Local Governments Taking on Climate Change: Situating City Actions in the Global Climate Regime:

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LOCAL GOVERNMENTS TAKING ON CLIMATE CHANGE: SITUATING CITY ACTIONS IN THE GLOBAL CLIMATE REGIME

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Abstract:

Given the current political environment in the US, there is great doubt about the future of American policy on climate change. Still, the optimistic future of American climate policy relies on the new group of leaders that have emerged from municipal government. Although local government is traditionally ignored in favor of the publicity of international negotiations between countries, cities have established a role at the forefront of climate policy over the past ten years. These local governments serve half of the world's population and often are extremely vulnerable to the impacts of climate change, making their contributions more important than ever. Although they face a unique set of difficulties, cities are able to take a range of actions impossible at higher levels of government, reaching communities in unprecedented ways and innovating new policies. This project aims to analyze how local governments fit into the global political regime on climate change, testing the theoretical framework of multilevel governance against real-life examples in Boston and New York City. Further, this paper finds that cities compensate for their relatively small size and limited jurisdiction through a unique set of actions and collaborative relationships, enabling these local actors to become international leaders on this complex global issue.

Key Words:
City climate policy, Multilevel governance, American local government, City networks, Regional adaptation, Horizontal collaboration, Vertical influence, Boston, New York City

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"A society grows great when old men plant trees whose shade they know they shall never sit in."

- Greek Proverb

Section 1: Introduction

1.A Background

Writing in the early months of 2017, the future of American climate policy sits in an unstable position. Despite former President Barack Obama's leadership and executive actions on this issue, President Donald Trump and his administration have thus far continued to spread doubts about the validity of climate change science and have threatened to abandon US commitments from the United Nations Conference of the Parties (COP) Climate Talks in Paris 2015. However, even as the national government sits on this precipice of disastrous policy, subnational actors from state and city governments have stepped up to lead the American contributions to the global response on climate change.[1]

Conventional understanding of climate change policy focuses on international agreements and national commitments. While there has been mild attention for state efforts over the past few years, city climate action receives even less acknowledgment from journalists and researchers despite its success and potential.[2] The common misconception is to view cities as flattened simply to their local people and properties, separated from global issues.[3] Many people view cities simply as weaker versions of their national governments, unable to act independently or take leadership on an issue. However, in recent years, the amount of academic literature discussing city climate policy has dramatically increased, and this research almost unanimously claims that local governments are important and valuable actors on climate change.

Furthermore, with Trump's election, focus has shifted to subnational actors in a way it never has before. After the presidential campaign, mayors and governors from

across the country proclaimed their resistance to Trump's climate policies, and almost every week brought a new article or letter about these political leaders refusing to wait on national government to act.[4] Americans are looking for new actors on climate change, and lately subnational governments have stood in the spotlight. For instance, on a recent visit to Boston College, the former President of Ireland and climate activist Mary Robinson described this political change at the national level and stated: "I don't want people to feel that the US is no longer leading on these issues."[5] She further claimed that it is important for the rest of the world to feel the "extraordinary progress" of "determined leadership" below the national level. These remarks demonstrate the global significance of city and state actions and allow for a sense of hope even as our national environmental agencies lose their claims to legitimacy.

In many ways, cities are not only the newest but also some of the most important actors necessary to combat climate change. Urban centers hold over half of the world's population, and as hubs of economic action, these areas contribute a large amount to greenhouse gas emissions.[6] This understanding expands on the widely accepted concept of a "global city," or an urban area with an impact on the global economy. Furthermore, these municipalities often are more vulnerable to the impacts of climate change. Two-thirds of the world's largest cities are situated on coasts, exposed to sea level rise.[7] These local actors have taken action on climate change at phenomenal rates and have established a clear role for themselves in the global response to this issue. Cities around the world have established international networks, reduced greenhouse gas emissions, developed new plans for resiliency and even taken positions at the UN. In one particularly substantial action, eighty of the world's largest cities became members of the

C40 Cities Climate Leadership Group, a climate network that now represents over 600 million people and over one quarter of the global economy.[8]

Given this success, academic research is rapidly increasing its focus on this local contribution to climate change efforts. Michele Betsill and Harriet Bulkeley have led this movement and produced a large amount of research.[9] Their foundational work is accompanied by scholars like Rachel Krause, Saskia Sassen and Taedong Lee, who each tend to focus on more specific aspects of city climate action.[10] To review some of the main literature on climate responses to climate change, Benjamin Barber's work finds that mayors are essential to any urban action, a finding supported by this study.[11] Furthermore, Barry Rabe focuses on state climate policy, but his perspective on the importance of subnational action provides a valuable foundation for work on the local level of government. He claims that the US does in fact have a "'climate policy…' albeit one that consists of a number of rather fragmented pieces rather than a single, comprehensive initiative."[12] This conclusion fits well with the broader implications of this paper. Perhaps most importantly for this paper, scholars like Kristine Kern, Arthur Mol, J. Corfee-Morlot and his colleagues discuss the parameters of the theoretical framework known as multilevel governance.[13]

The findings of these scholars and the framework of multilevel governance form the basis for my own research, but in general academic work on this topic leaves several gaps that will be answered by my work below. Most importantly, this paper will use both theories and real-world examples to demonstrate key concepts. This approach is fairly unique compared to the tendency of scholars to either focus on abstract theory or case studies. This perspective will be described in more detail in Section 1.B, but its

distinctive nature is owed to the collection of interviews with city officials in Boston and New York City. In particular, very little research has analyzed how abstract concepts like political legitimacy or vulnerability to natural disasters have practical impacts on city climate action. Similarly, current analyses on the themes and trends in city climate strategies are extremely limited, but this paper will continue to link theories to practical examples in order to place these strategies in context. In addition, this study will address a smaller gap in previous academic literature by illustrating examples of state governments supporting and encouraging climate action at the local level. This finding came almost entirely on information gained in interviews with real city officials, and it is generally a very rarely acknowledge aspect of the relationship between these levels of government. Through this simultaneously theoretical and practical approach, this paper aims to provide a new perspective on the ways in which cities are taking action on climate change.

1.B Approach and Main Themes

This study uses both primary and secondary sources on city climate action. While the examples of secondary research in academic literature are essential to my findings, interviews with Boston and New York City officials served as the primary sources and foundation of this paper. Over the summer of 2016, I interviewed officials from several different departments and agencies, allowing me to gather a range of perspectives on the many facets of city climate policy. Appendix 1 shows the full list of city officials, their positions and departments. From Boston, I spoke with officials from the Metropolitan Area Planning Council, Greenovate, Boston Recycling and Zero Waste, and the Environment Department. From New York City, I interviewed officials from the NYC

Department of Environmental Protection, C40 and the Mayor's Office of Sustainability. While I customized each interview based on the individual's experiences and position, a sample set of interview questions are listed in Appendix 2. All interviews with recorded with the consent of the interviewees (with the exception of my conversation with Axum Teferra, during which the recording device was not functioning properly), and each was sent a copy of this study to approve before its final submission. These two cities are at a far end of the spectrum demonstrating extremely successful climate policy with a supportive state government, and so while their example is not universal to all American cities, their success helps to demonstrate the nuances of different theories.

Examples in Boston and New York City serve two purposes in this research: first to provide practical examples of abstract concepts and second to demonstrate the potential success of city action. An urban approach will inherently be defined by local characteristics such as community values, history of environmental action, state support or vulnerability to natural disasters, and thus it is impossible to generalize based on any individual city's example.[14] Still, characteristics of a municipality's climate policy that are supported by literature or by multiple primary sources have more applicability to a larger scale. Furthermore, the limitations of certain conclusions are fully acknowledged. The report also uses examples from American cities in more resistant states. Overall the conclusions drawn from Boston and New York City highlight the characteristics of effective policy and show potential pathways to a successful response to climate change.

Beyond this primary research in these two Northeastern cities, the theoretical framework of multilevel governance also is essential to this project. While this political structure will be examined in much greater detail in Section 3.C, this theory summarizes

the complex set of actors and relationships that influence policy, making a system of governance rather than government and thus indicating what Hambleton defines as "government plus the looser processes of influencing and negotiating with a range of public and private sector agencies."[15] Beyond governance, Kern and Mol break this multilevel framework down into three dimensions.[16] First, the hierarchical dimension refers to the ways that superordinate levels of government are able to influence the city. Second, the horizontal dimension describes the ways that local actors create relationships with their counterparts in other urban areas both regionally and internationally. Third, the vertical dimension examines the ways that cities are able to "flip" the direction of influence in order to lead higher levels of government. Ultimately, these dimensions demonstrate that local governments play a distinctive and important role in issues that go far beyond their borders. This perspective allows readers to see how cities take part in the "big picture" of the global climate regime.

1.C Hypotheses and Outline

Given this framework, this study sets out with several key hypotheses. First, following the general focus of popular literature and media on this topic, mayors as well as vulnerability to the impacts of climate change will motivate local response. Second, the urban response to climate change will mostly use small-scale strategies that provide benefits at a local level rather than seeking to contribute to global climate change strategies. Third, the federal nature of American government will lead to states having a high level of control over their cities. This means that the division of power between the city and state will prevent the city from having the jurisdiction over the areas of regulation needed to reduce emissions or adapt to climate change. This hypothesis is

based on the widespread understanding and scholarship on decentralized government. Fourth, this study will disprove the common understanding that local governments are only concerned with their own people and geographic boundaries. Even a basic overview of academic literature on the horizontal dimension multilevel governance demonstrates that urban leaders coordinate their actions both with other municipalities and with higher levels of government. Fifth, a final hypothesis predicts that the local response to climate change will face different advantages and barriers not experienced by other levels of government, thus carving a unique role for cities in the multilevel governance response to climate change. This follows the general academic opinion about the importance of urban climate policy and seeks to disprove the common misconception that cities do not take part in this global policy issue.

The layout of this paper will attempt to examine the questions of these hypotheses as follows. Section 2 will provide an overview to some of the general characteristics of climate policy unique to local governments, basing findings mostly in primary research and practical examples. In contrast, Section 3 will focus mainly on theory and academic research, explaining the political structure of decentralized government and multilevel governance in American climate policy. Beginning the analysis of the specific dimensions of multilevel governance, Section 4 describes hierarchical power relations between the city and superordinate levels of government. Section 5 examines the horizontal dimension of city action through international and regional networks and relationships. Section 6 follows with an analysis of the vertical influence of urban governments, which acknowledges some of the larger impacts of city climate action. In all, this study aims to shed light on the ways that local governments contribute to the

global effort to combat climate change through an overview of their unique features and their place in multilevel governance.

1.D Parameters and Key Terms

Before beginning to discuss these important issues, there are a few key parameters that define the rest of this paper. First, findings will be limited to American cities unless otherwise noted. Second, while the history of environmental policy is relevant, conclusions will only apply to policy areas within the issue of climate change unless otherwise noted. Third, this study will examine both adaptation and mitigation policies. Unless a finding refers to one of these goals specifically, conclusions can be assumed to apply to both. While an ideal study would be able to separate the influences and impacts of each of these policy areas, real-world policy often answers both goals. Furthermore, mitigation and adaptation can also share many characteristics, such as economic benefits or a local focus, and thus many conclusions within this paper can freely apply to both major kinds of climate policy. Generally, adaptation efforts are neglected in academic studies on city climate action, and so this blend of strategies allows the conclusions of this paper to fulfill a gap in earlier research.

Furthermore, there are several key terms used throughout this paper that merit clarification. First, the term "state" refers to the American level of subnational government rather than a nation-state. Second, the term "federal" will indicate the American system of decentralized government. The term "national" will be used instead when referring to the highest level of American government with the exception of quotes from academics, who often use the term "federal" to refer to the highest level of government. Similarly, the term "decentralized" will be used both to refer to the federal

structure of US politics as well as to a more general understanding of dispersed power. Next, “global climate regime” references the entirety of political response to climate change, including the actions from every country and every level of government. Last, the terms “city,” “municipality,” “local government,” and “urban response” will be used interchangeably. Unless otherwise stated, “city” and “municipality” refer to the local government within rather than to the geographic location of an urban center and its people in their entirety. These definitions help to clarify the discussion of Sections 2-7.

Section 2: Overview of City Climate Politics

2.A Background

Before diving into the complexities of multilevel governance at the city government level, it is useful to develop a summary understanding of how local governments have engaged with climate politics thus far. By focusing on practical examples of city action, the following section provides an overview of how these municipal governments have approached climate change differently than their counterparts at higher levels of government. This background will assist in the later more theoretical analysis of how city climate action fits into the larger system of multilevel governance and decentralization (Sections 3-6).

2.B Unique Origins of Political Action

City climate action is first distinguished from other levels of government through two of its origins. While local governments choose to act on climate for a variety of reasons, including economic health and public opinion, the most unique stimulating factors are due to the immediate threat of natural disasters and the importance of mayoral leadership at the city level. Stakeholder involvement also provides an important driving force for local climate policy, as will be examined in Section 2.D. These independent and internal factors drive cities to have different policy strategies than other levels of government.

Difference from State and National Government

In contrast to these important origins for city action, national response is obstructed due to a different set of factors. Most importantly, the influence of lobbying from large corporations and their "seductive bank accounts"[17] has long helped to create

the partisan divide and climate denial at the national government that plagues any attempt to create climate policy. In contrast, republican mayors from cities in Florida and New Jersey have collaborated with Democratic leaders on adaptation measures,[18] and likewise, Republican communities led a climate action initiative in San Diego County due to the area's vulnerability.[19] Although some cities, such as Bloomington, Indiana,[20] have leaders that are unsure about or deny the human impact on climate change, this uncertainty does not occur with the same partisan divide and outright rejection of science as it does at the national level. Carl Spector, the Commissioner of the Environment Department in Boston, demonstrates the decreased impact of scientific uncertainty in municipal government when he claimed that there is less uncertainty in models on sea level rise compared to what most people would assume.[21] Without this barrier, local governments are more open to taking action on climate, especially if there is a persistent threat of natural disaster or strong mayoral leadership.

Natural Disasters and Vulnerability

Sitting on unstable coastlines with significantly altered landscapes, cities are some of the most vulnerable sites of human habitation. Stone finds that the impacts of climate change are even amplified in the city, as demonstrated by the increased intensity of heat waves within an urban heat island.[22] The city of Boston particularly exemplifies this vulnerability to natural disasters due to the city's history of building on landfill close to sea level, and many areas downtown already flood routinely. Furthermore, a vulnerability assessment of the region surrounding Boston examines danger such as sea level rise, increased hurricane intensity, increased precipitation and changes in water quality.[23]

Although this increasing vulnerability occurs gradually along with climate change, actions to adapt to this new vulnerability are "often reactionary, coming after a dramatic change event."[24] The immediate impact and community disturbance that follows makes cities more likely to take drastic action following a natural disaster. As Elizabeth Hanson, the C40 City Advisor for NYC, stated, "We are… on the ground facing the impacts that we're already seeing of climate change."[25] Several officials from Boston and New York City agree that Hurricane Sandy prompted new climate policy, and the sudden increase in climate-focused programs after the hurricane show practical evidence of this. As one Boston resident stated, "Superstorm Sandy really was the wakeup call for the northeast about climate change." There is a large amount of academic support for the way that increasing vulnerability to natural disasters can motivate city climate action, including Van de Meene, Lee[26] and Krause,[27] as well as studies by C40[28] and the Metro-Boston Preparedness Task Force.[29] Giest and Howlett claim that "because they are directly affected by the consequences of environmental transformations, cities are motivated to shape adaptation and mitigation" of climate change, thus explaining why natural disasters drive climate action much more forcibly at the local level rather than at the state or nation.[30] Likewise, Barber explains this increased influence in two key ways. First, "city officials will be the first to be held accountable by angry residents."[31] Second, "come hell or high water… (local governments) have to worry about plowing the streets and providing parking."[32] This immediate accountability to daily citizen life ensures that municipalities are inherently concerned with threats to basic city operations. Unfortunately, local governments are often confined to this reactionary response in policy

rather than holistic and preventative measures due to a lack of jurisdiction, creating a barrier to city climate action that will be further analyzed in Section 4.A.

Political Leadership

While political leadership plays an important role in all levels and forms of government, mayors appear to be especially significant in creating city policy. Unfortunately there is a significant gap in the literature to compare the roles and powers o mayors, governors and presidents, making it difficult to draw a legitimate comparison between these executive powers. However, the large amount of academic literature focusing on mayors as well as the repeated claims from city officials about the mayor's importance suggests that this political leader may play a larger role at the local level of government. Similarly, logical assumptions based on the city's decreased buraurcracy and consequential higher level of centralized control suggest the same. Still, it is impossible to fully compare political leaders from these different levels of government until this gap in academic research is fulfilled.

Mayors and local political leaders are extremely well studied in academic literature, but many scholars argue about the weight of their contributions. Krause finds that policy entrepreneurs are the second most important factor for determining city climate action,[33] and likewise Taedong Lee places political leadership as the second most important factor after his own emphasis on transnational networks.[34] Agreeing with authors like Wilson and Starr, Pressman claims that mayors are able to use personal leadership skills to overcome potential barriers.[35]

At the same time, a few academics argue that mayors may play a smaller or more symbolic role. Hambleton claims that the role of the mayor is outdated in globalization,

arguing for more dispersed leadership structure.[36] Shi and her colleagues believe that these leaders can be resistant to climate policy,[37] and even Pressman finds that other actors may play equally important roles to the mayor but may simply be less visible.[38] A tangible example in Bloomington, Indiana mentioned earlier demonstrates that often environmental policy can be established without the support of the mayor.[39]

Still, the literature overwhelmingly finds strong support for the role of the mayor, and my interviews with officials from Boston and New York City repeatedly support this opinion, making me inclined to agree. In Boston, Mayor Menino helped to some of the first sustainability programs, including bike rentals and a green buildings task force, and personally initiated the city's first climate action plan.[40] Similarly, Mayor Walsh has remained a strong supporter of climate policy.[41] Carl Spector of Boston described the strong mayor-focused form of government and stated that "none of this (climate action) happens unless the mayor is a strong supporter of it."[42] Similarly, Mayor Bloomberg is an international leader in pushing for climate policy, initially for emissions mitigation with PlaNYC and then turning to adaptation after Hurricane Sandy with the Special Initiative for Rebuilding and Resiliency (SIRR).[43] Alan Cohn, a Climate Program Director for Integrated Water Management in NYC, noted that many city resiliency efforts were prompted by Bloomberg initiatives." [44] Bloomberg even received international recognition for his leadership through his appointment to important roles like the chair of C40, a transnational network of cities on climate change, and the United Nations Special Envoy for Cities and Climate Change, making him, what one scholar described as, the "Mayor of the World."[45]

However, while mayors have played an important role in both Boston and New York City, such a level of dependence on one leader can create barriers for climate action. As Mia Goldwasser, a Climate Preparedness Program Manager in Boston noted, the real challenge is sometimes simply getting an issue on the radar of the mayor's office, making it difficult for climate policies that often are expensive and only produce benefits in the long-term to compete with "pressing, more urgent issues."[46] Similarly, the election of a mayor who is resistant to progressive action on climate would have disastrous impacts for related policy. In this way, the centralized power of the mayor can work either in favor or in opposition to successful climate policy depending on his or her own leadership. State and national governments have a more decentralized structure, making them unable to shift as quickly with a progressive leader's initiatives but also preventing a drastic decrease in programs during the tenure of a more conservative leader. Overall, mayors have still provided a more positive force to encourage climate action, making them key players in urban responses to climate change.

2.C Involvement of Community Actors in City Policies – Introduction

Background

City climate politics are further distinguished and heavily influenced by the participation of local stakeholders and community actors. This active citizenry includes voters, businesses, nonprofit organizations, universities and many other groups. While interest groups play an important role at higher levels of government through lobbying and campaign donations, local actors are able to participate in urban government in a different way. Municipalities respond to the demands of these groups by establishing new policies and shaping them to retain community interests and participation. Groups like

the Green Ribbon Commission (a union of businesses), the Barr Foundation, and a progressive and active set of voters have all contributed to the successful policy response to climate change in Boston.[47] Similarly, Elizabeth Hanson, a NYC official, acknowledged the importance of the actors when she said, "We're very fortunate to have very dedicated stakeholders here in New York City. So to some extent I think we're among the best equipped in the world to try and try and figure out these solutions and policies."[48]

Stakeholder Motivations

These examples demonstrate the active interest of community actors in climate action, but a common misconception is that many of these actors would resist further regulations and "red tape." There are a variety of overlapping reasons that any particular interest group would choose to engage with city climate policy, which can be broken into three larger categories of legitimacy, resources and culture. First, community groups that are established to address climate change are able to legitimize their message through partnership with city governments. For example, the Emerson Engagement Lab and the World Wildlife Fund reached out to Boston to help test a game to engage the public because of the city's ability to reach these local actors, demonstrating how some groups may wish to spread their message through a city's position.[49] Second, stakeholders can gain resources from municipal governments in a variety of ways, especially if the city has a more progressive climate response. Public transportation businesses such as FlyCycle seek out government contracts.[50] Similarly, partnership with city governments allows environmental nonprofits to gain access to city funds. For instance, the Boston Living with Water Competition was a collaborative effort between Boston Harbor Now and the

city's own departments, enabling this nonprofit to access a grant limited to city governments from Coastal Zone Management. Furthermore, businesses or institutions can simply be motivated by the economic threat that increased natural disasters place on their infrastructure investments. These stakeholders have long-term investments in the community, a factor that makes them distinct from the short-term election cycles that motivate many politicians. In addition,

Third, these community actors may be more indirectly influenced by the culture of the city and its people, particularly if it is as progressive and liberal as Boston and New York City tend to be. This response to larger community values can be completely unintentional, in which a local organization or community group may reflect the attitudes of its residents and may feel the need to "do their part" for responding to climate change, particularly if they feel that government action is lacking.[51] Similarly, organizations that are rooted in such a value-based culture, such as Boston Harbor Now, may have it firmly in their missions and processes to include sustainability in their work. Last, community groups may be influenced to take a more progressive persona on climate action in order to benefit from increased attention and a reputation of leadership, a goal that Bulkeley notes can be as desirable for businesses as it can for politicians.[52]

Disagreement in Literature

Academics debate the importance of local stakeholders, but overall I find that these groups are essential for successful climate policy. Academics like Verschuuren and Kazin claim that the participation of local actors is essential for environmental policy, affirming the conclusions of the National Research Council.[53] Likewise, Betsill and Bulkeley find that there is a "growing influence of a range of non-state actors in shaping

urban climate governance."[54] In contrast, Susskind argues that these groups have "narrow self-interested reasons" based on "short-term agendas"[55] and believes that they are simply too difficult to access, a conclusion that Anguelovski and a C40 report affirm.[56]

Despite this debate, I find that these stakeholders are important to climate policy due to the strong demonstration of their support in Boston and New York City as well as the increasing motivations for these groups to take action. The community actors in Boston and New York City primarily help to promote climate action, but it is certainly true that some interest groups in certain cities would likely push back against increased regulation. However, the number of motivations for local actors to support climate policy described above suggests that the kinds of actors who work at this local level will be more likely to support rather than resist these protective measures. Furthermore, a closer look at the community actors in Boston and New York City shows that these actors are invaluable in shaping the urban response to climate change. For instance, they can stimulate climate policy (Section 2.D), and then policy comes to address their needs in return through framing (Section 2.E) and the type of strategies used (Section 2.F). As Bulkeley concludes: "Private actors are increasingly seeing cities as places within which to act on climate change… Public and private authority is being reconfigured and contested through urban responses to climate change."[57]

2.D Stakeholders Stimulating Climate Action

Often these stakeholders view it as their job to stay ahead of the city government and encourage it to take political action on climate change, a stance supported by Anguelovski as well as Corfee-Morlot and his colleagues.[58] These groups help to

stimulate action in two key ways: direct action and indirect influence through the need to obtain political legitimacy.

