the plant superintendent was ordered to begin signing up customers, and a scale of rates for the electric plant was adopted. Two months later, the city-owned Opera House was outfitted with wiring and electric lights, and by the start of 1902 the electric light plant was up and running. The electric utility would wire houses and businesses, and in May the city-owned Market House was also wired (RMBOC 7 November 1901). However, the primary purpose of the utility was street lighting.

On May 1, 1902, the end of the municipal fiscal year, the accounts on the first five months of the utility were settled. The total revenues over the first five months were $3344 against costs of only $1500. The city reported that their payment for the 40 arc lights that were installed was $1700. If these lights were rented from a private company, they estimated their operation would have cost $2600 (RMBOC 1 May 1902). But what is important to consider is what street lighting did for the town, as well as how street lighting functioned as an industry in and of itself.

A Brief History of Street Lighting

Since medieval times and likely before, darkness has been associated with a range of social ills – witchcraft and devilry, heresy, sin and death (Edensor 2013). Before the arrival of gas streetlights in the middle part of the 19th century, the

"nocturnal culture" (Baldwin 2012: 6) of American cities was known primarily as one of crime, immorality, and sickness. The first gas streetlights were marginally brighter than candles and only served as faint beacons that marked the path down dark, rutted, muddy, or icy roads. While the roads posed a hazard to pedestrians, a greater concern for many was the threat of crime. In the popular literature of the late 18th and early 19th century, the physical darkness of streets was matched by moral darkness, underlining common fears of night (Baldwin 2012). The introduction of light into the nighttime cityscape represented a shift towards the more modern sense of space, altering the city's daily rhythms, and ultimately was an important part of the bourgeois reordering of the city (Edensor 2013; McQuire 2005).

More brightly illuminated streets directed movement and traffic while also promoting surveillance. Street lighting, as one of the "technical infrastructures installed to facilitate vision" (Edensor 2013: 5), enabled a reordering of cities into a rational and hierarchical model inscribed with the power to scrutinize and direct the nightly movement of people. The development was aided by the almost simultaneous rise during the mid 1800s of active policing in cities. Police began patrolling the streets at night, and most police departments deployed more police at night than during the day due to the perception of increased nighttime crime. While the combination of street lighting and police were believed to be making the city safer at night, the limited nature of both policing and lighting must be kept in mind. The first street lamps were placed only in areas of wealth and commerce in order to protect private property and property values. Night police work was done on foot

and marked by limited coverage of the city. Later, street lamps were slowly installed in working class and impoverished neighborhoods, although this time with the purpose of fighting crime (Baldwin 2012).

Although they remained in service until the early 20th century, gas street lamps were quickly replaced once electric lights became commercially available. The first electric arc lights were developed in the mid 1870s, and were commercialized by the Thomson Houston company in 1877. Arc lights were designed to illuminate outdoor spaces, and initially electric utilities were focused almost entirely on this market. As a result, most people's contact with electricity was only through street lighting in cities, as very few people had electric lighting in their homes or places of work (Hammond 1934). As electric street lighting became more common in the 1880s, nighttime illumination was thought of as evidence of the increasing control of man over the physical environment, "striking proof of the superiority of the modern present over the past" (McQuire 2005: 127). As electric street lighting grew in acceptance, lighting manufacturers wholeheartedly promoted its expansion.

By 1888, the Thomson Houston Company was looking beyond simply selling individual streetlights and instead was interested in devising a *system* of lighting. Such a system was not just a few "luxury arc lights", but instead a coherent set of lights, transformers, and wires connected to a central station electricity generator (Thompson Houston 1888). This idea was pushed forward four years later when four major electric manufacturing companies, Edison Electric, Brush Electric, Thomson Houston, and Wood Electric, were brought together as General Electric.

This move combined a number of critical pieces under centralized control: the patents of these companies, expertise on incandescent and arc lighting as well as alternating and direct currents, and perhaps most importantly, the financial capitalists that backed these companies (Hammond 1925; Hammond 1928). Over the next 40 years General Electric would emerge as the most prominent electrical manufacturing company in the world, largely on the back of their innovations in street lighting and illumination science.

Illumination Science

Among the key figures in the development of illumination science was W. D'Arcy Ryan. Ryan was hired by GE in the 1890s and quickly established himself in a number of departments. By the turn of the 20th century, Ryan began to focus on one area in particular: illumination. Over the next thirty years, Ryan, with ample support from General Electric, helped to create the field of electric illumination and the profession of the illuminating engineer. As street lighting was the focus of GE consumers at the time, Ryan focused on developing a program that would aid in the sales of street lighting systems. Much of this was based on changing the way municipalities and manufacturers thought about street lighting.

In the years prior to the emergence of illumination science, "where light was needed a lamp was hung, and if that was not sufficient, two were used. Unsatisfactory and inefficient illumination resulted" (Hammond 1925: L1039). In an effort to better understand why this was happening, Ryan developed instruments, such as the illumination photometer, and new metrics to measure the spread and intensity of light. These were specifically focused on street lighting, especially the

'foot candle', which measured the intensity of illumination at a distance of one foot from a light source of one candlepower (Ryan 1923). In combination, these technical innovations changed the way GE approached street lighting sales: "they went to sell light, rather than to sell lamps" (Hammond 1925: L1042). The work of Ryan and his contemporaries brought order to what had become the haphazard nighttime illumination of cities, a mix between old gas lamps and randomly place electric arc lights.

The new street lighting salesmen and specialists needed to be quite different in Ryan's mind, possessing the qualities of "the artist, something of the architect and very much of the engineer about him" (Hammond 1925: L1041). Ryan also hired an artist to produce paintings of specific streets to show how "it would actually look when illuminated by a high intensity system … the beauty … enhanced the street by day as well as aided in attractiveness by night" (Hammond 1925: L1042). Around Ryan developed a significant number of other experts, labs, and salesmen. GE's sales apparatus included departments that conducted scientific studies of street lighting by constructing miniature cities to experiment on. Another office was devoted to collecting and collating statistical evidence that linked lighting with safety, developing promotional films such as *Sentries of Safety* and a manual called *Street Lighting Practice* that would be distributed to towns and power companies (Hammond 1934). GE also partnered with other groups with an interest in street lighting. Insurance companies were consulted in order to report on how lighting decreased driving risks. Another study worked with the National Terra Cotta Society to determine that a bulk of the lighting costs of street lighting could be avoided by

using lighter colored building surface materials. This was especially the case, not surprisingly, when buildings were constructed of terra cotta (Wagoner 1927).

Because individual power companies had little expertise in illuminating science, street lighting design and sales were driven by the lighting manufacturers. GE developed a two-pronged approach to their marketing, one targeted at power companies and the other at municipalities. For power companies, the pitch was simple: street lighting was a good load builder. Once they were turned on, street lights provided steady, consistent demand that could be counted on. By working together to encourage towns to take on more intensive and extensive systems of lighting, GE made clear the benefit to power companies. "In many of these installations thousands of arc lamps are employed and operated on a 4000 hr basis per annum, resulting in the consumption of 1,000,000 KW hours per annum in a moderate sized installation of only 500 lamps" (Hammond 1934: 8). By increasing the volume and intensity of light, GE argued, customers would begin demanding a brighter and more constant source of light, thus increasing the expected standard of illumination. This approach clearly made sense to power companies, but a different sales pitch was needed for municipalities.

GE's plan for selling to cities was much more involved. As mentioned, Ryan's lab had developed a number of tools for visualizing and measuring new forms of lighting in cities. Using these 'scientific' findings, Ryan's team would approach cities across the United States with the recommendation of huge increases in lighting. At times, they would recommend an increase of 10 to 20 times the current level, which would mean expenditures of up to $100,000 over the typical spend of $5,000-

$10,000 per year (Hammond 1925). For this to work there needed to be broad support from important figures in the town, so new lighting needed to be viewed as providing comprehensive improvements to life in the town. The GE sales pitch that resulted was based on "slogans of safer streets, lessening of rowdying and nuisances, better police and fire protection, [and] more business for merchants." Using the statistical data they collected, salesmen could approach cities with evidence that "Hotel patronage has increased, people linger in cities that were more brightly lit. Merchants found an opportunity for night advertising and discovered the psychology of window shopping after dark, all of which led to the renewal of business leases and a benefit to real estate values" (Hammond 1925: L1041). All of this read like a city booster's dreams, and conveniently fed back into GE's pitch to the power companies. "Window and sign lighting kept increasing. Interior lighting had the effect of causing employees in well-lighted places to go home and aspire to equally good illumination in their homes. Out of town visitors went back to their home and agitated for better lighting there" (Hammond 1925: L1041). Of all its lighting innovations, however, none was more important for GE than the White Way.

Developing the White Way

The White Way system of lighting originated in 1903 with the top-secret development of the magnetite arc lighting system. Magnetite lamps were an improvement over traditional arc lamps due to their efficiency and ability to give off more light. After first being introduced in Jackson, Michigan and South Boston, magnetite lights quickly drove carbon arc lights out of the market. In 1910 GE began work on making the magnetite more ornamental in order to be "placed in rows

along streets, making a brilliantly lighted stretch, and giving an attractive ornamental appearance in the daytime" (Hammond 1925: L1087). Two years later, GE was tipped off that New Haven, Connecticut was looking to 'modernize' its streets by finding the most effective street lighting system available. At the same time, New Haven was the site of intense competition for its street lighting franchise, with the local power company battling with a gas company over the rights. Through a visiting GE salesmen, the power company found out about the experimental new ornamental magnetite lighting system and aggressively pursued it. GE delivered a prototype, and according to GE reports "the merchants were captivated. The entire town admired it" (Hammond 1925: L1088). The GE salesman that sold the product to New Haven then proclaimed

> Your city will become noted far and wide … Everybody interested in street lighting will come to see your lights … foreign engineers and city officials will come to American to see your lights, and upon landing in New York, will instantly inquire how to get to New Haven … You will have a great white way of your own! (Hammond 1925: L1088)

This marked the beginning of the spread of White Way systems of lighting throughout the United States. In 1916 GE helped San Francisco install the so-called Path of Gold, which was followed by the installation of systems in Cleveland, Salt Lake City, and ultimately a system of 'super-intensive' street lighting on State Street in Chicago (Hammond 1928).

White Ways were not only sold to larger metropolitan areas – many small towns across the country viewed the White Way as a method to boost local commerce. GE was eager to take advantage of this market, and began to simplify their sales processes for these smaller customers. One method of doing this was to

produce and advocate for zoning and architectural standards for illuminating cities, such as those introduced in Lansing, Michigan in 1922 (Hammond 1928). These standards were based on a hierarchy of lighting developed by C.A.B. Halvorson in 1912 that would consider the needs of all parts of the city. Under such system, the principal business streets of cities would feature Great White Way lamps for creating "sunny day effects with the consequent stimulation and exhilaration which accompanies such conditions" (Halvorson 1912: 711). The residential lamp, on the other hand, "is … used on fine residential streets and on boulevards bordered by large estates" (Halvorson 1912: 711). These ideas were further codified in the hierarchical table of street lighting developed by H.E. Butler in 1917 shown in Table 1.

Light and Dark in the (Partially) Illuminated City

By the 1920s electric street lighting was ubiquitous in most American cities and towns – at least in the central commercial areas. Despite this, nighttime, and especially after most shops had closed, was still the domain of danger and crime. "Streets were still controlled at night to a far greater extent than during the day by those who could wield physical violence: police and groups of young men, whose free-spirited pleasures often came at the expense of others" (Baldwin 2012: 13). In that sense, street lighting played a dual role – it was both a method of fighting crime, but also a marker of progress: "a form of conspicuous consumption that said 'We are progressive and growing.' … For such towns lighting was more than a mere functional necessity or a convenience; it emerged as a glamorous symbol of progress and cultural advancement" (Nye 2000: 216). General Electric and other street

Table 3.1. 1917 Hierarchical Table of Street Lighting Recommendations

Class of Street	Lamp Lumens/Sq Foot
Intensive White Ways	300-800
White Ways – Principal Streets	300-400
White Ways – Secondary Streets	125-250
Main Arteries	80-150
Secondary Arteries	50-80
Residential Boulevards and Parkways	25-50

Adapted from. Rose and Butler (1917)

lighting manufacturers attempted to play on this dual role, and sold street lighting designed to be both functional and ornamental.

But the location and uneven deployment of street lighting and electricity also took on a more discursive meaning. Through its presentation at various World's Fairs and Expositions, "Electrification … became embedded in a social Darwinist ideology of racial superiority." By juxtaposing exhibitions of the latest lighting technology alongside those depicting the 'un-modern' lives of Africans in the jungle, Filipinos, or Blacks in the Old South, electricity was explicitly racialized while being marked as something for only the most advanced societies. "Darkness was a metaphor for the primitive; light was the exemplification of Christianity, science, and progress" (Nye 2000: 35-36). Powerful metaphors of lightness and darkness were frequently used, for example the labeling of Africa as the Dark Continent, or the fear of Victorian citizens to venture into 'Darkest London' (Edensor 2013). Street lighting presented local governments with the ability to control or eliminate this darkness, at least selectively. As such, control over street lighting, that is, control over lightness and darkness, allowed local governments the ability to render the city legible in the way most desirable to local elites, editing the city to a few desired locations, while "effectively delet[ing] others, casting unattractive areas into impenetrable darkness" (McQuire 2005: 133). GE's recommended hierarchies of street lighting were instrumental in this. While lighting could used in parts of cities to boost commerce and activity, it was also selectively deployed for the purposes of surveillance and scrutiny. Through their selective illumination, white and black neighborhoods, and the people that inhabited them, became implicated in this

hierarchy of lighting. Due to the commonly held belief that African Americans were predisposed to crime and unfit for self-government, African American neighborhoods were not thought to need the ornamental benefits of lighting. Instead, street lighting should only be deployed when it was needed to decrease crimes that may effect whites or white interests.

Such a view deliberately ignored that significant violence and crimes were in fact directed at African Americans (Clegg 2010; Markovitz 2004). Between 1865 and 1941, at least 168 people were lynched in North Carolina. The overwhelming majority of those lynched were African American, and many of these occurred in eastern North Carolina counties. Lynching occurred in Nash and Edgecombe counties well into the late 1920s and early 1930s. Thomas Bradshaw, for example, was arrested on suspicion of rape in Nash County in 1927. However, in what appeared to be a mob orchestrated maneuver, Bradshaw was allowed to escape arrest. He was then patiently chased and hunted over two days and nights before being captured, exhausted, and then murdered by a group of white men who went unpunished. Three years later, another African American man, Oliver Moore, was arrest on suspicion of rape in Edgecombe County. One night while awaiting hearings in Tarboro, a town 17 miles from Rocky Mount, an armed group of men stormed the jail and remove Moore. Several miles outside of Tarboro, Moore was hung from a tree, shot numerous times, and left for all to see. The Tarboro police, as well as state law enforcement officials, showed little appetite for pursuing the Moore's killers (Newkirk 2009). Aside from targeting African Americans arrested on questionable claims, what both cases, and numerous other lynchings across North Carolina, had

in common is that they occurred at night, using the lack of light to propagate violence in order to reinforce racial hierarchies and strike fear in African Americans. While lynching was the most egregious form of violence against African Americans, the Ku Klux Klan and other white supremacy groups made use of the night to protect their identities during campaigns of violence against African Americans during the early 20th century.

Using the case of Rocky Mount, we can view the uneven dispersal of electric street lighting across the town. What is evident is that in addition to illuminating spaces of commerce, street lighting requests were granted by the Board of Commissioners in areas that needed protection from thieves, criminals, and other undesirables – white business and residential areas. The street lighting requests that were granted in neighborhoods of the poor or working class are typically adjacent to white business interests. This has the effect of leaving some areas of town literally in the dark, outside of the realm of policing efforts, and laid bare to the frequent violence directed against African Americans during this period.

Street Lighting in Rocky Mount

In Rocky Mount, it can be assumed that some number of streetlights would be placed by the municipal utility without being explicitly requested by individual citizens, most likely along major thoroughfares and in commercial districts. When residents of the town deemed that these lights were not sufficient, however, they could attend Board of Commissioner meetings and request that a streetlight be placed at a particular location. The Board could then act one of three ways – either the request would be granted immediately, it would be referred to the Lighting

Committee for further investigation, or it would be rejected immediately. Of the 88 requests that were made between 1902 and 1925, 41 (47%) were approved granted immediately, 47 (53%) were referred to committee, and none were rejected immediately. Based on the meeting minutes, it is not always entirely clear what happened to requests that were sent to Committee. Infrequently the notes from a subsequent meeting would note that the request was approved. More often another request would come for a light in the same location that would indicate that the initial request was not approved.

While the record of the meetings are somewhat incomplete, and the location of requests and actions taken not always clear, it is still possible to gather a fairly complete picture of where and when street lighting requests were made. Figure 3.2 shows the location of 88 requests in relation to the historically black and white neighborhoods in the town, as well as the locations of large employers, coded by the type of employer (i.e. manufacturing, railroad, municipal, or tobacco).[25]. Figures 3.3, 3.4 and 3.5, rather than simply presenting each lighting request as a single point on the map, show a surface of street lighting that depicts the areas of the highest density of lighting as dark yellow, with areas with no lighting requests having no yellow at all. While it is important to remember that this is not the complete view of street lighting in the town, mapping street lighting in this way does portray a distinct geography of nighttime illumination.[26]

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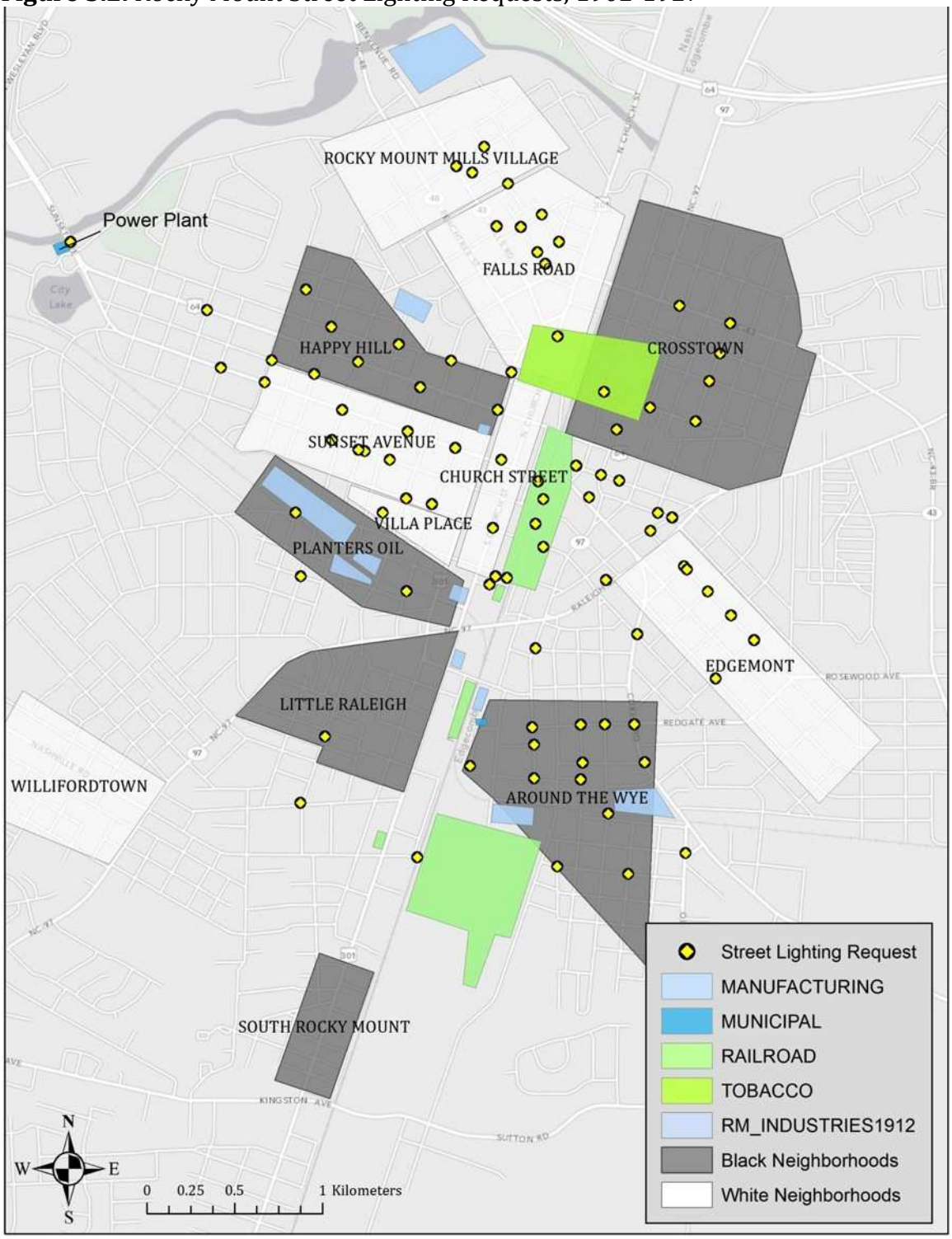
[25] The neighborhood boundaries are derived from Fleming (1998) and Hazirjian (2003). Locations and types of large employers are based on fire insurance maps produced by the Sanborn Map Company (1907; 1912; 1917).
[26] These figures were produced using the Kernel Density tool in ArcGIS 10.1.

Figure 3.2. Rocky Mount Street Lighting Requests, 1902-1927

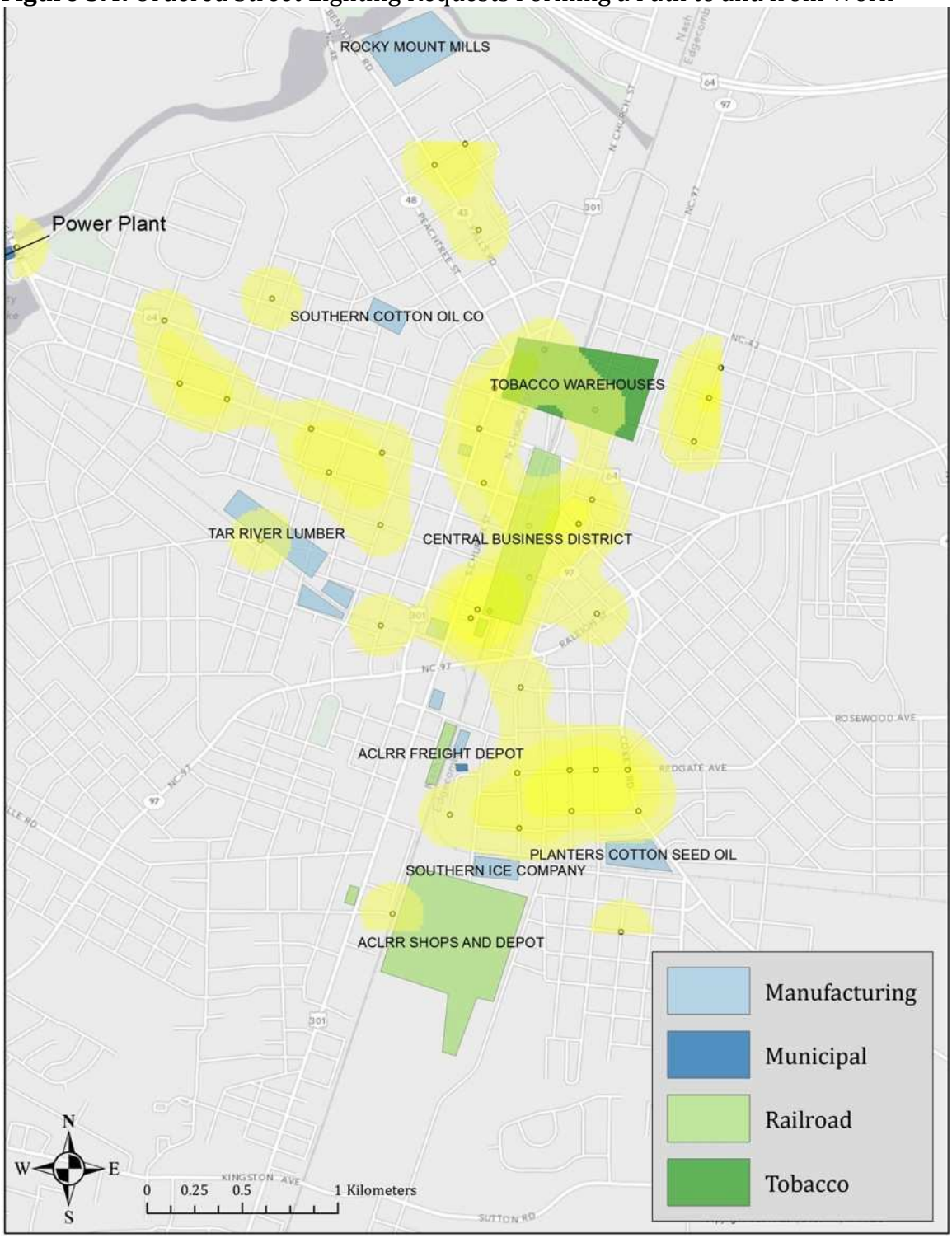


Sources. Hazirjian (2003); Meeting Minutes, Rocky Mount Board of Commissioners; Sanborn Fire Insurance Maps (1907; 1912; 1917)

Figure 3.3. Street Lighting Requests Approved by Rocky Mount Board of Commissioners, 1902 – 1927

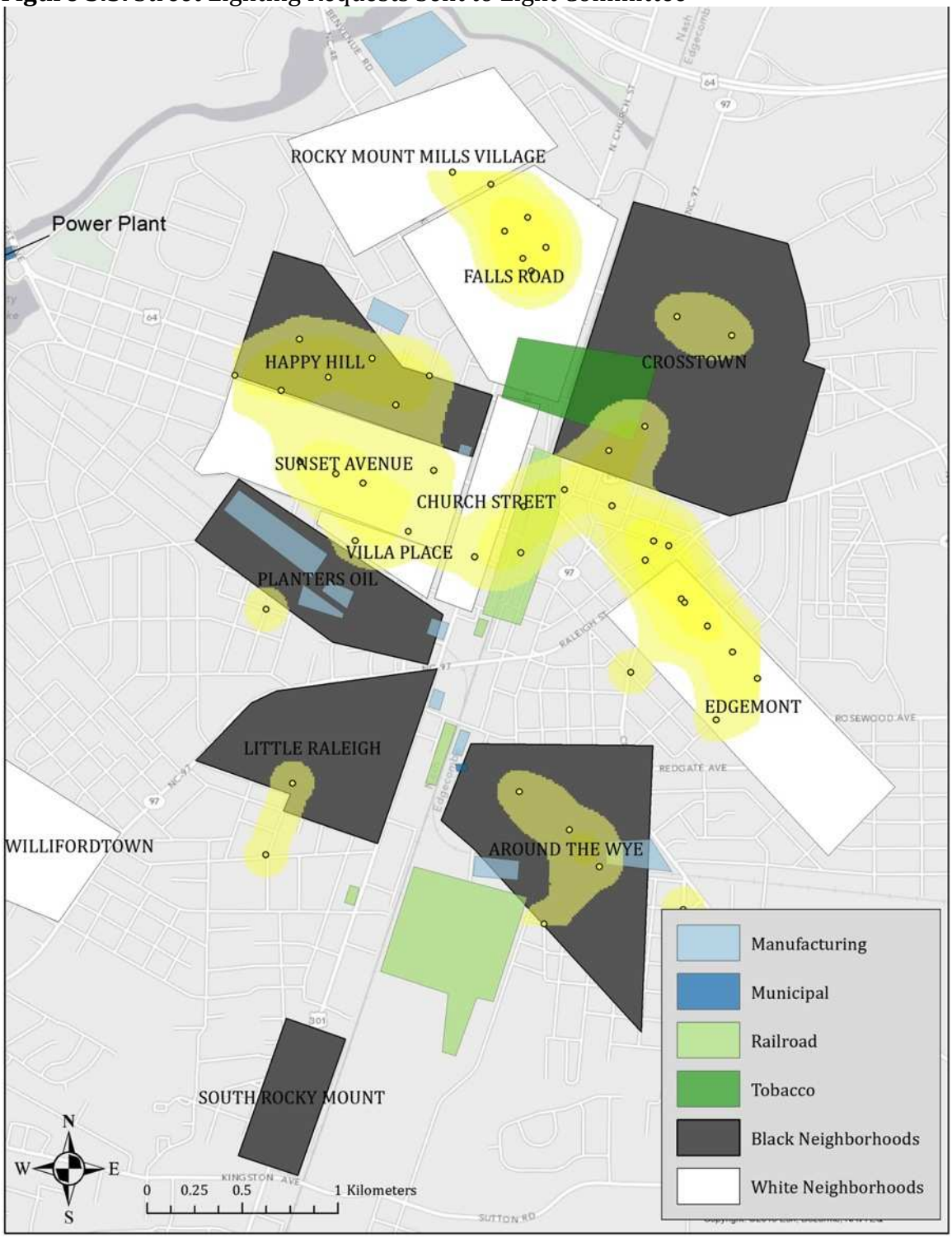
Sources. Hazirjian (2003); Meeting Minutes, Rocky Mount Board of Commissioners; Sanborn Fire Insurance Maps (1907; 1912; 1917)

Figure 3.4. Ordered Street Lighting Requests Forming a Path to and from Work



Source. Meeting Minutes, Rocky Mount Board of Commissioners; Sanborn Fire Insurance Maps (1907; 1912; 1917)

Figure 3.5. Street Lighting Requests Sent to Light Committee



Sources. Hazirjian (2003); Meeting Minutes, Rocky Mount Board of Commissioners; Sanborn Fire Insurance Maps (1907; 1912; 1917)

Before turning to the lighting request locations, it is important to take note of some key features in the urban space of Rocky Mount. As previously mentioned, the town is bisected by railroad tracks that also indicate the border between Nash and Edgecombe counties. The Edgecombe side (to the east) is, in general, considered the poorer side of the tracks. The area depicted as Church Street in the center of the map is largely comprised of a central business district located on both sides of the railroad tracks. To the northwest of town is the Tar River, along which the Power Plant was located after 1912, as well as the mill village of the Rocky Mount Mills (which was incorporated separately until 1928). To the south and southwest are two areas which were later annexed into the town, the white working class area of Willifordtown and the predominantly African American South Rocky Mount. The town's largest employers were mostly scattered on the Nash County side of the border, with a number of tobacco-related industry in the north of town, several manufacturers in and around the Planters Oil neighborhood, and the southern parts of the town dominated by the large Atlantic Coast Line depot and repair shops, the largest single employer in the town.

Figure 3.3 indicates the location of lighting requests that were approved by the Board of Commissioners between 1902 and 1925. In examining this, four features are immediately apparent. First, the Church Street area was brilliantly illuminated with light, and would be even more so once the Great White Way was installed in 1922. Second, in the northwest portion of the map, the Happy Hill neighborhood is circumscribed by light, with very little light present in the neighborhood itself. Happy Hill, like Crosstown located eastward across the tracks,

was a working and middle class African American neighborhood. Many of the neighborhood's residents worked in the town's industries, and many women worked in the homes of the adjacent wealthy and white Sunset Avenue and Falls Road neighborhoods. A third feature is the complete lack of light in the Little Raleigh neighborhood, but a fair bit of light located along the northern and eastern edges. Located along Raleigh Road, nearly 80% of Little Raleigh's residents worked for the Atlantic Coast Line railroad at some point. Finally, the northern section of the Around the Wye neighborhood is brilliantly illuminated.

We can draw several conclusions from this uneven geography of lighting in the town. First, the lack of illumination in an African American residential area like Happy Hill should be considered in contrast to the illumination of a white area like the Sunset Avenue. As street lighting became increasingly conflated with security through the work of General Electric and other street lighting boosters, the presence of street lighting marks those places as safe and secure. At the same time, the presence of lights also make clear to those in adjacent neighborhoods that when they are in white neighborhoods, especially after dark, they will be seen. Second, the brilliant illumination of Around the Wye must be seen in the context of that neighborhood, which was known as the roughest part of the town. Like many poor African American neighborhoods (Muhammad 2010), much of the vice in Rocky Mount was restricted to this area. Nearly all of the ordered streetlights in this area came during a two-month stretch in 1912. Finally, the complete darkness of many historically African American neighborhoods points to the potential for nighttime violence and terror campaigns to take place in those areas.

Figure 3.4 portrays the same lighting pattern, only with the neighborhoods removed and the names of several businesses highlighted. What becomes evident in this view are several paths home from work after dark, as well as the concentration of lighting around large employers and places of business. For example, an employee from the Atlantic Coast Line Railroad Repair Shops that lived in Happy Hill (the northwest portion of town) would have an illuminated path to take home, that is, until they reached the confines of their neighborhood. On the other hand, the wealthy doctors of Falls Road (in the northern section) or Sunset Ave (on the west side of the central business district) would have journeys home from their workplace in the center of town down illuminated roads to their homes. In this way, lighting marked the clear path to wealthy parts of town, as well as those parts of town that were effectively deleted from the lives of elite whites.

In contrast to Figure 3.3, Figure 3.5 shows the locations of street lighting requests that were sent to the Light Committee. While it is not clear what became of a majority of these requests, a far greater number of requests were made in African American neighborhoods. There is also a string of requests that are located along a strip of road in the Edgemont neighborhood. Edgemont was a white middle class neighborhood first platted in 1914, although a majority of the construction did not occur until the 1920s. In the intermediary period, however, there was frequent buying and selling of lots as speculators sought to make quick cash (The Gombach Group 2012). The rash of street lighting requests during the late 1910s that occurred in Edgemont is potentially related to this, as the presence of municipal services would likely have boosted property values.

What is clear from mapping the locations of street lighting requests is the racialized geography of Rocky Mount, with the placement of street lighting closely corresponding with the location of more highly valued and protected white property. Figure 3.5 presents a more ambivalent picture, with requests that were sent to committee variously located in African American and white neighborhoods. This points to the mutual desire of people in those neighborhoods to have the positive benefits that come from street lighting, principally safer mobility during periods of darkness. While electric street lighting presented some benefits to individuals and families, electricity service in the home would have a completely different and more substantially individualized impact. Yet not surprisingly, these took on an unevenly racialized character as well.

3.4 Electricity Service Requests in Rocky Mount

On July 6, 1916, a group of African American residents from the Crosstown neighborhood presented a petition to the Board of Commissioners requesting electricity service. Among the eight to sign the petition were William Sawyer, Cato Garner, and William Howard. Sawyer worked as a bricklayer, Garner a laborer at the Atlantic Coast Line railroad shops, and Howard as a laborer on a local farm. The wives of Garner and Howard also worked, as a laundress and in the tobacco industry, respectively. While Garner's two children attended school, two of Howard's children worked in tobacco while the youngest boy (aged 13) worked as an elevator operator at a hotel (Hill's Directory Co. 1920; U.S. Census 1920).

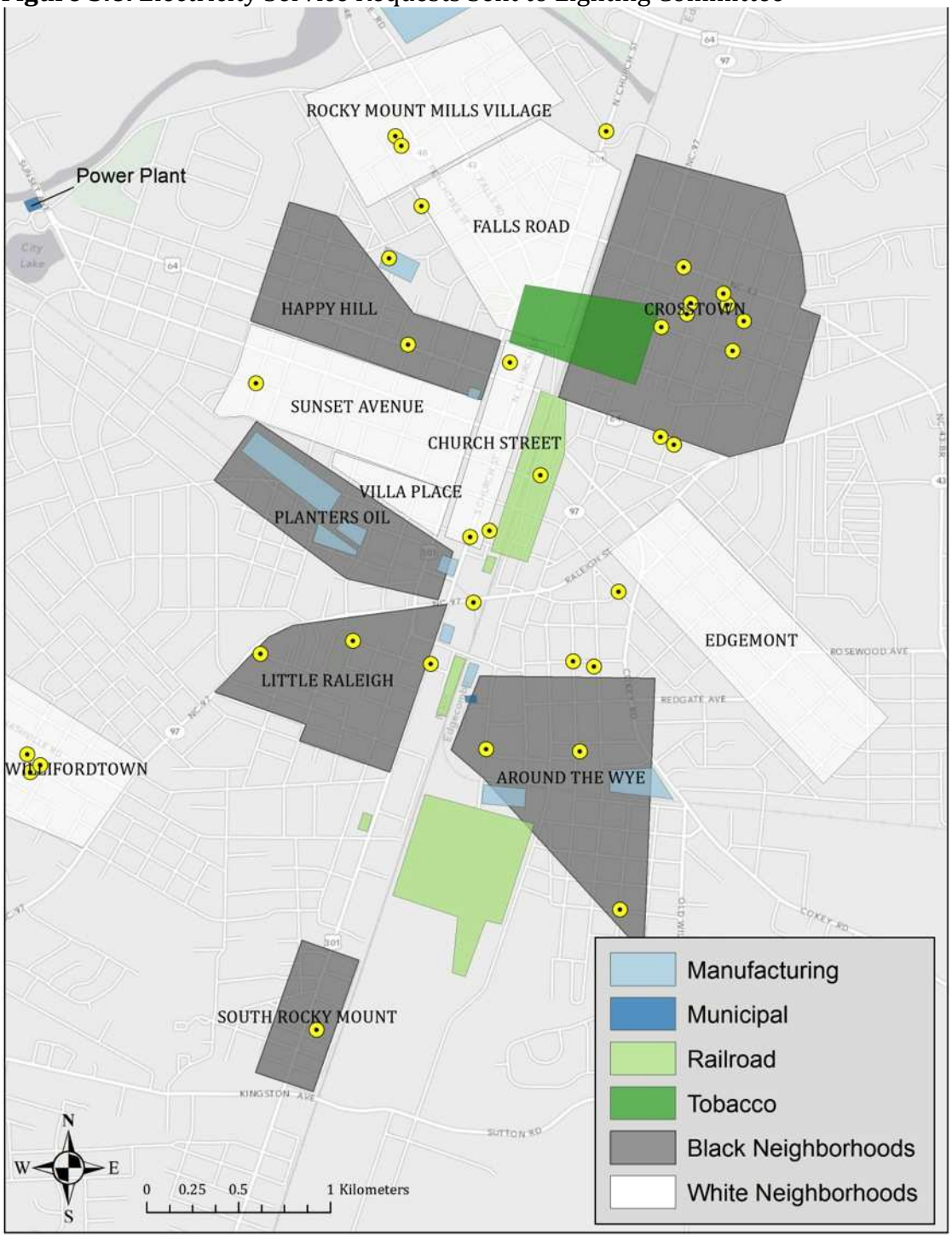
This group of petitioners is indicative of the working class residents of Crosstown, one of the two working and middle class African American

neighborhoods in town. With multiple family members working, these households were able to cobble together enough money each month that a supposed luxury like electricity would be deemed affordable. When several members of a neighborhood came together to make a request for electricity service on their block, all that was needed was for the Board to approve their petition and extend service to their houses. It is worth noting, however, that this seemingly mundane action – the expression of a desire for municipal services in front of an all white Board of Commissioners – is a show of substantial courage and agency.

