

Cities Joining Ranks

POLICY NETWORKS ON THE RISE

Supported by



Acknowledgements

This Report addresses a fascinating topic that is the subject of much discussion, but hitherto little systematic research. I believe it will be of considerable value to cities, academics, and those who administer the networks that increasingly link cities around the United States and, indeed, internationally.

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The authors of the Report, Katharine Lusk and Nicolas Gunkel, have committed considerable time, energy, and skill to producing it and I am most grateful to them for their work. The report is a collaborative achievement that has evolved out of the Menino Survey of Mayors, co-authored by Katherine Levine Einstein, David Glick, and Maxwell Palmer, whose work laid a strong foundation on which this study builds. The additional research in this report was greatly facilitated by the cooperation of the many city networks selected for this study; we deeply appreciate the time and insight their leadership and staff devoted to our research.

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Boston University Initiative on Cities

The Initiative on Cities at Boston University seeks to research, promote, and advance the adaptive urban leadership strategies and policies necessary to support cities as dynamic centers of inclusive economic growth and positive development in the twenty-first century. Founded by a proven urban leader, the late Boston Mayor Thomas M. Menino, and a highly regarded academic, Professor Graham Wilson, the Initiative serves as a bridge between world-class academic research and the real-life practice of city governance.

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FOREWORD

Mayors are increasingly being asked to solve problems that the federal government has not been able to resolve. As they do so, mayors have found value in linking with each other through channels that sit outside the standard frameworks of government. The last decade alone has seen a proliferation of city collaborations designed to secure mayoral commitments on specific policy issues, to share best practices, and to inspire positive local change. As one mayor noted in the 2017 Menino Survey of Mayors, *“People understand that the success of cities is intertwined.”*

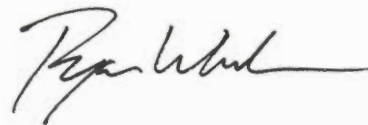
City-to-city networks can be conduits for such coordination. These groups are multiplying quickly, both nationally and globally, and cover issues that range from climate mitigation to immigration policy. *Cities Joining Ranks* explores which cities join which networks, and through new data analysis, offers fresh perspective on why cities are joining. The findings underscore how networks are building capacities of individual cities, while leveraging the strength in numbers that they possess.

Our organizations have long-valued the power of networks: in 2013, The Rockefeller Foundation launched 100 Resilient Cities and in 2014, Citi was a founding partner of Cities for Citizenship which now has 42 members and continues to grow — two networks dedicated to helping cities advance solutions to contemporary urban challenges and expand opportunities for residents. These networks and others are the medium for creative partnerships and innovative problem-solving that cities need to foster more livable, equitable, and inclusive communities.

As more and more mayors unite around common issues and agendas, they send the message to higher levels of government that cities are at the forefront of policy action as active and willing participants. And the findings from this report highlight just that: local leaders are planning; they are joining; and they are acting — together.



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INTRODUCTION

Networks act like arteries for cities. They help ideas spread, provide access to specialized knowledge, and bring like-minded mayors together to advocate for change. Yet networks — particularly those that have taken hold in the United States — seem to be drawing in cities and making headlines without attracting extensive attention from researchers. This report offers new perspective on their activities, member cities, and perceived value.

Given their limited time and resources, mayors have long turned to formal city-to-city networks to help them form bonds and share ideas across state and political bounds, as well as national borders. Founded in 1933 and 1926 respectively, the United States (US) Conference of Mayors and the National League of Cities have helped local leaders in the US forge important peer-to-peer ties. Networking is “seen as a way for cities to cooperate by sharing

or exchanging information, objectives, visions, policies, projects, best practices, resources and knowledge, increasing their chances of success.” (Fontana, 2017, p. 18)

In more recent decades, there has been a seeming proliferation of issue-specific city-to-city networks in the US, supporting connections among local leaders and their staffers around shared challenges and policy priorities. Among the more recent players that emerged in the last five years, there are

an abundance of environmental networks. But this proliferation has also made the increasingly complex network space more difficult to navigate. Mayors, city staff, media, academics and even occasionally the networks themselves have expressed confusion about which network offers what and to whom.

The authors of this report set out to demystify the city network space in the US for purveyors, members, researchers, and city allies. Specifically, this report seeks to address three guiding questions: **How do policy networks in the US compare to one another? Which US cities join which networks? Why do mayors sign on to networks?**

Fifteen active policy networks with strong name recognition and engagement in the US were selected for study. Among the networks examined in this report, eight were created in just the last five years. Given their rising salience and proliferation, networks which chiefly focus on environmental and climate issues make up two thirds of our sample.

Data sources for this report are diverse and unique. In addition to reviewing publicly available documents and information, interviews or written exchanges were conducted with senior staff of the networks in an attempt to understand their origins, gauge key points of difference and ultimately create robust, comparative definitions of the organizations’ missions and activities. To better understand their relationships to one another and assess relative visibility, additional analyses were conducted on the interconnectivity among the networks as well as their share of voice in online media.

Finally, a first of its kind city data set was developed to evaluate the network memberships of all US cities with populations over 75,000 and examine links between joining behavior and relevant city traits, such as city size and resident voting behavior. That data set, comprising 468 cities, also incorporates findings from interviews with 115 US mayors, conducted as part of the 2017 Menino Survey of Mayors. Responses from roughly a quarter of cities in our population, allow us to relate mayors’ perceived value of networks to their actual joining behavior.

“Working with others significantly increases our impact. Especially as major cities, we share and often outright copy each other’s ideas, and foster lasting relationships.”

— BIG CITY WEST COAST MAYOR, 2017 MENINO SURVEY OF MAYORS

“Cities once favored walls, but even when under siege never allowed themselves to be defined by borders. Their natural tendency is to connect, interact and network.”

— BEN BARBER, AUTHOR “IF MAYORS RULED THE WORLD” (2013)



KEY FINDINGS

How do the networks compare?

Regardless of the policy issue with which they are concerned, the fifteen networks reviewed here have a core set of common activities: they build and complement local capacity around particular issues through technical assistance, knowledge dissemination, and advocacy.

One important way in which the networks differ is with regard to their size and the audiences they elect to serve. Among the fifteen networks studied, we identified two clusters based on member type: 1) “High-Hurdle” networks that limit network membership to a select few of the most ambitious cities, which also tend to be the most highly networked, and 2) “Big Tent” networks that draw in large numbers of cities of all sizes, as well as policy maturity and network activity. High-Hurdle networks include organizations like the C40 and the Carbon Neutral Cities Alliance. Big Tent networks encompass a vast field from Mayors Against Illegal Guns to Climate Mayors.

Another distinction among the networks pertains to the origins of the networks themselves. Researchers tend to look to cities as incubators of policy, but a close examination of the origins of city networks reveals something more nuanced: Mayors are often incubating policy networks. Eight of the 15 networks included in this study were created by mayors for mayors, suggesting a remarkable level of activism, leadership, and policy entrepreneurship that extends well beyond city boundaries.

Not surprisingly, the networks are often competing for the attention of the same cities, media outlets, and potential funders. However, our research reveals that instances of inter-network cooperation and the creation of shared benefit prevail over competition between networks. Among the environmental networks, who are competing in the narrowest shared policy arena, online analysis and interviews with the networks indicate inter-network collaboration. And while the C40 enjoys the most significant media visibility, the proliferation of networks corresponds to an overall increase in media coverage.

Who is joining which networks?

Fifty-nine percent of all US cities with populations over 75,000 are in at least one of the networks included in this study. Network joiners have larger median populations than cities that are not currently a part of any network, and big cities tend to join more networks. Of the 50 largest cities in the US, 44 are in two or more of the 15 networks. America’s largest population centers, including cities like New York City, Los Angeles, Chicago, Houston, and Philadelphia, participate in seven or more networks, and all five share membership in the C40, the Global Covenant of Mayors, Climate Mayors, We Are Still In, Mayors Against Illegal Guns, and Cities of Service.

But the most highly networked cities are not exclusively the biggest cities. Boulder, CO, Pittsburgh, PA, New Orleans, LA, and Berkeley, CA, which have populations between 100,000 and 375,000 residents, are among the 13 most active joiners of the environmental networks. Akron, OH, and Richmond, VA, which both serve roughly 200,000 residents, are among the most engaged cities in non-environmental policy networks.

Forty-one percent of cities over 75,000 participate in at least one of the environmental networks, collectively representing 66.6 million Americans. Within this cohort, our analysis for the first time identifies clusters of cities, which are marked by a significant overlap in environmental network membership. The mapping of clusters and their structure can help cities locate peers with aligned policy priorities that may be outside the circle of similarly-sized or closely located cities with whom they interact regularly. In addition, the map allows cities to identify potential future membership trajectories by highlighting linkages between clusters.

Why are cities joining networks and to what effect?

Mayors report joining networks for a range of reasons, which generally mirror the activities of the networks themselves. The top three most frequently cited reasons mayors join networks include the opportunities to amplify their message by uniting around a common cause, to signal to local constituents that they share a particular priority, and to exchange best practices or other information.

The signaling value is further reinforced by the voting behavior of constituents, as cities that vote Democratic are more likely to join multiple environmental networks. There are, however, instances of possible dissonance where Democratic and Independent mayors have joined environmental networks, even when they represent districts that skew Republican. Republican mayors have also refrained from joining in spite of local majority support for climate policies.

Mayors who have joined environmental networks report a considerably higher level of political agency to counteract federal climate policies relative to mayors who are non-joiners. Our research design cannot rule out that empowered mayors may (also) be more likely to join networks in the first place. But, cities' high levels of engagement in networks and the high-profile actions coordinated by environmental networks in opposition to current federal environmental policies and actions suggests that environmental networks empower mayors. Notably, this distinction between network joiners and non-joiners only appears in relation to the environment, and not in relation to other relevant policy issues like immigration and policing.



METHODOLOGY

Definition of City-to-City Networks and Network Sample Selection

Broadening the definition by Kern and Bulkeley (2009), city-to-city networks in this report are understood as non-hierarchical, self-governing city collaborations, which require cities to abide by a set of principles and/or concrete obligations set out at the onset of the membership. Membership is voluntary and networks are either open to any city or accessible only if certain eligibility criteria are met. Borrowing piecemeal from Fünfgeld (2015), networks “create new networked arenas of political authority” (p.68) on specific issue areas at the subnational, national, and/or international level.

In this report we aim to comprehensively cover the environmental city network space in the US and to include as comparison cases, five established and well-known city networks from different issue areas. As a first step, we developed a set of criteria that determine whether a network is included in our sample.

As minimum conditions to be considered for this report, networks have to:

1. Elevate a specific issue (e.g. climate mitigation, community service, violence prevention, expansion of broadband access) rather than functioning as professional networks or issue-agnostic lobbying bodies for city officials;
2. Have at least half of their US membership body made up of cities;
3. Have a national or global orientation, rather than an exclusively regional focus;
4. Have a significant percentage of members from the US; and
5. Have released any reports and/or press releases since 2017 to classify as an active network.

Data Set

A unique data set was created of the 468 US cities with populations over 75,000. Their network membership status for the 15 referenced networks was compiled either from publicly available information on network websites or via updated rolls provided to the authors by the networks themselves. All memberships are as of January 25, 2018. It is therefore possible that by the time of publication more cities will have joined individual networks.

Additional data was appended comprising mayors’ responses to the 2017 Menino Survey of Mayors. The annual Menino Survey of Mayors explores a mix of timely urban issues and challenges, and includes both closed and open-ended questions. The 2017 Menino Survey is based on interviews with a representative sample of 115 US mayors leading cities with populations over 75,000. Among other topics, mayors were asked about their views on city-to-city networks. Preliminary results were included in the 2017 Menino Survey report available at www.surveyofmayors.com. For the “Cities Joining Ranks — Policy Networks on the Rise” report, mayors’ responses were recoded for greater granularity. All direct quotes are derived from those interviews, which were conducted in the summer of 2017.

To generate a systematic sample for the Menino Survey, the Boston University Initiative on Cities invited all mayors of cities with 75,000 or more residents to participate. Each mayor received an email invitation from the Boston University team at their official account, and follow-up phone calls. In total, 115 interviews (a strong 25 percent response rate) were primarily conducted in person or by phone. This systematic sampling and recruitment effort yielded a representative sample of American cities.

The 115 participating cities mirrored the target population of all cities with more than 75,000 residents (see Table 1). Participating cities were almost identical to the national population of cities in terms of their individual populations, racial demographics, housing prices, and geographic breakdown. The sample of participating mayors captures the breadth of America’s city leaders. Twenty-six percent are female and 85 percent are white. Sixty-five percent are Democrats. All three of these figures are consistent with the traits of the mayors in the 2016 Menino Survey. The partisan distribution also closely aligns with a rigorous political science study of mayoral partisanship (Gerber & Hopkins, 2011).

Table 1: Demographic Comparison of Menino Survey Sample Cities to All US Cities with Population >75,000

	Survey Sample	All Cities
Number of Cities	115	467
Average Population	233,086	224,762
Average Percent White	55%	50%
Average Percent Black	16%	14%
Average Percent Hispanic	19%	25%
Average Median Housing Price	\$238,719	\$245,783
Region	% of Sample	% of Cities
Northeast	9%	10%
Midwest	25%	16%
South	27%	33%
West	39%	40%

Data from 2015 American Community Survey (ACS), published by US Census Bureau



PROFILING CITY-TO-CITY NETWORKS

Elected officials use networks to come together, learn from one another, and share ideas. Political scientists are also interested in these networks as mechanisms for policy diffusion and experimentation, but so far have devoted limited attention to the activities and functions performed by issue-specific city networks in the US. Polycentric actor networks have been shown to represent one means by which policies, tools or norms that have been implemented in one place may be built upon, shared, and coopted by another actor for application elsewhere (Betsill & Bulkeley, 2004) (Rashidi & Patt, 2017) (Lee & van de Meene, 2012).