Direct Action

Stakeholders can prompt climate policy through direct action, whether that be through political pressure, information gathering, financial support or team participation and expertise. First, direct pressure for a specific program from community organizations may persuade a municipality to take action. For instance, one member of an environmentally-focused nonprofit in Boston stated that the role of these kinds of organizations was to "keep the issues on the table" and continually persuade government of their importance. Second, the Metro-Boston Regional Task Force on Climate Change noted that a report from Boston Harbor Now on rising sea levels was beneficial for the Metro-Boston Regional Task Force on Climate Change, thus demonstrating the encouragement from sharing information.[59] Third, groups like the Barr Foundation and the Kresge Foundation have donated millions of dollars to climate adaptation efforts in the last few years.[60] Last, cities often rely on the participation and expertise of these stakeholders to complete policies. Scholars like Fisher, Corfee-Morlot, Bedsworth and Hanak describe the important role of these groups in collaborative projects with city government. [61] Likewise, Mia Goldwasser, Carl Spector and Elizabeth Hanson described the importance of the expertise of these private groups in their working groups for projects like Climate Ready Boston, Climate Action Plan, and a project to limit emissions from buildings in both Boston and New York City.[62] In another example, the MetroLab Network links a city to a local university in order to leverage academic expertise, partnering NYC to New York University.[63] As one member of the environmentally-

focused nonprofit in Boston mentioned earlier said, "We're not background to the city… I would call us allies."

Indirect: Political Legitimacy

In addition to their direct prompting of city action, community actors can hold sway and power over local residents and indicate their interests. Thus, obtaining the support of these groups is a matter of maintaining political legitimacy, a characteristic that governments always pursue in order to avoid instability.[64] This is a more indirect force, and thus it can only be seen in the connection between community interests (particularly indicated by a reputation for liberal culture) and past policy, a point that scholars frequently comment on. For instance, Betsill, Kazin, Zahran and others observe that it is the communities with a liberal political constituency or prior interest in environmental issues that are most likely to respond to climate change.[65] Other authors like Wilson and Starr emphasize the particular need for mayors to maintain political support.[66] Frickel and Davidson take a more theoretical approach and finds that countries can only lead in sustainability issues if they are able to rationalize state environmental roles, which depends "critically on the types of linkages between nation-states and actors within civil society."[67]

While authors use the abstract theory of political legitimacy as helping to explain the actions of city government, only a few provide concrete examples. Starr's work on the history of New York City and Krause's finding that the city of Denver's "climate involvement was linked to (the mayor's) larger vision of establishing Denver as an environmental leader" are notable exceptions to this.[68] This gap can be further addressed by empirical examples in Boston. For example, Susan Cascino, the city's Director of

Recycling, described the history of the local recycling program, noting that the community volunteers for the early initiative influenced the mayor to keep it on the city budget when she said, "There was constituent demand… and the city responded to that."[69] The vast range of programs that target community participation and (described in Sections 2.E and 2.F) also help to show the importance of serving local interests through climate policy. Furthermore, the opinion of one member of an environmentally-focused nonprofit in Boston helps to explain the purpose of this overlap between community interests and programs. They claimed: "If you're going to go ahead of the curve, you absolutely need political cover," noting that an organization's support demonstrates "the people's will." In addition to this regular practice through the culture of sustainability and progress in both Boston and NYC, these cities show that the demand for political response to maintain legitimacy is especially important following a natural disaster (described above in Section 2.B). Their responses after Sandy help to show that city governments will be held accountable for the losses sustained during a natural disaster, likely regardless of the culture of the community. This finding is further supported by the public outcry following the government response to Hurricane Katrina in New Orleans.

Despite this general finding of the correlation between a culture that has prioritized progressive or environmental action and climate policy, Krause's finding that "city staff of 70% of US cities with an explicit climate protection effort described responding to interest group or citizen demands as only a 'somewhat' or 'not important' motivation for their climate initiatives."[70] Still, the repeated demonstration of the dual presence of both a culture of environmentalism and progressive climate policy suggests that this correlation is more important than city officials may recognize, likely due to its

indirect and hidden nature. While higher levels of government are also influenced by liberal cultures,[71] a community opinion from such a large population will likely lack the unity of the smaller city community. Thus political legitimacy will likely play a larger role in stimulating climate policy at the urban level than at superordinate levels of government, and its impacts can be seen tangibly through the framing of climate policy and the types of strategies used (discussed in Sections 2.E and 2.F below).

2.E Impact of Stakeholder Involvement – Framing

What is Framing

A vast range of scholarship examines the framing of city climate policy, and while climate change is approached in many different ways at all levels of government, there are two key frames related to the city's close relationship with its stakeholders. First, city climate action tends to have a local focus. Second, the benefits of action expand on this localization and are presented more as economic co-benefits or financial savings rather than for a contribution to global climate efforts. Framing is even more important for the actions of local governments because municipalities use persuasive power rather the top-down authority of higher levels of government.[72] As mentioned previously, Frickel and Davidson emphasize the importance of rationalizing government roles in environmental policy.[73] Often times, these frames can overlap, so that a policy to reduce emissions can be demonstrating both global leadership on climate change as well as a decrease in monthly electricity bills. This frequently inherent relationship between the two seemingly conflicting frames makes it nearly impossible to analyze these frames in isolation, but the following paragraph will attempt the useful task of drawing out the elements of each frame. Still, city actions tend to have a local focus that emphasizes

economic co-benefits of climate action rather than addressing climate change as a global issue.

Local or International Focus

The origins of city action in natural disasters and the need to find political legitimacy (described above in Sections 2.B and 2.D) lead to a local frame. This means that city action is generally framed as a local effort with local benefits rather than a contribution to the international reduction in carbon emissions.

International-focused actions still occur primarily in global networks of local governments and in the search for a global reputation. First, international city-to-city networks inherently will encourage actions that are based on a global strategy. For instance, Taedong Lee examines the ways international networks influence mitigation actions, and Beal and Pinson find that mayors are partially prompted to action through the growing globalization of cities.[74] Boston's Living with Water competition, which invited international participation, provides a more concrete example of this type of framing. More tangibly, the large amount of academic research on international city-to-city networks demonstrates that many cities, albeit generally the largest ones, can take action on a global level (See Section 5). Second, mayors and city leaders interested in political leadership and reputation are particularly interested in international action in order to establish themselves and their cities as global leaders. Anguelovski finds that cities are motivated by the desire to "demonstrate leadership, and build the image of the city in national, regional or international arenas."[75] Again, New York City serves as an example of a global city through its commitments to reduce greenhouse gas emissions, an action that primarily benefits the international effort to reduce emissions. Just so,

Elizabeth Hanson, the city's C40 City Advisor, noted that Mayor de Blasio's pledge to reduce 80% of emissions from a 2005 baseline by 2050 is based on the target outline by the UN.[76] This commitment was also required by the Carbon Neutral Cities Alliance (CNCA) of which New York City is a member, but it helps to show how a global city can choose to take actions on climate change akin to those from different countries. This example helps to show how involvement in an international network provides the opportunity for local government officials to establish themselves and their city as global leaders on climate change.

While international action is extremely important, especially in networks and political leadership, these strategies are only one part of a larger climate regime, much of which focused on local action. This trend of a local focus logically allows climate policy to addresses local needs rather than pursuing a more abstract public good. This focus is supported by authors such as Betsill, who believes that "ultimately, motivating local action to mitigate global climate change calls for an indirect strategy, focused on the ways in which emissions-producing activities are embedded in broader community concerns."[77] In another work with Bulkeley, Betsill claims that the need to address environmental issues from a local perspective has been a common trend in green political thought since at least 1987.[78] This supports Jasanoff and Martello's finding that "environmental politics… has historically been a politics of the local," a tendency that has been rekindled in light of climate change.[79] Betsill and Bulkeley further develop a theory that following a period of municipal voluntarism, the second phase of an urban response to climate change is to "re-frame" climate change as an issue with significant local implications, and Sassen similarly argues for the benefits of this local approach.[80]

Similarly, Barber says that a global commons will be "sustainable only if cities and citizens make it their common cause."[81]

This large amount of academic support for the importance of local framing is further affirmed by practical examples. For instance, the Department of Environmental Protection's Bureau of Environmental Planning and Analysis (BEPA) is looking to use integrated water management in order to address local needs and to improve communities.[82] In addition, Jessica Feldish, a Program Manager in the Boston Greenovate program, described her community engagement work as the "sidewalk talk of climate change" with the opinion that it is "really important to emphasize the things that are specific to Bostonians."[83] The Greenovate program works to motivate and educate citizens in order to mobilize their daily behaviors and make an individual contribution to climate action.[84] In addition, the resilience plan for the city of New Orleans focuses on "main streets" as the starting point of analysis, looking at centers of community and economic life as the essential aspects of climate policy.[85] Likewise, the vast number of reports on the local impacts of climate change demonstrates an effort to make this abstract global issue into a local one.[86] These examples show the strong use of a localized approach to climate politics. Even still, the international aspect of action is often inherently connected to local policies. For instance, Elizabeth Hanson's joint position in reducing emissions from buildings for both C40 and New York City helps to demonstrate how the same action can be both international and local focused.[87]

Co-Benefits or Climate Leadership

Betsill claims that climate change policy is "most likely to be reframed as a local issue" when the action can be linked to issues already on the local agenda, and just so,

city climate actions are further localized through the framing of advantages as co-benefits as opposed to climate leadership for its own sake.[88] Krause develops a persuasive argument here, claiming that it is important to frame issues in order to affirm that the causes and consequences of the issue are within the city's power to change. She argues that this often leads to a series of policies that are only implicitly related to climate change, finding that most city level actions are framed as being taken for energy or cost-saving reasons.[89] Likewise, scholars like Matisoff, Anguelovski, Rabe and others find that climate change policy tends to focus on the vast number of co-benefits.[90] Betsill also finds that a focus on co-benefits allows city politicians to avoid the debate about the legitimacy of climate change science, providing an advantage to municipal action.[91] Bedsworth and Hanak support this conclusion, and similarly, Krause finds that co-benefits allow for more bipartisan support of climate policy.[92] Thus, Betsill finds that ironically, the "most effective way to get municipal networks to mitigate global climate change is by *not* talking about global change; the best strategy may be to 'think locally, act locally.'"[93] For example, sustainability efforts in the more conservative Bloomington, Indiana focus on money-saving benefits, a local issue, rather than framing their work on climate adaptation, a global issue.[94]

Notably, a C40 report found that in city staff in Portland, a place where citizens are generally supportive of climate action, had to be more flexible in their messaging due to competing budget priorities and to, as Bedsworth and Hanak describe it, "foster broader community buy-in."[95] The C40 report further emphasizes the importance of "presenting the case" for climate action in terms of financial benefits and improved health and equity beyond "simply reducing emissions or risks from climate change."[96] An

example in Boston practically demonstrates this strategy. The executive summary on Mayor Menino's Green Building Task Force Report is entitled, "Everyone benefits from green building… everyone," and the entire report goes through each possible co-benefit of green construction.[97] Just within the front cover, a quote from Menino reads, "High performance green building is good for your wallet. It is good for the environment. And it is good for people," showing a choice to blend the benefits of this climate action in order to gain more support.[98]

While authors such as Betsill, Bedsworth, Hanak, Corfee-Morlot and his colleagues describe many kinds of co-benefits, including health, equity, energy security, vulnerability and ecological protection, the most common frame for climate policy is through economic savings.[99] Betsill claims that: "cost-effectiveness is the ultimate criterion on which city councils make budget decisions. It is thus important for city officials requesting money for climate-related projects to demonstrate the economic benefits."[100] This is supported by Krause's finding that a large margin of city governments state that their primary motivation in climate policy is to reduce energy-related expenses.[101] Alan Cohn, the Climate Program Director at the Bureau of Environmental Planning (BEPA) within the NYC Department of Environmental Protection (DEP), helped to demonstrate this financial focus when he said that his department's role is to find "more cost effective solutions."[102]

While this trend towards a framing of co-benefits generally creates wider public support for climate policies, there are also some drawbacks to this strategy that may adversely impact city climate action. Frickel and Davidson predict a very negative consequence from this kind of framing, claiming that: "Environmental improvements

undertaken in an effort to maintain political legitimacy are not likely to permit or support deeper reforms necessary to sustainability," resulting in incremental and often conflicting policies rather than truly addressing the root causes of environmental issues.[103] Given this plausible outcome, any government that uses a co-benefits framing must be careful not to become over-dependent on these additional benefits and must make a habit of rationalizing environmental policies for their own sake.

As noted previously, framings to emphasize co-benefits or to recognize climate leadership in its own right are often inherently interconnected. Overall, while climate policy is often framed to focus on saving costs, it is unlikely to ever be established solely for this benefit. This demonstrates how delicately framing is used in an effort to maintain political legitimacy. Furthermore, just as there is the need to maintain public support and legitimacy is somewhat satisfied by naming the co-benefits of climate action, a different kind of public demand requires cities to take actions that address climate change for its own sake. This climate leadership is often tied to a desire to establish an international reputation for a city. International frames become tied to climate-specific actions, often in the form of international intra-city networks, which will be further discussed in Section 5.

2.F Impact of Stakeholder Involvement – Types of Policy

The unique origins, stakeholder involvement and framing of city policy also contribute to an emphasis on certain kinds of policy. Local response to climate change is most unique for its general trend towards adaptation and community participation. It is impossible to directly connect the selection of these types of policy to the characteristics described above, but one can still find hints of the influence of vulnerability, political leadership, the impact of stakeholder interest and the local and co-benefit framing.

General Focus on Adaptation

Overall, cities tend to focus more on adaptation than higher levels of government.[104] Mitigation remains a significant part of city climate policy and often makes up the majority of climate related programs,[105] but the proportion of adaptation policies seems to be higher than state and national action. Supporting this claim, Romero-Lankao and her colleagues find that there is "increasing attention to adaptation among planners at all levels of government but particularly at the municipal level."[106] For instance, New York state passed a law on a resiliency policy in 2014, but NYC has an established Office of Recovery and Resiliency that works to consider adaptation needs in every government process.[107] Although academic literature lacks a quantitative review of this balance between mitigation and adaptation policy in cities, a variety of factors suggest that local governments take a strong interest in resilience.

First, academic literature claims that there is a connection between a focus on adaptation policy and increased vulnerability to climate change impacts, described above in Section 2.B. For instance, Graham and her colleagues found that Hurricane Sandy led Mayor Bloomberg to focus on resilience policy with his Special Initiative for Rebuilding and Resiliency (SIRR).[108] Similarly, both Krause and Betsill found that high levels of vulnerability generally increase adaptation efforts.[109] John Brock, a Project Manager under the Bureau of Environmental Planning and Analysis (BEPA) at the NYC Department of Environmental Protection (DEP), stated that the adage that "There is always a larger storm" has prompted preventative adaptation policy.[110] Continuing this support, a C40 report found that the "growing frequency and magnitude of climate-related shocks" led to a increasingly urgent adaptation response, causing adaptation-

related actions to grow from 11% of all climate actions in 2011 to 16% in 2015.[111] This finding suggests that the importance of resilience policy will only increase as the threat of natural disasters intensifies with climate change, a prediction that has already come to fruition in Boston's extremely vulnerable construction. The city's low-lying landfill base is already often flooded in large storms and likely has motivated the successful adaptation policies already in place, such as a recent group of innovative architectural proposals to make public spaces near the coastline into tiered landscapes.[112]

A tendency to increase resiliency also reflects the local and co-benefit framing described in Section 2.E. For instance, Van de Meene and Lee's claims that mitigation is considered long-term and large-scale while adaptation appears to provide short-term and immediate benefits.[113] This finding would indicate that a policy framework based on local co-benefits of climate action would likely tend towards adaptation-based strategies. Krause supports this claim when she finds, "Adaptation, unlike mitigation, provides direct local benefits and thus should not be hindered by the barriers" of collective action.[114] In addition, some adaptation policies can provide co-benefits for resilience against other social ills.[115] Mayor Bloomberg's PlaNYC program demonstrates how closely these benefits can be intertwined through its triple focus on equity, sustainability and resiliency.[116] By supplying immediate local benefits, these policies respond to the need for political legitimacy.

While I agree that adaptation policies almost always produces these local benefits, mitigation actions can do the same,[117] again leading multiple themes of urban action to overlap. Furthermore, adaptation policies generally focus on local or regional changes, maintaining action within the limited jurisdiction of the city. For instance, Houston and

Toronto have projects to rebuild the storm water infrastructure in their cities to adapt to flooding hazards.[118] The impacts of this limiting authority will be examined further in Section 4.A, but for now, it seems that while mitigation efforts can be limited by this small authority, adaptation actions can flourish in the same conditions. Still, some city leaders in Boston suggest that adaptation policy inherently increases the commitment to mitigation policy.[119] As noted throughout this section, other framings can also overlap with these two kinds of policy. This can lead to several different combinations of framing still based on these unique elements, making city climate policy diverse and flexible. leading to locally-focused mitigation policy that attempts to provide co-benefits.

Community as a Target for Action

City climate policy also aims to achieve high levels of community participation, indicating the impact of stakeholder involvement, political legitimacy and local framing. This participation is more initiated by the city government than the prompting forces described in Section 2.D, looking to the community as a resource to be tapped through voluntary participation rather than a stimulating force or top-down regulation. A fair number of academics and reports affirm this focus on community action within city policy. For instance, Anguelovski describes it as "community-based adaptation" approaches, and a UN Environment Programme (UNEP) argues that a primary way for cities to reduce climate impacts is by influencing their citizens' behavior.[120] For instance, educational policies can encourage people from the suburbs to use public transit rather than drive cars in order to reduce emissions or to build rain gardens to reduce flooding. Prager similarly claims that collaboration (here referring to high participation) is key to natural resource management and environmental policy, and Weinberg and his colleagues

go farther to claim that the lack of local participation in the recycling program in Chicago led to the ultimate degradation of environmental efforts.[121] In addition, some scholars believe that the greater focus on natural disasters and adaptation policy can lead to increased community participation, a more indirect connection. Randolph claims that climate adaptation plans need to engage the public rather than continue top-down practices, suggesting that a community response is beneficial following a natural disaster.[122] Similarly, Prager finds that a community-based approach is more effective with the "proximity" of environmental problems.[123]

Furthermore, pursuit of political legitimacy and a local framing are closely related to this community focus. Involving local actors in policy will give them a stake in its success, thus increasing their support for a political agenda. Similarly, policy that aims to address local needs and concerns can most easily do that through simply involving the community within. Overall, the unique local focus of cities encourages them to engage with the public in their climate policies.

Over time, climate policies in New York City and Boston have increasingly aimed to target local actors. For example, Alan Cohn and John Brock, who both work in the Integrated Water Management Group within the NYC DEP, describe the department's recent growth. A new director recently began to push the department to move beyond its traditional focus on maintaining large infrastructure in order to consider community participation and more decentralized policy.[124] Their efforts have since grown from an early challenge to restaurants to decrease water use to a recent and very large public competition to reduce the number of plastic bags in New York's Waterways.[125]

This hands-on community-based approach earned the department an EPA grant to further develop its growth in peer-to-peer learning and partnership.[126]

Community-targeted environmental policy has a longer history in Boston but has similarly increased in recent years. In 2006, Mayor Menino established the Greenovate Awards to recognize stakeholders who led on sustainability efforts in the city.[127] Mayor Walsh has since developed this program to assist in the implementation of the City's Climate Action Plan by working with the public and performing outreach. As Jessica Feldish, a Program Manager for Greenovate, stated: "The focus is really getting Bostonians to take climate action" on their own terms.[128] This statement demonstrates the city's understanding that community participation is an important resource in reducing emissions. While Feldish noted that the program's dedicated focus to community involvement is "unique," it is clear from the expansion of Greenovate that Boston has invested heavily in this engagement and finds its benefits useful in achieving their overall goals.[129] She described Greenovate's purpose as "really sourcing the work that our colleagues do and making it accessible to the broader community."[130] Similarly, Susan Cascino, the Director of Recycling in Boston, found that her department's role is to disseminate information about larger policies, looking at how changes at the state level will affect the community and how best to increase local engagement.[131] Cascino noted the difficulty of prompting behavior modification, but this continued commitment of staff and resources demonstrates Boston's understanding of the importance and value of community participation.[132]

A few programs in Boston show that the city targets the community in order to use these stakeholders as a resource. While the importance of their direct assistance was

described above in Section 2.D, this collaboration is prompted more by the city and expands on the idea of expertise. For instance, the Climate Action Plan collected two years of community input, prompting the city to develop the Greenovate Program as well as Climate Ready Boston.[133] In this way, the city allowed the community to access its policies and stimulate action, thus benefitting both public and private actors. Similarly, the Designing with Water Challenge sought out new ideas from the community through a competition to build a more resilient waterfront. Programs like these examples rely on voluntary participation and can benefit city policies by finding new ideas and further engaging the community.