While it is not clear from the meeting minute notes what became of this petition, judging from Figures 3.6 and 3.7 it is likely that it was not granted for some time. Subsequent requests and petitions for electricity service came from Crosstown over the coming years, and were mostly referred to the lighting committee only to be rejected. In Rocky Mount, and likely many other small towns with a municipally owned electric utility, economics were only part of the equation when deciding how to expand electricity service in the home. While street lighting functioned in the dual role of attracting consumers to commercial areas and illuminating areas for the purposes of safety, electricity in the home was meant to provide private benefits to the householder and their families[27]. These benefits included, among others, a higher quality of lighting at night that allowed children and families to read and do homework. By the 1920s electricity also gave households access to information and entertainment provided by radios. There were also the benefits that came from

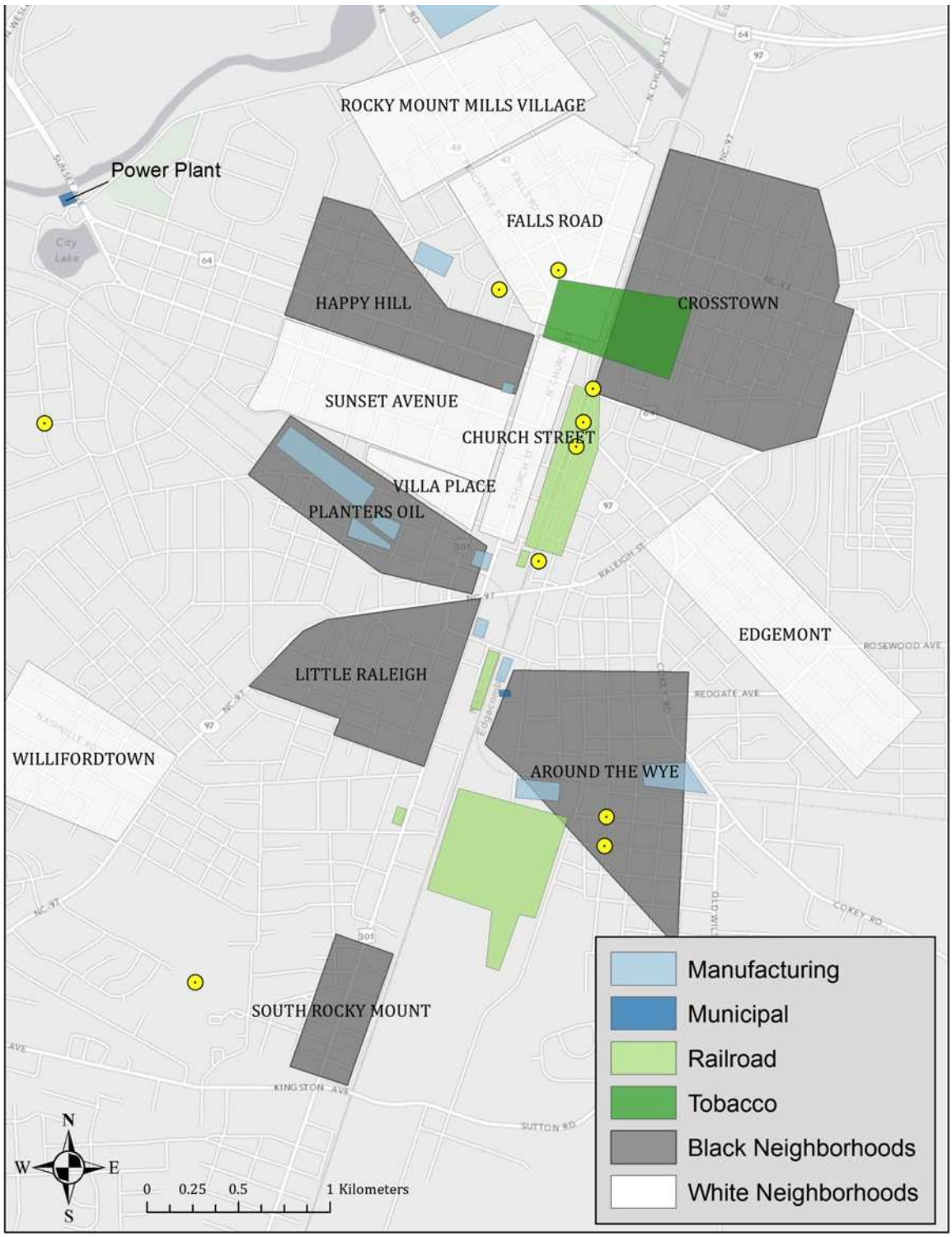
[27] Of course, both street lighting and domestic lighting were marketed in order for electric utilities to sell more electricity.

Figure 3.6. Electricity Service Requests Sent to Lighting Committee



Sources. Hazirjian (2003); Meeting Minutes, Rocky Mount Board of Commissioners; Sanborn Fire Insurance Maps (1907; 1912; 1917)

Figure 3.7. Electricity Service Requests Ordered to be Done by Board of Commissioners



Sources. Hazirjian (2003); Meeting Minutes, Rocky Mount Board of Commissioners; Sanborn Fire Insurance Maps (1907; 1912; 1917)

electric appliances, especially irons and washing machines.[28]

Figure 3.6 shows the location of 35 lighting requests made by citizens before the Rocky Mount Board of Commissioners between 1907 and 1923 that were sent to the Lighting Committee for further deliberation. Of these requests, 57% were made in African American neighborhoods, 9% made by commercial establishments, leaving slightly more than a third (34%) coming from white neighborhoods. Figure 3.7 shows an additional 10 connections for electricity service that were granted without further deliberation by the Board. Of these, two were in African American neighborhoods, with the remaining occurring in white neighborhoods or commercial areas.

What is clear from these maps is that during this period, African Americans were more likely to make requests before the Board of Commissioners for lighting, as well as being more likely to have their requests be sent to the Lighting Committee. What became of many of these requests is unclear, but judging by the frequency of requests coming in a similar geographic area like Crosstown, many were not approved. At the same time, the dearth of requests in the wealthier white neighborhoods of Sunset Avenue, Falls Road, and Villa Place indicate that these areas already had electricity service, and that new homes were readily provided with service. This trend was especially clear in the construction of the West Haven neighborhood, starting in the mid 1920s.

On April 5, 1923, D.J. Rose and Thomas H. Battle came before the Board of Commissioners requesting that electricity, water, and sewer service be extended to

[28] Just how beneficial these appliances were, especially for women, is subject to debate. See Cowan (1983).

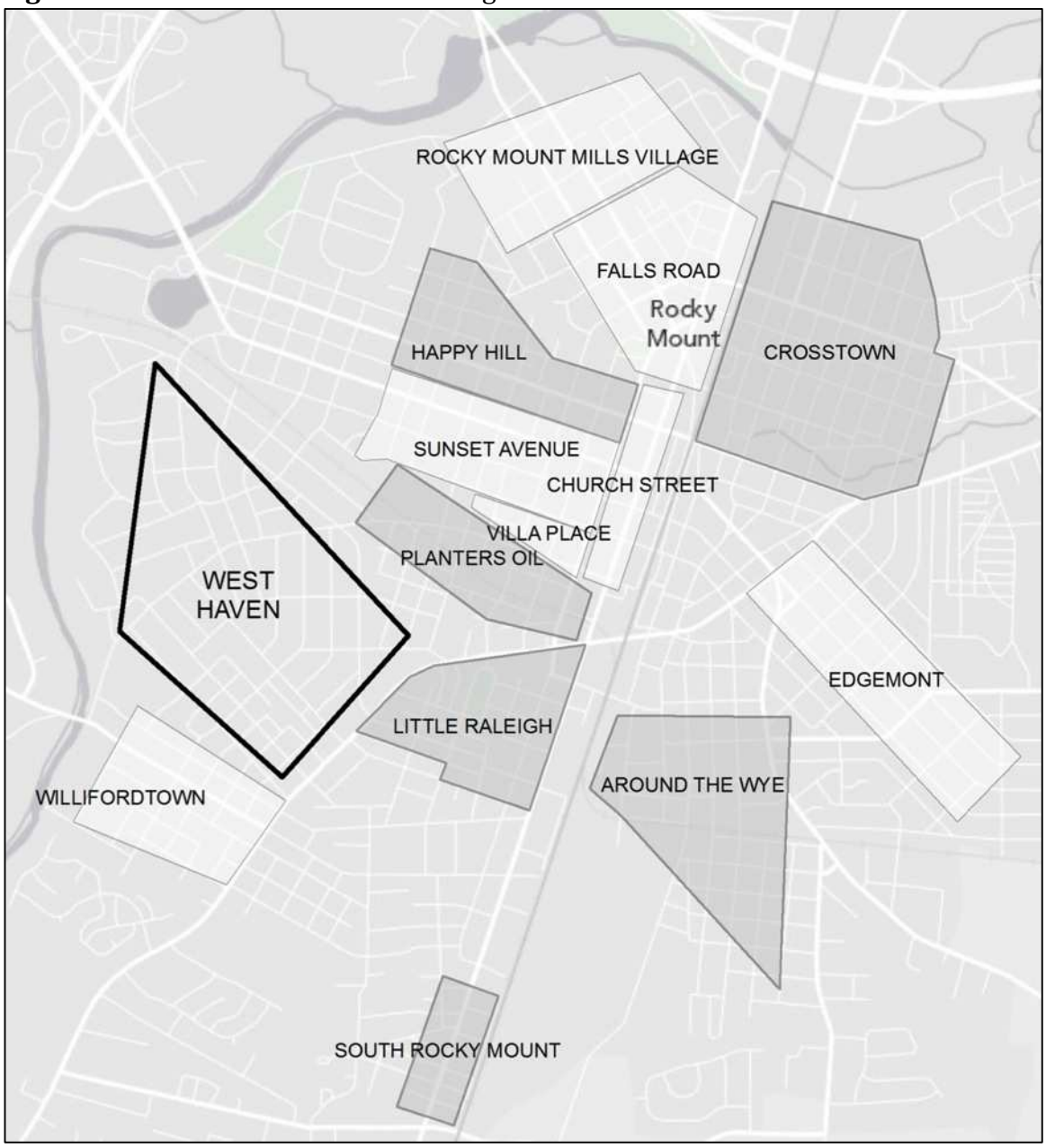
a new neighborhood in which 40 homes would be constructed on the western side of town (see Figure 3.8 for location). The interests of Rose (a local contractor and former Board member) and Battle in getting this approved are clear – Rose would benefit from the construction of high end homes, while Battle's Building and Loan association would provide many of the mortgages. Their request for the extension of service was immediately approved, and ordered to be done as soon as possible (RMBOC, 5 April 1923). Homes in the neighborhood were ultimately completed starting in 1928 and included "large one- and two-story, brick and frame … houses spaced well apart on large lots" (United States Department of the Interior, 2002: 6) that were occupied by "Rocky Mount's leading professionals, executives, and industrialists seeking a sylvan environment in which to raise their families" (United States Department of the Interior, 2002: 5).

As the preceding shows, the spread of electricity service in Rocky Mount was an uneven one shaped directly by racial discrimination. The effect of this was to mark certain areas of town as unmodern, dangerous, and unfit for receiving the privileges that come from full participation in democratic society. But controlling the operations of the municipal electric utility provided further advantages to the Board of Commissioners, as will be examined in the next section of this chapter.

3.5 Municipal Ownership and the White Way

As of January 30, 1902, about 77% of electric light and power stations in the United States were privately owned, with the remaining owned by municipalities. Of these municipal stations, about 82% were in towns with populations below 5,000, compared to 73% of private stations (Bureau of the Census 1902). This points to the

Figure 3.8. Location of West Haven neighborhood



fact that small towns were much more likely to have municipally owned electric companies. But municipal ownership and provision of services such as lighting and water was en vogue among Progressive Era reformers in the United States in the early 20th century, and between 1902 and 1930 the number of municipally owned utilities actually increased (Schap 1986).

By the late 1890s electric utilities were being established in towns all across North Carolina. The *1897 Annual Report of the Bureau of Labor Statistics in North Carolina* reported 22 electric utilities operating in towns, with a further 75 'isolated' electric plants in operation, predominantly at manufacturing facilities, but also in hotels and a few private residences. The ownership of the utilities was mixed, with some privately owned while others were operated by municipalities. While most of the electric utilities operated in larger cities and towns, a number of municipally owned systems had begun to spring up in the smaller but rapidly growing towns of eastern North Carolina, namely Wilson and Goldsboro (North Carolina Department of Labor and Printing 1897). At the same time, competition between eastern North Carolina towns was ramping up as they sought to become the market of choice for farmers looking to cash in on the booming tobacco trade. While market prices certainly played a role in the choice of market for farmers, the attractions that the market town offered was nearly equally important. Theaters, hotels, and saloons all sprung up in towns eager to draw farmers to the markets, and to get them to deposit their earning in newly formed banks (Valentine 2002).[29] Electric lighting was

[29] Several of these banks went onto become major state and regional banks, namely RBC Centura and Branch Banking &Trust (BB&T).

especially important to this effort, as it marked the towns as modern and allowed farmers to continue consuming goods and services well after sundown.

While the relative prevalence of municipal systems in smaller towns is often attributed to the their inability to attract private capital (Schap 1986), as we have seen in Rocky Mount attracting private capital was likely not difficult given Battle and Braswell's personal wealth and connections to the South's elite. Other Progressive urban reformers in the late 19th and early 20th centuries were eager to point out the advantages of municipal ownership, particularly in smaller towns. One such reformer writing in 1904 argued that small towns were uniquely positioned for effective municipal ownership as "Here government lies close to the people. The officials are known to every one. They cannot retire under the shield of their friends and party councilors. They are accessible to the personal complaints of every one" (Commons 1904: 59-60). Municipal ownership of the electric utility, then, would be one part of 'cleaning up' towns, ridding them of corruption, and providing a cleaner, safer, and more healthful environment for its citizens. In essence, municipal reformers sought to produce a sort of 'electric democracy'.[30]

Critics are right to question these claims, however, because while there may be some difference in the degree of personal responsiveness in small communities, there was still ample opportunity for corruption, not to mention systematic institutional racism. As one critic points out, municipal ownership allowed for the appropriation of graft in ways similar to the franchise system in large cities (Schap 1986). Even if cities like Rocky Mount had been unable to attract outside private

[30] This term deliberately draws on Mitchell's (2009) *Carbon Democracy*. Credit to Scott Kirsch for pointing out this parallel and coining the phrase.

companies, towns that built their own power plants and distribution systems still needed to invest in equipment, which likely involved in some kickbacks to purchasers. The municipal utility also involved the creation of jobs, which could be channeled to political allies and supporters. Finally, a municipal electric utility can provide indirect benefits to an elite ruling class – increasing the attractiveness of doing business in the community; increasing the length of the working day in their factories; and increasing the attractiveness of the community as a whole to stimulate population and business growth. It is important to note that those who benefitted from electrification – both directly and indirectly - were local commercial elites, who in small towns such as Rocky Mount were often one and the same with local elected officials. So in effect, those who reaped the greatest benefits from municipally owned systems were those controlling municipal purse strings, yet by financing these systems with municipal bonds paying for the system was the responsibility of the community as whole.

As previously noted, in Rocky Mount the Board members that ultimately pursued a municipal electric system were among town elites. Aside from serving on the Board, they were active in industrial interests, commerce, and banking. In addition, members were heavily involved in real estate development and lending. The close interconnections between the municipal government and their interests in industry, real estate, and finance created possibilities for corruption. While the meeting minutes typically show little in the way of opposition to the Board by the general public, two cases of opposition stand out.

The first involved D.H. Tuttle, minister of the white First Methodist Church, who on August 19, 1909 was called before Board of Commissioners to explain his comments during the previous weekend's sermon (which was subsequently published in the local newspaper[31]). While most accounts of the discussion of issues at Board of Commissioners meetings were handwritten and brief, Thomas H. Battle took it upon himself to have this account transcribed in full, typed, and pasted in the minute book. At issue was what Battle termed Tuttle's accusation of corruption among members of the Board. Under intense questioning from Battle, Tuttle argued that he simply drew together the potential for sin based on the personal and business connections held by several Board members:

> Here is a city government, a board of alderman, and a building association closely connected through the directors with the city government; certain city officials are in debt to the building and loan association, and those officials continue to be elected to office.

Of particular concern was a pay raise Battle had recommended for both the Town Clerk and the Superintendent of Public Works, both of whom also owed money to the Building and Loan Association owned by Battle. Tuttle was also concerned with the decision by the city to give free electric lighting to the amusement park that operated periodically in the park – including Sunday mornings when Tuttle felt everyone should be in church. Battle stridently defended himself against the charges of corruption, arguing that the Building and Loan Association is "nothing but a drag on me; not a particle of benefit to the Bank of Rocky Mount [which he owned], just a drag." He continued to interrogate Tuttle, requesting that he state which board

[31] The publication of this sermon in the paper is mentioned in the Meeting Minutes, but the newspaper is unavailable.

member he felt was corrupt or incompetent. Tuttle demurred, stating again that only the potential for corruption existed, and ultimately Battle declared the matter settled and his good name cleared (RMBOC 19 August 1909).

A second incident points to the fact that despite the immense political and economic power held by the Board of Commissioners, they did not rule unopposed or without criticism. Each June, the Board of Commissioners would issue their annual Financial Statement. Normally these were fairly sterile reports of accounting with very little narrative accompanying the reports of municipal incomes and expenditures. The *1913 Financial Statement* represented a sharp change in this regard, with again Thomas H. Battle taking the lead. At issue was "the great profits made by our light and water plants … all with rates as low as any in the State." In their defense, Battle argued that the town "make[s] no attempt to disguise these figures. We are very proud of them. They show how valuable municipal franchises are, if honestly and efficiently managed." Despite the appearances of vast profits, Battle argued that the Board believes the rates for service cannot be reduced because of the great need to expand service and replace equipment. Conveniently absent from this argument is the fact that a majority of equipment purchases and distribution expansions had been debt financed in the past.

Later in the same statement Battle attempted to rally the town around the municipal ownership of a planned gas plant by harkening back to previous debates over the benefits of municipal ownership. He argues that :

> [T]he great spirit of the age, against which nothing can stand, has decided the question on business principles – that what is for the good of all and is a monopoly is simple in its operation should be owned and managed by the city … communities everywhere are trying to get

> back the public franchises given away in the last generation. (Finance Committee 1913)

The only way to keep maintain this situation, Battle believed, was to keep it in the hands of a city government run on "business principles, free from graft and inefficiency and selfishness", with the implication being that the utilities' profit proves that the utility 'business' is already being run in that fashion. Ultimately, Battle issues a thinly veiled threat to the town:

> If our people do not want modern utilities, we can do without the bonds. All of school houses are now running over and we must have bonds for another building, if our people want to keep on sending their children to school (Finance Committee 1913).

These two cases are evidence that the municipal utilities of Rocky Mount were not operated without suspicion from the general public, including whites. But as we have seen from the cases of street lighting and electricity service, the service, nor the benefits, of the electric utility was not distributed evenly across the city. But the electric utility was used to benefit whites, and especially elite whites, in Rocky Mount in other ways as well. In the section that follows, I will show two ways that municipal ownership of the electric utility was beneficial to the ruling elite in purely economic terms. First, municipal ownership allowed industrial leaders to use electricity on a fee for service basis, thus not tying their own investment capital to an industry that required a high upfront investment in machinery and equipment. By making the switch to electricity from gas or kerosene lighting and stream driven belt power, industry was able to take advantage of numerous operational benefits, ranging from longer working days, decreased insurance rates, and the ability to take advantage of the flexibility that motor driven machinery provided. Second, and

perhaps most significantly, municipal ownership of the electric utility allowed for a gradual shift from a municipal budget based on property taxes to one based off of 'profits' derived from the electric utility and other municipal services. This budgeting measure provided a range of benefits to white elites, ranging from lower property taxes, lower industrial electricity rates, and the potential to offer tax incentives to attract new industry with tax incentives. Finally, the effects of running the electric utility at a profit will be examined. By 1932, with the Great Depression setting in, the very racialized impacts of unaffordable electricity in the town are evident through the analysis of a list of delinquent electricity accounts owed to the city.

Electricity, Fixed Capital, and Industrial Benefits

As described in Chapter Two, electric utilities require a tremendous upfront outlay of capital in order to begin operating. Because of this large outlay, and the relatively slow payback time on investment, the electric utility industry has long been dependent upon the state for its success (Howell 2011; Harrison 2013). This came in the form of state regulation by the mid-1910s, but in the very earliest stages municipal ownership provided the most stable form of government intervention to ensure a utility's success. This took considerable pressure off of small factories eager to take advantage of electricity for lighting and motor driven machinery but unwilling to make their own investment in costly electricity generation equipment. With municipal ownership of the electric utility, an individual factory owner does not have their own capital tied up in fixed capital, and can use the electricity on a fee for service basis. This keeps more of their capital liquid, meaning it can be used

more flexibly, for example invested in other ventures or used to expand production (Harvey 2006).

Electricity provided multiple benefits to the factory owner. Before electricity, steam or waterpower were used to operate machines. In this particular arrangement, a single turning mechanism, called the prime mover, was powered by the steam or water. The prime mover was then connected to an iron or steel line shaft that ran along the ceiling of the factory by a series of leather belts and pulleys. A number of countershafts were then connected to the line shaft, and then via another set of pulleys and clutches ultimately to the machine. To operate a single machine meant activating a clutch to connect that machine to the vast web of belts and pulleys. Machines on different floors in a factory would be connected to the prime mover by belts running through holes in the floor, and these holes were then insulated to keep fire from spreading between floors (Schur 1990).

The provision of power via this extensive arrangement of belts and pulleys limited factories in two primary ways. First, an enormous amount of maintenance was required to keep the various moving parts in working order. Individual machine operators were responsible for the frequent upkeep to stretching belts and moving parts in need of lubrication, a task that required a considerable amount of time each day that was not devoted to producing commodities. Second, because of their connection to the line shaft, there was a limit to how machines could be organized, and they typically remained arranged in a linear fashion that was not necessarily ideal for production (Schur 1990). The arrival of electricity in the factory brought about rapid changes in this arrangement.

While steam power was the dominant source of power at the start of the 20th century, by 1920 electricity was the predominant source of power in factories. Although electric motors were initially used only to turn the same line shafts, belts, and pulleys, they were soon used to power smaller parts of the factory, and ultimately individual machines. By 1929, the transition to electric drive motors was substantial, with 78% of all mechanical drive in factories provided by electricity (Schur 1990). The widespread use of electricity in factories meant that redesigns of the factory floor, so influential to achieving assembly line efficiency under Taylorism, became possible. The precision of electricity – both in the ability to divide it into the most effective unit size and the ability to produce a motor to match the power produced exactly – helped drive an increase in factory throughput after World War One. Further, with the web of belts that drove the machines removed, overhead lighting from skylights and electric lights improved, making precision work easier (Schur 1990). In addition to the benefits electricity provided to the actual operations of the factory, using electric lighting in place of open flame lanterns or gas lighting decreased insurance rates due to the decreased risk of fire (Insurance Library Association of Boston 1912).

In sum, electricity added flexibility and efficiency to the factory, making it very attractive to industrialists eager to take advantage of the latest methods of industrial organization (Mumford 1934). Increases in throughput meant that the cost of expensive machinery could be spread across the production of a greater number of more uniform units. However, these advances benefitted one class well above the rest: factory owners. Gains in assembly line efficiency, longer working

hours, and more precision work all equated to the potential for increased profits among factory owners. In these ways, starting an electric utility, especially one that did not have their own personal capital invested in it, was of great benefit to the elite class of Rocky Mount residents.

Electricity and Municipal Budgets

In the early 20th century, many private electric utilities in larger towns were struggling to remain afloat. Because many cities granted multiple electricity franchises, the utilities in those places engaged in fierce price competition that brought most to the brink of bankruptcy (Hughes 1983). This was not the case with municipally owned utilities as the town itself was providing the service. With a captive potential customer base, especially among small to medium size consumers unable to build isolated plants, the utility could charge the rates needed to at least break even. Most towns, however, sought to run their utility at a profit.

Rocky Mount was one such example. In 1902, its first year of operation, the electric utility turned a profit of $1844, which was a profit margin of 55%. In subsequent years this profit margin would fluctuate and at times be in the negative, especially in years with ambitious internally funded expansion programs (as opposed to bond funding). By 1912, the profit margin would remain comfortably above 30% (see Table 3.2). Different than investor owned electric utilities, these profits would not be retained for reinvestment in the business or distributed to shareholders. Instead, this money could be shifted around within municipal budgets to make up for shortfalls in other areas. Before 1910, the sum of electricity profits that could be shifted within the municipal budget was relatively minor, typically less

Table 3.2. Table of Rocky Mount Municipal Utility Revenues and Profits, 1902 - 1929

Fiscal Year	Profit	Profit Margin	Profit as % of total municipal revenues
1902	$ 1,844	55.1%	7.3%
1903	$ 934	8.4%	4.2%
1904	$ (7,507)	-61.5%	-17.9%
1905	$ 2,014	14.0%	4.1%
1906	$ (2,209)	-14.0%	-3.8%
1907	$ 2,183	11.1%	3.1%
1908	$ 3,547	15.8%	3.7%
1909	$ 2,435	12.1%	2.9%
1910	$ (7,254)	-32.5%	-8.7%
1911	$ 6,792	24.2%	7.9%
1912	$ 10,041	31.4%	10.9%
1913	$ 11,050	30.5%	10.8%
1914	$ 15,509	34.5%	9.9%
1915	$ 19,101	40.0%	9.8%
1916	$ 20,367	38.9%	11.8%
1917	$ 18,916	33.2%	9.1%
1918	N/A	N/A	N/A
1919	N/A	N/A	N/A
1920	N/A	N/A	N/A
1921	$ 28,625	18.1%	6.0%
1922	$ 63,117	43.5%	12.6%
1923	$ 63,478	35.4%	9.9%
1924	$ 77,792	37.8%	10.4%
1925	N/A	N/A	N/A
1926	N/A	N/A	N/A
1927	$ 128,150	51.9%	11.1%
1928	$ 130,159	52.0%	10.4%
1929	$ 142,608	53.5%	13.8%

Source. Meeting Minutes of the Rocky Mount Board of Commissioners; Financial Audits of City of Rocky Mount
Note. Missing data for years 1918-20; 1925-26

than 5%. That meant that a majority of municipal funding came from more traditional sources, namely property taxes and license fees.

By 1912 there was a dramatic shift, as electricity profits began to routinely comprise more than 10% of total revenue. By the mid-1920s, the town actually began to budget for a shortfall in general expenses, such as police, fire, and general operations, and plan to make up this shortfall with profits from the electric (and to a lesser extent), gas and water utilities. While this may appear a fairly mundane municipal accounting measure, it is important to consider what this practice made possible. First, in a city with a rapidly growing population desirous of ever-greater municipal services, property taxes could be held steady or even decreased. This was of overwhelming benefit to property holders in the town, who were predominantly white. Second, it was possible for the municipal government to present special tax incentives to attract new industries to town – offering a reprieve from property taxes for 10 years, for example. Finally, by keeping electricity rates at a level high enough to maintain a healthy level of profitability, the benefits of electricity were by and large beyond the reach of the poor.

While rates were kept high enough to achieve healthy profits, the Board of Commissioners was cognizant of the effect high electricity prices had on industry and routinely acted to provide relief to industrial customers. In September of 1920 representatives from the Southern Cotton Oil factory and Ricks Hotel appeared at the Board of Commissioners meeting to request a decrease in rates on the back of a rate increase earlier in the year. The representatives argued that the rates would keep business away from town and threatened to install isolated plants at their

facilities if rates did not change. The issue was referred to the Light Committee to investigate (*Rocky Mount Evening Telegram*, September 3, 1920). Two weeks later, the Committee reported that they would hire an efficiency expert to examine the possibility of decreasing rates, but in the meantime a larger discount would be applied to bills over $100/month. While the measure passed, one unnamed Commissioner was reportedly concerned with passing policies that favor heavy power users at the expense of smaller consumers (*Rocky Mount Evening Telegram*, September 17, 1920). By the middle of October, the Board reported that they would not hire an efficiency expert, but rather would offer increased discounts to those that used more electricity, a move that appeared to placate the protests of Southern Cotton Oil and Ricks Hotel (RMBOC 11 October 1920).

'Profits' from the municipal utility continued to be an important part of the budget of Rocky Mount well into the 1990s. As we will see in Chapter Six, after more than 80 years this particular arrangement was a major contributor to the problems of high electricity rates facing Rocky Mount, and numerous other eastern North Carolina towns, today. But operating the utility at a profit was already creating problems for many customers by 1932.

1932 Electric Utility Charge-Offs

Rocky Mount was particularly hard hit by the Depression, with a jobless rate of almost 45% by 1935. Making matters worse was the lack of funds available for charitable organizations. Fewer funds meant that these groups became more discretionary in their assistance, often choosing only to help those deemed as deserving. Once federal relief became available in the form of the Works Progress

Administration, many Rocky Mount elites opposed the projects because they presented many poor people with an alternative to domestic work and intermittent and low wage industrial labor (Hazirjian 2003). However, judging by returns from the electric utility these experiences were not universal, with those that were wealthy, not surprisingly, in far better circumstances than those that were not. After steadily increasing during the 1920s, the overall revenues for the electric utility had decreased slightly in 1932. Despite a decrease in revenues and hard times facing the city, the profit margin for the utility actually increased from levels during the late 1920s. By essentially requiring the utility be profitable year on year, the municipal government was pricing the utility beyond the reach of many poor and working class customers, many of who were undoubtedly facing challenges during the early years of the Depression.

Evidence of these challenges comes in the form of a list of charge-offs from 1932. For electric utilities, a charge-off is a declaration that an account is unlikely to be collected and will be removed from the balance sheet and deducted from earnings. This printed list included 261 customers, the address at which service was received, and the balance on the account to be 'charged off'. Although they are not indicated as such, the charge-off list includes a mix of residential, commercial, and industrial customers. The balances left unpaid ranged from a few cents, like the $0.15 owed by Mozelle Davis (an African American cook living in the Happy Hill neighborhood) to the $116.64 owed by Edgecombe Milling Company (located in the

southeast of town along Cokey Road). Overall the median balance owed was $2.85[32]. While a majority of the customers on the list appear to be residential, a majority of the unpaid money appears to be owed by industrial and commercial customers. However, there is also an uneven geography of where the customers with unpaid accounts are located.

The location of 257 of the 261 customers are able to be accurately mapped.[33] Of the total customers, 64% (163) could reliably be coded as living in a black or white neighborhood, with the remaining 36% (94) located in the central business district or scattered in residential areas outside of the core neighborhoods. As Figure 3.9 shows, 74% (121) of the coded customers are located in African American neighborhoods. Of these customers, the median account to be charged off is worth $3.21. Of the 26% in white neighborhoods, the median delinquent account value was nearly the same, about $3.15.

Table 3.3 presents how the charge-offs varied by neighborhood. In general, African American neighborhoods had the highest number of charge-offs, with the middle-class Crosstown neighborhood leading the way with 53 charge-offs that had an average bill of $4.34. The white neighborhoods typically have fewer charge-offs, but with a higher average bill. This is mostly due to the numerous businesses located in those neighborhoods that skewed the average bill significantly higher.

What the uneven geography of electric utility charge-offs makes clear is the

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[32] The occupation of Mozelle Davis is derived from Hill's (1930) Rocky Mount City Directory.

[33] Customers were mapped using an ArcMap 10.1 geocoding service. Each customers was then coded as living in a black or white neighborhood based on boundaries derived from Hazirjian (2003) and Fleming (1998).

Figure 3.9. Location of 1932 Charge Offs

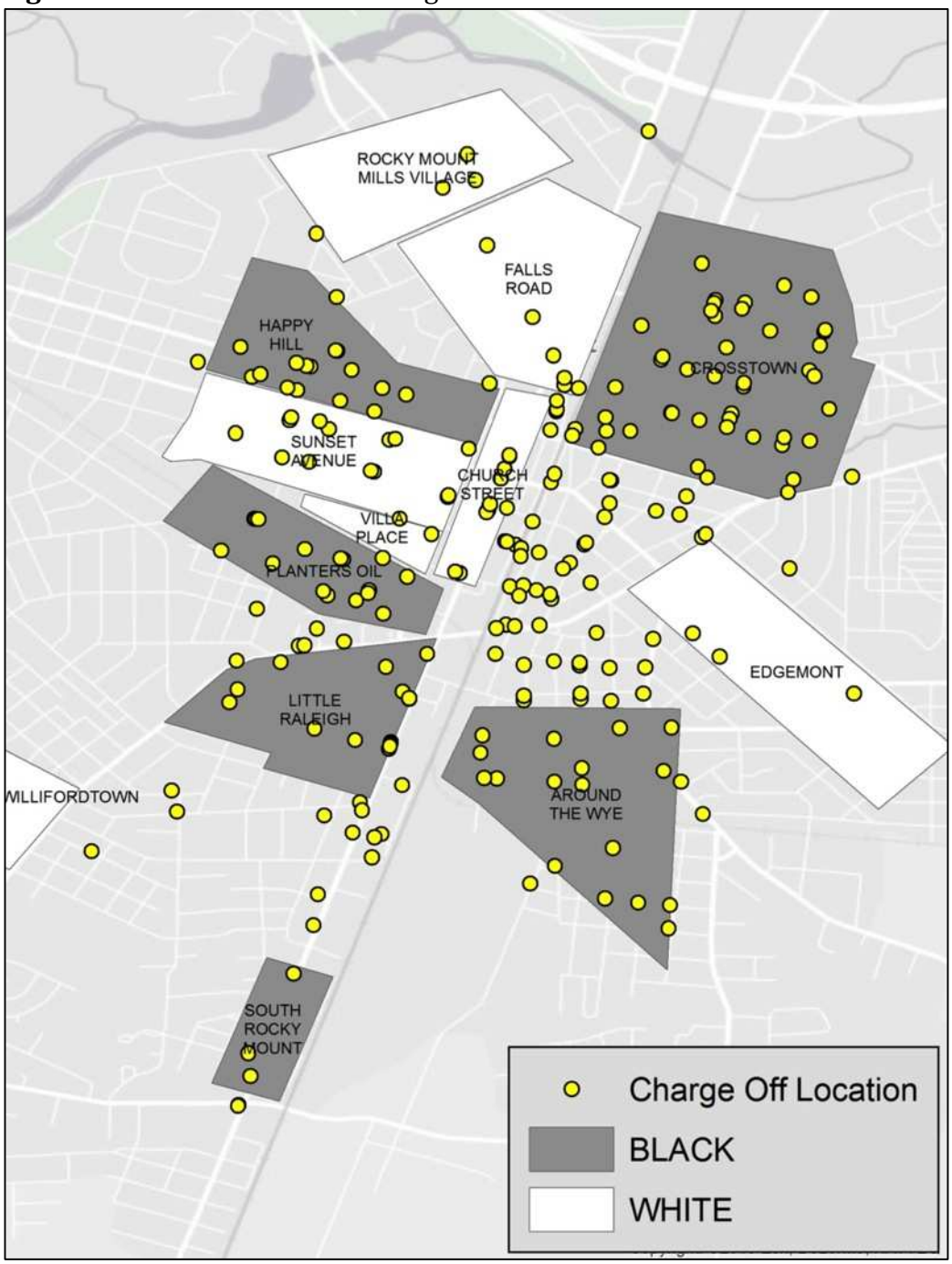


Table 3.3 Charge Offs Data by Neighborhood

Neighborhood	No. Charge Offs	Avg. Bill
Crosstown	53	$ 4.34
Happy Hill	16	$ 5.55
Little Raleigh	15	$ 3.97
Around the Wye	17	$ 5.90
South Rocky Mount	3	$ 4.22
Planters Oil	17	$ 3.66
Willifordtown	0	N/A
Rocky Mount Mills Village	3	$ 5.76
Sunset Avenue	16	$ 3.36
Villa Place	1	$ 1.38
Falls Road	5	$ 18.37
Church Street	14	$ 8.03
Edgemont	3	$ 9.69

extent to which electricity was being priced out of reach of the poor and working class. African Americans were represented among the poor at a far higher rates than whites. As shown by the maps of electricity service requests (Figures 3.7 and 3.8), working class African Americans in neighborhoods such as Crosstown and Happy Hill desired electricity, even going so far as to request it at the meetings of the Board of Commissioners. However, the persistent requests during the 1910s and 1920s show that electricity was slow to spread to those neighborhoods. By 1932, the Board appears to have taken a more ambivalent position towards electricity service in African American neighborhoods, and electricity use increased in those areas, as indicated by the number of delinquent accounts in those neighborhoods. But at the same time, the higher proportion of charge-offs in those towns points to two things. First, even in the middle and working class African Americans wages were so low that electricity was unaffordable. Second, and related to the first point, the insistence on the Board of Commissioners to run the electric utility at a profit continued to put electricity service outside the reach of the poor, and especially poor African Americans.

3.6 Conclusion: Producing the White Way in Rocky Mount

In 1922, just seven years after first requesting a White Way, a committee from the Rocky Mount Chamber of Commerce and Merchants Association requested that even brighter and higher quality lighting be installed along Main Street. The Board of Commissioners ordered that this improvement be made and that this improvement be paid for out of the normal operating budget (RMBOC 8 May 1922). Two months later, however, the funds for the improved White Way was included in

a $100,000 bond issue that also funded sewer extensions and street paving (RMBOC 20 July 1922). By November, with work on the improvements underway, a petition was brought before the Board to extend the White Way along Washington Street from Five Points to Hill Street (RMBOC 16 November 1922). The petition was referred to the Lighting Committee, and when the improvement was completed at the end of the year, the old lights of lower quality previously used on Main Street were moved Washington Street. In 1927, an additional extension of the White Way was again requested along the same block of Washington Street. This time, the request was granted without further discussion (RMBOC 7 January 1927).

Rocky Mount, along with many small towns across the American South, experienced revolutionary changes during the first three decades of the 20th century. The Progressive Movement, typically assumed to have lasted between 1900 and 1917 (Southern 2005), brought about changes in the operation and governance of cities. Concerns over public health, corruption, and efficiency brought about large scale restructuring of cities, especially in the new provision of the networked infrastructures of water, gas, and electricity. The shift in the American South from a largely agricultural economy to one increasingly based upon a network of small to medium sized market and manufacturing towns during this period also brought the leading white elites into close contact with each other. The white elite could thus easily become a homogeneous class marked by similar interests in community welfare as well as economic and social development (Weiler 1991; Southern 2005). But what is clear from the operation of the electric utility and the uneven distribution of the benefits of electricity is that these supposedly Progressive

interests were predicated on a vision of white supremacy and racial antagonism that had long defined white-black relations in the South.

In this chapter, I have shown that the case of electric lighting in Rocky Mount is paradigmatic of the new tactics of social and economic control in the New South. The melding of the ideologies of progress, efficiency, and segregation shows how electrification was a project of progress and modernity built on ideas of racial segregation and inequality. As the conclusion to this dissertation will show, the operation of the utility to extend the White Way has had long standing effects on Rocky Mount. It contributed to a series of decisions that left the town deeply indebted, and struggling to provide electricity to its (now majority African American) citizens at an affordable price.

As evidenced by the map of electricity charge-offs (Figure 3.9), by 1932 a majority of neighborhoods, including those that were predominantly African American, in Rocky Mount had electricity service. But this was not the case in the rural areas of surrounding Edgecombe County. In 1930 only 3.2% of farms had access to electricity service in North Carolina. With the coming of the Rural Electrification Administration, this would soon change. More than 30 years after the electric utility began in Rocky Mount, Chapter Four will examine how race continued to play a factor as various groups set out to electrify rural areas across the countryside.

Chapter 4: Accounting for Race in the North Carolina Rural Electrification Survey of 1934

In 1930, only 3.2% of farms in North Carolina had electricity, versus about 11% nationally (Badger 1981). By the late 1920s and early 1930s, the lack of rural electrification had already become an important political issue. In 1931, W. Kerr Scott, master of the State Grange, made rural electric service his top priority. During the race for governors in 1932, both candidates, John C.B. Ehringhaus and R.T. Fountain, strongly advocated for rural electrification as a means for developing and improving livelihoods among rural people. On May 31, 1934, two years after winning the election, Ehringhaus formed a Rural Electrification Committee (hereafter the Committee) to begin investigating the need and potential for rural electrification across the state (Brown 1982). At the first meeting, it was decided that the Committee's first order of business should be to conduct a statewide survey that would assess where rural electrification might be most feasible. The survey was to be under the direction of North Carolina State University engineering professor David S. Weaver, and would involve house-to-house visits by surveyors hired from the unemployment roles. The surveyed households would be located along a series of proposed electricity distribution lines and would be asked a number of questions about their household and farm, as well as their potential use of a range of electric appliances. This would all be tallied to produce an estimated household electricity

consumption profile, and would then be added to the other households along each line (Meeting of Governor's Commission on Rural Electrification 1934).

Completed over the course 8 weeks, the survey fieldwork produced an enormous amount of data. Seventy-eight of one hundred counties in the state were surveyed by a total of 58 field surveyors. They travelled along 677 proposed electricity distribution lines that extended over 4,486 miles in order to interview 25,508 prospects, 22,823 of which were interested in receiving electricity service (89.4%). Crucially in the eyes of the Committee, there was an average of slightly more than 5 interested prospects per mile. This fact provided an initial signal that the density of electricity consumers was sufficient in rural areas to support profitable rural electrification extensions. However, this enthusiasm was tempered in the eyes of Survey Director Weaver and his associates by the fact that the estimated total annual consumption of electricity in rural areas would be 10,651,168 kWh, which, considering the variety of electricity rates that would be charged, would produce an estimated annual revenue of $747,060. When compared to the cost of building the distribution lines, an estimated $7,467,957, the annual cost to revenue ratio was nearly 10. This was well above the 3 to 1 ratio preferred by private utilities, and even higher than the 5 or 6 to 1 that Weaver thought might be feasible in rural areas (Burton 1935a; see Table 4.1).

