Local Renewable Energy Actions in the Washington D.C. Region: Political Economy, Place, Policy and Culture

A Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University

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DEDICATION

This dissertation is dedicated to my grandparents—Sandy and Bill Graziano and T. J. and Stella Morris—who taught me, through their own examples, the *human* value of hard work.
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I would like to thank, first and foremost, my wife and partner of almost ten years, Nicole Dery, without whom none of what follows would have been possible.

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LIST OF ABBREVIATIONS

Baltimore Gas and Electric ................................................................. BG&E
Business Energy Investment Tax Credit .............................................. ITC
Cleveland Park Energy Coop ............................................................. CPEC
Common Cents Solar ....................................................................... CCS
Community-based Energy Development ........................................... C-BED
Community Renewables ................................................................ CR
Community Renewable Energy Generating Facility ......................... CREGF
Community Power Network ............................................................. CPN
DC Solar United Neighborhoods ....................................................... DCSUN
Distributed Renewable Electricity Generation .................................. DREG
District of Columbia Historic Preservation Review Board ................ DCHPRB
Federal Energy Regulatory Commission ........................................ FERC
Greater Washington Interfaith Power and Light ............................... GWIPL
Greenbelt Community Solar ............................................................. GBS
Investor Owned Utility ..................................................................... IOU
Local Renewable Energy Action ......................................................... LREA
Maryland DC Virginia Solar Industries Association ........................... MDVSEIA
Maryland Energy Administration ....................................................... MEA
Mount Pleasant Solar Coop ............................................................... MPSC
Net Energy Metering ....................................................................... NEM
Organization of the Petroleum Exporting Countries ........................ OPEC
Potomac Electric Power Company .................................................... PEPCO
Public Utility Holding Company Act ............................................... PUHCA
Public Utility Regulatory Policies Act ............................................... PURPA
Photovoltaic ..................................................................................... PV
Qualifying Facility ........................................................................... QF
Renewable Electricity Production Tax Credit ..................................... PTC
Renewable Energy Credit ................................................................ REC
Renewables Portfolio Standard ......................................................... RPS
Request for Proposals ..................................................................... RFP
Residential Renewable Energy Tax Credit ........................................ RRETC
Solar Renewable Energy Credit ....................................................... SREC
Standard Offer Service .................................................................... SOS
Urban Ecological Security ............................................................... UES
Urban Political Ecology .................................................................. UPE
University Park Community Solar .................................................... UPCS
Virtual Net Energy Metering ............................................................. VNEM
ABSTRACT

LOCAL RENEWABLE ENERGY ACTIONS IN THE WASHINGTON D.C. REGION: POLITICAL ECONOMY, PLACE, POLICY AND CULTURE

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Dissertation Director: Dr. Debra Lattanzi Shutika

This dissertation explores efforts to expand decentralized, neighborhood-scale, systems of renewable electricity production in Washington, D.C. and Maryland. I focus, in particular, on a specific class of initiatives that I have chosen to call local renewable energy actions (LREAs). Often described today as ‘energy cooperatives’, ‘solar cooperatives’ or ‘community-based energy projects’, these efforts, while they are largely nascent and account for only a scant percentage of overall electricity production in the United States, are scattered throughout urban and rural areas across the country. These projects are situated within contemporary struggles to transform the ecological character of electricity production in the United States (and, by extension, the planet). They are also embedded within a much longer historical struggle over the political-economy of electricity production stretching back to the late nineteenth century. In what I follows I argue that what differentiates the work of community-based renewable electricity advocates in the District and Maryland from broader to efforts to ‘green’ the nation’s electricity system is a focus on democratizing access to the
electricity grid. The vision of proper deployment of distributed renewable electricity generating technologies offered by these advocates is centered not only on a decentralized, community-scale network of electricity production but also a parallel vision of community-scale governance and ownership of that network. As such, this vision represents a challenge not only to the ecological character of fossil fuel-based electricity systems but, more importantly, the centralized, “hard path” organization, governance and ownership of those systems.
CHAPTER ONE

1.1 Introduction: Energy Systems As Cultural Projects

In many ways electricity remains as much of a mystery to the average person today as it was to those who first witnessed the electric light demonstrations that swept across cities in the Northeastern and Midwestern United States during the late 19th century. If pressed, the vast majority of Americans would not be able to identify where the electricity that powers their homes even comes from. Given the complexity of the modern electrical grid, it is quite possible that the utility responsible for assuring that it gets to those homes couldn’t say for certain either.

Despite this anonymity, electricity exists as a key ingredient in modern place making. Chilling food. Spinning the washing machine. Driving the microwave. Bringing us the capacity to consume college football telecasts, NPR programs and viral videos on YouTube. Almost all of the trappings of modern life, from the seemingly vital to the indulgent, are, in the global North and, increasingly, the global South, dependent upon electricity. This anonymity is generally only lost when the lights go off and the refrigerator stops humming in the corner of the kitchen.

At the point of consumption, electricity, as a collection of electrons, is also, more or less universal. Unlike say cars or horses or human beings our electric devices do not run better or worse depending on what kind of electricity they receive. These characteristics of invisibility and universality, however, belie the very real distinctions that surround how
electricity is produced and distributed as well as how it is consumed, who has access to it and its wider effects on culture, social structures and the environment.

This project is situated within a variety of contemporary concerns including the metastization of globalized ecological crises, the impacts of global climate change, a long term transition to a carbon constrained economic system, and the search for “green” solutions to the ongoing United States economic crises. Over the last decade efforts to develop systems of energy production that rely on renewable, rather than fossil (coal, oil, natural gas) or nuclear fuel sources, have occupied much of the space within these discourses. This renewed interest in generating energy from renewable sources tends to focus on markets, technologies, innovations and physical geographies with less attention being paid to the actually existing politics of place, political economy and culture that condition the development of systems of energy production.¹

In the United States, modern systems of generating electricity from renewable sources first became commercially available in the early 1970s. The technologies associated with these systems included solar photovoltaic (PV) panels, wind and micro-hydroelectric turbines as well as solar hot water heaters and geothermal systems used for heating and cooling buildings. Scholars such as Amory Lovins (1977) and Barry Commoner (1972; 1976; 1979), writing during a decade marked by energy shortages, the emergence of the Organization of the Petroleum Exporting Countries (OPEC) and the rise and fall of utility-scale nuclear energy, argued that in addition to offering relief from environmental degradation and energy insecurity, the development of environmentally responsible and appropriately scaled systems of energy generation from renewable sources could also engender social transformations leading to the emergence of a more equitable and
democratic society. These writers, along with others (Schumacher 1975; Dunn 1978), sketched visions of a decentralized, renewables-based, energy system built around attention to scale, geography and community. Notions of localism, egalitarianism and democratic governance were central to such visions. Driven by such visions, attempts to develop ‘community-based’ energy systems began to sprout up across the country. As the 1970s gave way to the 1980s, however, such discourses were unable to sustain the limited popular traction that they had gained.

Over the past decade, aspects of the emancipatory discourses of renewable energy promoted by Lovins, Commoner and others have returned. Such discourses are being deployed in conjunction with efforts that, on the surface at least, bare a resemblance to the types of small-scale, ‘grassroots’ actions that were popular thirty to forty years ago. Only limited, critical scholarly work has been done on the history of the emancipatory renewable energy discourses of the 1970s and their contemporary reemergence. Further, the practical feasibility of implementing and sustaining the types of local renewable energy initiatives envisioned by such discourses remains largely under-investigated. This project seeks to address both of these deficiencies through a study of efforts to expand decentralized, neighborhood-scale, systems of renewable electricity production in Washington, D.C. and Maryland. The central research question guiding this project is: Are the emancipatory and “aspirational” (Harriss-White and Harriss 2007) discourses of these local renewable energy initiatives realizable in actually existing practice?

My response to this question will proceed from the assumption that energy systems are, and have always been, socio-cultural projects of a certain sort—the result of human activities and practices stretching from the most basic uses of human labor power to the
most sophisticated nuclear technologies. In their review of two decades of research related to energy demand management Wilhite, et al. (2000) remind readers that examining the social characteristics of the production and use of energy in human societies has long been a central concern of the social sciences (Mumford 1938; White 1943). In the United States, the energy crises and electricity reform movements of the 1970s and early 1980s inspired many social scientists to adapt much of this work for use in empirical studies that sought to examine social attitudes towards energy conservation, patterns of energy use, the social effects of rising energy costs and energy shortages as well as the factors motivating changes in energy use (Wilhite et al. 2000, 110). While much of this work did not deal explicitly with renewable energy it paved the way for understanding social and individual responses to the cultural aspects of energy systems, particularly those involved with energy consumption. By the late-1980s, however, many social scientists had gravitated away from such research as it began to increasingly privilege a focus on rational, individual behaviors and market transformations rather than the broader social and institutional contexts in which energy production, distribution and consumption were situated (Wilhite et al. 2000, 112). Also, during this time, energy research became subsumed within emerging research focused on anthropogenic climate change and globalized ecological crises where it was positioned as one element, among many, to be explored (Wilhite et al. 2000, 112).

In recent years, concurrent with the renewed interest in renewable energy generation as well as the rise of fossil fuel extraction processes associated with ultra-deep water offshore drilling, hydraulic fracturing, and other processes capable of exploiting “unconventional” deposits of petroleum and natural gas, a number of social scientists have argued for a return to research that is specifically energy-oriented (Wilhite 2005; Byrne and Toly 2006; Love
2008). The arguments and work of these scholars and many others, along with the recent publication of energy-oriented volumes (Nader 2010; Strauss, Rupp, and Love 2013) as well as a series of targeted journal issues, indicate that scholars in the social sciences and humanities have begun to critically reengage with the topic of energy. A common thread connecting all of this work is a belief that energy systems must be understood and investigated as cultural projects, rather than simply technological chains of “energy production, conversion, transmission, distribution, and consumption” (Alanne and Saari 2006, 541).

In conversation with such work, this project focuses on a specific class of initiatives that I have chosen to call local renewable energy actions (LREAs). This term is adapted from *Energy Use: The Human Dimension* (Stern and Aronson 1984), a National Research Council volume produced in the early 1980s as the renewable energy wave of the 1970s was cresting. This volume describes “local energy actions” as “collective action[s] at the local level to meet local needs for energy services, [. . .] that is heating and cooling, mobility, industrial processes and so forth” (1984, 162). Often described today as ‘energy cooperatives’, ‘solar cooperatives’ or ‘community-based energy projects’, these efforts, while they are largely nascent and account for only a scant percentage of overall electricity production in the United States, are scattered throughout urban and rural areas across the country. They offer, through their discourse and actually existing character, resistance to both the dominant discourses of ‘hard path’ (Lovins 1977) fossil fuel dependent energy systems as well as the push for industrialized systems of renewable energy production that seek to displace them. The next section offers a general overview of the character of such efforts.
1.2 Local Renewable Energy Actions Broadly Defined

Conventional, industrial-scale electricity systems (both those that rely on fossil and nuclear fuels as well as those that are based around renewable technologies) are used to generate the majority of the electricity that is consumed daily in the United States and the rest of the world. These systems are generally marked by two distinct elements. First, they rely on a relative handful of concentrated generating technologies capable of producing large amounts of electricity for consistent periods of time. Second, these generating technologies are often located a considerable distance away from the major population centers where the electricity they produce is consumed. As such, massive distribution networks are required to transmit electricity across long distances and into homes, business, sports stadiums, and so on. Third, much of this electricity generating and distribution infrastructure is privately owned and operated by companies whose investors collect the vast majority of profits generated by the consumption of the electricity produced by such systems.

By contrast, the vast majority of local renewable energy actions are focused on developing small scale, on-site (and yet “grid-connected”) distributed renewable electricity generation (DREG) installations. The character of distributed generation marks such projects as geographically distinct from conventional, concentrated, industrial-scale electricity generation systems. Rather than being located far beyond the spheres of most people’s daily activity, distributed renewable electricity generation systems generally exist as installations that are directly integrated into elements of the everyday built environment such as homes, schools, churches, strip-malls and office buildings. Further, the electricity produced by such systems is consumed by those living and working in close proximity to them rather than being consumed by distant, anonymous populations. This strong emphasis
on localization marks local renewable energy actions as distinct from other models of renewable energy development that emphasize highly centralized, industrial-scale forms of generation and are often seen as mirroring the problems and structures of conventional, industrial-scale, fossil fuel generation.

Beyond exhibiting a preference for distributed renewable electricity generating technologies, supporters of local renewable energy actions are generally motivated by a “Community-based Energy Development” philosophy. Drawing on discourses of local self-reliance, decentralization, collaboration, ecological sustainability, energy security, and community-scale governance, community-based energy development focuses on cooperative, community-based ownership and investment in distributed renewable electricity generating systems and the localized retention of revenue from energy production. Advocates of community-based energy development generally describe the process as one that pays attention to a mix of factors or characteristics. These include the economics of ownership, the character of renewable technologies and the character of the deployment of those technologies. Walker (2008) has cited the following motivations for supporting the model: a desire for local income generation and economic redevelopment; the tendency of community ownership and participation to smooth approval and planning processes for projects; a desire to retain local control over decision making regarding energy projects in a region; a belief that such projects can provide affordable, reliable supplies of energy; and community commitments to social and environmental ethics. Such motivations are largely social rather than technological. They reflect a concern not for technology per say, but for "the particular social arrangements through which a given technology, irrespective of its scale or cost, is being implemented and made useful" (Walker and Devine-Wright 2008, 498).
Up until recently, realizing the benefits of generating some portion of your own electricity via a distributed, renewables-based generating system was out of reach for all but the most affluent or technologically inclined. Over the last decade, however, decreases in technology costs and changes in electric utility regulation, combined with Federal and State-level policy and tax incentives, have begun to generate a variety of models of ownership and project development that have been used to drive various scales of renewable electricity development across the country. Most importantly, for the purposes of this project, an emergent and extensive collection of local, grassroots solar-oriented renewable electricity initiatives have been developed in urban communities across the country over the past decade. In many ways these projects bare some resemblance to 1970s era projects documented by Weil (2009) such as the Alternative Energy Collective in Oakland and SUNRAE in Santa Barbara. Further, the discourses of the advocates promoting these initiatives align closely with the emancipatory discourses of Lovins, Commoner, Freeman (2007), Herman Scheer (2002; 2007) and others. Over the past six to eight years the Washington, D.C. region has seen the rapid expansion of neighborhood-scale distributed renewable electricity generation and a number of community-based models have emerged to support the expansion of such technologies.

1.3 Democratizing and Localizing the Electrical Grid

Electricity consumption and the ways in which people make use of electricity in their daily lives has been extensively documented and investigated. With these studies in mind this project focuses on how that consumption is made possible through the highly complex infrastructure of the electrical grid—that is to say how electricity is produced, transmitted
and then distributed to sites of consumption. The electrical grid is understood here as a technological network dedicated to the production, transmission and distribution of an anonymous, unmarked, invisible product: electrons. This technological network is embedded within a historically contingent network of social, political, economic and ecological relationships.

Contemporary, ecologically oriented, debates about the electrical grid are generally focused on transforming technologies of electron production and the transition from fossil fuel-based to carbon-free (or low carbon), renewables-based systems of electricity production. However, these debates mask deeper, ongoing conflicts around the social organization, management and ownership of the electrical grid in its totality. Distributed, renewables-based, generating technologies represent a shift in the ecological framework of electricity production. They are also often described as being disruptive to the existing framework of the grid as a technological network. Most importantly, however, these technologies, if properly deployed, have the potential to disrupt the network of social, political and economic relationships in which that technological network is embedded.

I use the phrase “properly deployed” because for the local renewable energy advocates whose efforts are documented here the two disruptions are, in many ways, mutually exclusive. It is possible to use distributed renewable electricity generating technologies to transform the operation of the grid itself without fundamentally transforming the wider cultural framework within which it is embedded and the structures of power that condition it. From the perspective of many local renewable energy advocates the former will be ecologically beneficial but, without the latter, the socially emancipatory possibilities of distributed renewable energy technologies will be left unrealized. What most
differentiates the work of local renewable energy advocates in Washington, D.C. and Maryland whose activities are the focus of this project from broader to efforts to “green” the nation’s electricity system then, is a focus on localizing and democratizing access to the electricity grid. The concept of the “local”—realized as a scale of practice, scale of organization and scale of social relations—guides the actions of these advocates.

1.4 Notes On Method and Organization

1.4.1 Introduction

The scope of this project has shifted, to some extent, from what was originally proposed. Some degree of “diversion” is, of course, to be expected in any intellectual endeavor (particularly learning exercises such as dissertations). The diversions encountered here, however, warrant some degree of explication with respect to the content that follows. I hope, therefore, that the reader will indulge my impulse to offer a brief biography of sorts for the project as it now stands. The next section offers a review of the methodology and organization of this project. I offer a general description of my field site and outline the scope of the participant-observation and informant interviews conducted as part of the study. I also briefly review the historical and policy analysis that inform the project and offer four caveats with respect to the organization and content of this document.

1.4.2 Description of Field Site

The Washington, D.C. metropolitan region currently boasts at least twenty active local renewable energy initiatives, in various stages of development, that fall within the descriptive parameters outlined above. This collection of projects is positioned within a heavily populated, ethnically and economically diverse urban/suburban region. Further,
governance of the region is split between the Federal government, two states (Maryland and Virginia), a large municipality (the District of Columbia), and a host of smaller municipalities. The region also contains four of the wealthiest, most educated and diverse counties in the nation (Montgomery and Prince Georges Counties in Maryland and Arlington and Fairfax Counties in Virginia). This political, economic and cultural diversity offered an excellent opportunity to investigate a broad cross-section of initiatives.

The vast majority of the initiatives that I encountered during my preliminary fieldwork and research were in the District and Maryland. While there are many advocacy organizations based in Arlington and Fairfax Counties that focus on issues similar to those confronted by advocates based in D.C. and Maryland, there are few, if any, initiatives in these counties that are similar to those being developed in DC and Maryland. The limited scale of activity in these counties can, to a large extent, be attributed to the state of Virginia’s lack of incentives (in terms of both regulation and tax policy) for electricity generation from renewable sources. Further, unlike Virginia, electricity markets in the District and Maryland have, since the early 2000s, undergone parallel processes of deregulation and restructuring (These processes will be discussed further in chapter three.) whereas Virginia’s utility markets remain in a state of “suspended” restructuring. It is for these reasons, as well as a desire to develop a manageable geographic scope for the project, that I focused exclusively on activities taking place in the District and Maryland.

1.4.3 Observations

The vast majority of the data for this project has been drawn from participant-observation activities conducted from the fall of 2011 through the winter of 2014. The initial
impulse was for large portions of this project to be ethnographic—in the broadest anthropological sense of the term. I had originally planned to compare and contrast three different initiatives in the DC region: the activities of the Cleveland Park Energy Coop (CPEC) (a neighborhood in the upper northwest quadrant of the District), University Park Community Solar (UPCS) (a small municipality located in Prince Georges County near the University of Maryland) and one additional initiative that was undecided at the time I commenced with my research. It was my hope that this third initiative would, in some way, be linked with then emerging efforts to expand local initiatives beyond their geographic concentration in highly affluent regions of the city and its suburbs. With these goals in mind I concentrated my initial fieldwork efforts on events sponsored by the CPEC and UPCS.

In the fall of 2011 I attended three events sponsored by the Cleveland Park Energy Coop: two informational meetings hosted by the group’s organizers that were held in neighborhood homes and a solar homes tour which took place over the course of an afternoon in late October. Unfortunately, for reasons that I touch on in chapter four, the group essentially ceased having regular meetings by early 2012. In January of 2012 I began my investigations of University Park Community Solar by attending a “Community Energy Fair” held at the Town of University Park’s public elementary school. It was here that I met members of the group and struck up a relationship with one of its key members: Dave Brosch. Brosch would become one of my key interlocutors as research for the project progressed.

Fieldwork progressed sporadically during the spring of 2012. My primary discovery, during this initial period, was that the real story was not in distinctions between particular projects, but rather how a particular vision for renewable electricity development might be
realized in two interconnected, yet regulatorily distinct areas: the District of Columbia and the state of Maryland. As a result of this discovery I elected to shift my ethnographic focus away from exploring particular projects and towards exploring how particular advocates in the District and Maryland sought to realize their shared vision in these distinct regulatory environments. In the summer and fall of 2012 I attended a series of events sponsored by DC Solar United Neighborhoods (DCSUN), the leading local renewable electricity advocacy organization in the city. My experiences at two of these events—the “DC Solar Flare Renewable Energy Tech Show” and the “DC Solar Congress”—are detailed in chapter four.

Fieldwork was sporadic from the late fall of 2012 through mid-summer 2013, (see the “Historical and Policy Analysis” section below for a description of research activities conducted during this time) but picked up significant steam beginning in August of 2013. It was during this time that I started to follow Dave Brosch’s organizing activities in Baltimore City and the Maryland suburbs more closely and began a seven-month “internship” in which I worked closely with Brosch and other Maryland advocates who were seeking to pass “Community Renewables” legislation at the state level. (The concept of “Community Renewables” is discussed, in detail, in chapters four and five.)

A description and analysis of my time spent working with the Maryland advocates forms the bulk of the material considered in chapter five. During this period I attended and participated in over two dozen meetings related to the group’s 2014 “Community Renewables” campaign. I served as the organizer of the group’s “Policy” team and helped guide the development of the legislation that was promoted as part of the campaign. During the winter of 2014 I made nearly a dozen trips to Annapolis, the state capitol, to meet with state legislators and staff members of the Maryland Energy Administration regarding the
development of the legislation. I was also involved with helping to organize testimony for the legislative committee hearings that were held on the bill in early March of 2014. Formal participant-observation for this project ended in mid-March of 2014.

1.4.4 Interviews

Between the fall of 2012 and the fall of 2013 I conducted seven formal, semi-structured interviews as part of the research for this project. It was my original intention to collect closer to twenty such interviews but time and resource constraints prevented me from reaching this goal. Details of plans for collecting additional interview data are described in chapter six. All seven interviews were digitally recorded. Partial transcriptions and detailed tape logs were prepared for each interview. A content analysis of the tape logs (as well as field notes collected from participant-observation activities) was completed.

Interviews ranged in length from 30-90 minutes. I spoke with five women and four men who ranged in age from their mid-20s to their mid-60s. Six of my informants—Rob Robinson, Olivia Cadaval, David Brosserman Steve Skolnik, Ketch Ryan and Tommy Luginbill—had either grown up or lived in the DC region for multiple decades. Cadaval and Brosserman were selected for their early affiliation with the development of the Mount Pleasant Solar Coop (MPSC). Robinson was also an early member of the MPSC and continues to be one of the core advocates involved with the work of DCSUN. Skolnik was selected for his affiliation with Greenbelt Community Solar, a neighborhood group directly modeled after the University Park Community Solar group. Ryan and her neighbor Kirk Renaud developed Common Cents Solar, an organization that has facilitated the expansion of ownership of solar PV and solar thermal technologies in the town of Chevy Chase,
Maryland. Luginbill and members of his family own a solar thermal and solar photovoltaic development business that operates in the District and Maryland. Emily Stiever and her colleague Triana Tello Gerez are involved with the work of the Community Power Network, a DC-based solar advocacy organization. Stiever also helps manage DCSUN’s neighborhood solar bulk-purchasing program. A final interview was conducted with a female informant that I met during the fieldwork I conducted at the DC Solar Flare. This informant requested to remain anonymous. 9

1.4.5 Historical and Policy Analysis

Most of the research conducted from the late fall of 2012 through the early summer of 2013 focused on historical and policy analysis. Much of this analysis appears in chapters two, three and five. Some of this material also appeared in an article published in the June 2013 issue of the journal *Culture, Agriculture, Food and Environment* (J. Morris 2013). In addition to the general history of electricity development offered in chapter three I conducted a significant amount of archival research focused on renewable energy development and “green” urbanism in the D.C. region during the 1970s. Although the majority of this research did not find its way into this document it has informed my broader understanding of the historical context for the initiatives under investigation here. Beyond the broad suite of renewable energy policies and incentives described in the final section of chapter three I conducted a significant analysis of net energy metering (NEM) regulations in the District and Maryland as well as various models and frameworks for the virtual net energy metering (VNEM) concept that is explored in chapter five.
1.4.6 Additional Caveats

Beyond the information on methods detailed above I find it useful to offer four additional caveats that may help prepare the reader for what follows. First, much of the material presented here is ethnographic, but I would not describe what I have produced as an “ethnography.” Rather, it might be best understood, to borrow from Andrew Ross, as “people-based research” (P. Smith and Ross 2011, 249). This is not to say that I do not stand by the conclusions I have drawn, but rather to say that they are only partial and warrant a more rigorous, in-depth, investigation that is beyond the scope of this project.

Second, my theoretical understanding of the electrical grid, and its centrality to the vision of the core advocates described here only began to take shape during my legislative “internship” with the Maryland advocates. I have tried, as best I can, to articulate this understanding in the chapters that follow but, as with the ethnographic content described above, this understanding is emergent. I hope that the reader will take that into account when interrogating its articulation here.

Third, many readers may find that this project suffers from trying to serve too many audiences. Readers who are deeply immersed in cultural studies’ tradition of critique will likely find it wanting theoretically. Anthropologists, geographers, historians, Marxist political-economists and public policy specialists will recognize their interests in what follows but this project fits unevenly, at best, into any one of those fields of practice. While I acknowledge that validity of such assertions I hope that, nonetheless, the narrative presented here “hangs together” in some relatively revealing fashion.

Finally, while the broad relationship between cultural studies and public policy will be addressed in chapter six, a word should be said about the particular detail of the analysis
offered in chapters three and five. My sense is that despite its aspirations as a political project, work in cultural studies rarely ventures deep into the “weeds” of public policy. The analysis offered here is not intended as a critique of this tendency. Rather, it emerges from my contention that, at least with respect to the emerging political-economies of renewable energy production, the devil, is in the details.

1.5 Chapter Outline

The next chapter outlines the proposed theoretical framework for this investigation. Drawing on work in urban studies, political ecology, Marxist political-economy and human geography I situate local renewable energy actions in the District and suburban Maryland within broader discourses of green urbanism. I argue, however, that framing these actions as strictly urban, ecological projects is problematic. Local renewable energy actions are not simply urban artifacts. Rather, they form part of a transurban, carbon-intensive, infrastructure: the electrical grid.

I argue that this distinction is important for at least three reasons. First, while electricity may be associated with modernity and urbanity it is by no means geographically indigenous to the city. The processes and technologies for delivering electricity to urban environments have drawn urban and rural environments into networks of electron exchange for over a century. Second, given the history of electricity regulation in the United States I suggest that we understand local renewable energy actions in a municipal context rather than a strictly “urban” one. I emphasize municipal here—in contrast to city or urban—because the geographical parameters of this project touch multiple municipalities of various sizes, all with contingent territorial, regulatory and governance boundaries. The electrical grid cuts
across such boundaries bringing certain regulatory frameworks and energy regimes with it. It also encounters certain regulatory frameworks and energy regimes along its path that alter its character. Third, I argue that local renewable energy actions can be understood as both place-making and political-economic projects. They are place-making projects in so far as they impact particular geographies and communities. They are political-economic projects in so far as they are embedded within more structural levels of governance, regulation and technological infrastructure. The chapter concludes with an exploration of localism movements and the nebulous, problematic concept of the “local”. I suggest that the place-making vision that is central to core local renewable energy actions supporters is directly linked with a particular political-economic vision. Further, I argue that localism, both as tactic and aesthetic, serves as the bridge between these visions.

Chapter three offers a broad history of electricity regulation and infrastructure development in the United States. I begin by reviewing this history starting in the late 19th century and moving forward over the next century through the deregulation movements of the late 1990s and early 2000s. I argue that discourses of localism played a central role in the early development of electricity systems in the late nineteenth century as well as the renewable energy and electric utility reform movements of the 1970s. Contemporary renewable energy movements are heavily conditioned by and make discursive use of this history. Further, I argue that while neoliberal regulatory frameworks and philosophies may have become dominant in the electricity industry over the last few decades, the ways in which these frameworks have been applied, the consequences of such regulatory transformations, and the responses to them, have been diverse and are not easily generalized. In the midst of and in parallel with these regulatory shifts, states and localities have, over the
last fifteen years, developed a complex and innovative suite of policies, approaches, and incentives to expand renewable electricity production. As much as this suite is overdetermined by “hard path” fossil fuel dependencies and Federal intransigence, the results of its application reflect the uneven, particular, localized, and place-based character of contemporary renewable electricity development. I conclude chapter three by arguing that core advocates in the District and Maryland initially sought to realize their vision of a decentralized, community-scale network of renewable electricity generation by taking advantage of this suite of policies, approaches and incentives.

Chapter four focuses on my ethnographic observations of the social motivations of participants in local renewable energy actions in the DC region. I argue that core advocates shared a collaborative ethic that they brought to their initial organizing efforts. However, the ability of these collaborative efforts, as well as the suite of policies and incentives on which they depended, to successfully achieve the broader vision of the core advocates was limited by two primary factors. First, core advocates experienced difficulties with maintaining the engagement of less invested members once those members had successfully become solar homeowners. As a result, core advocates were regularly involved with efforts to broaden and expand their coalition of participants. Further, I argue that while many of these less invested participants may have been sympathetic to and supportive of the broader vision of the core advocates such sympathies didn’t necessarily translate into a willingness to support the broader project and vision of the core advocates that extended beyond enabling the expansion of solar ownership for homeowners of elevated economic means. As a result, core advocates were regularly involved with efforts to broaden and expand their coalition of participants. Second, I argue that existing regulatory regimes—with their bias towards
appropriately sited properties, high-income populations and individualized ownership—severely limited the ability of the core advocates to implement their broader vision. As a result, they seized upon the emergent regulatory framework of virtual net energy metering in an effort to overcome such biases. Chapter five focuses on the success and failure, in the District and Maryland respectfully, to realize such regulatory transformations. I begin by reviewing the policy framework underlying the virtual net energy metering model and describe why core advocates in the District and Maryland seized upon this model in an effort to overcome the restrictions presented by current policy frameworks. I then compare the success of legislative efforts in the District with the ultimately unsuccessful effort to pass virtual net energy metering legislation in Maryland during the 2014 legislative cycle. In so doing, I identify three key reasons, which, I argue, help explain these divergent outcomes. First, the District’s anomalous status offered advocates a far less complicated political and regulatory structure than that confronted by advocates in Maryland. Second, this political complexity made it difficult for Maryland advocates to develop and maintain an effective coalition dedicated to advancing the legislation. Finally, Maryland advocates focused on developing a modest, conservative, and conciliatory piece of legislation bolstered by “fact-based” policy research but were ultimately defeated by ideological “arguments” offered by utility companies and their political supporters.

Chapter six offers a review of the project and concluding thoughts about future work that may emerge from it. I also attempt to situate this project within the larger universe of cultural studies by offering a limited to response to the question posed by Paul Smith in the introduction to, The Renewal of Cultural Studies: “What can and should cultural studies be doing right now” (2011, 3)? I do this by taking up three such “right nows” emphasized by
Smith that relate most closely to the themes explored in this dissertation: “the necessity of including a viable ecological sensibility in cultural studies’ image of itself as a political project,” “the need for cultural studies to revisit and revise the interest that it has sporadically had in public policy and policy making” and “the longing for political relevance and activism, or the question of what could be called activist knowledge” (2011, 6–7).
1.6 Endnotes

1 Following from Weil (2009), in this text I use the term renewable energy (RE) to refer “to modern technologies for capturing or converting energy flows and fluxes that originate in the sun or the earth’s core. This includes the direct conversion of insolation into electricity through photovoltaics (PV), indirect conversion (solar thermal power), conversion of wind energy through wind turbines into electricity or mechanical energy, solar heating (active and passive), ocean wave energy conversion, temperature and salt gradients in oceans and solar ponds, conversion of chemically stored solar energy in biomass into electricity, fuels, or heat. It includes geothermal energy, which is not technically ‘renewable’ but practically infinite. It also includes small, micro, and mini hydroelectric generation, but does not include large dams” (3). Where appropriate I use the term “renewable electricity” to refer specifically to electricity generated from renewable sources such as those described by Weil. Also, given that “alternative” and “renewable” are often terms that get collapsed in energy discourses I will use both terms, interchangeably, to refer to non-fossil and non-nuclear sources of energy such as wind, solar, tidal, geothermal, hydro and biomass.

2 Weil’s recent examination of the history of renewable energy development in California offers a flavor for how such efforts were realized. For example, he offers an extended case study of Davis, California that focuses on the town’s efforts, in the 1970s, to expand the use of human powered transport and solar heating technologies (Weil 2009, 198–253).

3 For example, the “Community Energy Directory” of the Solar Gardens Institute, a Colorado-based NGO, lists close to fifty such efforts, across sixteen different states (Solar Gardens Institute).

4 The majority of this work focused on consumer behaviors related to electricity consumption (Morrison et al. 1978; Kempton and Montgomery 1982; Kempton 1986). In 1984 the U.S. National Research Council published a volume entitled Energy Use: The Human Dimension (Stern and Aronson 1984). This volume called for an expansion of social science related research around energy issues and included essays dealing with barriers to energy efficiency, individual and household energy consumption practices, energy emergencies and local ‘energy action’ movements.

5 The last decade has seen social scientists working to understand community motivations and oppositions to industrial scale renewable energy development of wind and solar energy in the United States and Europe (Pasqualetti 2000; Wolsink 2000; Pasqualetti 2001; Kempton et al. 2005; Breukers and Wolsink 2007; Mallett 2007; Wolsink 2007; Pasqualetti 2011a; Pasqualetti 2011b). There is also a growing literature detailing emergent funding frameworks for developing community-owned renewable energy projects (Bolinger 2004a; Bolinger 2004b; Kildegaard and Myers-Kuykendall 2006; Khan, Chhetri, and Islam 2007; Walker 2008; Coughlin 2010; Farrell 2010).