Cities have a unique ability to access these community stakeholders, finding a new path for climate policy that may address some past policy gaps. It is a common sentiment, at least within the city officials of Boston, that this accessibility is a trait unique to local government. Carl Spector, the Commissioner of the Environment Department in Boston, described this detailed outreach as the "power of the cities," noting that it is "hard for the state to do that."[134] Similarly, Mia Goldwasser, Boston's Climate Preparedness Program Manager, claimed that the "state doesn't engage communities… in the same way that the city can."[135] A few academic scholars comment on this accessibility, including Krause, who supports these Boston officials' statements by claiming that local government is "closest to the citizen and may be able to influence local resource use in a more targeted way than other levels of government."[136] Similarly, Sassen writes on this larger role and finds, "Cities are critical for emerging intercity networks that involve a broad range of actors… that potentially could function as a political infrastructure with which to address some of these global governance

challenges."[137] This statement hints at a larger understanding of the city's role in the global climate regime, which will be analyzed throughout the rest of this paper.

2.G Concluding Thoughts: Importance of Accessibility

Thus far, local governments have engaged with climate politics in several key ways. Distinctly motivated by vulnerability, political leadership and the driving force of stakeholders, the urban response to climate change uses a framework focused on local co-benefits of action, an increased focus on adaptation policy and community engagement. While cities take action for many other reasons and use many different strategies, the characteristics described above help to give an overview of how city climate politics may be unique from actions at higher levels of government.

Most importantly, impacts on policy described in Sections 2.E and 2.F truly distinguish local response to climate change. In particular, local focus and accessibility to stakeholders are essential to building the community support for the broad-sweeping policies that climate change requires.[138] By making this abstract global issue into a tangible aspect of daily life, local governments can build a stronger culture of environmental action, which in turn will continue to push the government to create more progressive policy. This back-and-forth between stakeholders and city government allows the community to encourage or amplify a policy response to climate change while simultaneously providing the municipality with the unique benefits of widespread participation. For instance, the city of Boston targeted the community by helping to establish the Green Ribbon Commission, a group of businesses working towards sustainability, and this group eventually has come to put pressure on the government to increase its climate efforts. In the other direction, community input led to the

establishment of Greenovate, which now offers greater opportunity for stakeholders to access government. City governments are able to communicate with local actors through this faster feedback loop, making more effective and increasingly progressive climate policy. As acknowledged previously, some municipalities that lack the vulnerability, political leadership or culture of environmental action will be less likely to have this back-and-forth progression of climate change policy. Regardless, this accessibility is one of the most important and distinctive features of city climate action, especially as the impacts of climate change increase and thus prompt more cities to action. With this background in mind, one can more closely analyze the ways that the city relates to other levels of government in order to find factors that distinguish the local response to climate change.

Section 3: An Introduction to Multilevel Governance

3.A Background

In order to fully investigate the factors that lead an American city to establish climate policy, one must also consider the impacts that higher levels of governments may have on their municipal counterparts, both from the national and state level. City officials and scholars agree that city climate action often stems from a lack of action at higher levels of government, generally noting that subnational efforts "fill a policy void" left by national inaction.[139] For instance, Baltimore's Office of Sustainability cited their state governor's lack of advocacy as a strong motivation to become more of a leader in this policy area.[140] However, the influence of state or national government goes beyond simply prompting the origins of city climate policy.

The different levels of government are often perceived as being separate entities that work independently from each other, taking a literal interpretation of the phrase "division of power." For instance, Barber argues that cities and states are "necessarily in tension," showing the common misconception that cities function in isolation from their counterparts at the state and national level.[141] Instead, the impact of a city's relationship with higher levels of government constitute a much more complicated dynamic than a simple hierarchy or battle between progressive and inactive levels of government. Corfee-Morlet and his colleagues' argument aligns with the broader academic concept of multilevel governance, an abstract perspective found to be a "critical factor shaping urban climate governance."[142]

As increasing numbers of municipal governments are engaging in various activities that can be described as multilevel governance, the form of national

government in the US plays a key role in shaping the urban response to climate change, , a principle confirmed by Jorgensen and others' work on Belgian city climate policy.[143] Thus an overview of federalism and cities' traditional roles in environmental protection provides helpful background before analyzing the more abstract theory of multilevel governance.

3.B Decentralization and American Federalism

American federalism is built both on hierarchical and decentralized forms of power, meaning that loose environmental regulations come from centralized government and are implemented in the various lower units of more localized government. While these two characteristics may seem to be in conflict, the following overview of past environmental policy helps to show each element in turn. However, in times of where there is a lack of support or efficient action by centralized government, as there is today on climate change, this hierarchical relationship loses some of its importance while decentralized action becomes increasingly significant.

Common knowledge and academics disproportionately focus on policy at the national level, and while it is true that many environmental policies originate at this centralized government, environmental issues in the US are traditionally marked by heavy reliance on subnational actors for implementation.[144] States and local governments began regulating early environmental issues long before national government became active in the 1970s.[145] This decentralized responsibility only became more prevalent under President Reagan, who pushed for enhanced state government, and with it reduced national environmental regulation. Since then, national government has failed to take concrete and effective policy action on the issue of climate change, despite the efforts of

President Obama's executive orders. As recently elected President Trump and his administration have declared their contempt for national environmental regulation, it is fairly certain that this trend of increased decentralization and reliance on subnational levels of government will continue as cities continue to work for effective responses to climate change, thus expanding the importance of the decentralized element of American federalism. These structural features apply to almost all US cities, so while local factors like community interest and state support will have a large influence on the effectiveness of city action, American municipalities all tend to share at least the political background described below.

Tradition of Decentralized Action in Environmental Policy

Even today, national regulations on environmental issues are more far-reaching than their equivalents at lower levels of government, but "even those policies adopted by the federal government have been… heavily reliant on states for either initial policy development or central roles in implementation, leading to a remarkably decentralized governance approach for an issue generally framed as a 'global' problem."[146] While Rabe was referring to climate change issues in this quote, the same general dependence on lower levels of government applies to many other environmental regulations. For example, the Clean Air Act relies on states to issue air quality permits, and the Resource Conservation and Recovery Act (RCRA) requires state and local implementation.[147] Similarly, Susan Cascino, the Director of Recycling for Boston, noted that while innovations in recycling originate in the state government, they rely on municipalities to implement their regulations.[148] In this way, it is clear that local government is often extensively involved in climate policies established at other levels of government and can

even be an essential factor in determining the success of these policies. This helps to demonstrate the increasing role of decentralized action in environmental and climate policy.

Traditional City Independence

The principle of decentralization continues from the state level to the local government, resulting in a fair amount of independence and power for cities. Part of this power must come from necessity: cities are on the frontlines facing the impacts of environmental degradation, and thus they are often the first that must respond without waiting for superordinate levels of government to act. This necessity clearly draws a parallel today, as cities are often the first to experience the most obvious impacts of climate change in the form of sea level rise and increased intensity of hurricanes. On a more historic note, this relative level of independence and authority is embedded in American government. Goldshore notes that local government have historically maintained significant control over land use, public health, and safety, including "substantial responsibilities in the delivery of environmental services."[149] Overall, the environmental issues faced by cities in the last centuries have well prepared them to act on climate change, acknowledging that some local governments "have considerable experience in addressing environmental impacts within the fields of energy management, transport and planning."[150]

In recent years, cities have become even more independent and gained more control over local resources, further showing the increasing role of decentralized action. For instance, in the 1970s, New York City desperately looked to Washington DC for help following a fiscal crisis, but Barber argues that today DC looks to New York City, while

"New York often looks to other cities or abroad."[151] There are even instances of pushback, where cities worked to defend local authority even if state or national governments have regulatory powers over the same activity. For instance, a municipality in the state of New York used a local zoning law to restrict hydraulic fracturing in its region, even going to court to defend their authority.[152]

The decentralized system of the United States has created a relatively independent and authoritative role for city governments in environmental issues, but cities are still ultimately under the control of their states in many issues, as will be described below in Section B. Overall, the decentralized structure that permits this independence cannot be separated from a more structural division of power, and thus jurisdiction over certain policy areas often remains with state or national government.

Cities as Environmental Leaders

With this relative independence, cities are often held up as examples of environmental leadership, but they have not historically always been positive influences. For example, Goldshore claims that cities often refused to host landfills required for safe waste disposal, instead attempting to regulate their own solid waste.[153] Still, it seems as if over time cities have become greater environmental leaders. Barber concludes,

> "In an earlier epoch, the federal government was more often than not the 'good' power enforcing local liberty and civil rights… But nowadays, when it comes to issues of global cooperation among cities, it has been the federal authorities that have often thwarted cosmopolitan outcomes in the name of nationalist parochialism, as in the crucial case of global warming."[154]

Kazin explains this increasingly liberal nature of cities, noting that "progressives routinely win elections," possibly due to the "inevitable consequence of demographic and cultural change" or the organization and activism of these groups.[155] Regardless of its

cause, many American cities have established themselves as environmental leaders in the last few decades, and often it is these cities that are the first to take action on climate change. Still, while almost all cities have established a strong claim to local authority, not all cities use this power to benefit the environment, and many simply remain inactive on climate change. Overall, the significance of urban governments and their decentralized has increased in recent years, especially as national government fails to supply hierarchical regulation on climate change.

3.C Dimensions of Multilevel Governance

Because there is no complete climate policy at the national level, subnational actors cannot engage in the same patterns of American federalism. The theoretical framework of multilevel governance helps to explain the new forms of power relations that have emerged with the current lack of hierarchical action on climate change and the subsequently increased importance of decentralized action. This lens allows an understanding of the new divergent pathways of American federalism, particularly changing or expanding on its original elements of decentralization and hierarchy.

To first explain this theory in its own right, many scholars now rely on the concept of multilevel governance to explain city climate action, with some going so far as to claim that an understanding of global environmental and climate governance is only possible through this perspective.[156] Jorgensen and her colleagues trace the development of literature on climate change policy, first beginning with a focus on international and national initiatives, then emphasizing sub-national action, and for the past decade focusing primarily on multilevel governance.[157] The phrase "multilevel governance" refers to a perspective that examines not just the traditional "government" involved in a

policy issue, but also the range of actors who may influence it. Scholars examine the complicated interactions between levels of government, the development of transnational networks, and the participation of both public and private actors in policy decision-making.[158] In other words, "Multilevel governance also provides a flexible conceptual framework to understand the relationships between cities, regions and national governments across mitigation and adaptation policy issues."[159] Overall, this theoretical lens allows readers to see the ways in which different levels of government interact and produce climate policy, resulting in an understanding far more complicated than the simple division of power or traditional American federalism. This innovative understanding looks at how multiple structures and institutions shape global environmental policy, providing the most comprehensive framework from which to analyze the urban response to climate change.[160]

As noted in Section 1.B, Kern and Mol define three dimensions of multilevel governance: hierarchical, vertical and horizontal.[161] In a short summary, the hierarchical dimension refers to the ways that higher levels of government shape the actions of the levels below, the vertical dimension describes the ways that lower levels of government influence those above, and the horizontal dimension references the relationships between governments at the same level. While Corfee-Morlot and others have also used this distinction between the vertical and horizontal dimensions, Kern and Mol include a hierarchical dimension to separate the directions of influence between cities and states.[162] This means that the hierarchical aspect focuses on the way that cities implement the policies set by higher levels of government, and the vertical aspect focuses on the ways that cities in turn can influence the levels above.[163] The third dimension of Kern and

Mol's understanding of multilevel governance is horizontal, referring to the ways that cities create networks and relationships between each other both regionally and internationally.[164] Unlike Corfee-Morlot and his colleagues, Kern and Mol define horizontal dimension as solely between government actors rather than including non-state actors, and this paper follows suit.[165]

While their analysis is meant to explain the relationships between the European Union and subnational governments, Kern and Mol's addition of the hierarchical dimension can help to examine the remaining hierarchical element of American federalism. The second two elements of multilevel governance, horizontal and vertical, help to demonstrate the offshoots and new forms of decentralization. These three dimensions impact all cities in varying amounts, and they provide the necessary framework to examine the political process behind city climate policy. While it is still true that each city and state has a unique set of local influences and factors that will determine whether or not it takes action on climate change, some of the impacts of multilevel governance apply more generally. However, the overarching system of multilevel governance creates both barriers and catalysts for action at several levels, regardless of many of the individual characteristics of the cities.

Although multilevel governance is primarily helpful for describing the recent changes in American federalism in climate change, a lack of national action in other environmental issues has resulted in extremely successful multilevel collaboration in the past. For instance, Goldshore describes how hazardous waste regulation in the 1980s in New Jersey required action from all levels of government.[166] The "Siting Law" required local involvement and notice in the siting of hazardous waste facilities, and it resulted in

more successful environmental regulation.[167] Thus, even though the study of multilevel analysis is relatively new, multiple levels of government have been working together for decades on environmental issues. Still, while the analysis of multilevel governance has been used for many policy areas over the last few decades, this innovative approach is essential in order to sufficiently respond to the unique political difficulties of climate change in particular.

This theoretical lens provides a helpful analysis into the ways states limit and encourage city climate action as well as the ways in which cities influence and prompt state climate action. By looking beyond national directives and focusing on what has been described as "America's bottom-up climate change mitigation policy," some scholars have found that the "US has been more committed to climate change mitigation than is generally acknowledged."[168] While this conclusion is certainly debated in the literature, the recognition of efforts at all levels of government as well as by private actors shows a very different political system than the common perception of cities, states and national government acting, and often failing, in isolation.

The lens of multilevel governance also helps to show the increased role of decentralized action in climate policy through its increased reliance on community stakeholders. Scholar Robin Hambleton focuses on this point through his understanding of the term "governance." As noted previously, he defines this term as "government plus the looser processes of influencing and negotiating with a range of public and private sector agencies."[169] He finds that this form of rule and policy "encourages collaboration between public, private and nonprofit sectors" and can be seen as "shifting responsibility from the state onto the private and voluntary sectors and civil society in general."[170]

Likewise, Kjaer defines governance as the increasing combination of politicians, administrators, state and society actors over the last twenty years.[171] Hambleton believes that this increased collaboration between non-state and state actors in governance has direct impacts on policy, leading to "increased attention on issues relating to governmental legitimacy, citizen empowerment and the vibrancy of civil society."[172] These predictions show an amplification of the local framing and community targeting described in Section 2. This increased importance of local attention and non-governmental actors is reflected in the academic literature. Some scholars acknowledge the significance of these factors by including them in their own understandings of the horizontal dimension of multilevel governance. While this paper will follow the trend of Lee, Betsill and Bulkeley by confining the understanding of horizontal dimension to state actors, the role of stakeholders and community influence will continue to be discussed.[173]

The sections below provide the argument for my finding that American cities do not create climate policy in isolation and that each success or struggle connects into superordinate actions. The abstract concept of multilevel governance is fully realized in climate policy, and as academics note, "There is a growing recognition that a climate deal in the foreseeable future is likely to encompass both top-down and bottom-up initiatives in an outcome that tries to balance both global ambition and domestic appetite for action."[174] This section attempts to make sense of this complicated political environment in order to find the city's place within it.

In order to test these arguments, each of Kern and Mol's three dimensions will be examined in turn with respect to city climate change policy. The hierarchical dimension can result in a state both limiting as well as encouraging city policy. The horizontal

dimension describes the unique benefits of municipal networks, both regionally and internationally. The vertical dimension of multilevel governance is demonstrated in the ways that the city influences the higher levels of government, generally in form of positive influence through innovation and direct political leadership.

Throughout this section, analysis will generally focus on the relationship between the city and state as it relates to climate policy rather than expanding to the national level. This is both because national government plays a notably smaller role in environmental issues due to the structure of American federalism and because state interactions with city politics are simply better studied. This conclusion is affirmed in Ohlhorst's study of the German federal government when she finds that, "The national government is in a considerably weaker position in terms of its influence with regard to the implementation of sustainable energy policy… compared to that of non-federally organized nation states."[175] Similarly, the decentralized system of American government relies on the states to take a larger role. Thus, while key contributions from the national government will be noted, a larger analysis is beyond the reach of this paper, and findings will generally be based on state influence.

Section 4: Hierarchical Dimensions of Multilevel Governance

As mentioned previously, the hierarchical dimension of multilevel governance focuses on the way that cities implement the top-down policies set by higher levels of government.[176] In this way, the framework multilevel governance helps to show the remaining influences of the hierarchical element of American federalism even as climate change suffers from a lack of centralized action overall. In the context of climate policy, this aspect of the city-state relationship can both limit and encourage city action.

4.A Top-Down Control: Limiting City Actions

Background

While many states have relatively favorable environmental policy, often times the structure of American government creates institutional barriers that apply regardless of the political tendencies of the state. In other words, even the most progressive states will sometimes limit city action due to their distinct places in American federalist government. That being said, states can still influence the balance of this relationship in order to act more or less favorably towards climate policy in cities. So a state that strongly pushes against climate change policy, such as Texas, may exploit these structural barriers in order to repress city action while a state that has demonstrated leadership in environmental issues, such as California, may try to reduce the extent of these limitations.

Table 1 shows a rough categorization of the states that: A) generally lead climate and environmental policy; B) generally exert a small but positive influence on climate and environmental policy; C) generally are indifferent or inactive on climate and environmental policy; and D) generally reject climate and environmental policy. As each state government can create climate policy in both explicit (i.e. state climate plans) and

implicit (i.e. state housing policy, energy programs, etc.) ways, it is difficult to produce an accurate ranking simply from investigating state policy. While countries have been ranked repeatedly for their climate actions, there is a clear lack of well-analyzed state rankings in academic work. For these reasons, the categorization integrates the results of five studies that rank or measure various aspects of a state's climate as well as environmental policy and performance.[177] Each study's results were divided into 5 categories ranked 1 to 5 where 5 is the highest ranking. Thus the worst possible overall score was a 5 and the best possible overall score was a 25.

Efforts often do not necessarily translate into performance for a variety of external factor, and thus these rankings cannot fully explain a particular state's effort to create climate policy, especially as it applies to cities. Even when analyzing the conclusions of learned scholars, one must acknowledge that their conclusions are generalizations of a highly diverse set of states. In addition to varying based on their own commitments to environmental issues, states also vary in the distribution of autonomous power between their own government and municipalities. American states have significant independence in creating their own constitutions, and these constitutions set the jurisdictions of the city and state, making the autonomy of local government more varied between these states.[178] Similarly, the entire basis of Frug and Barron's argument is that each state structures its cities in a very unique way, and these differences have large impacts on the power balance in the city-state relationship.[179] Instead of attempting to determine the detailed impacts of each state's constitution and stated efforts on climate, Table 1 illustrates a more general summary of state climate policy thus far, and hence, it provides an estimation of the state's level of support for action at the city level relevant to this study.

Category	States
States that lead environmental and climate policy (Scores 17-20)	CA, CT, MA, MD, ME, NH, NY, OR, VT WA
States that exert a small but positive influence on climate and environmental policy (Scores 13-16)	CO, FL, HI, MI, MN, NJ, PA, RI, WI
States that are indifferent or inactive on climate and environmental policy (Scores 8-12)	AK, AZ, DE, GA, IL, NC, OH, SC, TX, UT, TN, WV, VA
States that reject oppose climate and environmental policy (Scores 4-7)	AL, AR, IA, ID, IN, KS, KY, LA, MO, MS, MT, ND, NE, NM, NV, OK, SD, WY

Table 1: An estimation of American states' commitment to climate and environmental action.[180]

While cities can look to states to reduce these structural barriers, even the most progressive of states, such as Massachusetts and New York, limit city action through their supreme jurisdiction over important policy areas and control of funding. Cheung, Davies and Truck recognize these same issues as what they defined to be the three largest barriers to city action: subservience to state and national government, the need to fulfill traditional and daily obligations before new policy areas, and financial constraints.[181]

Jurisdiction

This first obstacle refers to the division of power within any federalist government, which gives cities significantly less authority over important infrastructure. Without control over high-emitting operations like public transportation or energy sourcing, cities cannot mitigate their carbon emissions as easily as state or national government. In the words of Mia Goldwasser, a Climate Preparedness Program Manager from Boston, "The city and the state and the federal government have different jurisdictions… So a lot of the city's role is pretty limited actually."[182] She noted that the control over large infrastructure was a significant factor in determining the policy options open to the city, a thought affirmed by several authors.[183] Similarly, Carl Spector, the

Commissioner of the Environment Department in Boston, noted that city climate action relies on state programs, especially in areas where the city lacks control and can take advantage of programs that the state has already put in place on areas like energy efficiency.[184]

However, scholarly literature indicates a large tension about the amount of autonomy and independence at the city level. Some writers, such as Krause and Kantor, focus on the relative level of independence that cities maintain in a decentralized government system.[185] As mentioned previously, Kantor and his colleagues find that while technically state governments have ultimate control over their cities, in practice "states delegate considerable policy authority to local governments… The effect is that localities exercise major influence over some of the most vital policy areas, such as land use, police, education, housing and roads."[186] Similarly, Bulkeley states that: "Most municipalities have been found to have at least a degree of partial autonomy over the governing of climate change locally."[187] In contrast to this positive view of decentralized government, Barber argues that cities have more authority due to the ironic nature of sovereignty.[188] He argues that because countries are accountable to the cities within, they are less free to take drastic climate action. Instead, cities that technically lack sovereignty are responsible only to themselves so they may be more willing to take those same bold steps to take action on climate change.[189]

Still, most sources made concessions that ultimately and legally the state has power over its cities. For all his claims about the power of the city and about the lack of power at the state, Barber acknowledged that cities "lie within the jurisdiction and sovereignty of superior political bodies" and are thus "compelled to listen" to their

states.[190] The majority of writers seem to think that cities are limited by their lack of jurisdiction, creating a "problem of fit" in institutional capacity where the there is a gap between "the scale of issues that need to be addressed… and municipal authority."[191]

Resistance to Limited Jurisdiction through Decentralization

Despite the structural limitations of divisions of power in decentralized government, cities can push back on issues of jurisdiction in several ways. The first way is through the inherent reciprocity in decentralized government. For instance, because states and national government rely on local governments to implement their initiatives, cities maintain a fair amount of control over the application of these national policies.[192] In addition, as historical examples demonstrated in Section 3, cities are often willing to push back against higher levels of government that may technically have more authority. Corrie takes this analysis a step further and notes that while "the division of regulatory power between state and local governments determines the permissible extent of local participation in environmental regulation," municipal governments often have an "alternative power framework known as home rule," wherein they claim exclusive authority over local affairs.[193] In another form of direct opposition, both cities and states have used litigation in recent years to pressure the national government into action on carbon emissions.[194] This active resistance to larger state control is a trend of decentralized government that has become only more pronounced as cities try to gain more control over important areas of regulation.

