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Article

Hybrid Arrangements as a Form of Ecological Modernization: The Case of the US Energy Efficiency Conservation Block Grants

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Abstract: How are environmental policy goals implemented and sustained in the context of political stagnation surrounding national climate policies in the United States? In this paper, we discuss Ecological Modernization Theory as a tool for understanding the complexity of climate governance at the sub-national level. In particular, we explore the emergence of hybrid governance arrangements during the local implementation of federal energy efficiency programs in US cities. We analyze the formation and advancement of programs associated with one effort to establish a sub-national low carbon energy policy: the Energy Efficiency and Conservation Block Grant (EECBG) program administered by the US Department of Energy. Our findings highlight the diverse range of partnerships between state, private, and civil society actors that emerged through this program and point to some of the challenges associated with collaborative climate governance initiatives at the city level. Although some programs reflected ecologically modern outcomes, other cities were constrained in their ability to move beyond the status quo due to the demands of state bureaucracies and the challenges associated with inconsistent funding. We find that these programs cultivated hybrid arrangements in an effort to sustain the projects following the termination of federal grant funding. Overall, hybrid governance plays an important role in the implementation and long-term sustainability of climate-related policies.

Keywords: ecological modernization; environmental state; collaborative governance; hybrid arrangements

1. Introduction

What types of environmental governance arrangements are viable alternatives when top-down approaches are inadequate or unsuccessful in responding to environmental issues? Efforts to address environmental problems depend on the political and economic contexts in which they are developed and implemented. As recent United Nations climate negotiations have highlighted, nation-states vary in their ability to reach consensus on how to take action on climate issues as well as in their ability to enact effective policies. For example, despite its status as a world leader, the United States has struggled to implement substantive environmental policies in recent years. In particular, efforts to pass a national climate change policy through the US Congress have been unsuccessful. Since the Kyoto Protocol entered into legal force on 16 February 2005, the US Congress has repeatedly failed to enact proposed climate change policies [1].

At the same time, the Administrative branch of the US government has struggled to implement a climate policy that reduces carbon dioxide emissions. The Obama Administration has maintained a commitment to achieving significant greenhouse gas reductions (17 percent by 2020 and 32 percent by 2030), goals initially established in 2009 and reiterated again in the President's Climate Action

Plan in 2013 [2,3]. Because these regulations have faced staunch Republican opposition and have been the target of legal challenges led by energy industry interests, President Obama has relied on executive powers that can be exercised without the involvement of the US Congress [4,5]. For example, the White House has issued numerous executive orders addressing climate-related goals including state-level climate preparedness [6], climate-resilient international development [7], reduction of federal greenhouse gas emissions [8], and preparations for climate change impacts [9]. With the upcoming national election in 2016, it is unclear the degree to which the Obama Administration's efforts will be sustained. Only the passage of climate legislation through both houses of the US Congress will ensure that the Federal Government continues to take meaningful action to mitigate climate change.

In the absence of significant progress toward a national climate change policy in the United States, progress *has* taken place at the sub-national level [10,11]. Much of this progress has been achieved through collaborative partnerships between government agencies, civil society groups, and the private sector, or what some scholars call *hybrid arrangements* [12,13]. These hybrid arrangements are especially apparent in US cities that have implemented sustainability and carbon reduction initiatives [14–16]. In this study, we focus on one federal initiative that supports US cities in the implementation of low carbon policies: the Energy Efficiency and Conservation Block Grants (EECBGs) that were funded by the American Recovery and Reinvestment Act of 2009.

This paper explores how one type of environmental governance—hybrid arrangements at the sub-national level—can achieve environmental policy goals when state-led initiatives are unsuccessful. We apply the lens of Ecological Modernization Theory (EMT), which proposes that environmental crisis can be addressed through institutional reforms, technological innovation, and governance arrangements that link state, private sector, and civil society actors [17]. Previous research has shown that ecologically modern hybrid arrangements have emerged at the subnational level; this study builds on this work to consider the complexity of these arrangements, the consequences of collaboration between multiple state and non-state actors, and the effectiveness of such arrangements within the context of global climate governance regimes. We begin by reviewing debates within environmental sociology over the ability of the state to resolve environment crisis and present a brief overview of the broader literature on environmental governance. Then, we present an overview of EMT, focusing in particular on the notion of hybrid arrangements and their development at the city level. After presenting details about the data and methods used to assess how the low carbon energy policies initially funded by the EECBG program were implemented, we present findings from research on the city-level programs supported by the competitive grants component of this program. This paper concludes by discussing how these specific programs were developed and implemented through partnerships between federal energy efficiency programs, local agencies, organizations, and businesses. We explore the benefits and challenges associated with these partnerships and describe how they facilitated program sustainability after the federal funding ended.

1.1. Environmental Governance

The question of how best to respond to environmental crisis has been central to environmental sociology since the field emerged in the 1970s [18]. Whereas some scholars have argued that industrialization and economic growth are inherently harmful to the environment [19–23], others have proposed that continued economic development and modernization are prerequisites for environmental protection [24–27]. The question of whether the state can resolve environmental crisis has been a major focus of these debates. For example, the political economy perspective that state responses will always prioritize the economy over the environment stands in stark contrast to theories of the environmental state, which explore how environmental protection functions as an economically beneficial process and basic responsibility of industrialized nation-states [19,22,23,28–30].

In the context of 1990s debates over state failures in effectively coping with the challenges of modernity and industrialization, the bulk of the responsibility for environmental protection shifted

toward private economic and civil society actors [31,32]. Although the environmental state has expanded its responses to environmental problems in recent decades [33], concerns about the efficacy of top-down environmental policy approaches remain highly relevant. Given what Fisher and colleagues identify as the “inability of national regulators to address successfully environmental problems in the decision-making process, and effectively enforce the decisions already made,” alternative approaches to environmental governance will be crucial in moving forward with meaningful action on climate change, pollution control, and other urgent environmental issues [34] (p. 146).