6 Variants on the term community-based energy development appear throughout the scholarly and policy literature. The term is also specifically used in the Midwestern United States to refer to particular incentives and models for industrial-scaled wind electricity development.

7 The group’s accountant introduced me to Brosch by way of an electricity-oriented metaphor: “If we’re the distribution then he’s the generator.”

8 All research for this project was conducted under a framework approved by George Mason University’s Office of Research Subject Protections and the University’s Human Subjects Review Board. To the greatest extent possible I identified myself, in all formal and informal research activities, as a graduate student conducting dissertation research. All informants who participated in formal interviews signed an “Informed Consent Form” that was developed as part of the Human Subjects Review process.

9 My interview with the informant who chose to remain anonymous was conducted on October 18, 2012. My interview with Rob Robinson was conducted on December 5, 2012 at the home he shares with his wife in the Mount Pleasant neighborhood of Washington, D.C. My interview with Steve Skolnik was conducted on August 13, 2013 at the New Deal Café in Greenbelt, Maryland. My interview with Cadaval and Bosserman was conducted on August 16, 2013 at their home in Mount Pleasant. My interview with Ketch Ryan was conducted on August 19, 2013 at her home in Chevy Chase, Maryland. My interview with Emily Stiever and Triana Tello Gerez was conducted on August 22, 2013 at Heller’s Bakery in Mount Pleasant. My interview with...
Tommy Luginbill was conducted on August 22, 2013 at Politics and Prose, a bookstore in upper-northwest Washington, D.C.
CHAPTER TWO

2.1 Introduction

Vincent C. Gray, the mayor of the District of Columbia, could easily have been accused of being a hyperbolic bandwagon jumper when, in July 2011, as part of the launch of the District’s “Sustainable D.C.” initiative, he declared that:

“In just one generation - 20 years - the District of Columbia will be the healthiest, greenest, and most livable city in the United States. An international destination for people and investment, the District will be a model of innovative policies and practices that improve quality of life and economic opportunity. We will demonstrate how enhancing our natural and built environments, investing in a diverse clean economy, and reducing disparities among residents can create an educated, equitable and prosperous society” (“A Vision for a Sustainable DC” 2012, 1).

The “Sustainable D.C.” initiative may be a late arriving guest to the most recent “Green Urbanism” party but Gray’s statement hits all the right notes in a now well-rehearsed chorus: “international destination for people and investment”, “model of innovative policies”, “economic opportunity”, “diverse clean economy,” “educated, equitable and prosperous society.” The District’s sustainability initiative, along with the collection of climate action plans and “green” cities movements that have become part of the promotional and policy frameworks of urban communities across the country over the last decade can be linked with the international sustainable development movement that was inaugurated with the publication, in 1987, of the Brundtland Report, “Our Common Future,” (World Commission on Environment and Development 1987). This report, with “its crystallisation of the concept of sustainable development,” recast the remit of cities in
addressing environmental issues as central to the new sustainability agenda (Bulkeley and Betsill 2005, 43–44). In response to such challenges, urban communities across the country—even in the reddest portions of “Red State America”—have, for some time now, been buzzing with sustainability initiatives as they seek to enhance local livability while making themselves attractive to globalized capital investment.¹

The Mayor’s statement also fits nicely within the discourses of ecological modernization (Barry 2007; Fisher and Freudenburg 2001; Mol and Spaargaren 2009; Spaargaren and Mol 1992) and conventional environmental economics in which environmental deterioration is understood “as a challenge for sociotechnical and economic reform, rather than the inevitable consequence of the current institutional structure” (Mol and Spaargaren 2009, 255). Statements such as the Mayor’s are also low hanging fruit for advocates of Marxist-oriented political economic critique who argue that contemporary globalized ecological crises are capitalist induced structural crises that cannot simply be remediated through the deployment of “green” technologies and a reliance on the “egoistic behaviour of individuals” (Layfield 2008, 11).

A conventional investigation of local renewable energy actions could be readily incorporated into either of these theoretical frameworks. We could, on the one hand, investigate the policies and regulatory frameworks upon which such actions are built, offer an economic analysis of their costs and benefits and develop a framework for “best practices” that could be deployed to undertake such efforts elsewhere across the country. On the other hand we could develop a critique that situates local renewable energy actions within the broader contemporary discourse of green urbanism and builds on Andrew Ross’ assertion that the current political-economic trajectory of many such “greening” efforts, in
which “uptown populations are increasingly sequestered in green show-piece zones” while “residents in low-lying areas who cannot afford the low-carbon lifestyle are struggling to breathe fresh air or are even trapped in cancer clusters,” may “end up exacerbating climate change rather than ameliorating it” (2011b). Either effort could, potentially, be relevant to wider discussions concerning the ecological future of cities and the politics associated with confronting the globalized ecological and economic crises of the contemporary moment. And yet, neither is particularly necessary.

With respect to the former, numerous investigations of the costs and benefits of distributed renewable energy generation and community-based renewable energy development have been conducted by scholars working within the ecological modernization framework. Many of these investigations will be cited in what follows here. With respect to the latter, William Cronon (1991), Mike Davis (1992; 1998; 2006), Matthew Gandy (2002), David Harvey (1996), Roger Keil (2003), Jamie Peck (2007) and Ross (2011a), among numerous others, have made such arguments far more cogently and comprehensively than anything that could be developed here. I propose, instead, a theoretical framework that tacks between and draws from these two approaches while, at the same time, pulling in other threads of thought that might not normally get incorporated into such investigations. Such a choice is made here not out of pretentions to novelty but rather because the objects at the center of the investigation require such an approach.

At first glance we are compelled (or perhaps interpolated) to understand local renewable energy actions as ecological projects. There are certainly numerous reasons to do so. The ecological modernization framework would have us view renewable energy production as one technological wedge, among many, that should be called upon as part of a
transition to low carbon society. However, as I have noted previously, energy systems are social projects. To this end, while local renewable energy actions have what I would describe as embedded ecological goals, what differentiates them from other models of low carbon energy production are the particular social, economic and political frameworks and aspirations upon which they are built. To comprehend local renewable energy actions as simply techno-ecological projects dedicated to carbon reduction masks these differences and, I would argue, involves adopting an analytical frame crafted by elite political-economic interests who would prefer that debates surrounding low carbon energy production remain focused on apolitical, econometric cost and benefit analyses. Instead, an effort will be made here to avoid becoming entangled in some kind of binary debate where the choices offered are either ecological transition or nothing. Such a choice is a false one. An ecological transition is necessary and we should, instead, be concerned with the social, political and economic character of that transition.

The framing of local renewable energy actions as urban projects is also potentially problematic. While I do not disagree with the assertion that cities are, in many ways, ground zero for the battle against climate change, local renewable energy actions are not simply urban artifacts. Rather, they form part of a transurban, carbon-intensive, infrastructure: the electrical grid. This is important for at least three reasons.

First, while electricity may generally be considered a modern, urban convenience, the processes and technologies for delivering electrons to urban communities have drawn urban and rural environments into networks of electron exchange for over a century. Further, the now ubiquitous presence of electricity in the daily lives of nearly all residents of the global North (and the increasingly urbanized portions of the global South) suggests that while
electricity may be associated with modernity and urbanity it is by no means geographically indigenous to the city. Focusing on the relationship between local renewable energy actions and the wider electrical grid helps illuminate the disruptive character of distributed renewable electricity generating technologies and the potential threats such technologies pose to the political-economies upon which existing networks of electron exchange are built.

Second, it is important to note that Mayor Gray’s statement outlines what is, first and foremost, a municipal project. That is to say it is a project initiated by a municipal government whose territorial, regulatory and governance boundaries are fairly well circumscribed and outlined. (This is particularly the case in D.C. given the District’s unique political status and relationship to the Federal government.) I emphasize municipal in this context—in contrast to city or urban—because the geographical parameters of this project touch multiple municipalities of various sizes, all with contingent territorial, regulatory and governance boundaries. Many of these municipalities are engaged in aspirational projects and have produced aspirational documents that, for all intents and purposes, are interchangeable with the Mayor’s “Sustainable DC” initiative. With respect to Maryland in particular, each of these municipalities is embedded within a county-level government with its own contingent territorial, regulatory and governance boundaries and collection of aspirational ecological projects and pronouncements. All of these counties are, in turn, embedded within a state constrained by contingent boundaries attempting to realize a set of aspirational ecological goals. Both the District and Maryland are, in turn, embedded within and constrained by national regulatory and governance frameworks. Such relationships and nested frameworks of governance and territoriality create a complex environment offering various levels of autonomy to individuals, communities and jurisdictions.
The electrical grid cuts across such boundaries, bringing certain regulatory frameworks and energy regimes with it. It also encounters certain regulatory frameworks and energy regimes along its path that alter its character. The District and Maryland share a geographic boundary and an electrical grid but the way that grid is regulated in each jurisdiction is distinct. Such distinctions help condition the character of renewable electricity development in each jurisdiction.

Third, as scholars of the social history of electricity such as David Nye (1990; 1998) have made clear, electricity is a place-making technology. Further, electricity systems are historically contingent products of specific places, space-times and geographies. The place-based character of renewable electricity production is particularly evident given that the technologies deployed in such efforts rely precisely on particular landscapes, atmospheric phenomenon and aspects of the built environment in order to be successful.

Beyond their broad status as cultural projects then, local renewable energy actions, can be understood as both place-making and political-economic projects. They are place-making projects in so far as they impact particular geographies and communities. They are political-economic projects in so far as they are embedded within more structural levels of governance, regulation and technological infrastructure. Most importantly, as we shall see, the place-making vision that is central to core advocates whose activities are explored here can be linked with a particular political-economic vision. Building a thorough understanding of local renewable energy actions requires uncovering how the particular and the structural act in relation to one another.

It is important, then, to develop a theoretical framework for examining local renewable energy actions that can speak, in some way, to all of these considerations. This
chapter outlines the proposed theoretical framework for this investigation. Drawing on work in urban studies, political ecology, Marxist political-economy, geography and political science I situate the local renewable energy actions taking place in the District and suburban Maryland within broader discourses of green urbanism and localism. Much of the discussion presented here is rooted in a relevant set of theoretical threads that emerged out of scholarship in geography, political-economy and urban studies in the early 1970s. In the sections that follow these trends are traced forward to the present moment in an effort to identify elements related to urban process, ecological reform, infrastructure development and place that are key to this project.

There are at least five reasons to begin in the 1970s. First, and most broadly, Bruce Schulman, echoing numerous other commentators, has described the 1970s as a decade in which “the United States experienced a remarkable cultural makeover” and the country’s “economic outlook, political ideology, cultural assumptions and fundamental social arrangements changed” significantly (2001, xvi). Second, this was the period during which distributed scale renewable electricity generating technologies first became commercially available in the United States. As such, the 1970s marks the beginning of the contemporary renewable energy movement. Third, this decade gave birth to the contemporary environmental movement and was marked by a variety of energy crises. Beginning in the late 1970s both of these factors directly affected and helped precipitate the dismantling of the dominant framework of electric utility regulation that had been in place for over fifty years. Fourth, this was the decade that preceded the collapse of the Keynesian welfare state and the emergence of the neoliberal project in the early 1980s. Finally, this was the “decade of the
neighborhood” (Osman 2008), a time in which decentralized urban politics and neighborhood-scale governance had an extraordinary run of popularity.

It is my contention that positioning the renewable energy efforts of the 1970s within the broader transformations of the decade is crucial for developing an understanding of how such transformations shaped, and continue to shape, the direction of contemporary efforts to expand renewable energy development. Further, I would suggest that such an understanding might work both ways. This too is to say that exploring the 40-plus year history of renewable energy development can illuminate and complicate our understanding of the wider political-economic transformations that have occurred during the past decades.

The next section explores fundamental connections between political-economy and ecology. Section three links ecology and place making. Place making, political-economy, ecology and the city are drawn together in section four. Finally, section five brings these threads together through the lens of localism. The problematic concept of the “local” links process and materiality, the imaginary and the tangible. It is, I argue, central to the philosophies, discourses and practices associated with local renewable energy actions. The “local” links such activities with other political currents of the present moment. It also links them with broader historical currents of American political activity. Connections between three of these—the early development of electricity systems in the late 19th century, the political and economic transformations of the 1970s and the forty-plus year effort to expand renewable energy production—are central to the discussion presented in chapter three.
2.2 Linking Political Economy and Ecology

2.2.1 Political Economy and Ecology in the 1970s

The ecological crises of the 1960s and 70s posed significant challenges for neoclassical as well as Marxist political-economic theory. During this time globalized, environmentally-centered social movements, energy crises and ecological destruction on an unprecedented scale shone light on the emerging ecologically-centered, contradictions of capitalist production. The realization of physical limits to economic growth gained popularity in the late 1960s and early 1970s with the publication of a variety of academic and popular texts. According to Spash, many of these texts (though not all) “earned the reputation for being in the ecodoom school and resurrecting the memory of Thomas Malthus” (1995, 280).

Parlato and Ricoveri have described the framework of environmental regulation that emerged during this period as being linked to “reformism and the “Keynesian pact or accord” in that the regulations were focused on reforming capitalist relations of production along the lines of the Keynesian labor and social security reforms rather than reforms of the conditions of production (1996, 238). Along side this set of Keynesian-inflected reforms there emerged a set of ecologically-oriented political-economic critiques that confronted both the neo-Malthusian political-ecology and the nascent efforts to incorporate environmental reform into neoclassical economic theories of unlimited growth.

Economists such as Herman Daly began to make use, in the late 1960s, of the laws of thermodynamics to explicitly critique the growth paradigm that they felt was embedded within the “Keynesian-neoclassical synthesis” of the period (1993a, 14). These economists took aspects of the neo-Malthusian critiques as well as political-economic theory drawn from an eclectic mix of thinkers to develop criticisms that rejected classical and Marxist-
influenced growth paradigms and techno-scientific triumphalism in favor of a steady-state thesis predicated on viewing human economies as positioned within a finite, resource constrained, global ecosystem.

Hans Magnus Enzensberger’s 1974 essay “A Critique of Political Ecology” (1996) is widely recognized as the first influential attempt to explicitly incorporate ecologically-oriented arguments into a Marxist framework. In his essay Enzenberger conceded the need to incorporate aspects of the ecology movement into Marxist praxis while arguing that applying Marxist thought to ecological questions would help generate a more robust and intellectually detailed theoretical framework for examining environmental crises and ecological degradation (Hay 2002, 264). Enzenberger argued that while ecological destruction had long been a part of human history, the scale of such destruction and the ecological risks associated with it had increased substantially under the capitalist system (1996, 27). He pointed up the tendency of market-based approaches to environmental crises to treat pollution abatement as a growth industry and novel space for capital expansion (1996, 27). He described the existence of structural inequalities between the nation-states of the global North and global South with regard to capacities for pollution abatement and the uneven character of dependencies on the exploitation of natural resources and pollution intensive industrial production. Enzenberger was also equally critical of traditional socialist positions that treated capitalism simply as a set of property relations in need of egalitarian reformation rather than as a holistic system of production and social relations in which “the disturbance of the material interchange between man and nature” emerges as “the strict consequence of capitalist commodity production” (36). In offering such criticism he argued for a more critical assessment, in light of ecological arguments, of the concept of material
progress and the productivist teleology that was a significant part of the Marxist tradition (22).

### 2.2.2 Neoliberal Environmental Regulation and the Ecological Modernization Project

McCarthy and Prudham have argued that the “proliferation of environmental laws, regulations, constituencies, and norms in advanced capitalist countries” during the late 1960s and early 1970s “came to represent a substantial and growing constraint on capitalist accumulation strategies” that was “ripe for neoliberal attacks” (2004, 278). Such an assertion explicitly links the environmental politics of the 1970s with the broader political, social and economic transformations of the decade. Further McCarthy and Prudham argue that we should understand neoliberalism “as a distinctly environmental project, and one that necessarily reprises aspects of classical liberalism” (2004, 276). McCarthy and Prudham identify three key aspects of these connections. First, neoliberalism (following from classical, liberal economic thought) “is significantly constituted by changing social relations with biophysical nature” (2004, 275). Second, neoliberalism and modern environmentalism serve as the foundational political and ideological regimes for “post-Fordist social regulation” (2004, 275). Third, the modern environmental movement represents “the most powerful source of political opposition to neoliberalism” (2004, 275).

In the contemporary moment the Keynesian-inflected environmental reforms of the 1960s and 1970s have largely given way to the “neoliberal nature” described by McCarthy and Prudham. Under the neoliberal environmental framework there is a broad consensus that the primary and most economically efficient vehicle for environmental regulation is a suite of market-based incentives and regulations. The appeals to scale and the concern for
population growth, overconsumption and increasing scarcity of natural resources promoted by the neo-Malthusians and others have not disappeared, but they have been increasingly sidelined in favor of efforts to make capitalist markets more environmentally efficient and, in so doing, lay the groundwork for “green growth.” Curbing environmental pollution and maintaining access to, and an efficient allocation of, natural resources also tend to be the primary concerns of neoliberal environmental thought and practice.

The focus on regulating environmental pollution generally stretches across all segments of economic activity: production, distribution and consumption. At issue are the ways these activities result, to varying degrees, in the degradation of ecological systems, the relative health of which are recognized as being vital to continued economic growth. The difficulty emerges when we understand that the effects of pollution are generally unaccounted for in classical and neoclassical economic paradigms that treat natural resources and “ecosystem services” (Costanza et al. 1997) as free goods. Further a significant amount of environmental pollution is generally understood to affect “common” resources such as the atmosphere, supplies of fresh water, and so on that are not managed under the private property regimes upon which capitalist ownership systems are predicated. The treatment of natural resources and “ecosystem services” as free goods is understood within neoliberal environmental thought as a market failure that must be corrected by incorporating such externalities into the market calculus through privatization mechanisms and the commodification and economic valuation of ecosystem services.

John Barry has argued that ecological modernization (EM) has become “the preferred 'political economy' underpinning contemporary state and market forms of sustainable development” (2007, 448). Mol and Spaargaren have suggested that the
emergence and maturation of the ecological modernization concept “in the 1980s should be understood in reaction to the demodernisation ideas of the environmental movement in the 1970s on the one hand, and the not very successful curative approaches of environmental state authorities in Europe on the other” (2009, 253). These authors have identified three major commonalities that exist among the theoretical variants of the ecological modernization project. First, they suggest that under the ecological modernization paradigm environmental deterioration is understood “as a challenge for sociotechnical and economic reform, rather than the inevitable consequence of the current institutional structure” (2009, 255). Second, ecological modernization emphasizes “the actuality and necessity of transformation of modern institutions […] to achieve environmental reform” (2009, 255). Finally, Mol and Spaargaren argue that ecological modernization occupies a “position in the academic field that is distinct from the more or less strict neo-Marxists, as well as from counter-productivity and post-modernist analyses” (2009, 255).

Fisher and Freudenberg have suggested that the “expectations of ecological modernization differ from those of most of the past work on society–environment relationships” in two ways. First, the “theory explicitly describes environmental improvements as being economically feasible [sic]” and, second, in laying out an agenda for continued economic development it “depicts political actors as building new and different coalitions to make environmental protection politically feasible [sic]” (2001, 702). The emergence of these novel political coalitions is considered crucial to the development of “improved ecological outcomes” and is understood to require “changes in the institutional structure of society” (2001, 702).
Barry works to distinguish weak variants of the ecological modernization thesis with their focus on the “centrality of ‘innovation’ and ‘eco-efficiency’” from stronger variants of the thesis that focus less explicitly on ecological considerations in favor of advancing arguments for “lessening socioeconomic inequality” and the development and implementation of re-distributive policies designed to achieve such goals (2007, 447). He suggests, however, that while the environmental arguments for resource efficiency and innovation have largely taken hold, the non-environmental aspects of the sustainable development project still lack discursive prominence and are generally criticized as being too politically radical (2007, 447).

Further, Barry argues that within the discourse of ecological modernization, particularly its weaker variants, economic growth and environmental sustainability are often presented as a win-win proposition. Ecological modernization stresses “innovative policy tools such as market-based incentives and voluntary agreements that ‘steer’ businesses towards eco-efficient practices, which do not undermine ‘competitiveness’ and ideally should create new markets, employment, investment opportunities and technological advances” (2007, 447).

2.2.3 Ecological Marxism: Responding to Neoliberal Environmentalism and Ecological Modernization

Ecological Marxism represents perhaps the most robust response to the projects of environmental neoliberalism. Emerging out of the critiques developed by Enzenberger in the 1970s, Ted Benton (1996b) and David Layfield (2008) describe ecological Marxism, as being focused on deploying aspects of Marxist theory to investigate the character of contemporary,
globalized ecological crises and the development of descriptions of how such crises articulate with and emerge from the crisis prone system of globalized capitalism.

Three primary elements are clearly present in all strains of ecological Marxism. First, contemporary environmental crises are understood to be crises of capitalism. This is not to say that environmental crises exist only in the political-economic realm, but rather that the capitalist mode of production is implicated in and overdetermines detrimental human-environment relationships. Second, ecological Marxism tends to understand ecological crises as structural crises that cannot be remediated simply by the “egoistic behaviour of individuals” and an emphasis on scale and locality (Layfield 2008, 11). Third, ecological Marxism is concerned with the theoretical development and application of an ecologically-centered historical materialism (Layfield 2008, 11). This ecologically-centered historical materialism has refocused Marxist examinations of the capitalist mode of production in an effort “to offer an explanatory account [sic] of the production of ecological degradation and crisis” (Benton 1996c, 104).

These three analytical and theoretical points of emphasis have been applied to various projects that can be broadly located with the umbrella of ecological Marxism. Two of the key orienting positions within the domain are: the “second contradiction” thesis which has been framed by James O’Connor (1988; 1996; 1998) and articulated in various fashions by others (Altvater 1993; Benton 1996d; Swyngedouw 1999; Bridge 2000) and the “capitalist production of nature” thesis described by Neil Smith (2007; 2008), David Harvey (1974; 1982; 1996) and others.

Following from Polanyi (1944) O’Connor suggests that capitalism has the ability to produce both social (overproduction) and ecological (underproduction) crises that engender
complementary, though distinct, processes of capitalist restructuring. In the case of the former the focus is on a restructuring of relations of production and productive forces. In the case of the latter, however, ecologically related restructurings focus on restructuring the conditions of production to make them more “transparently social in form and content, for example, permanent-yield forests, land reclamation, regional land use and/or resource planning, population policy, health policy, labor market regulation, toxic waste disposal, planning, and so on” (O’Connor 1996, 200). In this construction nature is positioned as external to human beings and capitalist processes and understood as a set of material conditions to be struggled with and transformed to serve human needs.

The “capitalist production of nature” thesis seeks to complicate these ideas by suggesting that what is external and universal about nature changes over time and space and is subject to human and capitalist intervention. David Harvey (1974) and other Marxist scholars have long noted that it is precisely human processes of valuation, economic production and techno-scientific change that construct and influence the “resource” characteristics of the non-human world. Nature, by this line of reasoning, has no value, in any human sense, outside of that which human processes assign to it. Neil Smith builds on such assertions by arguing that transformations in that which is external to capital can be observed through processes in which plant and animal DNA, plant seeds, water and so on are transformed into capitalist commodities. Such transformations are also present in the establishment of carbon markets, pollution credits and particular capitalist sectors dedicated entirely to the remittance and clean up of ecological degradation that emerges from other capitalist processes. Further, while there are certainly universal events and processes of the
natural world to which all forms of life on Earth are subject, human beings are far from passive agents in their relationship to such events and processes.

Smith also points out that the “production” of capitalist nature is an uneven process that reflects the uneven nature of capitalist expansion in general. “Just as capitalists never entirely control the production process, its results, or the global capitalism it generates, so capitalist society does not entirely control nature” (25). Along these lines, Castree (2003), Goodman, et. al. (1987) and Prudham (2005) have demonstrated how particular aspects of the natural world—seals, work animals and Douglas Fir trees respectively—pose their own resistances to processes of capital expansion and accumulation.

We are left then with two not quite complementary perspectives. The first, framed by O’Connor and articulated in various fashions by others (Altvater 1993; Benton 1996d; Swyngedouw 1999; Bridge 2000), posits the existence of a certain set of (relatively) timeless conditions—human labor power, raw materials, sinks for pollution—that are necessary for capitalist expansion, but that stand external to it. The second, drawn from perspectives such as those of Smith and Harvey, argues that there is no material, untouched, universal nature, but rather the nature that human beings and capitalist processes have constructed and continue to construct in relationship to particular “natural” processes and conditions. In both cases, however, it is human agency that is seen as the social and political force capable of intervening to combat ecological crises. But, as Smith, Harvey and others suggest, intervention is not a question of returning to some idealized and universal nature, but rather the continued transformation of the human/nature relationship.

The local renewable energy actions described here clearly fall well within the framework of the ecological modernization project. They also, as we shall see, rely heavily on
a suite of market-based incentives and environmental regulations that fit within McCarthy and Prudham’s “neoliberal nature” conceptualization. With respect to O'Connor’s “second contradiction” thesis, market-based renewable electricity development clearly represents not only an attempt to ameliorate ecological degradation which threatens capitalist production but also an effort to open up new spaces for capitalist accumulation as well. And yet, as Lebowitz has noted, the process O’Connor describes, can be understood not only as a contradiction surrounding the needs of the broader capitalist system as a whole, but also as a conflict between the needs and actions of “individual capitals” (1996, 236). That such conflicts might exist between various energy interests—coal, natural gas, oil, nuclear, renewables and so on—is fairly obvious. Most important to this investigation, however, are the conflicts that emerge between for-profit electric utilities and renewable electricity interests. Those conflicts will be discussed further in chapter five, but for now it is sufficient to note that conflicts between utilities and renewable electricity interests have far less to do with “fuels” and technologies than with how these technologies will be owned, deployed and managed.

It is also worth noting that ecological modernization has diverse manifestations with strong and weak variants. Mol and Spaargaren, have suggested that many of the criticisms of the ecological modernization thesis advanced by scholars such as Barry (e.g., an “overemphasis on technological determinism,” the “productivist orientation” of the thesis, its “neglect of consumption and the consumer,” its lack of emphasis on “power and inequality,” and its Eurocentric bias) are no longer valid (2009, 260). Rather, they argue that such claims, as well as a host of others offered by neo-Marxists, deep ecologists, neo-Malthusians, and post-modern theorists, “are too narrow, limited and one-sided when they
claim that no environmental reform can be witnessed and refuse to interpret anything new under the sun as long as we continue to have capitalism, population growth or modernity” (2009, 260). Instead, the authors suggest that an emerging set of debates dealing with “the nation-state or national security centredness of ecological modernization, the strong separation between the natural/physical and the social in ecological modernization, and the continuing conceptual differentiation in state, market and civil society actors and institutions” have now become the primary foci for research in the field (2009, 260).

Further, while many environmental movements may be explicitly anti-capitalist they are not necessarily socialist, at least not in any traditional, classical sense of the word. Given such arguments it might then be more accurate to describe the majority of environmental movements as opposing particular forms of capitalism, most often those associated with the intensely globalized form that emerged following the end of World War II. Many environmentally-oriented political economists and advocates in fact aspire not to dismantle, but rather to reform a capitalism that is believed to have departed negatively from its small-scale, innovative, liberal origins as espoused in the writings of Locke, Hobbes, Rousseau, Bentham and others. This is not to say that the broader critiques offered by O’Connor and others are unwarranted. Rather, it suggests a need for developing more nuanced descriptions that can speak to the polyvalent character of the political economy of the projects under investigation here.

This polyvalent character also speaks to the “capitalist production of nature” thesis promoted by Smith, Harvey and others in at least two ways. First, with respect to the “resistance” arguments offered by Castree (2003), Goodman, et. al. (1987) and Prudham (2005) it is important to sketch out the character of such resistances with respect to the
renewable electricity generating technologies that are under consideration here. The production of these technologies—from silicon, to rare earth minerals, to power inverters—exists within a globalized market. “Nature” in O'Connor’s terms has clearly been incorporated into the production of these technologies and their appearance as capitalist commodities. It is worth noting, however, that the fuels on which these technologies depend, particularly wind and solar, are markedly ubiquitous when compared to the (geographically restricted) place-based nature of fossil fuels, which, with respect to their extraction, are generally location restrained. The political-economic character of these fossil fuel resources, within the context of the globalized capitalist marketplace in which they exist, conditions their ownership and control as commodities, in and of themselves, before they are ever used to generate energy, an entirely different commodity. The desert sands, the tops of mountains and the ocean floors under which these resources are to be found are owned and regulated by markets. In contrast, the wind, the sun and to a significant extent hydrological, geothermal and biomass fuel sources, operate much differently. The sun may shine more often and with more intensity in some geographical places rather than others, but it still shines everywhere. The wind may blow more regularly and with more intensity in South Dakota than in central Maryland, but it still blows everywhere. Further, unlike fossil fuels, the majority of renewable fuels (biomass being, perhaps, the major exception) resist the sort of space-time compression that fossil fuels can be and are regularly subjected to. We cannot collect sunlight or wind gusts in shipping containers and move them from place to place. The heat of the earth, the pull of tides and the fall of water over rapids cannot yet be bottled, barreled and loaded onto trucks. So, like fossil fuels, these renewable fuels are place-based fuels of the highest order and yet, unlike fossil fuels, their place-based nature is
ubiquitous rather than restricted. This place-based ubiquity engenders renewable fuels with the potential to transform the political-economic character of contemporary energy production.

We should, however, acknowledge that while fuel sources such as the sun and the wind are abundant and ubiquitous the capacity to harness such sources for energy production is restricted. The collection of solar energy requires the installation of photovoltaic solar cells in physical landscapes—the deserts of Arizona, the roofs of buildings and homes, and so on. Collecting wind energy requires the placement of wind turbines on the plains of West Texas, the tops of mountains, the roofs of homes. Access to such landscapes is restricted by markets, governments, regimes of land tenure and systems of property ownership. Further, solar cells, generators and wind turbines are not handed out like phone books or the weekly advertisement circulars that appear in our mailboxes. Access to these technologies is subject to market restrictions and economic means.

Second, to whatever extent ongoing transformations of human/environment relationships may be over determined by the political-economic sphere such relationships are cultural in the broadest sense of the concept. To take seriously William Cronon’s assertion “that “nature” is not nearly so natural as it seems” and is, instead, “a profoundly human construction” (1995, 25) requires reaching beyond the boundaries of the political-economic. With respect to the projects under consideration here I wish to suggest that a particular philosophy of place-making acts as a significant motivating force for the core advocates and, to a lesser extent, their collaborators.

The next section examines three interrelated understandings of the concept of place. I begin by situating the contemporary emergence of the place concept in a collection of ideas
that emerged among phenomenological geographers in the 1970s. In so doing I argue that these interventions were motivated by many of the same events which motivated the political-economic interventions of the period described previously. I then describe how phenomenological conceptions of place and critiques of such conceptions were incorporated, in the 1980s, into the framework of “new regionalism.” The final conception of place draws in both of these previous frameworks while centering place around ecology. Finally, I suggest that for this project it will also be important to consider place in the context of governance and regulation.

2.3 Theories of Place, Neighborhood and Locality

In the late 1960s and early 1970s, in parallel with the ecologically motivated work in political-economy described in the previous section, a group of phenomenologically-oriented human geographers and their humanist-oriented colleagues in related disciplines sought to embrace the subjective aspects of human-environment relationships while emphasizing broader attempts at crafting general theories of human phenomenological activity. Scholars working within this field emphasized human scale processes, practices and physical environments and took the concept of place as a key, organizing element for their work.9

Within the framework developed by these scholars places were understood to emerge largely as a function of temporal rootedness and relationships cultivated with particular landscapes, biophysical and built environments and human communities over time. Concepts such as “sense of place” and “topophilia”—Yi-Fu Tuan’s term for “the affective bond between people and place or setting. Diffuse as concept, vivid and concrete
as personal experience […]” (1974b, 4)—emerged in an effort to describe and explain the various human factors and forces that worked to bond human beings to particular geographies as well as understand the affinities human beings felt for particular places/geographies.

Much of the work of these scholars was bound up with the racial, ethnic, gender and environmental politics of the period and motivated by attempts to confront and make sense of the socio-cultural transformations that rapidly globalizing capitalist modernity had brought to the global North. The emphasis placed by these scholars on rootedness, temporal persistence, human scale, human-centeredness, and cyclical and seasonal time were all responses to increased perceptions of placelessness, unrootedness, and the rapid pace of technological and scientific changes associated with the period. Drawing on Heideggerian notions of authenticity, dwelling and deliberateness of conscious action, these scholars advocated for a “practice of place” which took local, human-centered places as the locus for social and political action, promoted a belief in human scale responses to crises and offered support to popular efforts of this period contending with the perceived threats to cultural diversity, regional traditions and environmental landscapes and practices posed by the advances of modernity and globalized capitalism.

Despite its popular appeal a number of geographers and theorists in related disciplines criticized this work for its insistence on linking place with notions of rooted authenticity and permanence (Cresswell 2004, 26). These critics argued that such linkages were, at best, essentialist and exclusionary and, at worst, incapable of serving as an adequate description for a world that seemed overcome by impermanence, mobility and hybridity (Cresswell 2004, 26). These critics eschewed understanding places as particular, distinct,
relatively static, relatively bounded, geographically defined areas in favor of understanding places as sites for the production and reproduction of social relations conditioned by forms of power, identity, geography, ecology and the needs of globalized capitalism (Cresswell 2004, 26).