New York City provides an extreme example of this dispute over jurisdiction due to its multiple centers of power vying for control. First, state control in the region is split between New York, New Jersey and Connecticut.[195] Almost every significant regional

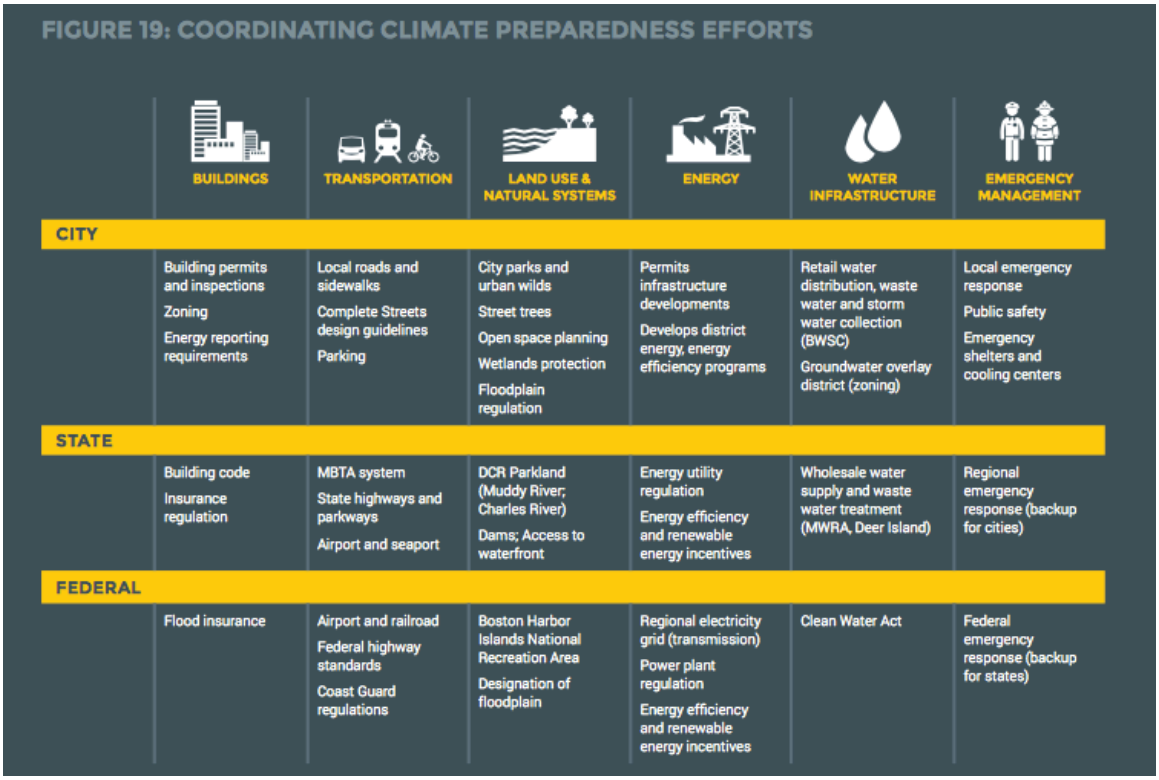
issue will ascend to these three powerful states, but New York City demonstrates that cities can maintain a relatively high amount of power even within structural limits.[196] For instance, Kantor and his colleagues claim: "Although state governments have legal supremacy, the enormous size, economic power, and importance of New York City create political rivalry and interdependency between city and state policy makers."[197] Similarly, New York City also demonstrates the way in which a city can utilize its limited authority to become a larger power. The city's strong local control over land use has made it nearly impossible to pass region-wide policy changes from a national level, demonstrating how even a city facing structural constraints can yield a larger amount of power and find ways to enact its climate initiatives.[198] Although she spoke in Boston, Mia Goldwasser, the city's Climate Preparedness program Manager, explained this phenomenon by saying that the city's official range of options and control may be limited, but "it can exert influence in those places."[199]

City Policies Shaped by Limited Jurisdiction

As mentioned in Section 2.F, city strategies will be shaped by the policy areas in which they have the most authority to actually influence, whether that be to limit emissions or to adapt to climate change. In this way, city actions will differ greatly from those taken at other levels of government. While countries and states can create treaties or mandatory regulations, local government lack the authority to take equivalent action. For example, Figure 1, an image taken from the Boston Climate Action Plan,[200] demonstrates that the city of Boston has the most control over buildings, emergency response and land use while having very little authority over emissions-heavy transportation and energy as well as resiliency-relevant water infrastructure. Although

this chart is specific to Massachusetts, many of its splits illustrated in this Figure likely are shared by other states and cities across the US.

Figure 1: Split Jurisdiction within Boston



Cities are partially limited in the actions they can take by their lower jurisdiction, but instead of becoming inactive on climate policy, local governments have developed several unique strategies to take action and overcome this barrier, including persuasion and incentives, creative action and a local focus. Although many academics mention specific policies or programs in their studies on city climate action, there is not much analytic or comparative research, and thus these three categories of new action emerged from interviews with Boston and New York City officials. A more in-depth description of city strategies can be found in Section 2, but the following actions function as a local response to limited jurisdiction.

First, in their day-to-day functioning, cities lack the centralized control of either a national planning agency or of an emergency response team. One Boston organization employee noted that this is a particularly difficult obstacle because climate change impacts in the city are often related closely to natural disasters that are traditionally under the control of centralized planning agencies. Instead, municipalities act as more decentralized and equal leaders that work to persuade their constituents to take certain positive actions to respond to climate change. For instance, Kern and Bulkeley define the need for internal and oft government in their claim: "In the absence of the usual forms of authority afforded to governmental actors in hierarchical relations of power – i.e. regulation, sanction and force – networks rely on other forms of authority and persuasion."[201] Barber takes a more ideological perspective when he concludes that mayors are "compelled to persuade rather than to enact and order, to debate rather than proclaim and pontificate… Declaring not their independence, but their interdependence, they build not walls but ports and portals."[202] This quote references the importance of accessibility described in Section 2.G. Once persuaded to participate, community actors play important roles in a city's climate change policy. Sections 2.D and 2.F provide examples to demonstrate the value of these local actors as experts or targets of city action. In a tangible example, both Boston and New York City have experimented with competitions like the Living with Water or Trash Free NYC Waters to gain community input and investment into a city project. Similarly, Boston's Greenovate program initially began as a rewards program to encourage environmental leaders in the community.[203] Farther South, DC uses a voluntary and incentive-based program to provide discounts and rebates to property owners who invest in green infrastructure.[204]

Local governments have also found some very creative and innovative strategies to overcome barriers from limited jurisdiction. As Jessica Feldish, a Program Manager for Community Engagement in Boston, stated, "I would say that we as a city… within our resources we can get more creative" than equivalent departments at higher levels of government.[205] For example, DC established a trading system of Stormwater Retention Credits (SRCs) to encourage large development projects to install green infrastructure like cisterns, rain gardens, green roofs and permeable pavement.[206] While most cities cannot set the kinds of building codes that would require these actions, innovative programs like the SRCs allow them to prompt these changes. Local governments have more control over building construction than other carbon-intensive policy areas (See Figure 1), and thus creative actions seem to focus on this area of city governance. Betsill remarks that a municipality can cut carbon emissions by enhancing building energy efficiency through codes and ordinances, and Boston proves her point with the Stretch Building Code.[207] While Massachusetts controls the building code, the city has jurisdiction over the zoning code. In an example of true collaboration between state and city actors like those found in Section 4.B, these two levels of government created an optional code with more stringent energy efficiency requirements.[208] Carl Spector described it as a "state initiative that gave an option to cities," and while this action did not come solely from the city, it helps to illustrate the innovative ways that local governments are overcoming the limits of their authority.[209]

Last, city response to climate change generally uses a heavily local focus and relies on municipal resources and infrastructure. While some reasons for this framing are described in Section 2, this local perspective also allows the city to take many actions

fully within its jurisdiction. Early in city action on climate change, this focus took shape as cities worked to reduce the carbon emissions from their municipal buildings and infrastructure. The UN Environment Programme (UNEP) finds that this effort to move ones own operations toward climate-neutrality is a primary way for cities to reduce climate impacts, and similarly Krause concluded that early city actions were focused on municipal operations.[210] Jessica Feldish from Boston spoke about the application of this theory in the city's first climate action plan, finding that it "was really only focused on the city's own assets and… what the city of Boston can control, like our own fleet, our own buildings, energy efficiency and so all the buildings that the city owns."[211] Furthermore, local focus can lead to an emphasis on adaptation policies, as discussed in Section 2.F. As shown in Figure 1, many aspects of daily utilities operations and emergency response can be under the control of cities. As these areas are strongly impacted by climate change, they provide an important opportunity for a city's first steps to take action.

In addition, this local focus can also be combined with the use of persuasive programs to increase voluntary stakeholder participation. Section 2.F provides concrete examples of this previously untapped group of human resources. Betsill and Bulkeley take a new theoretical approach to this community engagement, finding that just as different levels of government have different spheres of authority, stakeholders have their own.[212] By accessing these local actors, municipalities can effectively increase their jurisdiction to include both spheres of authority.

In addition to these three main pathways shaped by jurisdiction, other strategies are also able to overcome these inherent jurisdictional limits, such as participation in

larger intra-city networks (described in Section 5.C). Overall, cities are not only able to get around limited jurisdiction but able to find new opportunities for community engagement generally not available at the state level. Thus, city actions can focus on policy areas that are neglected in state and national action. Rather than serve as a judgment on the emphases of these higher levels of government, this demonstrates the essential and equivalent contributions of city action in the larger American response to climate change.

Concluding Thoughts on Jurisdiction

Overall, it is clear that local jurisdiction over key regulatory areas is hotly contested, both in reality and in literature. While Barber's analysis is often tainted with an idealistic bias, his description of this tension is quite accurate: the "continuing war over American federalism and the appropriate vertical distribution of power."[213] Similarly, while cities are legally bound to obey their sovereign laws, they are "at liberty to act in cases where superior jurisdictions are indifferent."[214] This debate results remains unresolved, resulting in an unclear, and thus amenable, status about the city's jurisdiction and independence.

Despite this lack of resolution, there are several key takeaways from this debate. First, in order for a local government to take firm action on climate change, a city must be able to overcome the limits on its jurisdiction over key policy areas, either by increasing its power or finding new tactics. As Pressman writes, "Few mayors have formal authority and resources which are adequate to deal with the enormous tasks facing them. But this is not considered an insuperable obstacle."[215] Cities are able to circumvent the limitations of their jurisdiction by finding these alternate methods of rule, whether

that be through persuasion, creative policy or a local focus. These local actors develop their "spheres of authority" in order to maintain a strong response to climate change. Second, the decentralized form of government allows for flexibility and city action to change its structural rules, creating what one city official called a "constant give-and-take" and providing the opportunity for significant political leadership.[216] Third, authors suggest that the best remedy for this dispute between the levels of government is to engage in stronger multilevel governance and vertical coordination between these levels.[217] It is this final path that most cities are now leaning towards and that will continue to be tested throughout the rest of this paper.

Control of Funding

In addition to these insights from issues of jurisdiction, the second two obstacles from Cheung, fulfilling regular obligations and financial constraints, can be grouped together in the larger issue of funding and prioritizing. Scholars such as Betsill, Bulkeley, Krause, Corfee-Morlot and his colleagues argue that both human and financial capacity are important factors for determining if a city will act on climate change, especially if established as an institutional department within local government.[218] A C40 report states, "the city government struggles to demonstrate the financial case for a climate action or to have the financial autonomy to employ appropriate fund-raising mechanisms."[219] This means that cities struggle to finance their own projects, often relying on state or national resources. Likewise, both Alan Cohn in NYC and Jessica Feldish in Boston acknowledged the difficulty of meeting their potential success in climate action due to limited staff and resources.[220] The New York City Department of Environmental Protection gains much of its funding from the ratepayers, but this amount

pales in comparison to the financial resources available to state and national government.[221] Overall, sources of government funding are often limited, especially for new initiatives. Funding for adaptation efforts is especially limited as 76% of global finance for climate change is dedicated to mitigation efforts.[222] Even when national funding is granted following a natural disaster, it is often insufficient to resolve the costs of climate change[223] and often must be spent quickly without allowing good time for planning.[224]

In addition to this small amount of funding, regulators at state levels often prescribe its use according to their own priorities.[225] For example, Boston acquires much of its funding from the state, but that comes with "certain requirements and restrictions."[226] In a similar way, the state enforcement of national and state regulations like the CWA and CAA may consume a large portion of a city's budget, leaving nothing to invest in new policy areas like climate change mitigation. This point was further affirmed by John Brock from the Integrated Water Management Group within the Department of Environmental Protection for New York City. He stated that while his department attempts to approach things in line with New York City's OneNYC platform on climate change and resiliency, but "as an agency… a lot of it is driven by getting in compliance with the state regulations and federal regulations."[227] The officials described how they try to balance compliance with investing in new climate initiatives, but often compliance gets prioritized because it is required by state or national law, whereas climate initiatives are primarily motivated by their own cost-saving, climate resilient or innovative benefits.[228]

City Policies Shaped by Limited Funding

Local governments have also initiated new tactics to get around this limited funding, and Pressman, Beal and Pinson claim that this search for new resources and financial outputs will only increase with declining state support.[229] Cities both search for cheaper tactics and for new and creative sources of funding.

First, persuasive action and soft governance again provide a mechanism for avoiding this barrier as these generally require less funding to be successful. Competitions like those described above need very little input from government officials once they are established. Community engagement programs that seek out voluntary compliance will likewise have very little regulatory expense.

Furthermore, this limited funding encourages local government officials to frame their policies in terms of their economic co-benefits rather than simply as a solution for climate change issues. This framing is described in depth in Section 2.E. Demonstrating these secondary impacts allows a policy to gain public support, even if funding and general belief in climate change is low. For instance, local governments may have more success convincing city budgetary committees to put limited resources towards adaptation due to its long-term cost effectiveness. This is because adaptation efforts tend to be cheaper while Hurricane Sandy alone cost the US close to $50 billion.[230] As a C40 report puts it, "A large body of research shows that timely land-use planning and climate-proof city design measures are often significantly more cost-effective than future urgent, reactive and uncoordinated responses to sea level rise."[231] The need to demonstrate co-benefits as well as to provide convincing cost-benefit analyses pushes the city towards certain strategies and framings.

Second, as cities lack the ability to increase their funds through traditional government processes like taxes, they must look to creative sources of funding to support climate initiatives. A C40 report argues that local governments are "using alternative financial mechanisms that support and incentivize action, such as bonds, tolls and developer contributions."[232] New York City in particular has been a pioneer in tapping nontraditional sources of funding, using bond issuance to build its own finances.[233] In addition, in order to encourage buffer wetlands after Hurricane Sandy, the city used a one-time federal recovery grant to establish a sustainable program on mitigation banking.[234] Furthermore, participation in large formal networks can also provide access to grants and direct assistance, as described in Section 5.C below. Likewise, the potential to access state finances and resources described in Section 4.B may push a municipality to seek out collaborations with the state. These examples show how a city could overcome this obstacle of lower resources by capitalizing the ones it does have and finding new savings and sources of funding.

Concluding Thoughts on State Limits

In this way, even a progressive state can still be trapped by the law and its role in decentralized government, requiring the state to direct the funding of city departments to non-climate projects. The lack of a national regulation on climate issues causes the breakdown in traditional decentralized government, leaving city departments unable to act. For example, Alan Cohn noted that the NYC DEP had to defer its investments to reduce flooding in Queens because "we've been so driven by the regulatory requirements that we're investing all of our money in… complying with regulations instead of mitigation the issues in that community."[235] As a result, these city officials search for

innovative ways to get "ahead of" state regulation, always trying to get beyond their control in order to have enough funding to place in their own priority of resiliency.[236] The results of this limiting relationship will be described in further detail in Section 6: Vertical Influence.

Overall, the jurisdiction and control of funding by the state often limits city climate initiatives, leaving them significantly disadvantaged when compared to their state or national counterparts. However, as the examples above demonstrate, cities can evade these disadvantages through creative and innovative tactics not previously attempted at other levels of government, thus both filling a unique role and providing equally important contributions to the US climate effort.

4.B Top-Down Control: Encouraging City Actions

Background

In addition to the ways that a state can limit the city, the hierarchical dimension of multilevel governance also can play out through state encouragement of city climate action. Supportive states can use their powers and resources in ways to both specifically require as well as softly incentivize cities to enact policy on climate change issues, acting as a key origin of urban climate policy. Lukas Hakelberg summarizes this action when he writes, "Superordinate governments can also promote local action on climate change through leadership, expertise and funding."[237] This positive influence seems natural given the widely publicized climate policy taken by certain states, such the Regional Greenhouse Gas Initiative (RGGI) in New England[238] and California's characteristic leadership.

Still, while every state in the US has at least one program designed to increase energy efficiency or promote renewable energy,[239] it is clear that some states promote city climate action much more than others (see Table 1). The two focus states for this study, Massachusetts and New York, are both in the highest category of support for climate action, and thus the importance of the city's relationship to the state was emphasized in many interviews with city officials. For instance, Carl Spector, the Commissioner of the Environment Department in Boston, casually noted that he talks frequently with his colleagues at the state, demonstrating the familiarity and stability of the city's relationship with Massachusetts government.[240] Still, many cities such as Austin or Miami sit within the boundaries of states that are indifferent, if not hostile, to climate policy. Given the range of state support for climate action, the conclusions of the following section about state encouragement of an urban response to climate change are limited to those states that provide strong leadership or a more moderate positive force.

In contrast to the vast amount of literature on the controls and limits states set on cities, there seems to be very little academic research that directly analyzes the environmentally positive impact that a state can have on a city. Still, examples of assistance from the state abound, demonstrating that many progressive states promote and support city climate action. This encouragement is realized in three main ways: direct mandates, provision of resources and incentives, and true collaboration.

Direct Mandates

First, state mandates on a city can force a city to expand its climate response with its inherently superior jurisdiction over urban affairs, using the high level of control described in Section 4.A above for an opposite goal. This is a modern demonstration of

the principles of a hierarchical system relying on decentralized implementation, described earlier as American federalism. For instance, in California the "state Attorney General began requiring local governments to consider GHG emissions in their general plan updates in 2007," suing noncompliant municipalities.[241] Such mandates can also have far-reaching consequences, such as when state legislation in Florida ordering the prioritization of renewable energy and energy conservation activities significantly delayed a plan by four cities to invest in a coal plant.[242] Often times these "mandates are not especially popular with local governments" due to this level of control.[243] Even though they "rarely involve harsh financial or legal sanctions," cities can be penalized for noncompliance by the threat of lawsuit or ineligibility for state grants.[244] However, some progressive cities may actually appreciate the sense of requirement and urgency that a state mandate brings to their agenda. As Dalton and Barby write, the "overlooked advantage of state or federal mandates – even weak ones – is that they can provide effective "cover" to local officials seeking to tackle difficult planning issues As one respondent in a conservative community noted, 'Being able to say 'It's required by state law' makes it easier to sell local action to our city council.'"[245] In this way, these top-down requirements can be received both positively and negatively by a city, even while the ultimate goal of increasing climate policy is advanced.

Provision of Resources and Incentives

The second form of direct encouragement for climate policy relies on the distribution of funds and resources, and often this kind of aid is well-received and appreciated by cities. In many ways, grants allow superordinate levels of government to take a "hands-off" approach by intentionally targeting cities and motivating them to take

climate action on their own terms. Establishing a financial encouragement rather than exacting a punishment, the benefits of state or national funding are frequently mentioned in official documents for city climate action. For example, New York City's Department of Environmental Protection (DEP) used a national EPA grant to create a community-engagement project to reduce the number of plastic bags in waterways, and Boston used a state grant to create a design competition to make infrastructure next to bodies of water more resilient.[246] Many climate actions in Boston can trace their success back to state and national grants. For instance, national grants from Sustainable Communities and Homeland Security enabled the expansion of the Metropolitan Area Planning Council to cover energy issues.[247] The list of ways that Massachusetts provides funding for sustainable city actions goes on and on as well.[248]

Sometimes these state grant programs are explicitly related to climate action. For example, the Massachusetts Office of Coastal Zone Management's Coastal Community Resilience Grant Program gave Boston $350,000 in 2015 to support climate preparedness efforts.[249] However, some state grant programs seem to be more indirectly focused on climate change efforts, even while using the direct approach of providing funding. For instance, a study on New Orleans' climate resiliency received funding support from the state's Office of Community Development.[250] This example also helps to demonstrate how a state that is generally inactive on climate change may have particular agencies or individuals who support its implementation at lower levels. Similarly, the city of New Orleans received a national grant for this project: the HUD's National Disaster Resilience Competition.[251] The title of this project did not clearly indicate it was meant for climate, suggesting a way that even national agencies supporting climate change are able to create

action and assistance from a generally inactive level of government. Often times these grants are not required by any form of legislation, indicating that the policy-making decision to assist lower efforts at climate action may come from another actor within the state or national government. In this way, the state agency offering these funding opportunities works to support cities even when other branches of government are inactive.

Even when financial opportunities are required by new top-down mandates, like those described in the section above, cities have more flexibility in realizing these grants. As Susan Cascino, the Director of Recycling for Boston, noted: a state that relies on a municipality to carry out its laws cannot put out an unfunded mandate.[252] In this way, cities like Boston were required to answer a state initiative, but had more flexibility to design their own programs to meet grant funding requirements.[253] For example, Massachusetts placed a ban on commercial food waste in 2014 that subsequently established a grant program to find funding for projects that would achieve this goal.[254] In response, cities would be able to design their own plans rather than simply obey strict mandates, often producing more innovative responses, an advantage discussed further below in Section 6.

Similar to this area of funding, states can assist city climate action by permitting and encouraging the use of state resources. While this kind of aid is not as well documented, the Metro Boston Regional Climate Change Adaptation Strategy notes two key examples. First, an internet-based resource that helps to manage changing coastal floodplain challenges was created by the Massachusetts Office of Coastal Zone Management and has been used fairly extensively by the region surrounding Boston.[255] A

second example describes the information and tools provided by the EPA Climate Ready Estuaries Program and their use to help develop adaptation plans.[256] Overall, funding and resources given by the state allow cities to more flexible by choosing to act on the opportunities they want, even while providing them with direct assistance. These resources are extremely valuable to cities, and allow cities (like Boston and New York City) that have already established a history of climate action to expand their reach.