Networks have also been shown to spur innovation and ambition in policy-making, not just foster replication and repetition. They have been credited with opening alternative policy arenas when national avenues seem gridlocked (Hale, Held, & Young, 2013), giving way to increasingly multi-tiered governance fora including market-actors (Acuto & Rayner, 2016) and stimulating more ambitious local actions as a result of strategic interactions (Dorsch & Flachsland, 2017).

Despite this optimism, particularly in the environmental network realm, experts caution that “site-specific free-riding incentives, leakage effects, and the persistent resistance of opposing actors are likely to prevail” (Dorsch & Flachsland, 2017, p. 58). On top of this, it is cautioned that the reverberations of governance lock-ins when it comes to the involvement of private interests in city decision-making may be felt for the foreseeable future (Acuto & Rayner, 2016, p. 1158).

In light of the beneficial outcomes researchers associate with policy networks, it is valuable to understand the benefits and activities contemporary networks offer member mayors and cities. Is sharing of best practices their core function, and if so, how do they approach it? What else do they really do? Which actors are they designed to serve?

Comparing Networks: Benefits, Requirements, and Membership

This report delves into the membership, benefits, and requirements of nine environmental networks, one hybrid network that has a strong environmental orientation, and five other distinct policy networks that broach different issues from immigration to broadband access. Selected networks include a balance of those which are exclusively focused on the US and others which include both US and foreign member cities.

The US-centric networks include Climate Mayors, We Are Still In, the Sierra Club Mayors for 100% Clean Energy Initiative, along with Mayors Against Illegal Guns, Welcoming America, Cities of Service, Next Century Cities, and Cities United. Those that bring together US and foreign cities include the C40, 100 Resilient Cities, Carbon Neutral Cities Alliance, Under2 Coalition, Chicago Climate Charter, and the Global Covenant of Mayors. ICLEI USA is a hybrid, as an independent 501(c)(3) that is the US-regional network of ICLEI Global. Table 2 provides a summary account of the networks.

An understanding of membership composition, member’s obligations, and network activities provides a valuable opportunity to compare networks and parse out both areas of commonality and difference. Table 3 breaks these dimensions down by network and standardizes network characteristics (see Appendix 1). If a certain activity is listed, it has met the definitional minimum threshold. For instance, “conferences & convenings” are listed among a network’s activities if it organizes conferences, summits, convenings, or forums at least twice a year which have mayors and/or city staff as their primary audience. Wherever possible, care was taken to have a senior staff member associated with each network corroborate requirements and activities noted here, based on provided definitions. There is understandably considerable variation in the degree to which networks engage in a certain activity and how successful they are.

Table 2: Summary Definitions of the Networks

ICLEI-Local Governments for Sustainability, USA (1991): As an independent US regional network of a global organization, ICLEI USA has 188 US city and county members in addition to subnational jurisdictions and institutes of higher education committed to sustainability. It provides tools, protocols, and trainings to help staff of individual member cities advance their own sustainability objectives and facilitates inter-city dialogue around common challenges.

C40 Cities Climate Leadership Group (2005): An exclusive, global network of 92 mega-cities and climate leader cities that seeks to speed up cities' progress towards achieving their own emission reduction goals by providing technical assistance, opportunities to engage in city-led technical networks, and access to tailored city intelligence and research products. Following separate competitive selection processes, cities can receive staffing and be paired with private sector companies to co-create mitigation solutions.

100 Resilient Cities (2013): A competitive global network of 100 cities, supported by The Rockefeller Foundation, that provides technical expertise, city staff funding, and forums for knowledge exchange to accepted cities, which seek to foster local, multidimensional resilience by identifying physical, economic and social stressors, and articulating a strategy to address them.

Climate Mayors (2014): A network of 389 mayors across the US that organizes and amplifies the collective voice and power of city halls in the media and encourages its members to develop voluntary, city-level GHG reduction goals. It offers regular opportunities for mayors and staffers to coordinate climate priorities and exchange best practices through moderated coordination calls that feature cities of all sizes and locations.

Carbon Neutral Cities Alliance (2015): A global network of 20 cities that represents, connects, and provides technical guidance to mayors and city-level climate practitioners, who have committed to a GHG reduction goal of at least 80% by 2050. Catalyzing action around deep decarbonization in cities, the network helps fund systems-level policy innovations and provides peer sharing opportunities through coordination calls.

Under2 Coalition (2015): A global network of 205 cities, states, regions, and counties, which are committed to achieve GHG reductions of 80-95% by 2050, that supports the planning and progress reporting and provides the option for cities to engage directly with state and national government members.

Sierra Club Mayors for 100% Clean Energy Initiative (2016): A network of 185 US mayors, who signal their personal commitment to work towards realizing a goal of having 100% clean and renewable energy in their city. Endorsements by mayors for this vision signal policy priorities and are amplified through media outreach.

We Are Still In (2017): A North American network of networks that brings together 253 cities and counties of all sizes in addition to states, regions, tribes, universities, faith organizations, and businesses that pledge to uphold the Paris Agreement within their jurisdictions.

Through media outreach, coordination with other climate networks and its emphasis on its cross-sectoral membership, We Are Still In builds and maintains societal and political momentum around climate mitigation goals.

Chicago Climate Charter (North American Climate Summit) (2017): A coalition of 68 predominantly North American mayors, who signal their climate leadership by pledging to exceed their nation's official emission targets in their city and report publicly on their progress.

Global Covenant of Mayors for Climate & Energy (2017): A global city and local government network that includes 143 US cities and counties, committed to meet or exceed national mitigation goals by following a process of planning, target-setting, and outcome reporting. It was formed in 2017 via a merger of the US Compact of Mayors (2014) & EU's Covenant of Mayors for Climate and Energy (2008) and focuses on developing reporting standards and protocols, and elevating cities in global climate diplomacy and in the eyes of investors.

Mayors Against Illegal Guns (2006): A network of 631 US mayors which provides technical and legal assistance, access to original research, and policy advocacy support to city leaders that advocate for stronger gun laws on a state by state basis. Folded into nonprofit Everytown for Gun Safety (2014) following merger of Mayors Against Illegal Guns and Moms Demand Action For Gun Sense in America.

Cities of Service (2009): An international network including 228 US cities that promotes citizen engagement, impact volunteering, and problem solving in cities by supporting project-based interventions through technical and targeted financial assistance. The network produces a variety of research materials and funds a dedicated staff person for a select group of cities.

Welcoming America (2009): A network of 62 US cities and counties in addition to states, regions, and nonprofits that helps to foster inclusive communities and institutionalize immigrant integration through peer exchanges, technical and financial assistance. The network makes available resources on policies, successful programs and partnerships, and offers to contract with its cities to audit their ongoing efforts on immigrant inclusion and recommend steps for improvement.

Cities United (2011): A network of 121 US mayors committed to developing a community-rooted strategic plan to end urban violence (with specific focus on African American men and boys), by providing venues to share best practices, disseminate research, and address the federal government with a collective voice. Guidance is provided through fellows, staff, and partner organizations.

Next Century Cities (2014): A network of 184 US cities and counties that seeks fast, affordable, and reliable internet access by sharing model policies, doing policy advocacy work, and linking cities with private sector partners. In addition to guidance on broadband policies and technical implementation issues, the network amplifies the voice of members in the media and as part of the regulatory process.



Membership

Among the networks examined here, most are nominally open enrollment — meaning there is no competitive process by which cities are admitted. The C40 and 100 Resilient Cities are two exceptions. The former limits membership to mega-cities and climate leaders that are also regional anchor cities, and cities must be approved for admission by their Steering Committee and Board of Directors. The latter likewise accepts cities based on a competitive application process. Others, like the Carbon Neutral Cities Alliance and the Under2 Coalition, focus on cities that have set aggressive climate goals, which effectively minimizes their membership rolls to a small subset of cities that have self-identified as the most aggressive climate leaders willing to make a specific public commitment.

Most networks included here focus their membership on cities, but six of the 15 are structured to draw in a broader membership pool. Next Century Cities and the Global Covenant reach just beyond cities, and include other local governments, namely counties. In contrast, We Are Still In, Welcoming America, and the Under2 Coalition all have significantly more expansive government membership pools, as they engage states, regions, and counties. ICLEI USA also includes large institutions like universities, while Welcoming America also includes nonprofit organizations. We Are Still In, which essentially functions as a network of networks, has the broadest member base, as it also draws in universities, businesses, faith-based organizations, tribes, and community groups.

Network members are most often bound by participation standards, meaning they must actively engage on a regular basis and, in some cases, voluntarily pledge to create a plan to fulfill their membership requirements. Binding commitments to targets and reporting obligations — such as the greenhouse gas (GHG) emissions, climate and energy actions, and reporting requirements specified by the Global Covenant of Mayors — only feature in a handful of networks. A few networks are considering implementing participation standards in 2018.

Interestingly, in contrast to professional networks, the vast majority of those reviewed here do not require the payment of membership dues. They largely maintain themselves through separate fundraising efforts, chiefly from philanthropies. Some network representatives with whom we spoke confided that membership dues are on the table for consideration. The only two that currently request them, ICLEI USA and Welcoming America, set them low enough that they believe they act as a signal of commitment and are not burdensome.

Activities

Media outreach, conference/convening offerings, documentation of best practices, and technical assistance are the most common benefits provided by the networks to members. Issue advocacy, whether nationally or globally, is also a highly common activity, which reflects the policy or issue-specific nature of the networks included here. Seven of the 15 also support public/private partnership facilitation, which we define as engaging in active matchmaking between members and private companies and/or having private companies that are considered “preferred network partners.” About half of the networks make financial assistance available to at least some members, and about half aggregate members’ activities or make impact projections. The least frequently found benefits are accreditations and awards for high-performing members.

As inter-city knowledge dissemination is regarded as one of the main benefits of these types of networks, it is worth noting the various ways they fulfill on that promise. Documented case studies, conferences and workshops, technical assistance, and peer information exchanges are used to varying degrees by the networks to cross-pollinate ideas and allow members to share expertise, and to reveal successes and failures.

Table 3: Comparison of Network Membership, Requirements and Activities

Name	City Members Globally (US) ^A	Member Obligations ^B	Open or Competitive Entry	Activities & Benefits	Web and Twitter Presence ^C
ICLEI USA	165 (165) Plus: Regional Organizations, Counties, Educational Institutions	Pay dues	Open	Technical assistance Conferences & Convenings Routine peer exchanges (esp. staff) Public/Private partnership facilitation Aggregated reporting/Projections Best practices/Case studies Advocacy (subnational, national, global) Media Outreach Awards	icleiusa.org @ICLEI_USA 5.4k Followers
C40 Cities Climate Leadership Group	92 (12)	Participation standards Report progress	Competitive; Restricted to mega-cities and proven city climate champions that are regional anchor cities	Direct assistance Technical assistance Conferences & Convenings Routine peer exchanges (staff & mayors) Public/Private partnership facilitation Aggregated reporting/Projections Best practices/Case studies Advocacy (national, global) Media outreach Accreditation Awards	c40.org @c40cities 68k Followers
100 Resilient Cities	100 (24)	Participation standards Commit to own goal Develop plan	Competitive; Restricted to cities with history of fostering inclusive and innovative partnerships that catalyzed city-level change; periodic intake	Direct assistance Technical assistance Conferences & Convenings Routine peer exchanges (esp. staff) Public/Private partnership facilitation Aggregated reporting/Projections Best practices/Case studies Advocacy (national, global) Media outreach	100resilientcities.org @100ResCities 78.2k Followers
Climate Mayors	389 (389)	Participation standards	Open	Technical assistance Routine peer exchanges (staff & mayors) Best practices/Case studies Advocacy (subnational, national) Media outreach	climatemayors.org @ClimateMayors 6.3k Followers
Carbon Neutral Cities Alliance	20 (8)	Commit to specific network target Report baseline	Open	Direct assistance Technical assistance Conferences & Convenings Routine peer exchanges (staff & mayors) Public/Private partnership facilitation Best practices/Case studies Advocacy (subnational, national) Media outreach	carbonneutralcitiesalliance.org @CarbnNtrlCities 900 Followers
Under2 Coalition	23 (12) Plus: States/Regions, Counties	Commit to specific network target	Open	Direct assistance Technical assistance Conferences & Convenings Aggregated reporting/Projections Best practices/Case studies Advocacy (subnational, national, global) Media outreach	under2mou.org @ClimateGroup (a related account) 128.7k Followers