It is rare for states to act alone in implementing and enforcing environmental policies. Instead, environmental governance is carried out through complex collaborations among state, market, and civil society actors [14,31,35–39]. Overall, scholars have documented a shift away from government toward governance of environmental issues in industrialized countries [40,41]. In contrast to government “command and control” over decision-making and policy implementation, governance refers to the complex, reciprocal array of arrangements between state, non-governmental, and individual actors that emerge through the definition and pursuit of collective political goals [11,14]. As Koontz and colleagues explain, “*government*, as a formal institution of the state, ceases to hold sole power through command and control mechanisms, thereby shifting to *governance*, a process that takes place through the collective action of a variety of participants, all of whom retain some control over decision making or implementation” [37] (p. 6, emphasis authors’ own). In the context of this study, *environmental governance* refers to the “set of regulatory processes, mechanisms, and organizations through which political actors influence environmental actions and outcomes” [42] (p. 298).

Research on environmental governance spans a range of disciplines including ecology, economics, geography, political science, and sociology. At the broadest level, debates within this literature have centered around which actors are best suited to participate in environmental governance efforts. Advocates of community-based resource management, for example, contend that communities will be more sustainable and democratic in the management of their local environments than states or corporations [43–46]. From this perspective, communities have stronger interests in ensuring the quality of the resources upon which they depend, deeper knowledge of how best to manage those resources, and pre-established governance practices that are already understood by local actors [47–49]. However, critics of voluntary conservation measures have argued that the state and its policies play a crucial and protective role by maintaining environmental standards and limiting corporate access to natural resources [50,51]. The success of market-based approaches such as incentives, taxes, voluntary agreements, and certification programs has also been reliant on the ongoing presence of effective governmental leadership [52–55]. Further, scholars have questioned whether market-based approaches lead to equal benefits for all, or simply increased benefits from those who are already making a profit [56].

Governance approaches that establish partnerships and shared responsibility for environmental protection across state-market-society divisions, or what Lemos and Agrawal call “cogovernance” strategies, represent a middle ground between top-down (state-led), market-based (economic), and bottom-up (community-based) environmental governance [42]. By including a range of stakeholders from the start, these approaches facilitate the participation and cooperation of actors that may be excluded from more hierarchical arrangements [57–59]. One example is collaborative governance, which Ansell and Gash define as involving “one or more public agencies” working toward policy goals by collaborating with “non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative” [39] (p. 545). Moving beyond traditional public-private partnerships that focus predominantly on providing services to consumers, collaborative governance aims to set the agenda for policymaking and implementation. In particular, collaborative governance may emerge as a deliberate decision-making and management strategy in cases where consensus cannot be reached (what Ansell and Gash call “policy deadlock”) or where policy makers foresee implementation as being potentially difficult (p. 553).

There are notable limitations to environmental governance. Some scholars argue that emergent governance arrangements are simply reorganizations of existing power distributions that do little to include new or underprivileged actors [60]. Scholars have also questioned whether democracy is limited when the complex bureaucracies produced under hybrid arrangements require stakeholders to possess a certain level of expertise in order to participate [61]. Further, the complexity of hybrid arrangements veil the fact that important actors are still excluded from the process [62]. It is important to consider whether governance arrangements fit the requirements of deliberative democracy, or whether elite actors are given more voice over environmental decision-making than actors who have little “veto power” [42]. Despite the challenges associated with forging partnerships across uneven levels of power, environmental governance strategies that link state, market, and civil society actors are becoming increasingly institutionalized, especially at the sub-national level.

One vein of literature that has been particularly critical in its analysis of environmental governance practices applies Foucault’s concepts of “governmentality”—or the practices, ways of thinking, rationalities, and discourses through which subjects are governed—to highlight the social construction of environmental problems and the limitations of market-based governance practices [63,64]. This perspective considers the multiple and relational nature of power as it plays out between actors and arenas in environmental governance [65]. Scholars have also applied the concept of governmentality to discuss how neoliberal economic policies (regulatory approaches that promote privatization, deregulation, and free market practices) have influenced the ways in which we think about and govern the environment [66,67]. Here, market-based approaches to environmental governance are considered as the tools of what Oels calls “an advanced liberal government” [68]. From this perspective, hybrid governance arrangements are tied to the “hallmark” tendency of neoliberal policy to “move *outside* of the formal apparatus of the state [. . .] and achieve policy aims through the institutions of civil society” and the free market [69] (p. 504). Further, the multiplicity of governance approaches—e.g., the rising prevalence of hybrid arrangements—is considered to be a reflection of the adaptive nature of neoliberal policies, which tend to work around environmental crises rather than addressing them at their source [70,71].

1.2. Ecological Modernization Theory

This paper engages with concepts from Ecological Modernization Theory (EMT) to address questions about the efficacy and viability of hybrid environmental governance efforts at the sub-national level. EMT examines the transformations of social practices and institutions, or patterns of “ecological restructuring,” that emerge from environmental concerns in industrialized countries when “the state can no longer be expected to design and prescribe the way society and economic interactions should be organized” [24,25,31]. In other words, EMT explores how economic growth and industrialization can be amenable to environmental protection and how solutions to environmental crises can evolve within, rather than outside of, the modern market economy [24,26]. This theory emerged in a Western European context and has been most applicable in cases within industrialized countries with established processes for environmental policymaking [17]. EMT has also expanded to consider global environmental governance and how new formations between science and technology, nation-states, and global markets can lead to environmental reform [25].