Still, there were areas in which rural electrification held great promise, and the Committee sought to share information about these areas with interested parties. Working alongside a small group of engineering college students, and under the direction of Weaver, a small group of engineers in Raleigh, North Carolina

Table 4.1. Overall Statistics, 1934 Rural Electrification Survey

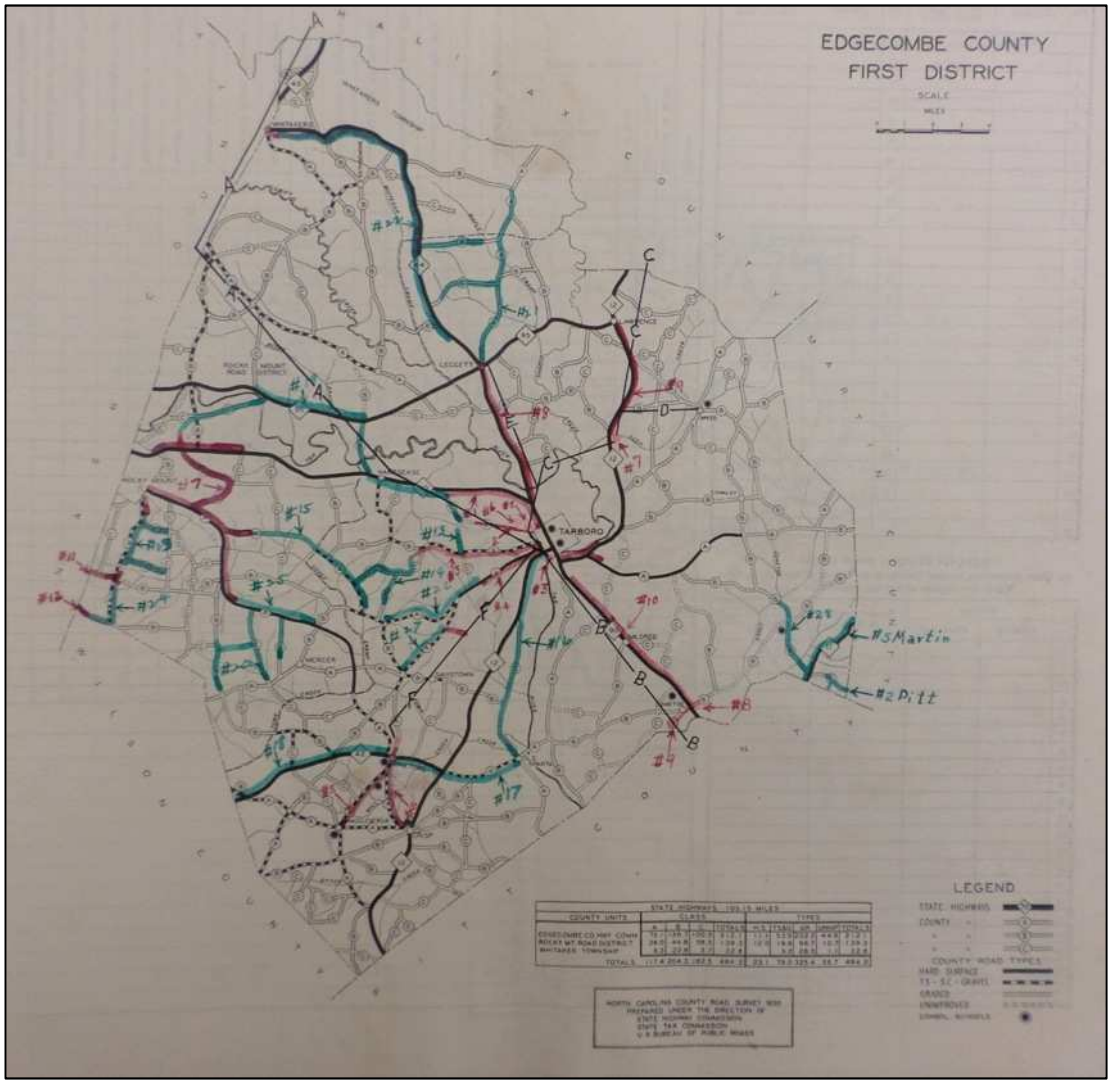
Counties in State	100
Counties surveyed	78
Total Lines surveyed	677
Total Miles of Proposed Lines surveyed	4,486
Total No. of Prospect Interviewed	25,508
Total No. of Interested Prospects	22,823
Interested prospects per Mile	5.09
Estimated Cost	$7,467,957
Estimated Annual Revenue	$ 747,060
Estimated Annual Kwh Consumption	10,651,168
Estimated Cost/Estimated Annual Revenue	9.997

Source. Report on North Carolina Rural Electrification Survey (1935)

produced 15 books of rural electrification maps that summarized the survey. These books were distributed to the major power companies in the state, as well as the North Carolina Utilities Commission and various other state administrative units with an interest in rural electrification. Each book contained a series of maps, one for each of the 78 counties surveyed (see example in Figure 4.1). On these maps were hand drawn lines representing the current and proposed electricity distribution lines snaking through the rural parts of each county. For each distribution line, the total proposed electricity consumption of users along that line was reported, as well as the costs associated with its construction. Each line was ranked in terms of its potential profitability both within the county and in the state as a whole. The expectation of the Committee was that the most profitable lines should be prioritized for construction.

In a final report on the North Carolina survey project, Weaver and assistant project director C.W. Burton were forthcoming about many of the flaws in the design of the survey and limitations of the data included in the books. Estimates of electricity consumption by appliances could be off, for example, and the average electricity consumption on farms was already showing a tendency to increase. The prices charged by electric utilities could also change (Burton 1935a). That said, in summarizing the activities of the 1934 Rural Electrification Survey, Weaver remarked that the results of the survey were being watched in many states across the country (Weaver 1934a), as by the mid 1930s rural electrification had become a major national issue. The FDR government was making moves towards the creation of a formal agency to foster it, and in the summer of 1935 created the Rural

Figure 4.1 Edgecombe County Proposed Lines From North Carolina Rural Electrification



Source. North Carolina State Committee on Rural Electrification (1934)

Electrification Administration (REA). Later in 1935 Weaver took a short-term post in with the REA to help design and implement similar surveys across the United States. By 1937, the administration of field surveys modeled after the North Carolina version became the standard operating procedure for rural electric cooperatives before they received REA loans to build distribution systems.

This combination of surveys, maps, and reports were part of preparing rural areas of North Carolina for an electricity-led socioeconomic intervention. By the mid 1930s, electricity service was viewed as the key to rural economic and social development. The collection of data through the surveys made this rural territory knowable, and provided the spatial knowledge to enable a central agency to direct interventions that were assumed to improve people's lives. Yet despite the forthright admission by Weaver and colleagues of the inaccuracies and shortcomings of the Survey, absent from any of the final reporting, and largely taken as self-evident throughout the survey process, was the use of one variable to negatively adjust the proposed electricity consumption of certain households at a rate much higher than others – race.

The race of the surveyed householder, along with the status of the home as owner- or tenant-occupied, was employed to create a number called the "Correction Factor". The Correction Factor was used to 'correct' the estimated electricity consumption of a household in a negative way, with a household's status as African American and/or a tenant used to significantly reduce the amount of potential electricity consumption attributed to that particular house. In this chapter, I show how the Correction Factor functioned as a practical means of encoding the racial

biases and hierarchies that shaped the 1934 Survey. This racial hierarchy put a value on the veracity of information provided by African Americans versus whites in the survey, as well as their capacity to carry out the electrification efforts they desired. But it also shaped who was included in the survey, and who was ignored. As this explicitly racist calculus was embedded in the survey logic, it systematically altered the survey data that was collected.

Yet the book of maps distributed to power companies and state officials, as well as all the written reports to various governmental agencies, makes no mention of this racial adjustment. As has been shown in the realm of housing and labor (Sugrue 2005; Freund 2007; Pietila 2010), the New Deal marked the start of a shift in the way race was used to shape cities and rural areas. In the case of housing, no longer were individual bankers required to make a face-to-face decision with potential borrowers. The rise of the Home Owners Loan Corporation, and the creation of redlining maps, became a systematic method of cloaking racism behind the language of housing value and risk assessment. In the same way, the 1934 Survey used the Correction Factor to factor in race, but to do so in a way that was statistical and, in the eyes of the survey designers, objective.

Much geographic research points to the power of maps to obscure certain variables while others are pushed to the fore. With their ability to spatially code a certain version of the world and to make it more or less knowable, maps play an important role in creating the world they seek to represent (Pickles 2004; Edney 1997; Woods et al. 2010). But it is imperative to remember that the power of maps is a relational achievement, as their power does not arise solely from the

cartographic process, but also from the stores of data, aggregations, and calculations that lead to their construction (Latour 1987). The availability of the original surveys conducted by 58 field surveyors, as well as the instructions to surveyors and their correspondence with the Raleigh survey headquarters, provides an opportunity to examine the 1934 Survey in considerable detail. Through the close reading of original survey documents, including instructions and correspondence with surveyors and the reports of survey administrators, it is possible to better understand the rationales that guided the design and administration of the survey, as well as the limits. In addition, by converting the paper survey forms of one county, Edgecombe County, to a digital form, it is possible to understand how the racial bias inherent in the survey design altered not only the survey results, but also the geographical diffusion of electricity in rural parts of North Carolina during the 1930s.

This chapter portrays a shift in the way race shaped the distribution of electricity. Where Chapter Three shows the direct denial of electricity service by a Board of Commissioners directly interacting with individuals and groups requesting electricity, the planners and administrators of the 1934 Survey employed a more subtle and hidden racism in which racial hierarchies became one among many data points used to direct electricity distribution. The availability of substantial archives detailing the design and administration of the survey, and not just the aggregated averages and statistics that were the survey's results, allows for a more in-depth examination of the way ideas of race circulated and influenced academic, state, and electric utility circles. The survey further sheds light on the continuing evolution of

relations between capital, the state, and race in the realm of electricity production and distribution. North Carolina's survey was designed to encourage electric utilities, regardless of type (i.e. municipal or private), to build rural distribution lines. The state of North Carolina hoped that by identifying areas where electricity consumption would be high enough to support utility profitability, already existing electric utilities would expand their distribution networks to those areas. In this way, the state's work in electricity research and development not only enhanced its own spatial knowledge of rural areas, it also served to produce market research for industry – albeit research that was shaped by white supremacy. This also had the effect of favoring a particular type of rural electricity user. By seeking high users of electricity, and in particular those that would provide the steady use of electricity that smoothed demand curves (see Chapter Two), the survey had a bias towards potentially ample electricity users on large-scale farm operation, as opposed to those on smaller, less intensive farms.

Electricity service did not encounter rural areas that had not already been shaped by patterns of uneven development. As such, this chapter begins with a discussion of rural African American life in North Carolina during the 1930s. In particular, the focus is on the experiences of tenant farmers, a group that worked the majority of cropland in Edgecombe County. After this discussion of the uneven rural landscape in North Carolina, I then recount the origins of the 1934 Rural Electrification Survey. In the section that follows, I examine the various instructions and materials provided to the field surveyors, and trace the ways in which these shaped and limited the survey work. With the operations of the survey thoroughly

sketched, I turn to an examination of how race was, or was not, taken into account by the survey. By digitizing and mapping the original paper survey documents, I am able to examine how the survey as conducted in Edgecombe County presented a whiter and more homeowner-centric view of rural life than actually existed.

4.1 African American Rural Life in the 1930s

The Great Depression brought hardships to rural areas all across North Carolina. Farmers in the eastern part of the state were particularly hard hit by the fall in tobacco and cotton prices during the late 1920s and early 1930s that arose due to chronic overproduction of tobacco and cotton, the two key cash crops. Numerous problems arose, but farm foreclosure, bank closure, and unemployment were especially acute. In Nash County, located on the western side of Rocky Mount, 3500 of 5280 farms were in foreclosure in 1930 because of their failure to pay property taxes. Two years later, a lack of deposits from tobacco farmers contributed to the closure of three banks in one month in the nearby town of Kinston. By the winter of the same year, 25% of the state's population was on the relief rolls (Badger 1981).

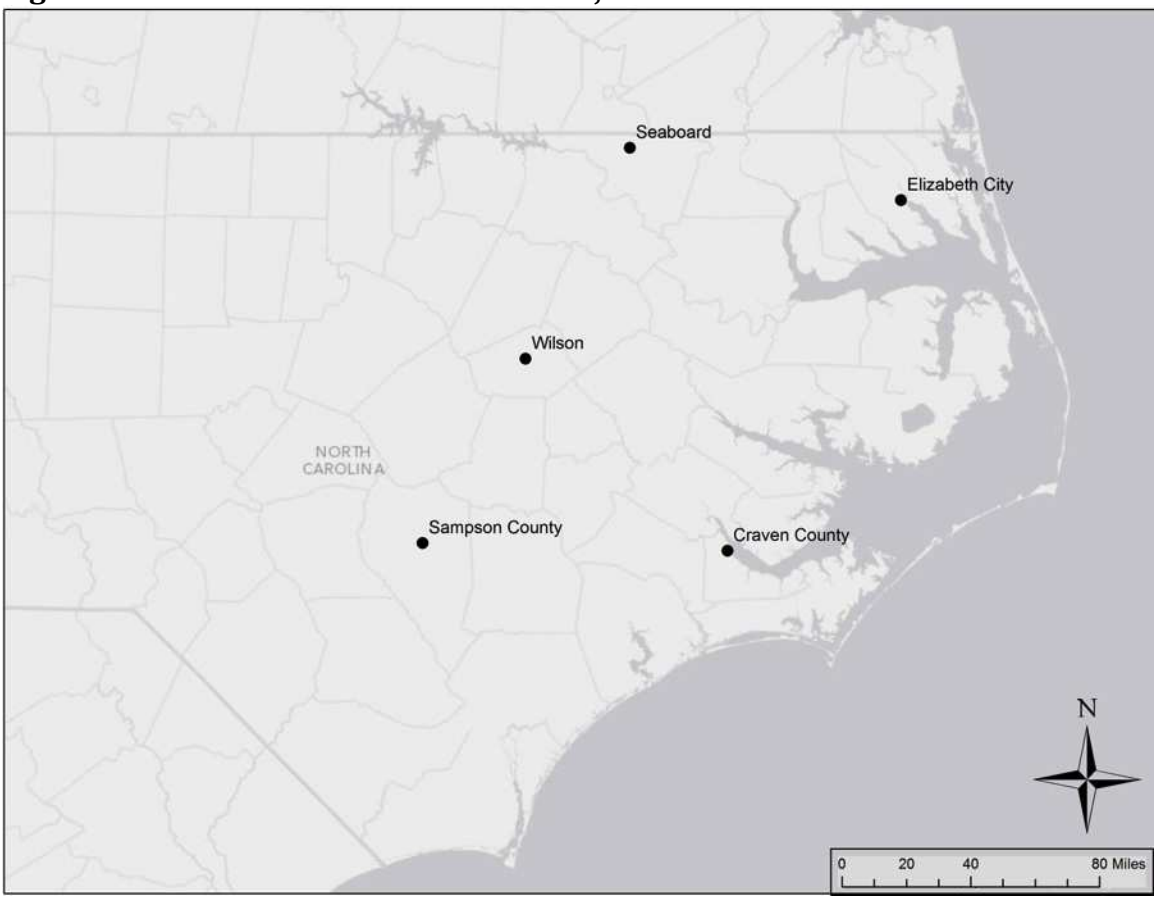
While large and formal branches of the Ku Klux Klan were on the wane by the late 1920s, smaller and more local white supremacy organizations appeared in its absence (Cunningham 2012). Even in areas without formalized Klan groups, as mentioned in Chapter Three lynchings, physical violence, and intimidation of African Americans was the norm. Where physical violence did not occur, the psychological violence of Jim Crow segregation loomed large. These forms of violence worked to maintain and hold together the systems of race and power that

not only supported ideals of white supremacy, but also supported capital accumulation. A prime example of this is the tenant farmer – landlord relationship.

The living conditions for farmers were undoubtedly varied, but the most difficult conditions were surely experienced by tenant farmers. Some of these experiences have been vividly captured by the Federal Writers' Project, a program started by the Works Progress Administration to provide employment for unemployed writers and journalists. The program was initially designed to produce travel guidebooks for the United States, but eventually produced a substantial collection of life histories and biographies of everyday people across the country (Hill 2006). Many of these biographies provide intimate insights into hardships and challenges facing tenant farmers in eastern North Carolina.

The relation of the tenant farmer to his (and they were almost entirely men) landlord was based on debt. The typical arrangement in eastern North Carolina involved a landowner providing a certain acreage of land to be worked by the tenant. A house was usually included for the tenant to live in. The cost of seeds, fertilizer, and equipment would be shared by the landowner and tenant, with the tenant most often paying for the implements on credit to be paid back after harvest. At harvest, the landowner and tenant would share the revenues of what was produced, and any debts would be settled at that time. Ruthless landowners, however, had numerous ways of making debt a permanent condition of the relationship, with the tenant never quite making enough to escape their indebtedness to the landlord (Billings 1979).

Figure 4.2. Location of Federal Writers Project Interviewees



The case of Jim Parker is indicative of this relationship. Parker, an African American tenant farmer living near Seaboard, a tiny town in Northampton, North Carolina, was born in 1877 (see Figure 4.2 for location of each tenant profiled). At the time of his interview in 1939, he was in his 22nd year of sharecropping. He returned to work with the landowner Carl Maddrey because, in his words, "I owned him some money on last year's account, and I don't want to leave a man owin' him" (Harris 1939: 1)[34]. The volatile nature of cash crops like tobacco and cotton meant that Parker faced years of boom and bust. In his best year, he made $1000, while the worst left him with a debt of $190. He had managed to send two of his fifteen children to college, but by his early sixties he was nearly broke. Like most tenants, Parker had multiple run-ins with ruthless landlords. In one case, he had bought a house from the landlord, who later claimed he had not paid for it and put it on his account at the end of the season, keeping him in debt. Reflecting on his current situation, Parker felt depressed about his options: "It ain't my landlord I'm complainin' about, for they been as good as any I reckon, maybe better'n most. It's sharecroppin' that wrong" (Harris 1939: 8). In the end, Parker's aim was to do better than his father, who was also a sharecropper. In his mind, he had failed: "He eat and wore clothes: that's about where I am now" (Harris 1939: 2).

John Bunch, an African American saw mill hand in Elizabeth City, had also experienced the challenges of living as a tenant farmer before moving to the city.

[34] Most authors of the Federal Writers Project were attempting to capture local language and dialectics. As a result, many of the quotes are transcribed phonetically. I have left these quotes as they appear in the original documents.

After growing up on a tenant farm, he set out on his own as a tenant at the age of 19. In his words,

> Good years or bad year, there won't no way o' getting' ahead on that farm. Landlord made us trade at his store. End o' the yar when settlin' up time came I'd come in and he'd say: 'John, old fellow, you got right up to de fence dis year but didn't quite get over. Here's my books, here's de figgers; figgers don't lie; a figger is a figger an' a cipher is a cipher.' I was always in debt to that white man. (Saunders 1939)

Ruthless landowners would often take advantage of the lack of education of their tenants to swindle them at the end of the year, keeping them indebted for the long term.

The effect of all of this was to keep tenant farmers living in very difficult conditions. An interview with Sallie Johnson, the wife of an African American tenant in Sampson County, is indicative. The house she and her husband rented from the landowner had three rooms, with cotton growing on three of the sides. The home had no porch on which to escape the summer heat, no screens on the windows, and no toilet. The well was uncovered, leaving it susceptible to any number of contaminates. Inside of the house were two bedrooms and a kitchen. The floor was partially covered, and in one bedroom tobacco was being stored after harvest. The house had no electricity, and although Gerald and Sallie would have liked a radio, they could not afford one (Forster circa 1939).

Despite the undoubted hardships of tenant farming, rural life was still desirable for many African Americans. William Batts worked as a tobacco packer in the bustling tobacco markets of Wilson, NC. Raised on a farm, Batts' family worked for many years but had no money despite their best efforts. In his words, "My folks couldn't figure up nothing and dey trusted de white man dey worked for" (Hicks and

Massengill circa 1939: 2). Unable to make a living on the farm, Batts moved to town, and he and his wife made ends meet doing a number of seasonal jobs. But town life was not without the same financial challenges: "It looks like we'd ought to save some but we ain't. We had to buy some furniture and clothes and keep up our life insurance and our rent and lights" (Hicks and Massengill circa 1939: 5). The preferable alternative, Batts felt, was to buy a little farm and a mule and subsist off the land.

Dreams of an independent rural life remained unrecognized for most African Americans due to the legacies of slavery and restrictive land owning laws. That said, there is some evidence of life on a black owned farm. Needham Hickman was born in 1885 and lived in rural Craven County. Hickman's grandfather had been given land and was freed by his owner in the 1830s, and multiple generations of the family had and were living on the land. By the 1930s, his family had owned their land for more than a century. Hickman's home was simple, an unpainted frame structure with a tin roof, but had comforts beyond those of the homes rented by Gerald and Sallie Johnson. It was larger, with a worn linoleum rug covering the floors and curtains over the windows, and was decorated with the antlers of a deer Hickman had killed years earlier. Hickman also had some 'modern' conveniences - an old sewing machine, a washstand, and a battery powered radio. The interviewer paints a relatively serene picture of Hickman's homestead:

> Thus living from month to month and year to year; mingling little with the outside word, yet by hard work and thrift deriving a steady, if somewhat frugal, existence from their own inherited soil, the members of this large colored family appear to find their lot in life not only entirely bearable, but largely free from the uncertainties and

> barriers met with by wage earners of their race segregated in larger towns and cities. (Beaman 1939: 10)

Despite this somewhat favorable portrayal, it was difficult for Hickman to meet the annual financial responsibility posed by property taxes. As part of the New Deal, the 1930s saw the institution of limits on the production of tobacco in order to boost commodity prices for ailing farmers. For Hickman, this limit posed a problem. While he could use his land to grow food in order to eat, he needed cash to pay taxes. Selling food brought little income, and tobacco, even in a bad year, found eager buyers. For large growers, the decrease in tobacco prices during the late 1920s and early 1930s was cause for considerable alarm. Through their joint lobbying, and with the support of the North Carolina government, large tobacco growers were successful in acquiring federal controls on cotton and tobacco production in the form of the Agricultural Adjustment Act (AAA) (Badger 1981).

The AAA was designed to essentially pay farmers for growing less. While cotton controls quickly fizzled out, tobacco controls proved effective in North Carolina. However, because the controls required small and large growers to cut tobacco acreage by the same percentage, the controls proved regressive and hurt small growers substantially more. After the AAA took hold, large tobacco growers grew in power. As tobacco prices steadily increased, large growers made it more and more difficult for new growers to enter and obtain an allotment. While overall farm income was increasing, the profits were not being distributed equitably. Many tenants were evicted because of acreage reduction agreements, while others, as we have seen, were cheated out of profits by their landlords (Badger 1981).

In general, rather than reforming the predominant labor and race relations in agricultural areas, New Deal programs targeted at rural areas mostly focused on recovery efforts, and in many cases heightened already existing inequalities. As federal relief funds began flowing into North Carolina starting in 1932, several New Deal agencies, and especially the Emergency Relief Administration (ERA), attempted to put many of the unemployed quickly back to work. There was a belief among some North Carolina academics that the work these groups had done was too hasty and without adequate planning. What was needed, they believed, was more detailed planning of exactly how to spend the money that was coming (Weaver 1934a). The 1934 Rural Electrification Survey emerged from this desire.

4.2 The Origins of 1934 North Carolina Rural Electrification Survey Project

North Carolina's rural electrification efforts began nearly a year before the federal Rural Electrification Administration (REA) was created. As mentioned in the introduction, during the late 1920s and early 1930s rural electrification was an important issue across the state. John C.B. Ehringhaus was elected governor in 1932 on a platform that included support for statewide rural electrification efforts. Rural electrification also had considerable support from influential farm organizations such as the State Grange, and as federal relief money began flowing into the state, the call for action on rural electrification grew (Brown 1982).

Few figures were more important to the initiation of rural electrification efforts than David S. Weaver, a professor of agricultural engineering at North Carolina State University. Weaver's career was largely devoted to increasing the mechanization of farms, and he served as an engineer for both the federal and state

rural electrification organizations. Weaver was also well connected to the agricultural extension services run from North Carolina State University, and went on to become director of the Agricultural Extension Service in 1950. Weaver's initial involvement in rural electrification came through the Agricultural Engineering Department at North Carolina State University as they attempted to assist the Emergency Relief Work in North Carolina. In Weaver's opinion, while the relief work carried out by the Civil Works Association was effective in getting people back to work, with better planning the projects could have been even more successful. During the same period in early 1934, Weaver assisted in a rushed three county rural electrification survey funded by the Federal Rural Housing Survey. Also in early 1934, two short rural extensions from municipal systems had been built with Civil Works Association funds (Weaver 1934a). With this momentum in place, and the seeming availability for funding, Weaver became interested in carrying out a rural electrification survey on a larger scale. Before beginning, however, Weaver needed to further negotiate with the variety of New Deal and state organizations with interest in the project.

With interest and activities around rural electrification increasing, on May 31, 1934 Ehringhaus took the initiative and appointed a thirteen member committee to begin investigating the possibilities for rural electrification.[35] This

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[35] The committee members included Clarence Poe, editor of the influential *Progressive Farmer*; E.S. Vanatta, Master of the State Grange; W. Kerr Scott, Past Master of the State Grange; Dr. Jane S. McKimmon, the director of the State Home Demonstration Agents; J.L. Horne, editor of the *Rocky Mount Telegram*; Capus Waynick, chairman of the State Highway and Public Works Commission; S.T. Henry, farmer and member of the Tennessee Valley Authority (TVA); Mrs. Gordon Reid, president of the state Home Demonstration Clubs; Dr. Howard W. Odum, Director of

group, along with David Weaver who served as secretary, met on August 1, 1934 to form a plan of action. One member suggested that several committees be formed: one to examine finances, another to contact power companies, and a third to plan a survey of needs. It was decided that the survey work was the most immediate need, as the power companies would be most likely to be of assistance to electrification efforts once definite proposals for line extensions were in hand. Weaver was appointed to lead the survey, and funding was made available to hire a teaching assistant to relieve him of teaching duties for the upcoming fall semester ("Meeting of Governor's Commission on Rural Electrification" 1934).

The survey can be viewed as part of a deepening desire for better planning of state interventions into daily economic and social life that were becoming possible with funds from the New Deal. Obtaining the spatial knowledge that this survey, and others like it, would produce was essential to the process of changing a relatively unknown area into 'calculable territory'. Before proceeding, it is worth defining 'calculable territory'. First, I define 'calculation' as the interrelation of politics and number, with calculation not viewed as counting for counting's sake, but rather counting as guided by a particular rationality. In addition, I do not consider calculation as restricted solely to quantitative actions, but also the processes of measurement, ordering, sorting, ranking, and dividing (Crampton 2006; Crampton and Elden 2006). Second, I use the definition of territory as used in Chapter Two,

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the Institute for Research in Social Science at the University of North Carolina; C.A. Sheffield, the Assistant Director of Extension Work; Dudley Bagley, a senator and farmer from northeastern North Carolina; J. Edward Tiddy, a teacher of agriculture; and T.E. Growne, the Dean of the School of Education at North Carolina State University (Burton 1935a) .

with territory conceptualized a historically specific form of politico-spatial organization designed to enable sustained economic growth (Brenner and Elden 2009). Rather than considering territory solely an issue of borders (and political boundaries at that), territory is viewed as a historically specific form of state space, a bounded and legible piece of land in which a state can exude influence. The 1934 Rural Electrification Survey was a key part of making or adding new electric utility service territories - rather than examine territory that had already been claimed, the survey was preparing *new* territory to be grafted onto an already-existing electricity infrastructure, and on top of already existing landscape of racial and political economic differentiation. The role of state, in this case, was to prepare the territory for action – to "consolidate, coordinate, manage, and reproduce large-scale, long-term productive capacities within a particular territorial arena" (Brenner and Elden 2009: 369) – and to do so in a way that fit with particular planning rationales.

This fits with recent geographic scholarship that examines how the state, corporations, and individuals have used "calculative rationalities … to refashion the world in their own image" (Rose-Redwood 2012: 300), marking a general movement towards space being organized according to number in a way that facilitates the production of knowledge, thus impacting daily lives and livelihoods (Norman 2013; Crampton 2006; Elden 2010). The systems and rationalities that undergird these calculations are attempting to make the world more legible, effectively "inscribing territory with basic systems of geographical reference that allow knowledge about populations, resources or activities to be indexed to specific locations, and hence making territory readable" (Hannah 2009: 68). This trend

towards 'geo-coding' the whole world is not new (Pickles 2004), though it has arguably increased in scope and pace recently (Wilson 2011).

But making territory legible is not an end in and of itself. As Hannah explains, the purpose of legibility is to prepare for intervention, "the initiation of purposeful engagement with some aspect of individual and/or social life that has the potential to produce effects" (Hannah 2009: 68). In the case of the 1934 Rural Electrification Survey, the goal of the intervention was clear: to not only determine where electricity distribution lines should be run, but where they could be run profitably. This was part of the making of not just territory, but legible territory, territory that had been surveyed, ordered, and ranked – in effect, calculated. As the following sections will show, these calculations were based on a rationale of racial difference and political economic value that structured New Deal interventions into rural spaces.

4.3 Making Territory Legible I: The survey work

The benefit of legible and calculable territory is that it allows rule from a distance, "where agents of governance may be non-local and thus cannot rely on familiarity with local geographies" (Hannah 2009: 68). Rural areas of North Carolina that were part of the rural electrification survey needed to be 'known' by the survey officials in Raleigh if they were to effectively direct subsequent electrification efforts. As such, the first step in the survey process was to assemble spatial knowledge of the territory in question. Once the Committee determined that a survey was needed, news of the forthcoming survey filtered out through newspapers across the state. Soon, letters from 137 separate communities had

arrived at Survey headquarters in Raleigh asking to be included in the survey. In the end, the survey examined over 700 communities, and in Weaver's estimation, could have included over 1000. As the project would be funded by relief agencies, the survey work was required to be done by workers from the relief rolls. To Weaver's surprise the project was able to hire men with some electrical experience, and even a few trained engineers. In total, the project hired 58 men for an average of 6.75 weeks. They were paid $0.80 per hour for 30 hours a week of work, though Weaver believes many worked (but were not paid) for double that. They were required to have a car, and were given a travel allowance of $0.04 per mile for a maximum of 900 miles (Weaver 1934a).

Once hired, the survey engineers underwent a two-day training at one of six sites spread regionally across the state. At these trainings surveyors were given the tools and materials they needed to complete the job. Without these tools and materials, the surveyors would have been unable to perform many of the tasks they were assigned. An examination of each of these items provides some insights into the task the surveyors were asked to perform, as well as the challenges, compromises, and inadequacies of each survey that was completed.

Contact information for power companies

One of the most important items that surveyors were provided with was contact information for the local power company. As has been described in previous chapters, numerous electric utilities were serving North Carolina, and especially in the eastern part of the state. Large private companies like Carolina Power and Light (CP&L) and Tidewater Power were complemented by numerous small private

operations like Davenport Electric, which operated in parts of Edgecombe County, and the small distribution network of Rocky Mount Mills, which sold electricity to a small mill village. As Chapter Three shows, many eastern North Carolina cities had their own municipal operations, and several of these also provided electricity at wholesale to surrounding communities. Because the goal of the Rural Electrification Survey was not to build additional generation *capacity* but rather extend distribution lines, it was important that the surveyors worked with existing local power companies to understand where existing distribution and transmission lines already were, and what kind of capacity each company possessed. One of the first tasks for the surveyors would be to make contact and spend some time with city or power company engineers to ascertain this information, and then accurately map it.

Survey engineers experienced varying levels of cooperation from power companies. W.A. Faulkner, for example, was hired to survey Johnston County, located just southeast of Raleigh and Wake County, and directly adjacent to CP&L territory. Johnston County farmers were organized from the start, and the survey ended up being one of the largest and most comprehensive in the state. However, Faulkner was clearly having a difficult time getting the data he needed from CP&L. In *Letter of Instruction No. 2*, a set of supplementary instructions sent to all surveyors after their training course, Weaver mentions that some engineers have written that they cannot secure the data they need from power companies. If this is the case, Weaver writes, "Do not waste too much time trying to get this, if it is apparent the company does not want to help" (Weaver, 1934d). The difficulty Faulkner in particular was having with CP&L was likely due to two things. First,

CP&L likely already had the territory in its sites and was planning to develop it, although not immediately due to the financial hardships it was facing in the mid 1930s. Second, new CP&L president Louis V. Sutton was famously suspicious of government led initiatives, and had likely caught wind of the growing cooperative power movement in Washington, D.C. While the North Carolina survey sought to work with any power company to achieve rural electrification, and although the legislation creating the federal REA would not occur until 1935, Sutton likely was suspicious of any state "interference" in the power industry. The North Carolina survey officials ultimately advised Faulkner to cease attempting to gain the data he needed from CP&L, and "suggest that you go ahead with the survey of your proposed lines and let us fight out the other questions with the Carolina Power and Light Company at a later date" (Burton 1934c). As Chapter Five will show, the battle between the federal REA and CP&L was a considerable one.

Faulkner's experiences can be contrasted with those of W.D. Wagner, the surveyor working in Edgecombe County. Just after beginning the survey, Wagner made contact with J.C. Martin, the head engineer of the town of Tarboro. Like several eastern North Carolina cities, Tarboro saw rural electrification as an opportunity to extend their lines into the surrounding rural areas. Even better, they saw the opportunity to have the work paid for out of federal relief funds. Several towns had been able to accomplish this already, and Martin was undoubtedly eager to follow suit. In a letter to the Survey officials, Wagner asked if it was OK to show the survey data with Tarboro county officials, including Martin (Wagner 1934). After receiving word that this was allowed, Wagner began spending many days with

Martin surveying the countryside. Martin was ultimately a key figure in the creation of the Edgecombe-Martin Electric Membership Cooperative that drew its electricity from Tarboro's municipal plant for many years.

Ultimately, the Survey Project was fairly ambivalent about how the rural electrification took place. In a Progress Report issued near the end of the survey, the project's assistant engineer, C.W. Burton, makes clear the view held by the Project:

> In several cases our survey has been followed by a survey of the power companies and in a few of these cases actual line construction by the power companies has resulted. We further believe that this survey has caused the power companies in this state to awaken to the fact that rural people desire service and deserve more consideration and has also stimulated the companies to more carefully scrutinize the rural areas in their respective territories for points where profitable extensions can be run. (Burton 1934e: 2-3)

While this outlook ultimately caused friction between the state and federal rural electrification agencies (as will be described in Chapter Five), Weaver and others on the committee were enthusiastic about spurring any kind of action.

Stamped envelopes and stationary

Stamped envelopes and stationary were necessary due to the immense amount of communication needed between the Project leaders and surveyors. By filing weekly reports on their activities and mileage, as well as the initial results of their surveys, project leaders were able to keep payments up to date and determine problems fairly quickly. Follow up letters of instruction were sent to clarify issues with the survey and survey instructions. The challenge of the Project leaders was to remind surveyors that the chief engineer has not seen their survey site, and as such, their correspondence should be as detailed as possible (Burton 1934b). Several engineers took this to heart, including long narratives on their thoughts on the

relative merits of certain proposed lines and the people that live along them. W.D. Wagner, for example, described the prospects along Proposed Line 20 in Edgecombe County as "hard working people and good farmers", and argues that while their farms are small by Edgecombe County standards, the fact that they are close together will help bring down the costs of line extensions (Wagner circa 1934).

Not all surveyors were as diligent as Wagner, and keeping track of the numerous surveyors proved difficult at times. In a May 1935 report on the survey assistant survey engineer C.W. Burton stated that "one or two of them were absolutely incompetent" (Burton 1935b: 1). The interim nature of the project was likely a challenge for numerous surveyors, and as in other cases, life could get in the way as well. W.L. Trevathan was hired to survey Wilson County, but in late October 24, nearly two months after the survey began, Burton wrote asking for an update on his progress as none had been forthcoming (Burton 1934d). Nearly two weeks later Trevathan replied with an apology. His wife had become ill with anemia, he explained, and had to have surgery. While she seemed to be doing better, her health remained uncertain. Further complicating matters was that Trevathan had been finding work on his own as a land surveyor. His plan was to hire someone to do his field surveying work for the electrification project and complete the needed office work at night. However, the electrification survey work never happened, and with his regrets he sent Burton the little work he had completed (Trevathan 1934). As a result, Wilson County was left largely unsurveyed.

Survey sheets and data on appliance loads

The 1934 Survey, as designed by Weaver, provides a detailed snapshot of rural life in 1934. Multiple categories of data were collected for each home, and detailed instructions were provided to surveyors dictating how to translate this data into proposed electricity consumption. To begin the surveys, each field surveyor was provided with details on the different communities that had requested inclusion in the survey. They were also provided contact information with local Farm and Home Demonstration Agents, as well as local vocational teachers and grange masters. These people, using their local knowledge, would be asked to suggest other areas to include in the survey.

Most proposed electricity distribution lines would run alongside established rural roads. Some, but not all, of these roads were paved. Along each road would live a number of prospects, some of which may have signed petitions asking to be included in the survey. The prospects would be a mix of homeowners as well as tenant farmers. Both were to be included in the surveys, even in cases when the owner of the tenant houses was not interested in wiring them for electricity. Each proposed line had a contact person to assist in the survey and contact with further questions. There were also practical questions to be answered – if the right of way for the proposed electricity line was wooded or cleared; if the right of way would be donated; how many poles could be donated to the project and from what type of tree; and finally, how much money could be raised locally to pay for the transformers and wires needed to distribute electricity to the area.

Along each proposed line, the field surveyor collected a number of different data points. Starting at an existing transmission or distribution line, the surveyor

would measure the distance to each house along the road from the origin. The total distance covered was essential to calculating the cost of the line, which could then be used to calculate a line's potential profitability. Each proposed user was assigned a number, and their name was recorded. Next the surveyor would collect whether they were an owner or a tenant, if they were white or black, the number of rooms in the house, and the number of occupants of the house. If there were additional buildings to receive electricity, such as a barn or poultry house, this was also noted. Next, the desirability of several common appliances was determined: refrigerators, washing machines, electric range, and an iron. If electric water systems were desired, the type and size was the assigned, and then the preference for a range of other small household electric and motor driven appliances was surveyed. Data was also collected on attributes of the farm: the number of dairy cows, hens, and hogs; and the number of acres under cultivation of cotton, tobacco, truck crops, fruit, and 'general crops' such as corn or wheat. If the home already had a home lighting plant[36], as many did, this was also recorded.

All of this data was used to calculate how much electricity each household would use. The number of rooms and occupants gave a sense for how much lighting would be used, as well as the capacity and usage of water systems. Surveyors were provided with the wattage of the common electric appliances (as shown in Table 4.2), so a household appliance electric load could be estimated. Finally, the amount of livestock and cropland was used to determine the load of agricultural water

[36] The most common of these was the Delco Light Plant, essentially a small internal combustion generator connected to a battery. These were popular on farms not connected to the electricity distribution grid, and were used for lighting and mechanical power.

Table 4.2 Annual Appliance Electricity Use

Appliance	Estimated Annual Use (kWh)
washing machine	30
flat iron	60
vacuum cleaner	20
ironer	130
range	2000
refrigerator	600
water heater	3000
toaster	10
percolator	20
fan	20
radio	60-100
small portable heater	20
oil burner	60-220
cream separator	25
water system for home and farm	300
water system - cistern	40

Source. An Estimate of Energy Used by Domestic Electric Appliances (1934)

systems and structures. All of this data was then aggregated to produce an electricity profile for each house, showing how much electricity it would consume in a given month. In combination with electricity cost data obtained from the nearest electric utility, the household's monthly and annual bills could be determined.

With each house along a proposed line now having an electricity consumption and bill attributed to it, an aggregate consumption could be determined for that line. In combination with the total length and cost of the proposed line already determined, the project engineers could create several key metrics to compare lines. First, the total line length could be divided by the total number of interested prospects to create Interested Prospects per mile. In the initial meetings of the Governor's Commission on Rural Electrification, it became apparent that finding lines with five or six users per mile was most desirable ("Meeting of Governors Commission on Rural Electrification" 1934). Using the annual revenue for the line and the total number of prospects the annual revenue per mile and annual revenue per prospect was calculated. However, the key metric that was calculated was the ratio of the estimated cost of the line to the estimated annual revenue. In Weaver's reporting, private utility companies had claimed that a particular line was not profitable unless the ratio was three to one or better – that is, the cost of the line should not be over three times the annual gross revenue (Weaver 1934a). With this ratio calculated for each line, the lines were then ranked in terms of their feasibility across the county and the state as a whole. This ranking would then determine which lines should receive priority and support in their construction. As will be discussed, this ranking completely obscured the role of race

in altering the household electricity consumption calculated for African American households. But it also gave precedence to a certain type of electricity consumer – one that consumed large amounts of electricity and provided a steady level of consumption.

Maps, colored pencils, and a tape line

Recent work in geography has made clear the importance of cartography and mapping to the actual calculation of territory. The rise of mapping in the 19th century was part of the process of making the modern state more knowable and governable, and the development of statistical mapping enabled project officials to answer questions of "What is there, where is it, and how much is there?" (Crampton 2006: 732). Not surprisingly, then, mapping would play an important role in making the potential territory of rural electrification knowable.