Name	City Members Globally (US) ^A	Member Obligations ^B	Open or Competitive Entry	Activities & Benefits	Web and Twitter Presence ^C
Sierra Club's Mayors For 100% Clean Energy initiative	185 (185)	/	Open	Conferences & Convenings Media outreach	sierraclub.org/ready-for-100/mayors-for-clean-energy @SierraClub (a related account) 322k Followers
"We are still in" Declaration	229 (229) Plus: States/ Regions, Counties, Tribes, Educational Institutions, Faith Organizations, Businesses	/	Open	Conferences & Convenings Best practices/Case studies Advocacy (national) Media outreach	wearestillin.com @wearestillin 1.8k Followers
Chicago Climate Charter (North American Climate Summit)	68 (58)	Commit to specific network target Report progress	Open	Conferences & Convenings Advocacy (subnational, national) Media outreach	northamericancimatesummit.splashthat.com
Global Covenant of Mayors for Climate & Energy (Merger of Compact of Mayors & EU's Covenant of Mayors for Climate and Energy)	7,498 (138) Plus: Counties	Participation standards Commit to specific network target Report baseline Develop plan Report progress	Open	Technical assistance ^D Conferences & Convenings Aggregated reporting/Projections Public/Private partnership facilitation Best practices/Case studies Advocacy (national, global) Media outreach Accreditation Awards	globalcovenantofmayors.org @Mayors4Climate 16.6k Followers
Mayors Against Illegal Guns (part of Everytown for Gun Safety)	631 (631)	Participation standards	Open	Technical assistance Conferences & Convenings Routine peer exchanges (mayors & staff) Aggregated reporting/Projections Best practices/Case studies Advocacy (subnational, national) Media outreach	everytown.org/mayors @Everytown (a related account) 168k Followers
Cities of Service	238 (228)	Participation standards Develop plan	Open	Direct assistance Technical assistance Conferences & Convenings Routine peer exchanges (esp. staff) Public/Private Partnership Facilitation Aggregated reporting/Projections Best practices/Case studies Media outreach Awards	citiesofservice.org @CitiesOfService 4.9k Followers

Name	City Members Globally (US) ^A	Member Obligations ^B	Open or Competitive Entry	Activities & Benefits	Web and Twitter Presence ^C
Welcoming America	55 (55) Plus: States/ Regions, Counties, Nonprofits	Participation standards Pay dues	Open	Direct assistance Technical assistance Conferences & Convenings Routine peer exchanges (esp. staff) Best practices/Case studies Advocacy (subnational) Media outreach Accreditation	welcomingamerica.org @WelcomingUSA 5.5k Followers
Cities United	121 (121)	Participation standards Develop plan	Open	Technical assistance Conferences & Convenings Routine peer exchanges (staff & mayors) Aggregated reporting/Projections Best practices/Case studies Advocacy (subnational) Media outreach	citiesunited.org @CitiesUnited 1.7k Followers
Next Century Cities	174 (174) Plus: Counties	Participation standards	Open	Direct assistance Technical assistance Conferences & Convenings Routine peer exchanges (staff & mayors) Public/Private partnership facilitation Best practices/Case studies Advocacy (subnational, national) Media outreach Awards	nextcenturycities.org @NextCentCit 2.3k Followers

A Membership figures are as of late January 2018. They may not reflect the latest counts at the time of publication.

B The term “obligations” refers to any pledges that a member needs to make in order to join a network. Here listed are the obligations that go beyond ascribing to general principles and values of the network. Only obligations that were in effect as of late January 2018 are included here.

C The follower statistics for Twitter are all as of 2/28/2018.

D Technical assistance to cities is delivered through the city network partners of the Global Covenant of Mayors. The city network partners provide technical assistance to support cities’ compliance with the Global Covenant of Mayors membership requirements.

Network Typologies

Researchers have devised various typologies of city networks, characterizing them by spatial scope (e.g. global, transnational, national, local), thematic focus (e.g. environment, energy, culture, social issues), membership (e.g. number and types of members), founders/leaders (e.g. intergovernmental organizations, universities, foundations), and the types of activities they undertake (Keiner & Arley, 2006) (Fontana, 2017). Characterizations focused on founders and members struck the authors as useful ways to delineate amongst the networks reviewed here.

“By Mayors, For Mayors”

Cities are frequently heralded as incubators of policy, but here we observe that mayors themselves are taking a leadership role in incubating policy networks. Research characterizing network founders draws distinctions between organizations that were created and spearheaded by nongovernmental actors or various institutions (Kern & Bulkeley, 2009), but seems to overlook the role individual mayors play in the formation of many of these networks.

Eight of the 15 networks included in this study were formed by and for mayors, to fill an observed void or to address a particular knowledge and resource deficit.

Table 4: Founding Mayors

ICLEI	1991	Mayor Larry Agran (Irvine)
C40	2005	Mayor Ken Livingstone (London, United Kingdom)
Mayors Against Illegal Guns	2006	Mayor Michael Bloomberg (New York City) and Mayor Thomas M. Menino (Boston)
Cities of Service	2009	Mayor Michael Bloomberg (New York City) and a founding coalition of 16 mayors
Cities United	2011	Mayor Michael Nutter (Philadelphia) and Mayor Mitch Landrieu (New Orleans)
Next Century Cities	2014	Coalition of mayors
Climate Mayors	2014	Mayor Eric Garcetti (Los Angeles), Mayor Annise Parker (Houston), and Mayor Michael Nutter (Philadelphia)
Chicago Climate Charter	2017	Mayor Rahm Emanuel (Chicago)

Most of the mayor-initiated networks were formed while the founders were still in office. ICLEI had a mayor as part of its origin story as the mayor of Irvine, CA, sought to take action on ozone-depleting chemicals and formed a coalition of like-minded peers in the early '90s, which ultimately grew into a vast global network. New York City Mayor Michael Bloomberg and Boston Mayor Tom Menino spearheaded formation of Mayors Against Illegal Guns to bring together American mayors eager for new solutions to reduce gun violence in their cities. Next Century Cities was initiated by a coalition of mayors who sought foundation support to create an unbiased resource to advise them on broadband infrastructure. In 2014, Los Angeles Mayor Eric Garcetti and his colleagues in Philadelphia and Houston came together to form Climate Mayors, originally known as the Mayors National Climate Action Agenda, in order to foster more mayor-to-mayor cohesion and communication on climate issues prior to the Paris Agreement.

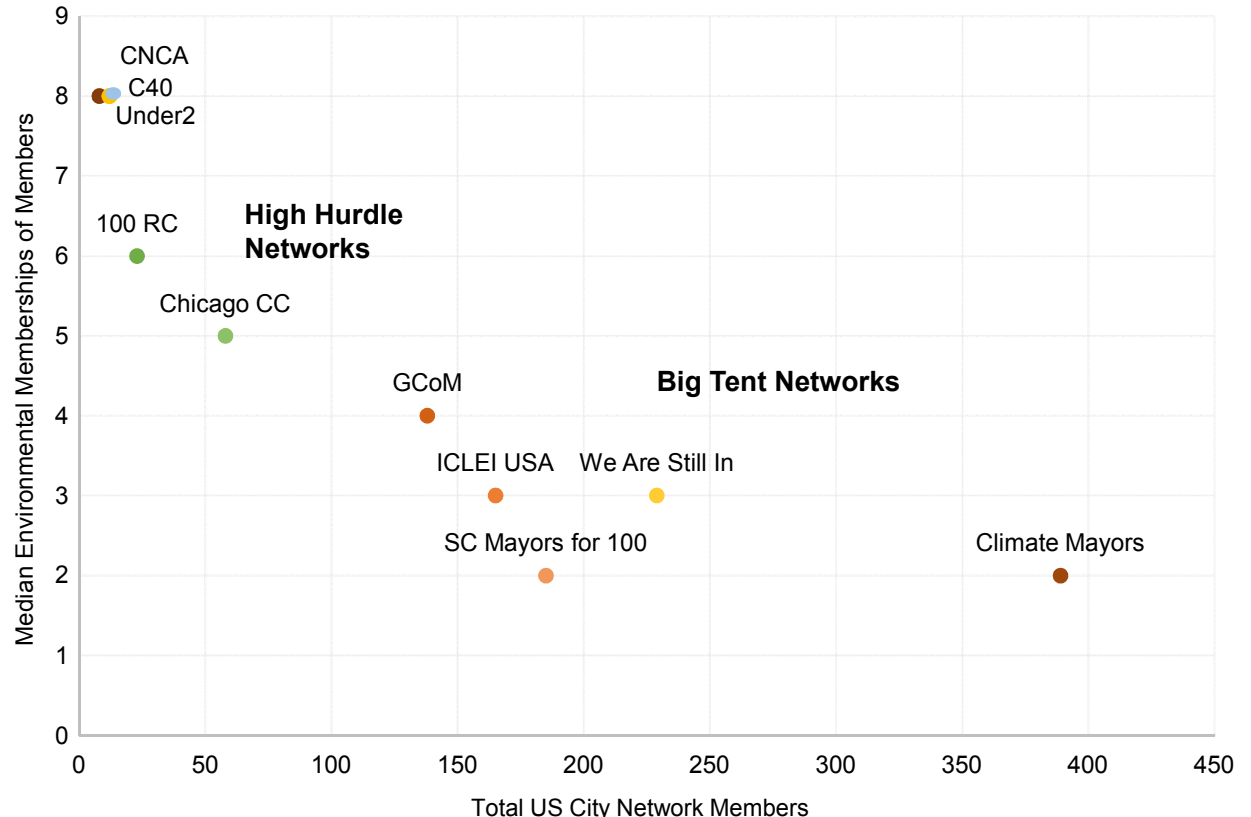
It is possible our sample skews towards those networks that are most likely to have mayors at their chief catalysts. Still, it is telling to observe this level of activism among mayors, particularly as forming national and global peer networks not only exceeds their governance boundaries, but — even as it provides solutions — creates more work for them and their staff. Mayors are indeed governing locally but leading nationally, if not globally.

In some cases, these networks were formed alongside, but independent of other major convenings. Mayor Livingstone convened colleagues alongside United Nations climate change meetings, and those sessions helped to seed C40. It is also interesting to note that existing member organizations for local elected officials, such as the US Conference of Mayors and the National League of Cities (NLC), do not appear to be intimately involved in the formation of the majority of the policy-oriented networks reviewed here. Both issue press releases on related member priorities and provide resources on environmental issues through existing centers and committees, but are generally not co-founders of networks. There are some exceptions: Cities United references the NLC as a founding partner, and the NLC is also referred to as a partner to We Are Still In. As one leader we interviewed noted, forming policy networks independently allows them to operate more freely and nimbly and focus exclusively on the needs of members who elect to join, rather than trying to serve many masters.


“Big Tent” Networks with Broad Appeal

Big Tent networks bring together broad coalitions of diverse cities of all sizes, including both the most “active joiners” as well as those that are not at all engaged in other policy networks. Within the environmental network space, Climate Mayors, We Are Still In, ICLEI USA, the Global Covenant of Mayors (GCoM), and Sierra Club’s Mayors for 100% Clean Energy all fall into this category. These networks provide cities with a venue to publicly signal their commitment to a policy agenda and engage with like-minded peers. Some of these networks, including We Are Still In and Climate Mayors, do not involve hard commitments such as reporting requirements or other aggressive targets, which also allows them to operate as starter networks with low barriers to entry. By broadly appealing to a range of cities that are in varying stages of environmental policy maturity or sophistication, these “Big Tent” networks provide space for historically less engaged cities like Laredo, TX, and Gainesville, FL, to come together with the active, visible environmental leaders like Los Angeles, CA, and Boulder, CO.

Figure 1: High-Hurdle and Big Tent Networks



Note: Includes all US city members, including those with populations below 75,000. All other analysis in this report focuses only on member cities with more than 75,000 residents.



Mayors Against Illegal Guns, Next Century Cities, Welcoming America, Cities of Service, and Cities United also operate as “Big Tent” networks. They are open to any city and have a significant number of US members spanning geographies and population size.

“High-Hurdle” Networks for Aggressive Climate Leaders

In contrast to the Big Tent networks, a smaller number of networks selected for review here have relatively high hurdles or competitive processes under which members may join and a correspondingly low total number of US member cities. These more exclusive networks, including the C40, Carbon Neutral Cities Alliance (CNCA), Under2 Coalition, and 100 Resilient Cities (100 RC) appear to be magnets for the most active networkers among our sample of cities. If a city has successfully gained access to a High-Hurdle environmental network, it is also highly likely to be a member of multiple others networks, including both those pertaining to the environment and others. These networks tend to believe their selectiveness is a source of strength, as it allows them to tailor programming to the most aggressive cities. Yet they also seek to benefit non-members, by providing case studies and sharing other lessons and resources publicly.

In slight contrast to the other High-Hurdle networks, 100 RC draws a wider pool of both the most aggressive climate leaders and highly networked cities, as well as cities that are less connected to their peers via other forums. All 100 RC cities exhibit some kind of joining behavior, participating in at least one other network, and 10 of their 24 member cities are among the most networked cities in our sample. However, Tulsa, OK, and El Paso, TX, are not actively involved in any other networks that pertain to the environment and Miami, FL, and Norfolk, VA, are in just one other. The broader resilience mission and resources available through 100 RC may be providing an opportunity to engage a wider array of big cities, outside of the most highly networked. Similarly, the Chicago Climate Charter (Chicago CC), whose members pledge to exceed their nation’s official emission targets in their city and report publicly on their progress, draw in a somewhat larger pool of both active and less active joiners.

Network Visibility

Every network included in this study conducts media outreach as a core part of its activities. We characterize a network as engaging in media outreach if it regularly publishes press releases and/or keeps social media feeds up to date. Website maintenance alone does not suffice. Given their active media engagement, we sought to understand the relative media visibility of the various networks. For comparison purposes, we chose to focus only on those in the environmental space.

The authors created a proxy measure for online media visibility of the networks in order to get a sense of how frequently their activities are being referenced in the seven most popular online news outlets in the US¹. In yearly intervals, we queried the individual network names² in the universe of all historically indexed web pages of these seven news outlets in Google. The aggregate number of references to the individual environmental networks³ is graphed in Figure 2.