Although scholars have developed a strong theoretical framework for EMT, more empirical research is needed to resolve questions about the conditions under which ecologically modern outcomes are viable and successful [72]. Ecological modernization is often more reflexive in its theoretical form than it is in practice [26]. We assess whether the hybrid forms of climate partnerships emerging in US cities are examples of truly ecologically modern environmental governance, or whether they are simply another iteration of the “advanced liberal government” described by Oels and other critics of neoliberal environmental policies [68]. In other words, this project considers whether hybrid arrangements in US cities align with what Bäckstrand and Lövbrand identify as the “strong” version of ecological modernization, which transforms the dominant paradigms of social and institutional

response to environmental problems, or whether they exemplify the “weak” version, which “does not involve any rethinking of societal institutions” and presents a false “win-win” storyline about the compatibility of economic growth and environmental protection [73] (p. 53).

Ecological Modernization Theory provides a framework for understanding environmental governance in the context of shifting boundaries between state, market, and civil society [27]. It describes how participatory governance practices emerged following the rise of the environmental state from the 1960s through the 1980s as a way of compensating for failures at the state level [31,34,74]. For example, Jänicke and Jörgens describe how environmental policy in Europe shifted away from the top-down approach of the 1960s and 70s as environmental organizations and industry groups began to interact and participate in policymaking [11]. This process of political modernization brought about a transition from a state-centered bureaucratic policy model to a more decentralized, consensus-oriented model of environmental governance [34,75].

Under political modernization, voluntary environmental protection measures tend to outnumber state-initiated actions as civil society and the private sector take on some of the responsibility for environmental regulation formerly shouldered by the state [25]. Van Tatenhove and Leroy contend that what they call the “societalization” of governance goes hand-in-hand with “marketization,” or the delegation of responsibility for regulation away from the state to privatized agencies [35] (pp. 167–168). As state-market interactions shift, economic processes and actors take on increasing roles in environmental protection [76]. In Mol’s words, market practices arise in which “economic processes of production and consumption are increasingly analyzed and judged, as well as designed and organized from both an economic *and* ecological point of view” [35] (p. 60, emphasis author’s own). In this “ecologized economy,” environmental protection is multidirectional, wherein the purchasing power of “citizen-consumers” combines with more top-down policies and economic tools to achieve environmental protection [24,77].

The central assumption of EMT—that ongoing processes of modernization and industrialization can solve, rather than exacerbate, environmental problems—stands in contrast to perspectives in environmental sociology that see economic growth as incompatible with environmental protection [19–23]. Thus, the most prevalent critiques of EMT have come from scholars who believe that the “sustainable capitalism” it promotes is not possible [78,79]. From a political ecology perspective, which focuses on the asymmetries of access to natural resources and exposure to environmental harm under capitalism, the market-based strategies associated with sustainable development and environmental protection efforts are inherently contradictory [80–83]. From this standpoint, technological innovations and “green” markets may alleviate specific aspects of environmental harm, but cannot resolve the underlying inequalities that produce environmental degradation at larger scales [57,84,85]. At the same time, however, institutions are a “necessary starting point” for understanding patterns of environmental inequality [86] (p. 268). In this context, EMT can provide a framework with which to consider contemporary governance arrangements that have the potential to redistribute, rather than exacerbate, power imbalances among economic interests, political actors, and communities.

As detailed by Leroy and Van Tatenhove, the institutionalization of “interference zones” between state, market, and civil society has created opportunities for new combinations of governance approaches and the emergence of unique policy arrangements [74]. Mol and Spaargaren have described these diverse forms of collaboration among social actors as “hybrid arrangements” [12]. The authors note that there has been “enmeshment and hybridization” between “formerly distinct entities” within the environmental state, pointing out that the “roles and responsibilities formerly reserved for the [state] are fulfilled by market actors and civil society groups and organizations, and vice versa” (p. 15). Thus, hybrid arrangements, which vary in terms of the actors and sectors involved, create new opportunities for innovative approaches to environmental governance [13]. Hybrid arrangements are highly contingent on the institutional, political and cultural contexts in which they emerge [33,34]. Rather than replacing more traditional approaches entirely, hybrid arrangements often function

side-by-side with top-down environmental policy processes [87–89]. Although the role of the state may diminish as regulatory efforts are undertaken by other sectors, collaborative initiatives provide opportunities for the state to participate in environmental governance in a variety of capacities [32]. In other words, the role of the state may shift without disappearing entirely: for example, the state may function as a moderator and facilitator between different interests, rather than acting on those interests directly [31]. Because the lines of accountability within hybrid arrangements can be diffuse, state authority can also help to anchor environmental policies and provide incentives for effective implementation. For example, state-initiated regulation policies continue to play a role in providing resources, setting imperatives for regulation, incentivizing sustainable innovation, and assisting in the regulation process [90]. In their study of the impact of integrated pollution control in linking state and market actors in regulatory action in England and Wales, for example, Murphy and Gouldson find that these efforts were successful when there was collaboration between state regulators and companies [90]. State backing of environmental policies can provide much-needed accountability, or what some have called a “stick behind the door” in the event of noncompliance or policy failure [11]. In Mol’s words, the state provides a “credible threat of regulation” that “may help ensure full commitment of all participants” in the governance and decision-making processes [33] (p. 345).