True Collaboration

Last, states can encourage cities to enact policy on climate change issues through more explicit efforts for collaboration between the levels of government, demonstrating a practical example of the complex relationships of multilevel governance. Again, there is very little analysis of these efforts within academic literature, but there are so many examples of this occurring that I only have space to note the actions within a few key cities. For example, often this collaborative effort takes place in designing plans together, as occurred in the adaptation plans both in New Orleans and the Metro-Boston area.[257] Resilience efforts in particular require the participation of a large range of state, city and non-governmental actors. Axum Teferra, an Energy Planner for the Metropolitan Area Planning Council (MAPC) in Boston and Manager of the Metro Boston Climate Preparedness Taskforce, acknowledged this need for wide-spread support, sharing that the Massachusetts Bay Transit Authority (MBTA), Massachusetts Department of Transportation (MassDOT) and other state agencies participate in MAPC projects and the Metro Boston Climate Preparedness Taskforce.[258] Similarly, New York City has worked directly with its superordinate levels of government on energy efficiency initiatives, and

the recycling program in Boston works closely with the state Department of Environmental Protection.[259]

This mutually engaging relationship between the city and state is best illustrated in the optional building Stretch Code in Boston, already described for its creativity in Section 4.A. As noted previously, traditional jurisdiction divisions in Massachusetts give the state authority over the building code, which can require certain levels of energy efficiency.[260] The support at the state level is not yet strong enough to increase the energy efficiency requirement for all cities, and yet many local governments wanted to be able to enforce a stricter version within their limits. Carl Spector described the collaboration when the state decided to establish an additional "stretch code" that cities could opt into, receiving the encouragement and support of many cities.[261] This example demonstrates that collaboration can allow cities to step beyond their traditional jurisdiction and access some of the authority of the state. This complex and reciprocal exchange of influence and authority practically demonstrates the theoretical framework of multilevel governance. Overall, while the other methods that a state uses to push cities to take climate action are important, these examples of true collaboration better demonstrates the interdependence of cities and states within a system of multilevel governance.

Concluding Thoughts

These three paths of state encouragement have had great impacts in prompting city climate action. Scholars note that while the most comprehensive climate policy efforts have come from the voluntary actions by local governments, "many of the specific actions extending to the community level reflect years of prodding by state government," including energy efficiency, waste management programs and expansion of renewable

energy.[262] While there are still many states that do not actively promote climate action as well as many cities that lead their states in environmental policy, the positive influence of states can impact a city in different ways within the larger system of multilevel governance.

As Ohlhorst argues, "The interactive dynamics in policy-making are interpreted as positive policy feedbacks, triggering the mobilization of resources, incentives, and information for political actors by encouraging ambitions and increasing commitment."[263] While proving the accuracy of this claim is beyond the scope of this paper, this statement shows some of the scholarly support for the positive influences of the hierarchical dimension of multilevel governance. Similarly, other authors even note that a lack of policy mandates from state governments act as a large barrier to city climate action, thus showing that state encouragement cannot be undervalued.[264] Krause even names adherence to state regulations or legislation as the third most important factor to causing successful action on climate, following the factors of framing and policy entrepreneurs.[265] Often any effort of state leadership can promote related climate action in cities, an idea Carl Spector reinforced when he mentioned how certain initiatives by the state, such as participating in RGGI or passing the Global Warming Solutions Act (GWSA), "helps us."[266]

Overall, in these three main ways, distinctively strong climate action at the state and national level, whether legislative or within agencies, often spurs the city to do the same. Daniel Zarrilli, the senior director of climate policy and programs in New York City, summarized this relationship. "We certainly have had good partnership over the last eight years… But we have a lot of things we can do on our own, and we can even

accelerate our own efforts to make sure that we do pick up some of the slack."[267] Building on the discussion of partnerships, both mandatory and voluntary, between cities and superordinate levels of government. Section 6 will approach this relationship from the opposite direction, examining how a city may lead and encourage its state to act on climate change.

4.C Concluding Thoughts on the Hierarchical Dimension

The hierarchical relationship between levels of government in American politics can serve to limit or advance the progress of city climate action, demonstrating how these public actors can work together as well as against each other. The impacts of these disputes over jurisdiction and funding as well as the weight of a state's support for climate policy can trigger a new city policy or vastly shape a city's strategy. For example, the New York City DEP actively strives to get ahead of the state in order to have the freedom to use its funding based on its own plans rather than being driven by regulations.[268]

While the hierarchical relationship between the city and the state depends on the unique characteristics of the state, the structure of decentralization and multilevel governance constitute the common foundation of this relationship across all cities and states. In just the same way, the conflicts and collaboration in the city-state relationship are based on this same system. Decentralization creates the inherently unequal relationship between these levels of government, which can become strained when "both these levels have regulatory powers over the same activity" and one level has a different objective.[269] Often times, higher levels of government are simply silent on climate change, thus reducing this tension, but when cities and their superordinate levels of

government come into conflict, cities still often find a way to demonstrate their "home rule." Still, a lack of action at the highest levels undermines the traditional political process of American federalism, leaving progressive states to find their own ways to prompt action at local levels of government and provide funding for new projects. This increased importance of decentralization culminates in the growth of truly collaborative projects between the city and state, derailing the system of strict decentralization and increasing the complexity of multilevel governance.

Section 5: Horizontal Dimensions: City Networks and Collaboration

5.A Horizontal Relationships in Multilevel Governance and Decentralization

A common misconception is that municipal governments are only concerned with their own people and resources, and while Section 2 provides numerous examples of this local focus, many cities in the United States are also involved in both international and regional networks and collaborative relationships to combat climate change. In fact, 30% of climate actions around the world in 2015 were involved in collaboration with other cities.[270] There are many kinds of horizontal relationships including formal networks, ad-hoc or informal networks, project collaboration, informal discussion between city leaders and one-on-one collaborative partnerships. Using a multilevel governance lens, these collaborative efforts and relationships fit into the horizontal dimension.[271]

There is a great variety in the types and emphases of these networks, but those studied in this section are defined by the following characteristics. First, although scholars debate whether or not non-state actors are a part of the horizontal dimension, this paper will only analyze the relationships between municipal governments, following the example of Lee, Betsill and Bulkeley.[272] Similarly, horizontal relationships exist between governments at the state or province level as well as between countries. This section will compare these efforts at superordinate levels of government but still primarily will focus on urban relationships. Third, while some kinds of relationships may focus more heavily on adaptation as compared to mitigation or vice versa, many aspects of these relationships apply to both strategies to combat climate change. For instance, local collaborations are more likely to focus on adaptation because of their shared interest in regional infrastructure while international collaborations are more likely to emphasize

mitigation because it is the most easily translated issue across international borders. Still, both regional and international relationships rely on decentralized government and increase a city's vertical influence. This example demonstrates the notion that some generalizations can be drawn from almost all city networks combating climate change, whether mitigation or adaptation. Thus this paper will only take note of a network's particular focus when relevant to the characteristic in question. Fourth, while regional collaborative efforts are analyzed below, scholars are far more interested in international networks and thus literature on these relationships primarily has an international focus. Similarly, state-to-state regional collaborations have received little attention from academic research, and the same goes for informal relationships and collaborations at all levels of government. Thus the discussion below will mostly use international, nation-to-nation formal networks to compare to city collaborations.

The horizontal dimension demonstrates some essential characteristics of multilevel governance. First, these networks play a crucial role in providing political action from a non-traditional source. While hierarchical and vertical dimensions of governance have some roots in traditional American federalism, city networks have never been utilized to the extent that they play now in the face of climate change. This area is fairly new, but just as scholars have focused on multilevel governance for the last decade,[273] studying networks has become increasingly popular in academic literature. Second, the horizontal dimension's focus on the connections between different cities inherently demonstrates the importance of relationships within multilevel governance. Third, multilevel governance emphasizes the increase of bottom-up leadership, a concept that is nowhere better demonstrated than in a series of networks between cities. To

Taedong Lee, these two political models are so inseparable that he begins his analysis by looking at city-to-city relationships and then from there acknowledging the characteristics of multilevel governance within it.[274] He writes, "I conceptualize translocal relations as the multilevel and multi-agent governance of local authorities, both within and across nation-state boundaries."[275] From this statement, it is clear that some scholars have come to inherently associate these networks with multilevel governance.

The horizontal dimension also demonstrates the increased importance of decentralized governance within the American federalist model. For instance, by joining in collaborations with other cities and transnational networks, municipalities practicing the horizontal dimension look to widely disperse power rather than rely on higher levels of government.[276] In addition to sharing national power in this way, city networks also often use extremely decentralized (using its more general definition) means of decision-making. However, some scholars argue that this horizontal dimension of multilevel governance goes beyond traditional decentralization. Betsill and Bulkeley find that while the horizontal system has its roots in federalism, traditional regime theory assumes a top-down perspective and thus cannot explain transnational networks where local members maintain independence and innovate freely.[277] Unlike superordinate levels of government, these networks are unable to require members to accept their preferred mitigation targets or adaptation strategies, instead relying on voluntary action. For instance, a city must commit to reducing carbon emissions by 80% by 2050 in order to join the Carbon Neutral Cities Alliance.[278] However, this pledge this a purely voluntary one rather than an action mandated by superordinate levels of government. Because cities opt in and select their own networks, they're most likely to follow its directives, even

without formal authority.[279] Even while cities are creating unprecedented levels of "bottom-up democracy" by freely establishing and joining their own networks, these local governments are also coming to a new level of interdependence.[280]

5.B Background

Superordinate Comparison – International Relationships

Based on its global impact and widely dispersed origins, climate change is a true tragedy of the commons. Given the history of intercontinental treaties to solve other wide-ranging issues like bird migration and international maritime disputes, there is a general public understanding that international agreements between countries are the most essential way to address climate change and the related misconception that this is the only solution.[281] In particular, most publicity focuses on the United Nations (UN) as the central figure in addressing climate change through the UN Framework for the Convention on Climate Change (UNFCCC) and the Conferences of the Parties (COP). Other nations have established alternative and more successful climate agreements beyond the UN, but actions from the American national government have remained mostly within the UN and its COP climate negotiations. Despite this international attention, these efforts have widely failed to provide any truly effective or long-lasting policies in reducing or adapting to climate change.[282] The most successful COP occurred in Paris in 2015, resulting in a significant climate agreement that is now under threat from the possibility of American withdrawal in Trump's presidency.

When reading city documents and literature, it seems that many public officials and scholars feel that the bonds between local governments replace the mostly unsuccessful international networks between countries. As Eduardo Paes, the Mayor of

Rio de Janeiro, said about a C40 study, "Importantly, the report provides compelling evidence for why city governments have demonstrated an ability to get to grips with climate change where others have failed, namely: the ability of mayors to collaborate across geographic, political and economic boundaries."[283] Mayor Paes believes that city governments are able to engage in networks in ways that higher levels cannot, an opinion that appears to be shared by many city officials and academics. Bulkeley summarizes this belief: "This (international network) movement has gathered pace significantly since the early 2000s because of a growing sense of the failure in international negotiations."[284] Similarly, Taedong Lee writes on this trend, finding that "locals have begun to interact extensively with locals in other parts of the world, bypassing national governments."[285]

Barber goes farther and explains why cities succeed where countries cannot based on the concept of sovereignty. He believes that countries attempt to force interdependent climate agreements even while staying completely independent, and thus every international decision is subject to sovereign veto "either implicitly via the noncooperation of powerful states… or explicitly as with the UN Security Council."[286] For example, despite Obama's political leadership, the legislative branch of American government has rejected almost every United Nations decision, at least partially due to a fear of encroachment, and now Trump has vowed to remove the US from several of these international agreements.[287] In contrast, the city's inherent lack of jurisdiction compels it to cooperate with other local governments, an opinion that will be reexamined in later sections.[288] While Barber's theory is not widely shared among scholars, his work exemplifies the general feeling of disappointment in country-to-country relationships.

Despite this feeling of superiority in both city officials and scholars, these actors may biased towards the policy abilities of this level of government, and thus their claims should be read with a skeptical eye. For instance, many urban networks actually have their roots in country-to-country networks, suggesting that cities may fit into a larger system of international networks rather than simply replacing country-to-country relations. ICLEI stemmed from a chapter on local agendas at the Rio Earth Summit in 1992,[289] and the UN helped to launch the Compact of Mayors.[290] Furthermore, the very nature of climate change as a "tragedy of the commons" necessitates actions from the largest players, which in this case are countries. While city networks can certainly provide unique advantages to local climate action, these partnerships are just one part of the horizontal dimension of multilevel governance, and actors at other levels and dimensions are also important.

Similarly, while in general scholars focus more on states rather than urban efforts, state-to-state international networks have largely been ignored by academic study. Overall, states seem to be considerably less active in forming international collaborations on climate change. Betsill and Rabe find that while these collaborative relationships exist at the state level for other issues, international climate networks like Cities for Climate Protection (CPP) tend to be unique to municipal climate action.[291] Furthermore, there is very little academic research on state- and country-based informal relationships and partnerships, perhaps because these efforts are less documented and more specific to the areas involved. The exception to this general trend is the work of Selink and Vandeveer, who described the development of memorandums of understanding between European countries and American states.[292] While these agreements are not binding, they allow for

many of the same benefits as intra-city networks, such as sharing information and partnership innovation.[293] These state-based relationships merit further research, but for now, this analysis will primarily focus on the formal networks between countries unless otherwise stated.

Intergovernmental organizations between countries created effective environmental agreements in the past, such as the Montreal Protocol, and agreed on the Paris Climate Agreement in 2015, but thus far, these intra-nation networks have been unable to stimulate effective action on climate change. As noted above, state-to-state partnerships are still fairly undeveloped. However, these organizations between superordinate levels of government are able to take part in intra-city networks. For instance, the Climate Group reinforces the complex and overlapping dimensions of multilevel governance by including both state and regional governments in its members.[294] With the rise of both city and state international networks, subnational authorities have developed their own foreign policies beyond a national government, making climate governance a more complex model instead of simply hierarchical.[295] International city networks occupy a unique niche within this larger system, providing a specific purpose and set of advantages that are examined below in Sections 5.C and 5.D.

Background of International City Relationships

Just as national discussions on climate change focus on international relationships, the number of transnational municipal networks (TMNs) and international collaborative relationships has been rapidly increasing over the past few decades. This trend is particularly significant considering that cities have historically maintained a local focus, as noted in Sections 2.E and 2.F. International networks and relationships

influence urban governments to use more international framing for their policies, making this the exception to the majority of locally-focused policy. Kern and Mol describe this changing horizontal dimension when they claim, "Because climate change is a complex global problem that requires action at local and regional levels, urban climate governance has become highly internationalized." [296] Similarly, Anguelovski views this internationalization as a sign of the maturation of the climate policy area.[297] These two perspectives demonstrate a commonly held view that these TMNs and international relationships are a mark of progress and improving policy actions.

Overall, international city action tends to be primarily in formal TMNs, and academic literature has similarly focused on this kind of collaboration. The first TMN, the International Council for Local Environmental Initiatives (ICLEI), was founded in 1990.[298] Since then, many kinds of international relationships have developed and expanded. One of the most significant networks is the C40 Cities Climate Leadership Group (better known as C40), which was founded in 2005 and now includes over 80 local governments across the world.[299] Boston and New York City were both early leaders to several city networks, such as ICLEI, C40, the Carbon Neutral Cities Alliance (founded 2015), 100 Resilient Cities (100RC; founded 2013), and Urban Sustainability Directors Network (USDN; founded 2009). These networks use different strategies and have different foci, but they often are willing to collaborate. For instance, the UN, C40, ICLEI and United Cities and Local Governments (UCLG) worked together to establish the UN Compact of Mayors in 2014.[300] There are many networks beyond these examples, but this brief history suggests that the development of TMNs were tied to early responses to climate change and have since increased in number and size to become a robust set of

political organizations. As early members or "pioneer municipalities," Boston and New York City have invested heavily in collaborative efforts and tend to fit into a group of "champion" network members that are highly active locally and transnationally.[301] Although many local governments are not as active as Boston and New York, their example demonstrates ways in which cities can gain access to the benefits of these international networks.

The first TMNs date back to the 13th century in Europe, but the globalization of cities has led to a rapid increase in the number of networks and the breadth of the issues they confront.[302] In particular, there are municipalities that can now be referred to "global cities" due to their influence, wealth and leadership that often is equal to or greater than many small countries. Lee writes, "Large global cities have significant economic, social and environmental governance," and thus these local giants have become "forerunners in global climate governance."[303] Lee uses the new word "translocal" to describe the dual nature of cities that are both international and local, and similarly he describes climate change as a "glocal problem."[304] These new words combine traditional local aspects with international ones, reflecting the development of a more multilevel approach to climate change. Lee's believes that TMNs are extremely significant to a city's climate policy, and he even goes so far as to state that the "global cityness" of a municipality is the primary driver of how much a local government will be engaged in climate governance.[305] While other scholars may not share this primary focus on TMNs, there is certainly support for finding a global role for local actors within a system of multilevel governance.

Superordinate Comparison – Regional Relationships

In contrast to the nation-to-nation focus and overall appearance of failure at the international level before the Paris COP21 in 2015, regional efforts on climate change tend to be focused on state-to-state relationships[306] and have experienced greater success. American states are increasingly collaborating with one another as well as with provinces and states in Canada and Mexico, respectively. The Regional Greenhouse Gas Initiative (RGGI) is one of the most widely publicized examples of this kind of network.[307] RGGI started in 2005 with nine states from the Northeast region of the US, including Massachusetts and New York, in an effort to curb emissions and establish a cap-and-trade policy that began in early 2015.[308] Other region-based collaborations established solely to confront climate change include the Western Regional Climate Action Initiative, which involves five western states and that was established in 2007, and the Southwest Climate Change Initiative, which involves two western states and that was established in 2006. Other initiatives were established at earlier periods and adopted new programs to address climate change in recent years. For instance, the New England Governors and Eastern Canadian Premiers, which includes six states and five provinces, was established in 1973 but only agreed to work on regional climate change efforts in 2001.[309] Similarly, the Western Governors' Association includes 18 western states and only began addressing climate change in 2006. In contrast to this widespread state-based collaboration on climate change, regional networks between countries within a given region (e.g. between the US and Canada) have thus far not taken direct action on climate change.

The level of successful climate action varies across these state-to-state networks, but overall these initiatives are too new or unexamined to analyze their contribution to the

global climate regime. The largest conclusion one can draw is that simply by their existence and continued efforts, they appear to be more actively confronting climate change than country-to-country efforts. Despite their success, overall the academic literature focusing on state-to-state relationships is fairly modest, only having been moderately covered in the news and in the work of certain scholars such as Barry Rabe. Once again, more informal relationships and partnerships are even less studied in academic research.

Furthermore, new partnerships between the U.S., Mexico and Canada since 2016 suggest that there is an opening in the literature for future study in country-to-country regional relationships and informal networks.[310] These more informal collaborations are still too new to evaluate, but as they have previously relied on Obama's political leadership, it seems unlikely that this strategy will continue during the Trump administration.

Even with the relative success of these state-based and past country-based efforts to combat climate change, regional collaboration between local governments provides an additional set of advantages and strategies. In a system of multilevel governance, efforts different levels of government do not need to compete or replace one another. Instead, each level has its own role in the success of the overall climate regime. Thus both international and regional city efforts work in conjunction with comparative relationships at superordinate levels of government.

Background of Regional City Relationships

In contrast to the relatively new use of TMNs and international relationships between cities to combat climate change, cities have long linked government efforts

across a region. As ancient as the city-state as a political structure, local governments have recognized the benefits of regional governance for millennia. A basic understanding of political logic demonstrates that banding together with one's neighbors creates a stronger front against a larger problem.[311] But in reality, some municipalities, such as New York City, have historically struggled with regional collaboration, making new efforts on climate change unlikely. This difficulty is mostly due to New York City's unusual structure with three very strong state governments in a small region.[312] This political fragmentation is compounded by the diversity of economic interests in the area.[313] Kantor and his colleagues' assessment supports this finding when he finds that regional collaboration on environmental issues is particularly difficult within New York City.[314] Citing the local government's inability to create tolls to enforce clean air standards, these researchers find that environmental policies have large effects on local economic development, creating conflict and rivalry between the parties involved.[315] Other cities and regions like New York City likely have similar past difficulties with collaboration and likely will continue to do so even as climate change becomes an increasingly pressing issue.

However, many new regional relationships have formed and older networks have adjusted to confront climate change with a fair amount of success. In contrast to Starr and Kantor's findings of failure in NYC, recent climate change efforts in the region surrounding Boston have been very strong. This action has been centered in the Metropolitan Area Planning Council (MAPC), which serves as a regional planning agency, and its example, as described by its Energy Planner and Manager of the Metro Boston Climate Preparedness Taskforce, Axum Teferra, helps to show the recent growth

and potential of city-to-city regional collaboration.[316] One of thirteen units apportioned by the state, the MAPC is extremely large, including representatives from 22 cities and 79 towns and covering 48% of the state's population.[317] The planning council claims that its efforts across many policy issues "resulted in almost 300 individual projects in regional and local planning, municipal collaboration, and public policy to advance the MetroFuture vision," demonstrating the enormous influence of its network.[318] Over 50 years old, this agency demonstrates how an existing government network can effectively retrofit to confront climate change.[319] The MAPC has helped to engage Boston and other cities in larger efforts on both mitigating greenhouse gas emissions and adapting to climate change since it put these issues on its agenda in 2015.[320]

More directly, the agency established the Metro-Boston Preparedness Task Force in 2015 to work on climate change impacts in the 14 cities and towns around Boston, made up of urban planners, city politicians and regional infrastructure agencies run by the state such as the Department of Transportation (DoT) and MassPort.[321] The mayors of Boston and Somerville led the formation of the Task Force with the support of the MAPC, and now that it fully functioning, this "very collaborative process" is helping local governments to make more informed decisions and prioritize adaptation needs.[322] Although the recent origins of this Task Force mean that its impacts cannot be fully evaluated, the MAPC helps to demonstrate the recent growth and planning structure of regional planning agencies that work to combat climate change.