We find that since 2010, the High-Hurdle network C40 has attracted by far the greatest online news media attention of all environmental networks (see Figure 2). With the emergence of multiple new networks in the

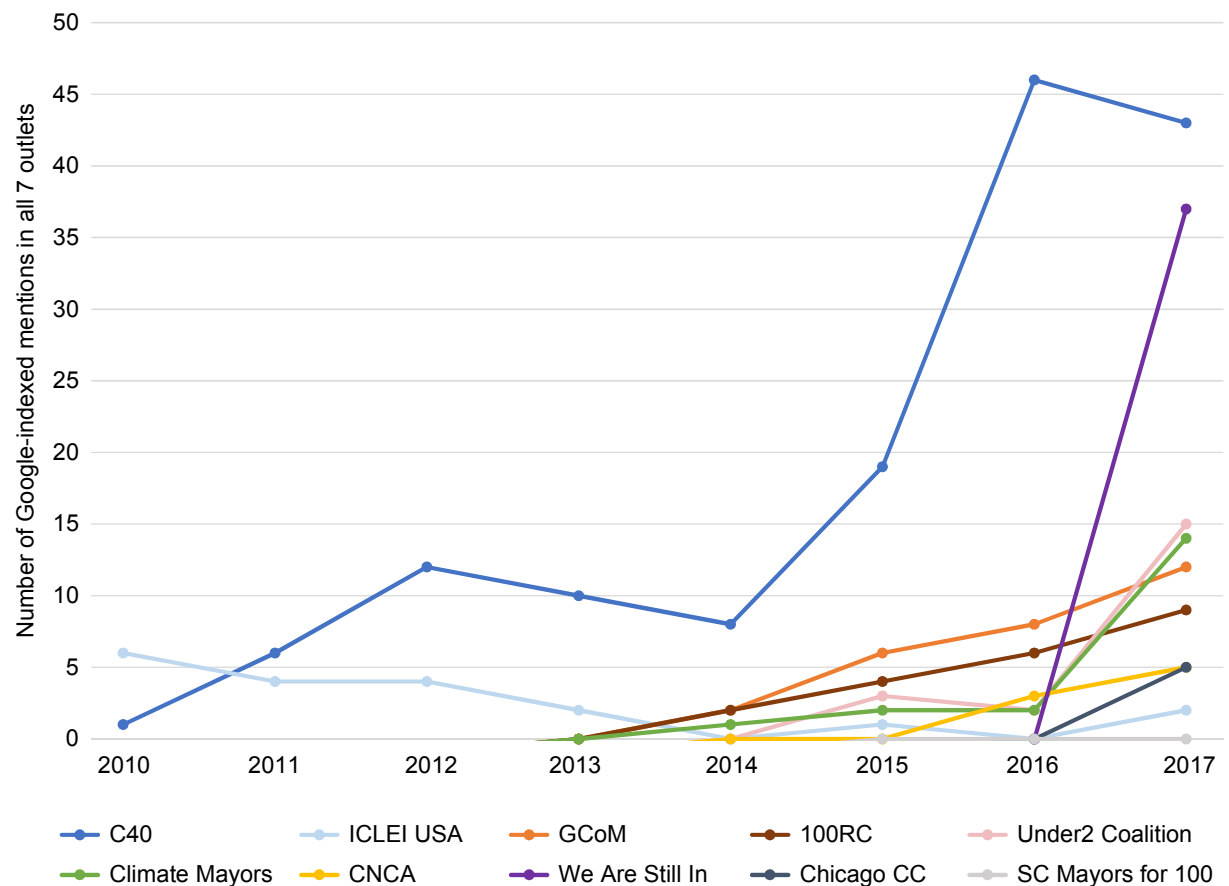
¹ We relied on a news outlet popularity ranking that takes the average total traffic volumes from three reputable sources (The eBusiness Guide, 2017). We excluded news aggregators to have a cleaner measure of visibility among the top seven news outlets only.

² If a network existed under a different name before, we queried the old name during this time window.

³ All results are as of mid-February 2018. We excluded indexed web pages if they were in a language other than English. If the search result preview did not show the correct network name, we checked the underlying web page. If upon inspection the web page did not contain the network’s name, we also didn’t count this specific Google search result.

issue space in 2012–2016, the attention devoted to all environmental networks increased steadily (see Figure 3), suggesting that the organizations are collectively elevating the visibility of their shared cause rather than simply competing for a limited share of voice. In the aftermath of the Paris Agreement approval in late 2015, the C40 network experienced a strong boost driven largely by much greater visibility on Huffington Post. The associated tide of greater attention also lifted the visibility of almost all networks.

Figure 2: Environmental Network Visibility in Online News Media*, 2010-2017



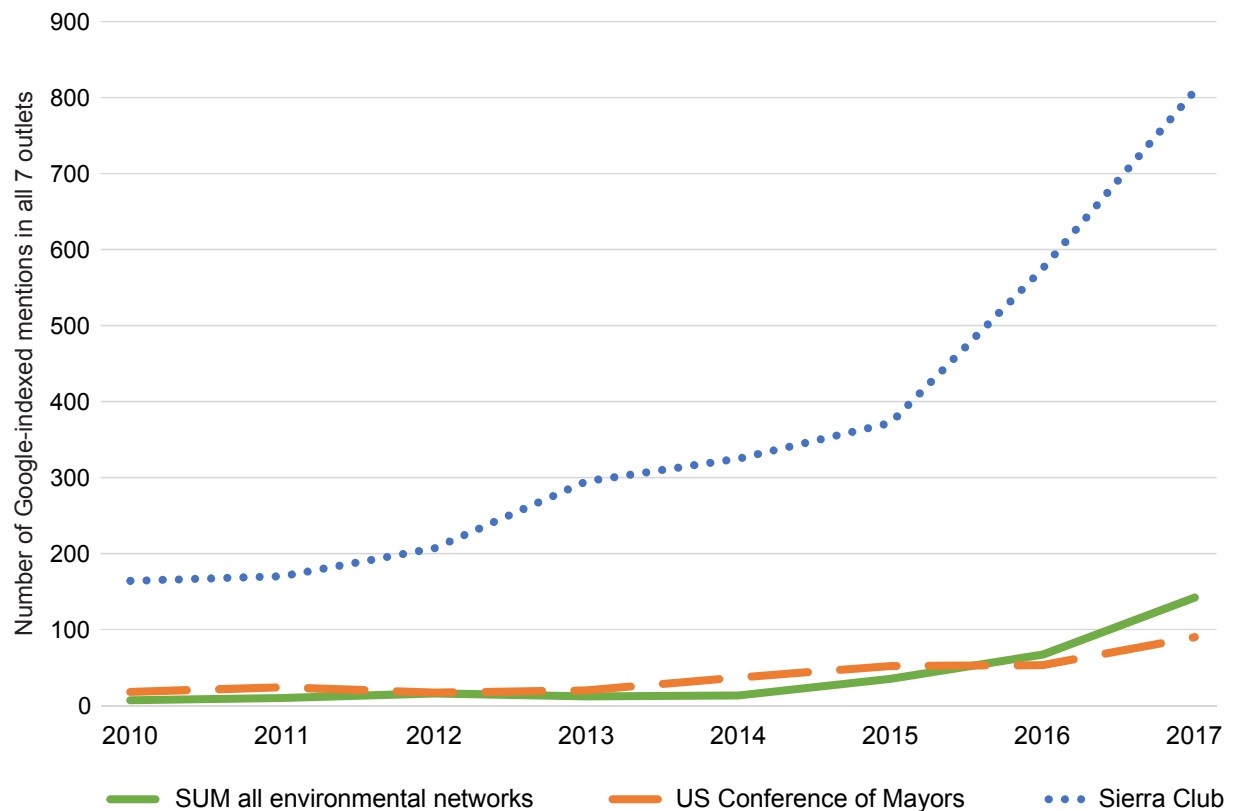
*Outlets: Huffington Post, CNN, New York Times, Fox News, NBC News, Washington Post, Wall Street Journal

The spike in media attention for We Are Still In, the Under2 Coalition, Climate Mayors, and the Chicago Climate Charter can be attributed to varying degrees to the US presidential election in 2016, the subsequent decision of the Trump Administration to withdraw the US from the Paris Agreement on climate change, and a flurry of subnational climate summits held in 2017.

All environmental networks together are roughly covered as much as the US Conference of Mayors (see Figure 3). Their joint news visibility, however, pales in comparison to one of the largest environmental nonprofit organization, the Sierra Club.



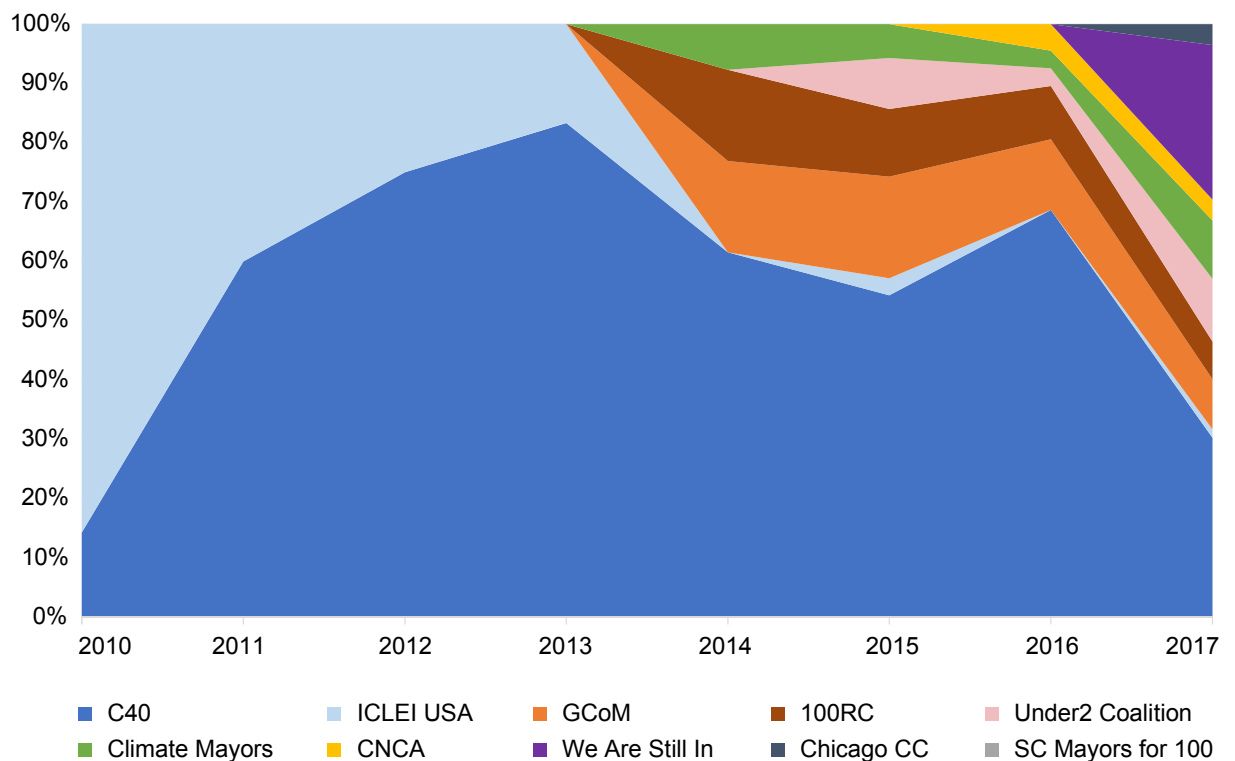
Figure 3: Aggregate Environmental Network Visibility in Online News Media*, 2010-2017



*Outlets: Huffington Post, CNN, New York Times, Fox News, NBC News, Washington Post, Wall Street Journal

Overall, the selected media outlets have split their attention among more environmental networks over the last few years (see Figure 4). Still, C40 garnered a third of the total visibility. Another third accrues to the two most recently formed environmental networks, We Are Still In and the Chicago Climate Charter, and the rest is roughly equally split among the remaining five networks.

Figure 4: Share of Online News Media Visibility by Environmental Network*, 2010-2017



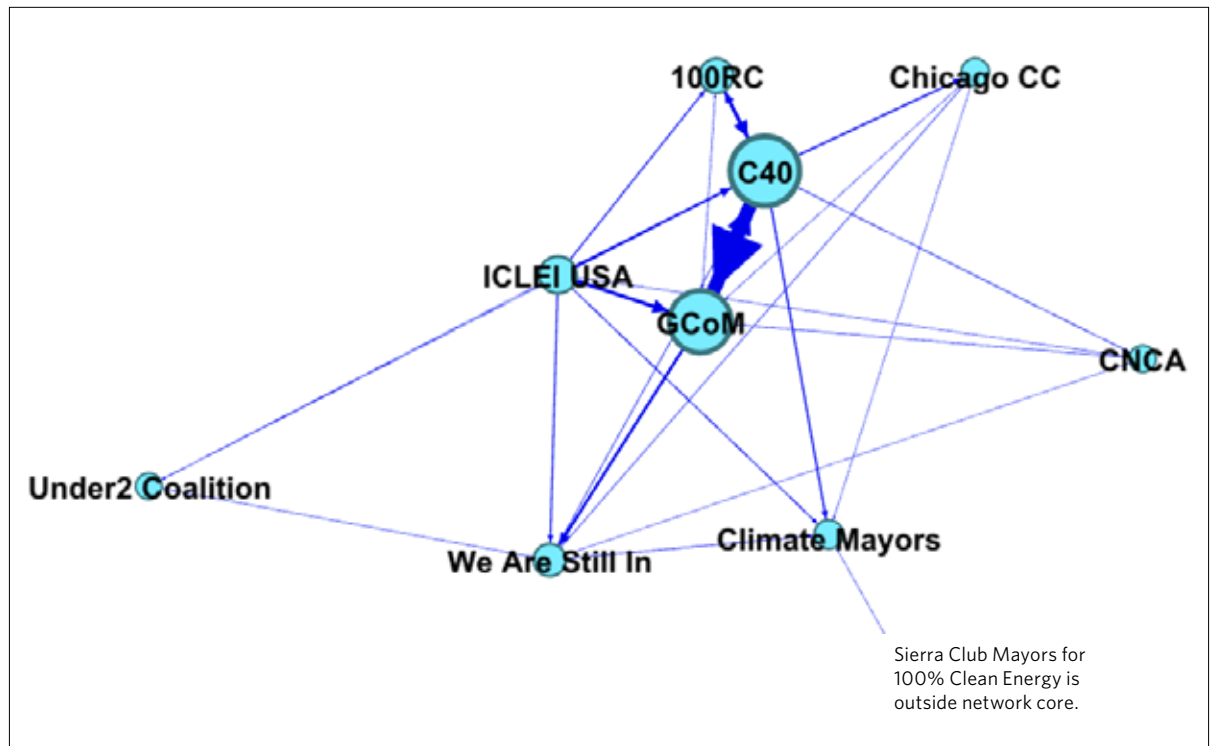
*Outlets: Huffington Post, CNN, New York Times, Fox News, NBC News, Washington Post, Wall Street Journal

Network Connectivity

Given the crowded landscape in the environmental network space, we were also interested in understanding the extent to which the networks themselves are interconnected. They do not appear to be competing for share of voice, but do they compete in other ways or are they mutually reinforcing and collaborative?