Physical location and distance played the crucial role in the feasibility of proposed electricity lines. As such, the surveyors were provided not just with survey sheets but also the tools of the cartographer: maps, tracing paper, and colored pencils. In their field work, it was important to carefully chart a multitude of distances: between existing transmission lines and those that are proposed; from surveyed house to surveyed house; and from the location of the proposed line to the house to be electrified. All of this was to then to be carefully mapped on a series of detailed highway maps provided by the project leaders. The maps were to be marked up with the colored pencils, with red showing the location of existing transmission and distribution lines, while green portrayed proposed lines. A variety

of symbols were use to note the location and type of prospective customers (which included residences, churches, schools, filling stations, and other businesses).

Despite detailed instructions and some training, the cartographic recording of the surveys posed a problem to many of the surveyors. In *Letter of Instruction No. 3*, Burton provided instructions for making inset maps of more densely populated areas where it was difficult portraying the needed detail. Burton also emphasized the importance of matching the consumer number with the survey to the location on the map (Burton 1934b). Late in 1934, Weaver reflected on changes he would make to the survey if it were to be administered again. Key among them was a series of changes that would clarify or reorganize the data to ease the work of a distant aggregator of the surveys. Weaver was insistent, however, that additional cartographic training would be advantageous, because without it "many of the men … made an awful mess of it" (Weaver 1934b: 2).

Contact Information for Local Officials and Extension Agents

In addition to the contact information for local power companies, the surveyors were instructed to contact other local officials and especially Agricultural Extension Agents thought to have intimate knowledge of local conditions. These contacts would enable the surveyors to expand beyond those communities that had already requested to be included in the survey and find other areas likely to be successful if electrified.

Agricultural Extension Agents had come to the forefront in rural communities through the administration of the AAA. Created by the United States Congress with Smith-Lever Act of 1914, the Extension Service was designed to

provide advice and expertise to farmers (Jones 2002). Under the programs designed by the AAA, extension agents were employed to visit farms, evaluate conditions, and assign acreage reductions. In addition, extension agents would provide farmers with the latest developments in agricultural science. Despite the improvements in daily lives that extension agents, through their knowledge of farming and rural life, could potentially bring, they largely ignored the hardships faced by poor African Americans.

The same indifference to African American poverty was shared by many in the academic community, as evidenced by work done by University of North Carolina at Chapel Hill rural sociologist Howard Odum. Odum was head of the Institute for Research in the Social Sciences when appointed as a member of the governor's Rural Electrification Committee in 1934. While moving beyond his early work that explicitly positioned African Americans as an inferior race, in the 1930s Odum continued to view the South as plagued by a 'Negro problem' that needed to be solved[37]. His support of federal socioeconomic intervention was premised on a diversification of Southern agriculture and redistribution of African Americans (Woods 1998). As such, when the North Carolina Rural Electrification Authority was formed in 1934, it should come as no surprise that race would play an important role in the design, planning, and ultimately the execution and results of the program.

Racist views of academics involved in rural development initiatives were certainly influential in the design of programs like the 1934 Survey. But the deep-seated racial antipathy among extension agents and other county officials in North

[37] As Gunnar Myrdal (1944), among others, has pointed out, the 'Negro problem' was in fact a white man's problem.

Carolina also had a significant impact on the daily lives of African Americans. These views were exposed by the work of Wiley B. Sanders, a professor of sociology at the University of North Carolina at Chapel Hill. In 1933, Sanders was doing research for a book on the state of the Child Welfare of African Americans in North Carolina[38]. Part of this research was a survey of county officials all across the state of North Carolina. Using a research design that would surely not be approved by Institutional Review Boards today, surveys of racial attitudes were conducted in the form of seemingly informal conversations with country officials by members of the staff of the North Carolina State Board of Charities and Public Welfare. While the interviews were conducted by 37 white and 15 black field agents, Sanders felt that only those conducted by whites portrayed the true attitudes of the country agents. While the survey was originally intended to be included in the book, Sanders stated in a 11 June 1963 letter donating the materials to William B. Powell of the North Carolina Collection that the findings were left out of the book as the directors of the study felt they would cause "misunderstanding and controversy".

Among the county officials surveyed, there was total agreement that African Americans were inferior, but no consensus as to why. Some cited biblical reasons, others a lack of opportunity (although they could never equal whites), simple laziness, and in keeping with the scientific thinking of the time, biology and climate. The belief was that social equality should be opposed at every opportunity due to the need to "keep the negro in his place".

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[38] What follows is derived from an unpublished and unpaginated manuscript donated by Sanders to the North Carolina Collection at the University of North Carolina at Chapel Hill. Citation information is found at Sanders (1933).

The methods county officials thought were appropriate to accomplish this goal were multiple. Only 25% of those surveyed thought African Americans should have equal opportunities for education. When only school superintendents are considered, this percentage is even lower. The general consensus among survey respondents was that higher education made African Americans, in the language of respondents, too 'uppity' and harder to control. Most felt that mandatory school attendance laws should be suspended for black children during harvest. In terms of land ownership, a vast majority believed African Americans should be allowed to own land, but only in segregated areas. 75% opposed black voting, and of the 25% that were in favor, most felt that only educated and 'exceptional' African Americans should vote. This is because, in the opinion of the county officials, African Americans are too emotional, too easily swayed, and their vote could easily be bought.

Sanders found that racial prejudice was particularly strong in counties where blacks had held office during the 1890s. The attitudes of higher county officials in several eastern North Carolina counties makes clear the outright hostility that most held, and the fear of black rule that was pervasive during Jim Crow. This view is especially clear in the statement of the Washington County clerk of court who stated "It is wrong for the white man to sell the negro land. If we keep on allowing them to buy land they will become the 'agriculturalists of the South.'" In Camden County, the clerk of court felt that there was no need for schools, and that blacks will always be servants to whites. Further, blacks should not be allowed to vote nor own land, and should always be made to feel under the white man. In Hertford County, the superintendent of schools and the clerk of court were in agreement that the "negro

was mentally inferior." The superintendent of schools in Washington County deployed biology in analyzing the situation, arguing, "the negro as a rule is contented, not happy." As a result, he "wanders if we are doing the right thing by them in disturbing their animal contentment."

These same views were common among the extension agents that were employed by county governments. The farm demonstration agent in Hertford County took a view that was both biological and biblical, arguing, "the outstanding and best negro is the best cotton hand. After God created the world, he saw that there was no one to till the soil so he created the negro. He made him to do this type of work and he should stay in the place intended for him." In Wayne County, the farm demonstration agent believed that the negro is not able to develop like the white, and as such should not own land because he lacks the business ability necessary to run a farm. A home demonstration agent from Chowan County felt that African Americans should not be educated. As an inferior race, she argued, they will always be cooks and homemaids. Further, "they should be taught cooking … not so much for their own sakes as for the protection of whites."

In the year Sanders' survey was conducted, and despite the fact that 25% of North Carolina's population was African American, only eight black home demonstration agents were employed. Between 1935 and 1943, this number climbed from 12 to 38, and over the same period the number of farm agents grew to 38 (Jones 2002). Two African American agents were interviewed during Sanders' survey, and not surprisingly, their views differed greatly from their white counterparts. The African American supervisor in Wayne County felt that blacks

were taking full advantage of the few opportunities that they had access to. An African American home demonstration agent echoed these views, stating that blacks were taking advantage of home demonstration programs, and that black tenants were just as good as their landowners.

The survey's findings provide a stark reminder that those with the most control over the local administration of New Deal and welfare programs that could most benefit African Americans had strongly negative attitudes towards them as a group. Surveyors working for the North Carolina Rural Electrification Committee were dependent upon this same group for knowledge of local conditions. It should come as no surprise, then, that race played such a substantial factor in the execution of the 1934 Survey.

4.4 Making Territory Legible II: Accounting for "*People of a low grade of intelligence*"

As previously mentioned, 26 separate household level variables were collected by the surveyors. Among those collected were the tenure status of the occupant (owner or tenant) and the occupant's race (white or black). Despite detailed information collected on the size of the house, the appliances desired, or the size of the farm, the tenure status and especially the race of a house's occupants could significantly alter the electricity use ascribed to that house, and did so in a way that can only be described as subjective and racist. Once all of the electricity demand was added up for the house, it was then multiplied by a number known as the "Correction Factor". The Correction Factor was derived from two grades that were assigned by the surveyor: the condition of the premises, and the quality of the interview.

In the instructions to field surveyors, the surveyors are asked to make a judgment on the condition of the house:

> By the use of the letters A, B, C, and D give a rating for the premises with the idea in mind – is the person interviewed sincere in his statements as to what he or she intends to do and do appearances point to the fact that he or she is financially able to live up to his or her promises. A – Excellent B – Good C – Doubtful D – Poor. (*Instructions for County Field Men to Follow in Securing Data on the Rural Electrification Survey*, circa 1934: 4)

Surveyors were then instructed to make a further judgment on the quality of the interview:

> By the use of the same 4 letters give a Grade to the rating or authoritativeness of the interview – that is if you interviewed the home owner, his wife or both and they were sincere, intelligent appearing people rate the interview A. If the parties interviewed are people of a low grade of intelligence give the rating B or C. If the interview is with a servant or a member of the family other than the heads give the interview a rating of B, C, or D. (*Instructions for County Field Men to Follow in Securing Data on the Rural Electrification Survey*, circa 1934: 4)

The combination of these two ratings produced the Correction Factor. The Correction Factor represented Weaver and the survey creator's attempt to account for an overestimation of how much electricity would be consumed by a particular house. Rather than boosting the proposed electricity use to unbelievable levels, Weaver and Burton preferred to underestimate the usage so that those areas that are developed will be successful (Burton 1934e). This conservative calculation was meant to ensure the success of the project. However, embedded in the Correction Factor calculation was another adjustment based on beliefs of the racial inferiority of African Americans.

Table 4.3 Matrix Used to Determine Correction Factor

Condition of Premises	A	A	A	A	B	B	B	B	C	C	C	C	D	D	D	D
Rating of Interview	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
White Owner	1.000	0.950	0.900	0.850	0.900	0.855	0.810	0.765	0.800	0.760	0.720	0.680	0.700	0.665	0.630	0.595
White Tennant	0.900	0.855	0.810	0.765	0.810	0.770	0.729	0.609	0.720	0.684	0.648	0.612	0.630	0.599	0.567	0.536
Negro Owner	0.850	0.800	0.765	0.723	0.765	0.727	0.689	0.650	0.680	0.646	0.612	0.578	0.595	0.565	0.536	0.506
Negro Tennant	0.800	0.760	0.720	0.680	0.720	0.684	0.640	0.612	0.640	0.608	0.576	0.544	0.560	0.532	0.504	0.476

Source. Instructions for County Field Men to follow in Securing Data on the Rural Electrification Survey (1934)

As Table 4.3 shows, Weaver created a matrix to determine the Correction Factor for each household based on the occupant's race, tenure, and the scores they received on the condition of the premises and the rating of the interview. For example, a household might receive both an A for the condition of the premises and an A for the rating of the interview. As the matrix shows, if they were a white homeowner, their Correction Factor would be 1.000. This means that if they proposed to use 100 kWh of electricity a month, it would be multiplied by 1.000, and the electricity use attributed to that particular house would remain the same. If they were a white tenant with the same housing and interview grades, the correction factor would be 0.900, thus decreasing the electricity assigned to 90 kWh. For an African American owner with two A grades, the correction factor is 0.850, and for an African American tenant to the correction factor is 0.800. This means that for these households, just by virtue of their race, the electricity use assigned to their house would be marked down by 15% and 20%, respectively.

This matrix is indicative of the racial hierarchy fixed in the minds of Weaver and the survey designers, along with their trust that numbers and formulae can precisely convey these hierarchies. While it is feasible to believe that a tenant would have less control over the electrification of their home than a home owner, white tenants were perceived as of higher quality, or at least more believable in their reporting, than a black homeowner. Nowhere in the instructions to surveyors, nor in the reporting to state officials on the project, was this hierarchy discussed. To Weaver and those producing the final reporting, it must have been self-evident that

this was the nature of things - that African Americans should be marked down solely because of their race.

In the section that follows, the workings of the survey in one particular county, Edgecombe, will be examined in detail. The use of the Correction Factor will be examined, but also the racial biases that shaped who was surveyed. The result is a survey that provides a skewed picture of the electrification needs in Edgecombe County, and especially in the case of African Americans.

4.5 The Rural Electrification Survey in Edgecombe County

The 1934 Survey examined the rural electrification needs of 78 counties across North Carolina. Among them was Edgecombe County, a largely agricultural county whose history was briefly introduced in Chapter Three. Edgecombe County was home to some of North Carolina's largest antebellum plantations, and during the 1930s agriculture continued to drive the local economy. Rocky Mount, whose electrification was detailed in the Chapter Three, is located along the western edge of Edgecombe County (and partially in neighboring Nash). The county seat of Edgecombe County is the town of Tarboro. While smaller and less economically powerful than Rocky Mount, as the county seat decisions made by the county commissioners and judges in Tarboro were particularly important for rural Edgecombe County residents. Aside from Tarboro, numerous small communities and towns dotted rural Edgecombe County (see Figure 4.3).

Somewhat surprisingly considering the prominence of agriculture in Edgecombe County, in 1930 its total population consisted of slightly higher proportion of urban residents than North Carolina as a whole. Of the total

Table 4.4 1930 North Carolina and Edgecombe County Demographics

	North Carolina	Edgecombe County
Total Population	3,170,276	47,894
Urban Pop.	809,847	16,401
% Urban	25.5%	34.2%
Rural Pop.	2,360,429	31,493
% Rural	74.5%	65.8%
Rural - Farm Pop.	1,597,220	27,616
% rural farm pop	67.7%	87.7%
Rural - Non-farm Pop.	763,209	3,877
% rural non-farm	32.3%	12.3%
Black Pop.	918,647	27,259
% Black Pop.	29.0%	56.9%
White Pop.	2,234,948	20,628
% White Pop.	70.5%	43.1%

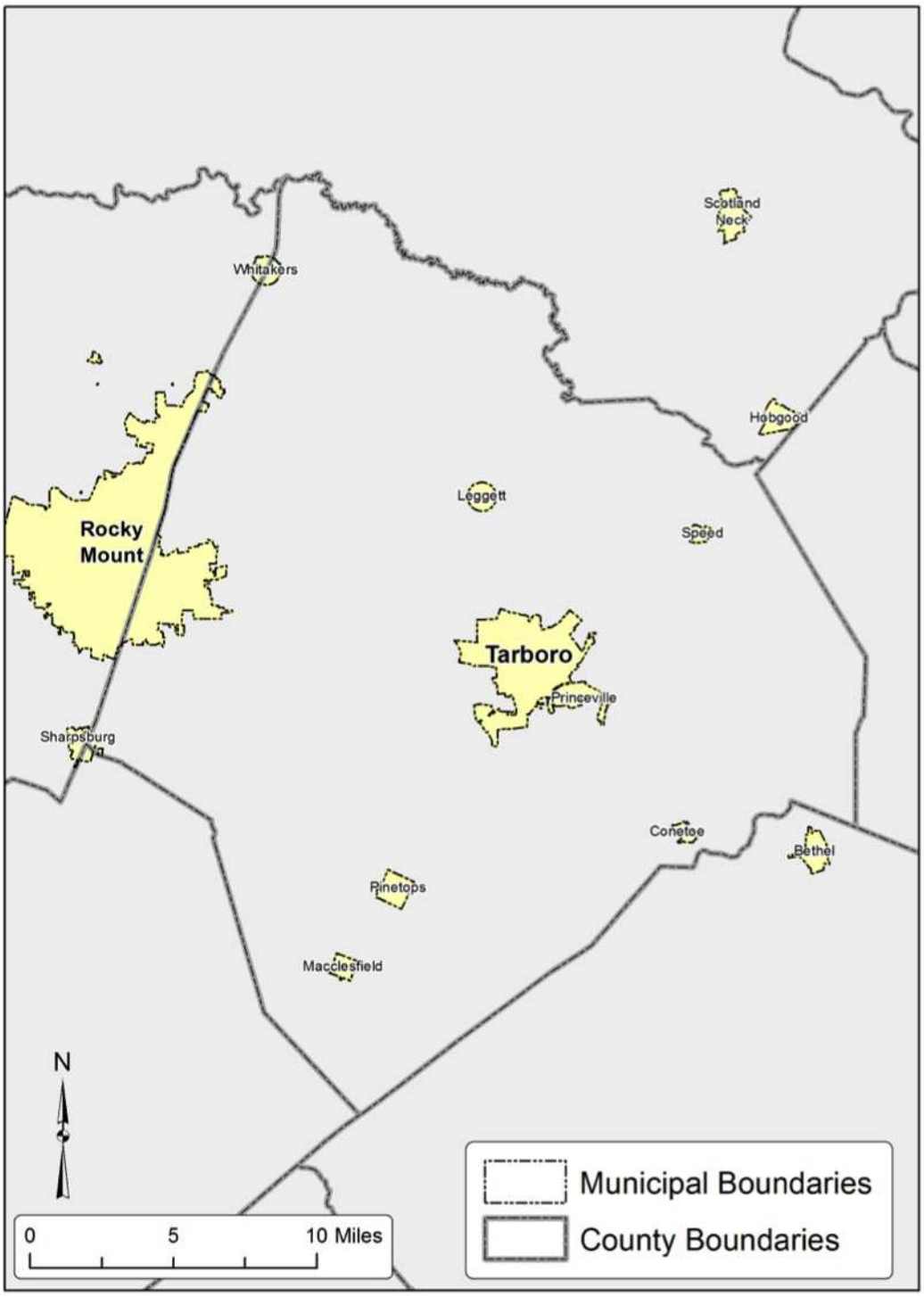
Source. 1930 United States Census, Historical Census Browser (2004)

Table 4.5 1930 North Carolina and Edgecombe County Farm Size

	NORTH CAROLINA		EDGECOMBE	
Acreage of Farm	**# OF FARMS**	**% TOTAL**	**# OF FARMS**	**% TOTAL**
Under 3	430	0.15%	8	0.20%
3-9	17,987	6.43%	214	5.35%
10-19	39,476	14.11%	408	10.20%
20-49	97,502	34.86%	1,806	45.15%
50-99	72,673	25.98%	1,139	28.48%
100-174	35,682	12.76%	241	6.03%
175-259	9,604	3.43%	88	2.20%
260-499	4,930	1.76%	66	1.65%
500-999	1,121	0.40%	26	0.65%
1000-4999	298	0.11%	4	0.10%
over 5000	5	0.00%	-	0.00%
TOTAL FARMS	279,708		4,000	

Source. 1930 United States Agricultural Census, Historical Census Browser (2004)

Figure 4.3. Cities and Towns of Edgecombe County



population of 47,894 in 1930, 16,401 residents were classified as urban (about 34%), with most living in either Tarboro or the portions of Rocky Mount located in Edgecombe County. Of rural residents, nearly 88% were farmers, compared to 68% of North Carolina rural residents. Among rural people, farming and agriculture was overwhelmingly the way of life (see Table 4.4).

Like North Carolina as a whole, the majority of farms operating in Edgecombe County were of modest size – between 20 and 49 acres[39]. There were also fewer large farms (over 100 acres) in Edgecombe County than North Carolina in general (see Table 4.5). One key reason for this was the prevalence of tenant farming in Edgecombe County. A vast majority of the farms in Edgecombe County were operated by tenants – over 84%. In total, Edgecombe County tenant farms comprised 72.7% of farm acreage and 69.8% of the value of farmland and buildings (United States Census 1930). Similar to antebellum plantations, major rural landowners in Edgecombe County performed very little of the labor, instead acting as a rentier class that skimmed or, as we have seen, swindled the profits derived from the labor of tenants. Also similar to the plantation, a majority of tenant labor was performed by African Americans.

Like many areas of the South with a legacy of plantation agriculture, Edgecombe County's population was a majority African American (56.9% in 1930), a far greater percentage than North Carolina as a whole (29%) (see Table 3.4 of demographics). A nearly identical trend existed in the racial division of farm

[39] The 1930 United States Census identifies farms based on a variety of operator types – tenant, owner operated, or operated by a manager, for example. When providing statistics on farms, I identify the type of operator type. If none is provided, it is an aggregation of all operator types.

operation. Of the 4,000 farms recorded by the 1930 Census, 57.1% (2,282) were operated by African Americans. That said, the size and value of the farms was significantly different. While farms operated by whites had an average acreage of 63.3 acres, those operated by African Americans were only 47.8 acres. The average value of the land and buildings per farm followed a similar trend, with white farms having an average value of $4,340 compared to $2,429 for African American farms (see Table 4.6). While these numbers are not segmented by operator type (i.e. tenant vs. owner operated), based on the fact that an overwhelming majority of farm operations in Edgecombe County are tenant farms, it can be assumed that even among tenant farmers African American's faced more challenging circumstances.

Despite the fact that a majority of the rural population and farm labor in Edgecombe County was performed by African American, the 1934 Rural Electrification Survey examined the electrification needs of a significantly different population. The details of the survey operations and findings are examined in the sections that follow.

Individual households

Over the course of six weeks Wagner, along with J.C. Martin of Tarboro, mapped and surveyed 412 buildings[40]. Of these, 387 (93.9%) were residences, with the remaining being schools, churches, stores, and a prison. Of the residences, 381 (98.4%) were occupied, with the remaining (mostly tenant farms) vacant. The Correction Factor matrix developed by Weaver and collaborators put a priority on

[40] The statistics that follow have been transcribed from the original Survey forms filled out and calculated by W.D. Wagner in 1934. Each survey sheet was manually entered into an Excel spreadsheet to enable analysis and mapping.

Table 4.6 1930 North Carolina and Edgecombe Agricultural Statistics by Race of Farm Operator

	NORTH CAROLINA		EDGECOMBE	
	Black	**White**	**Black**	**White**
Acres of Land	3,392,535	14,662,568	108,768	128,645
Farms in Operation (Race of Operator)	76,873	202,835	2,282	1,718
% of Total Farms in Operation	27.5%	72.5%	57.1%	43.0%
Value of Lands and Buildings	$ 159,285,251	$ 684,837,000	$ 5,541,853	$ 7,456,861
Acres per Capita	44.1	52.4	47.7	63.3
Average Farm Value	$ 2,072	$ 3,376	$ 2,429	$ 4,340

Source. 1930 United States Agricultural Census, Historical Census Browser (2004)

two factors: the household tenure (owned or tenant) and the race of the householder (white or African American). Examining the 387 occupied residences along these divisions reveals how the housing and farm attributes of different groups (owner; tenant; black; white) differed amongst each other, as well as how closely they reflected the demographics of Edgecombe County as a whole.

The survey as conducted by Wagner reflected a whiter and more owner operated farm life in Edgecombe County than actually existed. In terms of tenure status, only 55.6% (212) of the farms surveyed were operated by tenants, compared to over 84% of farms in Edgecombe County as a whole. Further, the surveyed farms were overwhelmingly white – 79.3%. This is especially significant when it is considered that 57.1% of farms in Edgecombe County were operated by African Americans.

Among these broadly defined groups, significant discrepancies exist among in the size of the home, the number of occupants, and the characteristics of the farm. Owner occupied homes and the homes of whites tended to be larger, have fewer occupants, and a greater number of hens and hogs. In addition, they had more acres of cotton, tobacco, and general crops (including various grains and corn) under cultivation. It is possible to subdivide these groups even further. Of owner occupied residences surveyed, 91.1% were owned by whites. The racial inequality in the various attributes is even starker – white homeowners had considerably larger homes, more livestock, and more acres under cultivation than their African American counterparts. These trends continue among tenant farmers, with a far greater number of white tenants surveyed (148 vs. 60). The white tenant farmers

surveyed tended to have larger houses and larger farms than even black owners (see Tables 4.7 and 4.8).

These trends are not surprising considering the context – African Americans had been systematically excluded from land ownership all across the Southern United States since the end of slavery. In fact, Sanders' (1933) study showed that the question of whether African Americans should even legally own land was still an open question among white North Carolinians during the 1930s. So it should come as little surprise that these biases would be present in the views of the surveyors as they assessed the condition of the home and the quality of the interview. If the letter grades A – B – C - D are converted to a scale of 4 - 3 - 2 – 1, owner occupied houses score higher on the condition of the home and rating of the interview than tenants. All whites score higher than all African Americans, and white owners score higher than African American owners. While the condition of white homes was deemed higher than African Americans, somewhat surprisingly African American tenants were judge slightly higher on the quality of the interview (see Tables 4.9 and 4.10). Despite this slight edge in the perceived quality of the interview for African American tenants over white tenants, it is crucial to remember the ingrained racial bias built into the calculation of Correction Factors – even when white tenants received lower grades than black tenants, they would still be assigned a smaller Correction Factor.

White homeowners received the smallest adjustment, on average having their electricity use scaled back by 11%. African American tenants, despite the fact that their interview quality was adjudged to be higher than white tenants, had their

Table 4.7. Edgecombe County Surveyed Farm Characteristics

	Count	% Total	Avg # Rooms	Avg # Occupants	Avg # Hens	Avg # Hogs	Avg Acres of Cotton	Avg Acres of Tobacco	Avg Acres of General Crop	Avg Total Acres
Owner Occupied	169	44.4%	6.22	4.59	43.5	16	15.4	10.23	39.4	67.2
Tennant Occupied	212	55.6%	5.19	6.08	25.1	7.99	10.1	5.35	22	38.5
White	302	79.3%	5.95	5.15	39	13.8	14.8	8.7	35.6	61
Black	75	19.7%	4.48	6.46	11.72	3.03	3.45	2.9	7.2	14.1
Race Not Specified	4	1.0%								
Total	381									

Source. 1934 North Carolina Rural Electrification Survey, Edgecombe County

Table 4.8. Edgecombe County Surveyed Farm Characteristics by Housing Tenure and Race

		Count	% Total	Avg # Rooms	Avg # Occupants	Avg # Hens	Avg # Hogs	Avg Acres of Cotton	Avg Acres of Tobacco	Avg Acres of General Crop	Avg Total Acres
Owner Occupied Residences	White	154	91.1%	6.4	4.7	44.6	16.8	16.3	10.8	42	71.4
	Black	15	8.9%	4.9	3.9	32.1	7.1	5.9	4.3	12.4	24.1
	Race Not Specified	0	0.0%								
	Total	169									
Tenant Residences	White	148	69.8%	5.5	5.7	33.3	10.6	13.2	6.6	29	50.2
	Black	60	28.3%	4.4	7.2	6.6	2	2.8	2.6	5.9	11.6
	Race Not Specified	4	1.9%								
	Total	212									

Source. 1934 North Carolina Rural Electrification Survey, Edgecombe County

Table 4.9. Edgecombe County Ratings, Correction Factors, and Electricity Consumption

	Condition of the Home	Rating of the Interview	Correction Factor	Avg Annual kWh Consumed	Avg Annual Bill	Unorrected Annual kWh Consumed	Avg cost/kWh
Owner Occupied	3.39	3.58	0.88	1067.6	$ 71.70	1213.2	$ 0.067
Tennant Occupied	3.01	3.45	0.69	376.8	$ 32.57	546.1	$ 0.086
White	3.27	3.54	0.81	800.8	$ 56.92	988.6	$ 0.071
Black	2.8	3.38	0.66	245.2	$ 24.02	371.5	$ 0.098

Source. 1934 North Carolina Rural Electrification Survey, Edgecombe County

Table 4.10. Edgecombe County Ratings, Corrections Factors, and Electricity Consumption by Tenure and Race

		Condition of the Home	Rating of the Interview	Correction Factor	Avg Annual kWh Consumed	Avg Annual Bill	Unorrected Annual kWh Consumed	Avg cost/kWh
Owner Occupied	White	3.44	3.62	0.89	1144.9	$ 76.12	1286.4	$ 0.066
	Black	2.75	3.08	0.73	274.3	$ 26.82	375.8	$ 0.098
Tenant Residences	White	3.07	3.45	0.71	442.8	$ 37.00	623.7	$ 0.084
	Black	2.81	3.47	0.65	237.9	$ 23.32	366.0	$ 0.098

Source. 1934 North Carolina Rural Electrification Survey, Edgecombe County

electricity use scaled back by 35%, versus white tenants whose use was adjusted by 29%. After all of the attributes were calculated and adjusted, the proposed average yearly electricity usage among individual households ranged from a high among white home owners of 1,144.9 kWh to a low among African American tenants of 237.9 kWh. This translated to an annual electricity cost of $76.12 ($1,323.23 in 2013 dollars) for white owners and a low of $23.32 ($405.41 in 2013 dollars) for African American tenants (see Tables 4.9 and 4.10).

Typical practice for electric utilities in the 1930s was to charge a minimum monthly bill. In the survey, households whose monthly bill would be below one dollar would have minimum monthly bill of one dollar attributed to that house. As a result, households that used the least electricity would pay a highest rate per kWh. For example, using the survey calculations, African American households, many of whom would pay the minimum monthly bill, would pay an average of 9.8 cents per kWh, while white owners would have paid 6.6 cents per kWh (see Tables 4.9 and 4.10). Because of their desire to boost electricity consumption, most electric utilities saw the use of minimum monthly charges as encouraging electricity consumers through monetary incentives – the more you use, the cheaper your rate. The use of the monthly minimum also is indicative of the goals of the survey. In the eyes of the survey designers, rural electrification efforts were best targeted to those who would use the most electricity. As a result, the concern for survey designers was not equity, nor was it to help those most in need. Both of these could have been accomplished in part by providing low cost electricity to those most in need, allowing them to pay only for what the used. Instead, like the Agricultural Adjustment Act and many other

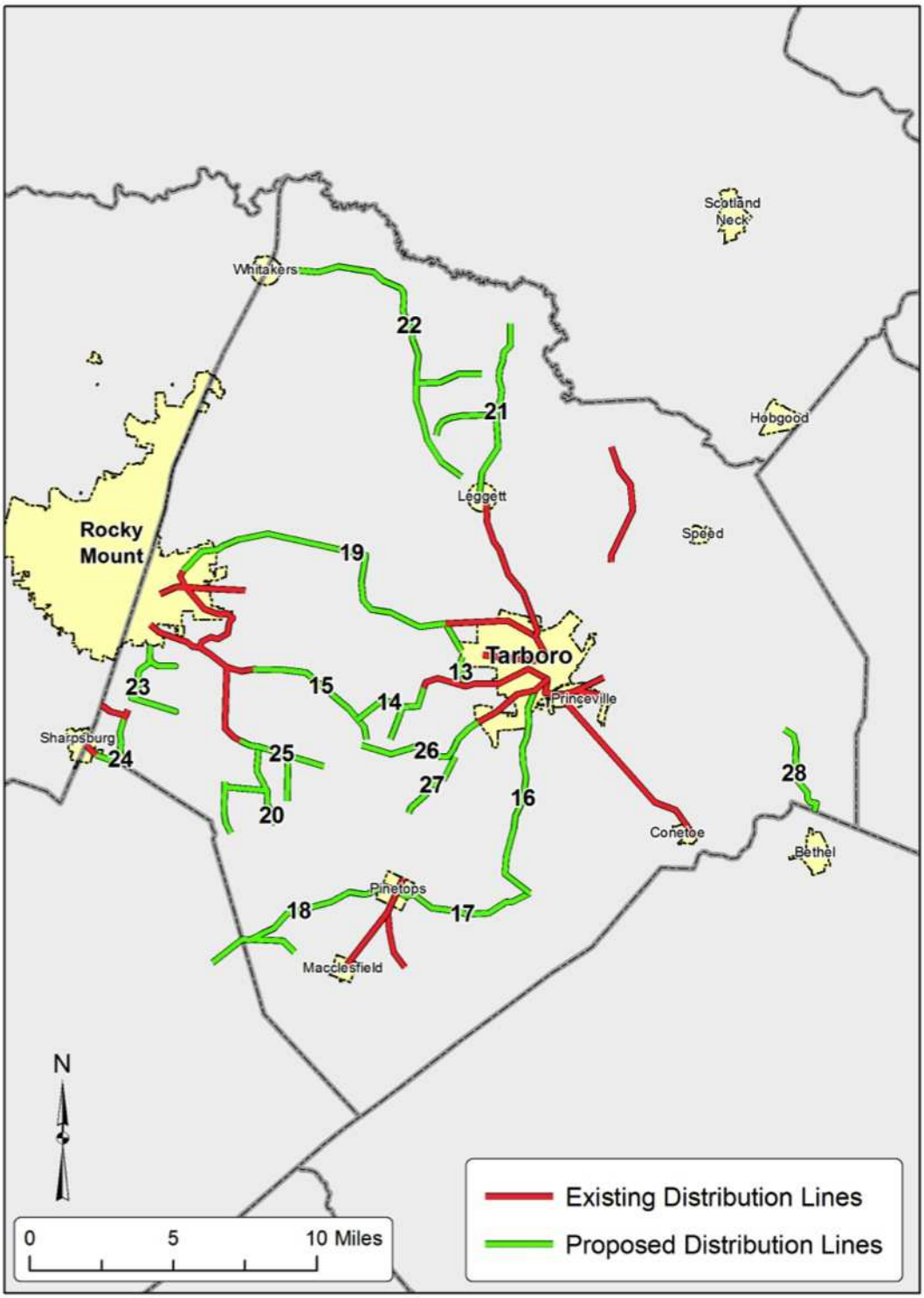
New Deal agricultural programs, the survey would reward those with already existing advantages.

Proposed lines

W.D. Wagner surveyed a total of sixteen proposed lines in Edgecombe County (see map Figure 4.4). When evaluating the potential for electrification, the Survey Directors were primarily interested in one metric: the estimated cost of the line divided by the line's estimated annual revenue. This metric was calculated for each line, and was then used to rank and prioritize the lines within both the county and the state as a whole. Based on this metric, Edgecombe County had several lines that were highly ranked in the state, with five of the sixteen ranked in the top 30 statewide.

It is worth examining these lines and the cost to revenue ratio more closely. Several factors are key to its construction. First, a low cost for constructing the line is desirable, a factor closely related to the physical length of the line. Second is the density of customers: the more interested customers per mile, the lower the cost of the line per customer will be. On the opposite side of the equation is estimated revenue. A successful line would have high estimated revenue, a figure driven in part by the size of the house and farm, as well as the choices each household makes about the desirability and usefulness of household and farm appliances. But it is also tied to the tenure and race of the householder, as the Correction Factor scales down the potential electricity consumption based largely on race and tenure status. Thus, the most desirable line in the eyes of the survey directors would be one densely and exclusively settled by white homeowners. As the 1930 Census has shown, this was

Figure 4.4 Existing and Proposed Distribution Lines, Edgecombe County



not the demographic pattern of much of rural Edgecombe County. So what was the make up of the most highly ranked lines?

Line 24 was the most highly ranked line in the county (see Figure 4.5; Table 4.11). It was quite short – only 2.1 miles - but would serve nearly 21 prospects, giving it a high density of customers. The line also had a relatively low proportion of African Americans living along it, but a fairly average proportion of owners to tenants. So in this case, the key metrics were customer density and whiteness. Line 13 was ranked second in the county, and again was very short – only 1.1 miles – and serving only six prospects (Figure 4.6; Table 4.11). The advantages this line possessed, however, was that it was made up of all white prospects, with four of the six being homeowners. As such, its consumption was only scaled back by 4%, effectively keeping all of the proposed electricity consumption.

The lines that were lowest ranked were plagued by a variety of problems. Line 27 was relatively short at 1.95 miles, but served only 3 customers over its length, giving it the lowest number of interested prospect per mile (Figure 4.7; Table 11). Line 21 suffers a similar plight. Despite serving only whites, the vast majority of which were homeowners, the interested prospects per mile was quite low. When coupled with low revenue per prospect, this made the line fairly unattractive in the eyes of the Survey (Figure 4.8; Table 11).