Boston and New York City represent the full range in variation in the effectiveness of regional collaborative efforts, but the overall lack of literature on this topic limits our ability to generalize based on these cases for now. Similarly, informal

regional work outside of established networks is even less studied, and so, as noted previously, the following analysis will rely mostly on the work that has been done in formal planning agencies like the MAPC. Without the attention or power of an international TMN or project, regional networks and relationships have not yet been carefully studied, and likely future work will have to build upon case studies across the US. Still, these two cities provide examples of how regional relationships between cities can be blocked by obstacles or can increase a city's ability to combat climate change. While Boston's example is not representative of all metropolitan regions in the US, the city serves to demonstrate the potential benefits from this kind of collaboration. As Kantor and his colleagues conclude, even New York City has a "surprising capacity to mount some coherent, if limited, regional governmental responses to the new forces of global changes," and the municipality has successfully collaborated with its watershed on environmental degradation.[323] Thus, while analyzing the range of obstacles and opportunities that impact the growth of a regional city-to-city relationship on climate change is beyond the scope of this paper, sections 5.C and 5.D will showcase the range of potential benefits of these networks, as demonstrated in several key examples.

5.C Benefits of Both International and Regional Relationships

Overview

While most scholars find that membership in city-to-city collaboration provides distinct advantages, a few authors think these networks are at best unnecessary and unhelpful. For instance, Krause claims that the "influence of neighboring or peer cities" is one of the lowest motivating factors to take action on climate change.[324] However, the vast majority of scholars describe the benefits of membership, several of which can be

found both in regional and international networks. Bulkeley claims that the establishment of organizations like ICLEI and Cities for Climate Protection (CCP) led to the first scholarly interest in city climate action.[325] Furthermore, in some cities, a majority of climate action is directly related to involvement in a network; for example, 70% of Houston's total actions are delivered through networks and collaboration.[326] Similarly, Randolph supports this motivating aspect of city networks with his finding that ICLEI membership led Miami-Dade County and King County to act on adaptation policies.[327]

The following sections examine the range of benefits in depth within international and regional networks and relationships. Both types of collaboration give cities four main advantages: shared knowledge with other cities, access to resources, a more flexible governance structure and, most importantly, new opportunities for vertical influence. This vertical influence is based on the amassed power of these networks in which cities are able to overcome the disadvantages of their smaller size and jurisdiction in order to play a larger role in the global climate regime.[328] Overall, the vast growth in these intra-city relationships helps to increase local governments' knowledge, expertise and capacity to deal with the far-reaching issues associated with climate change.

Sharing Information

The first benefit of city-to-city collaboration is the one most agreed upon by scholars, networks and cities alike: sharing information. Scholarly research on this advantage, like any research on these city-to-city collaboration, has been mainly focused on international networks rather than regional or more informal counterparts. Kern and Bulkeley claim that "strategies of information and communication are the bread and butter of TMNs," and the widespread agreement on this benefit demonstrates that this

spreading of knowledge is one of the most essential characteristics of networks, both for mitigation and adaptation efforts.[329] For instance, reporter Erika Bolstad from *Climate Wire* described the advantage of joining a network like 100 Resilient Cities (100RC) where cities are working on many of the same challenges.[330] Cities like New Orleans, Norfolk and New York City are facing the difficulty of planning for rising sea levels, and so a city would benefit from hearing about the innovative strategies used by others in the absence of top-down regulation from higher levels of government.[331] Similarly, Elizabeth Hanson, the C40 City Advisor from New York City, explained that, "You know people all around the world are trying to solve this same problem. And so rather than reinventing the wheel it's helpful for… city staff members to be able to have points of contact around the world and… here in the region that are working on the same issues."[332] Hanson's statement shows that the principle of sharing policy experience and ideas is also experienced at a regional level, and the MAPC in Boston finds that regional agencies are particularly adept at promoting best practices.[333] Likewise, one of the main strategies of the Water Utility Climate Alliance (WUCA), which consists of ten of the nation's largest water providers (including the NYC DEP), is to determine the best practice in climate adaptation and publicize the information.[334]

One possible contribution to the vast success and use of this benefit of network membership is the popularity of writing reports in the city.[335] There are many examples of strategies to gather this data within cities, and so it is an easy jump for their networks to utilize and distribute this information. Furthermore, formal networks can also help to set standards for measuring various climate-related properties. For example, the MAPC

helped Boston and Somerville governments to find and establish a task force on climate change with other municipalities who would face the same impacts.[336]

There are many scholars who list this exchange of information as one of the key functions of city-to-city networks or collaborations, including Betsill and Bulkeley,[337] Van de Meene and Lee,[338] Hakelberg,[339] Corfee-Morlot,[340] Shi,[341] Giest and Howlett.[342] Van de Meene and Lee describe this exchange as "policy learning," or a complex process with many actors that are working on a specific policy problem.[343] They claim that policy learning on climate change is particularly beneficial because: "An important approach to dealing with increased uncertainty, such as that generated by climate change, is being able to respond to changing circumstances. Learning provides a central mechanism for improving adaptive capacity and facilitating policy adaptation."[344] This perspective demonstrates how the unique characteristics of climate change, specifically its uncertainty and widespread impacts, may be well suited to solutions from city networks.

Hakelberg similarly describes this learning process as "governance by diffusion," noting its ability to "accelerate processed by which chains of 'interdependent but uncoordinated' adoptions of certain policies lead to their broader dissemination."[345] Thus sharing information can unite traditionally separate and locally-focused cities into coordinated actors in multilevel governance. Likewise, Shi and her colleagues state that regional agencies can "foster local leadership by… communicating why and how some cities have translated their awareness of climate impacts into actual adaptation plans and projects," using the MAPC as an example.[346] In a third perspective, Kern and Bulkeley find that "Municipalities indicate that the opportunity to learn about 'what works' from other places is a key motivation for their participation in networks."[347] Thus, the desire to

gain access to this shared knowledge can also be an incentive to experience the other advantages of membership. Although the theoretical work done on the ways that cities share information focus on different advantages and processes, almost all authors seem to agree that networks and relationships help this process.

Networks and their city members also frequently discuss the benefit of sharing information in this manner. In particular, the reports put out by the TMN C40 demonstrate the organization's strong focus on sharing strategies and information.[348] C40's *Megacities* report claims that it serves to bring the "world's megacities together in meaningful exchanges to speed up the global adoption of climate policies and programs that have been demonstrated to work."[349] The network explains that information sharing is one of the three largest benefits of membership, finding that "cities are learning from the successes of others and choosing to test best practices within their own jurisdiction."[350] This last statement once again emphasizes the multilevel governance that includes this horizontal action. By engaging in the collaborative horizontal dimension, cities are able to overcome disadvantages of limited jurisdiction or resources in the hierarchical dimension. C40 also evaluates this benefit more concretely when they find that there are "links between the extent of networking between cities and the scale of action delivered."[351] One possible explanation for this is that these larger actions are tested at one municipality within the network that then shares its results, thus allowing faster dissemination of best practices.

City leaders seem to share this admiration of C40 and other networks. Gro Harlem Brundtland, the former Prime Minister of Norway, stated, "Knowledge is a valuable commodity in the green economy, and knowledge shared is knowledge amplified. The

C40 process recognizes this in order to avoid 'reinventing the wheel' and encourages people to find and highlight technology."[352] Mayor Naheed Nenshi of Calgary echoed these same ideas when he said,

> "Every city in the world has the same issues. We have to take out the trash, we need to make sure the road networks are in good shape, we need police and first responders… So… our key is how we share best practices, because we all have to deliver the same services at the end of the day, and we are all looking for better ways of delivering those services."[353]

These quotes help to demonstrate the "common sense" understanding of the value of sharing information about climate change strategies between cities. Even smaller networks seem to have this same affirmation from their members. Barber found that a survey by the CityNet association revealed that a "significant majority of cities agreed that city networks facilitated information exchange… and provided valuable input for policy making and capacity building."[354] By providing cities with such an abundance of information about best practices, TMNs are able to compensate for the silence and lack of guidance from certain state and national governments in many countries. This allows urban governments to take more independent action and ultimately make smarter policy decisions.

Interviews with officials from the cities of Boston and New York City demonstrated the same understanding of this benefit, and often these officials almost mimicked other city leaders, scholars or networks' reports on the issue. For instance, New York City's Department of Environmental Protection (DEP) established a bilateral relationship with the city of Copenhagen in order to learn about the European city's accomplishments in decentralized water management and community engagement.[355] Alan Cohn, Climate Program Director for DEP, said,

> "They kind of are using storm water management and planning for these heavy rain events to actually guide urban planning moving forward. So any new development has to be built with water sensitivity and flood proofing in mind and it's not just about like raising things above the floodplain but actually building really cool landscapes that can absorb water… They're moving forward with it full force and it's really helping to improve public spaces there, not just making them resilient."[356]

Cohn's statement demonstrates his detailed knowledge on the climate strategies of this distant city, showing the effectiveness of the information sharing process. Copenhagen's innovative actions have impacts far beyond their own borders, showing how a network can amplify the effects of already successful actions. This collaboration was the DEP's first international work, but the relationship inspired them to newly focus on integrating resiliency into all of their urban planning and to adapt their green infrastructure approach in a similar manner.[357] Even while NYC's own officials praised the benefits of international collaboration, a study of 22 cities in C40 actually found that the city was one of the leading teachers of climate policy, finding that its practices were among the most studied and learned from in the world.[358] This demonstrates how New York City has benefitted both from learning and from leading the world's cities in climate action.

This free policy learning aspect of international networks allows cities to find out about innovative new strategies addressing similar threats from climate change, allowing them to make better-informed choices for more successful climate mitigation and adaptation policy. Information exchange is the most agreed upon benefit of collaboration, and this factor alone likely persuades cities to engage in horizontal governance.

Resources and Direct Assistance

A second benefit of collaborative relationships is the provision of assistance, which can come in many forms. First, a city can benefit from a network's expertise in

several small ways.[359] The TMN's skills can be shared with local governments through "technical assistance and trainings, including workshops (and) funding to conduct emissions analyses."[360] A CityNet survey found that a significant majority of cities agreed that these networks facilitated technical support.[361] Likewise, the MAPC was designated as the "technical assistance centers" for their member communities.[362]

In another form of direct assistance, a powerful international network, such as C40, can provide additional staff. As mentioned previously Elizabeth Hanson's position is joint-funded by the organization and the NYC Office of Sustainability.[363] Michele Betsill explains the value of this assistance by noting that cities are often unable or unwilling to fund an additional employee themselves, and so they benefit from the addition of personnel dedicated to climate issues "rather than adding it on to the existing portfolio of already overworked officials."[364] Adding an additional staff member for little or no cost is so valuable to cities that often they will participate in competitive application process to receive one.[365] Reportedly each spot in the 100RC network, which provides funding to hire a chief resilience officer, has about ten cities competing for membership.[366] This benefit can be even more valuable at the regional level where there are more small municipalities involved. For example, within the MAPC region, most small local governments do not have room for staff dedicated to work on energy, disaster preparedness or climate change, and thus the planning agency is essential for them to take action, a finding supported by Shi and her colleagues.[367]

Finally, formal networks can simply provide funding for climate projects, either directly from themselves or by helping to apply for larger sources of funding. As discussed in Section 4.B, the hierarchical lack of access to funding can often be a limiting

force in a city's attempts to address climate change. While this limitation can push a city to take creative actions or frame an issue as an economic co-benefit, networks are able to help urban actors overcome their lack of funding by simply providing access to alternative sources, thus allowing these city-to-city networks to have a greater capacity to respond to climate change. For instance, members of 100RC can access $200 million in partner platform services.[368] Taking this a step further, C40 is working to kick start a financing collaboration with the German federal government and the Inter-American Development Bank (IADB) to unlock $1 billion for sustainable infrastructure.[369] Although this particular C40 project is limited to cities in low- and middle-income countries, it still demonstrates the innovative ways that these networks seek to assist with funding. Similarly, Shi and her colleagues find that regional planning agencies can "help overcome the lack of fiscal capacity and political support,"[370] and the MAPC finds that regional cooperation can help municipalities take action on key policy areas "despite a more constrained financial world."[371] These examples help to show how networks in both theoretical and practical terms help their members to rely less on traditional sources of funding. By allowing access to this financial assistance, these networks are also providing an incentive for community stakeholders to collaborate with city efforts as they did with the Boston Living with Water Competition. It is clear that local governments are reaping the benefits of this assistance as C40 found that about half of actions delivered through networks utilized grants or subsidies.[372]

Flexibility

While most of the other benefits described in this section function more directly to assist city policy making, collaborative relationships and networks also simply provide

better means to make policy through their flexible nature. Their resources are able to adapt to the unique needs of every member due to their local focus, allowing a more customized approach.[373] Giest and Howlett argue that, "Networks are more flexible and less limited than, for example, rigid government programmatic restrictions to tackle place-based characteristics. They also have an increased reach to connect with knowledgeable actors, resources and multiple government entities."[374] Van de Meene and Lee echo this in their argument that this flexibility is important for dealing with increased uncertainty, an inherent feature in climate change policy.[375] These authors find that learning and shared information actually provide a key way to exhibit this flexibility, thus intrinsically connecting these two benefits. This benefit of international networks certainly needs to be explored further, but thus far it is a fairly undeveloped area of literature.

The MAPC's own reports demonstrate this flexible nature from a practical perspective. One report claimed that:

> "The agency feels nimble, agile and flexible. Staff members are excited to work at an agency that operates at the intersection of the public, private and non-profit sectors; that values pioneering thinking and allows staff to pursue innovative projects and funding opportunities; and that actively seeks to expand beyond the traditional areas of transportation, land use and environmental planning."[376]

This helps to demonstrate the more tangible ways that networks are able to achieve this abstract sense of flexibility and the ways in which its workings are preferred to other kinds of policy-making. While collaborations between cities face a unique set of obstacles, the smaller-scale of these governments allows them to find equivalent partners across the globe and to engage with them more meaningfully. Jessica Feldish, a Program Manager for Greenovate, described this sentiment in her claim that Boston is able to act

more creatively and "definitely form collaborations and relationships that allow us to be a little more nimble and respond faster and quicker," and she was echoed almost word-for-word by Elizabeth Hanson in NYC.[377] Although these two officials were speaking more generally about their cities, this flexibility is a key distinction of city climate policy as opposed to superordinate levels of government.

Vertical Influence

While city climate action may have first originated externally in these networks or in state action, cities are now using their membership in order to "raise the profile of cities in national and international climate debates and to put pressure on national governments, especially the US, to take more robust action."[378] This benefit is now one of the most important aspects of city-to-city collaboration, and it is found almost entirely in TMNs. However, regional networks and relationships work to increase their vertical influence through direct action. For instance, the MAPC in the metropolitan Boston area sits on several state and national boards related to climate change, and actively uses this position to gain the support of higher levels of government.[379] The regional agency lobbied the state governor and state legislature to continue financial support from the Sustainable Communities grant by increasing technical assistance funds for regional climate action, demonstrating a more direct form of vertical influence from a network based on city relationships.[380] Likewise, the personnel in the Water Utility Climate Alliance (WUCA) actively communicate with the national government in order to influence larger policies on sustainability and resiliency.[381]

International networks are also capable of similarly directly promoting their preferred policies, but there is far greater focus on, and support from, both academics and

local governments themselves for the ways that TMNs increase their members' vertical influences more indirectly. At first glance, international collaborative efforts are more intentionally focused on amplifying city policies. Kern and Bulkeley include "influence" as a key action of TMNs,[382] and similarly, Hakelberg notes that international networks give municipal action a voice at the national level.[383] Notably, TMNs seem to feel that this benefit is one of their largest roles, but in general, studies and reports focus more on indirect vertical influence rather than intentional amplification. Through their larger size and international presence, TMNs in particular, as opposed to regional networks, provide an important sense of legitimacy to city climate action. While this legitimizing nature has other benefits (discussed below in Section 5.E), it plays an especially important role in increasing the international impact of city climate action.

The first step of this indirect vertical influence is to build an international reputation for city action, which can take place both indirectly and formally. For instance, C40 describes the benefits of its membership as helping to "increase (the cities') visibility as leaders responding to climate change" and to provide "hard evidence that cities are true climate leaders, and that local action can have a significant global impact."[384]

In this way, international city networks can help build the reputation of local governments as global powers. TMNs can also provide a more formal international platform by allowing cities to take part in international climate negotiations between countries. Kern and Bulkeley describe this opportunity: "Within the international climate change regime, climate change networks have been granted observer status and hold side events to publicize the achievements of their members and the possibilities for taking action at the annual Conference of the Parties."[385] By showcasing city leadership both

informally and formally, TMNs help local governments to build an international reputation for their success in climate policy, showing them as leaders in a crucial policy space where national governments have been relatively paralyzed with the exception of the Paris Climate Talks in 2015.

Examples from primary and secondary documents that support this international aspect of networks abound. For instance, Barber finds that many local governments believe that their membership in city networks facilitated their international exposure,[386] and similarly, C40 claims to "amplify individual city solutions by providing a global platform for showcasing city successes."[387] Corfee-Morlot and his colleagues claim that networks allow cities to become active in the global agenda for climate change,[388] and similarly, Elizabeth Hanson from New York City found that the city's participation at COP21 provided a platform from which cities could call for greater actions from their nations.[389] The Compact of Mayors linked the importance of building a city's reputation to international influence by stating that it served to increase the visibility of local leaders responding to climate change, "demonstrating their commitment to an ambitious global climate solution, particularly as nations convene around a new climate agreement in Paris in December 2015."[390] Although it is certainly possible that these networks could be biased in overestimating their influence at the international level, this wide range of support demonstrates that at the very least, TMNs work very intentionally to increase this vertical influence.

This heightened reputation and participation in international climate negotiations works to increase the overall influence of these cities. C40 puts these actions together through its key goals of city diplomacy: demonstrate how cities are leading the way, and

have a positive impact on an inter-governmental agreement to tackle climate change.[391] This second goal demonstrates a multilevel governance mentality as networks see a clear role for cities to be a part of international climate negotiations. This vertical influence is possible due to the collective binding of city power through these networks. Rather than an individual city having a single small voice to its national government, TMNs allow municipal governments to combine their voices into a more powerful figure on the international level.[392] Again, C40 describes this benefit: by allowing cities to "demonstrate their collective impact… (the network) provides them with a platform to engage effectively with national government and international negotiations."[393] This statement shows how these reputation-building actions have a much larger impact than simply creating political legitimacy in one's hometown. In addition, international networks allow urban leaders to work directly with senior officials of international organizations instead of being restricted to a state or national government that may be resistant to climate action. Overall, TMNs allow cities to build their individual reputations, which in turn creates a powerful network that has a place at the table of national and international climate negotiations. Through this opportunity to demonstrate their leadership as well as through more direct regional efforts, local governments are able to positively influence the larger climate regime, fulfilling a much-needed pressure in multilevel governance.

5.D Benefits Specific to International or Regional Relationships

International and regional relationships work in conjunction with each other rather than in competition, and the horizontal dimension of multilevel governance will be most successful when collaboration occurs at both levels. Although these two types of

collaborative relationships share a large number of benefits (see Section 5.C), there are advantages specific to either regional or international networks that make them valuable and essential for climate action in their own right. For instance, Giest and Howlettt find that while international networks can provide huge resources and act as a source of legitimacy, their "champion-picking" nature does not motivate new cities to take action on climate change, creating a disadvantage that will be discussed more in Section 5.E.[394] Thus, these individual champion cities "have to be connected to less active cities regionally, to engage a wider network in their environment."[395] This shows that that these global, high-profile networks work in conjunction with regional relationships rather than replacing them.[396] The two types of collaborative relationships are tied together by their individual advantages, just as different levels of government each provide their own unique benefits, thus deepening our understanding of multilevel governance.

Benefits Specific to International Relationships and Networks

TMNs and related international relationships provide two unique advantages: linking distant cities with common needs and increasing legitimacy. This first benefit improves the sharing and spread of information, while the latter helps to increase access to resources and local support.

First, networks can benefit their local members by providing opportunities to meet and collaborate.[397] Although a great deal of network action happens directly through its personnel, these networks can also take a more relaxed approach by simply allowing cities to connect through its events and communication systems. This collaboration can take place in several forms. For instance, C40 hosts a biennial Mayors' Summit, physically bringing all these city leaders together.[398] In annual network workshops,

participants "set out an agenda for how C40 can help those cities collaborate throughout the year."[399] Furthermore, the benefits of project twinning can be felt even outside of networks, such as the NYC and Copenhagen did with water management.[400]

This linking ability also may help different cities to share information. While some urban areas may have totally different challenges and needs, formal networks help cities with similar issues to work together. For example, in NYC the buildings sector generates about 70% of carbon dioxide emissions while in Bangkok the majority of emissions come from transportation, making it difficult for the two cities to share relevant mitigation tactics with each other.[401] However, TMNs and regional networks can help with this goal because they can match cities with similar issues or strategies, as C40 does by creating themed focus groups.

In these ways, networks can act more as conveners of local actors with similar struggles rather than as active contributors. The survey of CityNet members emphasized that most members agreed that networks helped to move relationships with other cities 'beyond friendship,' leading to better policies and better partnerships.[402] These systems provide opportunities for cities to "collaborate on initiatives of mutual interest and benefit,"[403] allowing them to "band together to use their collective power to access partnership resources."[404]

Second, by combining city voices and tying them to a well-known international organization, TMNs can provide their members with a greater sense of legitimacy.[405] While this is important for building vertical influence, this indirect benefit can also allows cities access to better funding. For instance, networks that gather information about the impacts of climate policy and standardize it can build their case for acquiring

larger loans and grants. C40, ICLEI and WRI worked together to establish the Global Protocol for Community-scale GHG Emission Inventories (GPC) to measure a city's emissions.[406] This standardization, used by New York City,[407] allows cities to measure emissions and track their progress, allowing them to share information as well as creating accountability and helping cities to make a stronger case to achieve more financing.[408] Similarly, the Compact of Mayors works to build a "consistent and robust body of data on the impact of city action."[409] By collecting this data, these networks supply strong cases for any city looking to increase its funding.

The legitimizing aspect of networks can also help to build local support for climate action. Elizabeth Hanson, the C40 City Advisor for NYC, described the value of the award at the Paris Climate Talks in 2015 that the city received for their energy efficiency efforts in buildings. She stated that it is "always helpful… when you're dealing with stakeholders who may be… concerned about the pace of change… to be able to point to someone like C40 and say, you know they recognize that this is important work and they recognize that globally we're a leader on this."[410] In this way, international acknowledgement of local efforts gives local stakeholders a sense of pride and accomplishment, making them more likely to support climate policies in the future.