1.3. City-Level Hybrid Arrangements and Climate Governance

Hybrid arrangements have developed at multiple levels within the environmental state, indicating that civil society and private sector actors are aware of, and acting in response to, the limitations of top-down environmental governance [11]. Hybrid partnerships are especially central to climate governance, which is characterized by a multiplicity of actors with overlapping forms of authority across a range of political and social arenas [91]. Much of the literature on transnational climate governance has focused on proliferation of partnerships and collaboration between state, market, and civil society actors [65,92,93]. Transnational climate governance networks are characterized by their complexity and variety: they may be made up of purely public actors (governments, government sub-units, legislators, *etc.*), purely private actors (non-state entities and organizations), or, most commonly, a combination of the two [91]. In Bäckstrand’s words, these partnerships “signify a shift to ‘new’ modes of governance, which build on non-hierarchical steering and are characterized by decentralized, voluntary, market-oriented interaction between public and private actors” [93] (pp. 74–75). At the same time, scholars have explored the increasing agency of non-state actors and private authority in climate governance at multiple levels [94,95].

The impacts of sub-national climate initiatives are smaller and more incremental than more sweeping transnational approaches or national policies, but may also be more successful. This paper focuses on city-level climate partnerships, which exemplify the hybrid arrangements that are at the core of ecologically modern responses to global climate change. For example, in light of the delayed response by national governments to global environmental issues such as climate change, many cities have implemented their own environmental protection programs, which Rabe calls “races to the top” [96,97]. In many cases, these programs are conceived as, or created as opportunities for, hybrid governance configurations [98].

Cities serve an important role as non-state actors in the transnational response to global climate change by connecting with local stakeholders, integrating climate change into pre-existing policies, and experimenting with innovative programs aimed at cost-effective greenhouse gas reduction and energy efficiency [15,95]. In other words, cities are nodes within transnational climate governance networks where collaborative initiatives—for example greenhouse gas reduction or energy conservation efforts—are conceived and implemented [99,100]. City-level environmental protection programs provide researchers with an opportunity to understand more fully how hybrid arrangements are formed and implemented. For example, Betsill and Bulkeley document how the Cities for Climate Protection program, enacted locally in cities across the world, includes a variety of state and non-state actors in its efforts to lower greenhouse gas emissions [14]. More recently, Bulkeley and Schroeder focus

on the examples of London and Los Angeles, finding “new forms of public and private authority” in the urban governance of climate change [16] (p. 762). Looking at the case of environmental stewardship organizations in New York City, Fisher and Svendsen find a diversity of hybrid arrangements in practice [13].

When viewed through the lens of EMT, city-level sustainability initiatives demonstrate the diverse range of ways in which political, economic, and civil society actors collaborate to make environmental protection both economically and politically feasible. However, there is a need for more empirical assessments of hybrid arrangements (and ecologically modern outcomes more broadly), both in terms of the conditions under which they emerge and in terms of the challenges they face [13,72]. This paper uses the case of one particular environmental initiative in the United States to understand how a policy that was initiated by sub-national policy actors and financially supported by the federal government created opportunities for ecologically modern hybrid arrangements to emerge. We assess the role of hybrid arrangements in achieving initial policy goals as well as in sustaining these efforts after federal support had ended, and discuss the benefits and challenges of the specific structure of this program. We conclude our paper by discussing the implications of our findings for EMT and broader understandings of contemporary environmental governance.

2. Case

The EECBG program was funded through the American Recovery and Reinvestment Act, which was passed at the beginning of President Obama’s first term in office in 2009 (for more details, see Fisher’s study of the early stages of this program [101]). The program’s website at the Department of Energy describes its goals: “It is intended to assist U.S. cities, counties, states, territories, and Indian tribes to develop, promote, implement, and manage energy efficiency and conservation projects and programs [. . .] through formula and competitive grants, the Program empowers local communities to make strategic investments to meet the nation’s long-term goals for energy independence and leadership on climate change” [102]. Overall, the grants distributed \$3.2 billion over two years (all grants were awarded by the end of 2011). The majority of the grants were distributed through a formula: 24% to states, 58% to cities/municipalities, and 1.7% to Indian tribes. The remaining 14% were allocated through competitive grants. Building off of previous research on these grants [101], this paper focuses specifically on the competitive grants awarded to cities in the United States to understand how the EECBG grants were implemented and sustained at the city level.

The competitive grant portion of the EECBG program, first called the “Retrofit Ramp-Up” program and later renamed “The Better Buildings Neighborhood Program” (BBNP), was announced after the formula grants were implemented in April 2010. Grants awarded under the BBNP were intended “fundamentally and permanently [to] transform energy markets in a way that makes energy efficiency and renewable energy the options of first choice” [103]. In summer, 2010, the Department of Energy (DOE) awarded \$482 million in EECBG monies to 34 grantees across the state, county, and city levels [104]. An additional \$26 million in grants funded by the State Energy Program were added later in 2010, with awards to seven states, which brought the total number of grant recipients under the BBNP program to 40. Efforts undertaken with BBNP funds included short-term market-based approaches such as incentives for installation of energy efficient technology, as well as longer-term initiatives such as training for contractors and “green” jobs creation.

In particular, the BBNP program supported projects that had explicit plans to “sustain themselves beyond the grant monies and the grant period.” Initially, additional funding was likely to come from revenue generated from a carbon-trading program that was expected by many to pass through the Congress quickly after President Obama came into office. Although the bill passed through the House of Representatives in 2009, the companion bill never made it through the Senate [105]. Policymakers did not intend for the grants to be extended beyond the initial funding period stipulated by the DOE. Therefore, although some grantees organized campaigns to request additional federal funding, additional funds were not appropriated to extend EECBG-related efforts [106]. Federal funding for

the program expired in 2014 [107]. Continuation of these programs after federal support ended was contingent on individual programs' ability to leverage and sustain the partnerships they had developed with private economic interests and local groups.