During the 1980s a collection of scholars working in Great Britain under the rubric of the “new regional geography” sought to synthesize elements of the work of the phenomenological geographers and their critics (Thrift 1983; Kellerman 1987; Jonas 1988). Andrew Jonas’ review of this work (1988) argued that the “new regional geography” was focused on investigating the changing spatial scales of locality production emerging from the structural frameworks of globalized capitalism. Under such frameworks, Jonas noted, “systems of interaction have tended to expand over space and contract over time, albeit unevenly” (1988, 108). Further, he suggested that “locales, or settings for social interaction, within capitalist social space transcend a variety of spatial scales” (1988, 108). Such transformations, argued Jonas, called for the development of new theoretical understandings of locality production that were focused not on establishing some a priori concept of locality, but rather on investigating “competing concepts of locality which may be held by groups of co-located people” and the structures and mechanisms (operating at a variety of scales and in various localities) “which (contingently) have produced the events in localities under observation” (1988, 108).

More recently work by scholars such as Massey (1997), Appadurai (1995), Dirlik (2001), and Escobar (2001a; 2001b) has contributed to an extension of the project outlined by Jonas. Massey’s concept of a “progressive” or “global” sense of place understands places as sites of connection and permeability rather than defensive fortifications. She has described
three components she believes are involved in developing a global sense of place. First she argues that places, as "conceptualized in terms of the social interactions which they tie together" are processes rather than static objects (1997). Second, she asserts that there is a need to recognize that the boundaries of places—conceptual, material or otherwise—are less important than the particularity of linkages that form bonds between and among places (1997). Finally much like Jonas’ assertion of “competing concepts of locality” Massey argues that place identities are not homogenous rather, "they are full of internal conflicts” (1997).

Appadurai’s “production of locality” thesis is a relational and contextual concept, rather than a scalar or spatial one, in which locality is understood, simultaneously, "as a structure of feeling, a property of social life and an ideology of situated community," (1995, 213). Locality, from this perspective, is a phenomenological quality of social life “constituted by a series of links between the sense of social immediacy, the technologies of interactivity and the relativity of contexts [. . .] which expresses itself in certain kinds of agency, sociality and reproducibility” (1995, 205). Appadurai uses the term “neighbourhood” to describe “the actually existing social forms in which locality as a dimension or value, is variably realized” (1995, 205). In this construction “neighbourhoods” are understood as “situated communities characterized by their actuality, whether spatial or virtual, and their potential for social reproduction” (1995, 205).

Appadurai links the social reproduction of locality with the development of local knowledge systems, the production of local subjects and the production of local “neighbourhoods” “within which such subjects can be recognized and organized" (1995, 206). Such processes of neighbourhood production and reproduction require “the continuous construction, both practical and discursive, of an ethnoscape (necessarily non-
Appadurai argues that the capacity of “neighbourhoods” to produce local subjects and the contexts “within which their very localizing activities acquire meaning and historical potential” are significantly impacted by larger-scale structural formations (regional, national, global and so on) which possess the ability to determine the general shape of all the neighbourhoods within the reach of their powers" (1995, 211). The locality producing capacities of these larger-scale structural formations have, Appadurai argues, made the production of locality a contested, globalized process.

Dirlik has contrasted discussions of space and place that are centered within "the context of urban geography and sociology" with "ecologically conceived discussions of place" that "are of necessity attentive to questions of the fixity of places and the limitations set on the production of place by its immediate environment" (22). For Dirlik ecologically conceived discussions of place call up questions of boundaries and enclosures (22). "This is not to return to some kind of geographic determinism or bounded notion of place, but to suggest that any intellectually and politically critical notion of place must recognize some notion of boundary; porosity of boundaries is not the same as the abolition of boundaries" (22).

Escobar’s discussion shares similarities to Dirlik in its concern with crafting “a reassertion of place, noncapitalism, and local culture against the dominance of space, capital, and modernity that are central to globalization discourse” (2001a, 194). This process of “reassertion,” Escobar suggests, should make “visible possibilities for reconceiving and reconstructing the world from the perspective of place-based cultural and economic practices” (2001a, 194).
Such a perspective leads Escobar to be concerned with the ways in which "ecological difference" can be inserted into the defense of place and, like Dirlik, critical, of conceptions and theorizations of place that discount the ecological. He argues, based on descriptions of social movement advocates and political ecologists concerned with place-based politics of the global South, that the enactment of a relationship between place, culture and nature can lead to the development of a “place-based consciousness” in which place and culture become a source of political facts (2001a, 208). He suggests that these place-based, ecologically sensitive social movements, “with their forms of non-capitalism and particular form of cultural practices and ecological rationalities” can be deployed to "become effective political and life forces" by, following from Dirlik, projecting "themselves into the spaces that are presently the domains of capital and modernity" (2001a, 210).

This discussion has considered three interconnected understandings of the concept of place. All three regard places as products of human behavior. For Tuan and others places are sites of authentic, human-scale activity, the product of rootedness and temporal persistence. Places, in this construction, are threatened by homogenizing forces of globalized capitalism and must be defended and preserved. For Massey, Appadurai and advocates of the “new regionalism” places are relational and processual. They exist not as bounded entities but rather derive their polyvalent identities precisely through interaction and exchange. Such interactions and exchanges are both conceptual and material. For Dirlik and Escobar the ecological represents a linkage, of sorts, between these two conceptions. Ecology, in this construction, plays a limiting role in the place-making process while also offering a base from which resistance to the homogenizing forces of globalized capitalism can emerge.
Local renewable energy actions, and the technologies upon which they are based, fit somewhat unevenly into these understandings of place. To the extent that electricity is understood as a modern, technological convenience it links, inadequately, with the Heidegerrian notions of authenticity promoted by the phenomenological geographers described here. Further, as noted previously, electricity is, at the most basic level, a homogeneous product. Its consumption, despite the central role that such consumption plays in crafting the built environments and everyday activities of individuals and communities, is also, I would suggest, largely homogeneous. It would be a stretch to suggest that any individual, group or place uses electricity in some distinctly novel manner. If anything it is the scale of consumption, rather than the character of consumption, in which such distinctions can be located.

It is at the levels of production and transmission—the “work” of the electrical grid—that distinctions can more readily be seen. The grid acts as a link between places while also facilitating other place-based linkages: Skype chats, financial exchanges, globalized media circuits and so on. Through the character of production and the scale of consumption the grid also forms ecological linkages between places. Mountaintops removed in Appalachia yield coal that is burned to power espresso machines in DuPont Circle coffee shops. Hydraulic fracturing in Pennsylvania’s Marcellus Shale yields natural gas that is burned to power computers in downtown Philadelphia office buildings. Both processes yield excessive carbon dioxide that contributes to rising sea levels in the archipelagos of the southern Pacific and glacial melt in the Himalayas. Local renewable energy actions and the technologies upon which they are centered represent an effort to transform the place-connecting character of
the electrical grid from the perspective of production and transmission of electricity. They also represent an effort to transform the ecological consequences of such processes.

And yet, the electrical grid, as has been noted previously, is the product of nested, historically contingent, spheres of regulation and governance. Such spheres condition the character of places that fall within their influence. They also condition the character of the electrical grid as it moves between particular boundaries of regulation and governance. In this way, local renewable energy actions also represent efforts to transform the conditions of governance and regulation that play a role in the place-making process.

The city acts as a site of place-making that cuts across each of these conceptions of place. The next section examines this understanding of the city while paying special attention to the ecological and regulatory character of such place-making.

2.4 The Contemporary “Green” City: Urban metabolism, “Splintered Networks” and Urban Ecological Security

2.4.1 The City as an Ecological Project

The city has a prominent conceptual role to play in this investigation. Cities are understood here, first and foremost, as ecological projects. In general, there is nothing particularly novel about concern for the ecological character of the urban form. Its relative status as a functionally beneficial structure for organizing human settlements has long been a source of debate and contention.

Numerous commentators have sought to understand the connections between environmental quality, urban design and the broader social fabric of the city. Hippocrates’ offered his observations on “airs, waters, and places” in urban Greece in the 5th century B.C (Spirn 1985, 40). Fredrich Engels, writing in the mid-19th century at the height of the
industrial revolution, took note of the connections between class and the sanitary and ecological conditions of urbanization in England (Swyngedouw and Heynen 2003, 900). In the United States the writings of the American diplomat George Perkins Marsh (1864) inspired the conservationists of the late 19th and early 20th centuries such as John Muir, Gifford Pinchot and Aldo Leopold. Marsh’s ideas also influenced Frederick Law Olmsted’s efforts to design parks, parkways, and residential neighborhoods which promoted “the health and welfare of urban citizens by improving the quality of their environment” (Spirn 1985, 41). Aided by the work of muckraking journalists and photographers such as Jacob Riis (1996), Progressive advocates of this period advocated for the transformation of areas of urban poverty that were perceived as unhealthy because of building codes or lack of proper sanitation. In the 1960s writers such as Jane Jacobs (1961) and Henri Lefebvre (1996 [1968]) “polemicized against the homogenizing, destructive, and anti-social consequences of postwar Fordist urban renewable projects” (Brenner, Marcuse, and Mayer 2012, 2). Writing in the early 1970s, Raymond Williams (1973), in *The Country and The City*, argued that “the transformation of nature and the social relations inscribed therein are inextricably connected to the process of urbanization” (N. Heynen, Kaika, and Swyngedouw 2006, 4).

Cities are embodiments of globalized processes but they are also, simultaneously, products of particular, contingent histories. To understand cities as municipalities is to recognize their existence as particular, geographically bounded spaces of governance nested within and conditioned by multi-scalar systems of governance, regulation and policy. Further, I wish to suggest here that cities, towns and villages—large and small, global and provincial, core and periphery—despite their many differences can be linked together, to an important extent, by their status as municipalities.
Cities are also dependent on and constructed around particular infrastructures—transportation, communication, water, waste, energy and so on. These infrastructures—despite the varying degrees to which they are hidden within the hum of everyday life—are complex, material, technological constructions. Infrastructures are “second nature” (Lefebvre 1976, 15) of a sort but they too, like cities, are embedded within multi-scalar systems of governance, regulation and policy.

This section builds on the previous discussion by exploring three interrelated concepts: urban metabolism, “splintered networks” (Guy, Graham, and Marvin 1997) and urban ecological security. I begin by outlining the concept of urban metabolism as it emerges from contemporary work in urban studies and urban political ecology. Scholars in both of these fields draw heavily from the work of ecological Marxists and Marxist urban geographers that was developed during the 1970s. I then link the concept of urban metabolism with urban infrastructure and the “splintered” character of that infrastructure that has emerged in recent decades. Finally, I locate urban metabolism and “splintered networks” within the wider, controversial discourse surrounding urban ecological security.

2.4.2 Urban Metabolism

In the introduction to their recent edited volume on critical urban theory Neil Brenner and his colleagues argue that during the late 1960s and early 1970s a series of interventions by radical scholars such as Lefebvre, Manuel Castells and David Harvey focused on exploring “the ways in which, under capitalism, cities operates as strategic sites for commodification processes” (2012, 3). Through their analysis these authors argued that cities “are major basing points for the production, circulation, and consumption of
commodities, and their evolving internal sociospatial organization, governance systems, and patterns of sociopolitical conflict must be understood in relation to this role” (Brenner, Marcuse, and Mayer 2012, 3). Further, these authors argued that cities are not only sites of commodification but also “are themselves intensely commodified insofar as their constitutive sociospatial forms […] are sculpted and continually reorganized in order to enhance the profit-making capacities of capital” (Brenner, Marcuse, and Mayer 2012, 3).

Although elements of the work of these scholars focused on developing a historical description of the relationship between cities and capitalist processes these authors were also clearly seeking to respond to the processes of urban restructuring that were emerging during the time in which they were writing and, in so doing, link these processes with the wider political-economic and social transformations then taking place during the decade long run up to “the austerity, roll-out phase of neoliberal restructuring in the 1980s” (Brenner, Marcuse, and Mayer 2012, 8).

The history of neoliberalization, along with the emergence and perpetuation of neoliberal forms of urbanization, has been explored extensively elsewhere. Following Brenner, et. al. I will be most generally concerned here with the role played by neoliberal urbanization in

“the evolution of class struggles and other social conflicts in the spheres of production, reproduction, and urban governance; the role of state institutions, at various spatial scales, in mediating processes of urban restructuring; the reorganization of urban governance regimes; the evolution of urbanized socio-natures; and the consolidation of diverse forms of urban social mobilization, conflict and struggle” (Brenner, Marcuse, and Mayer 2012, 4).

More specifically, I shall be concerned with linking the urban ecological reform and renewable energy movements of the 1970s with the broader political-economic and social transformations of the decade and, by extension, situating the local renewable energy actions
under consideration here, within the broader movements towards low carbon urbanism (Hodson and Marvin 2012) and urban ecological security (Hodson and Marvin 2009) from which Mayor Gray’s “Sustainable DC” initiative emerges.

In the United States, the emergence of the environmental movement\textsuperscript{10} in the late 1960s, coupled with the energy crises of the 1970s and a growing awareness of urban environmental pollution, prompted a renewed focus on the ecological health of cities and led to a series of urban environmental protests in which poor and working-class urbanites across the country

“expressed their anger and dissatisfaction with dirty air, garbage-strewn streets, crappy, decrepit apartments, and ugly, destructive highway projects. All of these were symptoms of their general political and economic disenfranchisement, how they were being left behind in the detritus of the capitalist meat grinder. The frontier was out in the suburbs or overseas, and the current system of racial and economic segregation forced them to live in the remains” (Gioielli 2010, 442).

It was during this period that Henri Lefebvre wrote of the reconstruction of nature “at another level, the level of “second nature” i.e. the town and the urban,” and suggested that such a reconstruction represented “the world of the generalized urban,” a “produced space” of “assemblies and encounters” (1976, 15). Lefebvre’s comments subvert the long held (and still publicly prevalent) view that urbanization can be understood “as a process whereby one kind of environment—namely the “natural” environment—is traded in for, or rather taken over by, a much more crude and unsavoury “built” environment” (Swyngedouw and Heynen 2003, 906). Instead, they suggest an understanding of urbanization as “not merely a linear distancing of human life from nature, but rather a process by which new and more complex relationships of society and nature are created” (Keil 2003, 729). Put differently “cities are built out of natural resources through socially-mediated natural processes” (N. Heynen, Kaika, and Swyngedouw 2006, 5).
In making such a declaration Nik Heynen and his collaborators draw theoretical inspiration from Lefebvre’s early work but also from political ecology, a field that has its origins in the responses of Marxist and ‘steady-state’ political-economists to the ecological crises of the late 1960s and 1970s. The urban political ecology (UPE) framework advanced by Heynen and his collaborators calls specific attention to “the political processes through which particular socio-environmental urban conditions are made and remade” (N. Heynen, Kaika, and Swyngedouw 2006, 2) and acknowledges that this making and remaking occurs “in the realms of power in which social actors strive to defend and create their own environments in a context of class, ethnic, racialized and/or gender conflicts and power struggles” (N. Heynen, Kaika, and Swyngedouw 2006, 4).

To the extent then, that cites are sites of commodification and also “intensely commodified” (Brenner, Marcuse, and Mayer 2012, 3) urban political ecology holds that “the commodity relation veils and hides the multiple socio-ecological processes of domination/subordination and exploitation/repression that feed the capitalist urbanization process and turn the city into a metabolic socio-environmental process that stretches from the immediate environment to the remotest corners of the globe” (N. Heynen, Kaika, and Swyngedouw 2006, 5).

“‘Natural’ metabolisms and transformations” become, through processes of capitalist urbanization, “discursively, politically and economically mobilized and socially appropriated to produce environments that embody and reflect positions of social power” (N. Heynen, Kaïka, and Swyngedouw 2006, 6). Put differently, while phenomenon such as gravity and photosynthesis are not socially produced the powers of such processes are socially mobilized, under capitalism, to create uneven socio-ecological conditions which serve particular purposes and meet particular needs (N. Heynen, Kaïka, and Swyngedouw 2006, 6). Attention to metabolism reveals the extent to which “urban-nature relations are
now increasingly constituted at various scales of the globalization process as natural relations and urban social relations are produced through complex processes of “glocalization” and entangled in myriad flows of capital, things, and people” (Keil 2003, 729). Through this “rescaling of both natural and social relations, local lifeworlds are brought into more direct relationships with natural processes beyond their immediate reach” (Keil 2003, 724).

### 2.4.3 Splintered Networks

To the extent that electricity, or, more to the point, the activities and ways of being made possible through electrification, are a defining feature of contemporary processes of urbanization and urban life, we can understand the important roles that the metabolic socio-environmental processes associated with electrification play in producing and re-producing urban spaces and urban social relations. Electrical systems, as socio-technological projects, involve three primary processes: production (the generating of electrons), transmission (the movement of electrons from sites of production to sites of use) and consumption (the targeted deployment of electrons to accomplish a particular task). The electrical grid is the socio-technological infrastructure that links these processes and the means by which electrons are delivered to sites of consumption. It links metabolic processes of electricity production with metabolic process of electricity consumption. The work of Stephen Graham, Simon Guy and Simon Marvin (Graham 1997; Guy, Graham, and Marvin 1997; Marvin and Guy 1997; Guy and Marvin 1998; Graham and Marvin 2001) on utilities and urban infrastructure is helpful for linking the electrical grid, and electricity systems more broadly, with the theoretical threads explored above.
Understanding electricity systems as a form of urban infrastructure managed through the utility model helps to situate them within networks of governance and regulatory management. Guy, Graham and Marvin have argued that “because utilities straddle the production-consumption nexus within cities, delivering vital utility services through regulated markets has major implications for both production and the economic development of cities, and for consumption and urban social development” (1997, 191).

These authors produced a series of writings in the late 1990s and early 2000s focused on the privatization and liberalization of infrastructure networks and utilities (water, waste, natural gas, electricity and telecommunications) in the United Kingdom during the 1980s and early 1990s. In these writings the authors equated "the privatization of urban technical networks with a process of spatial, institutional and social ‘splintering’ in the delivery, development and management of urban technical networks" (1997, 192).

The development of “splintered networks” of utilities has three primary components. "First, splintered networks of utilities are no longer organisationally unified or integrated, even though they may technologically be based around, say, one single, large electricity or gas network" (1997, 192). Second, such networks have transformed the market orientation of utility providers who now "tailor their product according to the local needs of niche, profitable markets" (1997, 192). Third, these networks represent the splintering of “what were, hitherto (at least in aspiration), nationally homogeneous, technical systems” into systems that are “shaped by local and regional demand and therefore develop highly unevenly” (1997, 192). On the whole, the authors argue, such splintering “has shifted the socio-technical logic governing infrastructure provision, with complex results” (1997, 192).
2.4.4 Low-Carbon Urbanism and Urban Ecological Security

Against this backdrop of “splintered networks” Hodson and Marvin have begun, more recently, to investigate the role of infrastructure systems in the transition to low-carbon urbanism and the provision of urban ecological security (UES) (2009; 2010; 2012). The authors argue that urban ecological security represents a re-scaling of concern for ‘ecological security’—the safeguarding of the flows of resources, infrastructure and services—from a national to an urban scale. “Increasing concerns over UES are now informing strategies to reconfigure cities and their infrastructures in ways that help to secure their ecological and material reproduction” (2009, 193–194). Efforts to develop and maintain urban ecological security have now come to play a key role in the “intensified economic competition between cities under neoliberal conditions of contemporary global capitalism” (2009, 194). Across this competitive, global landscape,

> “the very resources that underpin the economic competition between cities, but which also support the material, social and ecological reproduction of cities, are now the source of the struggle: a struggle between economic ‘competition’, particular notions of ‘ecology’ and ‘security’, and the reproduction of cities” (2009, 194).

Hodson and Marvin argue that a primary strategy of urban ecological security efforts is to focus on the re-localization and re-internalization of urban resource endowments through the creation of ‘closed loops’ and ‘circular metabolisms’ (2009, 201). Through such efforts cities “seek to withdraw from reliance on international, national and regional infrastructures” by developing local resources (2009:201). “Such a socio-technical strategy combines both ecological and security priorities in a new strategy of attempts to guarantee secure urbanism and resilient infrastructure” (2009, 201). Hodson and Marvin argue that through the re-localization strategies of urban ecological security projects, large “world” cities become joined in networks of eco-technical innovation and information sharing.
“Critically,” they argue, “such world cities appear to be positioning themselves as national and international exemplars for the development of new fixes that can be cascaded down onto other cities in the urban hierarchy” (2009, 205). Further, they argue that urban ecological security is, increasingly, emerging as an economic development strategy for cities.

“Pricing technologies, carbon trading, decentralized technologies, new fuels and the physical fabric of the city are all new opportunities for the development of ecological and economic services. [...] Increasingly, questions around ecology and infrastructure become intertwined, where the ability to guarantee growth becomes linked to preparatory ecology and infrastructure, and such reconfigurations become a source of economic growth as they are ‘rolled-out’ and replicated in other contexts” (Hodson and Marvin 2009, 207).

The authors argue, however, that “the construction of ‘self-reliant’ cities through decentralized technologies”, is, largely aspirational. They offer three primary reasons for such an assessment. First, they argue, “infrastructures and cities are never truly bounded or autonomous spaces.” As a result they suggest “cities can only expect to build a relative form of autonomy that reconfigures relations rather than provides total independence” (2009, 207). Second, urban ecological security efforts tend to focus on issues of resource consumption while ignoring larger issues of resource production. “It might be more accurate,” the authors argue, “to think about the rescaling and reconfiguring of social and technical relations through the reorientation of resource flows and infrastructure rather than the construction of independence, closed loops and circular metabolisms” (2009, 208). Finally, they argue that critical questions remain unanswered about the “capacity and capability of cities and regions lower down the urban hierarchy to develop and implement the type of fixes piloted in world cities around decentralized technologies” (2009, 208). Such concerns lead the authors to ask the following question: “Does [UES-driven] eco-urbanism represent merely an attempt to create ecologically secure gated communities, or can it
contribute to the development of more collective notions of planetary security in the face of multiple eco-emergencies” (Hodson and Marvin 2010, 308)?

In responding to this question the authors draw on the philosophy of the “Transition Town” movement and a description of “relocalization” developed by the Post-Carbon Institute. “Such strategies,” they argue “seem to imply a more collective approach to innovation around climate change and resource constraints not solely oriented around technical fixes but suggest a more socially and culturally driven approach to new solutions and configurations” (2009, 209). Hodson and Marvin seek to differentiate such approaches from more dominant approaches to eco-urbanism, that they argue, are “strongly focused around particular corporate and governmental interests” (Hodson and Marvin 2010, 309).

In their discussion about competing approaches to contemporary eco-urbanism Hodson and Marvin also argue that there are historical distinctions between such approaches as well. Today’s corporate and government-lead efforts stand “in stark contrast to the 1970s, when at least part of the response by radical and environmental groups was a critique of such interests” (2010, 309). Further, they suggest that unlike efforts of the 1970s “there seems to be much less debate in this current period about wider questions of social and institutional control of these technologies, which, it is largely assumed, will be provided by the market” (2010, 308-309). Such analysis links eco-urbanism efforts with the broader political, social and economic changes identified by Brenner and his collaborators that have transformed the character of cities since the 1970s. They also help to draw potential linkages between today’s eco-urbanism activities and those of the 1970s that have been described by Gioielli and others. Finally, we can also trace such efforts more specifically to the contrasts
between the character of Mayor Gray’s sustainability initiative and the more vernacular efforts that took place in the city during the 1970s.

I wish to turn now to a discussion that considers how the category of the “local,” practices of locality, and localism movements have functioned and continue to function as frameworks for responding to economic, political, social and ecological crises in the United States. The literature on localism, broadly conceived, is quite vast. Rather than attempt a comprehensive summary here, I would like to briefly highlight two elements which complement the discussion presented thus far: practices of eco-localism and the connections between localism and governance, ownership and political-economy.

2.5 Localism As Aesthetic and Tactic

“Localism can appeal to socialists who want to see more local government ownership, to communalists and decentralists who wish to see the growth of independent local economies, to neoliberals who support the small business sector as a solution to social and environmental problems, and to liberals who seek greater regulation of local land use and federal legislation that ends corporate handouts” (Hess 2009, 51).

2.5.1 Practices of Eco-Localism

Gregory Albo has argued that despite their conceptual diversity in imagining eco-friendly alternatives to industrial capitalism, the majority of environmental movements share at least one key element: “the primacy of localism as the central strategic focus” (2007, 340). Albo argues that the foundations of what he terms “eco-localism’ strategies” can be located in the early texts of the modern environmental movement such as Carson’s Silent Spring (1962), Hardin’s “Tragedy of the Commons” (1968), The Club of Rome’s Limits to Growth (1972), The Ecologist’s “A Blueprint for Survival” (1972) and Ehrlich’s The Population Bomb (1968) (2007, 340). While population growth and concerns for the ‘carrying capacity’ of the planet, were the central focus of such texts, rather than some explicit call for localization,
they each suggested that scale was the central vector along which ecological degradation should be understood and that reductions in the scale of human ecological ‘footprints’ were central to combating such problems. “Although none of these founding contributions laid out an explicit strategy for localism, it was the logical corollary of their central concerns about the earth’s ‘carrying capacity’ in face of the force of industrialism driving resource usage and population endlessly upwards” (Albo 2007, 340).

Albo suggests, however, that it was E. F. Schumacher’s *Small is Beautiful* (1973) that was instrumental “in making localism both a virtue and a socio-ecological strategy” (Albo 2007, 340). Works by Barry Commoner (1972) and Herman Daly (1973) built on Schumacher’s philosophy and rejected the explicit and implied neo-Malthusian tendencies in the work of Hardin, Ehrlich and others by shifting “the question from scale in general to an issue of sustainability from a material point of view” (2007, 341). The publication of the Brundtland Report in 1987, brought aspects of these texts into discourses of international urban development by making a “range of development proposals in which greater decentralization, self-help and self-reliance figured centrally, pleading for greater focus on small-scale development projects within sustainable ecologies, and calling for city governments [to] become key agents of development” (Albo 2007, 341).

Albo situates his description of eco-localism within a broader discussion of the ways in which the local has increasingly been deployed by actors on the political left as the scale of choice for shaping resistances to neoliberal globalized capitalism. He suggests that over the past three decades the political left has grown increasingly skeptical about universal projects and collective struggles choosing to focus instead on the “embrace of more socially limited and spatially local projects” (337). In his analysis of such efforts Albo joins a variety of
scholars, particularly those working in a Marxist tradition, who have argued that while small, local and personal may be presented by many progressive environmentalists as an all encompassing solution to anthropogenic, capitalist induced, globalized ecological crises, such advocacy betrays a lack of understanding of the structural issues that are attached to the unequal and uneven consequences of such crises (N. Smith 2007; Layfield 2008). He remains skeptical of discourses in which “localization is invoked as a panacea to virtually all social ills” and suggests that while practices of eco-localism may have much to offer those seeking to respond to contemporary environmental challenges such practices and their philosophical underpinnings are deserving of careful scrutiny (339).

“If 'place' and 'local space' are where the 'tangible solidarities' necessary to build an alternate way of life, and an anti-neoliberal politics, must form, then we cannot avoid confronting the systematic obstacles that have to be overcome in realizing such a project. Claims that sustainable local ecologies can serve as the foundation for political action and social alternatives at least require careful scrutiny” (339).

In addition to Albo’s focus on eco-localism as a strategy for an anti-neoliberal politics it is important to note that this renewed emphasis on a socially limited and spatially local politics has many adherents from across the political spectrum. In the contemporary moment Tea Partiers, Occupiers, Libertarians, small business advocates, artists, food sovereigntists, education reformers, neoliberal political economists, urban advocates, defenders of the commons, champions of independent media and environmental justice campaigners all embrace and deploy elements of localism in their discourses and practices. Such diversity speaks to the conceptual malleability of localism as a philosophical framework as well as the relative and shifting positionality of the local vis-à-vis other geographically inflected scales of discourse and practice such as state, nation, globe and so on. The reality of such diversity suggests that understanding the function of localism and the motivations for
localist action is less about the development of a universalized description of the ‘local’ and rather the engagement in a contextually contingent project dedicated to describing particular valences of localism which may be active in specific situations. It also points to the explanatory limits of understanding the localism impulse in strictly ecological terms.

2.5.2 Towards Localism as a Social and Political Movement

David J. Hess distinguishes localism, as a social and political movement, from other forms of localization such as “the technopole or regional industrial cluster, Internet-based hyperlocalism, environmentally oriented relocalization, and political devolution” (2007, 339). He argues that in response to greater economic interconnectedness generated by advanced globalization “state and city governments have developed their own relationships to the global economy that, to some degree, bypass national politics and policies” (Hess 2009, 3). Such changes, he contends, have made local economies and systems of governance increasingly relevant in global environments. In response to this increasing relevance Hess suggests that the primary underpinnings of localism movements in the United States are issues of governance, ownership and political-economy. “Localism”, as Hess understands it, is “the movement in support of government policies and economic practices oriented toward enhancing local democracy and local ownership of the economy in a historical context of corporate-led globalization” (Hess 2009, 7). This emphasis on economic and political democracy, Hess argues, tends to make the marketplace rather than civil society or the political arena the central venue for localist action. Because of this emphasis on markets, Hess argues, “it might be better to think of localism in more general terms as an “alternative pathway” for social change in the global economy” (Hess 2009, 9).
Hess identifies four key features of localism: locally sourced resources and inputs for food and manufacturing, the production of goods by locally owned businesses, the sale of locally produced goods through locally owned organizations and the consumption of those goods by consumers who share a geographical proximity with the producers and retailers of those goods. Hess differentiates between an ideal form of localism containing all of these features and hybrid forms that emphasize some of these elements over others (Hess 2009, 11). Hess’ four key features framework also calls attention to global circuits of localist production that he refers to as “global localism” or the “alternative global economy.” These circuits of global localism “describe the interesting transnational networks of alternative commodity chains that operate outside the mainstream global economy of large food, manufacturing, and retail corporations” (Hess 2009, 13).

Hess positions his discussion of localism within the mainstream debates around liberal and neoliberal “approaches to the global problems of environmental sustainability and social justice” as well as “radical alternatives in the socialist and communalist tradition” (Hess 2009, 18). He suggests that “localist political-economic thought” differs from both mainstream and radical political-economic ideologies by placing emphasis on “the role of small-businesses and nonprofit organizations, the call for independent and local ownership, and the goal of extending that project to locations throughout the world in the form of a global economy based on locally owned independent enterprises” (Hess 2009, 52). Further, Hess argues that localism movements are primarily concerned with “the question of the relationship between the large publicly traded corporation and society as a whole” rather than with the relationship between government and the economy that forms the primary framework of “the debate between and within radical and mainstream political positions”
Such a perspective reflects the tendency of localism movements to emphasize the self-determination of “place-based communities” over the broader goals of economic justice (Hess 2009, 18). This emphasis on self-determination lends localist movements a polyvalent character and tendency to seek novel solutions to economic and ecological problems that draw from a variety of political-economic traditions rather than hewing tightly to a particular ideology or framework.

### 2.5.3 Localism as an Analytical Focus

To what ends and for what purposes might we wish to pay attention to visions and versions of localism? Why might they be of particular import to this project? To begin with I wish to argue that understanding localism as a guiding socio-cultural aesthetic offers an explanatory and analytical value to the present investigation. I understand aesthetic in this context to mean a loosely related set of values and practices which individuals and groups of actors mobilize in specific contexts to realize specific goals. When understood this way we can see how a rough set of core values such as sovereignty, self-reliance and human scale material relationships can produce such seemingly oppositional outcomes as the conservative isolationism of the Tea Party and the collaborative practices of urban communitarians.

Further, and more importantly, understanding localism as an aesthetic helps explain less extreme, more mundane behaviors such as visits to the local farmer’s markets, ‘buy local’ campaigns, community-based economic development organizations and even web-based systems for personalized, humanized, globalized consumption, philanthropy and investment. Finally the term aesthetic as conceived here, bridges the material and the imaginary. It is as much about water mains and bike lanes as it is about the linkages between my personal
carbon footprint and sea level rise in Bangladesh, coffee production in Nicaragua or hydraulic fracturing in North Dakota.

The popular localism of the present period has been heavily documented: from Tea Party-style libertarianism to the direct democracy tactics of the Occupy movement; from community supported agriculture schemes to backyard chicken coops; from local currencies to neighborhood banks; from Etsy to Kickstarter. Numerous organizations and scholars have dedicated themselves to supporting and investigating such efforts. The role, played by localism in the emergence of electricity systems in the late 19th century, the renewable energy movements of the 1970s and contemporary local renewable energy actions has, however, been under-investigated. The next chapter examines these connections in detail.
2.6 Endnotes

1 For a representative review of U.S. urban climate action plans see (Dolan et al. 2010). This piece was produced by the author and student colleagues in the George Mason University School of Public Policy. It focuses most specifically on building energy efficiency goals that are part of broader urban climate action plans in some of the United States’ most populous cities.


3 Daly and his colleagues made use of Marx, Engels and classical, liberal thinkers such as Malthus, Mill, Smith and Ricardo. They also drew on works by Christian Socialists such as John Ruskin (1967) and R. H. Tawney (1926) and Nobel prize-winning chemist Frederick Soddy (1924). For reviews of the economic perspectives of Tawney and Soddy see Wilber (1974) and Daly (1980). Gerald Alonzo Smith (1993) has also explored the influence that J. C. L. Simonde de Sismondi and J. A. Hobson have had on the development of the steady-state thesis.

4 For additional perspectives on Enzenberger and responses to his essay see: Benton 1996b and Layfield 2008.

5 Neoliberalism is understood here as the dominant (although non- hegemonic), contemporary, ideological and political project of global governance arising in the wake of Keynesianism (McCarthy and Prudham 2004, 275). As a project, neoliberalism can be characterized as a "variegated, geographically uneven and path-dependent process" (Brenner, Peck, and Theodore 2010, 327), realized through "privileged modes of governance for addressing social, economic, and environmental problems” (Hayden 2003, 48), in which a collection of ideologies and practices are deployed, particularly at the level of the nation-state, to facilitate and enforce the intensification and expansion of globalized capitalist markets and international trade (Hayden 2003, 48).