In the interviews with climate network representatives, they were asked to briefly share their inter-network collaborations. Representatives associated with the environmental networks spoke of myriad ties, some formal (e.g. through MOUs), but mostly non-contractual coordination and planning. Attempts were made to coordinate press releases, avoid scheduling conflicting events, and show support by attending other network's events and amplifying one another's efforts. They were cognizant of the competing asks they were making of the same mayors and cities. The majority felt each organization filled an important niche and served a particular audience with a particular set of benefits, which seemed to make collaboration both desirable and more likely.

Figure 5: Interconnectivity of Environmental Networks, Measured by Web Page References



In the interest of a more rigorous measure of connectivity, the authors developed a graphical representation (see Figure 5) of the web page references between the different environmental city networks⁴. The goal was to learn whether the networks at a minimum publicly acknowledge and reference the existence of each other (irrespective of whether the website passage describes an actual collaboration between two or more networks). Admittedly, this approach has a bias towards networks with many indexed web pages and does not measure actual collaborations between networks. Still, this approach starts to probe into the complex relationship between networks themselves.

Figure 5 shows that there exists a relatively tight web of mutual references among the majority of the environmental networks. The frequency to which networks mention each other differs markedly among the 10 city climate networks in this report. At the core, the GCoM and C40 exchange most mutual references and receive most overall mentions. Visually surrounding them, ICLEI USA, 100 RC and We Are Still In (in this order) appear to be second-tier reference hubs when measured by the number of ingoing and outgoing ties.

In interviews with representatives of the networks represented in this report we also specifically asked about their ties to organizations outside of our sample. In the environmental space, some of the most frequently recurring partners cited were the World Wildlife Fund, the World Resources Institute and the Urban Sustainability Directors Network. One example of a non-environmental network that works in tandem with various other partners is Cities United. The network works closely with the African American Mayors Association, My Brother's Keeper, Mayors Against Illegal Guns, and as previously noted, counts the National League of Cities as one of its founding members.

⁴ In Figure 5, nodes represent networks and ties between nodes depict the existence and number of Google-indexed references of a specific network. As an example, if network x on its web pages has at least one indexed reference to network y, the illustration shows a direct link from network x to network y. The thickness of the tie is proportional to the number of indexed references. The size of a node is proportional to the number of incoming and outgoing ties from this node. Nodes with many references to each other are located more closely. The social network visualization and analysis tool Gephi produced the illustration (Settings: scaled Force Atlas 2 layout algorithm, nodes sized by weighted degree).

CHARACTERIZING PARTICIPATING CITIES

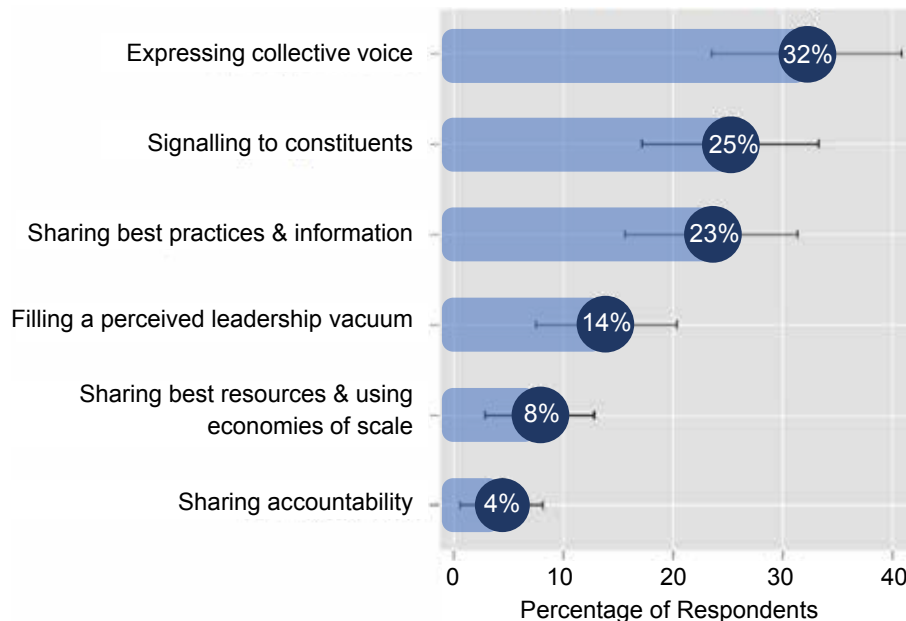
Why Mayors Join City-to-City Networks

Survey research on city leaders' rationale for joining city-to-city networks is rare to find in scholarly literature. In the few instances in which researchers have allowed city leaders to speak their mind confidentially about their incentives to join city networks, they picked up on sober cost-benefit calculations. They emphasize the ability to standardize processes and rules across jurisdictions (Andanova, Betsill, & Bulkeley, 2009), gain market access through a network's partners, and/or prestige (Acuto, Morrisette, & Tsouros, 2017) as well as build coalitions to attract external funding (Bulkeley, et al, 2003). Network participation has been mentioned to provide political license to set a new local agenda (Heinrichs, Krellenberg, & Fragkias, 2013), and provide a venue to reap reputational benefits among their peers (Caponio, 2017).

In the 2017 Menino Survey of Mayors, a nationally representative sample of 115 US mayors were asked why they believe mayors join city-to-city networks. The incentives mayors referenced in these interviews align with some of the themes touched on in prior literature, but it appears that mayors place greater emphasis on the political signaling value — both to higher levels of government and their local constituents.

The top three most frequently cited reasons⁵ mayors join networks included the opportunities to: amplify their message by uniting around a common cause, signal to constituents that they share a particular priority, and share best practices or other information (see Figure 6).

Figure 6: Mayors' Reasons for Joining Networks



Data from Menino Survey Question: Many mayors have joined policy-related city-to-city networks or compacts. Why do you think mayors make these types of commitments? Bars indicate 95% confidence intervals.

⁵ Mayors were allowed to provide more than one reason in their response. Hence, the percentages do not add up to 100%.



Just under a third of mayors believed that networks afford an opportunity to speak with one voice and that mayors join because they find strength in numbers. The notion of collective voice manifests for them in a few different ways. For many mayors, it was about signaling mayoral unity to higher levels of government. As a mayor from a smaller west coast city shared: *"You have strength in numbers and a united front. When we're all standing together, we're more of a force to be reckoned with."* In other instances, it related more closely to collective impact. One big city mayor noted that networks provide a mechanism *"to form a more coordinated base of power and influence change at scale."*

The second most frequently cited rationale for joining related to the notion that membership in policy networks acts as a signal to constituents. As a mid-sized mayor on the west coast mentioned: *"Your constituents are expecting you to represent them, so we are trying politically to be their voice."* Mayors also revealed that, sometimes to their chagrin, constituents aggressively pressure them to sign on to network pledges. In reference to a particular compact, a small city mayor in the Midwest said: *"I got a lot of grief from constituents for not signing onto this."* Some see this type of pressure as an indication of the unique role mayors play relative to other types of elected officials at the state and federal level. Citizens enlist mayoral support, because *"they feel that mayors and cities are where they can have the most access and influence."*

Just under a quarter of mayors interviewed also touched on one tangible benefit that network membership may afford, particularly the opportunity to share best practices and learn from the experiences of other cities. As a big city southern mayor noted: *"We gain access to the best thinking on important issue areas, as we can connect our team to staff in other cities that have been implementing those ideas. They're happy to share."* Some mayors also mentioned how policy diffusion can ultimately help to lower costs, whether by accelerating the learning curve on an issue or minimizing trial and error.

Fourteen percent of respondents shared that mayors are joining networks in response to a perceived leadership vacuum on issues they and their constituents feel strongly about. This is not surprising, given the number of networks devoted to environmental issues and the related divisions between federal and local leaders in recent years. The mayor of a mid-sized city in the southwest expressed that: *"People look to mayors for leadership because they perceive leadership stalling at the state and federal levels."*

A small minority of mayors perceived membership decisions to be politically or personally motivated. Relatedly, some touched on the point that the actual commitments some networks ask of signatory cities is relatively modest. *"Mayors do it because they need to get their name in the press. I think there are some really wonderful people who jumped in because they have true things they're doing. For others, all you had to do is sign your name."*

A handful of mayors interviewed about city-to-city networks proactively discussed the greater value they derive from intra-state coalitions, which afford opportunities to unite with regional peers to lobby state legislatures. As one southern mayor noted, *"I don't tend to sign on as I don't see [my city] as a city that can have national impact, but I will join with the five biggest cities in [my state] to lobby for issues we care about within the state."* Another mayor only thought of networks through the lens of these regional collaborations. *"We call it regionalism. It reduces the cost on a city level because we don't have to duplicate efforts of other cities nearby. It saves us money and is good for our constituents."* While state municipal associations already exist, it is conceivable that the wave of national and global policy focused networks will inspire new policy coalitions regionally. Aggressive preemption efforts by state legislatures and shrinking federal and state budgets may also play a role. In recent years, thirty Ohio cities received attention for their efforts to band together to lobby for urban priorities with the state legislature (Kasler, 2016).

Which Mayors Join Which Networks

Not surprisingly, there is large variation in the degree to which mayors and cities engage in policy networks. The majority of mayors appear eager to engage in networks across a wide range of issues, with 59 percent of all US cities with populations over 75,000 participating in at least one of the fifteen networks included in this study. Collectively, these cities represent 80 million Americans. Of the 50 largest cities in the US, 44 are in two or more of the fifteen. In the environmental space, we find that 41 percent of sample cities, which together represent 66.6 million residents, participate in at least one of the relevant networks.

Here we provide further insight into a subset of these networked cities — which we refer to as the most active joiner cities — examine connectivity amongst joiners, and provide some insight into the traits of non-joiners.

Active Joiners

In the discussion of network typologies, we already briefly touched on cities that are particularly active joiners of networks. Table 4 shows the 13 most active environmental network joiners sorted by their climate network membership count and population size. Boulder, CO, Pittsburgh, PA, New Orleans, LA and Berkeley, CA, stand out as the smallest four cities among the 13 most active joiners of the environmental networks included in this report. Focusing on the most active joiners of non-environmental networks (not shown Table 5), Akron, OH, and Richmond, VA, are the two (comparably) smallest cities.

Overall, we see a strong correlation between the number of memberships in environmental and other policy networks. Most cities either join a lot of both kinds of networks or few of either. In other words, once a mayor embraces network membership, they tend to do a lot of it. We see this correlation more clearly in Figure 7, which plots all cities by the number of environmental (y-axis) and other (x-axis) networks they belong to. The bubbles correspond to city size. Nearly all cities fall on the diagonal. The upper left (many environmental, few others) and lower right (few environmental, many others) corners are essentially empty.