3. Data and Methods

This paper presents data from the city-level EECBG programs and the 40 BBNP program grants before discussing 17 cities that were awarded grants as part of the BBNP program in detail. We incorporate data from multiple sources. First, we use data from a 2012 survey conducted by the United States Conference of Mayors (UCSM) titled "Clean Energy Solutions for America's Cities" [108]. The UCSM is a national nonpartisan organization comprised of cities with populations over 30,000. Out of the 1200 cities associated with the UCSM, 1060 have signed the Conference Mayor's Climate Protection Agreement, and the organization is dedicated to "leadership on energy and climate protection" [109]. As has been noted in previous research, the USCM played an integral role in securing federal funding for the EECBG program [101]. A private research company conducted the survey of all members of the US Conference of Mayors online during spring 2011 [108]. Data from this survey provide a picture of the city-level impact of the EECBG program as a whole.

Second, we collected data in 2011 and 2012 from the websites for all 40 recipients of BBNP grants, as well as the program website at the DOE. We coded this content to assess program goals and to investigate the types of partnerships that emerged from the program. Website content was supplemented with publically available data from DOE and other sources, which are cited throughout this paper.

Third and finally, we conducted in-depth interviews with the directors of the city-level BBNP-funded programs in fall 2012. Contact information for respondents was obtained from listings on the DOE website. We contacted all city-level grant recipients via email to request that they participate in interviews. Twelve cities (or 71% of the cities participating in the program) responded to these requests. This paper also incorporates information from multiple conversations with DOE staff and public officials with knowledge of the BBNP and EECBG programs. We conducted the majority of interviews via phone, as programs were located across the country. Interviews followed an open-ended, semi-structured format and asked questions about the history and progress of the BBNP program, the role of the Federal government, and the future of BBNP programs following the expiration of the EECBG funds [110]. Interviews lasted between 15 min and 1.5 h. We recorded interviews digitally and took extensive notes and memos during all conversations. To analyze the qualitative data collected for this project we used an open coding technique, which allowed themes to emerge from the data. Interviewees participated with the understanding that their words and comments would not be directly attributed. As a result, we cite only their general affiliations throughout the remainder of this paper.

4. Results

In the pages that follow, we present our findings from this study. First, we discuss the findings from the UCSM survey of cities to understand the impact of the overall EECBG program at the city level, which includes both formula and competitive grants. Then, we analyze data from the DOE and BBNP grantee websites to understand the types of partnerships emerging from the competitive grant portion of the EECBG program. Finally, we discuss the results of our interviews with city-level recipients of BBNP grants to provide a more in-depth picture of how the grant programs were implemented and how cities planned to sustain their programs after the expiration of the EECBG grants.

4.1. EECBG Impacts at the City Level

Consistent with findings of previous studies of sub-national efforts to address climate change [13–15,99,100], we find that the cities represented in the UCSM Survey were committed to energy efficiency and conservation. For example, 75 percent reported planning to increase their use of clean energy technologies and 25 percent had set targets for the use of future renewable energy.

However, cities also identified “financial constraints” as the most significant barrier to improving and continuing their energy efficiency and conservation efforts. In the context of budgetary constraints, high up-front costs, and uncertainty about the economic returns of clean energy technologies were frequently noted.

In terms of how cities spent EECBG funds, the overwhelming majority of cities (83%) reported that they were using the money to implement new energy technologies. There was a wide range of technologies deployed under the EECBG grants. The most common technologies included: installing LED and energy-efficient lighting (73% of cities), implementing new building technologies (40%), and installing photovoltaic (solar energy) systems (31%). In all, city representatives saw the EECBG program as being incredibly important to their efforts toward energy efficiency and conservation. In response to a question about whether the “initial EECBG funds [were] important to city’s efforts,” the overwhelming majority (85%) of respondents agreed that the funds had been important and only 5 percent disagreed.

Cities mentioned the EECBG program (including both the formula grants and the competitive BBNP grants) as the most widely used funding source for efforts to expand clean energy and energy efficiency programs. When asked about their next steps, most of the city representatives (87%) reported that additional EECBG funding was needed for the continued deployment of clean energy technologies. Looking toward the expiration of the EECBG grants in 2013, about half of respondents (51%) reported that they would seek future funding from the federal government, and 42 percent stated that they would look for money from their state governments.

4.2. Program Partnerships

A review of the program partnerships reported by BBNP funding recipients, shows that collaborations among state, private, and civil society actors were central to the city-level implementation of energy efficiency initiatives under the EECBG program. Beyond working with the federal government to implement the grants, which were seen as the most important form of funding (71%), the majority of cities responding to the USCM survey reported partnering with members of the private sector (59%). When we look specifically at the 40 competitive grants awarded under the BBNP program, we are able to understand the partnerships more clearly. As has been previously mentioned, the BBNP program supported projects at many levels: seventeen of the grants were city-level (42.5%), thirteen were state-level (32.5%), nine were county-level (22.5%), and one was regional. The regional grant involved sub-grantees across ten states in the Southeastern US [111]. Figure 1 presents this distribution.

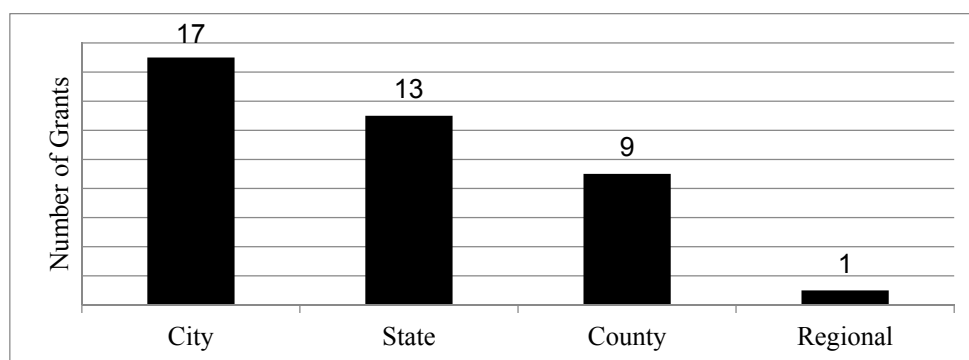


Figure 1. The “Better Buildings Neighborhood Program” (BBNP) Grants Allocation by Level.