6 The authors produced one of the earliest and most comprehensive attempts to value the ecosystem services provided by the global biosphere. In reporting on their efforts the authors suggested that “the services of ecological systems and the natural capital stocks that produce them are critical to the functioning of the Earth’s life-support system. They contribute to human welfare, both directly and indirectly, and therefore represent part of the total economic value of the planet” (1997, 253). The study identified 17 ecosystem services for 16 biomes including 'gas regulation,' 'climate regulation,' 'soil formation,' 'waste treatment,' and 'pollination' (1997, 254). The researchers estimate the value of the entire global biosphere “(most of which is outside the market) [...] to be in the range of US$16-54 trillion per year, with an average of US$33 trillion per year” (1997, 253). By comparison, at the time of the study, global gross national product was estimated to be around US$18 trillion annually (1997, 253).

7 The “reclamation” and “reforestation” of mountain top removal coal mining sites and the “banking” of wetlands are two examples of such reciprocal arrangements.

8 See Schumacher (1975) for an early version of this “Small is Beautiful” thesis and Amory Lovin’s update, Small is Profitable (2002). Hawken et al.’s Natural Capitalism (1999) offers a popular take on the efforts to recover and harness the innovative capacity of capitalism to solve environmental crises. At a more detailed level the work of ecological economist Herman Daly is focused around developing macro-economic limits to micro-economic market activities.

9 See Ley (1999) for full accounts of this period. For specific, prominent, texts see the work of Yi-Fu Tuan (1974a; 1974b; 1977), Edward Relph (1976), David Seamon (1979) and Anne Buttimer (1978; 1980).

10 The use of environmentalism in this text is based on the description offered by Cronon: “By “environmentalism” in this book we generally mean the broad cultural movement in the decades since World War II that has expressed growing concern about protecting nature and the environment against harms caused by human actions”(1995, 25).

11 Keil notes that “all natural relations now seem to be produced inside the reach of social activity. Still, “nature” cannot be entirely subsumed under social relations, and the natural base of society retains its continued relevance even in an age of alleged or apparent post-materiality, information-society and digitalization” (2003, 729).
Similar changes related to electric utility regulation in the United States will be reviewed in chapter three.

Hodson and Marvin note that as of 2008 there were 28 “Transition” towns in the UK. For more on the “transition” concept see: http://www.transitionnetwork.org/ (accessed 5.3.14). For more on the Post-Carbon Institute’s “relocalization” concept see: http://www.postcarbon.org/relocalize (accessed 5.3.14).

Hess suggests that the most popular forms of hybrid localism often involve ‘Buy Local’ efforts that seek to encourage the purchase of goods and services from locally owned businesses. Such hybrid forms rely on two of the features mentioned above: local ownership of businesses and sales to local markets (2009, 12). A second hybrid form can be found in “a local government agency that provides goods and services to a region, such as a publicly owned utility or a public transit system” (2009, 12). In this case local ownership and local sales figure prominently but the ownership is public rather than private.
CHAPTER THREE

3.1 Introduction

While they had appeared in Europe some years earlier, Cleveland, in the spring of 1879, became the first city in the U.S. to demonstrate an electric street lighting system developed by the local inventor Charles Brush (Rudolph and Ridley 1986, 24–25). Rudolph and Ridley’s description of this period as a time in which electricity generation was largely a neighborhood affair, and power was generated on site and provided to only a single building or a few city blocks bears no small resemblance to the types of neighborhood-scale systems of electricity generation envisioned by today’s advocates of distributed, renewable electricity production. This chapter traces the historical role played by localism in the development of electricity systems in the United States. The next section reviews this history beginning in the late 19th century and traces it forward over the next century into the early 2000s. The final section examines the diverse collection of policies, frameworks and incentives that have emerged over the past decade as part of efforts to expand renewable energy production.

3.2 Constructing Electricity in the U.S.: Scale, the Public Good and the Path-Dependency of Regulation

The broad history of electricity development in the United States has been extensively documented elsewhere. Four general aspects of this history are central to the discussion to be presented here: the localist origins of electricity systems, shifts in the scale of governance and ownership of electricity systems, technological changes that resulted in
shifts in the scale of electricity production and the emergence, in the 1980s, of market-based regulatory mechanisms and competitive electricity markets. This section briefly reviews these aspects over three rough time periods: the first century of electrification in the United States (roughly the late 1870s to the early 1970s), the push for renewable electricity generation that emerged during the 1970s and the period from the early 1980s through the early 2000s which was dominated by movements for deregulation and the uneven emergence of competitive electricity markets.

3.2.1 Electricity: The First Century

“The social construction of the American power system between 1880 and 1920 grew out of a conflict between competing views of electrification” (Nye 1990, 182). During this period debates raged over whether electricity would be treated as an economic commodity or as a public good—“a nonprofit service tied to least-cost policies, efficiency, and meeting of unstimulated, uninflated electrical needs” (Rudolph and Ridley 1986, 19). Because these debates “occurred within limits set by the decentralized American political system, which gave separate powers to local, state, and federal officials, a national energy policy was nearly impossible during the formative years of the industry” (Nye 1990, 182). Local control was seen, by many, as central to preserving and protecting the public interest embedded within electrical systems.

Due largely to technological limitations, electricity production was initially a highly localized, building-by-building, block-by-block affair, with individual service providers competing to provide electricity for lighting services and streetcar lines in urban communities. As the demand for electricity services increased, the majority of city
governments, rather than allow a variety of firms to install and maintain overlapping systems of generation and distribution, turned to granting exclusive franchises, usually to individual, vertically integrated, investor-owned utilities (IOUs) (Hess 2011, 1063). This decision was “based on the widespread belief that the electric power business constituted a natural monopoly” (Hirsh 1999, 2).

Municipal ownership of electrical systems became popular around the turn of the century as a populist response to the corruption associated with granting and maintaining exclusive franchises. Hess describes municipal ownership of electricity generation as a form of local socialism and suggests that as the “local consolidation of electric companies increased, and monopoly pricing by private firms became possible, local public ownership offered the possibility of significant redistributive benefits in the form of price” (2011, 1063). Rudolph and Ridley report that “each year during the period of 1897 to 1907 between 60 and 120 new public systems were formed by referenda. The rate of increase for public systems was more than twice as fast as private companies. By 1912 there were 1,737 public power systems and 3,659 private companies in operation” (1986, 38). Municipal ownership, however, proved to be as equally susceptible to corruption as the franchise system.

During the first decades of the 20th century, technological advances that allowed electricity systems to expand beyond their original municipal boundaries, combined with efforts of Progressive reformers to fight municipal corruption, led, to the development of the “regulatory compact” (Yergin and Stanislaw 1998, 356–358) or “utility consensus” (Hirsh 1999). As part of the ‘compact,’ utility companies were given monopoly franchises over electricity services in particular regions in exchange for “a limited rate of return and a very high degree of governmental oversight and regulation” (Yergin and Stanislaw 1998, 356).
The regulatory compact shifted the scale of electricity regulation from the municipal to the state level with the development of public utilities/public service commissions (PUCs/PSCs). These commissions were charged with the conflicting mission of offering monopolies on electricity service while, at the same time, being responsible for regulating such monopolies in ways that best served the interests of customers such as managing price controls on the costs of electricity.

The shift in regulatory scale was supported, in part, by the leaders of private power companies and the utility industry that Progressive reformers had targeted in their efforts to develop municipal ownership systems. The utility industry viewed state-level regulation as the lesser of two evils when compared with municipal ownership systems that they widely decried as socialist and communist. In this way systems of regulatory control were lifted from the day-to-day oversight of the municipalities who had previously held sway. Hess suggests that “in theory, the public good was served by price controls and an escape from local corruption, and the investor-owned utilities were served by having a negotiated monopoly” (2011, 1064). Many reformers of the period, however, viewed the loss of municipal regulatory control as detrimental to the strength of local governments arguing that public control of electricity generation “taught citizens self-reliance and a capacity for self-government” (Rudolph and Ridley 1986, 40).

The shift in regulatory scale was also accompanied by a shift in the scale and organizational structure of the electricity industry. By the 1920s many of the smaller, privately owned utilities providing power to cities and towns across the country under the new regime of state regulation had been gobbled up in waves of consolidation by larger and better-capitalized firms organized as holding companies. These holding companies, which
were organized across state lines, were able to evade many of the regulatory efforts of state-level agencies.

In response to the growth of the holding companies the scale of regulatory reform shifted again, this time to the federal level. The passage, in 1935, of the Public Utility Holding Company Act (PUHCA) “introduced the Securities and Exchange Commission as the regulator of holding companies and, over the following two decades, led to the break up of most of them” (Hess 2011, 1064).³ This period also marked the development of federal-level ownership and investment in electricity generation and distribution with the establishment of the Tennessee Valley Authority (1933), the Rural Electrification Administration (1935) and the Bonneville Power Administration (1937). The Federal Power Act (originally passed in 1935) gave the Federal Energy Regulatory Commission (FERC) the authority to regulate utilities involved in the interstate wholesale transmission and sale of electric power.

By the early 1970s electricity production and regulation had largely become a state-by-state affair with regional monopolies being controlled by private, investor-owned utilities who were heavily regulated by state-level public commissions charged with maintaining reliability and low rates while providing the utilities with a modest, if consistent, return on their investments. It should be noted, however, that the regulatory phases detailed above “were not distinct and successive but overlapping and cumulative,” and resulted in the development of a regulatory environment that became more ideologically and organizationally complex over time (Hess 2011, 1065). Although the centralized, industrial scale electricity systems that emerged from the regulatory compact would come to dominate the U.S. electricity landscape, these systems would coexist “with a patchwork legacy of
organizations and policies that remains in place today, from municipal utilities and rural cooperatives to IOUs and state-government regulation" (Hess 2011:1065). This patchwork legacy resulted in a complex, multi-scalar, regulatory environment that placed political-economic distance between electricity consumers, on the one hand, and the regulators, service providers, and financial backers who provided the electricity, on the other. This distance, and the lack of local control and self-determination that was associated with it, became a central impetus behind the first phase of renewable energy movements that started in the United States in the 1970s.

3.2.2 Electricity Reform in the 1970s: Ending “Natural” Monopolies, Promoting Natural Gas and Renewables

Many popular narratives of the emergence of renewable energy technologies in the 1970s highlight the ecological motivations behind the push for solar hot water heaters, photovoltaic (PV) arrays, and windmills. Renewables advocates were, however, equally motivated by the political-economic promise they perceived to be embedded within the deployment of these technologies. Referencing the early block-to-block days of electricity production and foreshadowing contemporary distributed renewable electricity generating discourses, these advocates argued that, in addition to offering relief from environmental destruction and energy insecurity, the development of appropriately scaled, renewable energy systems could also engender social transformations, leading to a more equitable and democratic society (Commoner 1972; Commoner 1976; Commoner 1979; Dunn 1978; Lovins 1977; Schumacher 1975).

Such visions were embedded within a much broader debate concerning electricity reform. In the early 1970s, the regulatory compact that had been in place for over six
decades began to experience a variety of challenges. Demand growth for electricity slowed and became difficult to predict. Nuclear energy expansion yielded cost overruns. Fuel costs spiked. Regulatory rate caps failed to keep up with inflationary pressures. Technological innovation proved unable to reduce production costs (Hess 2011:1066).

The emergence, during this period, of commercial-scale, renewable electricity generating technologies and cost-effective, small-scale, combined-cycle, natural gas generators, challenged two of the main pillars of the conventional electricity system: the “natural” monopoly held by utilities over electricity generation and the belief that concentrated, industrial scale generation was the most efficient and cost-effective method for producing electricity.

Advocates of renewables and natural gas shared, to a large extent, an ethos of decentralization. For renewables advocates, decentralization offered the chance to be liberated from inefficient, faceless, and increasingly unreliable electricity systems. With natural gas, managers of industrial plants saw an opportunity to replace long term, power purchasing contracts from investor-owned utilities with flexible, on-site, cogeneration processes. Advocates of renewables and natural gas cogeneration also hoped to sell excess electricity generated by these new technologies back to utilities. Both groups argued in favor of ending the “natural” monopoly on electricity generation and allowing independent electricity producers to connect to the grid and sell power to utilities and end users. With the passage of the Public Utility Regulatory Policies Act (PURPA) in 1978, this became, within limits, possible.

Perceived at the time as an effort to “increase energy efficiency by reforming the ways customers paid for electricity” PURPA, specifically a minor piece of the act that was a
late-hour addition (Section 210), has become widely recognized as the first major effort to
deregulate access to the United States electricity grid (Hirsh 1999, 6). The legislation
mandated that existing regulated utilities purchase electricity from “qualifying” nonutility
facilities. These included not only power producers that used renewable fuel sources but also
co-generators that used fossil fuel-fired steam turbines to generate both electricity and
thermal energy in the form of steam. The legislation helped remove “barriers to entry in the
generation sector” and allowed “unregulated electricity producers to contest the
monopolistic position of power companies” (Hirsh 1999, 6). Although it was intended to
help renewable energy systems, the legislation’s primary legacy was not the inauguration of
the solar energy age, but rather the age of small-scale, combined-cycle, natural gas generation
(Hess 2011:1066).

It is important to note that PURPA’s passage was part of a much wider set of
regulatory transformations that took place over the course of the decade. These
transformations have subsequently become linked, in scholarly discourse, with the “roll out”
phase of neoliberalization (J. Peck and Tickell 2002). Advocates of both neoliberalization
and renewables shared elements of a discourse that emphasized decentralization, localism,
self-reliance, and community-scale governance.

A rush of state-level regulatory changes, spurred by regional reformers, followed in
PURPA’s wake. Subsequent federal legislation and regulatory changes followed during the
1980s and 1990s that extended elements of the changes brought by PURPA. In particular,
Commission set the stage “for much more extensive competition among wholesale
generators and, at the discretion of states, among retailers or ‘electricity service providers’” (Hess 2011:1066). The next section reviews this period in more detail.

### 3.2.3 The Mid 1980s Through The Early 2000s: Deregulation and the Uneven Emergence of Competitive Markets

In some narratives of renewable electricity development in the United States the period stretching from the early 1980s through the early 2000s represent a lost two decades bracketed, on one end, by the Reagan “Revolution” and on the other by the “War on Terror” and the “Inconvenient Truth” of global climate change. The reality, of course, is much more complicated. The neoliberal turn inspired by Reagan’s election put a significant damper on the expansion of renewables envisioned by PURPA supporters but it also laid the groundwork for the market-based frameworks within which the vast majority of current renewable electricity development in the country is currently situated.

“The electric utilities, in the early 1980s, staggered under the burden of high interest rates and incomplete projects while facing uncertain demand for electricity” (Hyman, Hyman, and Hyman 2000, 181). They had attempted to fight the implementation of PURPA in the courts but a Supreme Court decision in June of 1982 upheld the legislation and “legalized the creation of a whole new industry of generators, qualifying facilities (QFs); these were firms that could set up generating units and then sell their output to utilities at the utilities’ avoided costs” (Hyman, Hyman, and Hyman 2000, 182).6

Beyond having to deal with the emergence of qualifying facilities, the economic and public relations nightmares surrounding the expansion of nuclear power that had begun with Three Mile Island in 1979 continued through the mid-1980s with a high profile series of domestic defaults and bankruptcies related to projects begun in the previous decade.
Utilities with serious problems caused by construction failures and extreme cost overruns would not be made whole by regulatory agencies. Investors could not depend on regulators for guaranteed returns or for bailouts” (Hyman, Hyman, and Hyman 2000, 182). The Chernobyl disaster in April of 1986 only added to the negative publicity and calls for additional regulatory transformation. Drawing on deregulation initiatives that had swept through the airline and natural gas industries in previous years:

“consumers and government officials, dissatisfied with the performances of the industry began to wonder whether bringing competition to the electric industry might not force more efficient performance. Communism had fallen. The free market had triumphed. Why not apply free market principles to the last great monopoly” (Hyman, Hyman, and Hyman 2000, 183)?

Calls for deregulation of the industry had begun to emerge in academic circles in the early 1960s and steadily increased through the 1980s (Michaels 1992, 38–39). Commentators as diverse as George Stigler—a Noble Prize winning economist and member of the “Chicago School”—and consumer crusader Ralph Nader

“came to portray regulators as captives of regulated firms, when not simply incompetent. Some economists found little difference between the operating costs of regulated corporate utilities and similar publicly owned entities. Either public agencies were as efficient as regulated corporations or regulated corporations were as inefficient as public agencies” (Michaels 1992, 39).

By 1992 the agitation for market-oriented reforms had gained enough steam that the libertarian-leaning Cato Institute’s house journal Regulation published an entire issue related to the topic. One contributor to the issue felt confident enough to declare:

“The electric power industry has been deformed by decades of massive, ill-advised government intervention. Freedom from those fetters is needed to allow the evolution of a more efficient structure. Every level of regulation interferes, for example, with company organization and efforts to alter it” (Houston 1992, 59).

This legislation rolled back elements of the Public Utilities Holding Companies Act and broadened portions of PURPA’s generating requirements. Most importantly the law “opened up the use of the utility’s transmission lines by competing generators, thereby helping those generators reach new customers. […] The Act, thus, let more firms into the electric generating business and opened up transmission lines so that those firms could find more customers” (Hyman, Hyman, and Hyman 2000, 184).

A primary effect of this expansion of access to the transmission grid was the further development of the regionalized, wholesale power pools that had begun to emerge in the 1960s. Wider markets for the selling and trading of electricity on wholesale markets began to emerge as did calls for allowing individual customers to chose their electricity provider. Such transactions were dependent on a then emerging concept known as “wheeling”—“the carriage of electricity from one supplier across the transmission lines of an intermediate utility for delivery to a third party” (Hyman, Hyman, and Hyman 2000, 307–308).

In practice, these neoliberal-inflected policies favored the expansion of competitive private markets for electricity production from fossil fuels, particularly natural gas, rather than renewables. In addition, they offered only limited support for efforts to develop decentralized, more democratically controlled systems of renewable energy production as envisioned by the reformers of the 1970s. In 1994 “California completed a review of the electric utility planning and regulatory processes in the state and concluded that reforms were needed” (Warwick 2002, 6.4). The state formally began to open its electricity markets to competition and retail wheeling the late summer of 1996. In that same year the Federal Energy Regulatory Commission “issued Order 888 which laid out the rules for open access on the transmission lines and for wholesale competition” (Hyman, Hyman, and Hyman 2000, 185). Bolstered by California’s actions, similar deregulation initiatives began to emerge across the country. By the late 1990s, when the fever of deregulation was at its peak, Daniel
Yergin and Joseph Stanislaw, writing in *The Commanding Heights*, remarked, “The only part of the utility industry that is now clearly regarded as a natural monopoly is the ‘wires business’—transmission and local distribution. It still does not make sense to have two sets of wires running down an alley” (1998, 359).

Two years later, California, a major hotbed of renewables activities in the 1970s, experienced rolling blackouts and electricity shortages caused by energy trading giant Enron’s efforts to manipulate energy markets in the state. By 2001, Enron was bankrupt and renewables advocates, seizing on concerns regarding climate change and energy security, hoped to inaugurate yet another solar revival. Enron’s spectacular rise and fall, and the stop-and-start, incremental expansion of renewables over the past four decades, are both elements of PURPAs extended legacy.

The ability of a particular regulatory and discursive legacy to engender two, largely oppositional outcomes reinforces the enduring power of ‘hard path’ fossil fuel dependencies, but it also suggests that we should investigate the complex ways in which regulation, discourse, political action and cultural values impact the development of renewable energy systems. While neoliberal regulatory frameworks and philosophies may have become dominant in the electricity industry over the last few decades, the ways in which these frameworks have been applied, the consequences of such regulatory transformations, and the responses to them, have been diverse and not easily generalizable. For Hess,

“the broader point is that the creation of new markets took place within a broader electricity field that included the diverse ideologies and organizations described above. Thus, it would be a mistake to paint the entire field with the broad brush of a transition to a neoliberal regime; rather, it would be more accurate to say that a neoliberal strand was introduced into an organizationally, institutionally, and ideologically diverse political field. Municipal utilities, rural cooperatives, federal electricity generation facilities, state regulatory commissions, and regulated IOUs remained in place in a field that now included competing wholesalers, retail competition in some states, and a range of other organizational innovations needed to support the new markets.
For this reason, the term “restructuring” is more accurate than “deregulation” (Hess 2011, 1067).

As a result the “various responses, accommodations, and resistances” to neoliberalization and electricity restructuring “cannot be described as either wholly captured by or wholly resisting an all-encompassing neoliberal regime” (Hess 2011:1067). Figure 1 offers an overview of the state-by-state status of electricity restructuring as of 2010.

![Electricity Restructuring by State](image)

Figure 1: Electricity Restructuring by State

3.2.4 Electricity Markets and Regulation in Washington, D.C. and Maryland: The Broad Context

The current structure and management of the North American electrical grid reflects this neither wholly captured / neither wholly resisting framework. At the widest level
it is broken into three “independently synchronized grids”: the Western Interconnect, the Eastern Interconnect and the Electric Reliability Council of Texas. For all intents and purposes these three grids are self-contained with very little electric power being shared between them. The Eastern Interconnection (home to Maryland and the District) accounts for 73% of annual electricity sales in the United States (“The Future of the Electric Grid” 2011, 3). Figure 2 outlines the geographic reach of these three grids.

![Figure 2: Interconnections](https://energy.gov/sites/prod/files/oe/modulesandMedia/NERC_Interconnection_1A.pdf)

Each of these “interconnects” is comprised of smaller, regionalized, interconnected grids. In contrast to the early days of electricity generation when all of elements of the system were relatively localized these “regional systems are connected together by high-voltage transmission lines to form highly interconnected and complex systems that span
wide areas.” Figure 3 outlines the three basic components of these regional grids: generation, transmission and distribution\textsuperscript{14}. The easiest distinction that can be drawn between transmission networks and distribution networks is to compare them with interstate highways (transmission) and surface roads (distribution). The substations marked on Figure 3 can be thought of as highway off ramps, places where the voltage of electric current is slowed down and readied for delivery to end users.

As a result of the waves of restructuring that swept across the country in the 1990s and early 2000s certain regional grids “are operated by Independent System Operators (ISOs) or Regional Transmission Organizations (RTOs) that do not own generators or serve
retail customers” (“The Future of the Electric Grid” 2011, 4). In general, ISOs or RTOs are present where the shift toward restructured, wholesale markets for electricity took hold. “In the Southeast, the traditional vertically integrated utility model is dominant, while in the West, particularly the Pacific Northwest, federal, municipally owned, and cooperative enterprises play an important role in the industry” (“The Future of the Electric Grid” 2011, 4). As a result, ISO/RTO presence in these areas is nonexistent. In areas where they do exist ISOs/RTOs have two primary responsibilities: operation and management of the regional grid and acting as a financial exchange for wholesale electricity sales between generators, retail electricity providers and utilities. Figure 4 outlines the current ISO/RTO framework in North America.

Figure 4: ISO/RSO Layout

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The District and Maryland are located within the PJM RTO, a territory that also covers Ohio, West Virginia, Virginia, Pennsylvania, Delaware and small portions of North Carolina, Illinois (greater Chicago), Indiana and Michigan. PJM is interconnected with neighboring regional grids as part of the larger Eastern Interconnect and, because it is not an “island” unto itself, will regularly import electricity from and export electricity to other regional grids depending on demand.

For the average electricity customer the work of an RTO like PJM is anonymous and seamless, somewhat like the backend of the internet. It is at the level of the individual utility that electricity customers have their most direct relationship with the larger grid. Generally speaking, in states that have gone through electric utility restructuring (The District and Maryland both initiated this process during the late 1990s.) electricity generation, transmission and distribution have been effectively “decoupled.” Other than select cases, such as those described above by Hess, regional utilities serving states with restructured electricity markets are no longer vertically integrated. They have, essentially, become “wires” companies. They no longer own generation and transmission infrastructure. Instead, they derive income from retail electricity sales as well as distribution and maintenance charges that are collected from all customers in their service territory. These distribution and maintenance charges are generally linked to monthly electric consumption (i.e., the more electricity consumed the higher the charge). Utilities in deregulated markets now compete with third-party electricity suppliers to offer electricity to end-users. These third-party electricity suppliers, however, only account for 7.5% of annual retail electricity sales (“The Future of the Electric Grid” 2011, 6). The vast majority of electricity customers in deregulated markets in the United States continue to buy their electricity from state-regulated
regional utilities. The majority of the actual “competition” occurs at the wholesale level where independent generators compete to sell power to utilities.\textsuperscript{18}

Restructuring, the expansion of wholesale markets for electricity generation and the development of retail “wheeling” have, perhaps ironically, helped the United States develop the world’s largest, voluntary, customer-driven green power market (Byrne et al. 2007, 4562). Green power markets offer electricity customers the option to pay a premium for ‘green’ power. In some cases these services are offered by incumbent, regulated utilities while in other cases, green power marketers act as third-party electrical suppliers and compete in the retail electricity sales market.\textsuperscript{19} In general, green power providers rely on purchasing the rights to renewable electricity from utility-scale sources across the country. These providers function in much the same way as any other retail electricity supplier except for the fact that they focus on selling a renewable (rather that fossil or nuclear) electricity product.

The District and Maryland have managed restructured electricity markets now for almost fifteen years. While the service territories of the utilities in both jurisdictions have maintained the regional franchises they have enjoyed for decades the markets in which these utilities operate have changed drastically. The Potomac Electric Power Company (PEPCO) remains the default electricity provider for the District and maintains its century-plus monopoly over electricity distribution and grid management. The city, however, now boasts over ninety approved electricity transmission and generation suppliers who are licensed to sell power to residential, commercial and industrial users in the city.\textsuperscript{20} Maryland boasts a similar number of approved third-party electricity suppliers, however, the utility environment in the state is vastly more complicated than that of the District. The District’s Public Service Commission is responsible for regulating a single utility and a single electricity market in a
densely populated urban environment—over 625,000 people packed into approximately 68 square miles. In contrast, the Maryland Public Service Commission is responsible for regulating thirteen distinct utilities (four investor-owned utilities, five municipal utilities and four rural electric cooperatives) and multiple electricity markets in a state covering over 12,000 square miles of varying urban and rural topography with an estimated population of almost 6 million. (See Figure 5 below for a map of utility service territories in Maryland and the District of Columbia.) Further, legislation regarding electric utility regulation in Maryland must pass through committees in both legislative chambers and receive majority votes in both chambers (47 total senators and 141 House Delegates). In contrast, any electric utility regulation legislation in the District, owning to the unique historical status of the city, only needs to receive a majority of votes from the thirteen-member City Council. In many ways the District electricity market operates more like that of a municipal utility in which PEPCO acts as a contractor providing electricity services to the city’s residences rather than a restructured, state-level, electricity market. (The importance of this distinction is explored in more detail in chapter five.)
In the midst of and in parallel with these regulatory shifts, states and localities have, over the last fifteen years developed a complex and innovative suite of policies, approaches, and incentives to expand renewable electricity production. As much as this suite is overdetermined by ‘hard path’ fossil fuel dependencies and Federal intransigence, the results of its application reflect the uneven, particular, localized, and place-based character of contemporary renewable electricity development. The next section offers a review of possibilities for access offered by this suite of policies, approaches and incentives.

3.3 Promoting Contemporary Renewable Energy Development: Possibilities of Access

Writing in 1996 about the perceived renewables bust of the 1980s Berman and O’Connor declared that, contrary to popular narratives of this period “solar technology wasn’t dead, it had just gone underground” (1996, 39). The authors’ narrative of renewables
during the Reagan-Bush era is one in which small-scale entrepreneurs struggled to keep the solar dream alive while major environmental organizations such as the Natural Resources Defense Council sought to compromise with utility companies by promoting “demand management” as a substitute for true reductions in energy use and increased production of renewable generated power” (1996, 38). Berman and O’Connor’s narrative (See Chapter 1 “Solar America: A Dream Deferred”) also describes the technology sell offs that sent solar technology developed in the United States to companies in other parts of the world that would, twenty years later, begin selling back into U.S. markets. For example, “Arco Solar, the largest U.S. produced of photovoltaic cells, was sold to Siemens, a German multinational, in February 1990” (1996, 33).

“The election of Bill Clinton to the presidency in 1992 triggered an evanescent euphoria among environmentalists and other people normally skeptical about electoral promises and the powers of presidents” (Berman and O’Connor 1996, 42). Clinton had, in the wake of the first Gulf War, campaigned as an advocate for energy efficiency, conservation and the “expanded use of renewables” (Berman and O’Connor 1996, 42). His running mate, Al Gore, who had just published the best-selling Earth in the Balance, “lauded photovoltaics” and proposed a new round of strategic investments focused on jump-starting new solar and the development of “other environmentally safe technologies” (Berman and O’Connor 1996, 43). Although the Newt Gingrich-lead Republican takeover of the House and Senate in 1995, endangered many of these initiatives, the late 1990s saw the development of efforts to use the emerging frameworks of restructured electricity markets to promote renewables. For example, one commentator, writing in 1998, argued that “while restructuring recently has preoccupied many state legislators and utility regulators, few may

The broad suite of contemporary renewable electricity policies and frameworks that began to emerge alongside deregulation efforts in the late 1990s can be understood as a set of possibilities conditioned by layers of access. The most basic layer is achieved by legislating access to the electricity grid for independent power producers. Basic grid access and market-based incentives have emerged as the two most basic requirements for expanding the development of renewable electricity production. In the United States, these elements of basic access are implemented, almost exclusively, at the state level.

While industrial scale electricity generation from renewables has grown over the past decade we are most concerned here with understanding the types of technological arrangements favored by local renewable energy action supporters and the regulatory and policy frameworks upon which those arrangements are dependent for their success. As we shall see in the next chapter it is the limits this framework poses to the realization of the broader social vision for renewables expansion that champions of “Community Renewables” legislation such as that recently passed in the District seek to overcome.

Beyond grid access economically viable models for small-scale renewable energy generation rely on four key elements: direct financial incentives such as tax credits and grants, Renewables Portfolio Standards (RPSs), Renewable Energy Credits (RECs) and net energy metering (NEM). With the exception of Federal tax credits all four of these key elements are governed by state-level policies. Of the four, net energy metering is the most complicated and, for the projects discussed here, the most important.
The Federal government maintains a wide variety of direct financial incentives and tax credits that support the advancement of renewable energy technologies, however three are most important for our conversation here. The “Business Energy Investment Tax Credit (ITC)” offers tax credits of varying sizes to businesses that invest in renewable technologies. The “Renewable Electricity Production Tax Credit (PTC)” is a “per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year.” In general, the Investment Tax Credit can be understood as a tax credit that is applied to the purchase of renewable energy technologies whereas the Production Tax Credit is, more or less, a tax credit given to industrial and commercial producers of renewable energy. Finally, the “Residential Renewable Energy Tax Credit” (RRETC) is a personal tax credit that can be captured by owners of residential-scale renewable energy systems. Under the terms of this credit “a taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States that is owned and used as a residence by the taxpayer.” In addition to Federal incentives, many states, counties and municipalities offer their own renewables-oriented tax credits and financial incentives. Many of these incentives are funded through fee-based systems, applied to electricity sales. The revenues from these public (or systems) benefit charges (PBC or SBC) are generally assessed based on the amount of electricity consumed by a particular utility customer. They are "then disbursed in support of energy efficiency, clean energy research, low-income household weatherization, and renewable energy projects" (Byrne et al. 2007, 4564).

Renewables Portfolio Standards are also another state-level policy instrument for supporting renewable energy generation. These standards "establish renewable energy
procurement quotas for utilities according to a schedule typically running for 10–15 years” (Byrne et al. 2007, 4564). These standards first began to appear in the mid-1990s when California elected to include such requirements as part of the state’s broader utility restructuring efforts (Rader and Norgaard 1996, 43). By January 2000 24 states had committed to some form of restructuring and, of those 24 the majority—15 in total—“had created renewables portfolio standards and/or system-benefits charges that target[ed] renewable energy” (Wiser, Porter, and Clemmer 2000, 14). RPS requirements are generally pegged to a percentage of a utility’s retail electricity sales or a certain amount of their generating capacity. Many states have also integrated “carve-outs” into their RPSs that favor production from particular renewable sources.24 In order to comply with the requirements of an RPS, utilities may either incorporate electricity produced from approved renewable sources into the overall pool of electricity they supply to their customers or purchase renewable energy credits (RECs) produced by qualifying, independent, renewable electricity generators.

Renewable energy credits represent a market-oriented method for quantifying the various collective environmental benefits that result from producing electricity from renewable sources. Depending on the regulatory environment, states have various methods for calculating how many credits are produced annually by a qualified renewable electricity generating facility. It is important to note that because RECs are a market commodity—essentially a financial product—they can be traded and sold to buyers across the country. This means that, hypothetically, electricity produced by wind turbines in Iowa can generate credits that are purchased by a utility operating in Maryland seeking to meet its in-state Renewables Portfolio Standard mandate. The electricity itself is not exchanged, merely the
environmental attributes associated with its production. For this reason, as efforts to encourage ‘in-state’ renewable electricity production have increased over the past few years, many states have revised their RPSs to include geographic restrictions on where credits used to meet RPS goals can be produced. Further, depending on the structure of “carve outs” certain credits gain value because of their attachment to particular production technologies. The market value of RECs, therefore, tends to fluctuate depending on the geography of their production as well as the technology of production.