The line with the highest proportion of African Americans was Line 28, with 12 of the 22 prospects recorded as African American. This is reflected by the fact that it had the second lowest average Correction Factor among the lines, with 19% of electricity consumption being scaled back from the initial calculation. Despite the

Table 4.11. Characteristics of proposed distribution lines, Edgecombe County

Line Number	Length (miles)	# Interested Prospects	# Black Prospects	# White prospects	# Owners	# Tenants	Avg Correction Factor	Prospects per mile	Cost of line	Annual Consumption (kWh)	Annual Revenue	Line Cost/ Annual Revenue	County Ranking	State Ranking
24	2.1	21	2	19	11	10	0.85	10.0	$ 3,255	14,028	$ 1,161	2.80	1	11
13	1.1	6	-	6	4	2	0.96	5.5	$ 1,705	6,132	$ 565	3.02	2	14
15	5.3	32	14	16	12	18	0.83	6.0	$ 8,215	36,384	$ 2,263	3.63	3	27
18	7.4	44	6	38	24	20	0.94	5.9	$ 11,470	37,992	$ 3,123	3.67	4	28
28	2.9	22	12	10	7	14	0.81	7.6	$ 4,495	13,380	$ 1,102	4.08	5	42
23	3.2	31	6	21	19	14	0.87	9.7	$ 4,960	13,326	$ 1,052	4.71	6	62
17	5.0	17	2	15	8	8	0.85	3.4	$ 7,750	21,252	$ 1,525	5.08	7	73
20	7.1	36	4	32	22	12	0.88	5.1	$ 10,943	29,484	$ 1,874	5.84	8	98
14	2.1	6	1	5	3	3	0.91	2.9	$ 3,255	4,716	$ 414	7.86	9	16
25	5.8	26	8	18	6	20	0.79	4.5	$ 8,944	12,324	$ 906	9.87	10	271
19	11.0	31	7	23	6	24	0.85	2.8	$ 17,050	17,784	$ 1,628	10.47	11	287
16	6.4	17	1	16	4	13	0.86	2.7	$ 9,920	10,440	$ 895	11.08	12	318
22	14.0	36	2	34	22	11	0.87	2.6	$ 23,018	33,648	$ 1,693	13.60	13	408
26	6.2	17	4	12	11	4	0.78	2.7	$ 9,610	6,636	$ 689	13.95	14	417
21	7.7	20	-	20	13	6	0.88	2.6	$ 12,623	17,952	$ 894	14.12	15	422
27	2.0	3	-	3	2	1	0.90	1.5	$ 3,023	1,860	$ 174	17.37	16	493

Source. 1934 North Carolina Rural Electrification Survey, Edgecombe County

Figure 4.5 Proposed Line 24 Detail

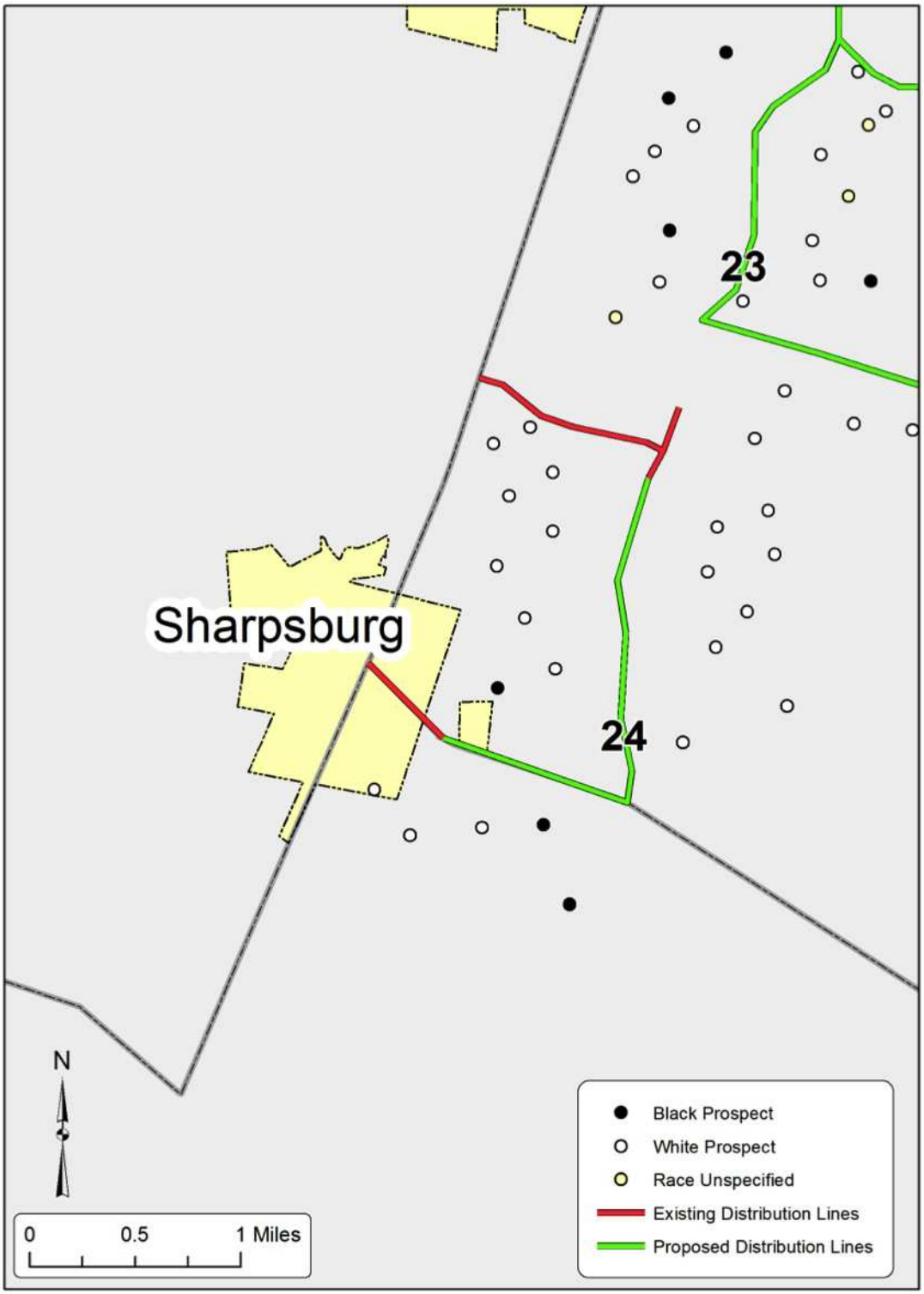


Figure 4.6 Proposed Line 13 Detail

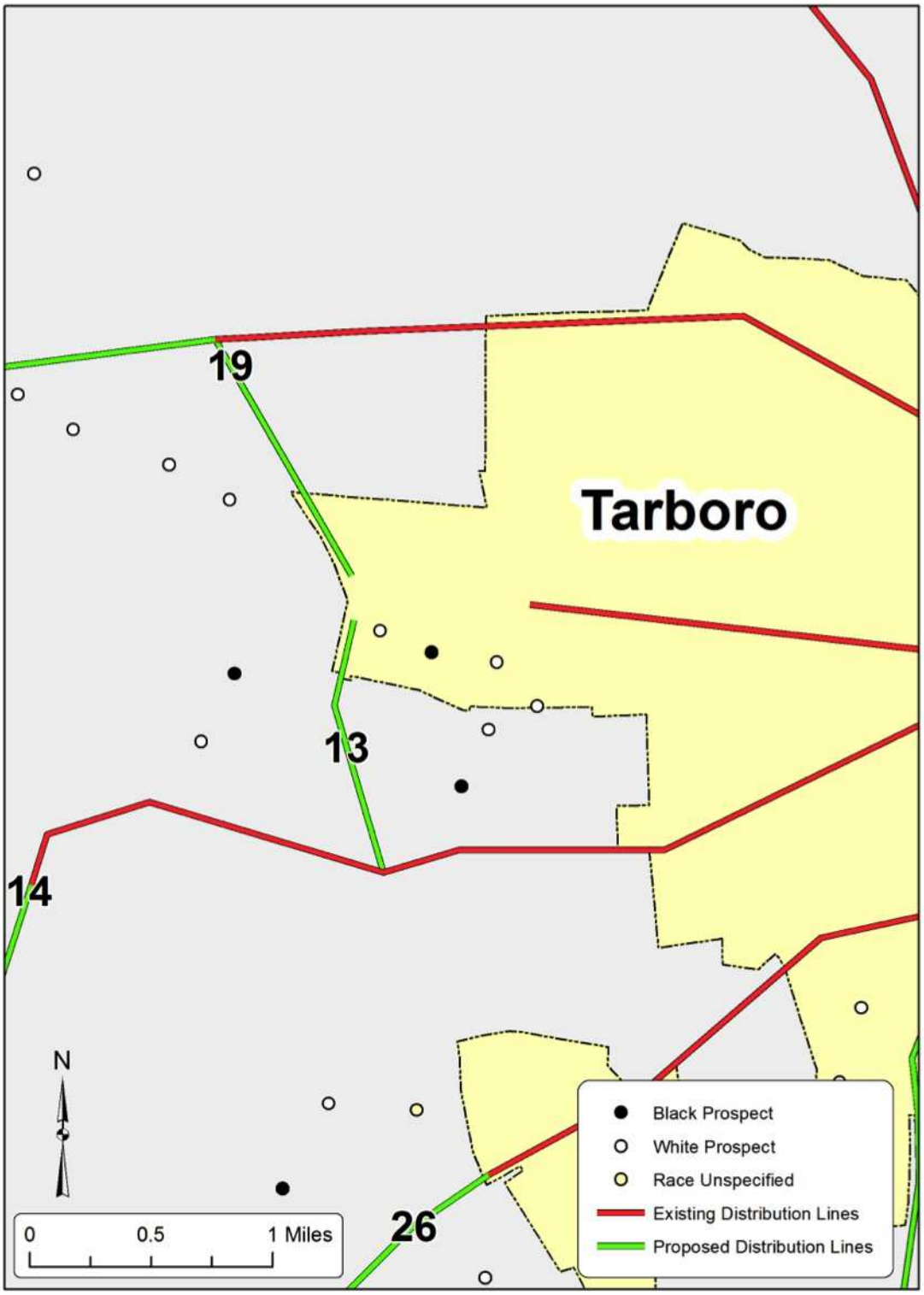


Figure 4.7 Proposed Line 27 Detail

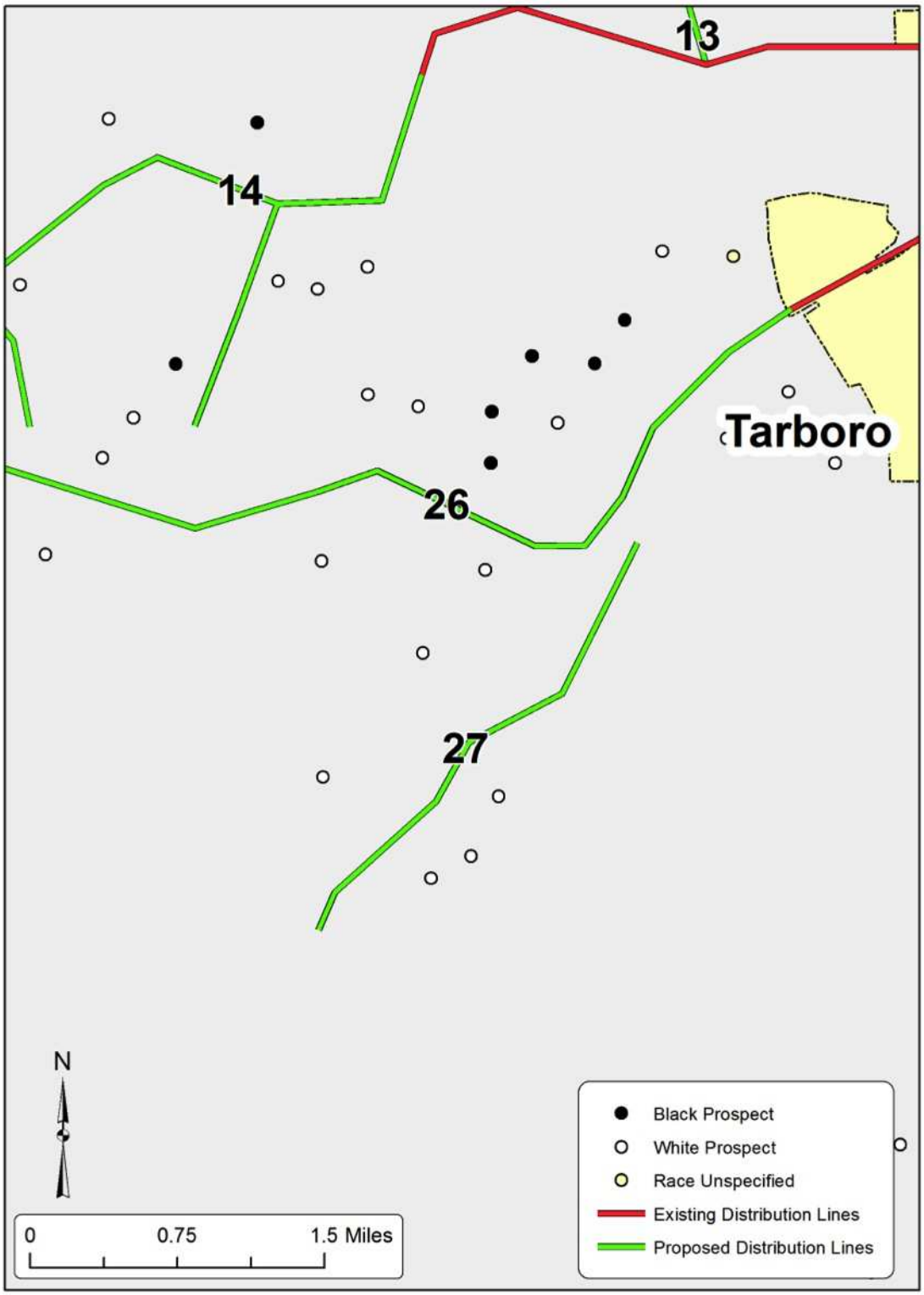


Figure 4.8 Proposed Line 21 Detail

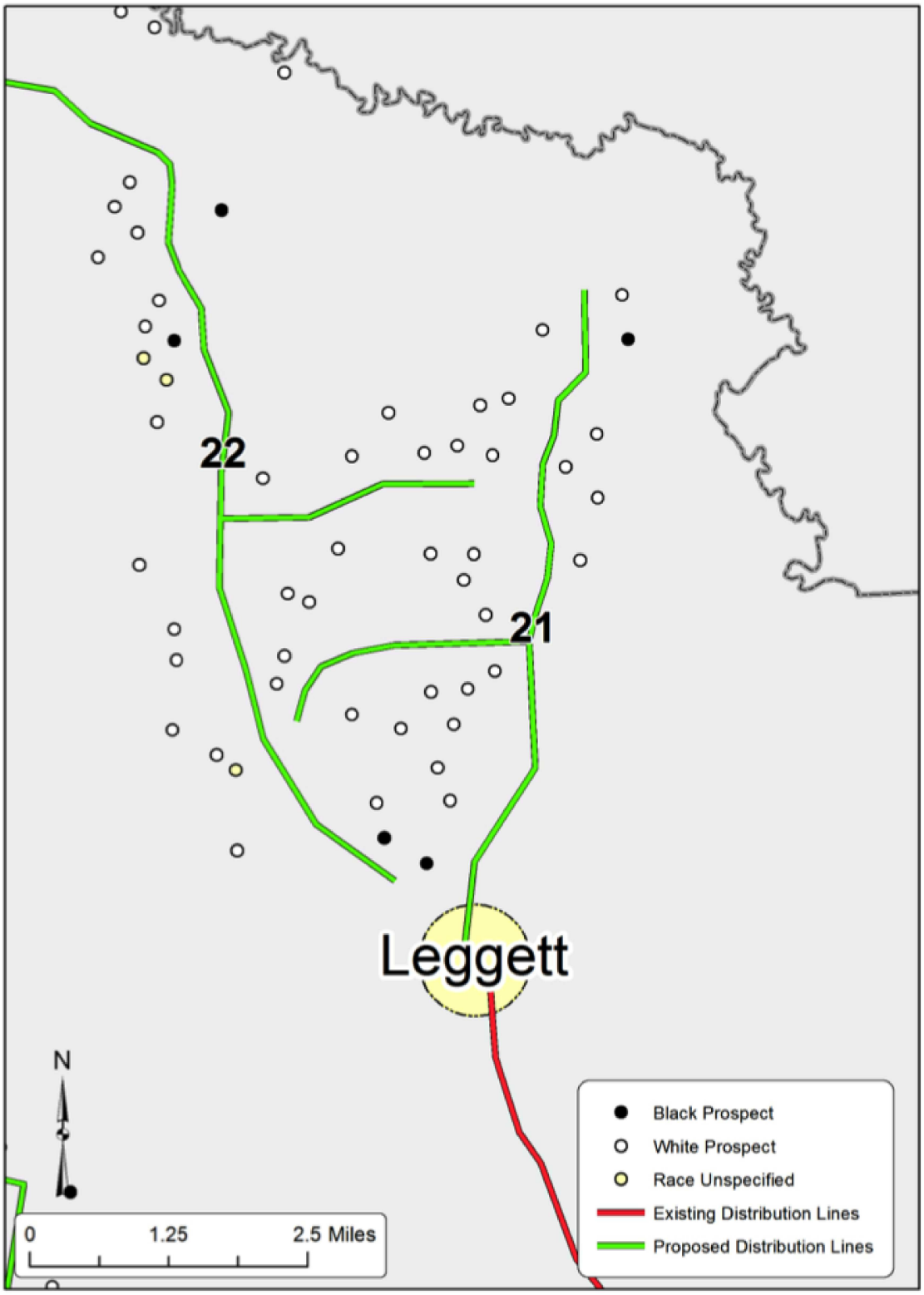
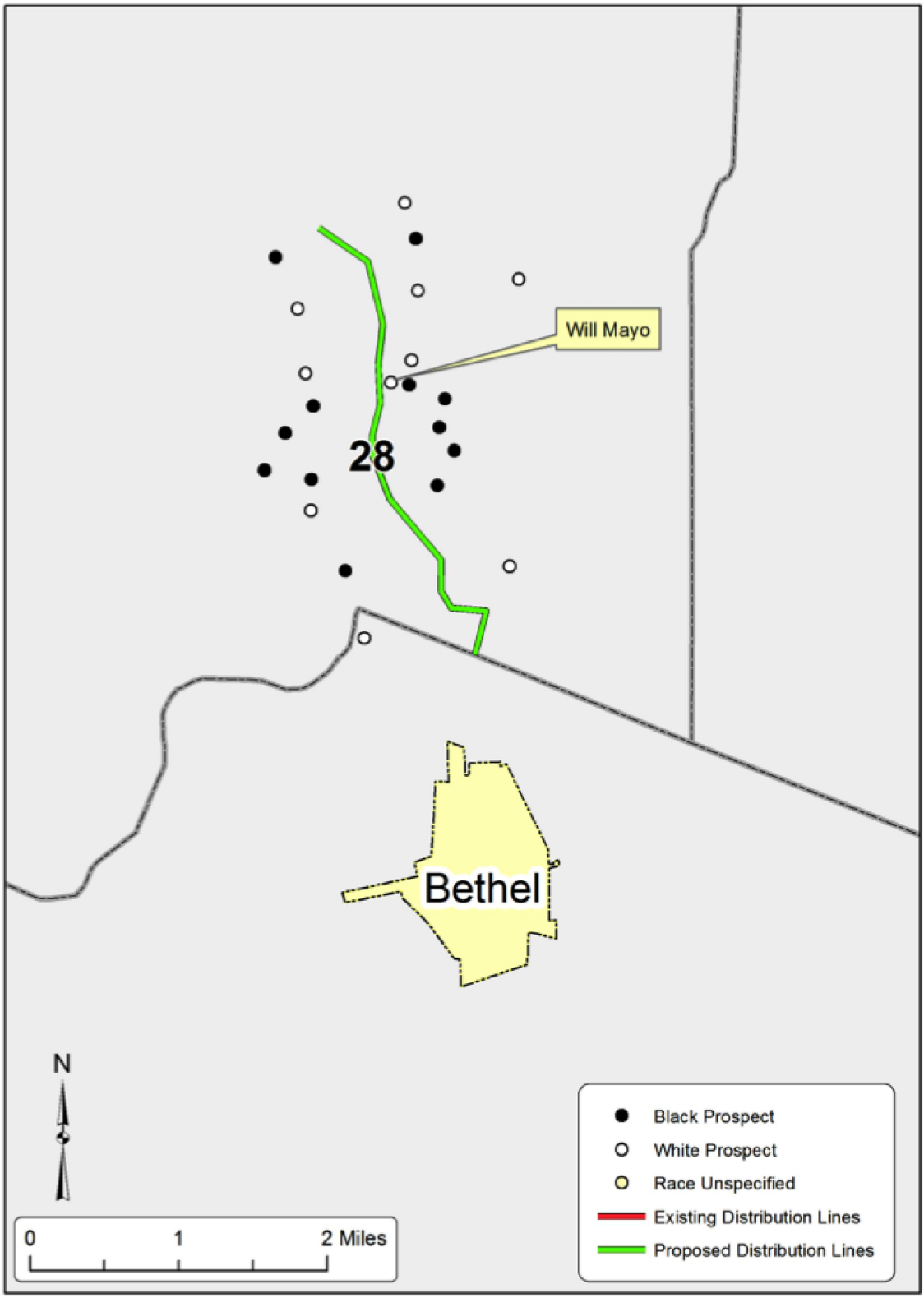


Figure 4.9 Proposed Line 28 Detail



high proportion of African Americans living along it, the line was ranked fifth in the county, and 42nd in the state. This is due to the fact that the highest potential electricity consumer surveyed in the county, Will Mayo, lived along this line. Mayo had a large farm, with 269 total acres under cultivation, as well as a substantial amount of livestock. He had a large house, with 10 rooms, and desired multiple appliances for his home. But the largest electricity use would come from two electric motors he planned to employ, a 40 horsepower for use in his feed mill, and a 5 horsepower for use in his workshop (Figure 4.9; Table 11).

A different survey?

How would the survey results have been different without the use of the Correction Factor? Across Edgecombe County as a whole, the Correction Factor eliminated 43,643 kWh from the total estimated annual electricity consumption, which translated into $3,134.95 in annual revenue. If this consumption and annual revenue were its own proposed line, it would have been the highest consuming and grossing electric distribution line in Edgecombe County. Despite the fact that an enormous amount of electricity consumption was removed from Edgecombe County, it did very little to affect the ranking of lines within the County. Only four proposed lines changed in rank if the Correction Factor is eliminated, and these represent a pair of changes in position between two lines (see Table 4.12; changes in ranking are noted in bold and italics).

The lack of change is primarily a reflection of the dearth of African Americans included in the study. Most of the lines surveyed across North Carolina came as a result of a direct request made to the Committee in Raleigh, or as a result of key

Table 4.12. Corrected and Uncorrected Proposed Line County Rankings, Edgecombe County

			Corrected				Uncorrected			
Line Number	Avg Correction Factor	Cost of line	Annual Consumption (kWh)	Annual Revenue	Line Cost/ Annual Revenue	County Rank	Annual Consumption (kWh)	Annual Revenue	Line Cost/ Annual Revenue	County Rank
24	0.85	$ 3,255	14,028	$ 1,161	2.80	1	16,504	$ 1,366	2.38	1
13	0.96	$ 1,705	6,132	$ 565	3.02	2	6,388	$ 589	2.90	2
15	0.83	$ 8,215	36,384	$ 2,263	3.63	3	43,836	$ 2,727	3.01	3
18	0.94	$ 11,470	37,992	$ 3,123	3.67	4	40,417	$ 3,322	3.45	***5***
28	0.81	$ 4,495	13,380	$ 1,102	4.08	5	16,519	$ 1,360	3.30	***4***
23	0.87	$ 4,960	13,326	$ 1,052	4.71	6	15,317	$ 1,209	4.10	6
17	0.85	$ 7,750	21,252	$ 1,525	5.08	7	25,002	$ 1,794	4.32	7
20	0.88	$ 10,943	29,484	$ 1,874	5.84	8	33,505	$ 2,130	5.14	8
14	0.91	$ 3,255	4,716	$ 414	7.86	9	5,182	$ 455	7.15	9
25	0.79	$ 8,944	12,324	$ 906	9.87	10	15,600	$ 1,147	7.80	10
19	0.85	$ 17,050	17,784	$ 1,628	10.47	11	20,922	$ 1,915	8.90	11
16	0.86	$ 9,920	10,440	$ 895	11.08	12	12,140	$ 1,041	9.53	12
22	0.87	$ 23,018	33,648	$ 1,693	13.60	13	38,676	$ 1,946	11.83	***14***
26	0.78	$ 9,610	6,636	$ 689	13.95	14	8,508	$ 883	10.88	***13***
21	0.88	$ 12,623	17,952	$ 894	14.12	15	20,400	$ 1,016	12.42	15
27	0.90	$ 3,023	1,860	$ 174	17.37	16	2,067	$ 193	15.63	16

Source. 1934 North Carolina Rural Electrification Survey, Edgecombe County
Note. Changes in uncorrected county rank are in bold and italics

local informants. As has been shown, local informants were very unlikely to have positive opinions of African Americans in their region, nor would they be willing to include them in the benefits that would come from receiving electricity. The individuals and communities surveyed are also a reflection of the goals of the survey. Rather than seek areas most in need of relief, the Survey was determined to find areas most ripe for *profitable* electrification, and not where electrification would provide the most benefit to residents. Yet considering alternative methods of conducting the survey still shows that a different survey was possible.

By closely examining the 1934 Survey in this chapter, the efficacy of the metrics employed for assessing potential electricity consumption are shown to be at best educated guesses. At worst, as was the case with the Correction Factor, arbitrary numerical adjustments based on racial valuations were employed to make large-scale changes to electricity consumption.

4.6 Conclusion

The 1934 Rural Electrification Survey was designed to kick start rural electrification efforts in North Carolina. As the following chapter will show, spurred by establishment of the federal REA in 1935 and the beginning of the rural electric cooperative movement, private utilities in North Carolina began actively pursuing their own rural electrification efforts. Not to be outdone, several municipal utilities continued to pursue the development of an electricity distribution system unrestricted by municipal boundaries by attempting to electrify adjacent rural areas. Private utilities, municipal systems, and the nascent rural electric cooperatives were soon in competition with one another, scrapping it out on land, in

the media, legislative halls, and in courtrooms across North Carolina and the United States in order to control the remaining un-electrified territory.

In the summer of 1935 the North Carolina Rural Electrification Authority (NCREA) would be formed and begin playing a key role in setting the rules and adjudicating these battles. The strength of the NCREA came in part from its role in the 1934 Rural Electrification Survey. The spatial knowledge it had accrued through the survey, as well as the accumulation of contacts and knowledge of electrification efforts in counties far from its offices in Raleigh, were periodically reported to the Governor and other key state administrative offices. These statistical reports, aggregations of the desires and needs of thousands of rural households across the state, were part of establishing the NCREA office and small staff as a 'center of calculation' – "a venue in which knowledge production builds upon the accumulation of resources through circulatory movements to other places" (Jöns 2011: 158; see also Latour 1987). The chapter that follows will examine the functioning of the NCREA in depth.

But it is worth reflecting once more upon the statistics, aggregations, and rationales that were part of the establishment of the NCREA as a center of calculation. Hidden within the averages and ratios that ranked each proposed distribution line was a spatial and racial calculus based on taken for granted notions of property value and racial hierarchies that existed in the minds of David S. Weaver and the survey administrators. The construction of the survey meant that electricity would be spread to those areas that were already considered valuable by the surveyors. Electricity was not seen as a tool of equalizing rural conditions, rather a

farm that already had a greater number of chickens, hogs, and cropland was deemed more in need of electricity than one with fewer. At the same time, the Correction Factor was designed to ensure that a farm operated by a white man was shown as more in need of electricity than one operated by an African American. In effect, the survey attempted to *produce* the service territory that was desired: white farm owner-operators with a substantial amount of material holdings.

The need to not only count race, but to also *account for* race, marks this survey as part of a number of supposedly objective and statistical analyses that shaped New Deal programs. In Chapter Three the issue of race was front and center, with the Board of Commissioners explicitly denying electricity services to African American parts of the city. The case of the 1934 Survey is part of a shift towards the embedding of racial hierarchies and ideals in the language of value and profitability, and hidden within statistical aggregations of risk. As will be shown in the conclusion, like the red lining maps produced by the Home Owners Loan Corporation (Freund 2007), the effect of these statistical aggregations, as guided by the racial hierarchies of their designers, have impacts far beyond the relatively short period that these maps are put to active use.

Chapter 5: The Utility Consensus? Territory, generation, and creeping socialism, 1934-65

The period of time after 1945 and leading up until the late 1960s is generally considered a time of great prosperity in the United States. Much of this increased prosperity was based on the development of a mass market for goods and services within the working class. During this period, referred to as Fordism, increases in productivity in factories were matched by an increase in wages that allowed workers to buy the commodities they produced (Gramsci 1971). This was matched by an equally interventionist state, based on Keynesian economic policies, that advocated debt financing in order to continually boost and expand economic output and effective demand (Harvey 1990; Mitchell 2009). The creation of new forms of consumption and mobility was epitomized by the growth in automobile sales and the growing preference of white American for suburban houses full of electric appliances. While the growth of automobility was largely predicated on a ready abundance of cheap petroleum, suburban growth required a ready abundance of cheap electricity (Huber 2013).

Between 1927 and 1969 the price of a kilowatt-hour of electricity continually decreased across the United States. During that same period, electricity consumption in the home increased at a 7% average annual rate (Hirsh 1999). Both trends were related to the work of electric equipment manufacturers, such as General Electric, taking advantage of developments in materials technology to build

larger and more efficient power plants. But decreasing electricity costs and increasing electricity demand were also supported by the territorial fixes described in Chapter Two: investor owned utilities courting designation as natural monopolies in order to sell reasonably priced electricity in regulated, non-competitive territories. Historian of electricity Richard Hirsh (1999) has described this society-wide arrangement as the 'utility consensus'. This consensus, he argues, enjoyed widespread support, including electrical equipment manufacturers benefiting from increased sales, investment bankers finding steady returns from utility stock, politicians who enjoyed generous campaign donations from utilities, academics who were placed on electric utility payrolls, and customers that were encouraged to buy utility stock. Hirsh argues that this arrangement minimized scrutiny, and that few stakeholders objected to the consensus.

While Hirsh's (1999) account provides a compelling meta-narrative of the utility industry between 1945 and the 1965, it largely ignores the persistent, but mostly unsuccessful, challenges to dismantling the utility consensus. The federal Rural Electrification Administration (REA) posed the most important challenge to unabashed private utility dominance during this period. While Hirsh ascribes a short period of REA influence limited to several years in the late 1930s, in this chapter I draw on evidence that the formative influence of the REA lasted considerably longer. Instead of portraying the period of 1935 to 1965 as one in which private utilities dictated the continuing development of electricity, I show the various tactics and challenges that were posed by rural electric cooperatives, and how this in turn shaped the electric utility landscape in North Carolina.

In this chapter, I turn to regulation theory as a political economic method (Bridge 2000; Peck and Miyamachi 1994), and different from most work using regulation theory, I employ regulationist concepts in order analyze a single industry. Regulation theory is concerned with the changing forms and mechanisms by which the reproduction of capitalism occurs despite its inherent contradictions, and has typically been deployed to analyze major epochs in the 'regulation' of the capitalist economy (i.e. Fordism and post-Fordism). But it can also be deployed to analyze the "institutional infrastructure around and through which capitalist development proceeds" (Peck and Miyamachi 1994: 643). In this chapter, I consider Hirsh's (1999) 'utility consensus' as, in regulationist terms, an accumulation strategy – a place based model for economic growth (Jessop 1997). However, rather than follow Hirsh and focus on the relative stability of this arrangement, I instead focus on its temporary, partial, and unstable nature, and the ways in which the provision of electricity during this period was at a crossroads of competing ideas about resource provisions – on the one hand, a vision that privileged profit making, and on the other, a focus on extensive provision above all else (Ekers and Loftus 2008). In this way, the shifting power of private utilities and the REA is theorized as a relational effect, as reliant on connections with political institutions as on the real and imagined flows of a commodity, in this case, electricity (Gandy 2002; Swyngedouw 2004).

But the provision of electricity is also part of a broader hegemonic project being played out in this period over the proper role of the state in economy. As previous chapters have shown, the state plays a crucial role in the provision of

infrastructure. In Chapter Two, the state is active in setting the conditions for the monopoly service territory, for example. In Chapter Three, the state, in the form of municipal governments, is actually providing the electricity. In Chapter Four, the state is evaluating a territory before electricity service begins. But as this Chapter shows, the state should not be conceptualized as a monolithic entity. Starting in the mid-1930s, broader debates about the proper role of the state were rampant. On the one side were New Deal 'liberals' that sought an activist stance for the government in the realms of infrastructure, housing, finance, labor, and many other spheres. On the other were those that wished to return to the free-wheeling laissez faire capitalism of the 1920s. How these projects are mobilized and materialized, and how they create a sort of power that can be enacted, is a complex process. Following Ekers and Loftus's (2008: 709) work on water, in this chapter I examine the "more subtle ways in which power works through everyday [electricity] practices", and how this shapes the material landscape. This requires a close analysis of the conflicting roles and scales at which the state, broadly defined, interacts with the electric geo-economy. Differing levels of electricity regulation are beholden to different interests - the Federal Power Commission and the State Utility Commission, for example – and this requires conceptualizing the state as a conflicted and multi scalar institution that pulls – and is pulled in - different directions on issues of electricity provision.

The conflicted actions and ideals of the state can be better understood by following the day-to-day activities of individuals charged with carrying out the missions of their state institutions. As such, this chapter devotes considerable time

to following individuals that were active in governing, regulating, and planning electric utility development. A focus on individual biographies does not automatically resign a work to the 'great man' school of historical research. Rather, as individual accomplishments and actions are undoubtedly a relational achievement, placing them within wider political, social, and cultural contexts helps to find the "knife-edge between social context (structure) and personal creativity (agency)" (Barnes 2001: 415). Biography is also an effective narrative method that helps to tie together parallel historical developments – in this chapter, the changing dynamics of the state, race, capital, and electric utilities – over a long time period.

While this chapter focuses on the evolving and conflicted nature of state involvement with electric utilities, reminders of the importance of state interactions with race and capital are constant. This is evident in the folding of utility electricity generation, regulation, and distribution into the rhetoric of state's rights, as well as REA supporters closing their letters to North Carolina Congressmen with offers of thanks for supporting segregation. But operating in the background of all these debates is a fundamental shift happening in the Southern economy between 1940 and 1970. As the South emerged from the Great Depression, war production accelerated the shift from the plantation agriculture economy to one driven by branch manufacturing, mining, banking, and retail stores (Daniel 1996: 49). Southern agricultural labor increasingly moved to the city and suburban manufacturing, and African Americans moved off the farm and out of the South in record numbers (Daniel 2013). Those that remained faced continuing racism, but were also key to the rising movement for Civil Rights.

The changing relationship of the South to the rest of the United States, and the modernization of the South, occurred with the sanctioning and encouragement of the state. As this chapter will show, however, private electric utilities sought to obscure the importance of the state from their operations, positioning themselves instead as operating in a purely free market. The irony, of course, is their own dependence on the state for regulation, as detailed in Chapter Two. For rural electric cooperatives, their link to the federal government was a close one – they received low interest loans from the federal Rural Electrification Administration – and this fact was viewed as either beneficial or harmful to their legitimacy, depending on the context in which it was discussed. By tracing these relationships over a relatively long time period, this chapter shows the shifting strategies and tactics employed by the competing electric utilities in response to changing political, economic, and social conditions.

At its formation in 1935, the REA had a simple mission: to provide low cost electricity to farms and rural households. The stated goal of the program was to increase the distribution of electricity, and not necessarily by increasing the capacity for electricity generation. Yet almost from the start, the goals of the program were at odds with those of privately held investor owned utilities. As a result, I argue that the period of the utility consensus was actually marked by numerous skirmishes between advocates of non-profit providers of electricity, such as municipalities and rural electric cooperatives, and for-profit providers. This competition pitted two competing visions of how the electricity landscape should

develop, and further, was a symbol of competing ideas of how (and where) government intervention in the economy should take place.

This chapter examines several notable electric utility conflicts in North Carolina while also putting them in the context of national electric power politics. It begins by tracing the development of rural electrification in North Carolina between 1935 and 1941. This involves a close examination of the at times acid relationship between the federal REA, which favored non-profit distribution companies, and the state-run North Carolina Rural Electrification Authority (NCREA), which arguably favored for-profit companies. Between the period of 1935 and 1941, the question of how to accomplish rural electrification was hard fought between the two entities in boardrooms, courtrooms, and along the planned and constructed rural electricity lines where accusations of prime territory 'sniping' and the construction of 'spite lines' occurred. At the root of this fighting was whether the established private companies were more suited than the upstart electric membership corporations (EMCs) to do the job.

By 1941, changes in leadership largely quelled fighting between the NCREA and REA. But by this point the question of electricity generation had come to the forefront, particularly as the goals of the universal distribution of electricity were becoming realized. Because EMCs did not produce electricity, they needed an electricity supplier. With private utilities often reluctant suppliers, some municipalities, such as Tarboro and Wilson, filled this void by using their spare generation capacity, along with REA loans, to expand their municipal systems outside of municipal boundaries. But the issue was more frequently one of

wholesale electricity rates. In these cases, oftentimes merely the *threat* of building power plants by municipalities and EMCs was enough to gain the concessions on wholesale electricity rates from private utilities.

By the end of the 1950s, however, both municipalities and EMCs in North Carolina were almost exclusively purchasing electricity at wholesale from private utilities. But with cities rapidly suburbanizing across the state, much of the formerly rural territory served by EMCs became increasingly attractive to the private companies, especially as new industrial and institution users moved in. This led to fierce competition between the two, resulting in lawsuits and propaganda campaigns by both sides. By the 1960s, the question for EMCs became one of territorial integrity – how would EMCs maintain their territory in the face of legal and PR challenges from the private companies?

Despite these persistent challenges, private utilities managed to fend off attempts to remove them from their hegemonic position as the primary producer of electricity in North Carolina. They accomplished this through persistent attacks on EMCs and the mobilization of substantial political, legal, and economic resources. In the words of one long time cooperative member in 1966, "I know of no year, or period of time since 1935, that the Power Companies were not at our throats in some way" (Eubanks 1966). Yet as this chapter draw to a close, it is apparent that the municipal electricity systems were in a much more vulnerable position than the EMCs.

5.1 The Development of Rural Electrification in North Carolina, 1935-41

As mentioned in Chapter Four, in the early 1930s only 3.2% of farms in North Carolina had electricity service. As such, rural electrification was an important policy point for politicians across the state. This section considers the at times competing efforts to distribute electricity throughout rural North Carolina, but before proceeding it is necessary to define several terms. I use 'rural electrification' to describe the general efforts to spread electricity distribution lines to rural areas. I will frequently discuss the North Carolina Rural Electrification Authority (NCREA), a state agency designed simply to encourage and coordinate rural electrification efforts in North Carolina. It was unaffiliated, though in frequent contact, with the Rural Electrification Administration (REA), a federal agency that loaned money to power companies to build rural electricity distribution lines. Most REA loans were made to rural electric cooperatives known as electric membership corporations (EMC). I will refer to these as either cooperatives or EMCs. EMCs were non-profit and organized to borrow money to extend rural distribution lines to farms across the state. Finally, there were also investor owned, or private, utilities. I will most frequently refer to these as private utilities or private companies.

This section will first briefly consider the origins of the NCREA and the REA. It will then consider the strained and at times hostile relationship between the two groups between 1935 and 1941. Finally, I will turn to a particularly important incident that caused considerable conflict, the contested extension of distribution lines into Johnston County, North Carolina. It is in this incident that the tense

relationship between the NCREA and REA becomes clear, as well as the role of EMCs and private power companies in their ongoing conflicts.

The Origins of the NCREA and REA

In late November of 1934, North Carolina was eager to electrify certain rural areas identified in the 1934 Survey. North Carolina Governor JCB Ehringhaus wrote to Franklin Roosevelt and reported the design and goals of the North Carolina rural electrification survey, while also noting that the survey had stimulated the construction of numerous rural lines by private companies. In his letter he recommended that Roosevelt take up the model of rural electrification being pursued in North Carolina (Ehringhaus 1934), and later made a personal visit to FDR to ask for federal funds to build distribution lines based on the areas they had surveyed (Brown 1982). While the Roosevelt administration took no immediate action on Ehringhaus's letter or his visit, it was part of the mounting chorus asking for rural electrification to become part of New Deal relief efforts (Brown 1980).

Especially influential in pushing Roosevelt was Morris Cooke, who would become the first Head Administrator of the REA. An engineer from Pennsylvania, Cooke had long been active in electricity and electrification efforts. In the mid-1920s, Cooke worked to design the proposed "Giant Power", an electricity-led economic development plan for Pennsylvania that aimed to build large coal power plants at the mouths of coalmines. The power generated at these plants would be transmitted to Philadelphia and other urban centers to power industrial development. While this plan ultimately did not come to fruition, the notoriety Cooke gained from the project helped him to be hired by FDR, while serving as

governor of New York, to assess the potential for rural electrification in that state. Once FDR was elected president, he actively consulted with Cooke on electricity matters related to the Public Works Administration (Brown 1980).

Cooke's work experiences before the start of the REA shaped his outlook in two ways. First, private power companies reluctant to relinquish any planning power to government ultimately upended the Giant Power plan in Pennsylvania. This experience pointed Cooke towards the potential for cooperative organizations to function where private companies would not. Second, his experiences with Giant Power and rural electrification efforts in New York informed his belief that rural electricity rates could actually be cheaper than those in urban areas. This was based on his realization that rural lines could be built far more cheaply than the $2,000 per mile often estimated by private utilities. In Cooke's estimation, private utilities were overestimating the cost of rural distribution because of their reluctance to distribute electricity to all customers in a particular area. Cooke believed that area coverage, the idea that a utility should cover a particular area in its entirety by serving all customers rather than cherry picking those areas that were particularly profitable, could be done economically if areas with high rates of consumption were blended with those of low consumption (Brown 1980).

In addition to Cooke and Ehringhaus, numerous national farm organizations were also urging FDR to pursue rural electrification. By the spring of 1935, the work of rural electrification advocates paid off. In April of 1935, Congress allocated $100,000,000 for rural electrification, and on May 11, 1935 FDR established the REA to run the program, and Morris Cooke was appointed Head Administrator. Later that

same summer, the North Carolina General Assembly, at Ehringhaus' urging, set up the NCREA. The NCREA, given a small budget to hire a stenographer and engineer, would consist of a full-time chairman and five members from regions spread across the state[41] (Brown 1982).

The first chairman was Dudley Warren Bagley, a state senator and farmer from Currituck County. Bagley also had a close relationship with Joseph P. Knapp, a wealthy magazine publisher from New York City. Knapp had an interest in the coastal county of Currituck due to his partial year residence on Knott's Island and his interest in duck hunting[42]. Writing to Knapp shortly after his appointment, Bagley stated that he had accepted the position as Chairman of the NCREA largely because he needed the money, but added "It is a job with possibilities of good or bad to the power companies" (Bagley 1935). Perhaps more than he knew, the issue of how the NCREA would or would not benefit private power companies became a significant issue, and created a sizable rift between the NCREA and the federal REA. Closely following Bagley and his interactions with Morris Cooke and the rest of the REA administration during his five years as chair of the NCREA shows the complex politics of North Carolina electricity politics, as well the continuing unease of Southern politicians with federal government intervention in the state economy.

In early June of 1935, Bagley made a trip to Washington to visit Cooke and the REA. In a report back to the NCREA Committee, Bagley noted that while the REA

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[41] The board orginially consisted of Kerr Scott (North Carolina Commissioner of Agriculture), Josh L. Horne (editor of Rocky Mount Evening Telegram), Samuel H. Hobbs (UNC professor of rural sociology), Jane S. McKimmon (head of North Carolina Home Demonstration Agents), and George S. Stephens (a publisher from Asheville, NC).

[42] Along with J.P. Morgan, Knapp founded what is today known as Ducks Unlimited.

was disorganized right now, he had learned that funds for line building would come not in the form of direct appropriations to the states, but rather as loans to groups already organized in the states (North Carolina Rural Electrification Authority (hereafter NCREA) 1935a). In August, Bagley conferred with both private utilities, which committed to build distribution lines where the distribution line cost to annual revenue ratio was 5 to 1 or better, and municipal systems, urging both to pursue federal funding for expanding rural distribution (NCREA 1935b). By September 1935, cracks began appearing in the relationship between NCREA and the REA. Additional survey efforts in North Carolina were cancelled by the REA, who felt that continuing surveys provided people with false hope for electricity. In Cooke's words, "I cannot refrain from expressing considerable anxiety whenever I hear of surveys being made in territory 'thick and thin' and in areas where there seems little likelihood of construction being undertaken in the near future" (Cooke 1935). Conflict between the NCREA and REA increased in 1936. In January a NCREA board member urged the North Carolina governor and US Senators to begin pushing Cooke and the REA for faster funding of projects that had been approved by the NCREA (NCREA 1936a), and later alerted Cooke that he was "disgusted" by the lack of assistance coming from Washington (Horne 1936b).

The issue between the two organizations was fairly straightforward. The NCREA was chartered to boost rural electrification in general, regardless of whether private utilities or municipalities were doing the work. The REA, on the other hand, had by 1936 developed a preference for loaning to non-profit utilities, and especially newly forming rural electric cooperatives. The electric cooperative was

not a new phenomenon. Numerous electric cooperatives existed nationwide during the 1920s, but they were typically limited in size and scale. Electric cooperatives rose to prominence during the Roosevelt administration with the establishment of Alcorn Electric Membership Cooperative in Alcorn, Mississippi. The Alcorn cooperative was set up by the Tennessee Valley Authority (TVA) in order to show the benefits of low cost electricity for economic development. Within a year, the results of the study showed significant increases in the use of electricity (often used as a proxy for development), and that rural electrification appeared viable from a cost perspective (Brown 1980).