All of the BBNP grants were implemented through partnerships. In fact, the relevant program websites at the Department of Energy (DOE) and individual programs’ sites listed 337 separate partners across seven categories. Overall, the vast majority of these partnerships were with market actors rather

than civil society collaborators. The most common program partners were local businesses and business alliances (such as green technology businesses, chambers of commerce, and sustainable development groups), which constitute over 26% of the total partnerships listed. Energy companies—including both public and private utilities—were the second-most common category, representing 22% of the partnerships. Non-profits, including environmental groups and community organizations and alliances, were the third-most-common partnership (20%). Financial institutions (banks, credit-unions, and other lenders) constituted about 16% of the total partners listed. BBNP programs also partnered with local contractors to assist homeowners with energy retrofits and with colleges and universities to provide “green jobs” training (just over 6% and 4% of partnerships, respectively). About 5% of partnerships fell into other categories, including sports teams and consulting agencies, which are depicted as “other” in Figure 2.

Given the prevalence of partnerships with energy companies and other private sector actors, it is important to consider the impact of industry interests on the implementation of the BBNP grant programs. Consistent with previous research that has found that climate-related programs and policies are less likely to be supported by states that extract coal we look at how BBNP partnerships are related to the natural resource endowment of the states in which they are situated [101,112]. In 2010, half of the states in the US extracted some coal [113]. Of the twenty-five states that extract coal, ten of them are considered “major coal producing states,” extracting more than 25,000 short tons of coal in 2010. Although the percentage of grant recipients is somewhat consistent across coal and non-coal extracting states (43% versus 57% accordingly), there are differences when we look specifically at the types of partnerships forged by grant-recipients in major coal states versus non coal-extracting states. (“Non-coal extracting states” are being operationalized here as states that extract less than 25,000 short tons of coal a year. Such a low level of extraction does not contribute significantly to the states’ overall economies.) Table 1 presents these partnerships comparing major coal extracting to non-coal extracting states and the percentages of each type of partnership across coal and non-coal states. Table 1 also indicates the total percentage of each type of partnership for all states. As can be seen, partnerships with energy companies were relatively equally distributed in coal extracting and non-coal extracting states. Non-coal extracting states were more likely to partner with businesses, educational institutions, financial institutions, local contractors, and other groups. Coal extracting states were more likely to partner with non-profit organizations.

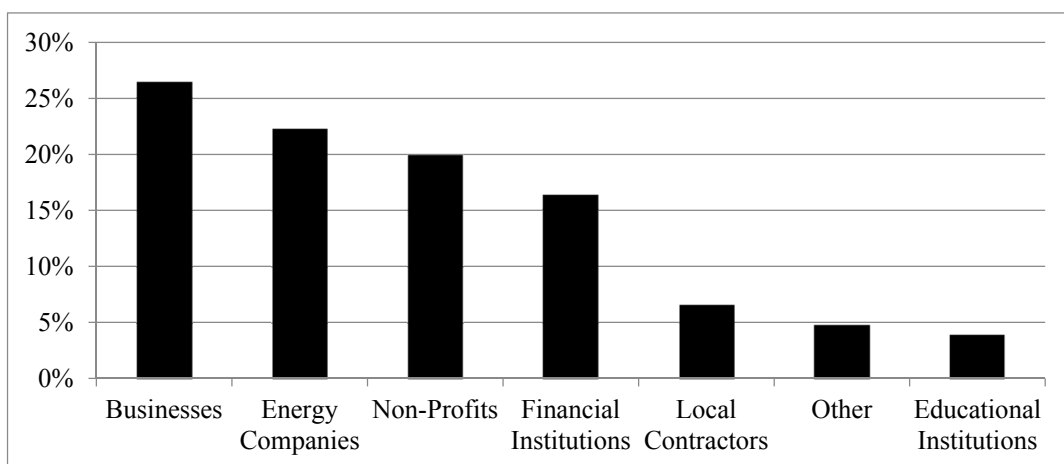


Figure 2. BBNP Partnerships by Type.

Table 1. BBNP Partnerships.

Partnership Type	Major Coal Extracting States	Non-coal Extracting States	Total N (Percentage of Total)
Energy Companies	19 (28%)	56 (26%)	75 (27%)
Financial Institutions	11 (16%)	44 (21%)	55 (20%)
Non-Profits	19 (28%)	48 (23%)	67 (24%)
Local Contractors	4 (6%)	18 (8%)	22 (8%)
Businesses	11 (16%)	21 (10%)	32 (11%)
Educational Institutions	2 (3%)	12 (6%)	14 (5%)
Other	3 (4%)	13 (6%)	16 (6%)
Total	69	212	281

4.3. Emerging Hybrid Arrangements in Sub-national Climate Governance

Through an analysis of program websites, we are able to see partnerships forming across social actors involved in the Better Buildings Neighborhood Program (BBNP). These hybrid arrangements become even clearer in the results of our open-ended semi-structured interviews, which were conducted with representatives of the programs in each city that received a BBNP grant. These data provide clear examples of how government agencies are collaborating with the private sector and civil society to implement what the US Department of Energy (DOE) calls “innovative ways to engage, inform, and motivate Americans to increase energy efficiency” through this program [114]. Specifically, local governments worked with civic groups and businesses in a manner consistent with the work on ecologically modern hybrid arrangements, which argues for the need “to rethink the role of the state, market, and civil society actors in environmental governance efforts” [89] (p. 15).

