GOING GREEN: THE ADOPTION OF CLIMATE ACTION PLANS BY ILLINOIS MUNICIPALITIES, 2008-2022

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This article explores the adoption of sustainability and climate action plans by Illinois municipalities that committed to pursuing measurable targets and climate goals between 2008 and 2022. The study team compiled the plans adopted by cities, towns, and villages in the state and systematically reviewed their contents. Thirty such municipalities were found to have plans, including half of the cities with a population of 100,000 or more. The overwhelming majority (82%) have measurable targets in their plans, with most having clearly defined goals for reducing greenhouse gases. Measurable targets for energy, solid waste, and transportation outcomes are less pervasive. This article explores the differences between having a plan and signing a climate pledge and offers practical recommendations for policymakers seeking to enhance the relevance of their plans.

INTRODUCTION

A *New York Times* headline on July 1, 2022, "As Federal Climate-Fighting Tools Are Taken Away, Cities and States Step Up," drew attention to the importance of municipalities and municipal policies for combatting climate change. The writer remarked that an "advantage of community strategies is that they can be tailored to the needs of the local economy" (Astor, 2022). The article came in response to a U.S. Supreme Court decision the previous day, *West Virginia v. Environmental Protection Agency*, which ruled that the federal agency did not have the authority to regulate carbon emissions from coal-fired power plants. The ruling contended that any new remit for the Environmental Protection Agency to fight climate change would first need to be authorized by Congress.

The themes presented in the *New York Times* article are consistent with the academic literature that places considerable emphasis on having climate policy originate at a municipal level. This emphasis is also evident in international initiatives, such as the mayoral-focused Local Governments for Sustainability (ICLEI), a worldwide network of more than 2,500 local and regional governments. Locally-enacted policies are regarded as effective in changing the trajectory of energy and water use, the generation of solid waste, and the

reliance on single-occupant private vehicles among residents and businesses. City and village governments also have the authority through zoning to affect land-use patterns in ways unavailable to state and federal agencies (Jordan & Jeppesen, 2000).

This study, therefore, explores how Illinois municipalities have adopted plans to combat climate change and have committed to measurable goals through these official municipal documents. It summarizes the principal components of some of the plans adopted in Illinois between 2008 and 2022 and offers guidance for local leaders who are seeking to develop plans or refine existing ones. Although four Illinois counties have adopted climate plans (Cook, DuPage, Kane, and Peoria), these are excluded from the analysis, which focuses solely on municipal plans produced during the 15-year span.

The authors used several methods to gain insight into the evolution of municipal climate policy over the period studied. First, municipal data portals were reviewed to identify the cities, village, and towns in Illinois that have adopted plans that encompass policies directed at climate change. The principal components of these plans were then evaluated for comparisons of their content and goals, aided by language-processing software. The practice of municipal governments passing resolutions to adhere to the goals of climate change agreements facilitated by nonprofit advocacy organizations were also evaluated.

The article begins with a background on climate change and a review of the literature on climate issues affecting Illinois. This is followed by a discussion of the principal findings of our analysis, case studies of five municipal plans, and the growing propensity for municipalities to sign climate pledges maintained by third-party organizations. We concluded by reviewing the status of climate action policy in Illinois and offering recommendations to local and state policymakers. Although our analysis does not categorize or numerically grade municipal plans based on comprehensiveness or completeness, we assess whether these plans encompass measurable targets in various topical areas. This provides insights on the status of climate action goals relevant to those contemplating creating plans or revising existing ones.

BACKGROUND

Municipalities have a demonstrated ability to transform abstract ideas about solving environmental problems into workable strategies (Bick, 2021; Gore

& Robinson, 2009). Policymakers who are advancing climate change policy, one research team concludes, can expand their effectiveness by recognizing that "decisions within a political system should be taken at the lowest level consistent with effective action, in this case, municipalities" (Jordan & Jeppesen, 2000, p. 66). Other research exemplifies how climate action policy often emerges when political will coalesces with political opportunity within a community (Leiserowitz, 2020). Residents of urban neighborhoods are often vigorous promoters of initiatives to combat climate change and expect their local governments to act (Bulkeley & Betsill, 2003), although Frick (2014, p. 7) argues that politically conservative municipalities tend to have a less urgent approach to climate change policy than politically liberal ones.