The cooperative took on additional importance because of the damaged state of private utilities in the mid-1930s. As the REA was getting underway in 1935, private utilities were being battered in the battle over the Public Utility Holding Company Act of 1935, the Act that ultimately brought about the demise of the holding company (see Chapter Two)[43]. Cooke's preference for cooperatives was hardened when the REA received an application from private utility Wisconsin Power and Light that proposed high retail rates and no area coverage. The application was rejected, and the president of the Wisconsin company warned other private utilities of the need to thwart the REA (Brown 1980). With most private utilities now in opposition to the REA, it was forced to rely on non-profit utilities. Municipal utilities, as a subsequent section will show, had some limitations, which put the onus on cooperatives to apply for and receive loans.

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[43] The ease with which the REA was funded is also in large part due to the low public opinion of investor owned utilities in the wake of the holding company scandals of the 1920s.

By the summer of 1936 more issues began cropping up between the NCREA and REA. In July Bagley lamented that a double program was emerging in North Carolina, one fostered by the NCREA with the other by REA (NCREA 1936b). By November, the relationship seemed fractured beyond repair. In an internal memo, Cooke wrote to Vincent Nicholson, the General Consul of the REA, saying:

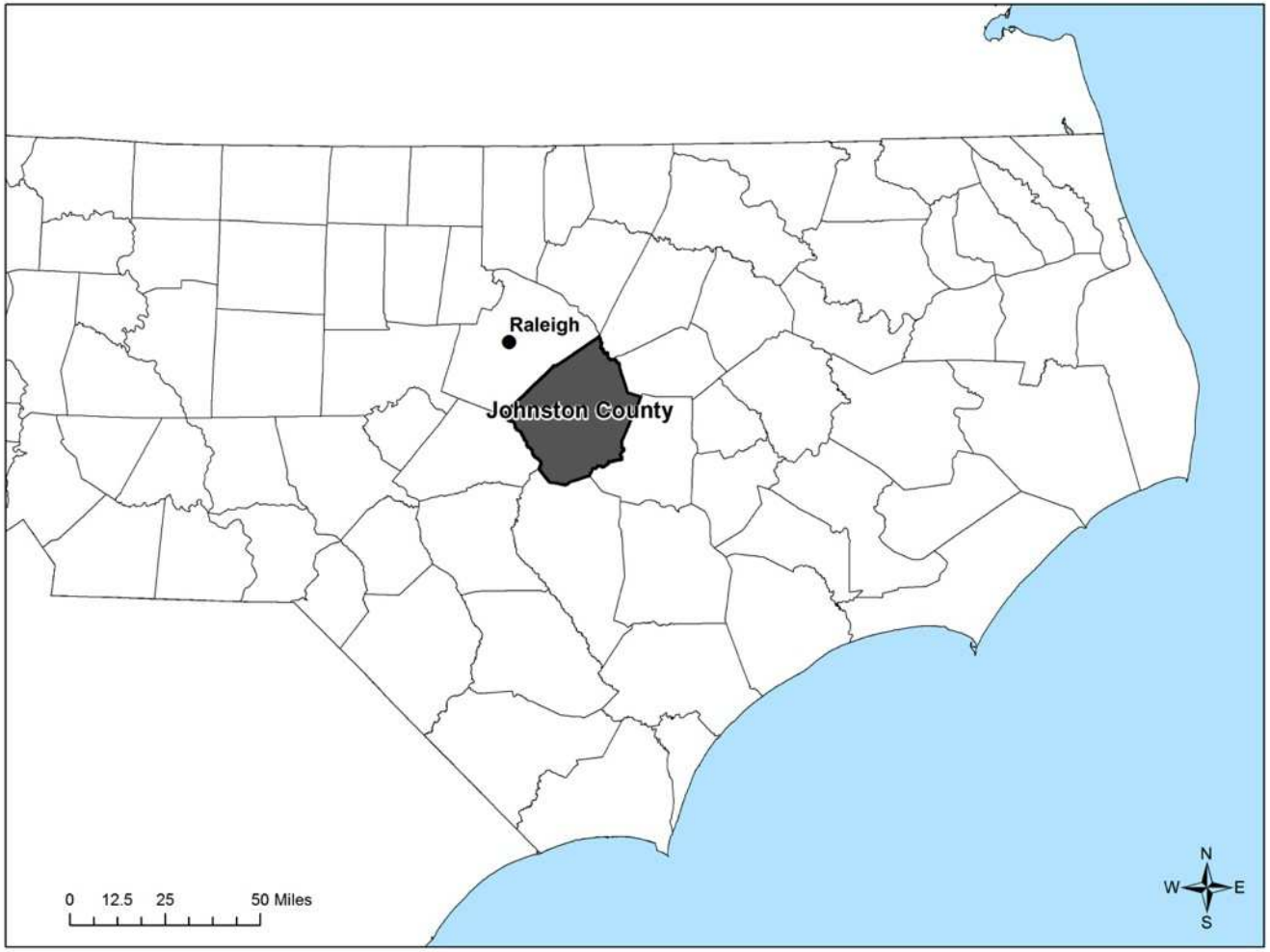
> I want to get going actively in North Carolina with certain groups of organized farmers. It would be my judgment that we might do away with the State Rural Electrification Authority as being a fifth wheel and not rendering any service to our scheme.
>
> In your opinion is there any necessity of passing new legislation or can rural electric cooperatives operate in North Carolina as advantageously as anywhere else? (Cooke 1936c).

Among the issues that were driving the two organizations apart was the controversy over the development of rural lines in Johnston County, North Carolina. In Johnston County, CP&L was battling a newly formed rural electric cooperative for the right to build lines in what appeared to be a profitable territory.

The Johnston County Controversy

Johnston County, located just southeast of Wake County and the city of Raleigh (see Figure 5.1), was among the 78 counties originally surveyed by the 1934 Rural Electrification Survey. The initial survey showed that 478 prospects living along nearly 83 miles of distribution lines were interested in service. On the surface, a majority of these lines would seem unappealing to private utilities. The highest ranked line had a cost to annual revenue ratio of 4.32, just barely below the 5 to 1 ratio preferred by private utilities. However, the county had two things that made it appealing to both REA and CP&L. First, the farmers involved were highly organized and eager to acquire electricity: by November of 1935, rural leaders had surveyed

Figure 5.1. Johnston County locator map



additional parts of the county and submitted an application for electrification to the NCREA. Second, Johnston was located directly adjacent to CP&L territory and power plants. This made the best parts of the territory particularly attractive to CP&L, which could easily run transmission lines to the area.

Before describing the events of Johnston County in detail, it is worth laying out the process North Carolina cooperatives were required to follow in order to get REA loans. After surveying and mapping potential customers, potential borrowers were required to fill out an application to be approved by the NCREA. If the NCREA approved of the loan, they would then recommend that a separate application filed with the REA be approved. This intermediary step posed by the NCREA was drawing the ire of Cooke and the REA, who preferred a direct relation with EMCs. The case of Johnston County makes clear why this was so.

After the initial application was received by the REA in late 1935, no action was taken, likely due to the disorganization that plagued the REA's first year (Brown 1980). In April of 1936, a renewed application was received by the REA that enlarged the project to 1535 customers over 295 miles of line. One month later, an REA Engineer visited the project. The engineer's field report described the Johnston project as "an ideal rural electrification project in that it does not depend on running lines to small towns over comparatively bare territory. Most of the farmers, owners, and tenants live on their land and not in town". Taylor was favorably impressed by Johnston County, describing it as "most prosperous looking county" where, in keeping with the same ideas that linked electricity use and race in Chapter Four, "The percentage of tenancy is high, about 50-60%, but the majority of these people

are of a high type, white, and of English extraction." However, prior to his arrival, the engineer reported that Bagley had shown CP&L the proposed distribution line map of Johnston County. After examination, "The Power Company had then surveyed all the lines and selected some which they indicated they wish to build." CP&L had gone so far as to sign up some of the customers, and planned to build around 40 miles. Even worse was that Bagley had told the Johnston County cooperative group that "REA would take two to three years to get started." Despite this, the field engineer felt that no irreparable damage had been done and that the project would be a successful one (A.Y. Taylor 1936).

By June, both CP&L and the local EMC had begun construction. In the middle of July, another obstacle appeared. Rural cooperatives were only distribution companies, meaning that they did not produce their own electricity. As such, they needed to contract with nearby power companies to buy electricity at wholesale. In Johnston County, the nearest provider was CP&L. Eager to go forward with their own construction plan, CP&L refused to quote a wholesale electricity price to the Johnston County coop. CP&L president Louis V. Sutton claimed that he first needed approval from the North Carolina Utilities Commission to sell power to the project. The REA saw these as delay tactics designed to embarrass the project, and began seeking alternative means of obtaining power. The REA lobbied the Utilities Commission to force CP&L to act, but the Commission replied that had the EMC applied for and received a 'certificate of convenience and necessity', CP&L would be required to provide the project with power. Without it, CP&L could not be forced to provide a contract (Winbourne 1936).

In the months that followed the issue became even more heated. In October 1936 Morris Cooke wrote to North Carolina governor Ehringhaus, arguing that after a loan of $310,000 had been approved by REA, CP&L had built 170 miles of lines over the course of a few weeks. Cooke further states that these lines had customer densities far lower than those CP&L would normally serve. What especially drew his ire, however, was the fact that the NCREA knew this was happening but did nothing to stop it. In Cooke's estimation, this amounted to the private utilities 'skimming the cream', that is, taking the best customers in an area with a scattering of short distribution lines, a tactic that leaves the majority of customers unserved (Cooke 1936b). Among rural electrification advocates, this practice became known as prime territory 'sniping', and was often accompanied by the construction of 'spite lines' – distribution lines built by private companies alongside already existing REA lines.

Negotiations in Johnston County continued. At times, CP&L refused to reply for requests for a power contract because they did not 'recognize' REA, and thus found no need for correspondence. At others, charges were made that CP&L employees working in Johnston County falsely represented themselves as the REA in order to sign up customers. Construction by both companies continued, but with the Utilities Commission on their side, in October 1936 CP&L obtained a court order forcing the cooperative to stop construction. Several days later, the REA obtained an injunction on CP&L to stop work ("Timeline of Events" 1937). With the case stuck in court, United States Senator Josiah Bailey of North Carolina got involved.

Bailey, described as "very conscious of his own importance" and someone who "struts even when he sits down" (Badger 1981: 76), was a conservative

Southern Democrat that fiercely opposed government intervention in the economy. Bailey's position was not unusual for Southern Democratic Congressmen, whose support was courted by FDR in order to push through New Deal reforms. In part because of the need to placate these conservative Democrats, New Deal programs generally tended to favor the wealthy. Historian Pete Daniel has gone so far as to argue that "New Deal programs could be seen as a mammoth attempt to prop up the toppling system of capitalism" (1996: 116), a view echoed by Huber (2013). Conservative Southern Democrats like Bailey were able to benefit from their association with popular New Deal programs without ever actually supporting them. After Bailey's reelection to the United States Senate in 1936, he ardently came out against any expansion of the New Deal and opposed any federal intervention in state affairs (Badger 1981). The Johnston County issue provided him with an opportunity to do so.

Early in 1937, an exchange of letters between Bailey and NCREA chairman Bagley made clear their thoughts on how rural electrification should proceed in North Carolina, as well as their mutual contempt for Cooke. Writing on January 23rd, Bailey informed Bagley "I am looking forward to the opportunity to deal properly with Morris Cooke. I saw him the other night, and if I had come face to face with him, I would have let him know just what I thought" (Bailey 1937a). Several days later, Bagley replied, detailing his frustrations with Cooke's plan of action. Bagley wanted to let power companies and municipalities pursue electrification, noting that:

> If we can prevent an open break with Mr. Cooke and a lot of undesirable publicity and chance for criticism by the newspapers, the power companies and municipalities will complete the program of rural electrification in North Carolina on the present basis. This will

> mean that the job will be done even more thoroughly than if Mr. Cooke does it. There is no doubt in my mind that the power companies and the municipalities are trying to make North Carolina a model of what they will do, if they are given the opportunity to do it. (Bagley 1937)

Bagley's optimism about the ability of private utilities to electrify rural areas was in part based on the progress of rural electrification in North Carolina up to that point in early 1937. By the end of June 1936, the federal REA had not constructed a single mile of line in North Carolina. As Table 5.1 shows, that would change over the next twelve months, but by the end of June 1937 the vast majority of rural lines in North Carolina had been constructed by private utility companies – much of which was done based on findings from the 1934 Survey. For the REA, the first part of 1936 was spent attempting to make the shift from a temporary agency set up by executive order to a permanent one in May of 1936. Not long after the REA became a permanent agency, Cooke began seeking a replacement for himself, ultimately settling on John M. Carmody. Carmody had a background in publishing and researching in the steel, coal and garment industries, and was known as a skillful administrator. He was hired by Cooke as deputy administrator by Cooke on August 1, 1936 and took over as head administrator from Cooke in January of 1937 (Brown 1980).

Few people were happier with the news of Cooke's resignation than Josiah Bailey and Dudley Bagley. In a letter to Bagley, Bailey could not hide his pleasure:

> Congratulations to you on the retirement of Morris Cooke, as contemptible a man as ever sat in public office. I hope things will go better for you and us all. He never was interested in getting power to farmers. What he wanted to do was to set up a system of Government ownership (Bailey 1937b).

Table 5.1. Rural electricity distribution lines construction statistics, 1937 and 1944

Utility Type	*Total Miles Built*			*Customers Served*			*Total Cost*		
	1937	**1944**	**% Increase**	**1937**	**1944**	**% Increase**	**1937**	**1944**	**% Increase**
Private Utilities	6,368	15,908	149.8%	36,800	109,183	196.7%	$ 6,567,663	$ 16,498,730	151.2%
Municipalities	566	2,123	275.1%	3,004	13,612	353.1%	$ 458,548	$ 1,883,880	310.8%
REA-funded	1,151	12,269	965.9%	5,375	40,349	650.7%	$ 1,256,824	$ 19,644,274	1463.0%

Source. North Carolina Rural Electrification Authority 1938; North Carolina Rural Electrification Authority 1944

Their happiness must have been short lived, however, as Carmody continued pushing on the Johnston County issue with equal fervor. In March and April of 1937 Carmody sent a number of REA staff to Johnston County to investigate. In a telegram sent April 17, Carmody was notified that 145 miles lines had been built by CP&L and the continued feasibility of the project was questioned (Scott 1937). Carmody continued to push forward on the project, however, writing to the president of Johnston EMC that he continued to support the project, and that abandonment of the project was a violation of an agreement with the government. Carmody described CP&L's actions as "a flagrant attempt to interfere with your plans and destroy your project", but also noted that they threaten "the hopes and chances of other rural communities in your state to participate in the rural electrification program" (Carmody 1937a).

At the same time, CP&L was acting locally to secure the project. CP&L president Louis V. Sutton offered to build what he called "all feasible lines" in Johnston County, and in early May CP&L submitted a proposal to the coop directors to take over the project. It quickly became evident that the directors were split – several wanted to give the project to CP&L, while the others were holding out for REA. CP&L was also rumored to be operating in the back channels. In Johnston County, reports circulated that the president of a local bank that would take CP&L customer deposits was influencing the project in CP&L's favor. The bank president was also the chair of the Johnston County commissioners, which was in charge of appointing and funding county extension agents. The county agent in Johnston County had been instrumental in setting up the REA project. Knowing this, the bank

president was reportedly using his influence on the county agent in an attempt to broker a compromise that would favor CP&L (Bacon 1937).

All the while a separate battle was occurring in the courtroom. In July 1937 the North Carolina Supreme Court made a ruling in favor of cooperatives ("North Carolina Supreme Court Rules in Favor of Power Coop" 1937), but at the same time, CP&L was threatening the coop with mountains of litigation. With some coop directors reluctant to go to court, in a split vote the directors offered to compromise with CP&L on terms that favored the power company. In the proposed agreement, after line construction was complete the Johnston County EMC would cease to exist (Johnston County EMC 1937). The federal REA snapped into action in opposition to this deal. Carmody aggressively questioned North Carolina governor Claude Hoey, asking whether cooperatives can exist in North Carolina ("North Carolina Supreme Court Rules in Favor of Power Coop" 1937). A public meeting was organized by the REA on July 28 to hear people in opposition of the compromise, and in early August, Carmody wrote to the Johnston County leaders and stated the he believed the actions of the board were not in keeping with the desires of coop members, and that the REA remained committed to the project (Carmody 1937c). Despite these actions, the REA was not successful in keeping the project. A compromise was brokered, and CP&L took over the territory. In July of 1938, Carmody wrote to the Johnston EMC attorney reporting that the loans had been cancelled (Carmody 1938), and the project file was closed.

The Johnston County controversy resulted in a sharp shift in tactics for the REA. Because of concerns about private utility 'sniping', that is, taking feasible lines

and projects for themselves, the REA stopped announcing projects until delays from the NCREA were complete (Carmody 1939). A decision was also made to allot money to all 'A' rated projects in North Carolina in order to head off private utilities, and special exceptions were made in terms of minimum bills and rates. Progress picked up, and by 1944 the miles of rural lines constructed by REA funded cooperatives began to rival those by private companies (see Table 5.1).

Competing space – time development horizons and the persistence of race

In the heat of the Johnston County controversy, REA administrator Carmody argued that the line extension policy of CP&L was "unsocial and represents a failure to realize that franchises carry with them obligations as well as privileges" (Carmody 1937b). What Carmody is pointing to is the fundamental difference between the spatial and temporal imaginaries of the private companies and the REA. Much local economic strategy is predicated on matching both temporal and spatial developmental horizons (Jessop 1997). CP&L, beholden to shareholders and in 1937 still under the control of EBASCO in New York City, sought to find only that territory that would bring the most immediate returns and profits. This also meant cherry picking particular areas that were densely settled or had high users of electricity. The REA had a much different outlook. Cooke, and later Carmody, was committed to area coverage – serving all consumers in a particular area. This difference in spatial horizon was also matched by much longer time horizons, one not based on short term gains but rather long term loan payback periods. One of the key battles fought in Congress over the Rural Electrification Act of 1936, and later in the 1944 Pace Act, was the length of loan term that REA could offer cooperatives. What was

ultimately determined was a 25-year amortization period, meaning that cooperatives could take the long view on distribution line success, thus allowing less populous areas a longer time period to repay their loans.

Despite the commitment to area coverage, however, REA engineers continued to rate territory based on racialized ideas of value. The Johnston County territory, in the eyes of the REA field engineer, would be successful due to the high proportion of tenants that were of English extraction. In Chapter Four the importance race played in calculating the value of potential territory was clear. But 'accounting' for race was not only done by the state survey however. In 1932 electric utility consulting engineer Charles Waddell was contracted by the North Carolina Utilities Commission to report on the history, organization, and financial condition of CP&L. In addition to reviewing CP&L's complex residential rate structures, Waddell also assessed the value of CP&L territory in 35 North Carolina counties (see Table 5.2). Although the calculation methods Waddell used are not available, his resulting tables include measures of overall population density, but also a column devoted to the African American population. How this plays into the territory valuation is not clear, but clearly Waddell felt that African American populations should be valued differently than whites (Waddell 1932). Both of these cases point to the persistent influence of social and racial formations on valuations of electric utility territory, despite the competing space-time horizons employed by private utilities and the REA. Even as private utilities and REA contested the future conditions of electricity distribution, both visions took white supremacy and racial discrimination as the norm.

Table 5.2 Waddell's Valuation of CP&L Territory by County

County	Area Sq. Mi.	Total Pop	Negro Pop	Pop per Sq Mi	Assessed Value
Buncombe	682	97,937	16,655	143.6	$ 165,983,771
Durham	312	67,196	23,481	215.4	$ 103,449,380
Wake	824	94,757	33,916	115.0	$ 97,227,196
Wayne	571	53,013	23,205	92.8	$ 47,480,213
Johnston	807	57,621	13,129	71.4	$ 42,373,589
Halifax	676	53,246	30,845	78.8	$ 39,085,475
Robeson	990	66,512	22,784	67.2	$ 37,521,260
Nash	586	52,782	23,456	90.1	$ 32,175,380
Richmond	521	34,016	13,283	65.3	$ 30,368,223
Cumberland	670	45,219	17,049	67.5	$ 28,542,988
Henderson	358	23,404	2,192	65.4	$ 27,224,430
Moore	639	28,215	9,795	44.2	$ 27,187,127
Randolph	803	36,259	3,840	45.2	$ 27,038,463
Lenoir	390	35,716	15,438	91.6	$ 26,749,854
Haywood	546	28,273	695	51.8	$ 26,155,320
Harnett	588	37,911	10,389	64.5	$ 24,752,899
Sampson	886	40,082	13,670	45.2	$ 23,056,856
Granville	503	28,723	14,045	57.1	$ 21,524,926
Vance	279	27,294	12,009	97.8	$ 20,730,562
Anson	556	29,349	15,247	52.8	$ 20,708,147
Chatham	696	24,177	8,018	34.7	$ 18,167,046
Montgomery	498	16,218	3,730	32.6	$ 17,527,722
Scotland	349	20,174	10,799	57.8	$ 15,160,122
Lee	261	16,996	5,405	65.1	$ 14,791,106
Franklin	468	29,456	12,941	62.9	$ 14,162,734
Bladen	976	22,389	9,203	22.9	$ 13,440,003
Warren	425	23,364	14,846	55.0	$ 13,386,908
Person	391	22,039	8,584	56.4	$ 12,603,364
Jackson	494	17,519	584	35.5	$ 10,513,031
Madison	436	20,306	449	46.6	$ 10,366,204
Hoke	417	14,244	8,635	34.2	$ 9,477,968
Mitchell	231	13,962	56	60.4	$ 8,829,441
Caswell	402	18,214	8,473	45.3	$ 8,538,268
Yancey	298	14,486	163	48.6	$ 7,783,399
Avery	238	11,803	277	49.6	$ 5,501,240

Source: Adapted from Waddell (1932)

5.2 The Question of Generation

With CP&L engaged in a considerable battle with the REA by 1937, municipalities in the eastern part of North Carolina continued to provide electricity to their citizens. Many towns had recently constructed new generating plants, and as in the 1920s, the towns were eager to find new sources of revenue to bolster their coffers. This was increasingly the case during the Depression years of the 1930s as municipal revenues began to sag. In 1935 the start of the REA as a formal rural electrification program appeared as a way to take advantage of what seemed to be additional revenue opportunities. Because the REA was primarily interested in building distribution lines and not generating capacity, the municipal systems were viewed as a promising source of electricity to power the lines. Without a source of electricity, rural electrification would have been impossible. But which utilities would provide the electricity remained an open, and hotly contested, question.

The utility consensus (Hirsh 1999) was largely predicated on the question of electricity generation. In Hirsh's view, private utilities enjoyed a harmonious period after 1940 and leading up to the 1970s as a result of a tacit 'agreement' – in exchange for non-competitive service territories, electric utilities would widely distribute electricity at a reasonable price. But as the section on Johnston County shows, bringing new territory under the control of one utility required substantial effort. With North Carolina urbanizing and adding manufacturing throughout the 20th century, the battle for new territory continued well into the 1960s. But in order to expand electricity distribution, the availability of affordable and reliable electricity to power those lines was essential.

This section examines several incidents related to electricity generation. Each shows the way in which actual, or even threatened, electricity generation by the federal government, EMCs, or municipalities impacted the hegemonic position of private utilities within the so-called utility consensus. By the end of the 1960s, and after considerable fighting between public (municipalities and rural electric cooperatives) and private power, private utilities still dominated power production. Nationally, in 1965 private utilities produced 76.7% of electricity, with federal dam projects such as those in the Tennessee Valley and Pacific Northwest producing 13.8%. Municipal and cooperative systems produced only 4.7% and 4.8%, respectively. In North Carolina, only the municipal systems Rocky Mount, Tarboro, and Kinston were still producing electricity in 1965. But even these towns were purchasing far more power from private utilities at wholesale than they were actually producing (Federal Power Commission 1967).

Despite these statistics, public utilities did experience success in obtaining lower wholesale rates, and were also more organized and steadfast in their opposition to private companies. As will be shown in the conclusion to this dissertation, the organizational frameworks established during this period played a significant role in the events of the 1970s and 1980s that led to the high electricity prices in eastern North Carolina towns today.

Municipalities and the EMC

When the REA was made a permanent federal agency in 1936, nearly all of the electricity consumed in the North Carolina was produced by private utilities, like CP&L, or municipal systems, like the town of Tarboro. Several municipalities saw

New Deal programs like the Public Works Administration or Civil Works Administration as an opportunity to obtain federal funds to expand their municipal plants and distribution systems. The City of High Point, North Carolina, for example, fought for several years to build a hydroelectric plant just outside their city limits. Duke Power, which served the territory around High Point, mobilized enormous resources to fight the project, going so far as to request beneficiaries of their charitable foundation to lobby the state and federal government not to approve the project (Badger 1981)[44].

Just months after the REA was established, the Town of Wilson moved to obtain a federal loan in August of 1935. Almost immediately, legal questions emerged as to whether municipalities could borrow money to serve areas outside of their town boundaries, the same quandary that plagued Frank Wooten in Chapter Two. The NCREA and REA were at odds over the issue, with the state organization viewing it as legal, while the federal group believed the opposite (Healy 1936; Horne 1936a). Ultimately, the REA opinion was what mattered, and their preference was to loan money to EMCs that would purchase electricity at wholesale from the towns.

In the early period of confusion with the REA, however, a loan was granted to the City of Wilson. After several years it became clear that continued loans to Wilson were untenable, and the REA discontinued funding the project. The Town of Tarboro pursued REA funds in a different way. As described in Chapter Four, J.C. Martin, the superintendent of public works in Tarboro, was active in guiding the rural electrification survey in Edgecombe County. After a brief period of attempting

[44] Raleigh *News and Observer* editor Jonathan Daniels described Duke's action as 'anti-social philanthropy' (Badger 1981).

to get the loan made to the municipality, Tarboro shifted strategy and worked to set up an EMC to take the loan (Bond 1936). Because Tarboro had their own generation facility, they did not need to interact with CP&L to obtain a wholesale rate. As a result, the project proceeded relatively quickly, and in 1936 Edgecombe-Martin EMC became the first EMC to go into operation in North Carolina.

Edgecombe-Martin EMC grew very rapidly. The hope was to have 100 members by the end of 1937, and in July of 1937 additional money was loaned by the REA to connect an additional 420 customers. However, reports from REA agents felt that the progress could be faster. A report by REA field engineers in November 39, 1938 stated that the large number of tenant houses in the territory would need a lower minimum bill if they were to be expected to join. The current membership fee was $10, deemed far to high for many of the poorest tenants to consider joining. Despite REA guidance, local racial politics continued to influence the spread of lines. One prospective group of farmers wanted to receive power from nearby Virginia Electric Power Company (VEPCO), and "would rather do without service than to tie up with the resettlement project in Halifax County but would as a last resort join with the Edgecombe group". The resettlement project in question, Tillery, included both black and white residents (Karns 1938).

Despite its growth, REA administrators were not satisfied with some aspects of the EMC operations. Likely because of the large role the Town of Tarboro played in the cooperative's formation and early operations, a degree of apathy was evident in the membership. An REA field report claimed the Edgecombe-Martin EMC annual meeting was well attended, but that most were there for the large quantity of

barbeque served. They were also concerned about the haphazard way in which the election of board members was carried out. Lyn Bond, the project's attorney, claimed the election procedures did not make a difference, as "the members have no interest in the project and do not care who is elected to the Board of Directors". Of those who were elected, the REA field representative did not feel they were very capable, and sternly warned them of apathy, urging them to either give more time to the project or consider retiring (Pyles 1939).

Despite the important role Tarboro's electricity generation capacity played in the EMC's fast start, by 1941 concerns about the adequacy of the supply began to appear. Tarboro made a connection to nearby VEPCO in order to obtain emergency power, but by 1945 the Tarboro plant was frequently overloaded, causing outages on the EMC system. While the cooperative preferred keep Tarboro as the power supply after receiving assurances of increased capacity, by late 1947 it was determined that the ultimate demand for power by the coop would grow larger than the demand of the entire Town of Tarboro (Colburn 1947). Similar situations were occurring between numerous EMC's that were dependent upon municipal plants for their electricity. As a result, other electricity supply options were beginning to be explored.

The threat of generation

By the early 1940s the relationship between the NCREA and the REA had largely improved. Key to this was the resignation in October of 1940 of Dudley Bagley, who was replaced by Gwyn Price. Price took over as chairman in 1941 and would serve until 1972. During his tenure, relations between the NCREA and REA

were much smoother than the tumultuous first five years. Much of this is due to Price's background – he was a dairy farmer from the North Carolina mountains, and for years before his appointment was involved in various agricultural cooperatives. But while the relationship between the NCREA and REA had improved, the REA in Washington was facing significant internal strife. In 1939 the REA, which had been operating as an independent operation, was placed under the direction of the Department of Agriculture. Carmody resigned in protest, and Harry Slattery was named his replacement. The relationship between the REA and Department of Agriculture was not a good one; numerous scandals and considerable infighting stained REA's reputation. Slattery was believed to be an incompetent administrator, had numerous chronic health problems, and rumors emerged that he was becoming senile (Brown 1980). Further, wartime shortages and quotas restricted the amount of construction that EMCs could undertake. However, it was commonly believed that the War Production Board was stocked with private utility insiders, and while REA construction had stopped, many private utilities were building plants and distribution lines to help the war effort (Brown 1980).

During this same period of REA strife, the National Rural Electric Cooperative Association (NRECA) was formed. NRECA was essentially a lobbying organization that represented the interests of EMCs to the United States Congress. One of the primary initiatives of NRECA, and one not necessarily supported by the REA, was to attempt to take control over their electricity supply. In general, NRECA approached this problem in two ways. The first was to get preferential access to the electricity produced by federal dam projects that were being constructed across the country.

Second, and related to this, was for EMCs to independently, or, as was more often the case, jointly build steam generation facilities. Steam generation plants[45] were needed to 'firm' the power that would come from hydroelectric operations. Because electricity generated by hydropower typically varied seasonally depending on water levels, 'firming' refers to the need to provide a supplementary power source supply so that a constant supply of electricity was available.

From the start of the REA, private utilities mobilized enormous resources to fight both federal and EMC generation efforts. But for many EMCs and for the REA itself, actually building generation facilities was often unnecessary, as merely the threat of their construction could force private companies into offering concessions on wholesale electricity pricing. For example, in February of 1939, Harper Craddock of the Wholesale Rate Section of the REA wrote to Harry Slattery, the new head administrator, noting that he was having considerable difficulty getting wholesale rates and contracts from CP&L. "As you know," he wrote, "most of the power companies in North Carolina have been unusually antagonistic towards our program." This was causing so much difficulty that he advised the REA to fund a generating plant in the eastern part of the state (Craddock 1939). Several months later, a phone call between Craddock and a field agent revealed how much this threat could affect CP&L. In a meeting between the field agent and CP&L officials to discuss wholesale rate setting, the tone of the meeting changed once the generating facility was brought up, and CP&L immediately offered a better rate (Roewe 1939). This tactic did not always work so well, however. As briefly mentioned in Chapter

[45] The steam for these plants was most often produced by the burning of coal, but fuel oil was also used extensively during this period.

Two, during the mid and late 1930s CP&L was in a fairly precarious financial position. Duke Power, which served the more prosperous towns in the Piedmont of North Carolina, was on much more firm financial footing. In a May 1939 memo to Craddock, an REA field agent noted that they would need greater pressure than the threat of a generating plant to get more cooperation on rates from Duke Power (Saponare 1939).

By the early 1940s EMCs began to realize that their collective action could bring better results than negotiating independently with private power companies. In February of 1941, L.E. Wooten, an engineer from Edgecombe County that had worked on a number of rural electric projects, wrote to the REA suggesting that five EMC systems would benefit from a jointly built power plant[46]. While the REA was ultimately not interested, they did feel that the plan would assist them in obtaining better rates from CP&L (Wooten 1941). The lack of interest from the REA did not deter more efforts from non-profit eastern North Carolina electric utilities to interconnect. The Eastern North Carolina Power Conference, an organization comprised of municipal electric systems, met in January of 1942 with representatives of the REA, NCREA, and several rural cooperatives to discuss interconnecting with each other. The group also sought to form a united buying group to link up to CP&L at a single point to increase their bargaining power for wholesale rates (Eastern North Carolina Power Conference 1942).

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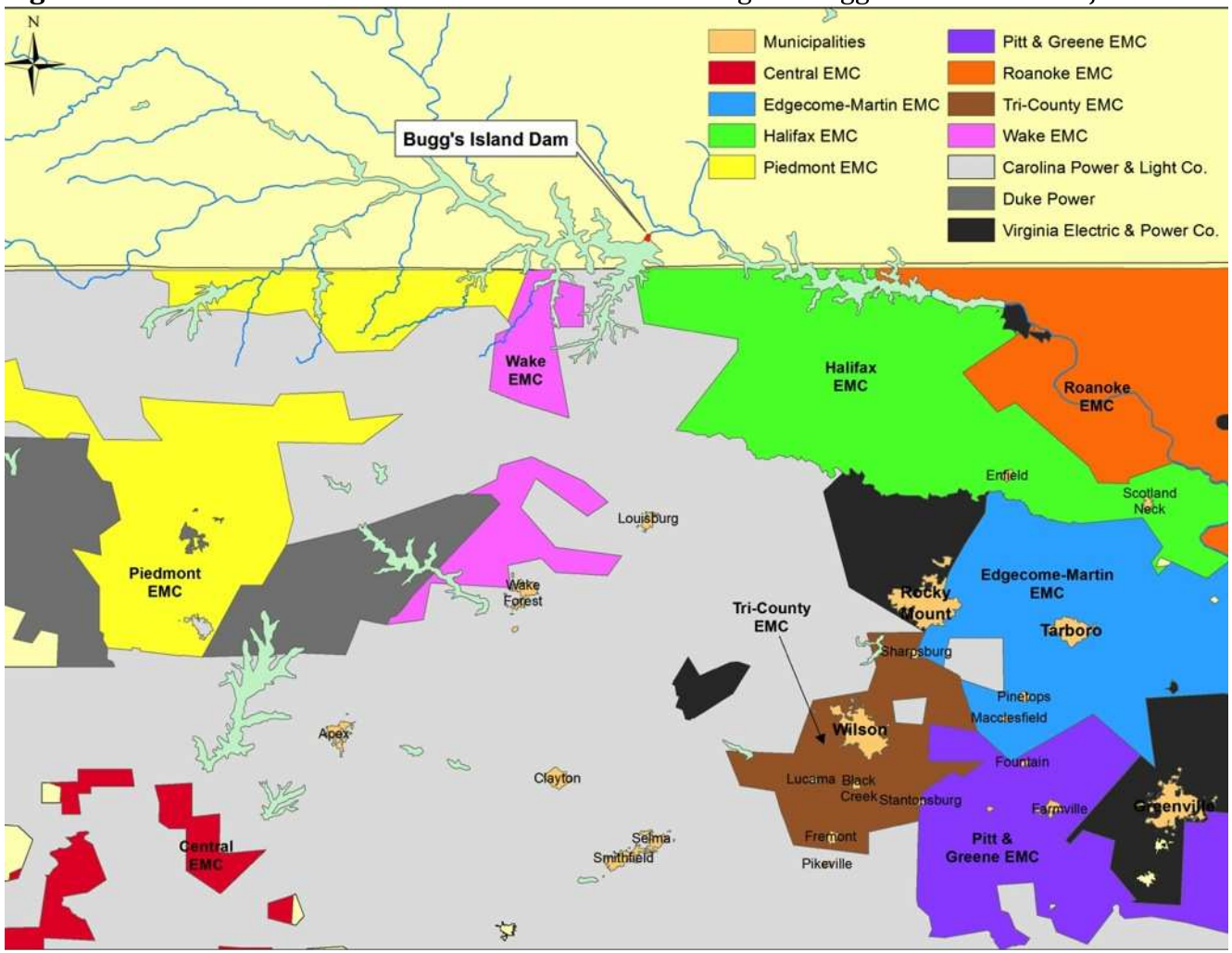
[46] I have not been able to determine if L.E. Wooten the engineer is related to Frank M. Wooten, Sr., the attorney from Pitt County interested in developing an interconnected system of municipal utilities in Chapter Two. Given that Pitt County and Edgecombe County are adjacent, it is possible that there is some relation.

Over the course of the next ten years, the cooperatives continued to explore opportunities for interconnection. By the late 1940s their efforts ramped up as the municipalities and cooperatives began to attempt to tap into the planned dam project along the Roanoke River. One part of the project, Bugg's Island (located along the North Carolina – Virginia border, see Figure 5.2), became particularly controversial. First announced as a federal flood control and power-generating project in 1944, the project was opposed from the start by CP&L as well as VEPCO. In 1948, VEPCO filed an application with the Federal Power Commission to construct and operate the dam. However, considerable controversy ensued over the nature of the project: how many dams were to be constructed along the river, where they would be built, and how much electricity would be produced. Ultimately, after five years of legal wrangling between the Department of the Interior and VEPCO, the United States Supreme Court settled in favor of VEPCO, who proceeded to build the dam (de Luna 1997).

While the Bugg's Island controversy was being played out in federal courts, municipalities and EMCs were angling to get access to the power that would be produced. The policy for federal dam projects dictated that first preference for the low cost electricity would go to non-profit systems – municipalities and EMCs. If there were no non-profit takers, or if there was surplus power, the power would be sold to private companies. The previously mentioned L.E. Wooten was again coordinating efforts for the EMCs, and numerous municipal systems were working to interconnect their systems so that they could share in the Bugg's Island electricity. Legal obstacles to the plans of EMCs and municipalities almost

Figure 5.2. The Numerous Service Territories Surrounding the Bugg's Island Dam Project



immediately presented themselves, and CP&L president Louis V. Sutton claimed that the EMCs were blocking action at the taxpayer expense (Tarheel Electric Membership Association 1955). At issue was that EMCs and municipal systems would need to build a transmission line from the Bugg's Island dam to their respective systems. Would this count as a duplication of services if private power lines were already running in the vicinity? Further, if the transmission facility was built with REA money, could the municipalities legally buy wholesale electricity from a cooperative? And finally, who would provide the power needed to 'firm' the Bugg's Island supply? There was some discussion of an REA financed steam plant near Kinston, but these plans never got off the ground (Whitaker 1949).

Once VEPCO gained control of the plant, a plan for dividing the power was determined. Of the 90,000 kW capacity at the dam, 60,000 kW would be sold to preference agencies (EMCs and municipalities) that were within CP&L's territory. The federal government would pay CP&L to transmit that power to the other agencies, and the electricity would be sold by CP&L to the EMCS and municipalities at the same cost as they purchased it from the federal government. The remaining 30,000 kW would be sold directly to 15 EMCs and four municipal systems. The four municipalities directly receiving electricity from the project each had their own generation capacity. But because they were receiving less power, they were unhappy with the power contract. Further, because CP&L had control of the vast majority of the electricity, in dry years they would schedule how the power would be used. Without a major source of firming power beyond the relatively small capacity generators in the towns, and despite intense lobbying efforts on their

behalf, the Bugg's Island project largely left municipalities and EMCs with a continued dependence on CP&L for their power (Eastern North Carolina EMC 1955; MacIntyre 1956; Aandahl 1956).

By the mid 1960s, control over electricity generation in eastern North Carolina was firmly in the hands of CP&L. But this control came at a cost, as CP&L was forced to offer attractive wholesale rates to non-profit utilities due to their organized and fervent resistance to private utility domination. This intra-utility organization and cooperation among EMCs and municipalities would continue to play an important role going forward. For CP&L, control over generation meant that they could expand freely and actively pursue new customers on the fringes of their territory. Often, this brought CP&L into conflict with municipalities and EMCs, and soon the issue of 'territorial integrity' came to the forefront.

5.3 The Question of Territorial Integrity

By the late 1950s, EMC concern for control over power supply was matched by concern for their territorial growth. In February of 1958, the president of Eastern North Carolina Electric Membership Cooperative, a group formed by EMCs to pursue mutual electricity generation projects, addressed the annual meeting of the cooperatives. He noted that while jointly negotiating with the private companies had brought down the cost of wholesale electricity, it was also making them more dependent on fewer suppliers. Because of this, he felt it was imperative that the cooperatives continue to try to take control over their power supply (Wall 1958). But while Wall felt that interconnection was making them more dependent on a single power supplier, he also felt that interdependence was essential if they were to

maintain what he termed 'territorial integrity' against attacks from private utility companies. While a term most often used in the realm of geopolitics, Elden (2005) considers territorial integrity to mean that within its own borders, a state is sovereign. As this section shows, EMCs used the term territorial integrity in much the same way – they sought to avoid interference in their affairs and operations by private utilities.