Benefits Specific to Regional Relationships and Networks

Most importantly, regional collaborative efforts provide a unique approach that is particularly helpful for adapting to climate change, and especially where there are cross regional effects and economies of scale in responding jointly. In any individual location, the level of greenhouse gas emissions is almost entirely distinct from the severity of the impacts in climate change, and thus an international response is vital. But even with this

universal nature, each kind of response and impact will be shared by a region, forming natural connections to take action. Sections 2.E and 2.F help to illustrate how a response to natural disasters is related to a local focus. The MAPC describes this problem when it explains its own structural advantage in addressing this critical issue:

> "After all, the impacts of climate change are not felt purely on the local level; rather, they transcend municipal boundaries, affecting several communities at a time as watersheds are taxed, sea levels rise, and disasters strike. MAPC can respond to climate change on this regional level, linking the work of individual municipalities and state agencies to create a seamless, regional approach."[411]

Even while acknowledging the unique benefits of regional action, the last part of this quote demonstrates recognition of the multilevel nature of their approach. Furthermore, this helps to illustrate how a regional response is often the most practical approach for policy areas most related to climate change adaptation, such as sea wall construction or emergency response.

As discussed in Section 2.F, there is a great deal of support for the essentially regional nature of climate change action in academic literature as well as among city actors. Starr explains the long history of neighboring cities working together on shared infrastructure,[412] and Stone looks to the future to call for the use of a regional scale in new policy frameworks and scientific assessments of climate change.[413] Meanwhile, Kaufman as well as Corfee-Morlot and his colleagues focus on policy areas that are particularly characteristic of regional action. Kaufman describes the simultaneously critical and vulnerable nature of geographically large but interconnected networks like electric grids[414] while Corfee-Morlot and his colleagues find that there is a need for regional action in New York City to decrease the vulnerability of water infrastructure to a rise in sea level.[415] Similarly, Sassen finds that city life depends on "massive

infrastructure and institutional support," including electricity utilities, transportation, hospitals and many other forms of regional infrastructure.[416]

A report by C40 agrees with these scholars, noting that appropriate action in relevant policy issues, such as energy, water supply, and transportation, must be planned beyond individual city borders.[417] Likewise, Romero-Lankao and her colleagues claim that adaptation planning can be "greatly enhanced by incorporating regionally or locally specific vulnerability information."[418] While multilevel governance is one way to regulate these larger policy areas, regional collaboration is a more specific tactic to do so. Jessica Feldish, a Program Manager for Community Engagement in Boston, noted that the almost inherently regional nature of topics like energy, regional preparedness and waste requires collaboration between local municipalities.[419] Similarly, Mia Goldwasser, the Climate Preparedness Program Manager in the city of Boston, emphasized the intentionally regional approach to adaptation policy, claiming that Boston is particularly capable of regional collaboration and emphasized the value of a structure like MAPC. [420] The regional collaboration in Boston is not only an advantage distinct to the city but also essential for tackling climate change impacts. For instance, Goldwasser highlighted a project addressing the flood pathway in Charlestown, which includes two towns and two state agencies.[421] These examples demonstrate how both the theory and application of regional governance agree on its necessity for adapting to climate change.

5.E Impacts and Limits of the Benefits of Horizontal Action

Impacts of City-to-City Collaboration

These benefits of horizontal action work together to achieve three main impacts: increasing city jurisdiction, stimulating climate action at the city level and shaping

framing. As examined in Section 4.A, cities are generally limited in their jurisdiction over policy areas relevant to climate change. Barber believes that it is precisely this "absence of power" that compels cities to collaborate on common strategies, as they do in these networks.[422] Krause is more surprised by city action on topics beyond their jurisdiction, and she suggests that cities know that their individual actions cannot reduce emissions enough to decrease the intensity of climate change nor can they adapt a large enough area to help with a population's resilience.[423] Krause marvels at the urban response to take on large upfront costs even with this insignificant position, but connections between local governments help to amplify the impacts individual actions to significantly contribute to global climate change efforts.

By joining together in international networks, cities are able to become more powerful than they would be in a traditional hierarchical system, obtaining a reputation, legitimacy and influence at a much higher level. For instance, Betsill and Bulkeley find that TMNs are often given the authority to take on roles that traditionally belong to the state, such as setting GHG emissions targets.[424] As described above, networks help cities to "influence national and international policy agendas and (drive) the market by leveraging the collective voice of cities."[425] This vertical influence demonstrates that local governments have gone far above their traditional role in decentralized government, taking a more central place in the system of multilevel governance. These city networks allow members to influence policy areas that they traditionally have no control over, effectively increasing their jurisdiction.

In addition to this added power, networks and collaborative relationships stimulate action from urban governments, and there is a fair amount of support for the

practical effects of this conclusion. Unlike regional efforts, the development of international climate networks has been well documented both by organization websites as well as academics. Krause traces the origins of local action on climate change to the founding of ICLEI, the first TMN, in 1991.[426] Several other authors agree that the 1990s were the origins of all city climate action[427] as well as the first city networks focused on climate policy.[428] This parallel timing suggests that networks played a role in inspiring or encouraging the first city climate action. Hakelberg agrees with this conclusion, finding that TMNs such as the Climate Alliance, CCP, Energy Cities and C40 were identified as "important drivers of local action on climate change" because they set reduction commitments.[429] Bulkeley provides one explanation for the ways that TMNs prompt local action by claiming that these networks offer "soft" rewards through competitions and awards.[430] Just as cities often use incentives to spur voluntary participation among the community, international networks are able to encourage action with local governments.

Collaboration, either in a network or in a more informal relationship, can also help to stimulate action more indirectly. For instance, the advantage of networks to build vertical influence and local reputation also supports city climate action. First, this attractive benefit of network action is tied to a TMN's ability to secure new resources for cities. As a city becomes more of a world power, this reputation will help it gain access to new funds and assistance. C40 sees these benefits as being so interconnected that "securing resources for C40 cities" is the third of its key goals for city diplomacy.[431] An additional benefit of this reputation-based aspect of networks is that it can create significant peer pressure to promote compliance among laggards.[432] By providing new

resources and creating peer pressure, these intra-city relationships are able to stimulate further climate action.

Similarly, Bulkeley finds that, "Municipal networks are found to be successful in enrolling and keeping members so far as they can offer expertise, funding opportunities and the ability to disseminate and learn from good or best practices."[433] These networks attract new members and thus are able to engage cities in the larger range of benefits that assist climate action. A report by the MAPC notes that regional networks can function as an access point for local stakeholders, thus involving a whole new set of actors in city climate policy.[434] By sharing information, local governments are able to learn about more effective and feasible actions. Likewise, the flexibility and legitimacy gained from membership allow municipalities to take more creative and innovative actions while maintaining local support for programs. Furthermore, cities with access to increased resources are able to further their actions in a way that is not possible in traditional isolation. Moreover, a city's membership in a TMN can actually lead to more collaboration and action in the municipalities surrounding such a member.[435] Hakelberg suggests that smaller cities do not have enough resources to achieve and maintain full membership in these larger networks, but they "rely on communication with nearby cities to access information on policy innovations."[436] While often these benefits remain more abstract, the logic behind the ability of networks to stimulate action is clear.

Last, these regional and international collaborations influence the type of framing that a city climate policy is designed with, amplifying the trends found in Sections 2.E and 2.F. As described in Section 2.E, city actions generally tend to be local rather than international and based on co-benefits rather than climate leadership. It is a fairly logical

assumption that regional networks will promote action with local or regional benefits while international networks will encourage action as part of an international strategy on climate change. At the same time, international networks can lead to either an international frame for urban climate policy or to a combination of framing between international and local. For instance, Elizabeth Hanson, who is jointly employed by the TMN C40 and the city of New York, stated that all other city advisors in the same position are "required to split their time" between local projects like energy efficiency in buildings and helping the city to meet C40 goals across the country.[437] Similarly, the international relationship between NYC and Copenhagen has actually led New York to try new policies to encourage community engagement.[438] Furthermore, C40 recommends that cities articulate the economic and health co-benefits of climate actions to gain more support even while sponsoring conferences at the UN COP talks.[439] With this flexibility, international and regional collaborations influence the way that municipalities frame their policies. While there is no clear rule that a particular network will cause a particular framing, these two kinds of relationships allow urban governments to shape their strategies as either local or international with ease. This makes an internationally-focused policy possible in a way that is relatively rare in most other forms of city climate action.

Limits to Benefits

There are many scholars who doubt the advantages of membership in a collaborative relationship or network. This criticism generally takes form in three main ways. First, some authors directly question specific benefits listed above, and just as sharing information and increasing vertical influence have the largest amount of literature support, these two advantages also have the greatest number of criticisms. For instance,

Kern and Bulkeley note that the benefits of sharing information are limited because often times examples of best practices are simply submitted without any standardization or critique, making it difficult to learn critically from others' practices.[440] Similarly, Hoornweg and others note that different measurement systems to account for carbon dioxide emissions can lead to difficulty in transferring information between countries.[441] Still, these complaints are relatively modest as obstacles to achieving the benefits claims by a majority of scholars.

Furthermore, Bulkeley and Rabe's criticism centers on a key benefit, doubting the ability of these networks to have vertical influence: "We note that national and transnational networks have been central in mobilizing local officials on the climate issue, but that such networks have been less significant in the development of state climate policies."[442] This comment seems to confirm the suggestion above that networks may overestimate their ability to influence higher levels of government. However, given that there does not seem to be much literature that strongly evaluates the vertical impacts of city networks, it is more likely there simply has not been a focused academic effort to evaluate this benefit. Corfee-Morlot and others sum up this lack of academic focus by simply concluding that the political benefits of membership are unclear.[443]

In a second form of criticism, scholars question the overall impacts of city-to-city collaboration: the ability to increase jurisdiction and to stimulate action. There is of course a necessary limit to the level of authority that cities are capable of achieving due to their structural confines within the American federalist system, as described in Section 4.A.[444] Giest and Howlett find that while "TMNs are the institutional foundation for a concerted effort in climate change within and between countries, they are also subject to

the provisions from national and regional governments, which might hamper their benefits."[445] Thus while scholars do not tend to refute the basic principle that cities increase their jurisdiction and authority through collaborative efforts, they argue that such an increase has a necessary limit due to the government structures that these cities and their networks are embedded in. While city-to-city networks and partnerships are not able to require any sort of action, the voluntary nature of membership suggests that local governments are already willing to take on climate actions beyond what is required. At the very least, it seems only logical that membership could only lead to increased rather than decreased action.

Furthermore, academics that question the ability of these networks to stimulate action focus on their lack of hard power. For instance, Kern and Bulkeley find that activities to build reputation like recognition and benchmarking are rarely used in formal networks, likely because they lack the authority to require members to achieve specific performance levels.[446] This questions the fundamental power of networks to hold any authority over their members. More concretely, some scholars suggest that membership may often be more symbolic than contributing to real climate action.[447] Giest and Howlett describe this purely symbolic climate action as paying "lip service" for programs that are never translated into action.[448] Even if participation in these international collaborative efforts is purely symbolic, it continues to raise a green reputation and culture within the city, which will produce higher citizen expectations for such action.

Third, by far the most widespread criticism of networks refers to the uneven distribution of benefits of membership.[449] Kern and Bulkeley describe this problem:

> "Although the more interventionist approaches such as benchmarking and certification create peer pressure which appears to be a powerful tool in

> promoting compliance, particularly among laggards, all three networks have only used such approaches to a limited extent… Certification is still confined to the most active cities which have already launched many local initiatives in the area of climate change policy and want to demonstrate their progress."[450]

This statement demonstrates how TMNs in particular can function as "networks of pioneers for pioneers," resulting in the uneven distribution of benefits primarily to member cities that were already extremely successful on climate action.[451] Climate actions both outside and within networks are resource-intensive, thus attracting the most active and established climate actors.[452] In contrast, passive members that lack the resources to take action themselves may be continually beaten out for these benefits,[453] and thus their passive membership may become simply symbolic.[454] Betsill and Bulkeley describe this focus on previously established leaders as "champion-picking," ultimately crediting networks for their members' individual successes and failing to motivate further climate action.[455] Still, even if benefits are available only to a few cities that are already well-established, the resources and ability to increase vertical influence will still continue to benefit climate action in those regions.

Overall, the benefits of membership in collaborative relationships have not been sufficiently examined within academic literature to evaluate their strengths and limitations. My review of the current criticisms suggests that scholars tend to emphasize the limits of certain benefits rather than refuting them entirely. While scholars may have their doubts, in some ways city participation effectively speaks for itself, demonstrating that local governments find the benefits offered by TMNs and other networks are worth the effort it takes to join them.

5.F Conclusion

The benefits of working in city-to-city relationships and networks are apparent. International collaborations between local governments seem to succeed over their counterparts between national governments while regional efforts provide the necessary partnership to address adaptation in particular. Formal networks specifically benefit cities seeking to act on climate change by encouraging and helping them to take larger actions, make informed decisions, benefit from global innovation, become leaders for world efforts and increase their influence in the global climate regime. Different authors describe this benefit in different ways. As a C40 report puts it: "The result is that cities' actions to mitigate greenhouse gas emissions and climate risks are bolder, and implemented faster, than if they were to go it alone."[456] Bulkeley describes a network as providing the "resources and political space within which policy entrepreneurs can operate with some degree of protection from 'politics as usual.'"[457] Likewise Corfee-Morlot and his colleagues simply find that networks allow cities to "link policies and programs that would otherwise operate in isolation… Regional strategies have the potential to make larger changes."[458] This principle of increasing one's positive impact on the overall climate regime holds true across the various types of networks and collaborative relationships.

Several authors believe that these relationships between local governments are so successful that they should become the basis of international efforts on climate change. For instance, Sassen describe the need for a "global regime centered in cities," seeing local governments as the "de facto components of the global environmental governance regime."[459] Indeed, Sassen claims that this system would promote the development of

new urban capacities regardless of sovereign country.[460] Barber takes a more idealistic view in his call for a "global parliament" based on organizations like C40 and ICLEI to address climate change.[461] In contrast to the never-ending struggle to maintain one's sovereignty between nation-states, Barber believes that cities are able to work toward an "egalitarian interdependence" that relies on soft governance, effectively creating bottom-up democracy.[462] Most hopefully, Barber looks to Mayor Bloomberg of NYC, seeing his past international networking as the beginnings of the international infrastructure that can promote a much-needed, promising and ever-expanding level of change.[463]

In this way, this idealistic vision views an international network of municipalities as the ultimate form of decentralized leaderhsip. While a world where international governance is performed solely through city networks is very unlikely, the concept of establishing a global civil society beyond traditional country borders echoes the theory of multilevel governance. The combination of TMNs and regional networks allow cities to approach climate change from both a local and international level, giving them the international power to take on such a large issue even while adapting policies to their unique issues and needs. Hakelberg puts this view most succinctly when he describes these global networks as an "increasingly fragmented, polycentric and transnational climate governance system that scholars see as the result of – but also the alternative to – obstructed international negotiations on a global climate agreement."[464]

Section 6: Vertical Dimension of Multilevel Governance

6.A Introduction and Background

Just as a state or national government may influence the city through a hierarchical dimension relationship, a municipality may have an influence on the levels above it. This bottom-up approach to climate action, partially described in Section 5.C, recognizes local governments as policy makers, not just implementers for higher levels of government.[465] To put this most directly, cities both affect and are affected by climate action at the international level. Kern and Mol put this in other words when they claim: "It can be assumed that both global climate change and global climate governance alter local practices and politics and vice versa."[466] This "vice versa" indicates a reciprocal relationship between the city and state that is rarely acknowledged in traditional studies about decentralized governments. While Section 4 discussed the hierarchical dimension of the city-state relationship, this section assesses the reverse – the vertical influence of cities on their states, a topic already discussed as a benefit of city-to-city networks.

Most research in this area has focused on the positive effects a city can have in influencing climate policy at the state level, ignoring the option for a city to have negative impacts on state climate policy. However, given that the city has no authority over state's actions, it could not limit this higher level of government in same the way the state can do to the city (as described in Section 4). Thus a city government that desires to resist climate change policy would likely only be able to practice this through their own inaction rather than directly trying to persuade higher levels of government to follow suit. Acknowledging this allows us to focus on the ways that city leadership has been used to

promote climate action at higher levels of government when studying the vertical dimension of multilevel governance.

The city can promote state climate action in both adaptation and mitigation in two key ways: innovation and direct political pressure. With these two main pathways, this vertical aspect of the city-state relationship is much simpler than the simultaneous limiting and encouraging impacts of the state's hierarchical influence. This is because the vertical dimension of multilevel governance goes beyond the traditional American system of decentralized government, and thus this new political sphere is still developing. Direct political pressure from the cities appears to be a relatively new phenomenon, and even while innovation has its roots in federalism, its use is expanded a great deal in climate policy. Thus, while cities are still experimenting with different ways of increasing their spheres of influence, these urban actors are helping to build more effective climate policy at all levels of government.

6.B Innovation and Leadership

Cities can indirectly promote climate action at higher levels of government by leading by example and experimenting with new kinds of policy responses. Boston and New York City are recognized as clear climate leaders, taking more advanced actions than most states and certainly the national government. The MAPC regional planning agency in Boston "actively pursues opportunities for staying ahead of the curve and integrating innovative strategies that improve the quality of local and regional planning."[467] As mentioned in Section 5.C, international and regional networks can play a large role in building a city's international reputation and combining the powers of various cities to increase their influence. At times, this leadership can subtly prompt

action at higher levels in a fight for political legitimacy. For instance, Betsill and Rabe find that governments are willing to compete to be the "leader" on climate change in order to access the "significant political capital at stake."[468] Sections 2.E and 5.D explain how a city's successful climate policy can gain it a reputation as an international leader, and thus the pressure to not be outdone by a lower level of government will likely help to increase action at the state and national level.

While this implicit pressure from leading by example is important, city leadership in climate policy is more often realized in experimentation at the local level, which can become a testing ground for national policy.[469] As explained by Alan Cohn from the Bureau of Environmental Planning and Analysis (BEPA) within the NYC Department of Environmental Protection (DEP): "I think that especially on resiliency the state and the federal government kind of look to see what the cities are doing and then I think try to encourage that type of thing more broadly."[470] Anguelovski supports this finding with her own belief that cities are generally are able to innovate adaptation policy more than mitigation policy. She claims, "In contrast to mitigation planning and implementation, the absence of models to follow has led local governments pursuing adaptation to test new ideas."[471] Still, there are plenty of examples of innovation in both kinds of policy. For instance, the city of Houston piloted one of the first zero-energy homes in the US, and Portland developed an early market for LEED building contractors.[472] In Metro Boston, Axum Teferra, an Energy Planner for the MAPC, described the region's interest in utilizing clean microgrid technology to localize energy production and increase energy resilience. [473] The examples demonstrate some of the policies that cities have

experimented with, and their findings have surely influenced other levels of government to use the same strategies.

There seems to be fairly widespread agreement between both scholars and city government actors that cities are well suited to this task. Sassen finds that "cities are sites where these challenges can be studied empirically and where policy design and implementation often is more feasible than at the national level."[474] Similarly, Corfee-Morlot and his colleagues claim: "Urban scale action may be important in its own right and able to provide a means of social and technical innovation that is not possible at broader scale, ultimately providing a vehicle for learning and broader dissemination where successful innovations occur."[475] These quotes reference the relative level of ease with which a city can experiment with a new policy, both due to its smaller size as well as its less complicated political process. Elizabeth Hanson, the C40 City Advisor for NYC, echoed this agreement when she discussed how the city's greater flexibility, high levels of stakeholder support and local knowledge made New York City "among the best equipped in the world to try and figure out these solutions and policies."[476] Furthermore, the importance of political leadership described in Section 2.B suggests that these actors will be more likely to take risks and innovate new strategies in order to establish a reputation for themselves as leaders. Anguelovski does eventually argue that while the structural limitations on local climate action foster "urban entrepreneurship," new programs are still limited in the speed of their development and the sustained gains they can achieve.[477] While there may be some merit to her claims, the lack of academic support for her opinion suggests that cities often are able to have some vertical influence through their innovation.

In some ways, this bottom-up leadership by the city actually fits within the traditional understanding of decentralized and hierarchical government even as a local government increases its independence and international position. Jorgensen describe the framework to view local units as "laboratories of experimentation is borrowed from literature on federalism."[478] However, this level of innovation and its impact are unprecedented in past policy areas. Corfee-Morlot and his colleagues argue that this advantageous influence of city action is key for the larger system of multilevel governance.[479] With the lack of action by the highest levels of government on this enormous and all-encompassing issue, low-level experimentation with new strategies is at its most frequent and most valuable. For example, when Rabe argues for a national carbon tax, he looks to state and regional attempts to find the most feasible option.[480] In the grand scheme of political history, climate change is a new issue, and so its urgency demands experimentation and innovation at all levels. Looking specifically at cities as "policy laboratories" helps to demonstrate that a city provides essential contributions to the larger system of climate action rather than simply being a puppet of the state or solely influencing its local population.

6.C Direct Political Pressure

While innovation expands an aspect of traditional decentralized government, cities trying to directly pressure higher levels of government to act on climate must find new ways to circumvent the limits of a federalist system. There is no formal way for this to occur in the hierarchical and decentralized American government, and yet many city leaders seem to feel that this direct political pressure and advocacy is a key role of city climate action. Axum Teferra, an Energy Planner for the Metropolitan Area Planning

Council (MAPC) for the region of Greater Boston, said that the job of the Metro Boston Climate Preparedness Taskforce is to advocate for climate policy at the state level increase coordination with state and federal agencies, so that resilience practices cross silos and reach broader geographic areas.[481] This example also demonstrates the vertical influence of networks discussed in Section 5.C. Similarly, the mayors of two cities in Massachusetts (Medford and Pittsfield) wrote a public letter to endorse a state Senate bill to accelerate the rate of increase for Renewable Portfolio Standards (RPS), using their public office to influence other levels of government and proving Roger Starr's finding that mayors are able, and often strive, to impact legislation.[482] In this way, cities work to promote policies outside of their jurisdiction using their informal power.

A city's commitment to climate change can also translate to state action through the representatives in the state legislative branches. In Massachusetts, 11% of the House of Representatives and 15% of the state Senate represent some of Boston's population, and New York City has an even larger delegation in its state legislature.[483] Elected officials from these regions will likely be politically similar to the mayors elected in the same regions, and in this way, a mayor that establishes a strong tradition of climate action in the city can create expectations for elected officials at other levels of government.