The importance of local governments experimenting with novel policies rests on their greater nimbleness than state and regional agencies. City and village boards can act quickly and develop policies that have a strong impact when crises occur, sometimes within days or weeks after an environmental issue gains prominence (Bulkeley & Betsill, 2003). Such initiatives can also foster bottom-up policy diffusion, thereby spurring other localities and regional, state, and national actors into action (Antwi-Kusi, 2021, p. iv). Municipalities can "serve as 'laboratory' experiments for innovative policies" that, if successful, can spur larger-scale action among regional, state, and federal agencies (Antwi-Kusi, 2021, p. 2).

Climate action plans adopted by municipalities generally encompass both climate mitigation and climate adaptation measures. Climate mitigation refers to efforts to lessen climate change and includes such goals as reducing greenhouse gases (GHG), promoting "clean" energy, retrofitting buildings to increase energy efficiency, encouraging more eco-friendly building designs, and expanding the electrification of vehicular fleets. Climate adaptation refers to strategies to lessen the negative effects of climate change. These range from policies to deal with greater extremes in temperatures and drought as well as the deterioration of infrastructure spurred by changing weather. In Illinois, reducing flooding and water runoff problems has had particular visibility in recent years, spurring many climate mitigation efforts to promote "gray" and "green" infrastructure, preserve and restore local ecosystems, and conserve water and natural resources. Efforts that make infrastructure more adaptive increase climate resilience, a phrase used abundantly in plans (United Nations Environment Programme, 2022a, 2022b).

Statistical targets for reducing GHG emissions by a certain date are the centerpiece of most early plans adopted by cities around the United States. Such targets are often accompanied by interim dates to encourage policymakers to gauge their progress toward this goal, although Wheeler (2008, p. 484) found that resources to support the achievement of goals were often lacking and that "[p]lans dealt overwhelmingly with mitigation of emissions rather than adaptation to climate change." More recently, communities aiming for complete carbon neutrality by 2040 or 2050 may attain such targets by investing in offsets, such as allocating funds for habitat preservation in other parts of the world.

The impetus for climate action plans comes from mounting evidence that collective action is needed to deal with an emerging crisis, thereby raising citizen expectations that their local government will do its part. The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report, released in early 2022, found "the extent and magnitude of climate change impacts are larger than estimated in previous assessments" and warned that without comprehensive action to reduce carbon emissions, "[we] will miss a brief and rapidly closing window of opportunity to secure a livable and sustainable future for all" (IPCC Sixth Assessment Report, 2022). Such warnings have galvanized citizens' and policymakers' support for climate policy in some communities but have had little effect in others.

Concerns over climate change provided the impetus for Illinois Governor JB Pritzker's Executive Order 2019-06, committing the state to "fulfill, uphold, and exceed the objectives of the Paris Climate Agreement" (State of Illinois, 2019). The January 23, 2019, order noted that "the transition to a clean energy economy has already begun, and Illinois will be left behind if we do not move forward" and came in the wake of the Trump Administration's withdrawal from the Paris Agreement. That pact, which was adopted in late 2015 and took effect in the autumn of 2016, put signatories, including the United States, on a five-year cycle of increasingly ambitious climate action.

RESEARCH ON CLIMATE CHANGE ISSUES FACING ILLINOIS

A growing amount of literature points to the extent to which climate change has affected Illinois. The Nature Conservancy's *An Assessment of the Impacts of Climate Change in Illinois* concludes that average temperatures in Illinois have risen between 1°F and 2°F over the past 120 years (Wuebbles et al., 2021). During certain overnight hours in winter, average temperatures have risen

by 3°F statewide. Over the past century, the number of two-inch rain days in Illinois has risen by 40% while extreme droughts are becoming less common. Extreme heat and cold events, along with flooding, are projected to become more pervasive as a result (Wuebbles et al., 2021). The study concludes that "more frequent heat waves and warmer summer nights, increased precipitation in the winter and spring, and drier summers will impact everything from the economy to public health" (p. 1). Asthma and allergy rates will likely grow in response to increased levels of ozone, mold, and pollen, and corn and soybean yields could fall by mid-century. Such warnings are echoed in a 2022 National Oceanic and Atmospheric Association report on Illinois that notes "[s]pringtime flooding in particular could pose a threat to Illinois' important agricultural economy by delaying planting and reducing yields" (Frankson et al., 2022, p. 5).

Several *Illinois Municipal Policy Journal* articles have evaluated policies related to climate risk in the state, covering such topics as flood risks facing disadvantaged households (Keenen et al., 2019), methods for reducing private vehicle travel in auto-oriented downstate communities (Crabtree et al. 2018), the benefits of urban and suburban tree programs (Darling et al., 2017), and waste diversion through composting (Smith et al., 2017). Bartling (2018) explores the approaches municipalities have taken with respect to community choice aggregation in electric markets.