In some cities, the competitive BBNP grants were the first energy efficiency initiatives ever implemented. Several respondents from cities new to the energy efficiency arena asserted that the BBNP funding allowed them to establish programs that would have otherwise been impossible to get off the ground. For these cities, extension of the BBNP was seen as the only opportunity to address energy efficiency in the coming years. For other cities, the grants provided supplementary funding for well-established climate protection or environmental sustainability plans. Cities with ongoing energy efficiency programs tended to partner with utilities, city government, and local nonprofits from the outset, whereas less-experienced cities had fewer opportunities to create partnerships early in the grant period. Because cities with pre-existing green development and sustainability policies had already done the hard work of forging partnerships with private sector actors (utility companies, chambers of commerce, banks, *etc.*), they entered into the BBNP grant with knowledge about which actors were already on board and what kinds of partnerships were most beneficial for the specific circumstances of their cities. For example, one city in the Midwest had recently gone through the lengthy process of adopting a climate protection plan. As the program director explained, partnerships that were established through the climate protection plan proved to be beneficial in expanding and sustaining projects under the BBNP grant. In this case, federal grant money helped to carry over existing programs and partnerships during an “economically challenging time.”

In contrast, partnerships in cities with less experience “evolved over time” as programs sought to find the most effective ways of implementing their goals. For some cities, newly-forged partnerships fell through, while for others, awareness of the needs and demands within their communities did not fully develop until halfway through the grant period. Two program directors, both from cities lacking formal energy efficiency policies prior to the BBNP grant, described having to overhaul their programs halfway through the grant period because of low adoption. They reported that this process consumed much of the time they had dedicated for cultivating partnerships. Another representative explained that his office had to “push local utilities to be more sustainable” through education about the economic benefits of energy efficiency before they could discuss setting up rebate programs.

Because of the grants’ short timeline of only three years, nearly every respondent described having to “hit the ground running” and “learn on the fly” once funds arrived. Regardless of whether

grants funded pre-existing programs or entirely new projects, the funding timeline often constrained opportunities for partnerships to develop fully. In the words of a program manager of a city in the Southwest, cities struggled to “get everyone on board” in the limited time available, a challenge that was especially daunting given what another director described as “the inherent conflicts between private and public sectors.” Additionally, the pressure to report positive outcomes meant that programs were implemented before staff could work out the basic details of how partners would collaborate. As one BBNP director described, “this whole portfolio had the feeling of sailing the ship out of the port while you were still building the ship . . . it was frankly too early for most of the grantees because building a state-wide or region-wide energy efficiency program is a lot of work and it takes years to put the footing in place.” Further, as another program director noted, it was a challenge to “get everyone to work together under one brand” when partnerships bridged numerous established organizations and companies. These challenges were especially significant for programs established as entirely new energy efficiency initiatives, as there was even more to accomplish within an already short allotment of time.

The Federal Government directed the implementation of BBNP programs from a distance. Rather than maintaining tight oversight of day-to-day operations in each city, DOE provided broad guidance about how to develop, sustain, and maintain the compliance of BBNP programs. This fact did not mean, however, that cities were free to develop their programs without constraints. In addition to the timeline challenges described above, respondents identified paperwork and reporting requirements as significant barriers to efficient program implementation. Overall, respondents noted that there was a need to streamline the federal compliance process. As one director from a city with a long history of energy efficiency programs said, the “administration side was pretty bad and sucked up a lot of resources . . . [there was a] need for innovation and speed at the same time as intensive reporting.” She added that compliance-related guidance from DOE was often “unintelligible” and that it “took forever to resolve questions about what regulations applied to the loan program,” creating a situation in which “everyone was afraid to go awry [and spent] lot of very fruitless energy . . . [trying to] accomplish what DOE wanted and still do what we were trying to do.”

As detailed earlier, respondents to the USCM survey indicated that they hoped for additional federal funding to continue their projects. A year after the survey was conducted, interview respondents were much less optimistic. Some city representatives said that they were holding out hope depending on the outcome of the 2012 Presidential election, but the overall expectations were consistent with the position presented by a DOE representative: the support from the federal government would not continue after the initial grants expired [55]. As one BBNP program director explained, grantees “are operating under the understanding that there are no more dollars from the Federal government.” Another program director described the future of the BBNP program in his city as “one big question mark.” Most grantees were equally pessimistic about funds from city governments, most of which were in the process of dealing with financial crises by cutting, rather than expanding their budgets. Instead, city representatives specifically discussed expanding existing partnerships and initiating new partnerships with local organizations, businesses, and utilities when they discussed their plans for the future.

Overall, forging long-term partnerships to implement goals and sustain future funding was in the best interest of BBNP grantees, who sought to continue providing services beyond the lifespan of the grant program. Sustaining these programs was also good for DOE and the Obama Administration, which benefited from having supported projects that were successful, both within and beyond the grant period. Thus, the Federal Government played an active role in cultivating relationships among the BBNP and utilities, non-profits, and local associations. In fact, DOE itself coached grant recipients as they initiated and enhanced partnerships with non-profits, utilities, contractors, and other local groups during the start-up phase of their projects. Halfway through the grant period, DOE held a workshop for grantees encouraging them to develop partnerships with utilities, integration with local non-profits, and business partnerships as methods of sustaining their operations. A representative

from DOE noted during an interview that forging partnerships, especially with utilities, provided an opportunity to extend the life of the projects. In addition, the representative pointed out that some cities' programs included spin-off nonprofit organizations that were looking for other revenue. This type of a hybrid arrangement, wherein one partnership leads to the creation of a new program in order to address a specific issue (in this case, the need for additional funding for energy efficiency programs), is consistent with what Fisher and Svendsen call a "nested governing arrangement" [13].