In the rest of 1958 and into 1959, reports were coming in from EMCs that numerous lawsuits over territorial matters were pending. Throughout the post World War II period, most North Carolina and Southern politicians and businessmen advocated for increased economic development of the region. Industrialization became a regional obsession that hinged on attracting manufacturing to the state with low taxes, few social welfare demands, and a non-unionized workforce (Cobb 1988). Throughout the 1950s and 1960s North Carolina was among the leading Southern states in growing industrial employment. The overall population increased in step, growing 12% between 1950 and 1960. A bulk of this population growth came in the Piedmont and Coastal Plain regions, where between 1954 and 1961 89.5% of new manufacturing facilities chose to locate. With industrial growth came increasing urbanization. By 1960, 40% of the state's population was urban, and the most rapid urbanization was occurring in the Coastal Plain (Blaine and Gentry 1964).

While many contemporary observers felt that industrialization would prompt changes in Southern social, political, and racial relations, any changes that did occur were hard fought and slow to come. In large part, this is due to the easy

adaptability of the Southern political and social systems to capitalist exploitation. A long history of tight control of labor (through violence if necessary), low wages, low taxes, and minimal government interference mixed easily with the low skill and labor intensive industry that tended to relocate to Southern states (Cobb 1988). In fact, Southern politicians found that the long underdevelopment of their states suddenly became an asset when trying woo industry. But while progressive social changes from industrialization were hard to pinpoint, economic shifts had radical effects on many workers. Among the largest changes were those experienced by African American farmers. Between 1950 and 1975, farm mechanization and institutional racism embedded in federal farm programs resulted in 500,000 African American farms failing. Overall, between 1940 and 1974, the number of African American farms fell by 93%. While the number of white farms also declined, the drop was nowhere near as steep (Daniels 2013). The movement of African Americans off of farms and into growing cities resulted a growing surplus labor force, which served to keep wages low. As the African American populations of small North Carolina towns grew, white flight saw many working and middle class white families flee to the growing suburbs. Relocating industry tended to set down in these areas as well.

Private electric utilities, still searching for high consumers of electricity to smooth their demand curves (see Chapter Two), were active in recruiting relocating industry. They were also competing for the new industrial, institutional and commercial customers moving into suburban and rural areas. But with cities growing in areal size, service territories that were formerly those of municipalities

or private companies were now butting up against those of EMCs. When new customers located in those border areas, conflict occurred. Now essentially united in their battle against private utilities, municipalities and EMCs signed an agreement detailing how territorial conflicts outside of city limits would be settled between the two (North Carolina EMC 1958; North Carolina EMC 1959). No such agreement existed between the public and private companies.

By late 1959, the president of the North Carolina EMC reported that he was convinced that the actions of the private utilities were no longer accidental, but rather:

> [T]he increasing incidence and similarity of these controversies result from a definite, concerted policy of the power companies: Apparently, they have made up their minds not only to take our territory whenever a promise of profit therefrom exists, but to provoke us - if we can be provoked - into becoming the plaintiffs in actions to stop them. This would indicate that they wish to test the territorial clauses in the contracts; that they hope they are virtually meaningless and cannot be enforced except in the most obvious violations thereof; and that if this theory is sustained by the courts, the door will be thus opened for wholesale construction almost anywhere and in almost any way they find desirable (Crisp 1959).

These statements were made in the face of an intense lobbying, legislative, and public relations campaign by the private utilities to undermine the REA program. The argument of the private companies revolved around three interrelated issues: first, that the REA does not pay taxes and is thus a government subsidy; second, that rural electrification is complete, so the job of REA is complete; and, third, as argued both directly and indirectly through a number of intermediaries, the REA is socialist program and part of a plan to create a nationalized, government controlled power

system. The details of each of these claims, and the REA rebuttals to each, are examined in the follow sections.

REA is an unnecessary federal subsidy

One of the key arguments private utilities made against EMCs was that they received an unfair federal subsidy. Much of this is related to the low 2% interest rate EMCs paid on loans from the REA. These 2% loans were enshrined in the 1944 Pace Act, which recognized the need for low interest rates in order to assure areas coverage, that is, so that EMCs could serve all customers in a territory. By the 1950s, private utility supporters in Congress were introducing legislation that would increase the interest rates, or fix to them to the same market rates that private utilities paid. (Shearon 1957). A further argument was presented over taxes. Private utilities felt that by allowing areas to be served by EMCs, the federal, state, and local governments were missing out on valuable tax revenue that a for profit utility would provide. This argument was put forward by the Hoover Commission, a committee organized to recommend changes to the organization of the federal government in 1947. Headed by former president (and private power advocate) Herbert Hoover, the Commission issued a controversial statement noting the issue of EMCs and taxes, a statement that was criticized for taking an overtly political stance (Childs 1952).

The REA refuted the tax claim by noting that they did in fact pay local and state taxes where they were applicable, but also that private utilities receive a subsidy by being able to write off the interest on borrowed money, something that was not possible for the EMCs. By writing off this interest, the REA claimed the

private utilities were able to accelerate the amortization of their capital investments, which provided them with a great financial benefit (James 1957).

Despite repeated efforts, private utilities were unsuccessful in getting these measures passed during the 1950s. They persisted into the next decade, however, and in 1963 more federal legislation was pending that would increase interest rates for REA borrowers. EMCs appealed to United States Senators, claiming that they are "suffering severely from power company attacks" (Rucker 1963). A similar sentiment was expressed by J.C. Brown of Tarheel Electric Membership Association, the EMC trade organization in North Carolina, who argued that rate increases would cause "economic damage … to our system which are already suffering from power company piracy of our best areas and low customer density" (Brown 1963). To aid in their attacks, private power companies published a booklet called "The story behind the Electric Power Issue", which argued that federal production of power is costing states significant taxpayer money. In North Carolina, this was estimated to have cost $82,900,000 in lost tax revenues (America's Investor Owned Electric Light and Power Companies 1964). REA advocates mobilized in opposition to these laws, and again were able to defeat them.

Aside from lobbying to end perceived EMC tax and interest benefits, many private utilities sought legislation that would place EMCs under state utility commission regulation. Private utilities were especially eager to get the regulation of the sale of electricity at wholesale under state control (it was currently regulated by the Federal Power Commission). These arguments over the scale of regulation were taking place in the backdrop of a significant resurgence in claims of 'state's

rights' related to the pending Civil Rights Act. States across the United States were attempting to claim state's rights to avoid the integration of schools, unions, and workplaces. As such, the regulation of wholesale electricity sales was occasionally wrapped up in the overall narrative of federal interference with local affairs. Both EMCs and municipalities were concerned over any legislation that would shift the regulatory scale, as most felt they were already overpaying for electricity. Even worse, they argued that state regulation was inadequate and beholden to the private utilities (Baker 1965; Meunch 1965)[47].

The fight between REA and the private utilities spread to the issue of nuclear energy. At issue was how nuclear energy developments, largely developed, researched, and tested with federal money, would be developed for commercial use by electric utilities. In 1954 the NRECA stridently argued that nuclear power should be part of the public domain, much like public lands and navigable rivers. As such, if these projects were developed under federal control, EMCs and municipalities would get first preference on what most thought would be electricity 'too cheap to meter' (Smith 1954). Ultimately, the federal government would take a relatively minor role in actually producing electricity via nuclear power. Most of the nuclear electricity would be produced by private utilities, and as the conclusion to this dissertation will show, the electricity produced was far from 'too cheap to meter'.

REA job is complete

[47] It is worth noting that numerous letters to United States Senator Sam Ervin of North Carolina, from both supporters of private and public utilities, thanked Ervin for his work opposing school integration and his signing of the 'Southern Manifesto', a pro-segregation statement supported by most Southern Congressmen.

By the mid 1950s the private utilities began to claim that the United States was essentially electrified, and that the job of the REA was therefore complete. In many ways, they were correct. As of 1955, over 93% of farms in the United States had electricity (Rural Electrification Administration 1982), a dramatic improvement from 1930 when roughly 10% of farms were electrified[48]. In a 1955 reply to claims that the job was done, William T. Crisp of the Tarheel Electric Membership Association argued that a change of strategy for the REA needed to be taken into consideration. The change, he argued, is that "the horizontal growth of rural electrification is virtually completed and that the primary considerations governing future rural electrification loans will be with respect to (1) vertical, that is, load building and system improvement, expansion, and (2) the financing of generation and transmission facilities" (Crisp 1955, emphasis in original). In so doing, Crisp was eager to continue to boost the electricity consumption on farms, thus keeping up with national trends during the 1950s that showed consistently increasing electricity use.

Despite a strategic shift to promoting 'vertical' growth, by the mid 1960s, with virtually no open territory left in which to expand, EMCs and private companies entered into open competition for new customers along their territorial fringes. The private utilities kept up claims that because the EMCs do not pay taxes, new business acquired by EMCs actually hurts taxpayers. In response, the REA proposed creating a bank that would allow EMCs to borrow from non-federal

[48] Where the remaining 7% of unelectrified farms in the United States were located is not known. Given the formulas for determining where electricity distribution lines should be extended, it is possible that those farms were in the poorest and potentially blackest areas.

sources in order to continue their expansion. But as one EMC manager presciently pointed out, "the cities and towns the power companies are serving have been from its beginning 100% electrified, but they are still having to invest capital and new equipment to care for the increase in demand for electric service. So it is with the electric cooperatives" (Taylor 1966). As suburban growth expanded adjacent to areas already served by EMCs, the fight for these new developments would continue full bore throughout the first half of the 1960s.

Aside from increasing vertical growth, Crisp of the Tarheel Electric Membership Association was angling to take control over electricity generation for EMCs. This is evidenced by the emergence of new plans by municipalities and EMCs to jointly pursue new generation. The most ambitious plan was undoubtedly the Yankee Dixie Power Association. Announced in 1965, this plan would harken back to the Giant Power plans of Morris Cooke and Gifford Pinchot in Pennsylvania, but on a much grander scale. The Yankee Dixie plan called for three giant coalmine-mouth electricity generating plants in Pennsylvania, Kentucky, and Alabama capable of generating 6 million kilowatts. 670 miles of extra-high voltage transmission lines would interlink these plants. From these lines would fan out another 2,425 miles of transmission lines to connect over 400 municipalities and 200 EMCs spread out over 18 states in the eastern United States (Spurlock 1965).

Besides providing power, the Yankee Dixie plan was viewed as an economic development engine for much of Appalachia and the eastern United States. The designers envisioned a quasi-TVA project that would generate 5,000 new jobs to mine 15 million tons of coal to fuel the plants. Because the plants were located at the

mouths of coalmines, transport costs would be low and the electricity would be produced cheaply. Plan boosters argued that such an arrangement would provide a great benefit for the industrial development in the territories of the participating cooperatives and municipalities. The total estimated cost was massive – over $1 billion dollars in total – and the plan flamed out as quickly as it came to prominence (Spurlock 1965).

In spite of the failure of these 'public' generation plans, industrial growth in North Carolina continued unabated. Ample and affordable electricity was always there to fuel industrial expansion. As Henri Lefebvre has argued, state institutions are essential to the continued reproduction of capitalism and capitalist spaces through their ability to mobilize large-scale and long-term investment in the built environment. By the 1960s, electricity had become essential to continued industrial growth. The battles between public and private utilities, then, should be seen as competing "state strategies to shape, reproduce, and control patterns of industrial development, land use, [and] energy production … within … their territories" (Brenner and Elden 2009: 21), and not as a capitalist or non-capitalist form of electricity production. Broadly speaking, EMCs, municipalities and private utilities were all supported by the state. But private companies rarely acknowledged this fact, instead aligning EMCs with broader federal power initiatives like the TVA. In their minds, this federal involvement in the power industry was part of a growing socialist conspiracy.

REA is part of a socialist conspiracy

Attempts to associate the REA with socialism began before the program was even officially established. During Congressional discussions on appropriations for the program in 1935, Utah Senator William King took to the floor to denounce the program as an attempt to socialize the electricity industry (Ellis 1966). These suspicions only grew when John Carmody took over as head administrator in 1937. Carmody had made several research visits to the Soviet Union in the early 1930s, and was subsequently thought to have Soviet sympathies. Further, several REA officials were questioned for their alleged involvement with an American group aligned with the Communist Party (Brown 1980).

The private utilities were eager to promote the idea of the REA as an encroachment of the government on private enterprise and an attempt to socialize and/or nationalize the power system. Few private power executives were as outspoken on this issue as longtime CP&L president Louis V. Sutton. In the words of CP&L public relations manager Jack Riley, "Even in the late 20's … Sutton was watching his flanks. The advance outposts of his personal instincts forewarned him of the impending government infiltration into the private power business"(Riley 1958: 220). Sutton's viewed himself as in opposition to the "political power apostles", and his role as an engineer one of "safeguarding the American heritage" (Riley 1958: 225-226). While serving a variety of positions with the Edison Electric Institute and other national private utility associations, Sutton took many opportunities to speak out against government intervention in the electric utility industry.

In 1952, speaking on the Bugg's Island controversy to a Senate appropriations committee, Sutton stated that CP&L would transmit electricity from the project to municipalities for free, but not the EMCs. The reason, he argued, is that "we feel the rural cooperative is like part of the government. Therefore, if the Government wants to take them over … that is all right" (quoted in Tarheel Electric Membership Association 1955). Several years later, Sutton was interviewed on the *Longines Chronoscope*, a weekly television program aired on CBS that examined major issues in the news. Representing the private utility viewpoint, Sutton directly stated that "we are opposed to further encroachment" by the federal government in power production, and further argued that most federal spending on dam projects had been wasteful. When asked to speculate on the future of the battle between public and private power, Sutton, with a hint of paranoia, claimed that public interests "are going to endeavor to use power as a subterfuge to extend and socialize the business … every move is a well thought out plan to nationalize or socialize the power industry, and when they take over the power industry they will have a powerful weapon to control the public" ("*Longines Chronoscope* with Louis V. Sutton" 1952).

When asked about the amounts of money being spent on propaganda by the private utilities, Sutton, citing an article in *Reader's Digest*, replied that it was dwarfed by that spent by the federal government. In fact, Sutton regarded private utilities as "pitifully poor advertisers", and urged that they improve in "telling their story" ("*Longines Chronoscope* with Louis V. Sutton, 1952). What Sutton ignores, likely deliberately, is the effective use of private utility proxies and stockholders to

attempt to influence legislation and public opinion. The private utilities in North Carolina partnered with various Chambers of Commerce and groups like the North Carolina LP Gas Association that were concerned about REA competition in appliance market. In one such case, the president of the LP Gas Association wrote to Senator Sam Ervin, "It seems unfair that our Government should permit such as this to continue … by such action we are continuing toward socialism" (Watkins 1958). Public utility stock holders also wrote to Ervin claiming that the REA is "basically a Federal Power Agency using the Public's money to help other Federal Power Agencies bypass Congress in their efforts to build a Nation Wide 'Public Power System'" (Bushong 1963).

Another effective proxy emerged in future United States Senator Jesse Helms, who in the early 1960s was a regular commentator on the local television station WRAL-TV. Helms, who would go on to become symbolic of white conservative Southern interests, suggested in a WRAL-TV "Viewpoint" in 1963 that the three private power companies in North Carolina should buy out the EMCs at 'fair market value'. Doing so, Helms argued, would solve one of main problems facing state and nation: the socialism in electric power generating operations (Helms 1963).

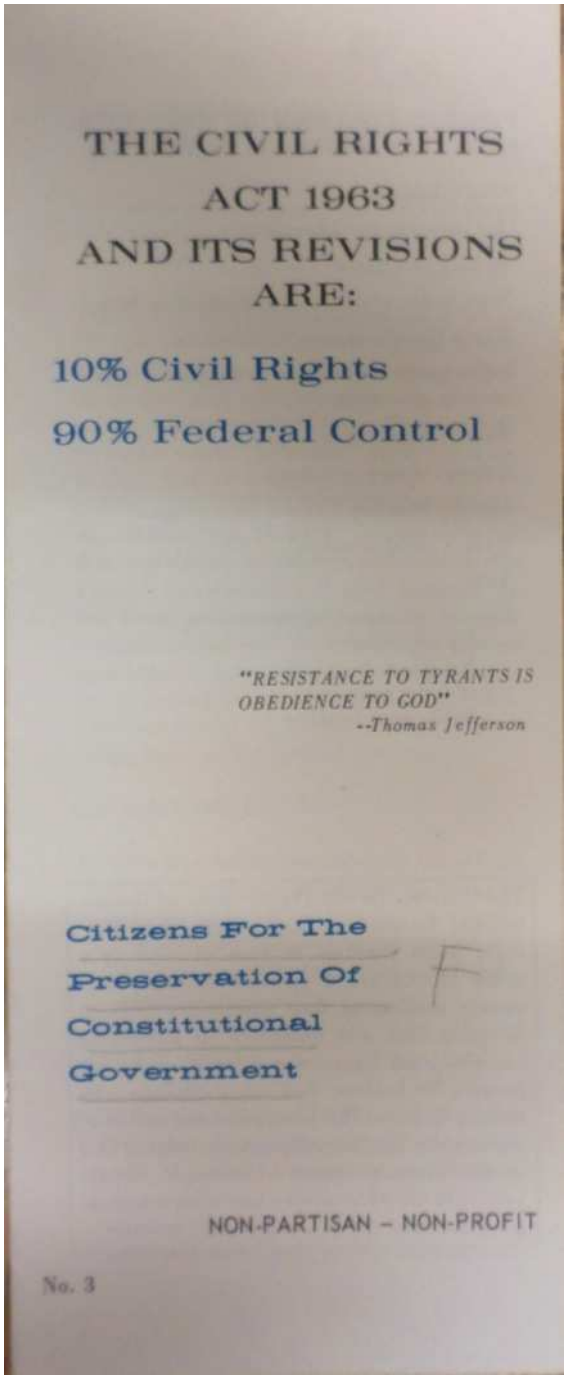
Perhaps the most egregious example of proxies doing CP&L's dirty work was a right wing activist group formed in 1963 called the Citizens for Preservation of Constitutional Government (CPCG). In a brochure (see Figure 5.3) published on July 4, 1963, the group stated that they believed the country was at a turning point when citizens are losing their fundamental freedoms guaranteed "by our Christian concept of government". In a manifesto of sorts, they laid out a series of concerns: balancing

the federal budget; eliminating the national debt; returning public school control to states and localities; and an elimination of all federal subsidies except in the case of national defense. Also on the platform were issues of obvious concern to CP&L and other private utilities: taxing similar enterprises on the same basis; removing the federal government from competition with private enterprise; preserving the right of the individual worker not to belong to a labor union (Citizens for the Preservation of Constitutional Government (hereafter CPCG)1963b). Similar brochures opposed the federal Civil Rights Act, claiming it limited the ability of people to live, act, and work, and was a "presage [of] dictatorial control" that would "destroy the private enterprise system" (CPCG 1963a).

The charter members of the group, printed in a brochure and later in a full page advertisement in the Raleigh News and Observer, contained six CP&L employees (including Sutton), as well as prominent private power supporters like Jesse Helms. CPCG funded a speaker series that brought prominent conservatives to Raleigh such as Clarence Manion of the University of Notre Dame (who would later found the John Birch Society) and Thomas Sensing of the Southern States Industrial Council. Other prominent local business interests were also represented: executives from North Carolina-based Wachovia Bank, local real estate developers, and the children of previously mentioned prominent 1930s politicians JCB Ehringhaus and Josiah Bailey.

While not officially affiliated with the CPCG, a right wing group headed by W.C. Brown of Raleigh put out a series of flyers called "ACTION" that put forward an agenda that was almost identical. The third edition of the flier included a diatribe

Figure 5.3. Brochure of the Citizens for Preservation of Constitutional Government



THE CIVIL RIGHTS
ACT 1963
AND ITS REVISIONS
ARE:

10% Civil Rights

90% Federal Control

"RESISTANCE TO TYRANTS IS OBEDIENCE TO GOD"
--Thomas Jefferson

Citizens For The
Preservation Of
Constitutional
Government

NON-PARTISAN – NON-PROFIT

No. 3

Source. Columbia Rare Book and Manuscript Collection

directed against REA using familiar talking points: it's job was done, it was entering into competition with private enterprise, and that the system did not pay taxes. In closing, "ACTION" stated that it "would like to salute Mr. L.V. Sutton in his quest for better Government practices. We would also like to thank Mr. Jack Riley of CP&L for furnishing us with the above information" (Brown 1963).

The REA, NRECA, and EMCs in North Carolina did not take these claims lightly. J.C. Brown, the longtime editor and publisher of NRECA's membership magazine was in contact with Group Research, Inc about CPCG. Group Research was a Washington, DC based organization that collected materials on right-wing activist organizations between 1962 and the mid 1990s. Group Research published newsletters to keep their subscribers abreast of the latest right-wing activist groups (Group Research Inc. 2014). In one exchange, Brown provided brief but scathing profiles of numerous charter members of CPCG. He noted that A.E. Finley, one of the group's founders and leaders, was the owner of heavy road machinery company. Also a noted philanthropist, Brown sarcastically noted that he "gave University [of North Carolina] a golf course to advance higher education". In addition, he noted that Finley "won't hire females to work on his staff, although this should not be interpreted to imply something is wrong with him sexually". He described the son of JCB Ehringhaus, former North Carolina governor, as an "old plantation type", while members Nan Hutchins and J.W. York were affiliated with Raleigh shopping center Cameron Village, "from which a lot of these people get graft in one form or another". He also speculated that the organization might be a front for raising money for the gubernatorial candidacy of I. Beverly Lake, a Wake Forest law professor, lawyer for

the North Carolina Utility Commission, and in Brown's words, "a nut on the race issue" (Citizens for the Preservation of Constitutional Government, Identification of some of the Charter members (Dope from J.C. Brown) undated).

North Carolina EMCs were also active in notifying their members about CPCG and their actions. *Inside Tarheel*, the regular publication of the Tarheel Electric Membership Association that reported EMC news, stated, "the presence on the Committee of the top brass of Carolina Power and Light Company … is a signal for concern". It speculated that:

> [R]eaction to racial unrest and demonstration is the core of these organizations. The Raleigh racists, however, in exchange for financial support, have merged with the power companies and others who traditionally oppose farm programs, social security, minimum wage, resource development, and rural electrification.

The editor further remarked:

> There are many strange groups and publications (I was sent something called "The Foundation for Economic Education, Inc." in which rural electrification was compared to Castro-Cuba.) and they are appearing more frequently.

While he speculated that the groups may ultimately self-destruct, he cautioned that:

> Recalling the diligence with which CP&L tried in the General Assembly to rob rural people of their right to own and operate their electricity systems, I'm sure you would rather not have Louis Sutton tell you what Freedom means. (Tarheel Electric Membership Association 1963)

The question of private versus public power was similar to battles that had played out across the United States for much of the country's history – what is the proper role of the federal government in the economy? As the Fordist compromise began experiencing fissures in the late 1960s (Aglietta 1979; Harvey 1990), these issues came to the forefront in numerous industries. And as *Inside Tarheel* noted, much of

this argument was framed as a question of freedom – whose version of freedom would you chose? For Clyde Ellis, longtime director of NRECA and an ardent cooperative advocate, EMCs represented the freedom to come together and jointly provide services which otherwise could not have been obtained. And for Ellis, this was not socialism, rather, it was the most effective deterrent against the spread of communism, a way for people to "look after and promote their own cooperative, and contribute to it, and find ingenious ways to cut costs. They will learn to do other things together, including the promotion of entrepreneurial enterprise" (Ellis 1966: 220).

5.4 Closing the Territorial Fight – But the Generation Issue Remains

After years of conflict, the territorial issue between EMCs and private utilities in North Carolina was finally settled in 1965. Incoming North Carolina governor Dan K. Moore, backed by numerous legislators, requested that the REA and private companies come to an agreement that could then be put into legislation. Perhaps tired from the intense battles in the years immediately prior, the interested parties held a series of meetings and finally brokered a deal in January of 1965 that would be drafted into legislation for approval by the 1965 North Carolina General Assembly. The agreement, which became as alternately known as the Electric Act or the Territorial Act, worked as follows.

If the disputed customers are inside of a municipality, and that town is served by a municipality or private company, another supplier can take customers if they are within 300 feet of their current lines. If the area has been annexed by the town, the company that is serving can continue to serve existing customers and new

customers within 300 feet. The agreement also allowed EMCs to acquire a franchise in an incorporating town if the EMC is currently the majority supplier of electricity and serves the majority of meters in that town. If EMCs serve property inside a town, they would also be required to pay all city and county property taxes, as well as all state taxes (other than income tax) on that property.

The Act also clarified territorial claims outside of the town. First, all new customers within 300 feet of existing lines 'belong' to the owner of those lines. If a customer is within 300 of both, the North Carolina Utilities Commission will determine which company should serve the customer based on the public interest. Cooperatives would be banned from offering discriminatory rates (i.e. using lower rates to entice a particular customer), nor would any company construct a generating facility without obtaining a certificate of necessity from the state Commission. Finally, the tax issue was settled, with EMCs agreeing to pay all city and county property taxes, and all state taxes bar income tax after January 1, 1967 (Price 1965).

While the Territorial Act seemingly ended the fight between EMCs and private companies, municipal electric systems were left feeling vulnerable, arguing that they were not included in the negotiations. For the cities, several issues were at hand. First, they argued that the Act made it impossible to purchase distribution lines from EMCs or private companies in areas that were annexed by the cities. This made it impossible for cities to expect that electricity revenues, which were still funding a large portion of their overall municipal budgets (see Chapter Three), would be able to keep up with growth in their corporate limits.

Second was the issue of wholesale rates. Again, the cities felt hard done by the agreement between the private companies and the EMCs, arguing that despite purchasing nearly equivalent amounts of electricity, they were being charged higher wholesale rates than EMCs. Ten cities in eastern North Carolina went so far as to file a lawsuit with the Federal Power Commission against VEPCO over the issue of wholesale rates (US Federal Power Commission 1967). Much of the wholesale rate discrepancy was likely due to the differential ability to use the threat of generation, with the spatially smaller cities having a far weaker position at the negotiating table. In western North Carolina eleven municipal systems were seeking a rate reduction from Duke Power, which Duke refused. The cities then opted to attempt to invest in Duke's planned nuclear plant near Charlotte. Duke refused, citing that the cities were attempting to buy power solely from what would be their most economical plant, while other customers have to also buy from less economic plants. Further, Duke cited legal precedent, recalling that the North Carolina Supreme Court had forbade the town of High Point from constructing and operating a hydroelectric facility outside of its municipal boundaries (McGuire 1967; Hicks 1967).

By the late 1960s, most municipalities that had long generated their own electricity had closed their plants and were buying power at wholesale from the private companies. Even those still generating in 1965 bought far more power at wholesale than they produced. These cities felt particularly vulnerable on the issue of wholesale rates, especially as they expected little support from the State Utilities Commission. Further, the municipalities considered themselves crippled by the Act, feeling it was "impossible for the electric city to grow", and that IOUs and EMCs

could build speculative lines into unsettled suburban areas where they are not yet needed in order to establish "squatter's rights". They termed their position as "isolation behind the Electric Curtain", and sought to amend the Act to give them the right to legally acquire electric distribution systems within their corporate limits (North Carolina Municipally Owned Electric Systems Association 1967; "An analysis of the bill to amend chapter 160 of the general statutes of North Carolina" 1967).

By 1965, the territorial disputes between the EMCs and the private utilities were largely settled. The key issue that remained between the EMCs and private utilities, and one that was especially important to municipalities, was electricity generation, especially as it related to wholesale rates for electricity. Municipal wholesale rates had not decreased, even as retail electricity rates for customers of the private utilities had steadily fallen since 1945. This is evidenced by the numerous plans for generation that emerged, ranging from interconnections of EMCs planned by L.E. Wooten in the 1940s, the struggle over access to power from Bugg's Island in the 1950s, to the ambitious Yankee Dixie Power Plan in the 1960s. In spite of these efforts, by 1965 electricity generation was overwhelmingly in the hands of three private utilities in North Carolina – VEPCO, CP&L, and Duke Power. The municipalities and EMCs both chafed under this control. From their inception in 1935, REA cooperatives sought to control their own generation. For municipalities, once their plants were eventually unable to match electricity prices from the large interconnected systems of Duke and CP&L, they too became dependent on private utilities for power. This dependency sets the stage for the concluding chapter,

during which municipalities and EMCs finally get access to the generation they desired, but at a long-term cost they did not anticipate.

To return to Hirsh's (1999) notion of the utility consensus that opened this chapter, it is difficult to view the years between 1935-65 as a period of harmonious 'consensus'. Battles were hard fought for territory, for the right to generate electricity, and for how public goods – be it river valleys or the knowledge of nuclear energy – would be distributed. The fight was fought between private investor owned utilities, who claimed to be bastions of the free market and private enterprise, and rural electric cooperatives, non-profit, but also privately held, and financed by the federal government. Despite the claims of both types of utilities, working at a variety of scales, and in shifting ways over the time period considered, was the variegated state. But while electric utilities were helping to fuel rapid industrial development and economic change in North Carolina, it is crucial to remember that political and social relations, especially related to race, changed very slowly.

While the relationship between EMCs and the federal government was clear, as Chapter Two has shown investor owned utilities likely would not have existed in their current form without the steadying hand of state regulation that essentially guaranteed their profits. While this was an argument that rarely came to the fore, this fact was not lost on some REA advocates. This viewpoint was made abundantly clear in a remarkable polemic by Wilton Rowe of Snow Hill, North Carolina, sent to United States Senator Sam Ervin. Rowe, who would later become a NCREA board member, argued that:

> These same power companies have knocked and kicked the United States Government for the past 28 years because the Government has loaned money at two percent interest to the rural electric cooperatives in order that rural people could have service at all! Recently, for instance, a vice president of Carolina Power and Light Company was so outspoken against the U.S. Government that I could not refrain from suggesting to him, at a public meeting, that if he doesn't like our Government then maybe he ought to move to Russia. The private monopoly power business is a great paradox, to say the least.

He further urged Ervin that:

> I trust that billions of dollars spent on atomic research will not be given to the electric power lobby, but will be used for the majority's benefit by keeping it in the public domain. I hope that no more government funds will be turned over to the private power companies for building power plants. Let them spend their own money; They seem to have an endless supply of funds for propaganda and destruction of institutions that they don't like. I for one would rather go back to the kerosene lamp than have Louis V. Sutton and his kind run the Government of the United States. Please let them pay for their own power plants. They've been preaching "private enterprise" - let us keep it private with private money - not private-owned and Government built! (Rowe 1963)

The events between 1970 and 2014, which are covered in the conclusion to this dissertation, would result in his worst fears being recognized.

Chapter 6: Conclusion: Shearon Harris and beyond

The year 1965 is viewed as the high point for electric utilities in the United States (Hirsh 1999). Profits were high, and public opinion favored the private utilities. In North Carolina, CP&L had put territorial disputes behind them and could once again focus on the business of selling electricity. Backed by an aggressive program that marketed all-electric houses, by 1958 CP&L's territory had among the highest per capita usage of electricity in the United States (Riley 1958). In 1962, CP&L proudly reported that residential customers in their territory used 31% more electricity than the national average (Carolina Power and Light 1962). Like most utilities, boosting profits by increasing consumption was one wing of CP&L's profitability strategy; the other was decreasing costs through technological advances. CP&L had constructed numerous coal plants across their territory, and aside from a small section served by VEPCO, they had a near monopoly on power production in eastern North Carolina. By 1970, if eastern North Carolinians did not buy electricity directly from CP&L, they bought it indirectly through rural cooperatives or municipal systems, which purchased their power at wholesale from CP&L.

Wholesale revenues from electricity sales to municipal and cooperative systems represented 10.6% of CP&L revenues by 1970, making it an important part of their business (Carolina Power and Light 1970). Overall, consumption of

electricity had increased alongside production, and CP&L remained bullish on growth as it projected sales into the 1970s, forecasting a 10.5% annual demand growth over the coming years (Carolina Power and Light 1965). As a result of these ambitious forecasts, still more generation capacity was required. This meant that the substantial construction program already underway would be increased even more. To finance an additional 700,000 kilowatts of capacity it projected to need by 1973, CP&L estimated in 1966 that it would need to sell an additional 250,000 shares of the company's preferred stock (CP&L Annual Report 1966).

While CP&L spent the mid-1960s predicting almost unrestrained demand growth, EMCs and municipalities remained not entirely pleased with their subservient relationship to CP&L. After the Territorial Act of 1965 settled issues between the private companies and EMCs, municipalities started becoming better organized in their efforts to protect their own territorial integrity. In 1967 the North Carolina Municipally Owned Electric Systems Association changed its name to Electricities of North Carolina, and determined to take a more active role in presenting their issues statewide (Electricities 1968). As noted at the end of Chapter Five, several municipal systems were also suing Duke Power to allow them to buy their way into a planned nuclear facility near Charlotte. Duke fought back, and in Congressional hearings on the matter, Carl Horn Jr. of Duke Power pointed out that each of the towns suing could, in theory, build their own generation facilities. But, he argued, "Self-generation is a <u>technically</u> feasible alternative for all of them. It is not an <u>economically</u> feasible alternative because of Duke's low wholesale and industrial rates" (Horn, Jr. 1968:4). Further, Horn claimed Duke Power had no need for outside

investors, because despite the fact that nuclear power was economically unproven, "Investors in electric utilities have been willing to provide [financial capital] in sufficient quantities" (Horn, Jr. 1968: 12). Despite Horn's claim that outside investors were willing to fund nuclear power in 1968, fortunes would soon change for the private companies.

6.1 The shift to nuclear energy

The late 1960s marked the beginning of a tumultuous period for electric utilities nationwide. The first signs of problems were related to inflationary pressures and federal tax increases. In 1968 CP&L filed a temporary rate increase with the North Carolina Utilities Commission in order to offset a 10% federal surtax. EMCs and municipal systems, fearing this would result in an increase of their own wholesale rates, attempted to intervene in the case. CP&L's public relations director Jack Riley noted that their interference would likely result in a denial of the rate increase, which, he said, would limit CP&L access to the capital they needed to support their ambitious building program (Riley 1968).

With municipalities and EMCs facing the potential for increases in wholesale electricity rates, both groups continued to look for opportunities to enter (or re-enter, in the case of municipalities) the realm of generation. EMCs and municipal systems resolved to work together to solve this problem (National Rural Electric Cooperative Association, Region I 1968) and assembled a statewide municipal and cooperative power supply plan. The plan, known as Electric Power In the Carolinas (EPIC), would cost $1.75 billion and included several power plants linked by extensive transmission facilities. As would be expected, the private utilities in North

Carolina leapt into opposition, with VEPCO calling the plan an "expensive and unnecessary duplication of electric service" by systems that lacked the needed operations experience. The plan, VEPCO claimed, would be "a great disadvantage for the majority of the people of North Carolina (Virginia Electric Power Company 1969). Duke Power also joined the fray, calling the plan a "tax evasion scheme that in 15 years will cost the taxpayers over three hundred million dollars". They echoed VEPCO in claiming that the promoters had no experience building a system, and that the kind of complex technical work the plan proposed could only be done by power companies (Duke Power Company 1969).

While public utilities made plans to generate electricity, CP&L's fortunes began to change. By the late 1960s the company faced a series of problems, most related to what some felt were unrealistic expectations for growth. CP&L demand projections, on which new plant construction was based, were a significant source of controversy. Utility consultant Donald Kosh, for example, felt that CP&L was engaged in 'flights of fancy' to expect that its growth rates would continue as projected. The securities markets were, he argued, taking note of the likely less profitable future for utilities, and their stock prices were beginning to reflect this (Cockshutt 1970). In addition to the aforementioned inflation and tax increases, ecological challenges also began to appear. Statewide, most of the prime hydropower options had been exploited, and there was growing concern regarding the environmental damage caused by coal-fired power plants. Further ecological limits appeared due to the particularities of coal production, which meant that miner strikes in the late 1960s and early 1970s were causing severe price

disturbances and shortages (Mitchell 2009). Labor unrest in Appalachia exposed the limitations of coal-fired plants[49], and nationwide many utilities were opting to build oil-fired plants to meet additional capacity needs, though this switch was short-lived. Finally, technological limitations compounded the utility industry's financial and ecological problems. By the 1960s, technological stasis set in. The thermal efficiency of steam generating plants, after increasing steadily for nearly 60 years, reached a plateau around 40%, which meant that bigger plants were no longer offering increasing economies of scale. The combination of all these factors meant that what had been a consistently decreasing price of electricity came to a halt (Hirsh 1999).

CP&L felt these issues acutely. While revenues and profits increased during the 1960s, each year required the selling of significantly more electricity to obtain an increase in profits (see Figure 6.1). In 1969, CP&L, while still profitable, reported a decrease in profits for the first time since the 1930s. A big reason for this decrease was a jump in the price of coal (see Figure 6.2), as well as problems with inflation in the late 1960s. With operating expenses increasing, in 1969 CP&L sought, but did not receive, the first general rate increase in the company's history (Carolina Power and Light 1970). However, in 1970 the worst fears of the EMCs and municipalities came true, as CP&L filed for and received authorization for a 32% increase in wholesale electricity rates from the North Carolina Utilities Commission (Carolina Power and Light 1971).