ILLINOIS CLIMATE PLANS 2008-2022

The Chicago-based Metropolitan Mayors Caucus (MMC) made it a priority to review environmental initiatives in the greater Chicago area. It found that the local policy response has been extensive, with 81% of all communities in the area "making substantial efforts toward sustainability" and 71% of communities in the area being "responsible for the lion's share of sustainable actions" (Metropolitan Mayors Caucus, n.d.). In this article, we add to the MMC's assessment by examining Illinois as a whole and use four primary methods to evaluate goals in climate action and sustainability plans. First, in the first half of 2022, we inventoried plans posted on municipal websites and data portals among cities, villages, and incorporated towns with populations of 2,000 or more. We omitted from consideration informal documents, such as "green visions" issued by communities, which we found do not have the same technical components as plans. Second, the contents of each plan were scrutinized to identify targets in various topical areas such as air quality, energy,

transportation, and waste. Our rubric closely follows a framework established by the C40 Cities Climate Leadership Group, an organization composed of 94 large cities around the world, which recommends that municipal strategies be organized on the basis of clearly defined outcomes and targets, as is discussed below (C40, p. 16). Third, the study team recorded and evaluated the communities that had signed climate agreements managed by third-party membership organizations. Finally, we used language-processing software to evaluate the changing content of plans.

A notable aspect of policy formation in Illinois and elsewhere is the varying lexicon being used, with some municipalities adopting "climate action plans" and others "sustainability plans." The Center for Climate and Energy Solutions (CCES) posits that climate action plans generally encompass climate mitigation strategies, including targets for GHG reduction (CCES, 2021). Conversely, sustainability plans tend to be broader in scope, often addressing environmental, social, and economic issues beyond climate change (New York State Energy Research and Development Authority, 2014). Others have observed that politically conservative communities tend to adopt sustainability or energy plans while larger and more liberal ones adopt climate action plans (Frick, 2014). Our assessment indicates, however, that in Illinois, the name chosen has little bearing on the content of the plan. The phrases "sustainability" and "climate action" seem largely interchangeable, and as such, we considered them both in our analysis.

TABLE 1

ILLINOIS MUNICIPALITIES THAT HAVE MUNICIPAL CLIMATE ACTION OR SUSTAINABILITY PLANS

MUNICIPALITY	POPULATION	DATE	PLAN NAME	PLEDGES SIGNED
Algonquin	29,700	2010	Environmental Action Plan	GRC2, USCM
Aurora	180,542	2009	Sustainability Plan	GRC2, USCM
Buffalo Grove	43,212	2018	2018 Sustainability Plan	GRC2
Chicago	2,746,388	2008	Climate Action Plan	GRC2, USCM
Chicago	2,746,388	2022	Climate Action Plan*	GRC2, USCM
DeKalb	40,290	2014	Sustainability Plan	*
Downers Grove	50,247	2009	Sustainability Best Practices	

MUNICIPALITY	POPULATION	DATE	PLAN NAME	PLEDGES SIGNED
Elgin	114,797	2011	Sustainability Action Plan	GRC2, USCM
Elmhurst	45,786	2018	Sustainability Action Plan	USCM
Evanston	78,110	2008	Climate Action Plan	GRC2, USCM
Evanston	78,110	2018	Climate Action and Resilience Plan*	GRC2, USCM
Grayslake	21,248	2017	Sustainability Plan	GRC2
Highland Park	30,176	2010	Community Sustainability Strategic Plan	GRC2, USCM
Hoffman Estates	52,530	2013	Sustainability Plan, Growing to Greenness	GRC2, USCM
La Grange Park	13,475	2012	Sustainability Plan	*
Libertyville	20,579	2015	Sustainability Plan: 2018 Update	GRC2
Lombard	44,476	2012	Local Climate Action Plan	GRC2
Morton Grove	25,297	2021	Sustainability Plan	GRC2
Naperville	149,540	2010	Environmental Sustainability Plan	GRC2
Niles	30,912	2013	Environmental Action Plan	GRC2
Normal	52,736	2010	Community Wide Sustainability Plan	USCM
Northbrook	35,222	2021	Climate Action Plan	GRC2 , USCM
Oak Park/River Forest	66,300	2011	Sustainability Plan	GRC2 , USCM+
Park Forest	21,687	2012	Climate Action and Resilience Plan	GRC2, USCM
Schaumburg	78,723	2009	Comprehensive Green Action Plan	GRC2, USCM
Skokie	67,824	2016	Environmental Sustainability Plan	GRC2
Urbana	38,336	2012	Climate Action Plan	USCM
Warrenville	13,553	2016	Climate Action Plan	USCM*
Waukegan	89,321	2021	Green Town: Waukegan Sustainability Plan	GRC2 , USCM
Westmont	24,429	2010	Climate Action Plan	GRC2 , USCM