For example, the geographic and technological restrictions placed on the solar ‘carve outs’ in the Renewables Portfolio Standards of Maryland and the District have resulted in a wide variation in SREC (solar renewable energy credits) prices between the two jurisdictions. Utilities in Maryland may purchase SRECs produced by qualifying solar facilities that are connected to the distribution grid serving the state. In practice this means that credits generated by solar installations in states adjacent to Maryland could be used to meet the state’s RPS. The District has a similar arrangement but with one significant distinction: The District’s Renewables Portfolio Standard has a specific solar ‘carve out’ mandating that by 2023 2.50% of the electricity serving the city must be produced by qualified solar facilities located within the city’s boundaries. This geographic restriction has currently helped make District-produced SRECs almost three times as valuable as Maryland-produced SRECs.

The types of small-scale generation that are at the center of local renewable energy actions generally rely on either the federal investment tax credit or the federal residential renewable energy tax credit, in combination with similar state incentives, to offset the initial cost of purchasing renewable energy technologies. These technologies also produce RECs that are sold to generate additional revenue. However, the most important regulatory
instrument responsible for making small-scale renewable electricity generation economically viable is net energy metering.

Net energy metering regulations were first introduced in the early 1980s. “For example, the Arizona Public Utilities Commission (PUC) ordered net metering for QFs in 1981, and Minnesota enacted a net metering statute in 1983” (Wan and Green 1998, 2). By 1998 twenty-two states had developed such statues (Wan and Green 1998, 1). As of 2014 the vast majority of states and territories had some form of net metering in place. Net metering statutes are complicated and vary from state to state, but they generally share a set of characteristics. First, they only apply to what are known as ‘behind-the-meter’ installations. In ‘behind-the-meter’ installations the electricity produced by the system is designed to meet a direct, on-site electricity load. For your average home or business direct load means refrigerators, lights, computers, hair dryers and so on. Net metering allows the owners of ‘behind-the-meter’ renewable electricity generating installations to

“bank excess electricity on the grid, usually in the form of kilowatt-hour (kWh) credits. These credits are used to offset electricity consumed by the customer at a different time during the same billing period (i.e., when the customer’s system is not generating enough electricity to meet the customer’s needs). In effect, the customer uses excess generation credits to offset electricity that the customer otherwise would have to purchase at the utility’s retail rate.”

This generally means that every kWh of electricity produced by a net-metered system is valued at the same dollar amount as the electricity the system owner purchases from an electric utility. “Consumers with net-metered generation systems benefit financially by being able to offset conventional electricity with clean, onsite energy at full retail electric rates. This seemingly simple benefit is often cited as one of the key financial underpinnings of successful distributed, renewable energy generation systems” (“A Guidebook on Net Energy Metering in Maryland” 2013, 2). This direct, one-to-one valuation can often be the most
critical element with regard to making a small-scale, behind-the-meter, installation affordable. If tax credits and REC sales help cover the initial purchase cost of the technology then net metering policies insure that the cost of the electricity produced by the technology is equivalent to the cost a consumer must pay to purchase electricity from a utility company. Figure 6 depicts a conventional, behind-the-meter, NEM installation.

Figure 6: Diagram of a Conventional “Behind-the-Meter” Net Metered Installation

It must also be understood that the “retail rate” paid by electricity consumers generally includes three primary charges: the cost for the fuel used to produce the electricity, and the costs to transmit and distribute the electricity to the end consumer. Most electricity consumers will also have a number of fees associated with their bill—such as system benefits and ‘stand-by’ charges—but, in general, these are not offset as part of net metering regulations. The value of distribution costs under net metering has long been contentious.
Wan and Green, writing in the late 1990s (1998), detailed many of the arguments against net metering that are still deployed today by detractors of the process. To the extent that net metering reduces the amount of electricity a consumer-generator must purchase from a utility it also reduces the monies paid by that consumer to support the upkeep and management of the entire electric grid through distribution charges. In much the same way that a portion of gas taxes are used to repair and maintain roads, distribution charges are the primary vehicle for funding electrical grid maintenance. It is for this reason that utilities often describe net metering customers as “free riders” who do not pay their fair share of costs related to the upkeep and management of the electricity grid. Supporters of distributed renewable electricity generation, meanwhile, cite numerous studies in support of their arguments that net metering can provide a variety of measureable benefits to the electrical grid. This debate, and its impact on efforts to pass “Community Renewables” legislation in Maryland, is explored in more detail in Chapter Five. Figure 7 reviews general costs and benefits associated with net metering programs.
It must also be understood that because net metering applies specifically to ‘behind-the-meter’ installations it is a framework that privileges both property ownership and elements of the built environment that are appropriately sited for the deployment of renewable energy technologies. For all intents and purposes you must own property in order to install some type of distributed renewable electricity generating system on it. This provision effectively eliminates the ability of non-property owners to share in the benefits of net metering. Further, net metering also requires the properties on which distributed renewable electricity generating technologies are sited to be suitable for development. In some cases suitability can be architectural. Does a home receive enough sunlight to make a solar PV system viable or is it too shaded? Is the roof of a building oriented correctly for a
solar installation (in the northern hemisphere generally for solar PV roofs must be either flat or facing south or west and largely unobstructed by trees, etc…)? Given these conditions entire groups of homes or buildings can sometimes be off limits for solar PV development. A widely cited 2008 study by the National Renewable Energy Laboratory (Denholm and Margolis 2008) “found that only 22 to 27% of residential rooftop area [in the United States] is suitable for hosting an on-site photovoltaic (PV) system after adjusting for structural, shading, or ownership issues” (Coughlin 2010, 1–2). Geography and topography can also be restricting elements for particular technologies. Finally, because net metering requires that a distributed renewable electricity generating facility be linked directly to a single electrical meter, residents of multi-family dwellings such as condominiums are effectively prevented for participating regardless of whether they own the unit in which they live.

These four elements—tax incentives, renewables portfolio standards, renewable energy credits and net energy metering—demarcate the possibilities for access and development of small-scale renewable energy generation in any particular jurisdiction. The District and Maryland have each established tax incentives, RPSs, REC markets and NEM regulations over the past decade.

Over the last five to seven years distributed renewables advocates in the District and Maryland have developed two primary frameworks for exploiting these possibilities for access. They have also endeavored, with varying degrees of success, to expand the possibilities for access by seeking changes to net metering regulations, renewables portfolio standard requirements and the disposition of systems-benefits funds. The next two chapters draw on ethnographic research to explore these efforts. Chapter four focuses on the early development of the “Bulk Purchasing” and “Community Investor” models that have
emerged over the last seven years in the District and Maryland, respectively. Chapter five focuses on efforts to pass virtual net energy metering legislation in both jurisdictions.
3.4 Endnotes


2 Hess characterizes “this early system as a nineteenth-century, classical liberalism of relatively unregulated markets that gave way to a chaotic, localized social liberalism that was based on bribery and other forms of cronyism and hence hegemonic” (2011, 1063).

3 The PUHCA was part of a suite of anti-trust legislation passed in the wake of the 1929 economic collapse and the ensuing Great Depression. In 1932, just three years prior to the Act’s passage, the eight largest utility holding companies in the country controlled 73 percent of the investor-owned electric industry (Hyman, Hyman, and Hyman 2000, 74).

4 Cogeneration allowed industrial plants to generate their own electricity while also providing heat needed for industrial processes. “In these plants boilers heat water until it becomes steam, which passes through turbines connected to electricity generators. Instead of dumping the waste steam into the atmosphere, cogenerators provide heat for industrial processes. As a result, the facilities get double duty from raw fuel, and the overall efficiency of the energy conversion process is generally higher than that of utilities’ power plants” (Hirsh 1999, 81).

5 The Energy Policy Act (EPAct) of 1992 significantly amended the Federal Power Act. “The EPAct authorized FERC to order utilities to provide open access to their transmission lines to other utilities, nonutilities, and other wholesale providers and suppliers of electric power. FERC has jurisdiction over these wholesale ‘wheeling’ transactions and approves rates filed by each utility for transmission to ensure that the amount charged to others is no more than the utility is charging itself” (“The Road to Electric Restructuring in Maryland” 2006, 2). Additional orders include FERC Orders #888 (1996) and #2000 (1999). A provision of the Energy Policy Act of 2005 repealed the Public Utilities Holding Companies Act.

6 “Avoided cost” is a complicated and politically fraught concept within electric utility regulation. At the most basic level it is “the price a utility is obligated to pay a qualifying generation facility should reflect the costs that the utility avoids (the "avoided cost principle") by purchasing from an independent supplier compared with the best alternative available to the utility to meet its load” (Joskow 1992, 27). PURPA did not, however, did not outline specific formula for calculating “avoided cost.” This decision was left up to regulating bodies in individual states. As a result, “California and some other states determined that “avoided cost” was substantially above current costs and thereby encouraged the construction of substantial generation capacity that proved to be uneconomic” (“The Future of the Electric Grid” 2011, 238).

Deregulation of the airlines began in 1978 with the passage of the Airline Deregulation Act. Deregulation of the natural gas industry began in 1978 as well with the passage of the Natural Gas Policy Act. With respect to natural gas Warwick notes that “deregulation of the natural gas industry paved the way for electric industry deregulation both by unleashing market forces to free up natural gas for electricity generation and through FERC’s experience with gas industry restructuring” (2002, 6.1). See Warwick, Section 6.1.1 for a more detailed history of regulation and deregulation in the United States natural gas industry.

9 Issue #4, Winter 1992
11 The United States and Canadian grids are interconnected, to different degrees, along the full length of the border between the two countries.
12 “Physically, the U.S. electric grid currently consists of approximately 170,000 miles of high-voltage (above 200 kilovolts or kV) electric transmission lines and associated equipment, and almost 6 million miles of lower-voltage distribution lines. Several hundred entities currently own parts of the transmission or bulk power system. Investor-owned utilities own about 66% of the system, and federal enterprises own 14%. The rest is divided among other publicly owned entities (7%), cooperatives (6%), independent transmission companies (4%), and others (3%). The U.S. Federal Energy Regulatory Commission (FERC) has jurisdiction over wholesale electricity sales and transmission rates” (“The Future of the Electric Grid” 2011, 4–5).
14 “At the distribution level, about 3,200 organizations provide electricity to retail customers. Nearly 2,200 are publicly owned—six by the federal government and the rest by states and municipalities—but they account for only 16% of electricity sold. Another 818 are cooperatives, which in aggregate account for 10.5% of kWh sales. In some areas of the country, particularly the Pacific Northwest, municipally owned and cooperative utilities benefit substantially from preferred access to low-cost power from federal projects. Only 242 distribution entities are investor owned, but they account for 66% of electricity sales. Their retail rates are regulated by state public utility commissions (PUCs). Finally, about 7.5% of retail sales are accounted for by retail power marketers that do not provide distribution services” (“The Future of the Electric Grid” 2011, 6).
16 Reproduced in: (“The Future of the Electric Grid” 2011, 4)
17 For a timeline of deregulation activities in the District and Maryland please see, respectively, http://www.eia.gov/electricity/policies/restructuring/dc.html and http://www.eia.gov/electricity/policies/restructuring/maryland.html.
18 Utilities generally sell power to customers under the terms of what is known as “Standard Offer Service” (SOS). The rate for SOS is regulated by state-level public utility commissions. The business goal for a utility selling electricity at a regulated SOS rate is to sell as much electricity as possible, at that rate, while keeping operating costs at a minimum.
19 It is important to note that green power purchasing programs (and retail electricity sales more broadly) do not send “green” electrons directly to individual electricity customers. The transaction is, essentially, a virtual one. Customers are supporting the production of “green” electrons somewhere but they are not directly “consuming” green electrons. The arrangement is, in some ways, similar to purchasing carbon offsets for air travel.
20 See the following URL for a complete list of DC providers: http://www.dcpsc.org/customerchoice/whatis/electric/Approved_Commodity_electric_Suppliers.shtm See the following URL for a complete list of Maryland providers: http://webapp.psc.state.md.us/intranet/supplierinfo/electricsupplier_new.cfm
21 Downloaded from the State of Maryland’s Office of the People’s Council (5.1.14): http://www.opc.state.md.us/ope/LinkClick.aspx?fileticket=0KrP47geZJ8%3D&tabid=60 The “X” marks the District of Columbia, currently a part of PEPCO’s service territory.
24 Generally speaking a “carve-out” dictates that some percentage of the electricity used to meet the requirements of an RPS must come from a particular technology and resource. For example, the current RPS in Maryland mandates that all utilities operating in the state must, by 2022, acquire 2% of the electricity they sell.
from solar technologies. This solar mandate is “carved-out” from the wider framework of the RPS, which dictates that utilities must produce 20% of their electricity from approved renewable sources.

25 See the following URL for a map detailing the landscape of net energy metering in the United States: http://www.dsireusa.org/documents/summaries/maps/net_metering_map.pdf

26 This description is drawn from the Database of State Incentives for Renewables and Efficiency (DSIRE): http://www.dsireusa.org/solar/solarpolicyguide/?id=17 (accessed 5.3.14)

27 Image from website of Florida Power and Light: http://www.fpl.com/residential/savings/net_metering/images/how_it_works.gif (accessed 5.3.14)

CHAPTER FOUR

4.1 Introduction

On a Saturday afternoon in late October of 2011 I attended a solar homes tour organized by members of the Cleveland Park Energy Coop (CPEC). The Coop is one of a handful of such groups that have formed in the District since 2008. The neighborhood of Cleveland Park, one of the wealthier in the District, is located in the northwest quadrant of the city. Listed on the National Register of Historic Places, the neighborhood’s hilly and elevated topography appealed to city dwellers seeking to escape the swampy heat of District’s lower lying areas and made it a popular location for summer estates beginning in the late 19th century. These included one owned by President Grover Cleveland, the neighborhood’s namesake. Known today for its tree lined streets, late 19th and early 20th century architecture and 1930s-era Art Deco movie theater, the neighborhood, which features a variety of upscale eateries and hang outs, is bounded by Wisconsin Avenue on the west and Rock Creek Park on the east. It is bisected by the bustling Connecticut Avenue commercial corridor.

Established in early 2011, at the time of the tour the Coop was undergoing a bit of a reboot. A new pair of neighborhood volunteers—Elizabeth, a married mother of two in her early 40s who had recently quit her job with the United States Green Building Council to spend more time with her family and pursue other opportunities and Peter, a single man in his 30s who worked as an environmental consultant in the city—had recently taken over the
management of the group. Elizabeth and Peter were working to recruit new members and the solar homes tour was to be one of a series of educational events for neighbors they hoped to organize over the next few months.

On this occasion Elizabeth and Peter had scheduled to have an introductory informational session be held at the Cleveland Park Club, a private, non-profit neighborhood community center housed in one of the neighborhood’s late 19th century homes. This was to be followed by a tour to visit two neighborhood homes that had recently installed solar systems. The twenty or so attendees, mostly neighborhood residents, were almost evenly split between men and women. They sat in metal folding chairs and listened attentively while a neighborhood resident who was an employee of a local solar installation firm walked through a lengthy power point presentation covering the basics of solar electricity and the particulars of going solar in the District. The presenter promised that going solar would require “no change to your lifestyle” as he discussed the net metering statutes, renewable energy credits and tax incentives that would help interested individuals cover the cost of their solar system.

In an atmosphere akin to something like a continuing education classroom the attendees raised their hands to ask questions throughout the presentation. The presenter patiently answered each one, sometimes with the help of comments from other attendees. The questions ranged from the mundane to the complicated. “What about snow?” “Not a problem.” “How long do the panels last?” “Twenty to twenty-five years.” “How much electricity can they produce?” “It depends. Most homes in this neighborhood could probably produce one quarter to one half of the electricity they consume each year.” “Are Chinese-made panels any good? Should I buy American? German?” “It’s not about where the panels
are made it’s about the quality of production. Good panels are made everywhere. Bad panels are made everywhere.” “What if the company that makes my panels goes out of business?” “Almost any company should be able to service them.” “How long will it take to pay off my system?” “Five to seven years.”

There were also multiple questions about building structures and roof orientation. “Will installing panels make my roof leak?” “Not if they’re installed correctly.” “Can you install panels on a metal roof?” “Yes.” “A flat roof?” “Yes.” “A slate roof?” “Very difficult, but not impossible.” “What direction should my roof face?” “South and west are best.” “What about shading?” “We can work around that if it’s not too bad.”

After the hour long presentation the group traipsed out of the community center and, after a five-minute walk, we found ourselves at the first stop on the tour: an alley overlooking the backyard and roof of the presenter’s home. The presenter answered a few more questions. He complained about a neighbor’s tree that sometimes shaded part of his solar array. An eagle-eyed member of the party pointed out what looked to be a far older solar installation on the roof of a large home further down the alley. “Are those “Whip Inflation Now” stickers on the sides of those things?”, he asked. The presenter replied that he didn’t know that neighbor too well but he doubted that the panels were still working.

The second and final stop on the tour was a duplex owned by a local architect, Ethan, and his partner. The two men had recently completed an extensive renovation of the home’s interior. The solar panels were hidden by the home’s roofline and not visible from the street, so the members of the group assembled on a small hill in the backyard and careened their necks upward. We took a trip to the basement to see the system’s inverter—the technology that converts the direct current produced by the panels into alternating
current that can be fed into the home’s electrical panel. We climbed the stairs to the attic and, one by one, took turns peering out of a small window to get a better view of the panels. Finally we assembled in the front yard, in the space between the front porch of Ethan’s home and that of his neighbor, to look at the “smart meter” that had been installed to track the system’s electrical production. Getting this installed, Ethan offered, had been a bit of a fight. The city’s Historic Preservation Review Board (DCHPRB) hadn’t had a problem with the panels since they weren’t visible from the street but they had opposed the installation of the “smart meter” arguing that it marred the historic visual character of the front of the home. A member of the group pointed out that the smart meter was installed right next to a fairly modern and ugly looking natural gas meter. Ethan noted that that gas meter had been installed before the Review Board had come into existence so it had been “grandfathered” in. The group had a good laugh about this irony. After the tour the group convened in Ethan’s living room for refreshments and a bit more Q&A before dispersing into the fading twilight of mid-October.

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The solar homes tour was one of nearly a dozen such events that I attended over the course of my fieldwork. Often held in private homes, these neighborly, informal, informational activities were one of the primary ways that renewables advocates across the District and Maryland sought to gain support for their efforts. They often combined promotional and educational efforts with a ‘hands on’ component that offered attendees the opportunity to interact with businesses offering services and hear personal narratives delivered by neighbors who had ‘gone solar’, completed energy efficiency upgrades, and so on.
This brief description introduces four of the key ‘characters’ I encountered while exploring local renewable energy actions in the District and Maryland: the dedicated volunteer-organizer, the convert-adopter, the information seeker and the renewable energy professional. Although their ‘roles’ sometimes bleed into one other these characters populate a complex matrix of participation that has emerged around renewable energy in the area over the past decade. Much like the public power advocates of the Progressive Era and the renewable energy promoters of the 1970s these characters are guided in their activities by a discourse of localism that draws on familiar concepts of collaboration, decentralization, self-sufficiency, and human-scale governance. Today’s advocates, like their historical antecedents, also struggle to garner support for the broader social vision that undergirds their energy activism.

These networks often resemble concentric circles of participation with core advocacy efforts emerging from a small group of individuals who work primarily in energy and environmental fields or political and community organizing. In many cases these core actors are leaders of particular neighborhood solar co-ops or investors in particular neighborhood projects. Beyond this core group, sits what I have termed the ‘converts’, a ring of participation made up of individuals who, to a limited extent, participate in organizational meetings, attend public events and assist with political advocacy and outreach projects. Many of the ‘converts’ have ‘gone solar.’ Those who haven’t hope to do so in the near future. Beyond the ‘converts’ floats a nebulous group of actors: renewable energy professionals, politicians, real estate developers, government officials, policy makers, utility lobbyists. The work and values of these ‘satellites’ regularly impacts the actors of the core and converts. This entire microcosm is, to a certain extent, held together by a network of electronic
participation centered around online forums maintained by the core actors. These networks of electronic participation connect local actors with one another while simultaneously drawing local renewable energy actions into broader, nationalized networks of activism and activity.

This chapter examines the development of this collaborative model of participation and the efforts of the core advocates to overcome its limits. I begin by offering a series of ‘Origin Stories’ that describe the development of three local renewable energy actions in the District and Maryland. These narratives give a sense of the early efforts undertaken by a handful of core actors to develop neighborhood-scale renewable electricity projects. They also highlight the important role played by motivated individuals and particular neighborhoods in the early development of the most recent round of renewable energy activism that has taken root in the region. I then examine the collaborative character of such efforts and the broader motivations that individuals have for participating in them. In particular, I highlight the tensions between individual self-interest and broader social concerns that serve as a dividing line of sorts between the core actors and those of the converts. This investigation of motivations also highlights tensions between an older, social justice-oriented environmental practice and a more contemporary, consumption-focused ‘lifestyle’ environmentalism. Finally the examination of motivations reveals differences between organic, grassroots civic activism and a more professionalized, entrepreneurial, policy literate and politically astute activism.
4.2 Origin Stories

4.2.1 Mount Pleasant Solar Coop, NW, Washington D.C.

When I began the ethnographic research for this project in the fall of 2011 the Mount Pleasant Solar Coop (MPSC) had been active in the District for almost six years. As of this writing the neighborhood-scale organizational model developed by the group has, to a limited extent, made its way into all corners of the city. The Mount Pleasant model has two primary components: educational activities such as the solar homes tour described above and the organization of bulk purchasing contracts in which neighborhood coop members collaborate on the purchase of solar PV systems. Mount Pleasant-style coops have nominally been established in all eight political wards within the District over the past five years. The majority of these, however, are located in the northwest quadrant of the city and the affluent Capitol Hill area. Similar efforts also began to take shape in the Maryland suburbs in early 2014.

All of my informants, and many of the people I spoke with informally as part of my participant-observation activities, pointed to the formation of the Mount Pleasant Solar Coop as a kind of origin point for the activities of the past few years. The Coop’s primary organizer, Anya Schoolman appears in the Coop’s online promotional video. Schoolman has an extensive background in environmental policy and advocacy. She currently manages DCSUN and has recently established the Community Power Network (CPN), a “a network of grass roots, local, state, and national organizations working to build, and promote locally based renewable energy projects & policies.”

Emily Stiever helps manage DCSUN’s bulk purchasing and advocacy activities. She also serves as the Program Director for the Community Power Network. When we met she
offered her own version of the Mount Pleasant Solar Coop’s origin story. The group initially organized bulk purchases of energy efficient, compact fluorescent light bulbs and gradually moved into conducting energy audits and solar readiness assessments of member homes. Within a year the group had organized its first residential bulk purchase and succeeded in “solarizing” fifty homes in the neighborhood. Rob Robinson and his wife, Cheryl Berger, were original members of the Coop. Today, he says, “if you go up on one of the roofs, particularly where Anya lives […] you can look down towards the park and up towards Columbia Road and across towards Bancroft School […] and there are solar panels all over the place.” The bulk purchasing concept soon spread to other neighborhoods in the city and the Coop began to receive national press for its work.3

Like Robinson and Berger, Olivia Cadaval and her husband David Bosserman were early members of the Coop. The couple has lived in Mount Pleasant since 1985. Their own narrative of the group’s emergence is informed by their long years of residence in the neighborhood. During our interview Cadaval noted that Mount Pleasant has long been known for its “spawning, social atmosphere.” Bosserman drew attention to the high level of returned and retired Peace Corps volunteers living in the neighborhood as well as the number of people who are active in progressive politics as well as the number of group houses. The group house phenomenon has long been associated with progressive activity in the District. “And you know,” Cadaval told me, “this neighborhood has always been very socially engaged. There have always been a lot of cooperatives. Very progressive.” The idea of solar coop seemed to fit in well with this history.

While the couple first heard about the group’s formation via an announcement on the neighborhood email listserv they recall that interest in solar had already begun to
percolate prior to this announcement. The couple had attended a green homes tour, organized by a local environmental activist in nearby Takoma Park, MD: “It was in the air”, Cadaval told me, “and I think we were already beginning to purchase wind power somewhere.”

And yet, what the couple encountered, upon attending their first informational meeting, was not quite what they expected. Cadaval recounted:

“When I went to that first meeting I was expecting all these hippie or post-hippie or green people who usually don’t own anything and are very idealistic. And then you had these people that are professionally very technical. And they were going through everything. You know you would never find that in a coop. So my first thought was that this was not going to be a scam. This is not just going to be a fluff, feel good thing because all these guys are pretty technical.”

Bosserman expressed a similar first impression.

“But the group that started this coop were a different breed. […] And so people there were very technical. They were lawyers or they were engineers or they were architects. They were young professionals that had just moved to Mt. Pleasant and wanted to be engaged but they didn’t come out of the Civil Rights, they didn’t come out of the [19]70s era. It was a completely different thing. It wasn’t Occupy Mt. Pleasant. It was different. We had all that in Mt. Pleasant but the link to that and the coop might be tenuous.

Cadaval estimates that most of the people involved, initially, with the coop were “newcomers. They probably have not owned their house for more than ten years at the most.”

At the time Bosserman and Cadaval were also interested in getting the roof replaced on their home. This led them to Maggio Roofing. The company had been working in the city for sometime and had recently branched out into doing solar installations. Cadaval noted that even though solar installation was new for the company she felt comfortable working with them. “I like Maggio […] because his name’s been around the neighborhood and you just sort of say, ‘Well he must be a neighborhood guy because his name’s been around here.’”
Maggio was able to offer Bosserman and Cadaval an interest free loan on the cost of the system based on the Federal and District tax credits they could expect to capture as part of the installation. This allowed them to make an initial down payment on the cost of the system and then payback the rest of the loan over time once they received tax credits and revenue from the sale of the solar renewable energy credits produced by the system. During this time the ability to secure upfront financing was a key factor in Bosserman and Cadaval’s decision to go through with the project. Cadaval recalled: “They dump you the bill, which is not a little bill, for the whole thing. It’s crazy. You’ve haven’t gotten your Federal credit yet. You haven’t gotten city credit yet.”

I spoke with Emily Stiever about the evolution of DCSUN’s neighborhood bulk purchasing program during our interview. The group has organized a series of bulk purchases over the last five years and, beginning in the fall of 2013, was seeking to organize additional rounds of purchasing in Mount Pleasant, Capitol Hill, and a handful of other neighborhoods in the northeast and northwest quadrants of the city. The process is modeled off of the first purchase that Schoolman organized in Mount Pleasant in 2008 and early 2009.

During our interview Stiever used the recently completed process in Petworth, a gentrifying neighborhood located along the upper reaches of Seventh Street in the District’s northwest quadrant, to review the general timeline and format of the bulk purchasing model. A community volunteer in Petworth organized an initial meeting where DCSUN gave a presentation. Stiever and her colleague Triana Tello Gerez collected the names and address of those who were initially interested. They then conducted a rooftop of evaluation of potential properties using internet-based software to gauge their suitability for solar
installations. Once twenty to thirty people with suitable properties had committed to installing systems DCSUN helped guide the group in the development of a request for proposals (RFP) that was then sent out to area solar installers for bid. The goal is to have installers offer a bulk discount on installation and equipment based on the size of the purchasing group. According to Stiever “each group basically picks the criteria that’s important to them. We have some suggestions but then also they take a survey and they indicate what’s important to them, what they weigh more importantly than others. And then, based on that, we put that weighting into the RFP.” Price and company qualifications—Has a company, for example, had experience with working in the DC market?—tend to be the two major factors considered. Purchasing groups also frequently emphasize and investigate the possibility of purchasing American-made panels. Eventually fifty-six households signed on to the Petworth RFP.

4.2.2 Common Cents Solar, Chevy Chase, Maryland
When Ketch Ryan was asked by an Associated Press reporter to describe the beginnings of Common Cents Solar (CCS) she settled on the word “organic.”

“I just said, you know, it happened so organically. I was the first one in the neighborhood—this very touchy-feely neighborhood, we have a listserv and everybody knows each other a lot. And I just put out a note on the listserv, I think, just saying, ‘I went solar. Anybody want to know about it come on over on this particular day.’”

The initial meeting at Ryan’s home in Chevy Chase, an affluent enclave in Montgomery County, Maryland along the District’s northwest border, was a smashing but intimidating success. Ryan asked the company who had installed her solar system, Chesapeake Energy, to send over a representative who could explain the process to her
neighbors. “And I got just hoards, out of the blue, coming in my gate.” Ryan notes that while her neighbors were interested they were also intimidated.

“Everybody left and they got sheets of paper and stuff and every single person, no matter what they said, they all commonly said, ‘Well I don’t know how I could possibly do this. There’s just so much information and I’ve missed something.’ That was the general leitmotif: Too much information. Can’t imagine reinventing the wheel myself.”

A friend and neighbor, Kirk Renaud, approached her about working on the project together. “Kirk very wisely said, ‘We can do this together. There’s no reason everybody has to do this by themselves. Let’s just step forward and make it happen.’ I was like, ‘You first.’ Not something I would have done by myself, but together we were a really good match.”

Ryan describes the early efforts that she and Renaud engaged in as somewhat pioneering.

“There [were] timing issues. […] Now it’s like talking about indoor plumbing to talk to people about solar. I mean they’re just like, ‘Eh, solar? Of course solar.’ Well five years ago, around here, it was really a strange duck.”

Ryan and Renaud organized a series of informal meetings with interested homeowners and offered to give their homes grades for hosting solar. They initially settled on classifying homes as either “A”, “B” or “C.” This process often produced rather humorous results.

“It’s not tough to figure out if you’ve got an “A” roof—actually this is sort of a cute story—a “B” roof or a “C” roof for solar. Now these are really compulsive people, right, let me tell you. We got phone calls, serious phone calls, from people saying, ‘Oh, I’ve never gotten a “C” before. Is there anything I can do?’ (Laughter) I’m serious. I mean we should have just said “Bunnies” and “Squirrels” and “Owls” or something, you know. Really. We really did get calls from people saying, ‘I don’t want a “C”.”

Over the course of the survey Ryan says she figured out that about half of the town’s homes were a great fit for solar. There were also a number of “B” homes that weren’t good fits for solar PV but had the capacity to work well for solar thermal hot water systems. This prompted Ryan and Renaud to also help organize neighbors who were interested in
purchasing solar thermal systems as well. The pair also eventually helped a few neighbors with slate roofs—“which were a NIGHTMARE” to work with at the time—find a contractor who could install systems on these surfaces.

Ryan says that initially they worked on neighborhood projects in a piecemeal fashion. Rather than try to organize some kind of group purchase she and Renaud simply assisted interested neighbors with the legwork necessary to secure the discount from Chesapeake Solar. The group also didn’t attempt to solicit competitive bids. This was partially because, at the time, Ryan notes, there were few companies actually involved in solar installations. She also suggested that competitive bidding processes don’t always produce results that are beneficial to customers or companies. “Sometimes if you have everybody coming they’re sort of all killing themselves for a cheaper price. They waste a lot of time doing it—I think. And I’m not sure you end up with a better system. But I don’t know. It’s just a very different model.” She doesn’t doubt that some of the neighbors used the quote from Chesapeake to get bids from other installers but these neighbors didn’t get their help “filing for the SRECs and filing for the grants. All of which at least back then [was] a real pain in the neck, especially in Maryland. It was a real pain in the neck.”

When I asked her to elaborate on the issues with paperwork Ryan offered the following description of the process:

“Because you had to get a lot of pieces of paper together that a lot of people weren’t used to getting. They were very overwhelmed by, ‘I’ve got to get this electric permit piece and I’ve got to get that piece very smart act overwhelmed by those things so…And there were time limits also. The grants kept going down and if you didn’t hit it you were going to lose out.”

Ryan and Renaud received no monetary compensation for the information and assistance they provided to their neighbors. Ryan enjoyed “being a central repository for
information…We didn’t mind…because I didn’t work full time and that was sort of fun for me and my kids were off going to college…It just worked well for me.”

The initial bulk purchasing models developed by the Mount Pleasant Solar Coop and Common Cents Solar, as well as the more refined model that DCSUN now uses to promote bulk purchasing across the District, focus, essentially, on collaborative models for purchasing residential solar photovoltaic systems. Ryan, Stiever, Schoolman and DCSUN serve as knowledgeable intermediaries helping to broker numerous individual purchases. The need for knowledgeable intermediaries was, according to my discussions with informants, particularly necessary five to seven years ago when a number of factors converged to make such purchases possible but a streamlined process for managing purchases and detailed information about navigating the particularities of the incentive frameworks had yet to materialize. The individual purchasing process takes advantage of the primary incentive framework for residential solar outlined in the previous chapter: net energy metering.

During the time that Mount Pleasant Solar Coop and DCSUN were in the early stages of developing their bulk purchasing model a distinctly different model was being developed in the town of University Park, Maryland. The developers of this model also took advantage of existing incentives for renewable electricity development. The model they settled on, however, was an investor-oriented model that involved financing the installation of rooftop PV systems on neighborhood churches and businesses rather than the facilitating the purchasing of individual systems.
4.2.3 University Park Community Solar and Greenbelt Community Solar

In June of 2010, after spending more than two years “crafting the legal and financial aspects of their business model” and approximately $12,000 in legal and accounting advice the volunteer members of University Park Community Solar, LLC (UPSC) flipped the switch on a 22kw solar PV system that had been installed on the roof of local church (Coughlin 2010:15). The thirty-six members of the group had each invested anywhere from $1,000 to $5,000 to cover the costs of the system and negotiated an twenty year agreement with the host site—the University Park Church of the Brethren—to purchase the electricity produced by the system. Under this arrangement—sometimes known as a “Special Purpose Entity” model —LLC members, rather than investing, individually, in the ownership of a personal PV system, sell electricity to a third party consumer, in this case the Church of the Brethren, and receive a modest return on their investment based on electricity and the sale of solar renewable energy credits. The group was also able to take advantage of Federal tax credits and, at the time, a $10,000 state grant to help offset the costs of purchasing the system. The Church, in turn, receives a twenty-year guaranteed output of electricity production from the system and a guaranteed rate on the cost of that electricity.