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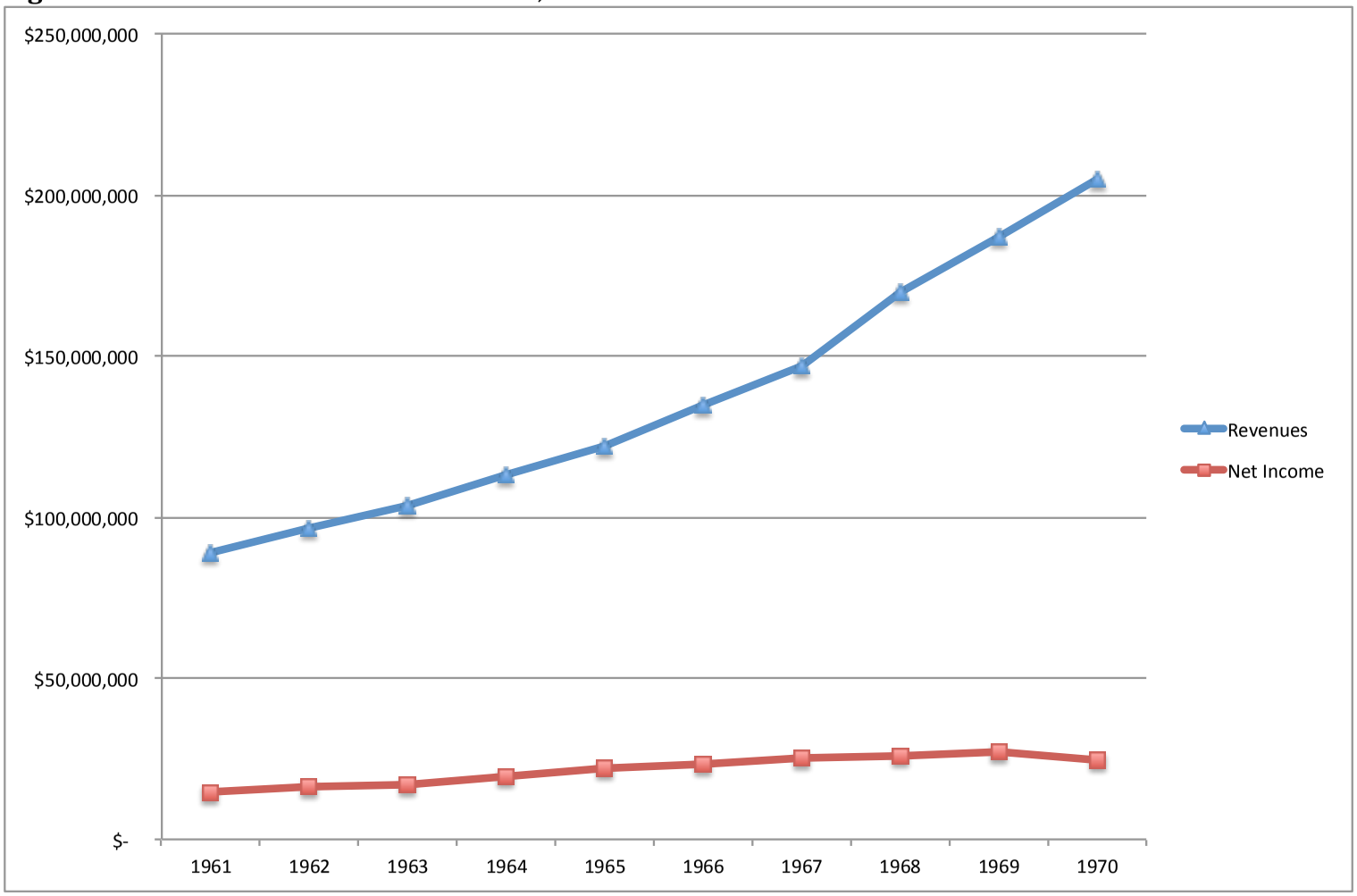
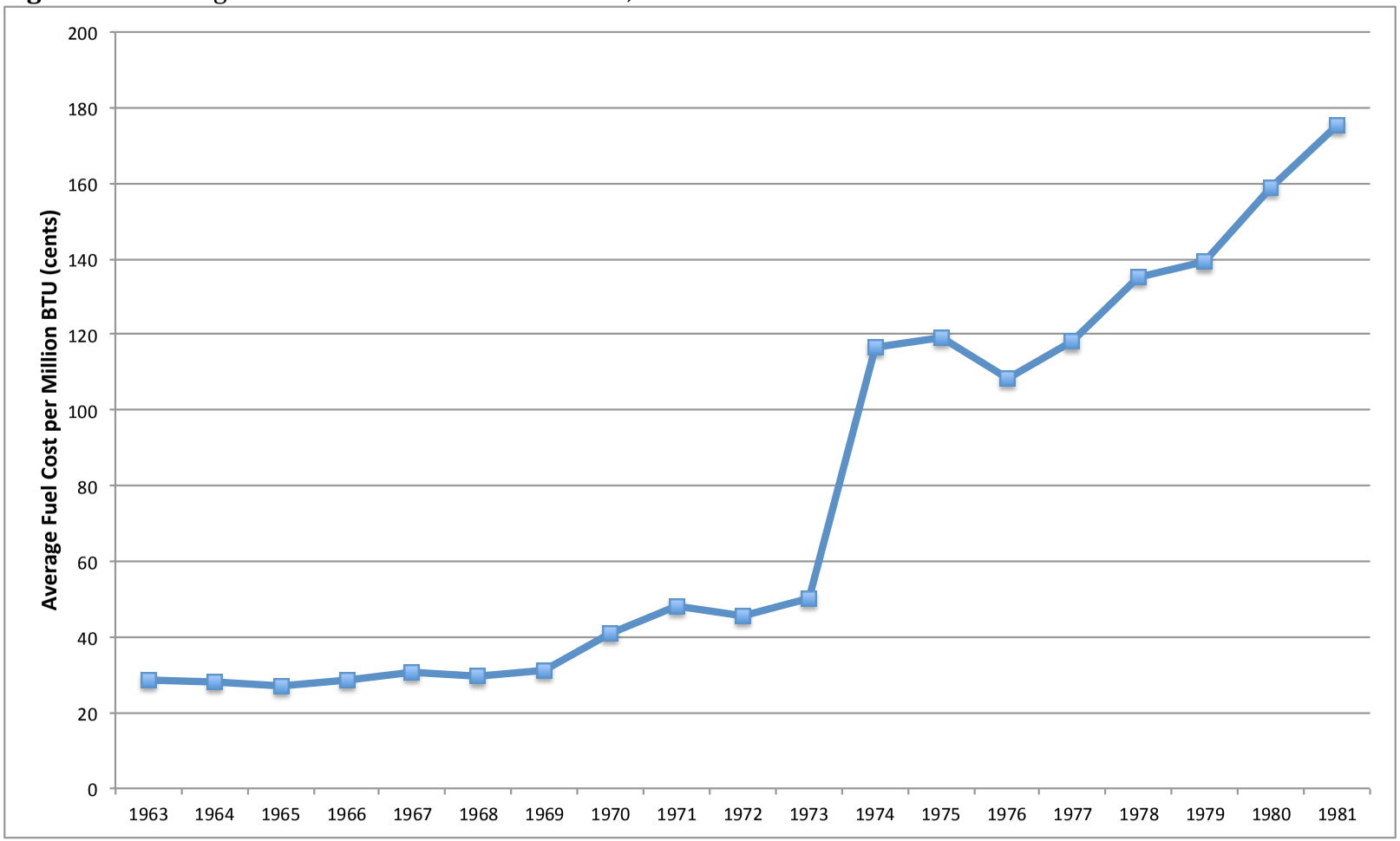
[49] It is worth noting that mining companies responded to labor unrest by employing new forms of labor saving technology, most notably strip mining and mountain top removal.

Figure 6.1. CP&L Revenues and Net Income, 1961-1970



Source. CP&L Annual Reports, 1961-1970

Figure 6.2. Average Fuel Cost for CP&L Steam Plants, 1963-1981



Source. CP&L Annual Reports, 1963-1981

Coupled with a burgeoning environmental movement that was recognizing the negative ecological impacts of coal plants, a technological shift to nuclear power became even more attractive to utilities. In theory, nuclear power offered a lower, and infinitely more stable, fuel price. Nuclear technology also appeared scalable in many of the same ways as other generation technologies, seemingly restoring the utility consensus that appeared to be failing. In the 1962 CP&L worked with private utilities Duke Power, VEPCO, and South Carolina Gas and Electric to build and operate an experimental nuclear plant in Parr, South Carolina. This plant provided operations data that each utility hoped would allow it to expand their nuclear capacity, and in 1967 CP&L began planning a second plant to be located near Wilmington, North Carolina. As noted, the cost of fuel (especially coal) was driving these decisions. In their 1967 Annual Report, CP&L management explained to shareholders their preference for nuclear, noting that while the nuclear plant would require a higher initial investment, the cost would be "justified because of the substantial savings to be realized on fuel" (Carolina Power and Light 1967: 2). In 1971, CP&L reported that their first nuclear plant was put into operation, and "its performance has had a salutary effect on total fuel costs" (Carolina Power and Light 1971:8). With early results showing great promise, CP&L went all in on nuclear, aiming to have 50% of its capacity from nuclear by 1980. Most of this additional capacity would come from a new nuclear plant near Raleigh, North Carolina.

6.2 The Shearon Harris Nuclear Power Plant

The new nuclear plant, which would ultimately be named for CP&L president Shearon Harris, was planned to have four 900 kW generators, with one coming

online each year between 1977 and 1980. Planning for the project was significant, and became increasingly difficult as challenges to utilities mounted during the 1970s. In 1972 the completion of the Harris plant was pushed back one year due to difficulties obtaining permits in the face of new environmental requirements (Carolina Power and Light 1972), and the plant was again delayed in 1973. Limited construction finally began in 1974, but that year brought still more challenges. High fuel prices, high interest rates, a mild winter, and difficulties obtaining further rate increases troubled CP&L. Across the United States, for the first time since the early 1900s, electric utilities were having difficulty obtaining investment capital. CP&L stock prices, which traded for around $53 in the mid-1960s, plummeted to $13 by 1974 (Berg 1975). CP&L President Shearon Harris stated that without being able to increase electricity rates in 1974, CP&L "simply would have gone out of business in the fourth quarter" (Harris 1975). Bill Lee, Chairman and CEO of Duke Power, later said of the period:

> We were not able in 1974 to sell bonds at any price, under any conditions whatsoever. We were desperate for cash to meet the payroll… We converted everything we could to cash. We converted uranium to cash. We sold our office buildings and leased them back (Lee 1985)

With these difficulties widespread, CP&L again cut back its construction program, and the Shearon Harris nuclear plant was put on hold. Plant construction resumed in 1978, with a new estimated completion date of 1984. Yet real questions remained about nuclear power. CP&L, for instance, shared with stockholders their concern "about the federal government's failure to resolve the issues of nuclear waste storage." CP&L, not surprisingly, felt a safe solution had been developed, but the "federal government needs only to make the political decision as to which of several

viable options should be used" (Carolina Power and Light 1978: 2-3). Aside from utility concerns, public uncertainty about the safety of nuclear plants grew seemingly by the day. Reports emerged concerning the dangers of radiation and the Harris plant site's geology (Berg 1974a), as well as generally poor record of plant safety management by CP&L (Berg 1974b).

To support its expanding construction budget, CP&L continued to request and receive rate increases during the early 1970s. These requests bring forth one of the central issues that still face investor owned electric utilities – who pays for construction of new plants? During this period in North Carolina, electric utilities were able to include the costs of on-going construction projects in the rates paid by customers. This practice, known as Construction Work In Progress (CWIP), in combination with increasing electricity rates, helped private utility earnings improve in North Carolina, making them more attractive to outside investors. However, as construction costs spiraled out of control in the late 1970s, CWIP came under increasing fire. Setbacks to Shearon Harris plant construction and the nuclear industry as a whole made investment appear increasingly risky. The specters of increasing risk and unstable revenues sufficiently scared investors and forced CP&L to again delay Shearon Harris's scheduled completion, this time until 1990, with the first reactor coming online in 1977. The delay was designed to increase CP&L's attractiveness to investors, with the thinking being that without the liabilities of construction projects, CP&L could simply collect electricity revenues and bolster their cash flow (Berg 1975). But ultimately, the Harris plant would still need to be built.

6.3 Plant Investments by Municipal Utilities

The combination of new environmental restrictions and higher interest rates meant that across the United States the cost for building new power plants increased from $147 per kilowatt in 1970 to $678 per kilowatt in 1978 (Hirsh 1999). As a result of utility financial problems, very few new plants were coming online. And while electricity demand growth per capita slowed in the 1970s, North Carolina's growth in population and industrial activity meant that overall electricity use was still increasing. With fewer plants coming online, the issue of reliable power in the future became a real threat. As noted in Chapter Five, by the late 1960s all municipalities in eastern North Carolina were purchasing their entire power supply from CP&L. Between 1970 and 1982, the wholesale prices the towns paid increased 530% - a dramatic increase (Research Triangle Institute 2000). Fearing rising costs and projected electricity shortages, municipal power companies determined that getting back into the generation business was now essential. Duke Power, whose financial situation was even more dire than CP&L's, had a partially completed nuclear plant near Charlotte, North Carolina, that was in need of an injection of financing to be completed. As previously mentioned, a group of western North Carolina municipal systems wanted to invest, a move that was supported by the eastern municipal group. After years of attempting to get into generation only to be blocked by private power interests, the power availability crisis meant that legal hurdles were quickly overcome.

The issue was taken before the North Carolina General Assembly, and in 1975 the Joint Municipal Power and Energy Act was passed, which allowed

municipalities to jointly finance, develop, and operate electricity-generating facilities. Two years later, a statewide referendum approved a constitutional amendment that would allow joint public-private ownership of electricity generation in North Carolina. After clearing these legal hurdles, in 1978 51 municipalities joined together to form two municipal power agencies: North Carolina Eastern Municipal Power Agency (NCEMPA), comprised of 32 eastern North Carolina towns; and a western group called North Carolina Municipal Power Agency One (NCMPA1), comprised of 19 western North Carolina towns (Research Triangle Institute 2000). With the law now on their side, NCMPA1 bought a 37.5% share of Duke's Catawba Nuclear Plant for $600 billion. At the time, the deal seemed a logical fit: the municipalities could borrow money in the bond market for considerably less than cash-strapped Duke, and towns felt they had now secured their electricity supply into the 21st century (Horan 1978).

A year after the municipal power agencies were created, the partial reactor meltdown at Three Mile Island occurred, and the federal government reacted with stringent new safety regulations and design changes that drove construction costs to still higher levels in subsequent years. Nuclear construction projects all across the country were struggling for completion (Cook 1985) and CP&L needed still more financing in order to push ahead with the Shearon Harris plant. Once of the central problems facing utilities is that they largely treated nuclear as just another way to create steam. Following the same model so successful for coal plants, they attempted to rapidly scale up smaller nuclear plants, a practice that ignored the complexity of nuclear generation. In addition, each new nuclear plant was

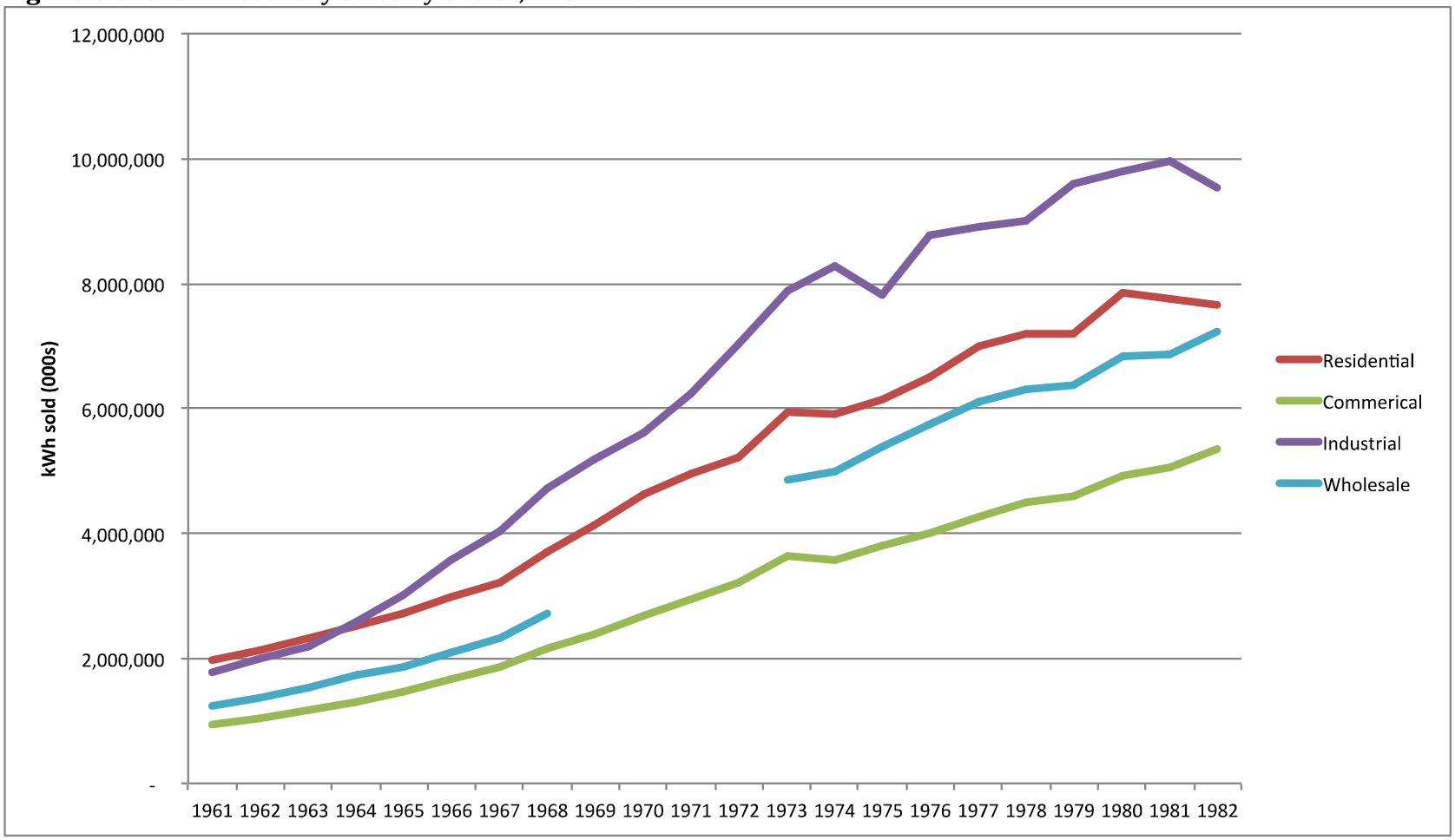
essentially a one-off, designed entirely from scratch (Hirsh 1999; Cook 1985)[50]. With the added costs incurred in the aftermath of the Three Mile Island disaster, construction costs skyrocketed, with some utilities paying as much as $1 million a day in interest on unfinished nuclear plants (Cook 1985).

In 1981 news emerged that despite spending $1.2 billion, the Harris plant was still only 37% complete ("CP&L costs soar for new plants" 1981). With costs at Shearon Harris spinning wildly out of control, another CP&L nuclear plant near Wilmington, North Carolina was experiencing frequent shutdowns due to poor operations. Public and investor confidence in CP&L's ability to build the new plant, as well as confidence in nuclear power as a whole, was waning. Complicating matters was that electricity demand, which the electric utility industry had long considered inelastic, was beginning to tail off due to higher electricity prices in the 1970s. CP&L electricity demand growth experienced several significant dips, and in general failed to grow at the rates expected in the mid-1960s. By the early 1980s, electricity consumption had largely leveled off in CP&L territory (see Figure 6.3).

Despite the dire situation facing the Harris plant and the problems of the utility industry, the eastern North Carolina municipalities inexplicably pushed on in their quest to invest in the plant. In July of 1981, after nearly 50 years of trying to keep 'public' power out of generation, CP&L agreed to sell NCEMPA a 16% share in a nuclear power project near Raleigh, as well as shares in several other planned coal plants. Historical events had conspired to make CP&L unable to raise the funds

[50] This practice can be compared to a country like France, where centrally planned electricity provision enabled nearly identical plants to be constructed in multiple locations.

Figure 6.3. CP&L Electricity Sales by Sector, 1961-1982



Source. CP&L Annual Reports, 1961-1982
Note: Data on wholesale sales of electricity missing from 1969-1972

needed for their projects, and their public power opponents, who had reasons of their own for wanting back into generation, were providing the capital needed to complete the project. In the following year, fearing that ratepayers would continue to pay for expensive and unlikely to be completed nuclear plants, the North Carolina legislature ended the practice of allowing utilities to include the cost of unfinished power plants in electricity rates (McInnis 1983). After many more years of construction delays, the Shearon Harris nuclear power plant, which included only one reactor, finally came online in May of 1987. The plant had a final bill of $3.9 billion--$2.8 billion more than the initial cost estimate.

By 1999, after a series of poor financial management and planning decisions (which included continuing the practice of moving electricity 'profits' into the general fund described in Chapter Three), the combined debt of the municipalities was $5.6 billion, which in 1999 amounted to 28% of *all* public debt in the state of North Carolina (Research Triangle Institute 2000). Perhaps most troublesome is the nature of this debt, which is not backed by tax revenues, but instead must be paid back solely from the sale of electricity, meaning the "true liability for all of the … debt resides with the electricity consumers of the member cities" (Research Triangle Institute 2000: 30). Though Duke Energy (which acquired Progress Energy 2012 after Progress Energy merged with CP&L in 2000) owns the vast majority of the Shearon Harris plant (84%), they are able to spread that debt across a larger number of customers as well as numerous other plants constructed during the 1960s that have long since been paid for. Thus, their rates are generally well below those charged by the municipalities.

6.4 Nuclear Power: No Longer a Political Issue?

Speaking optimistically in 1979, CP&L President Shearon Harris mused "We'll soon enter an era when nuclear power isn't a political issue … This society has more to lose through the discontinuation of this technology" (Gruson 1979). Given the events occurring around the nuclear plant that bear's his name since it came online in 1987, his prophecy is yet to come true.

The electricity rates in the investing municipalities' systems are on average 42% higher than those charged by Duke Energy, and 35% higher than North Carolina as a whole (Electricities of N.C., Inc. 2010). The high rates charged by these towns have been the subject of significant outrage by people living in them. In 2000, the municipal systems were nearly sold to CP&L and Duke Power during a move to deregulate the North Carolina's electricity system, but discussions broke down along with the move towards deregulation. A decade later, anger over the issue again peaked, and the North Carolina legislature in 2011 reopened discussions over what should be done about the electricity rates.

The Joint Municipal Power Agency Relief Committee, formed by the North Carolina General Assembly to examine the issue, was largely comprised of conservative Republican members of the legislature[51]. After three meetings that consisted of numerous presentations, the Committee made several recommendations. First, the Committee advised more study of the issue, principally if the rates were hindering the economic development of the towns in question. Second, the Committee advised that the practice of transferring funds from utility

[51] The Republican Party took back control of the North Carolina General Assembly in 2010 for the first time in nearly a century.

revenues to the general budgets of municipalities be halted. This practice had already ceased in most towns with municipal systems by 2012, but several towns had continued the practice. Finally, and most significantly, the committee members came out in support of selling the system to Duke Energy, which had recently merged with Progress Energy, if a feasible arrangement could be found (Municipal Power Relief Committee 2012).

As of February 2014, the final recommendation appeared to be coming to fruition. In early February, reports emerged that Electricities and Duke Energy were in advanced discussion over the possible sale of NCEMPA generation assets, including its 16% share of the Shearon Harris plant. In an initial statement, a Duke Energy spokesmen stated that such a deal would be "mutually beneficial" to both NCEMPA and Duke. He further claimed that while the move would not add additional generating capacity, Duke could benefit from realizing "economies of scale" from taking over the plant (Dunn 2014). What exactly these 'economies' are is unclear, as the municipalities currently have no involvement in the day-to-day operations of the plant. News of the possible deal appeared to be met with enthusiasm in the towns served by municipal systems, especially with claims that electricity rates could decrease 30% if the deal goes forward. However, the exact terms of the deal remain to be specified. While the entire $1.8 billion in remaining debt could be paid off in the deal, it is possible that the towns could be left owing part of the debt. Further, a new wholesale agreement for electricity purchases would need to be agreed between Duke and the towns (Dunn 2014).

In a recent report, it appears the deal would require the 32 towns to sign a contract to buy wholesale electricity *only* from Duke Energy for as many as 25 years. Such a long-term arrangement would likely raise questions for the Federal Energy Regulatory Commission that monitors anti-competitive utility practices and wholesale electricity sales. It was also reported that the deal would not include Duke taking over the local distribution systems, meaning that local municipal governments would remain in control in control of electricity billing and service (Murawski 2014). While still a work in progress, news of this deal means that the landscape of electric utilities in North Carolina remains in flux. What should be made of the recent news of the pending sale of the municipal assets? More broadly, how do the previous chapters help to make sense of this situation, as well as the questions posed in the introduction?

6.5 Putting current events in light of the past

To begin, it is necessary to recall why Duke Energy, the municipal systems, and the EMCs all serve their own unique territory. In Chapter Two, I argue that the monopoly service territory emerged as a spatial fix to solve profitability problems related to the materiality of electricity – the need to have a simultaneous match between electricity production and consumption. Regulation by state utility commissions, in combination with the monopoly service territory, provided the utilities with a spatial and regulatory 'platform' from which private utilities were able to obtain the necessary financing to rapidly expand their systems during the 1920s. While private companies rapidly expanded, the operations of municipal systems were, and remain, encapsulated by their municipal boundaries. While *both*

territorial configurations initially provided insulation from competition, ultimately the larger territories of the private utilities meant they could begin benefitting from economies of scale on the production side – bigger plants helped to lower prices and increase consumption. Once EMCs entered the electricity distribution picture in the 1930s, the importance of monopoly territories, and the idea of electricity service as a 'natural' monopoly, was well established.

But the monopoly service territory as spatial fix was limited in its effectiveness. By the 1960s, the ability for utilities to expand spatially was constrained, and competition for new customers between public and private power companies became heated, as shown in Chapter Five. As previously discussed in this concluding chapter, by the late 1960s the 'fix' provided by the monopoly territory was limited in its effectiveness, causing private utilities to look to nuclear energy as a technological fix. While the territory as spatial fix proved effective for nearly 50 years, nuclear energy's effectiveness as a fix was much shorter. The rising costs of nuclear meant that by the late 1970s most utilities had seen the writing on the wall: no new nuclear plants were being ordered, and several partially completed nuclear plants were abandoned altogether.

In light of this, we should view the investment of the municipal systems in the late 1970s and early 1980s as another in a series of fixes to profitability problems in a utility industry continually facing challenges posed by the materiality of electricity. Facing hard times during the period, and with previous spatial and technological fixes played out, only a public-private partnership could solve the utilities' problems. But the fact that the solution was a public-private should not be a

surprise: the territorial fix was dependent upon state regulation that guaranteed profits, and nuclear energy was largely developed by the state. After the municipal investment in Shearon Harris in 1981, other fixes would appear in the industry. The late 1990s, for example, saw fervor around deregulation, which would effectively de-territorialize electricity production and distribution. In theory, deregulation of electric utilities meant that electricity producers in one area could sell power to those in another, a move that would shift the spatial calculus of the industry. Under deregulation, a new uneven development in electric utilities would likely emerge, with power producers less concerned with inducing demand growth in their own territory and instead looking to areas where it was cheap to produce power. This cheaply produced power would then be shifted to areas of high demand and high prices (Solomon and Heiman 2001; Heiman and Solomon 2004). While put into place in several states, financial fraud and market manipulation by firms like Enron has limited deregulation's spread.

After the promise of deregulation fizzled in the early 2000s, another trend emerged that conjures the actions of the holding companies of the 1920s. The last decade has seen the employment of strategic mergers between operating utilities in order to reduce operating costs and attract more financial capital (Fontana 2006; Aston 2011), a trend bolstered by the repeal of the Public Utility Holding Company Act in 2005. In December of 2012, the merger of Duke Energy and Progress Energy (previously CP&L), the two largest electric utilities in North Carolina, was approved by the North Carolina Utilities Commission. Both companies, operating under different names, started in North Carolina in the early 20th century. Since the mid-

1990s, both have undergone a number of mergers and acquisitions, and their latest merger created the largest electric utility in the United States - 7.1 million customers across Florida, South Carolina, North Carolina, Ohio, Kentucky, and Indiana (Wald 2012). In a presentation to the Edison Electric Institute, former Duke Energy CEO Jim Rogers made clear the reasons for the merger: savings in the cost of fossil fuels; savings in operations and maintenance; and the elimination of 1,100 employees through a 'voluntary' severance package (Rogers 2012). In the long term, Rogers believes this will "deliver superior value for our investors and other stakeholders" (Rogers 2012: 4). Many stakeholders are not as enthusiastic with the value being presented. The merger was put on hold for over a year due to litigation by shareholders, concerns over the elimination of competition by the Federal Energy Regulatory Commission and several wholesale electricity customers (including municipal systems), and rate increase and environmental concerns by a variety of groups (Murawski 2012).

Duke Energy is now seemingly on the brink of reacquiring generation assets CP&L sold to the municipalities in the early 1980s. In early 2014, Duke is clearly not facing a profitability crisis as it reported profits of $2.7 billion, up considerably from the previous year. But much of this profitability has come from this new fix – mergers and acquisitions – that is becoming more widespread in the industry. In light of the previous chapters, it can be argued that the eastern North Carolina municipal systems merely loaned money to the private utilities (CP&L, then Progress, and now Duke) at very favorable terms so that they could complete the projects. Without the municipal investments, Shearon Harris most likely would not

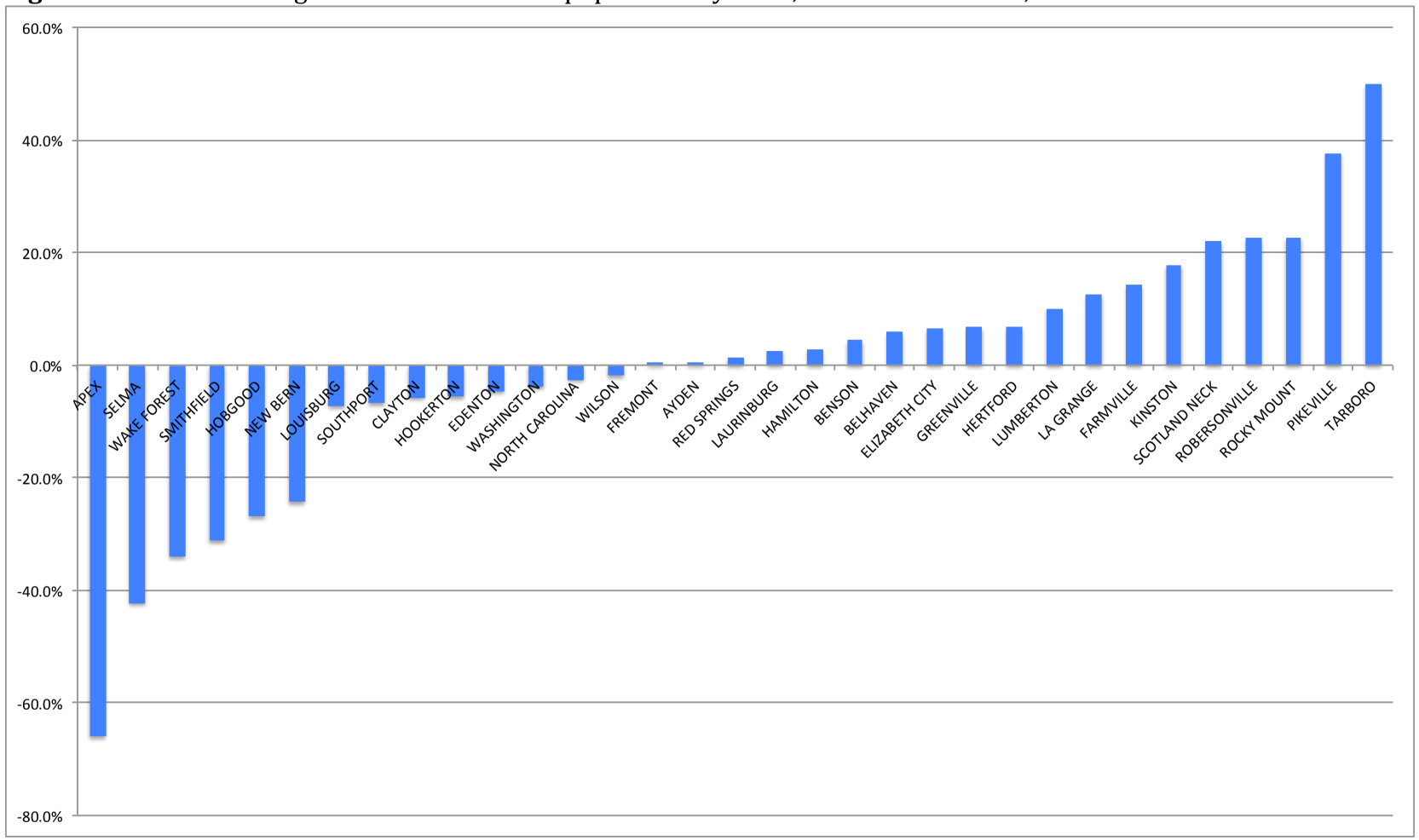
have been completed. But in borrowing money in the bond markets on extremely poor terms, the towns effectively provided a bridge loan, paid off the majority of the interest, and are now giving the assets back to Duke on favorable terms that would return them to the position as a wholesale customer they so desperately wanted to leave in the late 1970s.

This account of the relationship between private and public utilities is not to discount the hardships people in those towns face due to high electricity bills. For many people living in eastern North Carolina municipal systems, high electricity bills are one more in a series of overwhelming challenges. The history of electric utilities in North Carolina, as the previous chapters have shown, is a complicated and messy one, and a critique of private utilities should not absolve the towns of responsibility long periods of discrimination and mismanagement in the running of their utilities. Chapter Three shows how the electric utility was a technology of racism employed by municipalities to mark certain sections of town, and the inhabitants of those neighborhoods, as premodern and undeveloped. This helped to bolster the town's elite by keeping the African American working class poor and subservient while also funding municipal operations while keeping property taxes low. These town's elites reaped benefits from operating municipal systems for many years. The five-story city hall that towers over downtown Rocky Mount was built, a former city manager told me, with profits from the electric utility. Profits, I would argue, that would have been better spent improving the livelihoods of the impoverished residents of those towns.

The use of race to guide the spread and valuation of infrastructure continued outside of municipal boundaries. Chapter Four shows how state of North Carolina officials employed the latest 'scientific' methods to assess and direct how rural electrification should proceed in the state. Despite the vast quantities of data collected on individual households, the race of the householder trumps all. The importance of race in assessing the valuations of potential service territory is apparent again in the field reports of REA surveyors in Chapter Five that praised areas with high numbers of tenant farmers of 'English' descent, as well as the studies of private utility territory by utility consultant Charles Waddell briefly mentioned in Chapter Four. The heavy hand of the white supremacist state apparatus in guiding electricity development is a signal of the larger racialized economic development plans that have contributed to eastern North Carolina's persistent poverty and wider economic challenges.

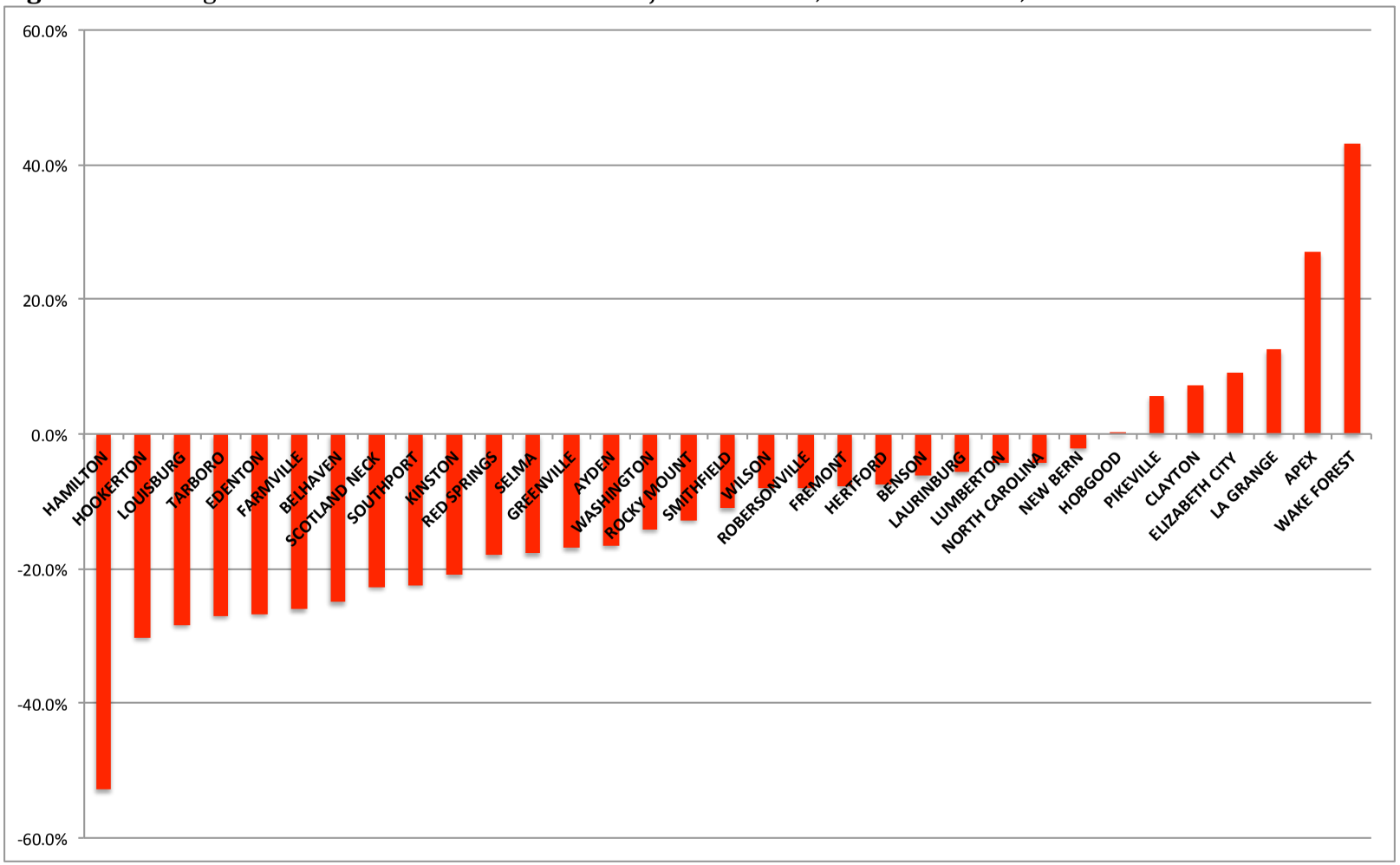
The last 25 years have seen substantial demographic and economic shifts in eastern North Carolina, and many of the towns with municipal utilities in eastern North Carolina today have greater African American representation in city governance. Unfortunately, this has come at a time when much of the industry that contributed to the cities' growth, especially textiles, has vanished. As Figure 6.4 shows, in many of the towns, between 1990 and 2011 populations, and especially white populations, have dwindled. Incomes, as Figure 6.5 makes clear, when adjusted for inflation, have also fallen in most of the towns. Contracting populations have spread the debt across fewer (white) people, and declining or stagnant incomes mean that each electricity price increase hurts even more. This makes news

Figure 6.4. Percent change in African American population by town, NCEMPA members, 1990-2011



Source. United States Census Bureau American Community Survey Data 2007-2011 Summary File

Figure 6.5. Change in Median Househould Inflation Adjusted Income, NCEMPA Towns, 1990-2011



Source. United States Census Bureau American Community Survey Data 2007-2011 Summary File

of a possible rate decrease through the sale of generation assets even more attractive to town residents. Yet it also means that these towns will remain beholden to the corporate interests of Duke Energy.

6.6 Electricity and uneven development past, present, and future

This dissertation has shown how electricity, and the electric utilities that provide it, have been both a shaper and been shaped by the contexts in which they developed. The electric utility landscape that has emerged in North Carolina is the result of more than 100 years of battles over how electricity would be employed in the realms of production and social reproduction. Spatial formations of inclusion and exclusion, often ordered around race and bolstered financial capital, have emerged and morphed as the industry attempts to capture surplus value from the production and distribution of electricity.

The question of value and the relationship between industrial and financial capital looms larger than ever in the wake of the 2007-08 financial crisis. In the immediate aftermath, critical commentators on the Left pointed to several important contributing factors to the crisis: the challenge of managing risk in the financial world (Blackburn 2008); a blind belief in 'the efficiency of markets', whereby markets contain all relevant information and stock prices are an accurate representation of value (Wade 2008); and a blurring of industrial and financial capital which raises questions as to relationship between financial and industrial capital (McNally 2009; Mann 2010). The parallels of the crisis with the history of electric utilities are numerous. Utility holding companies, like mortgage backed securities or collateralized debt obligations, were complex financial instruments

originally designed to manage or limit systemic risk. Similar to sub-prime loans, early utility investments were risky ventures, as likely to go out of business as to succeed. However, both financial forms enabled financiers to obscure risk, to change a liability into an asset, and encouraged highly leveraged financial forms. The tendency in both cases was for asset prices to slow relative to the wealth that was created via the financial innovations and ultimately collapse, greatly damaging the lives of millions of people. While the blurred lines between industrial and financial capital was especially prominent in the most recent crisis, it is certainly not the first case of this. In many ways, the utility holding companies can be viewed as an early experiment with financial innovation by erstwhile industrial capitalists keen to take advantage of wealth creation via finance. For many giant firms, the experiment has paid off handsomely. General Electric, which created EBASCO in 1906, in 2011 derived $6.5 billion, nearly 32% of its profits, from its financing arm GE Capital (General Electric 2011).

Similarities between the subprime mortgage crises and high electricity rates in eastern North Carolina are also evident in who is facing the brunt of the effects. While investment firms like Lehman Brothers went bankrupt, people across the country were losing their homes and life savings. The burden of home foreclosure disproportionately affected African Americans, with some estimates showing that nearly 8% of recent African American borrowers lost their homes as of 2010, compared to just 4.5% of whites (Bocian et al. 2010). Wyly et al. (2009) have shown that this was not coincidental, that rather African Americans, after being kept out the housing market for decades, were now being specifically targeted by predatory

lenders through what they refer to as reverse redlining. The African American residents of eastern North Carolina towns contending with electricity bills are facing similar challenges. As Chapter Three shows, for years African Americans were systematically passed over for electricity service. This kept their neighborhoods and assets degraded, and marked those areas, and the people that inhabited them, as undeveloped and unmodern. This view, in the minds of whites, justified the political and economic exclusion (not to mention violence) that African Americans in those towns were subjected to. Then, as race became incorporated into statistical measures of territory valuation, rural areas with high numbers of African Americans were again viewed as less valuable. Today, as a result of social and economic shifts, African American's are again largely facing negative impacts related electricity service.

One important issue that has gone largely unexamined in this dissertation is the question of electricity consumption. Electric utilities, both public and private, associated increasing electricity consumption with development, both in the home and the factory. Most employed a multi-pronged strategy to induce consumption including rate manipulation, building all electric houses, novel appliance financing mechanisms, and producing new 'needs' via advertising campaigns. Without consistently increasing electricity demand, the battles over generation and territory described in Chapter Five would have largely been moot. More research remains to be done examining how electric utilities were involved in shaping and reshaping electricity demand in the home and at work, and how those histories have locked in certain patterns of consumption that lead to the challenges of today.

Despite the continual emergence of new innovations in technology, governance and finance, new methods of calculating territorial valuation and producing demographic control, and despite the promise of the new spatial and temporal fixes that may emerge, electric utilities are still confronted by the natural limits of electricity itself. Through what financing mechanism does the industry confront the enormous upfront costs of new plants and equipment needed to meet a peak demand that happens only one day a year, all while satisfying the demands of financiers? Given the history of electricity as a technology actively employed to produce uneven development, how can electricity be distributed in a way that works in the reverse? Instead of seeking yet another fix to the problems of capital accumulation in the electric utility industry, perhaps the question should be how to reconfigure all of these technologies, financing mechanisms, and the intervention of the state to produce an electricity system that answers not to the demands of shareholders and financiers, but instead to the people whose life and health depends on it.

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