Table 5: Top 13 Most Active Joiner Cities

City, State	Climate Network Memberships	Other Policy Network Memberships	Population Size	Mayor's Political Affiliation
New York City, NY	9	3	8,426,743	D
Los Angeles, CA	9	4	3,900,794	D
Boulder, CO	9	2	103,919	D
San Francisco, CA	8	3	840,763	D
Seattle, WA	8	4	653,017	D
Washington, D.C.	8	3	647,484	D
Portland, OR	8	3	612,206	D
Pittsburgh, PA	8	5	305,928	D
Philadelphia, PA	7	4	1,555,072	D
Austin, TX	7	3	887,061	D
Boston, MA	7	5	650,281	D
New Orleans, LA	7	3	376,738	D
Berkeley, CA	7	2	117,386	D



Figure 7: Relationship Between Cities' Environmental and Non-Environmental Network Memberships

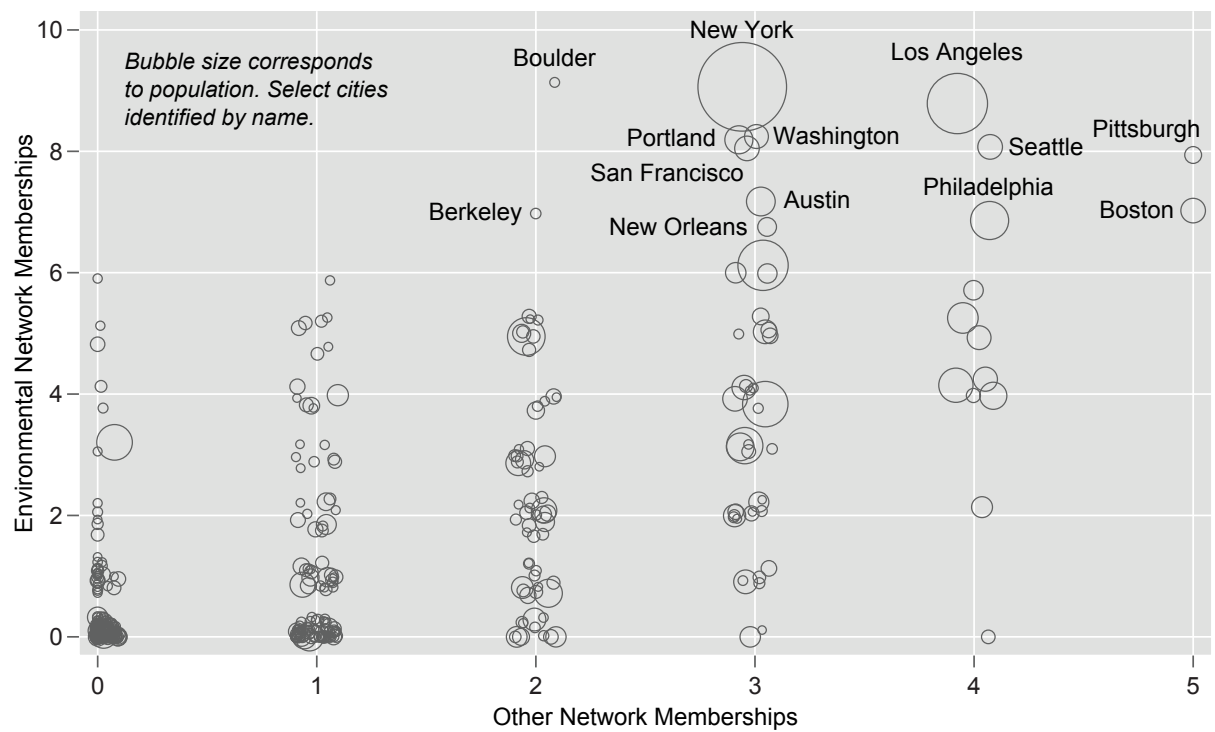
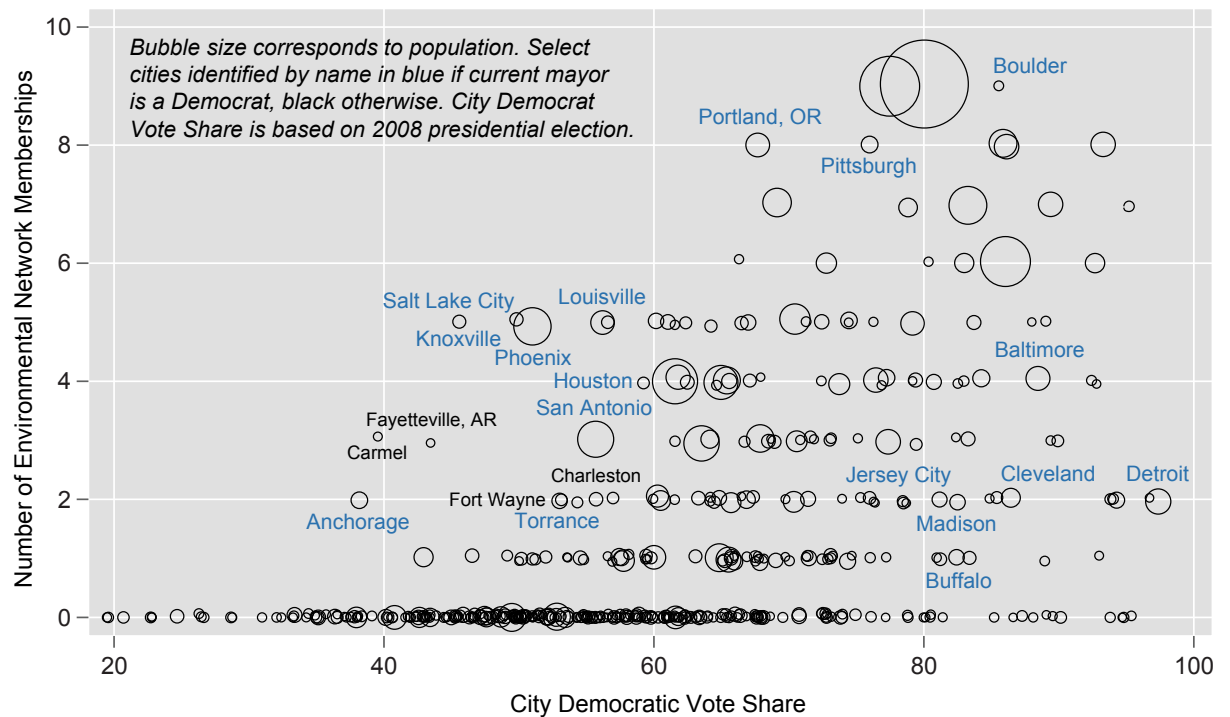


Figure 8: Cities' Environmental Network Memberships by Democratic Population



The 2017 Menino Survey of Mayors underscored the stark fault line between Democrat and Republican mayors when it comes to the role of cities in mitigating climate change. Similarly, we find a very strong relationship (see Figure 8) between the ideology of a city's residents and the number of environmental networks to which a city belongs. Very few cities in which Republican Presidential voters comprise half or more of all voters⁶ belong to more than one (if any) environmental network.

Figure 8, though, also suggests that there are a few Republican leaning and/or closely divided cities that belong to multiple environmental networks. In these cases, some of this variation seems to be explained by the partisanship of the mayor. With the exception of Carmel, IN, which has a Republican mayor, who has long been a climate leader, all of the other cities that are in more than two environmental networks have Democratic or Independent mayors.

In addition to the city-level partisanship data, we can cross-reference these findings with county-level opinion data that measure, among other things, climate policy support (Howe, Mildenerger, Marlon, & Leiserowitz, 2015). We find some evidence that despite local majority support for climate policies⁷, the majority of Republican-led cities that also voted Republican in 2008, decide to remain outside the environmental networks covered in this report. It suggests that environmental policies are not highly salient in these mayoral races.

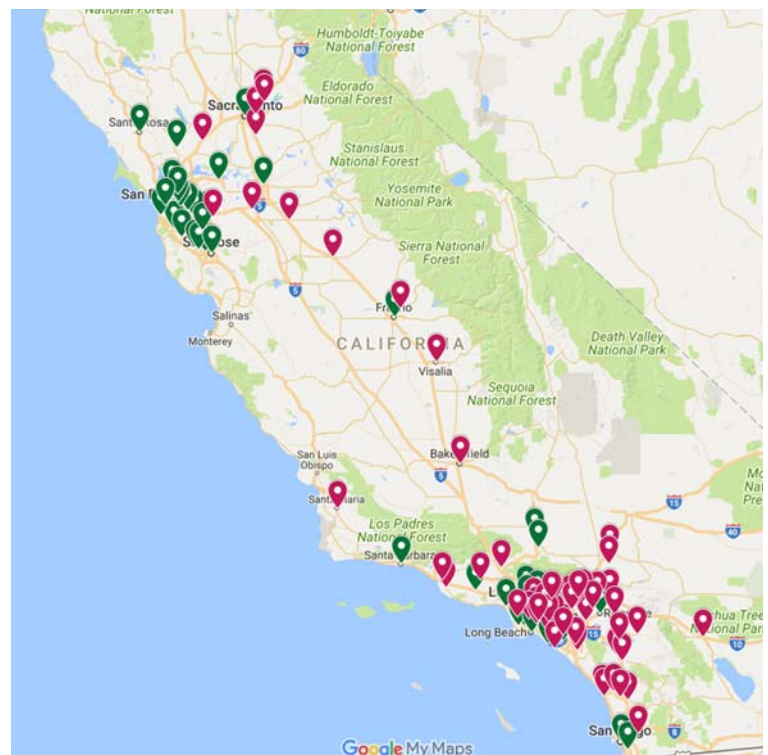
Likewise, there are a handful of large cities that voted for the Democratic Presidential nominee in 2008 by a margin of 30 percent or greater, currently have a Democratic mayor and are in favor of policies restricting emissions, but only participate in at most two environmental networks. With the exception of Madison, WI, these cities are all former industrial centers.

These findings and mayors' appreciation that participation in these types of networks is sometimes driven by vocal constituents, suggests an opportunity for local residents to advocate for membership in more environmental networks. Similarly, this data set suggests a targeting strategy for the Big Tent environmental networks that are seeking to further broaden their membership base.

Non-Joiners

Forty-one percent (194) of all cities with populations over 75,000 are not members of any of the fifteen policy networks included in this study. With a median population of just under 104,000 residents, non-joiners skew smaller than joiners, which have a median population of 142,000. While detailed information was not gathered on 194 mayors that are not part of any network, it is available for twenty-four non-joiners who participated in

Map 1: Environmental Network Joiners and Non-Joiners in Central and Southern California



⁶ The city-level partisanship data, measured by the Democratic vote share in the 2008 Presidential election, comes from Einstein & Kogan (2015).

⁷ The authors used the respective county-level data estimates from the Yale Climate Opinion Maps as proxies for the opinion splits in the large cities. The margin of error is +/-8%p for county-level data. Even in the most conservative case, we find majorities in favor of the 4 polled policies.

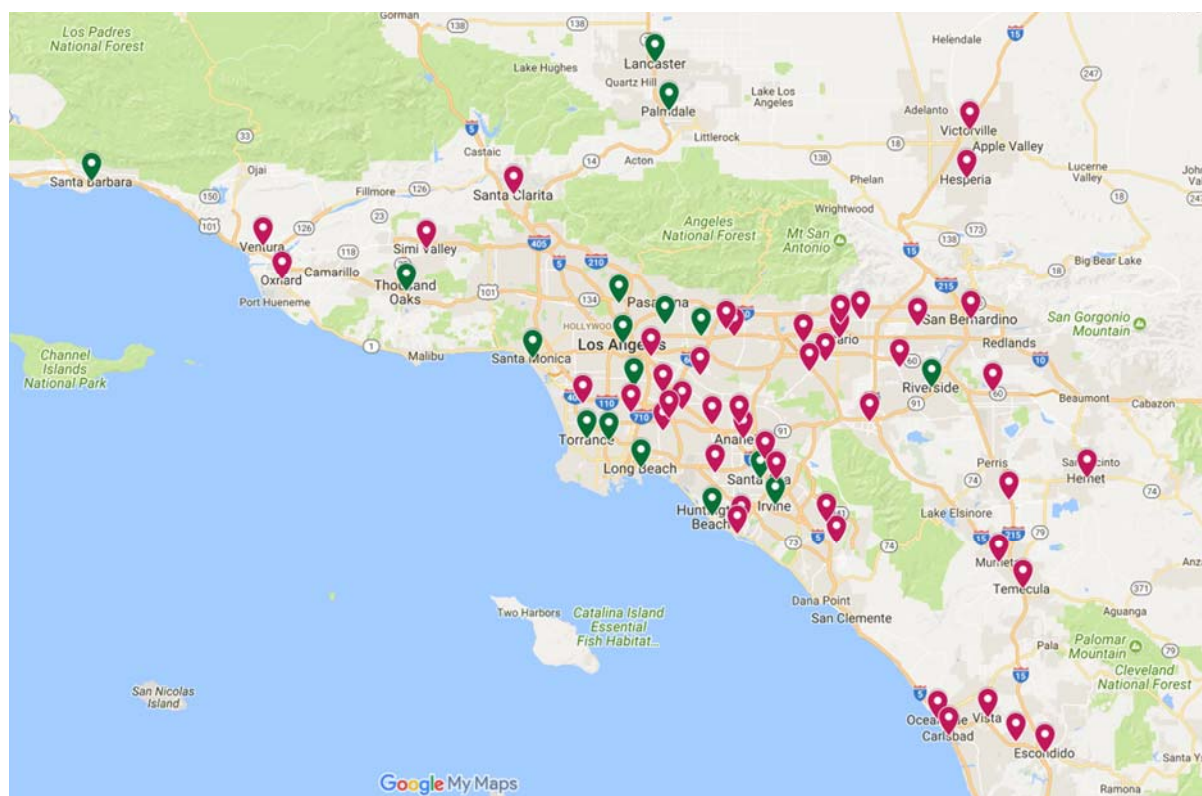
the 2017 Menino Survey of Mayors interviews. This subset includes mayors with tenures ranging from two to more than 10 years in office and a median tenure of five years, suggesting that it is not simply lack of experience or awareness of networks that is precluding their participation.

It is impossible to predict whether any one city will decide to join any one network. Individual city leaders make decisions based on their own values and priorities and those of their community, regardless of their city size, affluence, or individual characteristics of the mayor. Still, it is interesting to examine whether there are any noticeable membership gaps where one might have expected stronger engagement. California represents one such instance. In total, 73 California cities with populations over 75,000 (65 percent of all Californian cities in our sample) representing nearly 9,000,000 residents are not part of any climate network. This is in spite of related national and global activism demonstrated by the current Governor, the Mayor of Los Angeles, and the California legislature.