In late December of 2011 members of Greenbelt Community Solar (GBSC) using the model and legal and financial framework developed by the University Park group, flipped the switch on a 22kw array installed on the Greenbelt Baptist Church.4 Located just outside the capital beltway, the Depression-era planned community of Greenbelt has been home to Steve Skolnik and his family for over thirty-five years. When I asked Skolnik, a former Vice-President of Operations for a DC-based electrical contracting firm, how he came to be an investor in the project he began by telling me that upon retirement he “fell in
with some people here in Greenbelt are very community activist types.” Like Cadaval and Bosserman, Skolnik argues that Greenbelt’s unique history and community-values make it a place that would be amendable to collaborative, neighborhood-scale renewable energy development. “It’s an astonishingly strong community. There are eight cooperatives active in the community right now.” Inspired by the recent development of the University Park project Skolnik and his neighbors formed a group and set about trying to reproduce the project’s model in their own community. “So I looked at that [the University Park project] and thought, ‘Man, if that could work, we could do it here.’

Under the terms of the contract the group has with the church the church is obligated to purchase all of the electricity that the system produces at a set rate that increases over the lifetime of the agreement. The LLC agreed, initially, to hold the rate steady for the first three years of the contract. Skolnik noted that this decision was “prescient” because electricity prices have not gone up as much as was expected because of the recent boom in domestic natural gas production.5

4.3 Motivations for Participation

4.3.1 Environmental Values

In much of popular discourse environmental values are regularly presented as the primary motivating factor driving individuals and communities to pursue renewable energy development. For the majority of my informants, however, this was not the case. Rather, among participants in the projects I investigated a certain framework of environmental values was assumed and largely subsumed within other more compelling reasons for
participation. In fact, some of my informants were openly skeptical of what might be considered elements of formal, centrist environmental politics and political action.

Rob Robinson discussed, in colorful detail, the difficulty of having to overcome the perception, in some quarters, that the efforts of the Mt. Pleasant Solar Coop and DCSUN, were little more than promotions of a particular, privileged lifestyle.

“And environmentalism also tends to get into people that are…you know it’s like a lifestyle so it kind of becomes clubs, you know. And like one of the problems that I have with all these motherfuckers in renewable and solar is they live out in Colorado and they’ve got a house that’s off the grid and this sort of thing. And they drive around in a jeep and they wear Weejuns and it’s like they come from one demographic slice and that’s all. And it’s like…so for them environmentalism is kind of like a country club, you know. It’s what I call ‘lifestyles stuff.’ And it becomes club-ic. And so I think part of the struggle that people have that are concerned about environmental things is: If you had to tell the average person that these things are important to you—whether it’s recycling or clean energy or clean air or not using genetically modified foods or using more fresh foods, not using stuff that’s trucked in—we have a very difficult time of explaining what it is that we’re going to do to make the world a better place ‘In toto.’”

When I questioned Cadaval and Bosserman about the environmental motivations of some of the early members of the MPSC they returned to their evaluation of the young professionals that were part of the group. Cadaval suggested that for the young professionals environmental values may have been at play but that those values had an individual rather than social valence.

“I don’t think it was environmental justice as such. It was sort of choosing a way of life. And choosing to, you know, run your life and build your house and be a good citizen and control your space. […] Ecological, but I would say on a very modern, personalized, not a social…Not ‘I’m turning my community into a better community.’ ‘No, I’m turning my way of life into a better way of life.’ Because that’s the paradigm. It’s a very individualistic…”

Cadaval and Bosserman both suggested to me that this “paradigm” of individualistic environmentalism could be at least partially linked to the economic capacity of the young professionals to afford such a stance. Whereas, supporting a more social “paradigm” such as that frequently associated with environmental justice movements, could, potentially, be linked to a lack of economic means. That is to say it is possible that more socialized
environmental values are frequently adopted by those for whom the model of the environmentally conscious individual consumer is economically inaccessible.

4.3.2 Economic Values: Security and Autonomy

Indeed, economic motivations appear to play the largest role in encouraging participation. Robinson suggested that a strict economic calculus was the primary motivating factor for participation. “Yes you believe in it but you also believe it’s going to save you money and you have a feeling that you want to save money.” Ryan noted that some of the neighbors who initially expressed interest in working with her were approaching retirement and motivated by a desire for financial security.

“And actually a lovely subtext, this is a woman who—We had a number of these older people who were quite anxious about money and wanted to lock in their money certainty over time. And that was a very big deal. So they’d know what they were looking at in terms of prices of life. She’s in her sixties. We had a number of those as a matter of fact. And we had never thought about that concept. They’re going to be on fixed incomes and they want to know where it’s going to go. And to the extent that they can control any piece of it they’re happier.”

Ryan’s comment regarding “control” touches on the relative sense of economic security that many of my informants associated with the individual ownership of distributed renewable electricity generating technologies. Ownership of the technology was viewed as offering some level of autonomy over fluctuating electricity prices and faceless, unaccountable electric utilities. Skolnik expressed the view that even though the investors in the Greenbelt Community Solar project were not producing electricity for themselves they were, nonetheless, helping to support a level of economic autonomy for the institutions and communities in which the projects were situated. “Well we wanted it to be local, of course, because part of the community-based model is you want to keep the money in the community to the extent that you’re able.”
Cadaval and Bosserman pushed this sense of autonomy even further. For example, when I asked if they thought that members of the Mount Pleasant group were drawn together by a commitment to social justice they suggested, instead, that all of the original members—both the long time and more recent residents of the neighborhood—shared a concern for neighborhood autonomy.

OC: “There’s a sense of social justice there. It’s just that…[...] I mean, it’s interesting that even though they’re [the young professionals] in this professional world where usually it’s dog eat dog that there’s a supportive system. That to me is what intrigued me right away, that we were working together. I did not feel like I was outsider. I felt supported by them. We were all in the same…in the same sort of vision that we could actually have a better life and that we can actually control…we don’t have to cede to how corporations like PEPCO control our lives. That we can actually have a say there and that we can do it through policy. And that you can do it through local government.”
DB: “That was a big thing, getting the DC government to legislate.”
OC: “But even more—right—local to the real, small local, like Mt. Pleasant local. That sense of ownership of this space. Not ownership in ownership way but in a way, in the Civil Rights way. Having an autonomy over our space and how we use that space.”

4.3.3 Self-Interest and Its Limits
And yet, the interplay between economic and social motivations appears to engender multiple frameworks for engagement with local renewable energy actions. Robinson perhaps captured this sense of entanglement best when he argued that the motivation to participate could be located at the intersection of individual interest and “social currency”.

“The best thing is for things to have some kind of social currency. So if people can go to something where they see something that’s interesting or they watch a film about it or they get to ask questions or they found neat stuff or, you know, whatever it is…If there’s some social motivation for something that’s also in your interest, in your best interests, people will do it. And the social glue is something, particularly in a city, in a diverse city, if there isn’t some social glue holding it together… [...] So I think, again, in the city, if there’s something social that attracts people and makes them feel good as well as them feel like they’re doing good or well that helps. But I think fundamentally there are personal reasons for this. And I think the more you learn about what those personal reasons are, the fact that they bleed into the planet and the rest of humanity that’s good, but ultimately it’s great for me because I can do something that helps me stay in my own home and has all these other benefits. Now that I know that, I’d still do it again but I’m a lot more enthusiastic about the altruistic and the planetary issues now that I know about them. But before you know about them and understand it it’s basically the self-interest. I know that there has to be something better than what I’ve got now.”
The motivation to participate in socially collaborative processes such as those managed by the Mount Pleasant Solar Coop or Common Cents Solar, as opposed to the independent pursuit of an economic self-interest—that is to say, joining a loose knit group as opposed to going it alone in pursuing solar—appeared also to be, at least to some extent, a product of self-interest as well. From Ryan’s perspective, the process, at the time, appeared to many neighborhood residents as complicated and opaque.

“This was helping out neighbors who were mostly, at that point, afraid they’d miss something. In other words, nobody was out there advertising that there were loads of grants. People weren’t saying, ‘I’ve got money for you.’ You had to know where to look. And there’s no point in everybody having to find out the same information over and over and over again. It just didn’t make any sense.”

Ryan’s reference to the inefficiency associated with having to collect “the same information over and over and over again” was mentioned regularly in my conversations with informants. It was understood that collaboration reduced the individual labor load associated with collecting information and navigating the solar process. Plus, Ryan argues, the process of collaboration allowed the group to take advantage of the individual strengths of various participants.

“And I do think one of the takeaways is, you know, it can often be better to do things together. Not just even economically but because you all have different strengths and have a different way of learning about things…and focus on different things. And collectively, it just sort of feels better.”

Cadaval and Bosserman noted that even though many early members of the Mount Pleasant group were pursuing an individual goal they recognized the value of working together. When I asked them if the group had sought out pro bono legal help to assist with its activities Cadaval suggested that while there were lawyers in the neighborhood who offered pro bono legal services many of them were, in this case, “members of the coop so they didn’t do it pro bono.” Rather, she says, they approached the process with an attitude of
“Well, I’m helping myself. I can help the others.’ That’s the personalized thing. By helping myself I can help others.” Bosserman suggested that this is an important distinction. “They weren’t doing it for others. We were doing it together. The coop ideal.”

Along similar lines, Cadaval and Bosserman also noted that the “young professionals” also brought a kind of managerial focus to the project.

OC: “I do think, you know, this was primarily an individualistic pursuit. In a good way, ‘We’re mature. We’re professional. We’re sophisticated. We know how to work together.’ But it’s a more individualistic model.”
DB: “When it started nobody was an expert. There were different groups doing research on different things.”
OC: “That was very nice. Nobody was an expert....It’s tricky to say one thing or the other.”

Cadaval’s final statement in this exchange speaks to the complicated relationship between social collaboration—neighbors helping neighbors in Ryan’s description—and the pursuit of self-interest.

Robinson takes a pragmatic view of this relationship, one that, to a certain extent reveals its limits. In our interview he suggested that it was inaccurate to argue that people participated initially because they wanted to benefit their local community.

“I think most people that got into this saw that we needed help to make it work and were willing to do a little bit but I think, as I said, the dynamic for most people is: Now matter how intelligent you are, no matter how technologically inclined you are, whether you’re a progressive or a conservative, most people, after they put the panels on their roof and they work and they’re getting the benefits of that they’re happy and they don’t want to go to more meetings.”

Robinson’s statement touches on the limits of self-interest in being able to sustain the broader activities of groups such as DCSUN. The groups sponsoring local renewable energy actions in the District and suburban Maryland were, by and large, informally organized and highly dependent on volunteers, a small, dedicated inner-circle of advocates, and an even smaller handful of individuals who were being paid for their work. Other than Schoolman and Stiever, who draw modest salaries for their work with the Community
Power Network and DCSUN. I spoke with no one during the course of my research, outside of a handful of individuals who worked in energy and environmental fields, who was actually being paid as part of their involvement with various projects and efforts.

Both Robinson and Stiever spoke of the limits of the Mount Pleasant model in this regard. Stiever noted that none of the coops that have been developed under the DCSUN umbrella are formally organized. “We’ve had people contact us. ‘We want to start a coop. Tell us how to do it.’ And we’re like, ‘Well we’re actually just a coop in name. We’re not formally incorporated.’” Robinson suggested that while this informal framework has its benefits it regularly falls short in terms of helping to maintain a broader social and political presence that can help expand and sustain efforts. The framework helps homeowners secure the individual economic and environmental benefits of solar ownership but it doesn’t necessarily motivate them to continue broader political activism around the issue.

“Here’s the difficulty with an organization like this. You don’t charge dues. You don’t make people go to meetings. But you have all this shit that you have to do…to educate people, to get legislation drafted, to get legislation passed, to keep telling people in the Council that don’t care about these things why they should pay attention and why they’re important anyhow. You don’t have many people to do that.”

The need to educate potential participants about the limits of DCSUN’s organizational capacity is something that Stiever confronts regularly. When we discussed the organization’s efforts to develop new bulk purchasing projects in District neighborhoods she recounted the following exchange: “There was a guy on the listserv that was like ‘Why is there no Ward 7 [bulk purchasing agreement]?’ and I was like ‘There is, but we need a volunteer.’” Robinson recounted a similar narrative. “We had one solar coop head who was working very hard in Shepherd Park and then she found out that she couldn’t get it put on
her roof for some reason—I don’t know what it was—and she said, ‘Ok, I’m giving up.’ So as soon she figured out she couldn’t do it that was it. She’d had it.”

Despite such difficulties Stiever believes that appealing to individual self-interest can be a way to encourage participation. “Part of it is like we don’t have the capacity to do all the organizing and get all the people ourselves. We need people to tell their neighbors and recruit people and host meetings. […] It gets people to engage because it’s in their best interest.” Further, Stiever suggested that self-interest can be a powerful tool not only for motivating initial participation but for galvanizing continued support for broader political activities. “Part of our goal is to not just get solar on roofs but to really build an energy literate constituency of people that are invested in solar and are willing to support policies that will create a strong solar market.”

The cases of University Park and Greenbelt appear to be somewhat distinct from the issues with the bulk purchasing model described by Stiever and Robinson. These were investor-oriented projects—albeit with only the most limited financial return to the investors—designed to provide electricity to a host site rather than projects built on securing the individual ownership of solar electricity system. Both Skolnik and Dave Brosch, a primary developer of the University Park model, indicated to me that, in general, finding small-scale investors for their projects was not the most difficult part of the equation. Rather, it was finding physically suitable host sites and property owners that were willing to support the projects. Nevertheless, neither Skolnik nor Brosch ever received monetary compensation for their work in organizing the projects. And, as we shall see in the next chapter, the efforts of Maryland-based renewables advocates such as Skolnik and Brosch to effect state-level changes in renewables policy met with similar difficulties to those
encountered by the DCSUN advocates as they worked to grow the political weight of their coalition.

4.4 Tactics For Sustaining Support

The struggle then, for core advocates, to sustain support for their efforts and encourage new participation is ongoing. Based on information collected from interviews and participant-observation I believe that this outreach takes place along three somewhat overlapping vectors: the sharing of personal narrative and the exposure to existing projects or motivational events; formalized educational and public outreach events and political gatherings designed to develop strategy and tactics for future activities.

4.4.1 On Personal Narrative and Exposure

Both Ryan and Robinson emphasized the extent to which the personalized experience of owning a solar electricity system tends to lead to a deeper degree of energy awareness. Robinson recalled that after he and his wife had their system installed he would drag her around on the weekends to look at high efficiency appliances that could help them save electricity and take better advantage of the output of their system. “After you’ve gone solar,” Robinson suggests, “you become a true believer in efficiency and conservation.” Ryan suggests that the physical visibility of solar PV, combined with the ability to physically monitor the production of your solar system have a certain appeal that captures human interest in a way that CFLs and insulation simply do not.

“Human interest doesn’t work that way. Like, you pay for the insulation. The check clears and you’ve totally forgotten about the insulation. It’s not interactive, insulation. You can’t play with insulation. You can’t go out and look at your meter and go ‘Nanny, nanny boo boo’ and see it go backwards. It doesn’t give you anything on a daily basis. And we’ve found, quite the opposite, pretty successfully, that people who went solar paid more attention to the dumb stuff later because they wanted to affect their solar positively. So actually it made more sense to go solar first. They were staring at the panels. They’re staring at the inverter.
They’re watching the meter. And they’re going, ‘What else can I do to make it go backwards? What else can I do?”

In a similar fashion Skolnik suggested that the visibility of the projects in University Park, Greenbelt have helped generate interest in potential future projects. He noted that while members of the congregation of the Greenbelt Baptist Church, the host site for the Greenbelt Community Solar project, were amenable to the installation, none of those members actually chose to invest in the project. Once it was completed, however, Skolnik says that many members of the church’s congregation expressed interest in being involved in future projects.

4.4.2 Public Outreach: The Case of the “DC Solar Flare”

On a sunny Saturday in mid-June of 2012 solar advocates affiliated with DCSUN helped produce the DC Solar Flare. Billed as a “Renewable Energy Tech Show” this public event had many of the trappings associated with the “Green Festival” genre of public event that has emerged over the past decade. One part hands-on trade show, one part educational outreach and one part entertainment, the day long event featured exhibits by green businesses, an electric car display, a speakers program featuring talks by renewable electricity, labor and community development activists as well as green business entrepreneurs, an environmental film series and a door prize raffle. While DCSUN had helped produce a handful of similar events in previous years the Solar Flare was notable for its scope, its location and its intended audience: residents of the District’s Ward 7. Located deep in the city’s northeast quadrant Ward 7 (along with Ward 8 in the District’s far Southeast quadrant) is one of the two most heavily African-American wards in the city. It has also been, for much of the last four decades, one of the District’s poorest. The Solar Flare represented an
explicit and public attempt by DCSUN and a handful of the core advocates to bring the renewable energy message to an area of the city that had largely been left out of the recent solar renaissance.

The event was held on the campus of H.D. Woodson Senior High School in the city’s Deanwood neighborhood. Robinson and Berger were two of the event’s key organizers and during our interview Robinson explained the rationale for the choice of setting in historical terms. The once thriving neighborhood was one of the first places in the District where African-Americans could buy homes. Much of the housing stock dates to the early 20th century and was designed and built by prominent African-American architects of the day including W. Sidney Pittman and the high school’s namesake, Howard D. Woodson. The neighborhood was home to Nannie Helen Burroughs, an early civil rights leader, and the singer Marvin Gaye. For a time (1920 – 1940) it also boasted the District’s only amusement park, Suburban Gardens, which served as an integrated alternative to the segregated Glen Echo Amusement Park in nearby Maryland.6

Robinson also noted that the high school, once known as the “Tower of Power” for it’s rigorous African-American scholarship, had just undergone a $100 million dollar upgrade and renovation and been transformed into a magnet high school targeting students interested in STEM (Science, Technology, Math and Engineering) fields. I got to see a bit of this transformation while serving as a volunteer for the event. When I arrived early on the morning of the event to help set up, I was sent to the volunteer holding area: a clean energy laboratory on an upper floor of the school that featured stations where students could practice connecting a small solar panel to an inverter and circuit breaker box.
While the hands on portion of the event was located outside, with presenters and displays strung out along the front driveway of the school I spent the majority of my volunteer time assisting with the speakers program. This, ultimately, proved to be very useful for capturing discursive material. Held in the school’s brand new and cavernous auditorium the speakers program was emceed by a fourth generation Washingtonian, African-American green business owner. A Woodson graduate and youth minister at a neighborhood congregation offered the opening keynote. Although the auditorium was ill-suited as a venue—a cafeteria or small room would have been more inviting and accommodating for the fifty or so audience members the program attracted—the program offered a venue for introducing the President of the newly created Ward 7 Solar Coop and a platform for the neighborhood’s city council representative, Yvette Alexander, to offer her support for DCSUN and the group’s proposed “Community Renewables” legislation. The majority of the speakers were people of color and a number also identified themselves as native Washingtonians. Some were owners of green businesses. Others were employees of District government agencies that sponsored or administered environmental or energy related programs. Members of the local electricians union were represented as were members of the Anacostia River Keepers, a local environmental group dedicated to cleaning up the Anacostia River.

Four key themes reappeared regularly among the speakers and audience members: the potential for employment that could emerge from expanding solar across the city, the history of resilience and self-reliance of Deanwood and African-American communities across the District, the history of African-American engineering, architecture and craftsmanship that was embodied in the built environment of the neighborhood and its
historically famous residents, and widespread anger and dissatisfaction with PEPCO regarding recent rate increases and power outages. Many of the speakers spoke of a commitment to place and to neighborhood rebuilding. The expansion of solar was understood not only as an opportunity to provide economic development for the neighborhood but also as an opportunity for residents to “stay in their homes” and have relief from rising and fluctuating energy prices.

When Robinson and I debriefed about the event he linked his vision of distributed solar directly with a concern for creating employment opportunities for Deanwood residents. He noted that the recent history of the neighborhood, and the broader “east of the river” community has been that residents have been forced to abandon these communities because of a lack of jobs and opportunities. On the other hand, Robinson, argued, the development of a “21st century” grid would, by the very character of the technology, produce opportunities for local employment. “Distributed generation means you’re doing the generation of the stuff right here. You’re not bringing the stuff in from transmission towers from a hundred and fifty miles away.”

Robinson also emphasized the educational goals of events of this type. “Most people don’t understand that they have energy choices. But once they understand that then there’s a question of: “Ok, what do I do about it?”” He noted however that in order for educational activities to be effective they must be recurring and predictable. Even if they only happen once a year that predictability can continue to encourage people to get involved and participate.

Robinson also noted that just mustering a minimal level of initial interest can be difficult. “You really have to get into the community with these things to make them turn
out for it. You have to do a lot of advertising. You have to do a lot of explaining. You have to show them the information we had in the booklet about why this going to save you money. You really have to work at that.”

My informal conversations with event volunteers and my own observations of the event corroborated this statement. For example, while I was helping to staff an outside display table late in the afternoon I was approached by a passer-by who asked for information about the event. When I offered an explanation of the event the man indicated that even though he lived just down the street from the school this was the first he had heard of the event. At least one additional volunteer that I spoke with recounted a similar story. It was also unclear if the aesthetic framework of the event was necessarily appealing to the primary audience. Green Festivals of this type have exploded in popularity over the last decade among certain demographic segments of the public but it’s unclear how effective they can be in low-income communities such as Deanwood. This is not to say that those who attended the event were incapable of comprehending it or engaging with its content but rather that the success of many public outreach efforts can often depend on developing culturally appropriate and familiar mechanisms for sharing information.

When I brought these concerns to Robinson he said that many of the event exhibitors had spoken positively about their experience. He noted, however, that while the high school was an appropriate venue for many reasons it was also geographically isolated—the nearest Metro stop was beyond walking distance and buses were infrequent—and that likely affected attendance. Robinson also noted that the organizing group lacked funds to do any wide scale advertising. It was a tough moment economically and event sponsorships rolled in at the last minute. This prevented the group from having more money
to spend up front on publicity. The group did do some limited distribution of informational flyers about the event in the neighborhood and Robinson spoke about the event at a number of community meetings but attendance was still less than had been projected. Interestingly enough Robinson suggested that probably the biggest outreach lesson he had learned was that the group would likely have benefited from doing more outreach to junior high school and high school students. Robinson argues that informing children can often be an effective way to inform parents.

Attendees received a high quality, full color multi-page program book describing the event. The program featured brief informational articles with titles such as “Choosing A Solar Contractor,” “What About My Roof?,” “Solar Basics” and “Drawing Money From Your ‘SRECs.’” It also offered information about DCSUN’s bulk purchasing programs and the District’s solar rebate program. A description of the proposed “Community Renewables” legislation was also featured. Perhaps the most important selling point of the program book, however, for attendees, was a piece titled “Deanwood Residents Go Solar” that described the efforts of two “life-long friends and long-time neighbors” to solarize their homes. “Solar is a way to keep our community together,” one of the neighbors is quoted as saying, “and maybe solar will bring installing jobs for some of our young people.”

4.4.3 The Derecho, June 29-30, 2012

When I asked Robinson about the anti-PEPCO sentiment that was expressed by many of the presenters and attendees at the Solar Flare speaker series he noted that the event took place just two weeks before a fast moving powerful line of storms that would eventually be named “The Derecho,” swept through the region and did severe damage to
much of the electrical infrastructure in the District and surrounding counties in Maryland and Virgina. The “Derecho” knocked out power to approximately 68,000 electricity customers in the District and roughly an additional 1.6 million in Maryland (Samenow 2012; Maryland Public Service Commission 2012). In some cases, it took over a week to restore power to affected areas.

Numerous horror stories emerged from the storm. During our interview Robinson related a long narrative about a trip his wife took, on an excruciatingly hot day a few days after the storm, to visit a relative living in a health care facility in the city’s northeast quadrant. The facility was still without power. Robinson’s wife arrived to discover that Capital Metro (the District’ public transit agency) busses were idling in the parking lot with the air conditioners running in an effort to provide some relief from the heat to patients and staff members at the facility. Robinson also repeated anecdotes he had heard about elderly residents in high-rise apartment buildings who had to go days without electricity. These residents were effectively trapped inside (or outside) their homes because elevators in the buildings were not operational and they were unable to use the stairs for mobility reasons. A recent report detailing the prospects for expanding low income solar electricity generation in Baltimore City (Sanders and Milford 2014) recounts similar narratives from the Derecho as well as “Super Storm” Sandy.

The utility response to the storm prompted such levels of public outrage that some advocates and politicians began floating the idea of public takeovers of utility systems—and called for a return, of sorts, to the types of public power systems that had been popular prior to the development of the utility consensus in the early 20th century (Hensal 2012). A local radio program dedicated an entire hour to the topic (Nnamdi 2012). A prominent
Montgomery County politician expressed support for revoking PEPCO’s franchise in the County and attempting a public takeover of the grid system (O’Keefe 2012). The Washington City Paper, a local independent weekly newspaper, picked up Robinson’s support of a similar effort in the District (Sommer 2012). Ultimately the public takeover fervor went nowhere but Robinson argues that, to a certain extent, the storm did more to encourage support for the efforts of the solar advocates than any number of Solar Flares could have done. Further, he suggested that to the extent that such events continued to occur, that severe weather will be a “consistent ally” to the solar community in the future.

“No matter what type of grid, what level of reliability or what level of ‘smart’ we get, the ratepayers are going to wind up paying for. The investors and the company are not. We’re going to pay for it. So if we’re going to pay for this grid for the 21st century we damn well ought to have a grid that doesn’t mean that thousands of old darlings aren’t frying or freezing on the sidewalk when the power goes out” (Robinson).

4.4.4 DC Solar Congress 2012
In early October, two weeks before the hurricane that would become “Superstorm Sandy” crashed into the eastern seaboard, the District solar community held its annual “Solar Congress.” The Solar Flare and the fallout from the Derecho were part of the conversation as attendees discussed priorities for 2013, chief among them the hoped for passage of the “Community Renewables” legislation that had recently been introduced in the city council. The “Congress”, a combination educational outreach / political strategy event was held in a community meeting room of the Franklin D. Reeves Center.10

When I arrived Anya Schoolman was greeting guests, staffing a sign in table and handing out programs and buttons left over from the summer’s Solar Flare event. Other volunteers readied a table filled with modest refreshments. Emily Stiever moved through the long, rectangular room arranging groups of chairs and posting signs. The first hour of the
event was dedicated to a variety of informational sessions, held concurrently in different locations throughout the room. These included: “Going Solar 101 (Solar Electric)”, “Going Solar 101 (Solar Thermal)”, “Solar for Nonprofits, Small Businesses, Congregations, and Organizations”, “Apartments, Condos, and Multi-Unit Buildings: How community solar legislation will make going solar possible”, “How to Start or Grow a Solar Coop: Tools and Techniques” and “Solar Inverters--Solar Reliability--What Happens When the Power Goes Out?”

I chose to attend the session focused on community solar legislation. A diverse group of sixteen attendees arranged chairs in a semi-circle around two DCSUN volunteers who had been working in detail on the development of the legislation and exchanged introductions. The group was almost evenly split between men and women and included people in their 20s, 30s, 40s, 50s and well into their 60s. Franklin, an African-American in his late 50s, lived in Southeast and worked on environmental justice issues for the Sierra Club. Hank, a white male in his mid-30s with “two degrees in jazz” and, admittedly, very little knowledge about solar had come to learn how he might be able to get solar on his condo building in the nearby Columbia Heights neighborhood. An older white couple in their early 70s had come to learn how they might be able bring solar to the retirement community they lived in near the Thomas Circle neighborhood. Andy, a white male in his early 60s with an unruly mop of grey hair on his head, referred to himself as an “old solar dog” who had been “hitting my head against this wall for a long time.” Kim, a tall, blonde white female in her 20s shared flyers for an upcoming “DC CO-OP DAY”, and talked about her interest in finding out how online fundraising tools like Kickstarter could be used to support solar efforts. I sat next to a white female in her 50s who offered that she had recently gotten
interested in solar after spending the last couple of years in a major environmental funk of sorts. The group also included three East Africans, a Central American man who lived in Mount Pleasant and two volunteers I had worked with on the Solar Flare.

The volunteers who led the session—Ken, a volunteer with a background in affordable housing and Sally, an environmental lawyer with the Sierra Club—walked the group through the particulars of the legislation and its potential benefits. The elderly woman from the Thomas Circle retirement community wanted to know how getting electricity from a community solar project was different than purchasing wind energy through a green power purchasing program. Andy wanted to know if similar legislation was in place in other parts of the country. Ken noted that the legislation existed in a small handful of states and that legislation had been recently introduced in Maryland. He suggested, however, that getting legislation passed in Maryland would be far more complicated than in the District because there were multiple utilities operating in the state whereas the District only has a single one: PEPCO. Sally followed this by saying that they had worked closely with PEPCO on the legislation and the company had, ultimately, come to be supportive of it. She also said that the Derecho had served as motivation for passing similar legislation in Delaware. Ken offered that there were, potentially, a number of financial models that could be used to develop a project under the legislation. Sally was most hopeful that the legislation would provide opportunities for low-income residents in Wards 7 and 8 to have access to the benefits of renewable energy.

The next chapter examines the “Community Renewables” model in more detail and compares the successful efforts to pass such legislation in the District with the failure of similar efforts in Maryland.
4.5 Endnotes

1. Aside from David Brosch, Anya Schoolman and the specific informants who I spoke with as part of the formal interview process for this project all names in this chapter are pseudonyms. Brosch and Schoolman are “public” figures whose names were mentioned specifically by informants that I interviewed for the project.


The group has received mention in numerous internet blog posts and articles. The bulk purchasing model has also been cited in a variety of reports such as one produced by the Institute for Local Self-Reliance published in 2010 (Farrell 2010).

3. With respect to how the group managed to acquire the legal paperwork associated with the University Park project Greenbelt Community Solar member Steve Skolnik was quick to point out that “one of the things about the University Park model and about Dave [Brosch] is that he wants to spread and he wants to share, so all of the legal documents that they spent a lot of time and a lot of money on they handed to us for free.”

4. In 2012 Skolnik worked with fellow members of the Washington Ethical Society to develop an LLC and fund a solar installation on the roof of the Society’s meetinghouse in northwest DC. Ryan also developed a similar model with two projects at Sidwell Friends School, an elite private school in the DC area that offers education from kindergarten through high school. In this case Ryan helped to organize the sale of bonds to the parents of students at the school. She helped raise $225,000 to cover the costs of the first installation. Each bond for this project was worth $5,000 and the school offered a 4% rate of return. Given the interest rates available on similar investments during the economic crises of the past few years this rate of return, noted Ryan, “was great. People were thrilled with 4%. You just buy a bond. And we had people buy four or five.”

5. It’s no small irony that if you place the location of both parks on a map of the District they both border Maryland and are yet are on completely opposite sides of the District’s east-west axis. Deanwood and Suburban Gardens border Maryland’s heavily African-American Prince George’s County while Glen Echo is situated in Montgomery County, the state’s wealthiest county, and is easily accessible from some of the District’s most posh neighborhoods.

6. This description is often used by long-term District residents, particularly by African-Americans, to set themselves apart from the revolving door of new residents who are drawn to the capitol to work as lobbyists, Congressional staff, etc…

7. The Anacostia figures prominently in District geography, history and political ecology. To live “east of the river” in DC means to live east of the Anacostia in Wards 7 and 8. The phrase has also become a short hand to describe the poorest regions of the city, those that have historically been significantly marginalized throughout the city’s history. The DC-based anthropologist, Brett Williams (2001) has written, in detail, about the history of the Anacostia.

8. A union electrician who served as a panelist and operates a non-profit dedicated to training and developing job opportunities for DC-based electricians spoke passionately about the way in which contractors involved in hiring for major construction projects in the city skirted local hiring laws and hired electricians from Maryland and Virginia rather than District residents. The speaker specifically referenced allegations that the contractor handling the construction of the Smithsonian Museum of African-American History and Culture on the National Mall was skirting such laws.

9. The Reeves Center, a municipal building owned by the District government, stands at the corner of 14th and U Streets, NW. It was built in the early 1980s during the Mayoral administration of Marion Barry. Barry’s intention was to help jumpstart development in a neighborhood that had been badly scarred during the riots that swept the city following the assassination of Dr. Martin Luther King in 1968. Over the past fifteen years the redevelopment that the Reeves Center once promised has arrived in spades with condominiums and high-end restaurants being built at a rapid pace. Now a bit dilapidated and aging, the building serves as a complicated link between the past and the present in one of the city’s most historic and vibrant neighborhoods (Wiener 2013).
CHAPTER FIVE

5.1 Introduction

On a fall evening in early October of 2013, solar advocates in the District gathered, in the midst of a Federal government shutdown, to celebrate the passage of the “Community Renewables Energy Act of 2013”. The event was held on the main floor of a recently renovated rowhouse in Northwest DC that had been converted into a combination art gallery and architectural studio. When I arrived, volunteers from DCSUN were busy hanging a large banner along one wall of the room. The banner had a large sun in the middle and the words “Let The” and “Shine In” printed on either side. Many people wore pins that read “I have a job because of solar.”

The event attendees formed a representative sample of the workers and advocates that have driven much of the expansion of solar in the region over the past decade. There were “old solar dogs,” individuals in their 50s and 60s who were affiliated with environmental organizations and solar engineers. There were also, however, numerous examples of what might be described as a new wave of solar supporters, younger people in their 20s and 30s with one foot in the solar movements of the 1970s and another foot in the contemporary world of policy making, technology advocacy and urban sustainability: a Program Manager for Greater Washington Interfaith Power and Light (GWIPL), a recent college graduate who was serving as a fellow with the U.S. Department of Energy, younger employees and interns affiliated with Anya Schoolman’s Community Power Network and
representatives of novel, entrepreneurship-oriented NGOs dedicated to advancing solar and local economic development.