In addition, municipal governments often display their climate leadership at international conferences and organizations, even when they are traditionally excluded from membership. For instance, cities cannot vote in the United Nations, but the UNFCCC recognized subnational governments as the second largest delegation of attendees at their international conferences.[484] Jorgensen and her colleagues conclude, "Subnational governments are no longer mere observers in international climate policies

but also influential actors."[485] This new leadership role is very intentional, as indicated by the deliberate coordination of several international city organizations in scheduling to plan their conferences based on the schedule and locations of UN conferences.[486]

Both Boston and New York City leaders emphasized the beneficial impact of their cities' leadership at international conferences like the 21st Conference of the Parties (COP21).[487] This United Nations conference included sessions for these subnational leaders and even presented awards to leading cities like Boston. Elizabeth Hanson, the C40 City Advisor for New York City, said that COP21 gave cities the opportunity to "partake in the climate negotiations and really drive home the point… that cities are leading the way on climate action, and that there needs to be… national and sub-national level commitments to help advance this work."[488] Similarly, when speaking about the motivations for city leaders to attend COP21, Jessica Feldish, a Program Manager for Community Engagement in Boston, echoed this positive peer pressure when she said that these cities hope to influence national leaders by saying, "We are leaders of US cities… We are coming together to represent those people and we're looking for bold commitments from the US for climate change."[489] These statements help to illustrate the way that cities see themselves having a large role in influencing the global response to climate change.

This vision of cities as a beacon to guide all levels of government to effective climate policy sits within the larger system of multilevel governance, recognizing that the city's actions are just one part of a global climate regime. Hanson spoke to this holistic approach to climate policy when she said her colleagues from C40 at COP21 found that: "There was a recognition that cities really are having a substantive impact on this issue

and that the work that we're doing is… helping to stack up to those nationally determined commitments."[490] Similarly, she believes that city choices and policies are "helpful in driving that conversation" on national commitments to act on climate.[491] These statements show that even while cities are pushing for locally focused adaptation policies, they are intended to be part of the larger effort to respond to climate change and have a role to play in pushing for action at different levels.

6.D Concluding Thoughts on the Vertical Dimension

As the large cities have increasing global power, the limits of American federalism are being pushed. The relationship between the city and superordinate levels of government has become increasingly reciprocal, allowing the local to influence efforts above. In addition, the complex and broad-reaching nature of climate change necessitates a truly multilevel response, forcing the traditional hierarchical relationship to expand and rely more on the city's leadership. Ohlhorst finds that "accelerated innovation occurs through multi-level reinforcement," demonstrating that even while the system of local policy laboratories has been part of long-running forms of decentralized government, this vertical dimension of the city-state relationship also constitutes a key aspect of multilevel governance.[492] This effort to have influence beyond a local area also may bring a city to take part in another aspect of multilevel governance by joining networks in order to expand their power, as discussed in Section 5.[493]

Beyond a more equal relationship in multilevel governance, this effort to impact action at higher levels is a way to address the areas of governance that the city does not traditionally have jurisdiction over. As Mia Goldwasser, Climate Program Preparedness Manager for Boston noted, the city "can advocate to the state and it can join with other

cities in advocating to the state, but it doesn't ultimately have that power" to have total control over issues within the state's jurisdiction.[494] But while local governments do not have jurisdiction over key aspects of climate change policy, it is clear that their effort has an impact on the levels of government that do. In this way, cities are able to circumvent their traditional limits within a federalist system and take part in a multilevel response to climate change.

Despite the strength of the city described above, a city's relationship with higher levels of government can diminish or increase the impacts of their effort. Urban governments that have collaborated with their states, as described in Section 4, may find it easier to get state actors to listen to their ideas. In contrast, government bodies that lack a "shared goal, vision or priorities" face a serious obstacle to a productive vertical relationship.[495] This certainly seems to be true in the United States, where the strong subnational action still has not led to any large national attempt to take on the issue. However, even in a country as relatively inactive in national climate policies as the United States, which took its first real actions in 2009, the public rhetoric and actions of mayors to advance climate change adaptation and mitigation are visible to their local residents, helping to shape people's beliefs and creating a culture of environmental activism that may hopefully have an influence on the highest levels of American government.

Section 7: Conclusion

7.A Summary of Main Points

This paper aimed to demonstrate the ways in which city climate policy may be different or similar to state and national efforts in the US, and it is my hope that it has helped to show the unique role of local responses to climate change. Throughout the examination of basic city actions, theories like multilevel governance and decentralization, hierarchical power relations, horizontal networks and vertical influence, there were many important conclusions.

Section 2 provided a summary of some of the most distinctive features of city climate policy, basing these findings in real-world examples. This section showed the importance of vulnerability and political leadership to motivate local action, a finding supported by many scholars and that word-for-word proved one hypothesis of this study. Section 2 also found significant support for the value of community actors, both as stimulants and participants, in city climate policy. This finding supports the hypothesis that urban governments would have unique advantages. This conclusion is based almost entirely on real-life examples rather than academic studies, and thus it contributes a relatively new conclusion in the scholarly literature in this area. Last, this section outlines a framework for city climate policy for the rest of the paper, finding that actions tend to be framed locally and as co-benefits rather than simply for international climate leadership. It also found that local governments have a higher focus on policies that adapt to the impacts of climate change and that use community engagement to act. These two findings support the hypothesis that city actions will generally use small-scale strategies with local benefits, but they partially refute the hypothesis that cities will engage with

issues outside their own borders. Furthermore, this local focus within adaptation allows the urban response to climate change to be more unique and thus more valuable in matters of resiliency. Overall, this section lays the parameters of basic city action, and many of these general findings are examined more deeply throughout the rest of the paper.

Section 3 provided an introduction to the theoretical framework of multilevel governance, summarizing the findings of many scholars and academic studies. First, the decentralized character of American government also reveals a long history of relatively independent local governments, a feature well studied in political science literature. This history partially refutes my hypothesis that federalism will inherently limit urban action. While there is an element of hierarchical relationships in traditional American federalism, the second element of decentralized action has only increased in importance as central government in the US has failed to produce effective climate change policy. Multilevel governance shows the escalation of this local action, explaining the remaining influences of hierarchical power while changing and expanding decentralized action into horizontal and vertical dimensions. This theoretical framework helps to place city climate action in a larger context as one aspect of a larger policy-making system. This theory is a more recent topic in academic studies, but it too is strongly supported by a majority of scholars. Multilevel governance demonstrates that the different levels of government are closer and more connected than common understandings would believe, and in doing so, this theory places city action into a larger and more interdependent system of climate policy. With this lens, Section 3 finds that the US has been more successful on climate action than commonly acknowledged.

In this way, Section 2 provided real-world and tangible examples to introduce city climate policy and Section 3 introduced the theories behind many of these actions. Together, these two sections lay out the framework for a deeper analysis of city action within the lens of multilevel governance and decentralized federalism.

Examining the hierarchical dimension of multilevel governance, Section 4 describes the limits in jurisdiction and funding that define American cities, supporting an uncontested and well-proven conclusion of most academic literature on the topic. This finding also affirms the hypothesis that urban governments face unique disadvantages. However, this section of the paper also finds that despite these inherent limitations, real examples from cities demonstrate a variety of strategies to either circumvent these barriers or to find nontraditional paths. I find that a variety of actions described in Section 2 serve this function, including local focus, co-benefit framing and community engagement. Section 4 also describes new actions, such as creative policy-making, persuasion and soft governance. In addition, this section of the paper also approaches this relationship between levels of government from the opposite side and examines the ways that states can encourage city climate action, thus contributing a previously unexamined aspect of the relationship between cities and superordinate levels of government. Again, these findings were based in real-world examples and are certainly limited by any given state's stance on environmental issues, but this conclusion helps to outline a direction for further study of direct mandates, state incentives and resources, and true collaboration between different levels of government. Overall, the hierarchical dimension supports the hypothesis that federalism limits local governments, but past decentralized action and

current state encouragement of climate action demonstrate that this limiting effect is not an inherent characteristic of this structure of government.

Section 5 contributed a substantial portion of the paper, examining the development and benefits of international and regional city-to-city relationships. This area is one of the most unique and robust aspects of the local response to climate change and is similarly well studied in academic literature. Echoing the city's autonomy in decentralized and multilevel governance systems, networks rely on voluntary action and maintain local independence through self-government. Participation in one of these cross-city collaborative efforts provides many benefits for local climate policy, including shared knowledge, access to resources, flexible governance structure, an external effort to link similar cities, and new opportunities for vertical influence. Furthermore, the two geographical ranges of networks described help to show another aspect of the complex and interdependent nature of multilevel governance. Just as regional relationships respond to the truly regional impacts of climate change, international networks and relationships provide legitimacy and link distant cities with similar issues. Participation in these city-to-city collaborations, both formal and informal, help to overcome the limits of city jurisdiction, stimulate action and shape framing. This policy area is relatively new to academic study, and thus it is difficult to generalize these conclusions, but most importantly, these horizontal relationships allow local governments to take their largest steps onto the international stage, providing a new avenue for policy outside of the local focus described in Section 2 and supporting the hypothesis that cities will act on issues beyond their own borders.

Section 6 expands on this increase of a city's vertical influence, finding that municipalities can further impact higher levels of government indirectly through innovation as well as direct pressure. This international leadership supports the hypothesis that cities will act beyond their own borders. A clear agreement among scholars shows that cities have irreplaceable advantages to innovating and experimenting with new policy. Superordinate levels of government can then adopt these more efficient policies, and thus municipalities can contribute substantially to the development of policy at the state, national or international level. Similarly, their leadership can indirectly pressure a state or nation to follow suit by changing the culture and expectation of the community to demand action on climate change. Local governments can also directly pressure higher levels of government, clarifying the city's role in multilevel governance. Section 6 demonstrates how cities both find ways to overcome their structural limitations and contribute unique actions to the global climate regime.

Between these conclusions, a few main points stand out across the entire paper. First, the limits of jurisdiction and funding described under the hierarchical dimension of multilevel governance define a great deal of city action, demonstrating the unique disadvantages of responding to climate change from a local level. From community engagement to international networks, almost every strategy described in this paper functions to either overcome these limitations on city power or to find new policy pathways. While any individual strategy may be shaped by a larger array of motivations and barriers, it is clear that jurisdiction and funding act as primary drivers of local climate action.

Second, this paper has discussed the importance and value of local factors in determining a city's response to climate change. Whether it be an area's vulnerability to rising sea levels or the emphasis on community participation in strategies, local actors and consequences shape much of a municipality's response to this global issue. However, this local focus does not simply isolate city climate action to its own borders, thus supporting two of my hypotheses that urban governments will use locally focused strategies and will act on larger issues. Instead, cities are filling a gap in earlier climate policy by accessing nontraditional resources and communities in order to combat climate change from the bottom-up. Thus, the city's contribution to the global climate regime goes far beyond its simple participation in international networks or pledges to reduce emissions.

Third, the US approach to climate change shows that the political structure has changed to expand the role of local action through multilevel governance. Overall, this means that cities have a distinctive and equally valuable role in the "big picture" response to climate change, supporting the hypothesis that these urban governments have unique advantages. Betsill and Rabe claim that this "clear shift" from the traditional hierarchical approach of American government led to a more "decentralized epoch… where the state and local levels constitute the primary loci of governance."[496] Similarly, Engel defines the modern American political structure as "bottom-up federalism."[497] These statements show that these authors believe that the fundamental structure of American governance has changed, but my research found that remnants of the hierarchical dimension of power relations still exist within multilevel governance. Still, the climate responses of different local governments demonstrate some of the ways that these cities have increased their

influence and autonomy while still taking part in a system "characterized by interdependency among governments at different levels, shared competencies, and joint decision-making."[498] Within multilevel governance, city policies are an essential part of the larger climate regime, especially in the US where the national level has been mostly silent on this issue.[499] In doing so, these local governments add a new meaning to the term "global city." This political structure both increases city action and allows the surprising finding that the American climate response is more successful than commonly believed.

7.B Broader Implications

The main points and conclusions described above also lead to some broad implications for city climate action both around the world and into the future. The conclusions of this paper are limited by its scope, basing examples on Boston and New York City and focusing on American cities. First, these two cities represent a far end of the spectrum of climate responses with their extremely progressive policies and strong state support. As noted in Table 1 in Section 4.A, the level of past environmental response in different states suggests that there will be a wide range of support and limitations on city climate policy. Furthermore, Boston and New York City also are liberal cities with a strong reputation for environmental action. Their community culture provides support for climate action likely far above the national average, making it easier to create and implement policy. In this way, Boston and New York City are certainly leaders with their own exceptional advantages. However, every single municipality in the world has their own extremely unique set of characteristics, and thus it is almost impossible to generalize based on a single city's experience. Instead, the examples of

Boston and New York City provide examples of the potential benefit of certain characteristics. For instance, while these two cities have exceptionally active communities, their policies demonstrate the potential power of tapping these human resources and thus they can provide a model for further action. Still, the examples in this paper demonstrate one end of a spectrum, and each conclusion found above must be taken with full consideration to local factors. In addition the results of this study are limited by their focus on American cities. These local governments are generally much wealthier than those in developing countries, and their place in a developed country allows them to have a higher proportion of resources dedicated to climate efforts rather than more basic services. The examples in this paper also will differ from other global cities in developed countries due to the distinctive impact of American federalism as a national system of government. At the same time, some of the strategies and advantages described in this study could apply to cities around the world due to their inherent and general nature. For instance, city vulnerability to climate change is increasing in many locations, community actors can provide support in almost all cities, and TMNs already break country borders. Furthermore, many of the conclusions of this paper are supported by a great deal of literature from around the world, allowing for an extension of their broader implications. Thus, despite these limitations, the conclusions of this paper still allow for more informed speculations on how these same principles might be applied in other places and times.

First, climate change poses a unique set of political problems as compared to policy areas, and thus new and innovative actions will have to be taken no matter where it is addressed. For instance, Rabe finds that while other policy areas like health care and

education are as decentralized as climate change, climate change is particularly "heavy on imposing front-loaded costs and uncertain at best on conferring long-term benefits."[500] Furthermore, climate change has broad-sweeping causes and consequences, and Gupta describes it as a "glocal" problem that operates simultaneously at several levels.[501] This means that effective policy must inherently include the coordination of many actors. In addition, the impacts of climate change are akin to natural disasters, but while any individual hurricane or flood would be characterized by immediate and strong centralized action, the longer-time scale and more dubious occurrence of climate change means that this same centralized response is no longer possible. Last, the validity of this issue faces some extreme political opposition both within the US and around the world, and its impacts occur over a longer timescale than most politicians ever consider. These features come together to create a set of difficult problems that every response to climate change will have to cope with and adjust for. City climate policy around the globe will have to address this mismatch in scale and difficulty in framing. Boston and New York City provided key examples for adjusting to these factors, but it is certain that any future response will require similar levels of innovation and new decision-making processes.

Second, political structures will likely have to adjust in order to address these unique characteristics of climate policy. For instance, when reviewing the available literature on climate change governance, Gupta writes, "One of the key discourses in the literature discusses the most appropriate level for taking action."[502] An obvious solution to this mismatch in scale is the use of multilevel governance, a political structure that has already been studied across the world. This political reconfiguration can also take shape in different structures beyond multilevel governance, but very likely it will include an

increase in the role of the city and subnational action. Bulkeley takes a strong stance on this issue and declares that multilevel governance is on the rise as the power of the nation-state falls.[503] Similarly, Barber claims that nation-states are now irrelevant in globalized issues, and instead places his trust in a vision of a global urban parliament of city mayors.[504] While Barber's vision goes beyond the findings of this study, his belief that cities are an increasingly important and independent aspect of global politics can be applied to local governments across the world and through time.

A third and fourth broader application of the conclusions in this paper describe two key strategies for future action. First, local factors and community engagement are extremely influential and advantageous in determining a city's response to climate change. Second, participation in networks and city-to-city relationships will provide many of the benefits described in Section 5 regardless of time or place. Local vulnerabilities and leaders will continue to motivate climate policy, and the influence of other local factors will be seen in the local framing and community-based strategies taken in each municipality's climate policy. It is also likely that cities will continue to have a greater emphasis than other levels of government on adaptation policy, especially in developing countries that are most vulnerable. Furthermore, the success of city-to-city collaborations and networks has already spread across the world, demonstrating their broad application to many different areas. These networks can act as new and more flexible structures of governance, and likely will have a large role in the future global climate regime.

Last, the findings of this paper show that city governments have the potential to be active and dynamic, able to evade their limitations and forge new policy pathways.

This potential leadership points to a further responsibility to take action on climate change. The framework of multilevel governance requires action on all levels, and the individual abilities and advantages of local government show that their actions fulfill a vital need in the global response to climate change. Betsill summarizes this broad-sweeping action, claiming that: "all levels of government and society must be actively involved in efforts to control greenhouse gas emissions."[505] Elizabeth Hanson, the C40 City Advisor for NYC, emphasized the role of local government in particular to this task and noted that the participants in COP21 generally shared the "recognition that cities really are having a substantive impact on this issue and that the work that we're doing is sort of helping to stack up to those nationally determined commitments."[506] Similarly, Corrie summarizes the irreplaceable role of cities when she concludes: "There is significant untapped potential in these local governments both to fill gaps in existing regulatory schemes and to define and structure regulations that operate concurrently with state and federal law while more precisely catering to unique local needs and concerns."[507]

Still, actions by superordinate levels of government are essential for changing energy sources, building new infrastructure and other tasks requiring higher levels of jurisdiction and funding. Statements by Boston and New York City public officials help to demonstrate this more abstract collaboration to combat climate change. Mia Goldwasser, the Climate Preparedness Program Manager for Boston, acknowledged this need for a multi-pronged approach when she said, "The city won't be able to do it alone… because of its jurisdiction," citing the need for action from state and national agencies as well as private community actors.[508] Similarly, regional and city officials

including Axum Teferra and Elizabeth Hanson noted their personal opinions that action is required at all levels.[509]

But at the same time, Goldwasser acknowledged the city's responsibility to lead this collaborative and broad-sweeping effort. She said, "The city definitely has to be the leader on this… the city has to be at the forefront of saying that this is the direction that we're going in because they have a lot of influence that way."[510] This statement acknowledges the dimension of vertical influence and views it as an essential aspect of the larger effort to combat climate change. John Brock, a Project Manager for Integrated Water Management in the NYC Department of Environmental Protection (DEP), assigned this duty to lead and innovate more specifically to large cities that are especially vulnerable to climate change.[511] In a broader perspective, Alan Cohn, the Climate Program Director also from the NYC DEP, discussed his department's innovative and cost-effective solutions and stated:

> "We have the local knowledge you know. So yeah I think it's difficult for the state to come up with those types of solutions because they don't, they aren't really embedded in it and they have the purview of enforcing the regulations at the state level. So I think it's kind of our… responsibility in a way to do so."[512]

Academics and studies also support this powerful view of city climate action. Bolstad finds that cities are able to "pick up some of the slack," and a C40 report describes these local governments as "changemakers" and a "central part of the solution to climate change."[513] In this way, municipalities are both able to fill unique gaps in policy and are vital leaders in the global effort to combat climate change. It is clear that local governments are active and effective policy-makers, and their influence stretches far beyond the city limits, staunchly taking on the global issue of climate change.

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Appendix 1: Table of Interviewed City Officials

Name	Title	Department	Date of Interview (mo/day/yr)
Jessica Feldish	Program Manager for Community Engagement	Greenovate, a program of EEOS Cabinet within Communications and Community Engagement (CCE) – Boston	6/29/16
Carl Spector	Commissioner of the Environment Department	Environment, Energy, and Open Space Cabinet (EEOS) – Boston	7/11/16
Mia Goldwasser	Climate Preparedness Program Manager	EEOS – Boston	7/11/16
Susan Cascino	Director of Recycling	EEOS – Boston	7/11/16
Elizabeth Hanson	C40 City Advisor for NYC	Mayor's Office of Sustainability – NYC	7/15/16
Axum Teferra	Energy Planner	Metropolitan Area Planning Council – Boston	8/9/17
John Brock	Project Manager – Integrated Water Management Group	Bureau of Environmental Planning and Analysis (BEPA) within the NYC Department of Environmental Protection (DEP) – NYC	10/12/16
Alan Cohn	Climate Program Director – Integrated Water Management Group	Bureau of Environmental Planning and Analysis (BEPA) within the NYC Department of Environmental Protection (DEP) – NYC	10/12/16

Appendix 2: Sample Interview Questions

SECTION 1: WARMUP

- What is your position and department?
- How does that relate to other departments within your city?
- When was your department established?
- When did you come onto the department?
- What was the driving force behind creating your department? For instance, was it a mayor's initiative, public action, a city council decision, or something else?

SECTION 2: POLICY ACTIONS

- Are the main policy goals of your department more about adaptation or mitigation?
- Do you see your department more designing policy or implementing it?
- How does the policy process work? How does a particular idea become a program? For example, do you take follow on initiatives from the mayor/city council, or do you generate your own policy?
    - Following the decision to make policy, how much independence do you have from other sectors of government? For instance, do you have to have your policies approved by city councils/other departments?
    - For a particular program, about how many people will be involved in the design and implementation of a policy?
    - Within your department, does the implementation of a policy occur primarily by the people who make it or is it frequently delegated to other departments or employees?
- What has been your most successful policy thus far?
- Is participation particularly important for the success of your programs? If so, what do you use to incentivize participation in your programs? Are people motivated by a concern of climate change, economic incentives or something else?
- What are the biggest barriers to creating effective climate policy in your department?

SECTION 3: INTERACTION WITH OTHER LEVELS OF GOVERNMENT

- Overall, do you think your department has taken a more local or international approach to climate policy mitigation?
- To what extent has your department been pursuing climate policy due to initiative taken at the local/city, state and national level? How do local, state and national initiatives interact or intersect?

SECTION 4: PARTNERSHIPS

- What regional, national or international networks are you a part of, and what benefits or problems have they caused for climate action in your city?
    - What is the importance of having these networks?
- What differences do you see in how your department engages in partnerships and negotiations and how these same processes occur between countries?

SECTION 5: COMPARISON

- Are there initiatives you think your department can do that the state cannot, and similarly, are there initiatives that you think the state can do that you cannot?
- Has your department ever come up with innovative policy designs in order to address issues that are not normally under city jurisdiction?
- Do you think that your department faces advantages or limitations that the state or national governments do not in climate action?
- Are there any other differences that you've noticed between your policies and state or national climate action?

SECTION 6: OVERVIEW

- What do you think is the role of city policies in the face of climate change?
    - Do you think your policies are effectively addressing climate change, or is there much more to be done?

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