The network membership rolls of northern California cities also stand in sharp contrast to those of southern California. In Map 1, cities indicated in green are those with populations over 75,000 that have joined at least one environmental network, while cities indicated in red are not currently participating in any network.

A closer examination of Southern California also reveals divisions on a regional scale. A number of the major and mid-sized cities, such as Los Angeles, San Diego, Santa Ana, Chula Vista, and Long Beach, are engaged in multiple environmental networks, but the majority of cities in the region are not part of a single environmental network (see Map 2).

Map 2: Environmental Network Joiners and Non-Joiners in and around Los Angeles, CA



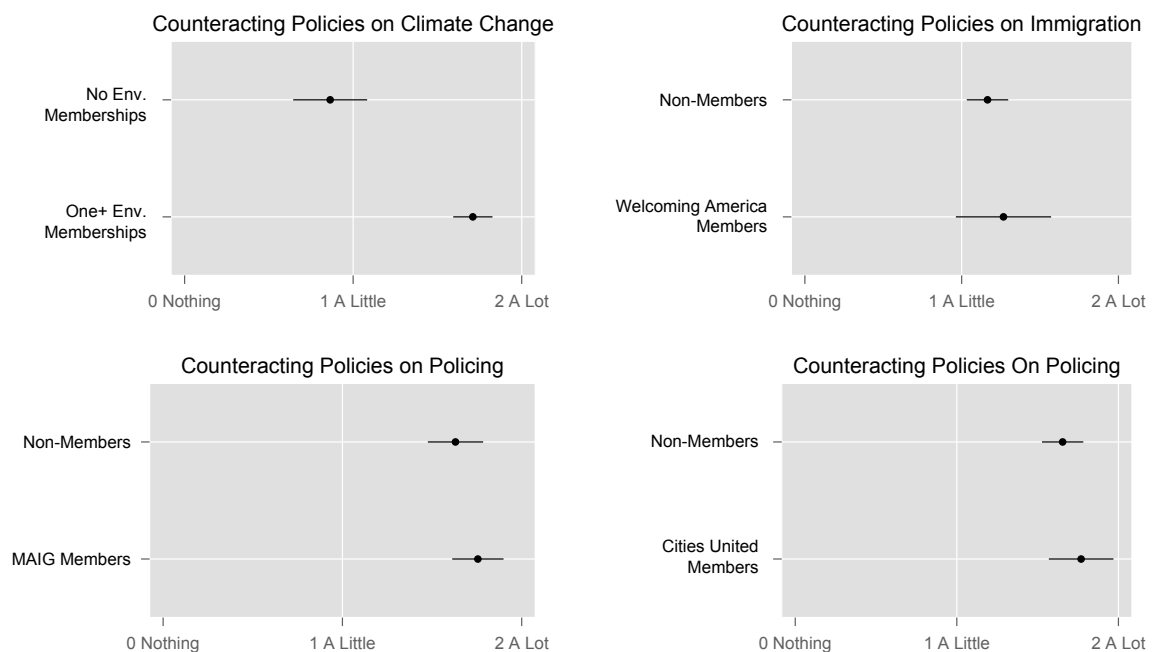
At least one organization with which we spoke referenced its intention to mature beyond a national focus and begin to coordinate more regional cooperation and knowledge sharing. Membership gaps like those seen in Southern California suggest an opportunity for forging networks with close neighbors. In the Boston region, a number of examples have emerged in recent years, including the Metro Mayors Coalition, convened by the Metropolitan Area Planning Council to tackle climate adaptation and preparedness.

Sense of Agency among Joiners and Non-Joiners

As previously noted, mayors report that networks afford intangible benefits, such as the opportunity to influence other levels of government. In light of this, we were interested in understanding whether mayors who participate in environmental networks are more likely to feel they have an ability to affect issue-specific policy change at the federal level. Analyzing mayors' responses to the Menino Survey of Mayors allowed us to see a statistically significant difference between the degree of agency joining mayors feel when compared to non-joining mayors (see Figure 9, top left). Specifically, mayors who are in at least one environmental network are significantly more likely compared to their non-joining peers to feel mayors can counteract the Trump administration's policies pertaining to climate change.

Shifting to the Trump administration's policies on immigration, we do not find a statistically significant difference in the responses of members compared to non-members of Welcoming America, which focuses on creating inclusive and welcoming communities for immigrants. Likewise, in the policy area of policing, membership in Mayors Against Illegal Guns or Cities United, which work to strengthen gun laws and end urban violence respectively, is not associated with a greater sense of mayoral agency with regard to counteracting federal-level policies. To be clear, Mayors Against Illegal Guns, Cities United, and Welcoming America were not expressly established with the intention of counteracting federal level policy, in contrast to organizations like We Are Still In — which was formed in immediate response to the administration's decision to withdraw from the Paris Agreement on climate change.

Figure 9: Network Memberships and Views on Counteracting the Federal Administration



Data from Menino Survey Question: Many mayors have publicly stated they would take actions to counteract President Trump's policies. Regardless of whether you agree with these mayors, for each of the following policy areas, how much can mayors do to counteract the administration's policies? Bars indicate 95% confidence intervals.



City Connectivity

Roughly a quarter of mayors cited the opportunity to share best practices as a rationale for joining policy networks. But the question then becomes — with whom are they sharing? An analysis of network membership rolls provides an opportunity to explore city connectivity, or the degree to which cities have similar or even completely identical membership profiles. Cities' decisions to be members of similar or the same sets of networks may be an expression of social similarity and can reveal shared preferences among these members (Borgatti & Halgin, 2014). In any case, joint membership in networks provides opportunities for cities to learn from one another, share resources and forge alliances.

Focusing on the 10 environmental networks introduced earlier, there are more than a dozen “cliques” of two to 31 cities each, defined here as those which have joined exactly the same combination of city networks. Appendix 2 provides the membership breakdown of cliques with at least five members.

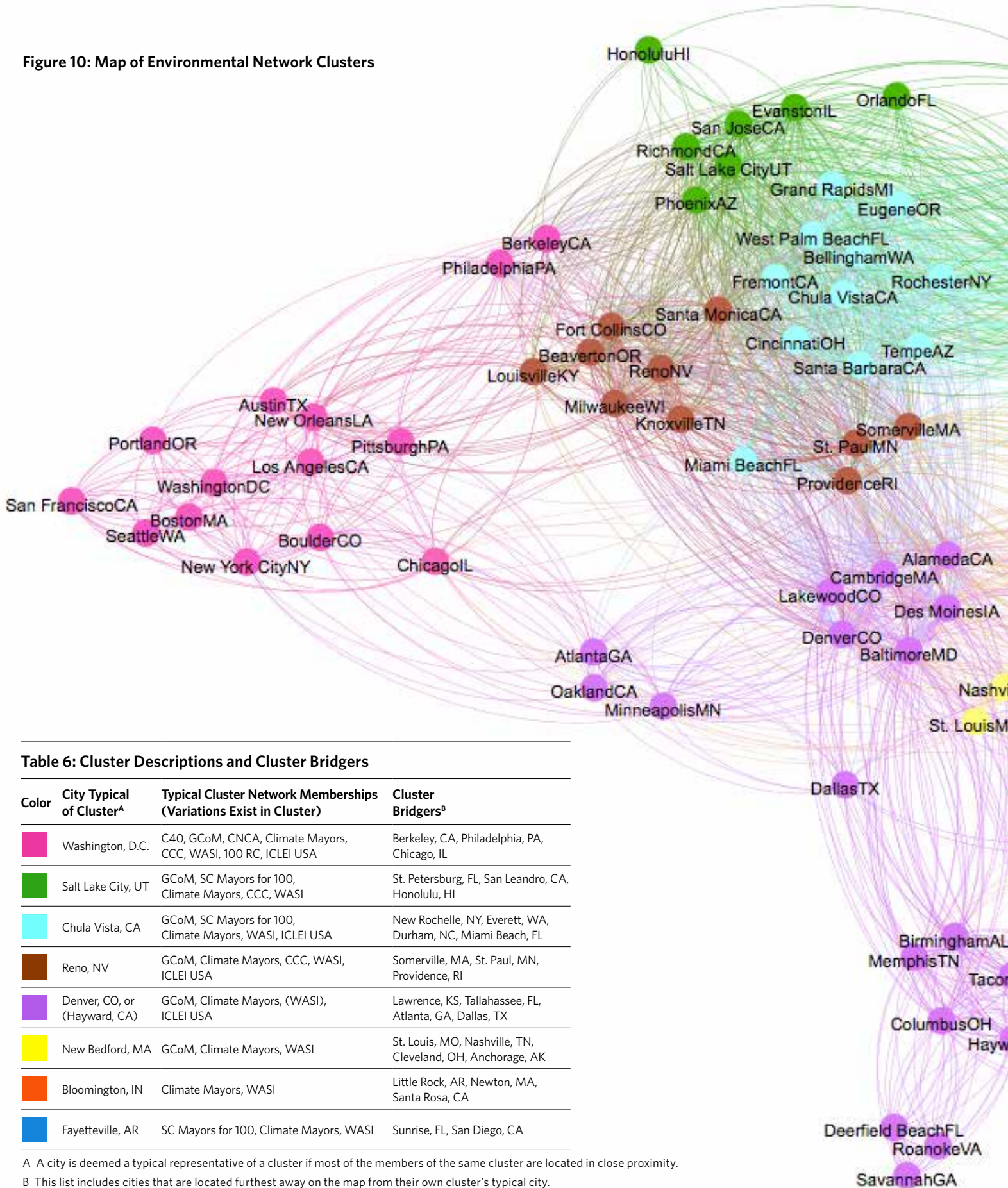
Besides the cliques, there is a significant number of cities that share to varying degrees the same memberships and thus have ample opportunities to engage with one another. Figure 10 highlights these cities⁸. Cities, represented as nodes, are linked by a tie if at least two-thirds of all their network memberships are identical⁹. Generally speaking, the closer the nodes of individual cities are located, the greater the overlap of cities' network memberships. Communities of cities that are particularly tightly co-located (and hence have similar network memberships) are marked by the same color. Some cities are on the cluster's periphery and share more network memberships with another cluster than their own cluster peers (we call them “cluster bridgers”). Table 6, which accompanies Figure 10, provides an overview of typical cluster network memberships and identifies cluster bridgers such as Durham, NC, or Cambridge, MA.

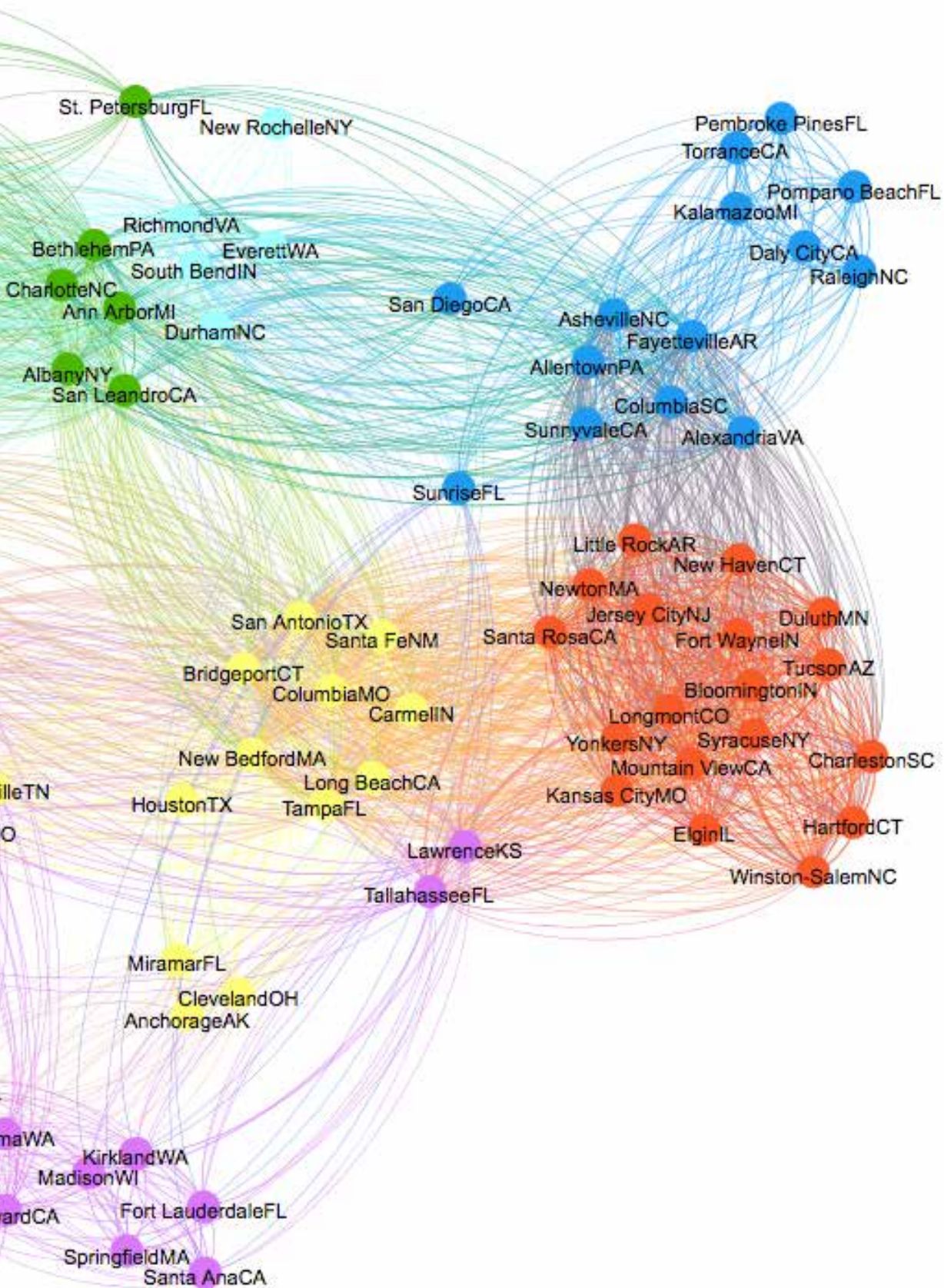
This city cluster map can help city officials orient themselves in the jungle of city environment network affiliations. Besides serving as a shortcut in locating peer cities, the map can also function as an entryway to explore trajectories for cities interested in ramping up their ambitions. In combination with the network profile table introduced earlier in the report (see Table 3), this map invites cities to look beyond their own color-coded cluster and to learn which benefits and activities neighboring clusters derive from their network memberships.