Members of the DC City Council made brief appearances and brief speeches. Schoolman made a speech of her own praising the work of the Council as well as the work of PEPCO. She handed out awards to two volunteers from DCSUN who had been instrumental in developing the legislation. She concluded her speech by declaring that the recently passed legislation would help support the development of “an open, transparent, vibrant, competitive solar market” in the District.

This chapter examines efforts to pass “Community Renewables” (CR) legislation in Maryland. I draw on almost seven months worth of participant-observation and interview related data regarding the campaign to get such legislation passed in during the state’s 2014 legislative cycle. Developing an understanding of the significance of the DCSUN advocates’ victory in the District and complementary efforts in Maryland requires walking through a very twisted landscape of policies, regulations and technological developments. In the District, advocates were able to successfully leverage a broad landscape of access and take advantage of the city’s anomalous political status to move “Community Renewables” legislation forward. And yet, however difficult and complex such efforts may have been, the process in Maryland has been much more arduous.

I begin by reviewing the policy framework underlying the “Community Renewables” model and describe why core advocates in the District and Maryland seized upon the model in an effort to overcome the restrictions presented by current policy frameworks. I then review the ultimately unsuccessful effort to pass “Community Renewables” legislation in
Maryland during the 2014 legislative cycle. Finally, I compare the success of legislative efforts in the District with the failure of similar efforts in Maryland. In doing so, I identify three key reasons, which, I argue, help explain these divergent outcomes. First, the District’s anomalous status offered advocates a far less complicated political and regulatory structure than that confronted by advocates in Maryland. Second, this political complexity made it difficult for Maryland advocates to develop and maintain an effective coalition dedicated to advancing the legislation. Finally, Maryland advocates focused on developing a modest, conservative, and conciliatory piece of legislation bolstered by “fact-based” policy research but were ultimately defeated by ideological “arguments” offered by utility companies and their political supporters.

5.2 Why “Community Renewables”?

As discussed in the previous chapter core advocates in the District and Maryland have developed two primary models for expanding neighborhood-scaled renewable electricity development: bulk purchasing groups and community-based investment projects. These models have, however, proven to be of limited use to the core advocates in both jurisdictions who are interested in expanding access to the benefits of distributed renewable electricity generation to the vast majority of electricity customers who cannot currently take advantage of the present regulatory framework because they rent their homes, live in multi-family dwellings, or own homes that are ill-suited to customer-sited renewable electricity generation. Similar barriers confront tenants of multi-unit commercial and industrial buildings such as strip malls and office parks as well as the owners of individual commercial and industrial properties. Property-owning not-for-profit organizations such as churches are
able to take advantage of community-based power purchase agreement models such as those developed by the group in University Park. The broader benefits, however, of distributed renewable electricity generation ownership are generally out of reach for such groups because the current framework is linked, in part, to tax credits that such institutions cannot take advantage of. Finally, and most importantly, the existing policy framework is tilted heavily towards “financing for [distributed renewable electricity generation] among the better off but not the poor” (Sanders and Milford 2014, 1). It is for this host of reasons that in late 2011 core advocates in both the District and Maryland set about trying to transform the regulatory frameworks governing distributed renewables. Both groups chose to focus their efforts on so-called “Virtual Net Energy Metering (VNEM)” legislation.

Virtual net metering has been slowly gaining traction across the country over the past four to five years. As with the broader suite of local renewable energy projects discussed in the previous chapters advocates of virtual net metering generally have two goals: to develop locally-sited distributed renewable electricity generation installations which provide electricity and financial benefits to multiple community members. A secondary goal is to enable the collective ownership of such installations. At the most basic level the virtual net metering model is designed to allow electricity customers to subscribe to or own an interest in the electricity output of a small-scale distributed renewable electricity generation facility that is located in relatively close proximity to their home or business. The model accomplishes this task through an accounting process where the production of electricity at the distributed renewable electricity generation facility is credited directly to the utility bill of subscriber-owners of the facility. The term “virtual” is used to describe this process because it is, in theory, supposed to operate in much the same way as the standard net metering process with
one major difference: Because of the way in which the electrical grid operates most subscriber-owners will never actually consume the electrons produced by the distributed renewable electricity generation facility to which they have subscribed. Figure 8 outlines the general framework for a distributed renewable electricity generation facility developed under the “Community Renewables” / Virtual Net Metering model.

![Figure 8: General Format for a Distributed Renewable Electricity Generation Facility Developed Under the Virtual Net Energy Metering Model](image)

Although it has been extensively studied in the abstract by advocates and partisans from across the political spectrum, virtual net energy metering remains a largely untested
model for expanding distributed renewable electricity generation in the United States. As of the end of 2013 only 10 states and the District of Columbia had enacted some form of the legislation. The majority of this activity has happened within the last three years. Consequently very little information exists regarding projects that have been developed under actually existing virtual net metering programs. As with net energy metering, the technical specifics associated with developing virtual net metering legislation are complex. For the purposes of this discussion the following general elements of the VNEM framework should be noted.

First, in the majority of cases, virtual net metering legislation functions as an expansion of the existing state-level net metering framework. It is expansive in so far as it is designed to offer the benefits of net metering to electricity customers who, for various reasons, cannot take advantage of that framework. In general, virtual net metering legislation does not seek to alter the existing technical framework of net energy metering programs (i.e., system size, valuation of electricity generation, approved technologies, etc…). This has led some commentators to describe virtual net metering as little more than an “accounting” framework where electricity generated in one location is “virtually” credited to the electricity bill of a utility customer in another location. From this perspective virtual net metering appears as a variant of the third party retail electricity sales and green power purchasing programs that are already inexistence in deregulated electricity markets across the country. Electrons are not transferred only the “credits” associated with the production of those electrons.

Second, participation in virtual net metering projects is generally restricted based on state and utility service territory. For example, were virtual net metering to be implemented
in Maryland, electricity customers in PEPCO’s service territory would only be able to participate in projects that were sited within that territory. They would, not, for example, be able to participate in projects sited in western Maryland or the Delmarva Peninsula.

Third, virtual net metering projects can be designed as either “behind-the-meter” or “stand alone.” “Behind-the-meter” projects function, more or less, like conventional net energy metering projects. The electricity generated by the virtual net metering facility is primarily consumed by onsite demand with excess electricity being exported to the grid. A basic example of a “behind-the-meter” project would be a solar PV installation on a large warehouse. Electricity produced by the system would first be dedicated to the “demands” of the warehouse—computers, refrigeration, lighting, heating and cooling, and so on—with any excess electricity being sent to grid. In this scenario the warehouse owner would serve as a subscriber/owner of the virtual net metering facility with excess electricity exported to the grid being “virtually” credited to additional subscriber/owners. “Stand alone” projects, while metered, are not designed to serve an onsite electrical load. Instead, all electricity generated by such projects is directly exported to the grid and credited to the utility bills of the facility’s subscriber/owners. A solar PV installation in an open field or on the roof of a parking garage could be considered examples of “stand alone” virtual net metering projects. The ability to develop “stand alone” projects that take advantage of existing elements of the built environment that are appropriately sited for distributed renewable electricity generation (such as surface parking lots, parking garage roofs, and brownfields) but unable to host a net metering project because they have no onsite load, is a distinguishing feature of the virtual net metering model.
Fourth, business and organizational models for virtual net metering projects—
proposed and enacted—are highly varied. In general organizational models can be
categorized as either ownership-based or subscription-based. Ownership-based models are
generally designed around the collective ownership of a virtual net metering facility. To
return to the example of the solar PV installation on a parking garage roof described in the
previous paragraph: Under an ownership-based model portions of this installation would be
owned by individual electricity customers and those customers would have the electricity
generated by their portion of the facility “virtually” credited to their electrical bills. The
easiest way to conceive of this might be to imagine that the installation on the parking garage
roof was made up of 100 individual solar panels and that each panel was “owned” by a
different electricity customer. In analogous terms such an arrangement would be somewhat
similar to owning a condominium. A condo owner owns a specific unit in a building but the
operation and maintenance of the building is also managed by a legal entity to which the
condo owner pays a fee. A condo owner can also sell his or her unit to another buyer. Under
ownership-based virtual net metering models an owner would likely have to pay an operation
and maintenance fee to a managing entity and that owner would also be able to sell her stake
in the facility to another buyer. Under subscription-based models a third party would own
the virtual net metering facility and sell portions of the electricity produced by the facility to
subscribers.

A key point of consideration for both models is the ownership and capture of any
tax credits and renewable energy credits associated with the facility. Under the subscriber-
based model the third party owner would likely claim both. Various scenarios are possible
under the ownership-model. An individual owner might capture a portion of the tax credits
and renewable energy credits produced by the facility or, alternatively, a developer might capture the tax credits and renewable energy credits and simply sell portions of the project to individual owners (in similar fashion to how the financing for a condominium development might be expected to operate).

Another key point of consideration for both models is the long-term ownership of the virtual net metering facility itself. For example, a solar PV installation is estimated to have a 20-25 year productive life span. However, depending on financing, electricity prices and incentives (tax credits, SREC sales, etc...) it may only take eight to ten years to pay for the cost of the facility. Once such facilities are paid off they require fairly little regular maintenance and have no fuel costs (unlike, for example, industrial scale fossil fuel generating plants). Under such conditions a third party owner could, conceivably, sell electricity to subscribers while incurring few, if any, formal costs. Alternatively, once a system is paid for the ownership of the system could be transferred to a non-profit entity such as a church, social service provider or municipality, and that entity could, in theory, offer free electricity to the facility’s subscribers.

Projects could be designed under either model, or some hybrid of the two, to fit a variety of contexts. A solar PV system could be installed on the roof of a condominium or multi-family apartment building with rental units with a portion of the electricity produced dedicated to powering the general load for the building (elevators, hallway lights, heating and cooling of common spaces, etc...). The rest of the electricity could be sold to subscribers (most likely building residents) or portions of the system could be “owned” by individual condo owners. Owners of a home with an attached rental unit (In the District owners of row houses often rent out the ground floor (or “English Basement”) of their homes in order to
collect extra revenue that is then used to pay the mortgage on the property.) could install a solar PV system on their home and sell subscriptions to their tenants (or their neighbors). Owners of a large warehouse or commercial business park could install solar PV systems on the roofs of their buildings and then sell subscriptions to the installations to tenants or other electricity customers in the area. A church could install a solar PV system on its roof and sell subscriptions to members of the congregation. Municipalities could, conceivably, develop similar arrangements using public buildings such as schools, parking lots, libraries and recreation centers.

5.3 Community Renewables In Maryland: The Broader Context

When “Community Renewables” advocates in Maryland began their legislative push in the summer of 2013 they were faced with a legacy of two failed attempts to get similar legislation passed during the 2012 and 2013 legislative cycles. In both cases advocates were unable to even get the bill a full floor vote in either chamber. Advocates were also facing a broader set of factors that had the potential to impact support for the legislation. With statewide elections scheduled for the fall of 2014 there was concern that state lawmakers might be reluctant to support any kind of polarizing legislation. Second, many of the potential supporters of the legislation had spent the past three years pursuing a successful attempt to pass legislation related to offshore wind energy development in the state and there was concern that they would be reluctant to support additional renewables-related legislation so soon afterwards. Third, broader attacks on net metering regulations had begun to appear across the country and it was believed that sympathetic legislators would be
reluctant to support any legislation, however modest, that had the potential to expose the state’s generous net metering rules to debate.

There were, however, reasons to believe that the legislation could draw a broad group of supporters. First, that state’s solar industry had expanded rapidly over the previous five years. So rapidly, in fact, that solar development had begun to outpace the existing solar carve out in the state’s renewables portfolio standard. The effect of these two actions was that prices for solar renewable energy credits had dropped substantially as demand for the SRECs needed to meet RPS goals had diminished. Some advocates and industry members believed that passing virtual net metering legislation would expand the solar market and, in turn, grow support for expanding the solar carve out in the state’s renewables portfolio standard. 9

Second, as the profile of distributed renewable electricity generation had expanded in the state the general public was slowly becoming aware of the access limitations of the current net metering framework. Condo owners and owners of single family homes that were not properly sited for renewables were increasingly seeking opportunities to take advantage of the social and economic benefits associated with small-scale ownership of renewables. Debate had also begun to take hold that looked specifically at the economic limitations associated with renewables ownership and the criticism that the benefits of such technologies were, under the current regulatory regime, only available to property owners of significant economic means. Virtual net metering legislation was viewed as a way to expand the social and economic benefits of distributed renewables to low and moderate-income electricity customers.
Third, the state and its neighbors, had been impacted by a number of severe weather events over the previous few years and community-scale renewables, developed in part through virtual net metering, were viewed as a way to develop resilient micro-grids that could offer emergency electricity services to neighborhoods in the event of long term power outages.10

Finally, the long term leasing (as opposed to purchasing) of solar PV systems to individual property owners had expanded rapidly in the state over the previous three to four years. The leasing model, promoted by California-based companies such as Solar City and Sungevity as well as regionally-based companies, offers property owners the opportunity to have a net-metered solar PV system installed for little to no upfront cost. The system may offset some or all of the property owners electricity consumption. In general leases may run for 10-15 years with the property owner paying a monthly leasing fee. Beyond the environmental benefits, the lease, in theory, acts as a hedge against increasing electricity prices. Property owners also benefit because the leasing company guarantees a minimum annual electricity output from the system and the lease covers any maintenance and repair costs for the system. On the other hand, the leasing company, rather than the property owner, captures all of the tax incentives and solar renewable energy credits generated by the system. As a result, while solar leasing has made solar more economically accessible to property owners it has done so by cutting those property owners off from the longer term economic benefits of direct system ownership. Many advocates argued that virtual net metering would make the benefits of ownership available to a broader range of electricity consumers and, potentially, slow the growth of the leasing model, which was seen as less financially beneficial for customers and communities.
All of these issues, and more, were part of the debate when “Community Renewables” advocates began meeting in late summer of 2013 to prepare for the third attempt to pass legislation at the state level. Between August of 2013 and March of 2014 I attended and participated in nearly two dozen planning and strategy meetings regarding the legislation. In most cases these meetings involved a wide variety of actors and supporters from community advocates to staff members of non-profit environmental advocacy organizations to industry professionals to political staff of state lawmakers and policy staff of the Maryland Energy Administration. Much of the early fall was given over to the development of a relatively broad coalition of supporters for the legislation and informational discussions regarding strategies for advancing the proposed legislation. By mid-November this broad coalition had coalesced into two primary working groups—a policy team and an outreach team—each led by a handful of primary actors, many of whom had been involved with promoting the legislation during previous years. With the beginning of the legislative cycle in mid-January energy was given over to securing sponsorship of the bill, shepherding it through the legislative process and building a grassroots base of support for the legislation. I personally became deeply involved with the work of the policy team and contributed a substantial amount of time to researching previous versions of the legislation, similar legislation in other states and regions and developing the broad outline of the 2014 legislation.
5.4 Building A Coalition

5.4.1 Getting Started

I initially began attending meetings in August 2013 at the invitation of Dave Brosch. A long time DC metro area resident, Brosch is one the founding organizers of University Park Community Solar and was, at the time, a member of the University Park Town Council. He has been deeply involved in efforts to develop virtual net metering legislation in Maryland since late 2011. The first meetings that Brosch helped organize in the late summer and early fall drew largely from the network of supporters that had been developed during previous legislative efforts. This network included community solar advocates involved with projects in University Park and Greenbelt, environmental advocates, solar enthusiasts, small and moderate sized solar installation companies and renewable energy finance specialists.

One of the most well attended meetings, held the day after the passage of the community solar legislation in the District, also included representatives from a regional condominium and community association trade group, the chief of staff for a member of the Maryland State Senate, a representative from a land conversation organization on Maryland’s Eastern shore, a staff member of the Baltimore City Department of General Services and a staff member from a prominent regional environmental organization, the Chesapeake Climate Action Network (CCAN).

5.4.2 Seeking Legislative Sponsors

In the previous two legislative cycles virtual net metering legislation had been introduced in the Senate Finance and House Economic Matters committees. These committees hold jurisdiction over any legislation involving public utilities. They are also
known for being the two most conservative committees in the entire legislature. The key for this year’s legislation, supporters argued, would be getting the legislation voted out of the Senate Finance committee, something that had not happened in the previous two attempts. This, supporters believed, would put pressure on the House Economic Matters Committee to report favorably on the legislation. All of the coalition members generally agreed that if you could get the legislation to a floor vote it would likely pass.

Locating sponsors for the legislation was an initial point of concern for the group. In the two previous legislative cycles sponsorship had come from a Senator (Paul Pensky) and a Delegate (Dana Stein) who were known to be sympathetic to environmental causes. The general consensus, especially among members of the coalition who had been involved with previous iterations of the legislation, was that it would be beneficial to locate sponsors who were interested in supporting the legislation but not necessarily known for supporting environmental causes. More importantly, neither Senator Pinksy nor Delegate Stein were members of the committees that would be considering the legislation and it was felt that it would be important to have legislative sponsorship that came from a member of each committee. Ultimately members of the Chesapeake Climate Action Network staff, working in consultation with Senator Pinksy and Delegate Stein were able to secure sponsorship for the legislation from members of both committees: Senator Victor Ramirez—who represents a heavily Latino and blue collar district in Prince Georges County that borders the northeast District line—and Delegate Tom Hucker who represents a District in Montgomery County that borders Ramirez’s district and includes the progressive enclave of Takoma Park. Ultimately I believe the group would preferred to have secured committee sponsors who represented districts outside of the immediate DC metro region but the coalition’s ability to
draw in support for the legislation from other regions of the state was limited. This is not to say that Senator Ramirez and Delegate Hucker were inadequate sponsors of the legislation but merely to highlight the difficulties the coalition encountered with trying to “sell” the legislation to legislators from other parts of the state.

**5.4.3 Seeking Supporters**

The development of a coalition of supporters for the legislation occupied a considerable amount of the group’s energy. The group reached out, with varying degrees of success, to a variety of stakeholders. These included environmental groups, renewable industry groups (particularly those in the solar industry), business interests (predominately related to real estate), municipalities and stakeholder communities in “swing” districts whose influence, it was hoped, would help encourage reluctant legislators to support the bill.

Although it was not a top priority on their agendas, the legislation received predictably strong support from the state’s environmental organizations. Two staff members from CCAN dedicated considerable time to the effort and handled the majority of the interface between the bill sponsors and the broader group. Staff members affiliated with the Maryland Climate Coalition, Environment Maryland and the Sierra Club provided outreach and grassroots organizing support for the effort.

Members of the group considered the support of renewable energy industry stakeholders, particularly solar developers, key. It was hoped that the Maryland DC Virginia Solar Industries Association (MDVSEIA)—the major trade industry group for solar in the region—would potentially be supportive of the legislation provided it didn’t negatively impact the current benefits derived from the renewables portfolio standard and net energy
metering. The core community-based advocates within the group, particularly those who had been involved with the legislation in previous cycles, had what could be best described as a wary attitude with regard to MDVSEIA. The group had offered relatively tepid support for the legislation during previous cycles and it was clear from the outset that it would be difficult to expect much beyond that during this cycle. Four of my primary informants from the coalition also relayed narratives from the 2013 legislative cycle indicating that MDVSEIA had “cut them out of” many of the final negotiations surrounding the development of the 2013 legislation. As a result, many of these advocates were concerned that something similar might happen with the 2014 legislation. After months of wrangling and in depth negotiations with staff from the Maryland Energy Administration MDVSEIA did offer their support for the bill. This support collapsed, however, when the Association decided not to support a final set of amendments to the legislation proposed by members of the Senate Finance Committee.

It was also hoped that Vote Solar, the national organization that had helped support the virtual net metering legislative effort in the District, would also offer support for the legislation. The group had initially offered support for the 2012 legislation but did not offer support as part of the 2013 cycle. Ultimately, the group declined to offer any support for the 2014 effort. The group did, however, receive logistical and outreach support from the Community Power Network, Anya Schoolman’s organization.

Outside of solar industry involvement, efforts were made to recruit other business interests, predominately real estate developers. A member of the coalition who runs a green building and architectural firm based in suburban Baltimore had connections with a regional condominium and community associations organization and it was thought that the
legislation might appeal to such groups. There were also nominal efforts made to recruit real
estate developers and managers of commercial real estate such as shopping malls and
business parks. Ultimately these efforts bore very little fruit.

The group also worked to recruit the support of two key sets of regional
stakeholders: farmers and poultry growers in rural counties on the Delmarva Peninsula and
urban residents of Baltimore City and Baltimore County, particularly low and moderate
income African-Americans. Outreach to these stakeholders was seen as key for two reasons.
First, both regions were significantly represented on the Senate Finance and House
Economic Matters Committees and it was hoped that gaining regional stakeholder support
would also gain votes on both of these committees. Second, stakeholders in both regions
stood to benefit from the legislation.

As has been noted previously, a primary goal of advancing virtual net metering
legislation was expanding accesses to the economic and social benefits of distributed
renewable electricity generation. Low and moderate-income communities in and around
Baltimore City were seen as a natural fit for such outreach. The legislation aligned with some
of the goals of the city’s Office of Sustainability. There was also strong interest in the
legislation from members of the Baltimore City’s foundation and NGO community.

With respect to rural counties on the Delmarva Peninsula the legislation offered at
least three opportunities for rural landowners, farmers and poultry growers to benefit. First,
landowners, particularly farmers who were struggling to maintain ownership of their
property, could, under the terms of the legislation, lease land to a solar developer and gain
additional income. Second, in a similar fashion, solar projects could be sited on farm
buildings—barns, poultry houses, equipment storage facilities—and a property owner could
benefit by producing some portion of the electricity load for the farm while also gaining income from subscribers to the project.

Third, poultry litter poses a significant environmental and waste disposal problem for poultry growers in the Delmarva. The bill included provisions for waste to energy facilities designed around the anaerobic digestion of poultry litter.

5.4.4 Utility Opposition

Countering utility opposition to the legislation was a primary focus of the coalition throughout the legislative campaign. Members of the group hoped that the success of getting virtual net metering legislation passed in the District would encourage PEPCO to at least “be silent” about the bill rather than fight it directly. Baltimore Gas and Electric (BG&E), the largest utility in the state in terms of customer base, had offered the heaviest opposition to the legislation in previous years and was expected to do so again. There was significant debate among the group, particularly among the policy team, about tactics related to countering utility opposition. Two competing perspectives emerged.

In general all of the group members agreed that utility opposition, particularly from BG&E, was inevitable and would be impossible to overcome directly. No one in the group believed that any of the utilities in the state could be persuaded to openly support any version of the legislation. Given this reality some members of the group argued that the legislation should be designed to fit the group’s ideal framework and offer no concessions to the utilities. Others, argued that while a more conservative version of the legislation would likely not garner utility support it would help the group gain support from a broader coalition and be more acceptable to the bill sponsors as well as executive branch agencies.
such as MEA. In the end a conservative version of the legislation that offered a number of concessions to state utilities was developed.

5.5 Designing the Legislation

Four key considerations drove the development of the final legislation:

(1) whether the legislation would either make comprehensive changes to net metering regulations or, alternatively, establish a time-limited, small scale pilot program;

(2) the percentage of their annual electricity consumption that a utility customer would be able to “offset” via their participation in what were termed “Community Renewable Energy Generating Facilities” (CREGFs);

(3) the value of end of the year “net excess generation”;

(4) the value of “unsubscribed” energy and;

(5) finally, the value of the electricity generated by the “Community Renewable Energy Generating Facility”.

With respect to developing comprehensive versus pilot legislation both forms had been submitted during previous legislative cycles—comprehensive in 2012 and a three-year pilot program in 2013. After consultation with bill sponsors and staff from the Maryland Energy Administration it was decided to pursue a two-year pilot program. Pushing for a time-limited pilot was considered a concession to utility companies which adamantly opposed comprehensive legislation. Further, given the novelty of virtual net metering programs nationwide, a pilot bill was considered a conservative, measured approach that would give the state time to assess various project models and develop best practices for
implementing virtual net metering at a larger scale, one that would fit well within the particular ‘universe’ of electricity provisioning in the state.

The disposition of “unsubscribed energy” was a key concern for utility companies. This term is simply used to refer to any portion of the electricity generated by a particular “Community Renewable Energy Generating Facility” that is not owned or assigned to a particular subscriber. For example, if a 100KW solar PV “Community Renewable Energy Generating Facility” were developed, but only 95KW were owned or subscribed to, the other 5KW of the facility would still be producing “unsubscribed” electricity that would be delivered to the grid. Under current net energy metering regulations in Maryland excess electricity produced by a net energy metering facility is credited at the full retail rate. In general this is not considered a problem for net energy metering facilities. Since they must be sized to meet onsite, “behind the meter,” demand very few produce excess electricity on annual basis. The regulation of “Community Renewable Energy Generating Facilities” in this regard, is, however, is a bit more problematic.

For example, it is conceivable that a solar developer could build a 1.5 MW “Community Renewable Energy Generating Facility” on open land but only recruit a small handful of subscriber/owners, far fewer than the number necessary to “virtually” consume all the electricity generated by the facility. Under current net metering regulations a utility would then be obligated to “purchase” the excess electricity at the full retail rate. Such an arrangement offers no incentive for a developer to actually go out and recruit subscriber/owners. Why spend time and money marketing and managing a facility when you could just build it, line up the minimal number of subscribers required, and then have a guaranteed retail market for the excess electricity produced by the system? Utility companies
would prefer not to have to purchase excess electricity from net metering installations at all, regardless of the rate. Therefore, as an additional concession to the utility companies it was decided that the legislation would only require utilities to purchase “unsubscribed” generation at the “avoid-cost” rate (roughly the wholesale rate). This change would incentivize seeking out a full complement of subscriber/owners for a “Community Renewable Energy Generating Facility.”

With respect to the “offset” percentage a third concession was made to the utility companies. Under current net metering legislation in Maryland the “offset” rate is 200% of annual electricity consumption. It was decided that the legislation would only permit subscriber/owners to offset up to 100% of their annual electricity consumption. Such a provision would prevent utilities from having to make end of year “net excess generation” payouts.

Determining the value of the electricity produced by a “Community Renewable Energy Generating Facility” was, by far, the most contentious issue with developing the legislation. As a fourth concession to utility companies it was decided that electricity produced by a “Community Renewable Energy Generating Facility” would not be credited at the full retail (the current net metering framework). Instead it was decided that “Community Renewable Energy Generating Facility” subscriber/owners would receive the full value of energy and transmission but only seventy-five percent of the value of distribution. Such a concession represented an acknowledgement of the wider debate surrounding net metering and the infrastructure of the electrical grid.
5.6 Success and Failure

Despite the multiple concessions that were offered, the bill sponsors were unable to garner the votes needed to move the bill out of committee and onto the floor for voting. The ultimately successful efforts of District advocates to pass virtual net metering legislation and the failure, after three legislative cycles, of Maryland advocates to do the same can be insightful from a variety of perspectives.

First, I would argue that the success of District advocates is largely anomalous and reflective of the city’s unique jurisdictional status. This is not to say that District advocates didn’t have to invest incredible amounts of time and effort into promoting the legislation, however, as I noted previously, the political scale of the advocates’ push was, to some degree, far smaller than that confronted by the Maryland advocates. Despite the fact that the city is served by an investor-owned utility (PEPCO) it functions, in many ways, like a municipally-owned utility. There is significant evidence to suggest municipally-owned electric utilities in jurisdictions with sympathetic political establishments, have been the most successful at implementing variants of the virtual net metering model. In general this appears to be because public ownership, as in the early days of electricity development during the late 19th century, offers municipalities a degree of freedom from the constraints associated with more complicated and distanced layers of regulation such as those that emerged during the formation of the “utility consensus” during the early 20th century. This is not to say that public ownership at the municipal level always produces desirable and egalitarian outcomes. Indeed, as discussed in chapter two, municipal corruption was one of the primary concerns Progressive-era advocates gave for supporting the “utility consensus.” It does suggest,
however, that where sympathetic political coalitions exist municipal control over electricity systems can limit barriers to regulatory transformation.

In some ways the District has the best of both worlds with respect to electricity system governance and infrastructure. On the one hand, a reliably sympathetic political coalition exists within the city that can be counted on to support regulatory transformation. On the other hand management and maintenance of the city’s electricity infrastructure is carried out by a private entity, PEPCO that relieves the city from the potential burden of such activity. The city also benefits from being connected to a well-managed, restructured regional electricity market (PJM) in which wholesale electricity prices are, in general, kept relatively low. The restructured market has also forced PEPCO to become a “wires company” with only limited control over generation assets that serve the city. In so doing PEPCO’s leverage over the pricing of the city’s electricity market has been reduced. Further PEPCO’s franchise in the District—a market of approximately 625,000 customers who all pay for distribution and maintenance services regardless of which company they purchase their electricity from—is attractive enough that the utility has multiple incentives to maintain a good relationship with city government lest its franchise be revoked. It is also, at least at this moment, a technological impossibility that the District will be able to provide 100% of its electricity needs through distributed renewable electricity generation sited within the city’s boundaries. Such a reality insures that PEPCO will continue to be called upon well into the future to manage the city’s electrical grid and some portion of the city’s electricity demand. Further, given that city itself is only 68 square miles, with significant, localized, electricity demand, the pressure on the distribution grid posed by an expansion of distributed renewable electricity generation technologies is likely to be far more limited than in
Maryland. Finally, although the political will to support virtual net metering and other similar regulatory interventions seems strong there appears to be only limited, if any, support for reclaiming public ownership of the city’s electricity system (too say nothing of the economic costs of attempting such a maneuver). It’s also highly likely that were such an effort ever to gain decent political steam it would be shut down quickly by the US Congress which continues to maintain oversight of the District’s laws, regulations, and so on.

The regulatory context, just over the District line, is, in many ways, vastly more complicated. Localized political will, such as that demonstrated by advocates in University Park or Greenbelt, is diffused at the state level and dispersed into a much more fractured regulatory and political field. The state is served by multiple utilities with varied regulatory histories and frameworks of ownership. Unlike the District, the state’s electricity infrastructure is widely dispersed creating significant regional variation in the organization, maintenance and cost of generation, transmission and distribution services. Further, despite the state’s reputation for progressive politics, such progressive political will is largely confined to the populations of the Interstate 95 corridor and diffused, particularly at the level of the legislative committees. This is particularly true, for example, in the Senate Finance committee where the 2014 bill ultimately failed to gain all but the most limited traction.

This diffusion of localized political will, combined with the power of legislative committees, essentially guarantees that in order to advance any contentious legislative action relatively broad coalitions, stretching not only across interest groups but across the geographical regions of the state, must be developed. The geographical partitioning of the state—based on major topographical features—and the long-standing, cultural allegiances
such partitioning has produced, should not be underestimated as a barrier to building such coalitions. The highly urbanized I-95 corridor, with its associated progressive politics, is effectively sandwiched between two dominant geographical features. To the west of the corridor, the Appalachian mountains (and their foothills) effectively draw that portion of the state into historical and cultural allegiances with other Appalachian communities in southern Pennsylvania, eastern Ohio, West Virginia and northwest Virginia. To the south and east, particularly along the Delmarva Peninsula, the Chesapeake Bay acts as a maritime partition that is analogous to that of the Appalachians. If the naming of the peninsula did not make this already apparent, this maritime partition has long drawn the eastern portion of the state into cultural allegiances with rural coastal communities in Virginia, Delaware and New Jersey. In many ways, the urbanized, Beltway-driven, cultural politics of the I-95 corridor is the exception rather than the rule. Finally, post-industrial, blue collar Baltimore City boasts a cultural, social, political and economic history that is, in many ways, quite distinct from that of the urbanized, Beltway culture of the DC suburbs.

Given such fractures—geographic, cultural, regulatory, infrastructural—it is far from surprising that virtual net metering advocates would encounter difficulties building a broad coalition in support of their efforts. I would argue that this was particularly the case with respect to BG&E’s command of the Baltimore City and Baltimore County electric services territories. In general, progressive political coalitions in the state have, historically, been built around the solidarity of the I-95 corridor and the ability to incorporate the relatively more urbanized portions of the eastern and western regions of the state into such coalitions. BG&E’s political influence with Baltimore legislators was able to prevent the development of such a coalition. This is not to say that members of the “Community Renewables”
coalition were unaware of such obstacles but rather that they lacked the on the ground capacity to overcome them.

Capacity was, in general, something that the coalition struggled to manage. As with the various local renewable energy actions and groups described in the previous chapter, the main work of the coalition was driven by volunteer labor. The core members of the policy team were volunteers who integrated their participation into other jobs, obligations, and so on. Conditions were similar for the core members of the outreach team. The outreach team was able to take advantage of the extensive grassroots advocacy network that had been developed by environmental organizations such as the Sierra Club, Environmental Maryland and the Chesapeake Climate Action Network while the policy team depended heavily on the work of three Chesapeake Climate Action Network staff members who were intimately familiar with state house politics in Annapolis. The contributions of these professional organizations were, however, somewhat limited, given that they were pursuing a broad legislative agenda of which the virtual net metering legislation was only one element. Further these groups are also perpetually strapped in terms of resources and capacity. Finally, my experience with this legislation suggests that environmental NGOs continue to struggle to build coalitions with other community groups and advocacy organizations that are not pursuing an explicitly environmental agenda.