In terms of the types of partnerships that were expected to succeed in the post-grant period, most programs reported looking to utility companies and the private sector. For example, one city representative explained that their program was planning to split into a partnership program with the local municipal utility and a nonprofit program building off of an organization established through a statewide formula grant. Another city representative described their program as a "venture capital" investment focused on attracting private investors to contribute to lending programs. Similar to several other cases, the hope in this city was that the existing program would mature into an established non-profit bank, or "green lender." Alternatively, some cities reported turning toward increasing rebates and incentives in order to encourage uptake of energy efficiency upgrades among single-family homeowners. Representatives noted that partnerships with utilities were necessary to subsidize further rebates, which had been some of the most successful citywide initiatives. Overall, arrangements such as those explored by BBNP grantees offer opportunities for sustained funding and support in light of uncertainty about future grants and limitations on federal funding. In other words, these government-initiated programs intentionally capitalized on hybrid arrangements to sustain their projects.

5. Discussion and Conclusions

Hybrid governance arrangements provide opportunities for environmental policymaking and implementation in cases where top-down approaches have failed due to policy deadlock. Although there are numerous challenges to collaboration between state and non-state actors across multiple levels of authority, hybrid arrangements such as those observed in this study provide an opportunity for meaningful climate governance at the sub-national level. In the face of uncertainty about future action on environmental policies at the federal level in the United States, sustainable development efforts are increasingly implemented via collaborative governance processes [34–39]. These partnerships among government, market, and civil society actors are creating innovative organizational and civic forms that blur the lines between public and private [13]. Our findings contribute to the broader literature on environmental governance, the majority of which has focused on transnational governance networks, by highlighting an important case of hybrid arrangements at the city/sub-national level. We find that city-level grant recipients in the Energy Efficiency and Conservation Block Grant program cultivated collaborative partnerships as they sought to implement and sustain their programs. These conclusions are consistent with the expectations of Ecological Modernization Theory, which proposes that environmental protection can be achieved via hybrid arrangements that bridge state, market, and society actors [33,34,38,77].

At the same time, we find that the process of developing partnerships under the EECBG program was neither uncomplicated nor without its challenges, especially when it came to working with the state. Although some cities were able to establish programs that fit the expectations of a "strong" interpretation of EMT (increasing public participation, spurring technological innovation, transforming governance approaches) [68,73], other cities were constrained in their ability to move beyond the status quo due to the demands of state bureaucracies and the challenges associated with inconsistent funding. Overall, we find that some hybrid arrangements reflected ecologically modern outcomes, while others took less reflexive, albeit hybrid, forms [66,67,70].

Hybrid arrangements at the city level take different forms based on the specific constellation of actors, political and economic contexts, and pre-existing partnerships [14,15,99,100]. These unique partnerships among state, private, and civil society actors were catalyzed by the availability of federal

funding. Consistent with the findings of previous research on hybrid arrangements, we find that city-level energy efficiency projects that were funded by the EECBGs initiated “new forms of public and private authority” in the urban governance of climate change [13,16]. These programs exemplify what Mol describes as the ecologically modern “ecologized economy:” participation in energy efficiency efforts was incentivized through funding and partnerships leveraged across government agencies, local businesses, and energy companies [24,77]. However, the overall approach of these programs went beyond market-based strategies to engage with local communities while also receiving guidance from the state.

Our findings also highlight the ongoing role of the state in emergent hybrid arrangements at the sub-national level. The local energy efficiency programs we studied through the EECBG program used federal funds as a method of “getting programs up and running” or expanding their existing capacities by creating partnerships with businesses, financial institutions, and other local groups. Consistent with previous research, we find that continued state involvement provided accountability and support during policy implementation [31,32,78,89]. At the same time, we find that some challenges did arise as cities developed collaborative initiatives under the constraints of a federal grant program. Interview data show that the development of partnerships within these programs was constrained by the tight timeline and strict reporting guidelines associated with federal grant funding.

Our research also finds that, although these city-level environmental initiatives benefitted from funding established through federal policies and received guidance and program assistance from federal agencies, they did not rely on the state for long-term support or funding. The inconsistency of federal support for environmental sustainability efforts created an imperative for programs established with EECBG funding to establish other means of sustaining their operations. Organizers of local BBNP initiatives did not expect federal support to be consistent or reliable beyond the short scope of the grant period. To fill this gap, hybrid arrangements were cultivated as a way of sustaining local initiatives once federal funding expired in 2014 [107]. In fact, representatives from the federal government themselves reported that they encouraged these arrangements to make implementation possible and provide opportunities for future monetary support.

This paper has explored a case in which hybrid arrangements were effective in implementing energy efficiency programs at the local level despite broader political and economic contexts that pose significant challenges to environmental policy goals. The sustainability of the EECBG programs in US cities was dependent on the specific partnerships and forms of collaboration that developed over the course of the grant period. Given that climate policies are currently unlikely to advance at the federal level in the United States, sub-national energy efficiency efforts such as the programs described in this paper are especially important. Because hybrid arrangements support these efforts, more information is needed about the specific types of collaboration that are most successful over time. Our findings should also be tested in other political contexts to understand the degree to which the US is, indeed, exceptional [115]. Such specificity will also enable us to understand the ways that Ecological Modernization Theory fits policy implementation of sustainability initiatives in greater detail.

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