⁸ About half of the aforementioned cliques of cities that share the exact same combination of city networks are embedded in this graph, because they share at least two thirds of their network memberships with at least one city outside their clique. The remaining cliques are not depicted in this illustration. Those with at least 5 members can be found in Appendix 2.

⁹ In social network analysis terms, this means that the network affiliations were standardized in form of the Jaccard coefficient and the visualization depicts ties of edge weight 0.667 and larger (settings: Force Atlas 2 layout algorithm; modularity algorithm with resolution 0.3).

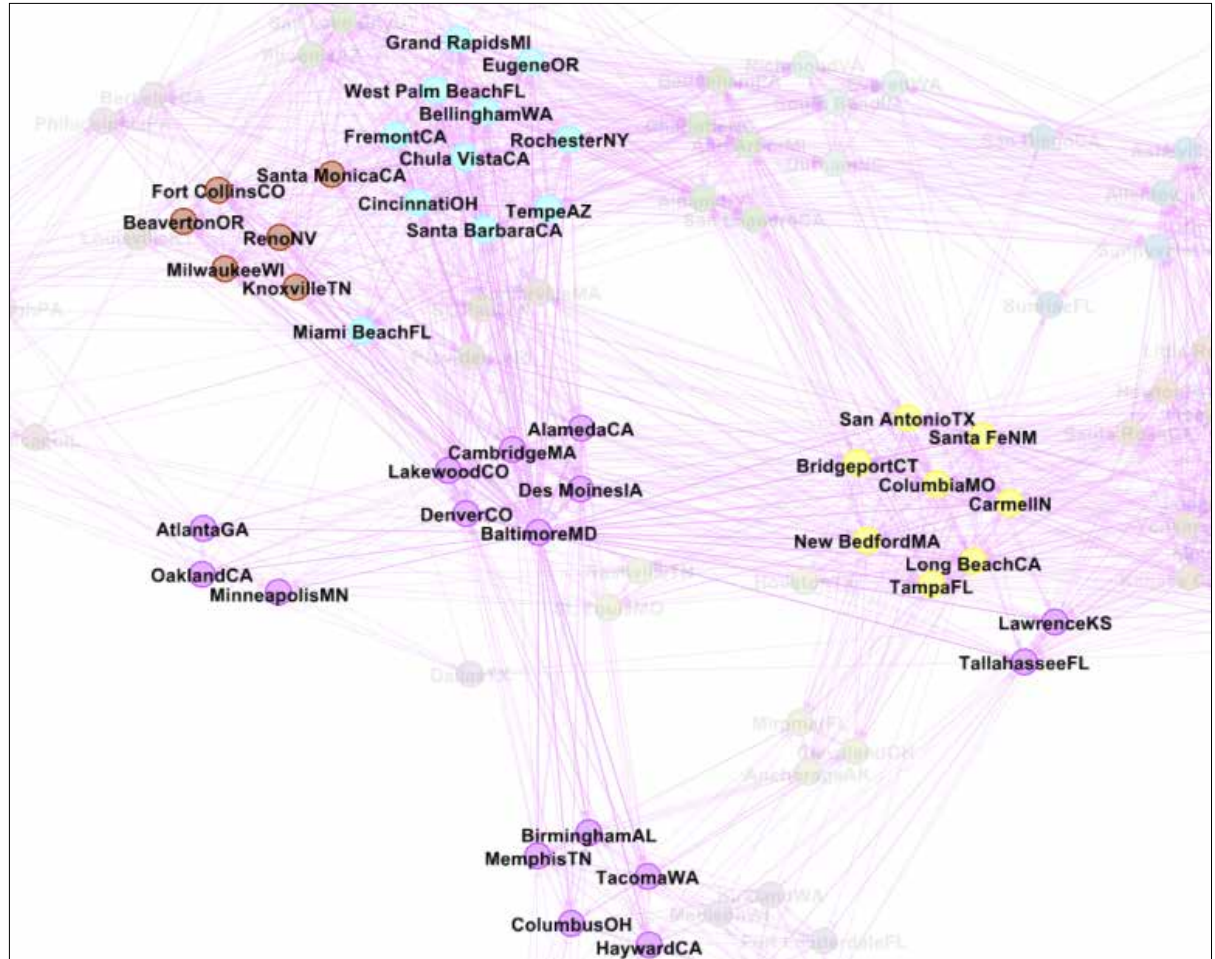
Figure 10: Map of Environmental Network Clusters





Baltimore, MD, together with its purple core cluster provides a good example because its network membership overlaps more than two thirds with three nearby clusters (see Figure 11).

Figure 11: Zoom-Level View of Map of Environmental Network Clusters: Baltimore, MD



If, for instance, any of Baltimore's core cluster members decided to publicly signal their commitment to a 100 percent clean and renewable energy future in their city, they could follow the footsteps of Chula Vista, CA or Rochester, NY (both light blue.) These cities have nearly identical memberships compared to Baltimore's core cluster members, but for the fact that they have also signed on to the Sierra Club Mayors for 100% Clean Energy Initiative. If Baltimore and its peers intended to leap further and commit to GHG emission reductions of 80 percent by 2050, they could attempt to follow the path of Minneapolis, MN, (purple "cluster bridger") and attempt to join the Carbon Neutral Cities Alliance, which provides technical assistance specifically around deep decarbonization. New Bedford, MA (yellow) and its cluster peers, on the other hand, could look towards Baltimore, an ICLEI USA member, and learn about the possibility as an ICLEI USA member to tap into that network's resources for conducting GHG emission inventories.

It is beyond the scope of this report to try to offer an in-depth explanation of these individual commonalities. The establishment of membership profiles is in itself, however, a novel contribution and hopefully inspires cities to learn more about their respective peer groups and encourages them to seek out new city partners.

CONCLUSION

Mayors join city networks because they believe they provide strength in numbers, act as a potent signal to their constituents, and afford opportunities to share best practices and exchange information. Ultimately, members of environmental city networks feel more agency compared to non-members in counteracting current federal policies on climate change.

Navigating the vast array of city-level policy networks can seem daunting, especially because network activities and cities' commitments are often difficult to pin down. This report sheds light on some important differences amongst the networks. It is worthwhile for cities to parse through the differences to determine what they need and which peer cities they want to connect with.

When cities look beyond individual network memberships, clear peer groups of cities with similar membership profiles emerge. Cities can leverage these peer groups both to enhance the odds of meaningful exchanges, but also see how different network membership trajectories may help cities on the path to becoming more sustainable places.

A Checklist for Cities

When evaluating network membership, city officials should ask themselves the following questions and weigh the importance of each for themselves:

Thematic Focus	<input type="checkbox"/> What is the policy focus of the network? How important is that issue to my constituents? <input type="checkbox"/> What message does membership send to my constituents and to other levels of governments?
Entry Restrictions	<input type="checkbox"/> Is my city able to compete for membership if a network is not open to all?
Member Cities	<input type="checkbox"/> Which other cities will be my peers within this network? <input type="checkbox"/> Are those cities on trajectories similar to my own?
Sectoral Diversity of Members	<input type="checkbox"/> Can my city engage with civil society or businesses? <input type="checkbox"/> Is that important to me?
Geographic Footprint of Network	<input type="checkbox"/> Besides US cities, who else is a member?
Member Commitments	<input type="checkbox"/> Which pledges does my city have to make as member? <input type="checkbox"/> How resource intensive are those commitments?
Network Benefits	<input type="checkbox"/> Which activities and outputs do I have access to as a member? <input type="checkbox"/> How important are those to me and my city?
Network Visibility	<input type="checkbox"/> How much press coverage has the network received in the past?
Connectivity of Network	<input type="checkbox"/> How connected is the network with other networks?

APPENDIX

Appendix 1: Definitions of network characteristics categories

Commitments/Actions Associated with Network	
Pay Dues	Members have to pay membership dues (one-off or regularly).
Participation standards	Members pledge to participate actively in the network activities (can be an explicit number of required interactions or a more general pledge).
Commit to specific network target	Members pledge to achieve a quantified target under a deadline, which are both set by the network (e.g. GHG emission reduction of 80% by 2050).
Commit to own target	Members pledge to achieve a quantified target under a deadline, which every member sets for themselves. If a network-wide exists, this category is not displayed even if some cities decide to set a more stringent target for themselves.
Develop plan	Members agree to design a plan (e.g. climate action plan, strategic plan) as a condition of membership. Plans may have to be created immediately or as part of a specific membership level requirement further down the road.
Report baseline	Members are required to make an inventory (e.g. of emissions in context of climate networks) at onset of their membership and report it publicly. Baseline data can be shown on network web pages or on third-party platforms. The member not the network staff needs to perform this activity.
Report progress	Members need to periodically report on their performance as it pertains to network goals or activities.
Activities/Benefits of Network ^A	
Direct assistance	At least some members have received financial or in-kind financial assistance (includes sponsored personnel) in the past. Access to funds may be competitive.
Technical assistance	Network assists members with hands-on programmatic advice and/or planning, measurement, development and implementation of policies.
Conference & convenings	At least twice a year the network organizes conferences, summits, convenings or forums that have members (staff and/or mayors) as primary audience.
Routine peer exchanges (staff, mayors or both)	Network connects members (staff and/or mayors) on specific network issue through regular calls, working groups, subnetworks or similar channels.
Public/Private partnership facilitation	Network engages in active matchmaking between members and private companies and/or has private companies as “preferred network partners”.
Aggregated reporting/Projections	Network periodically publishes report that stacks up member activities or members’ progress towards network goals (e.g. in form of annual member activity report that goes beyond spotlighting work of some members). Alternatively, network makes more generalizable projections based on members’ activities that can apply to non-members as well.
Best practices/Case studies	Network regularly publishes best practice guides, case studies, blueprints or similar material that is accessible to members and/or the general public.
Advocacy (subnational, national and/or global)	Network reaches out to elected officials or bureaucrats in an effort to implement network agenda. This also includes elevating the voice of cities in subnational/national/global decision-making around the network’s topic (e.g. through writing joint letters by mayors that oppose or support certain policies).
Media outreach	Network regularly publishes press releases and/or keeps social media feeds up-to-date. Website maintenance alone does not suffice here.
Accreditation	Network provides accreditation to members, which reflects different tiers of performance or levels of involvement in the network activities.
Awards	Network awards prizes to high-performing members. Form of prizes does not matter (cash money, trophies, labels), but it needs to go beyond being featured in brochures or once in the network’s newsletter.

A This refers only to activities/benefits by the network itself, not those of founding partners (that in some cases are networks themselves).

Appendix 2: Cliques of cities with at least five members, who have identical city climate memberships; within cliques, cities are listed in random order

Clique Number	Cities		Exclusively Members of
1	Irvine, CA Edinburg, TX South Gate, CA Antioch, CA Fayetteville, NC	Riverside, CA Bend, OR Denton, TX Thousand Oaks, CA Palmdale, CA	ICLEI USA
2	Jersey City, NJ New Haven, CT Kansas City, MO Newton, MA Tucson, AZ Little Rock, AR Hartford, CT Bloomington, IN Santa Rosa, CA	Charleston, SC Duluth, MN Mountain View, CA Longmont, CA Elgin, IL Syracuse, NY Fort Wayne, IN Yonkers, NY Winston-Salem, NC	Climate Mayors, We Are Still In
3	Brownsville, TX Arlington, VA Lancaster, CA	Las Vegas, NV Jackson, MS Racine, WI	Global Covenant
4	Daly City, CA Pembroke Pines, FL Raleigh, NC	Kalamazoo, MI Pompano Beach, FL Torrance, CA	SC Mayors for 100% Clean Energy, Climate Mayors
5	Fort Lauderdale, FL Madison, WI Santa Ana, CA	Kirkland, WA Springfield, MA	Global Covenant, ICLEI USA
6	Alhambra, CA Elizabeth, NJ Portsmouth, VA Huntington Beach, CA	Palm Coast, FL Rochester, MN Deltona, FL	SC Mayors for 100% Clean Energy
7	Bloomington, MN Worcester, MA Westland, MI Stamford, CT Salem, OR Kenosha, WI Champaign, IL Bloomington, IL Westminster, CO Chattanooga, TN Greensboro, NC Lansing, MI Flint, MI Buffalo, NY Boise City, ID Fresno, CA	Carson, GA Toledo, OH El Monte, CA Redwood City, CA Glendale, CA Hollywood, FL Trenton, NJ Napa, CA Vancouver, WA Santa Clara, CA Stockton, CA Las Cruces, NM Newport News, VA Nashua, NH San Mateo, CA	Climate Mayors

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