The national debate surrounding net energy metering that emerged during the campaign also severely impacted the ability of the coalition to secure the support of members of the solar industry as well as renewables-focused NGOs such as Vote Solar. The limited interaction that I had with MDVSEIA and Vote Solar during the course of the campaign suggested that they were severely concerned about the potential for the legislation
(despite its pilot status and despite the more than likely favorable results that would have emerged from the proposed Maryland Energy Administration study) to open the door to a wholesale reconsideration of net metering regulations in the state. Some of my informants were openly critical of the position taken by both organizations, likening it to an ostrich sticking its head in the sand in hopes of avoiding a confrontation that could not be avoided. It would take further research (beyond the scope of the present investigation) to develop a detailed understanding of the motivations for such opposition. However, given the significant role that net metering plays in building a (relatively) affordable market for small scale solar the concerns of MDVSEIA and Vote Solar at least appear to be somewhat economically valid. I would also suggest, however, that MDVSEIA, in particular, may not have been have had a strong incentive to support virtual net metering legislation given that the current residential market in the state remains largely untapped and the fact that solar installations, especially those developed under leasing and power purchase agreement models are expected to continue to grow at a rapid pace.

Finally, the failure to gain support for a well reasoned, conservative, time-limited, concession leaden piece of legislation poses its own set of questions with regards to the political tactics undertaken to secure the passage of virtual net metering legislation. Perhaps the most obvious conclusion to be drawn from such a failure is that ideological arguments and political alliances carried the day over wonky, play by the rules, policy making. Such a conclusion suggests the potential need for a tactical shift on the part of virtual net metering advocates. It is possible that successful attempts to broaden the coalition of supporters will be able to overcome ideological opposition. This was certainly an opinion expressed by many members of the coalition after the legislation met its demise. Anecdotally I would also
suggest that a sustained campaign to educate lawmakers about the merits of virtual net
metering might also, eventually, bear fruit.
5.7 Endnotes

1 The gallery is located in what’s become known, through an act of real estate inspired re-branding, as the “FRINJ” neighborhood—the intersection of Florida, Rhode Island and New Jersey Avenues. If the Reeves Center marks, in some way, the western edge of the gentrification and redevelopment that has swept through the U Street corridor over the past decade then “FRINJ” represents the eastern edge.

2 In a bit of an ironic juxtaposition if you faced the banner and then turned ninety degrees to the right you found yourself looking out of the front window of the building, staring across Florida Avenue, now buzzing with rush hour traffic, and were greeted by a BP gas station with it’s own yellow and green “sun” logo.

3 Greater Washington Interfaith Power and Light is a local affiliate of Interfaith Power and Light, a national NGO based in San Francisco that works with faith communities to do group purchasing of clean electricity, fund solar projects on churches and so on.

4 Three members of the Council—Tommy Wells (Ward 6) Kenyan McDuffie (Ward 5), and David Grasso (At Large)—were present. It’s worth noting that while all three of these men have been involved with District politics in some way for at least the last decade or so they were all recently elected to the Council (Wells in 2006 and McDuffie and Grasso in 2012). Each Council member made a quick speech in support of the legislation. McDuffie, in particular, applauded the way the government, advocacy groups and PEPCO collaborated on getting the legislation drafted and developed. He noted a willingness of all parties to “roll up their sleeves” and get to work on the legislation.

5 This graphic appeared in the program book for the 2012 “Solar Flare” (Johnson 2012).


7 “Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business,” produced by the Edison Electric Institute, has been extensively cited during the most recent round of public debates regarding net energy metering and virtual net energy metering. See: http://www.eei.org/ourissues/finance/Documents/disruptivechallenges.pdf

For a recent meta-study of the costs and benefits of distributed renewable electricity generation and net energy metering see “A Review of Solar PV Benefit and Cost Studies” (Hansen, Lacy, and Gilick 2013). For a perspective slanted against net energy metering and distributed technologies that’s currently being circulated by the Koch Brothers-supported American Legislative Exchange Council see “Reforming Net Metering: Providing a Bright and Equitable Future” (Tanton 2014).

8 The Maryland General Assembly is a part-time body and generally only meets for 4 months each year, January through April.

9 Every member of the Maryland General Assembly (both the Senate and House) along with numerous state-wide offices (governor, lieutenant governor, attorney general, etc…) stands for election every four years.

Concern over SREC prices would be a continual theme as work on the legislative campaign progressed. SREC prices are fairly low in the state now because the expansion of the solar ‘carve out’ in the state’s RPS has not kept pace with solar development and the market for SRECs expands along with it. Some of my informants suggested that this was likely to change in 2014 and 2015 as the ‘carve out’ is scheduled to expand. According to the state’s current RPS guidelines 50MW of solar are scheduled to be added in 2014 with an additional 80MW scheduled to be added in 2015. There was, however, concern that as prices for solar continued to decline larger scale projects would begin to get built and that these larger projects would eat up most of the SREC market and essentially kill financing for smaller jobs that generate fewer SRECs. These concerns prompted Brosch to suggest that perhaps the group should propose a “small solar” carve out for the
state’s RPS that focused on supporting systems under 100KW in size. He argued that “neighborhood solar is visible” and provides communities not only with a knowledge of where their electricity comes from but a real world example of solar’s viability as a technology. Brosch’s comments signal an attention to project scale that was shared by many of the core advocates that I spoke with. For Brosch the everyday visibility of the technology was understood to play an important role in developing public support for it. Large scale projects in remote locations were viewed as not having the same kind of visibility. Further, because smaller scale projects were more dependent on SREC sales for their economic viability there was concern among core advocates that an expansion of larger scale projects would eliminate this vital element of project financing.

10 The development of such micro-grids is a primary focus of a recently published Abell Foundation report (Sanders and Milford 2014) exploring opportunities for expanding solar access among low-income neighborhoods in Baltimore.

11 Average attendance at most meetings was around 8-10 but this particular meeting had over 20 attendees.
CHAPTER SIX

6.1 Concluding Thoughts

I began this investigation by arguing, following the lines of other commentators, that electricity systems (and energy systems more broadly) must be understood and investigated as cultural projects rather than unproblematic, apolitical technological conglomerations. Socio-cultural practices of electricity consumption have been extensively documented in the social sciences and humanities. In conversation with such work I have chosen to focus here on how such practices of consumption are enabled through the highly complex infrastructure of the electrical grid. I have argued that while the grid may be a technological network dedicated to the production, transmission and distribution of an anonymous, unmarked, invisible product—electrons—this technological network is embedded within and conditioned by a historically contingent network of social, political, economic and ecological relationships. More specifically, I have argued that contemporary ecological debates regarding the transition from fossil fuel-based to low-carbon, renewables-based systems of electricity production often mask deeper, on going conflicts around the social organization, management and ownership of the electrical grid in its totality.

Distributed renewable electricity generating technologies represent a shift in the ecological framework of electricity production. They are also often described as being “disruptive” to the existing framework of the grid as a technological network. Most
importantly, however, these technologies have the potential to disrupt the network of social, political and economic relationships in which that technological network is embedded.

The objects at the center of this investigation, local renewable energy actions in Washington, DC and Maryland, are situated within contemporary struggles to transform the ecological character of electricity production in the United States (and, by extension, the planet). They are also embedded within a much longer historical struggle over the political-economy of electricity production stretching back to the late nineteenth century. I have argued, explicitly, that what differentiates the work of community-based renewable electricity advocates in the District and Maryland from broader to efforts to ‘green’ the nation’s electricity system is a focus on democratizing access to the electricity grid. The vision of proper deployment of distributed renewable electricity generating technologies offered by these advocates is centered not only on a decentralized, community-scale network of electricity production but also a parallel vision of community-scale governance and ownership of that network. As such this vision represents a challenge not only to the ecological character of fossil fuel-based electricity systems but, more importantly, the centralized, “hard path” organization, governance and ownership of those systems.

While local renewable energy actions impact particular geographies and communities those impacts are conditioned by and embedded within more structural levels of political-economy, public policy and technological infrastructure. Local renewable energy actions are particular in that they impact and involve the transformation of places. They are structural to the extent that they challenge or seek to preserve existing political-economic frameworks. There is a need, then, to understand local renewable energy actions as both place-making and political-economic projects. More importantly, it must be understood that the place-
making vision that is central to core local renewable energy action supporters can be directly linked with a particular political-economic vision.

The problematic concept of the ‘local’ is, I have argued, central to the philosophy, discourse and practice of local renewable energy actions. The concept of the ‘local’ links local renewable energy actions with other political currents of the present moment in which localism functions as both an aesthetic and tactic for responding to social, economic and ecological crises. An emphasis on localism also links local renewable energy action with the early development of electricity systems in the United States in the late 19th century and the political, economic, and technological transformations of those systems in 1970s.

I have attempted to situate the transformations of the United States electrical system over the past four decades within a broader narrative of the emergence and expansion of neoliberal forms of regulation and governance. However, following Hess (2011) I have suggested that while neoliberal regulatory frameworks and philosophies may have become dominant in the electricity industry over the last few decades, the ways in which these frameworks have been applied, the consequences of such regulatory transformations, and the responses to them, have been diverse and not easily generalizable. In the midst of these uneven and path-dependent transformations states and localities have, over the last fifteen years developed a complex and innovative suite of policies, approaches, and incentives to expand renewable electricity production. As much as this suite is overdetermined by ‘hard path’ fossil fuel dependencies and Federal intransigence, the results of its application reflect the uneven, particular, localized, and place-based character of contemporary renewable electricity development.
Core advocates in the District and Maryland initially sought to realize their vision of a decentralized, community-scale network of renewable electricity generation by taking advantage of this established suite of policies and incentives to promote access to the electrical grid and expanded ownership of and investment in distributed renewable electricity generating technologies. These advocates shared a collaborative ethic, which they brought with them to their initial organizing efforts. However, the ability of these collaborative efforts, as well as the suite of policies and incentives on which they depended, to successfully achieve the broader vision of the core advocates was limited by two primary factors. First, core advocates experienced difficulties with maintaining the engagement of the “converts” once bulk purchasing arrangements and other similar efforts had been completed. As a result, core advocates were regularly involved with efforts to broaden and expand their coalition of participants. Further, the evidence I collected from some of my informants suggests that while people who participated, for example, in the bulk purchasing models managed by DCSUN, may have been sympathetic to the broader vision of the core advocates such sympathies didn’t necessarily translate into a willingness to offer material support to realizing this broader vision. Secondly, I have argued that existing regulatory regimes—with their bias towards appropriately sited properties, high income populations and individualized ownership—severely limited the ability of the core advocates to implement their broader vision. As a result, they seized upon the emergent regulatory framework of virtual net energy metering in an effort to overcome such biases.

Finally, in comparing the successful virtual net metering campaign of District advocates with the failed efforts of Maryland advocates in pursuing the same framework I have identified three key reasons, which, I argue, help explain these divergent outcomes.
First, the District’s anomalous political status presented DC advocates with a less complicated political and regulatory structure than that confronted by advocates in Maryland. Second, this political complexity made it difficult for Maryland advocates to develop and maintain an effective coalition dedicated to advancing the legislation. Third the focus, by Maryland advocates on presenting and arguing for a modest, “fact-based,” policy-oriented piece of legislation failed in the face of ideological “arguments” offered by utility companies and their political supporters.

6.2 General Implications of This Study

The narrative presented here is one in which local renewable energy action advocates situated their activities within an existing, market-oriented suite of opportunities and regulatory frameworks. The proposed response to the limits of these frameworks—virtual net energy metering—represents an extension of these frameworks rather than a rejection of them. To a certain extent, then, virtual net metering represents an effort to redistribute the benefits of and provide more egalitarian access to these market-oriented frameworks rather than an overt refutation of the frameworks themselves. A potential critique of such redistributive efforts is that they ignore the underlying, inequality-producing tendencies of market-based mechanisms. Put differently, they focus on reforming the operation of market-based mechanisms rather than the production of more inherently egalitarian frameworks for distributed renewable electricity development. While I don’t necessarily disagree with such a claim I would offer the following reflections.

First, among my informants and the many people that I interacted with over the course of my research, there were a variety of perspectives with regard to these market-
oriented solutions. Many times I encountered the perspective, particularly from people involved directly in the solar industry, that these market-based approaches were necessary in order to somewhat level a playing field that was seen as being heavily tilted in favor of the fossil-fuel industries. There was strong consensus that the establishment of a Federal carbon market (either in the form of a carbon tax or some kind of cap and trade scheme) would allow renewables to fairly compete with fossil fuel generation without the need of other subsidies, favorable regulations and so on. In general many of the advocates displayed what I would describe as a pragmatic uneasiness with market-based approaches. This uneasiness often took on a populist, small business, community-based tone focused on making sure that the benefits of the market-based approaches remained accessible to the broadest number of people possible.

What is less clear, however, is the extent to which the core advocates, and more broadly their collaborators in the “converts”, see these market-based models as the most appropriate for realizing their vision or, rather, as the best the present system has to offer. To what extent, for example, would core advocates and their collaborators be supportive of a public ownership and socialization of the electricity grid at any scale—municipal, regional, state or national? Given that the current framework is oriented towards the relatively haphazard whims of individual choice and economic means it is quite possible that socialization and some degree of centralized planning related to the electricity grid and the siting of distributed renewable electricity generating technologies might actually be more efficient and egalitarian than the more haphazard approaches to expanding distributed renewable electricity generation that are promoted by market-based mechanisms such as net energy metering. In what way would a socialized model actually contrast and conflict with
the privatized, collaborative models supported by the core advocates? To what extent is the market-based approach seen as being more compatible with the decentralized values of the core advocates than a centralized planning approach? In what way is the support of the market-based approach a reaction to/rejection of the centralized planning approaches that dominated electricity development throughout the middle part of the 20th century?

The failure of efforts to advance virtual net metering legislation in Maryland reflect the potential limits of a localist politics in terms of being able to affect regulatory change in supra-local regulatory environments. Such failures highlight the need to contextualize the systems of regulatory governance that condition particular infrastructures—electricity, water, transportation, housing, communication, and so on—and the possibilities for and limits to localist politics posed by such regulatory systems. We must also be aware of the extent to which each of these infrastructures is governed not only by a distinct regulatory system but also by a distinct, multi-scalar, geography of regulation. The analysis presented here regarding local renewable energy actions suggests that developing a comprehensive understanding of the political-economy of particular infrastructures requires peeling back the layers of policy, regulation and governance in which such infrastructures are embedded.

6.3 Implications for Cultural Studies

6.3.1 The “Right Now” of Cultural Studies

In the introduction to his recently edited volume, *The Renewal of Cultural Studies*, Paul Smith suggests that the volume focuses on responding to the following question: “What can and should cultural studies be doing right now” (2011, 3)? In this section I wish to take up three such “right nows” emphasized by Smith that relate most closely to the themes
explored in this dissertation: “the necessity of including a viable ecological sensibility in cultural studies’ image of itself as a political project,” “the need for cultural studies to revisit and revise the interest that it has sporadically had in public policy and policy making” and “the longing for political relevance and activism, or the question of what could be called activist knowledge” (2011, 6–7).

6.3.2 Ecological Sensibilities and Cultural Studies

Michelle Yates responds to Smith’s call for the development of a “viable ecological sensibility” in cultural studies by referencing Jennifer Daryl Slack’s assertion that cultural studies “tends to frame environmental politics not as environmental per se but rather by way of thematic issues such as technology, food, lifestyle, or other aspects of consumer culture” (2011, 238). She then goes on to suggest, as Smith’s statement seems to imply, that unlike many of the disciplines with which it is aligned cultural studies “has been resistant to developing an explicitly ecological criticism” (2011, 238). Yates’ intervention into this resistance is a call for the development of an eco-conscious cultural studies based on a return to/reexamination of Marxist theory. In particular, she suggests that such a project “would benefit from contemporary Marxian traditions that move away from an analysis of class and class struggle toward a reexamination of the social categories that fundamentally constitute capitalist society (i.e., the commodity form, value, capital, and labor)” (2011, 242). While I do not disagree with Smith’s call, nor the elements of Yates’ response to it, the insights gleaned from working through this project prompt me to dig a bit deeper rather than simply nod my head in approval.
First, Yates’ assertion that cultural studies tends to focus on environmental politics in thematic terms rather than framing environmental politics as an explicit object of inquiry raises a particular question in my mind: Is the issue of establishing an ecological sensibility in cultural studies a topical concern or an analytical one? That is to say, should cultural studies seek to focus more prominently on environmental topics because these topics are somehow more pressing or relevant than say Facebook or zombies or postcolonial theory or is the call to fold an ecological sensibility into the broader method of “doing” cultural studies? I suspect that for Yate’s it is a bit of both.

With respect to the former, I will not wade into the briar patch of decreeing which topics cultural studies scholars should consider the most urgent. I will only say that my primary, personal motivation for pursuing this project was my perception of its urgency and relevance “out there,” beyond the realms of the academy. More broadly, however, it seems to me that there is no shortage of intellectual inquiry related to environmental topics emerging from within the academy (and without). Given such a situation the concern would, then, seem to be analytical. Can cultural studies, as an intellectual project, intervene in such discourses in some constructive manner? And, conversely, can such discourses offer analytic insight into projects with which the discipline is already engaged?

My answer to the first question is a qualified yes. I do not believe there is any unfilled niche within intellectual discourse regarding environmental issues that only cultural studies can fill. That being said, there are ongoing debates and projects within this discourse that I believe align themselves with the cultural studies sensibility. In particular I would note the work in political ecology and the discussions of infrastructure and “green” urbanism discussed in chapter two. With respect to the second question I can only say, perhaps.
Individual scholars, it seems to me, are in the best position to decide whether an ecological sensibility—or perhaps what type of ecological sensibility—will be relevant to their work.

A brief word should also be said regarding Yates’ appeal to Marxist theory. I would hope that, however brief the mentions may have been, my own allegiance of sorts to Marxist theory has been clear in this text. I believe, like Yates, that Marxist theory can be of powerful explanatory value with respect to developing an etic understanding of the objects under investigation here. And yet I would argue (and I hope this has also been made somewhat clear) that neither Marxism nor the neoliberal frameworks against which it is regularly positioned are adequately capable of capturing a substantive emic understanding of the political-economic values driving many of the “characters” who have appeared in this text. My own theoretical preparation prior to undertaking this work did not adequately prepare me to fully comprehend such values. I would humbly suggest, therefore, that perhaps this project and cultural studies more broadly, could benefit from a more thorough embrace of a broader range of heterodox political-economic theory that ventures beyond the boundaries of the Marxist-Neoliberal binary.

6.3.3 On Cultural Studies and Policy

The concluding chapter of The Renewal of Cultural Studies features a wide-ranging conversation between Smith and Andrew Ross. At one point, during a discussion of cultural studies and cultural policy, Ross poses the following question: “Do you respond to the policy makers to see if there can be a productive engagement or do you turn your nose up at it because there’s too much compromise involved” (P. Smith and Ross 2011, 256)? Marcus Breen’s essay, in the same volume, which focuses on the connections between cultural
studies and public policy (broadly understood), appears to split the difference between the two approaches outlined in Ross’ question. Breen is primarily focused on engaging with policy through political-economic critique. More specifically he argues, referencing Meghan Morris (1988) “that a cultural studies that fails to identify and problematize economy, and thus its commitment to resource allocation through policy making deserves the consequences of its ignorance: banalization, marginalization, and irrelevance” (2011, 209). For Breen, policy is a relevant field for cultural studies inquiry in the present conjuncture because he feels that the broad policy-making arena has been thoroughly captured by the elite interests of globalized capital. Referencing the context of “global ecological crisis” and arguing that “the current iteration of globalization has reached its sustainability threshold” Breen critiques cultural studies’ pursuit of “Band-Aid solutions that channel liberal conceits that have little to say about the economic miracle of consumer capitalism that uncritically incorporates the excesses of the U.S. lifestyle” (2011, 211). Of particular relevance to this project is Breen’s call to “work against the culture of antistatist ideology that manifests itself as antiregulation” (2011, 214). Such an ideology, he argues, following Saskia Sassen is “ultimately disempowering national institutions, thereby rendering them incapable of undertaking resource allocation for citizen needs” (2011, 214). Breen’s response to such disempowerment seems drawn directly from the localism playbook of the core advocates whose work has been discussed here. He argues that “supporting locally based institutions that are committed to the public interest is critical” for responding to such disempowerment (2011, 214).

I share Breen’s concern for developing policy-specific political-economic critiques. As I hope this investigation has revealed in some small way, it is at the level of specific
regulatory, legislative and governance interventions that the broader outlines of particular political-economic philosophies are realized. The critique of consumer capitalism with respect to ecological crises should, at this point, be obvious. Unfortunately, however, it is one that still warrants repeating in public discourse. And yet, such a critique poses a conundrum of sorts. Whether we wish to acknowledge it or not the need for a transformation of consumption practices is absolutely relevant. While we most certainly will not be able to shop our way out of the current mess, waiting around for the structural revolution of consumption practices to magically appear doesn’t strike me as a viable solution. I have largely avoided an explicit critique of consumption here because I find it to be rather unproductive in this context. Rather, I have chosen to focus on the conditions of production. This choice has been made because, it seems to me, this is the ground upon which the economic, political, and social terrain of a carbon constrained world will be built.

The particularity of policy and the conditions of production come together for me in the context of the final element I cited from Breen’s argument: the appeal to the local as a site for guarding and supporting the public interest. As we have seen in chapter two the turn towards the local is often viewed by progressive critics on the left as a turn away from political action directed at wider structural reform. I personally find such critiques to be oversimplified and, at times, condescending towards advocates who focus on localist interventions. The reality is that there is “work” to be done at all levels. Furthermore, the advocates I encountered through my work on this project are not neoliberal dupes gallivanting off on utopian localist projects. They know full well that there are limits to localist politics and localist lifestyles. They are also, for the most part, keenly aware of the
inequalities that exist within their communities. Their actions are measured, pragmatic and strategic.

But, as we have seen, policy intervention is complicated. It seems to me that this is where Breen’s call for cultural studies to develop a more explicit political-economic critique of policy-making is most useful. The holistic approach towards intellectual inquiry to which cultural studies aspires is particularly well suited to developing wide ranging critiques of policy-making that can counter the more ahistorical, econometric analysis which occupy much of public discourse. The discipline has a long track record of producing such work, particularly in the realms of media and cultural policy. And yet, critique should not be considered an end in itself. It must be of practical use. One way to do this, as has been done in some small way here, is to focus on policy at a micro-level. For it is at this level, rather than some broad, abstract level, that complexity emerges and the most practical value is found.

6.3.4 “Longing for Political Relevance”

The question of practical value touches on Smith’s concern regarding the “longing for political relevance” in cultural studies. In his conversation with Ross, Smith suggests that Ross’ “catchphrase,” “the production of politically useful knowledge,” may offer “a quite useful way of thinking about what cultural studies is for or what I can do in its institutionalized form” (P. Smith and Ross 2011, 246). In responding to Smith’s request to discuss the meaning of the phrase Ross’ suggests that the production of politically useful knowledge is a particular form of knowledge production that is unique to the academy. It is, he argues, unique, in so far as it is a type of knowledge that can’t be produced outside of the
academy. But, at the same time, Ross argues that if this knowledge “isn’t going beyond the academy” then “those that are producing it” are “probably not doing the right thing” (2011, 246). For Ross, part of being successful in the application of knowledge beyond the academy “involves acknowledging that the temporality of “intellectual advocates””—academic producers of politically useful knowledge—“is going to be different from that of grassroots advocates” (2011, 246). The timeline for producing ideas is vastly elongated when compared with the day-to-day urgency of grassroots activism. “The goal,” says Ross, “is not to be in sync, because you are moving at different speeds, but to be subject to the same gravitational pull as the advocates” (2011, 246). Smith, in response, suggests that Ross’ framing presumes the existence of some “assumed [sic] activist community” that stands ready to make use of the knowledge produced by Ross’ “intellectual advocates” (2011, 247). Rather, he asks, “By our work couldn’t we begin to make some activist community” (2011, 247–248)? For Smith, the most likely audience for the “kinds of knowledge” produced by cultural studies will be “the university and its associated communities” rather than an activist community, assumed or otherwise (2011, 248). Regardless of audience, however, Smith argues that “we will still come up against an antagonistic environment where the kind of knowledge we produce is simply not required by the dominant forces around us” (2011, 248).

Ross and Smith’s comments point to at least two tensions within the political project of cultural studies: What type of knowledge is to be produced and for whom? These are largely existential questions which will never be clearly resolved. I would, however, offer the following comments based on what I’ve learned from going through this project. First, I would suggest that we ought to focus more on producing knowledge with than knowledge for. To that end I think we might do well to question the embedded impulse to produce
radical knowledge for radical advocates. Instead, I would suggest, following Ross’ reference to a “casual maxim” that appeared in the first editorial of the *New Left Review*, that “the task…should be not to tell people where they ought to be but rather to try to meet them where they are” (P. Smith and Ross 2011, 249).

6.4 Suggestions For Further Research

I will conclude by offering the following suggestions for further research inspired by this investigation. The suggestions are divided into three overlapping categories: ethnographic, political-economic and historical.

6.4.1 Extending and Expanding the Ethnographic Component of This Project

First, as detailed in the introductory chapter, the number of in depth interviews completed as part of this project was limited due to resource and time constraints. I hope, in the future, to expand the interview pool up to more than forty individuals. I plan to begin this expansion by conducting additional interviews with a wider group of core advocates. I plan to conduct additional interviews with participants in three of the local renewable energy actions detailed here: the Mount Pleasant Solar Coop, University Park Community Solar, LLC and Greenbelt Community Solar, LLC. I would also like to interview the lead community volunteers who have been engaged with DCSUN’s bulk purchasing projects. I also plan to interview key actors who were involved in the development and passage of the District’s “Community Renewables” legislation. I would also like to collect a sample of interviews from convert-adopters who have participated in DCSUN’s bulk purchasing projects. Finally, I would like to develop a survey, based on the outcome of these interviews, that could be administered to a wider pool of convert-adopters.¹
Second, this project did not effectively investigate the extent to which race and ethnicity impacted the ability of the core advocates to advance their agenda. Concerns with race and ethnicity were implied and deeply embedded within the broader mission of core advocates to expand access to the benefits of distributed renewable energy generating technologies to low and moderate income consumers and communities. Beyond these general concerns questions of race and ethnicity figured prominently in the public outreach efforts of the core advocates such as the “Solar Flare” that were described in chapter four. They were also touched on as part of the “Building A Coalition” narrative offered in chapter five in which I argued that race played some role in the inability of the “Community Renewables” coalition to get virtual net metering legislation passed during the 2014 legislative session in Maryland.

These two examples offer overlapping context for examining the impact race and ethnicity had on the ability of the core advocates to advance their agenda: the level of grassroots organizing and information campaigns and the more formal arena of state-level politics. With respect to the former the ethnographic portion of this project would benefit from a more explicit investigation of such outreach efforts. Beyond continuing to document such efforts I have identified two potential avenues for further ethnographic exploration of this topic. First, during the course of my research I became acquainted with the work of the Abell Foundation, a philanthropic organization that is active in Maryland and Baltimore City in particular. The Foundation recently published a report focused on expanding solar generation in low-income neighborhoods in Baltimore City (Sanders and Milford 2014) and has made such concerns a focus for future funding and outreach. I hope, over the course of the coming months, to continue following how these efforts take shape. Second, concurrent
with the Abell Foundation’s emphasis on expanding solar to low-income communities two NGOs dedicated to similar efforts—Groundswell and GRID Alternatives—have become active in the District and Maryland over the last two to three years. I have developed contacts at both of these organizations over the course of my research and I hope, in the future, to be able to investigate their work in more detail.

Finally, I believe it will be important to consider connections between race and labor with respect to electricity and the expanded roll out of renewable energy technologies. I touched on this to a very limited extent as part of the narrative of the “Solar Flare” offered in chapter four, but more sufficient investigation is warranted.

Labor, broadly understood, represents a third perspective that was under-investigated as part of the ethnographic research conducted for this project. Although the solar industry has grown rapidly over the past decade, very little qualitative ethnographic documentation of the everyday lives of workers in the industry exists. Over the course of my research I encountered and worked informally with a number of professionals working in diverse aspects of the solar energy industry in the Mid-Atlantic region including design, installation, sales and finance. I plan to expand my ethnographic research by interviewing a variety of these individuals.

The solar energy industry has an almost forty year history in the United States. It has undergone significant changes and transformations over this period. The coming decade will represent a period of transition for the industry as older workers who have been in the business since the mid-1970s begin to retire and a new generation of workers emerges to take their place. As a result it will be necessary to speak with a diverse range of workers, old
and new, in order to learn more about the ways in which the industry has changed over the past decades.

Further, as the industry has matured and professionalized, it has spawned a wide array of employment niches. Design engineers must make use of sophisticated computer software and internet-based satellite imaging tools to properly design and site systems and monitor their operation. Sales staff must be conversant with a dizzying array of subsidies, grants, regulations and technologies in order to adequately serve the needs of potential customers. Financial specialists, especially those involved in recruiting investors for larger scale projects, must be capable of working with a broad suite of complex business plans and funding models. Installers must be intimately familiar with many different types of technologies and with adapting those technologies for use in a variety of environments. I would like to interview workers employed in each of these sectors of the industry in order to learn more about the diversity of labor practices within the industry as whole.

Finally, it is well known that the scope and character of employment in the United States has changed radically over the past forty years. The rapid pace of economic globalization has contributed to a significant decline in employment in the manufacturing sector and a corresponding increase in employment in the service, financial and high tech industries as well as in “knowledge work.” The relatively stable middle-class lifestyle enjoyed by many blue and white collar workers during the post-WWII economic expansion that stretched from the mid-1940s through the early 1970s has become a thing of the past. To a certain extent, the solar energy industry has a foot in both of these worlds. Much of the work in the industry incorporates service, financial and high tech labor. However, despite modern sophistication, there is still a complex material culture of work within the industry.
that involves recognizable forms of more traditional manual labor—climbing on roofs, installing electrical equipment and so on. I plan to focus on both sides of this labor experience in order to learn what work in the solar industry might tell us about the broader transformations of labor and employment that have taken place in the United States over the past few decades.

6.4.2 Emerging Political-Economies of Renewable Energy Development

Concerns with labor also point towards the need to more fully investigate the emerging political-economies associated with renewable energy development. Based on the research outlined here I believe there are at least three pressing topics worthy of further investigation. First, at a more theoretical level, I believe it’s worth developing a more comprehensive description of emerging commodity markets related to renewable electricity development. On the one hand, as has been made clear here, the growing deployment of small-scale distributed renewable electricity generating technologies has helped to disrupt long-standing frameworks of technology ownership related to electricity production. Such disruptions have been touched on as part of this investigation and should be expanded. However, I am also particularly interested in trying to understand the changing frameworks for electricity sales and electron consumption that have emerged in parallel with deregulated electricity markets, “green” power marketing, net energy metering and, potentially, virtual net energy metering as well.

On a more pragmatic level I believe there is a need to develop a more comprehensive description of clean energy finance markets and project funding frameworks, particularly those that may impact projects of the scale described here. I plan to incorporate
some of this research into the expanded, labor-oriented ethnographic fieldwork described above. In addition, I believe that as “Community Renewables” projects associated with the District’s virtual net energy metering legislation begin to come online there will be opportunities to evaluate financing models that emerge to facilitate such projects and evaluate their efficacy.

Finally, a more thorough description of the impact that solar leasing and the considerable growth in domestic natural gas production over the last five years have had on aspects of the renewable industry and more specifically, the work of “Community Renewables” advocates must be developed. Many of my informants spoke of the impact that the growth in solar leasing had had on various solar markets in the state. The ability for further expansion of the leasing model to further shift ownership and governance of renewables-based electricity systems into more consolidated hands is considerable. Further, it will be important to see what effect, if any, the emerging political battles over net energy metering will have on the solar leasing model and distributed renewables more generally.

The expansion of domestic natural gas production over the last five years has clearly impacted electricity markets and the relative economic viability of distributed renewables. Beyond such economic impacts, however, I believe that there are some intriguing discursive overlaps between renewables and natural gas—concerns with self-reliance, energy sovereignty, labor, domestic economic growth and so on—that warrant further consideration. There are also, I believe some equally intriguing historical connections between renewables and natural gas—some of which were touched on in chapter three—that could also stand to be investigated in more detail.


6.4.3 Historical Research To Be Considered

Following on the discussion of deregulation and restructuring of electricity markets in chapter three I believe there is a need to develop a more detailed understanding of the history of utility regulation in the District and Maryland from the 1970s forward. I have conducted some preliminary research into this topic which did not make it into this dissertation—mostly related to renewables and energy efficiency programs in the District during the 1970s and early 1980s—but a better understanding of such efforts, both in the District and Maryland, is needed in order to develop a fuller picture of how such a history impacts the present day efforts of “Community Renewables” advocates in both jurisdictions.

As mentioned in chapter two there is a need to more strongly root the politics and history of renewable energy, particularly during the 1970s into the wider social, cultural and political history of that decade. Along such lines, I have begun preliminary research into early “green” urbanism projects that took place in the District and Maryland during this decade and would like to further explore these projects and any linkages they may have with contemporary projects such as Mayor Gray’s “Sustainable D.C.” initiative.
6.5 Endnotes

1 When I spoke with Emily Stiever of DCSUN regarding any kind of survey data they may have collected from participants in the organization's bulk purchasing programs she told me that although the organization has a database that includes contact information for all households that have participated in the bulk purchasing program they have not yet completed any detailed survey of these participants. The pool of participants is upwards 150 so it would offer a good starting point for collecting survey data.
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BIOGRAPHY

Jason Morris was born in south Louisiana and grew up in the Hill Country of central Texas. He spent six years living in Chicago while pursuing an undergraduate degree in theatre from Northwestern University and serving as a volunteer with the AmeriCorps program. He has lived in the Washington, D.C. area since the fall of 1999.