MUNICIPALITY	POPULATION	DATE	PLAN NAME	PLEDGES SIGNED
Wheaton	53,970	2012	Turning Wheaton Green	GRC2
Woodstock	25,630	2010	Environmental Plan	GRC2

** Revision of earlier plans.*
*Notes: GRC2=signed Greenest Region Compact 2 agreement from the Metropolitan Mayors Caucus; USCM=signed United States Conference of Mayors' Climate Protection Agreement Agreement as of 11/13/19, the last update to USCM's published list. *=signed original Greenest Region Compact (GRC1) but is not reported by MMC as being a GRC2 signatory. += only Oak Park has signed GRC2. The above information may not include plans published during the past year or internal documents not identifiable through online searches. Most GRC2 signatories had previously signed GRC1.*

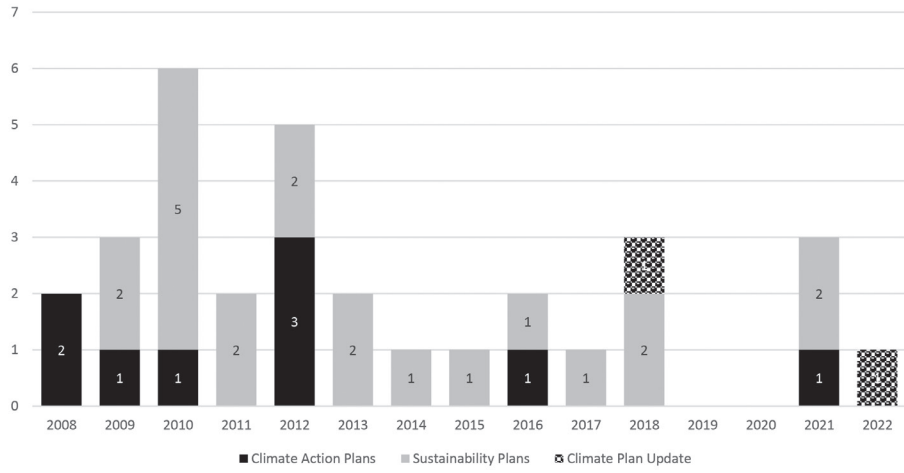
Our review revealed that between 2008 and 2022, 30 municipalities adopted plans, and two, Chicago and Evanston, adopted both an initial plan and an update to that plan, for a total of 32 plans in the sample (Table 1). Around 10% of these plans have introductions by the mayor that summarize the plan's importance, and others indicate that they were written at least partially by consultants.

The review also shows that climate action concepts have been part of the municipal policy agenda for many years prior to the emergence of these plans. Terminology has changed, with phrases such as "global warming," "urban sprawl," and "neo-traditional development" giving way to other language, particularly of "equity." But over the past 15 years, municipal attention to climate change in Illinois appears to have gradually grown. By 2005, several Illinois municipalities, with the largest being Aurora, had created frameworks for combatting climate action. By 2007, at least 17 Illinois municipalities, including Aurora, Evanston, and Schaumburg, had issued resolutions to sign the Climate Protection Agreement administered by the U.S. Conference of Mayors (USCM), which commits municipalities to certain environmental goals. Another initiative, launched in Illinois in 2007, saw 30 Illinois municipalities agree to pursue the goals outlined by the MMC in its Greenest Region Compact, which we discuss below. By 2007, many cities around the country, although none in Illinois, had created stand-alone sustainability or climate action plans (Wheeler, 2008).

Despite such growing attention to climate issues, stand-alone sustainability and/or climate action plans did not appear in Illinois until 2008, when both Chicago and Evanston adopted their pioneering documents. Chicago's plan built upon its initial Environmental Action Agenda (2005), one of a series of city initiatives that included the promotion of recycling, green alleys, and green roofs, that Lorr (2017, p. 102, 104) asserts "focused on greening incentives rather than on environmental justice" and offered "a narrow focus on money-saving techniques made possible through technology and efficiency savings." A flurry of plans followed, with 2010 having the greatest number of plans released in any year with six; the second-highest number of plans were outlined in 2012, which had five (Figure 1).

FIGURE 1

NUMBER OF MUNICIPAL CLIMATE ACTION AND SUSTAINABILITY PLANS ISSUED BY YEAR



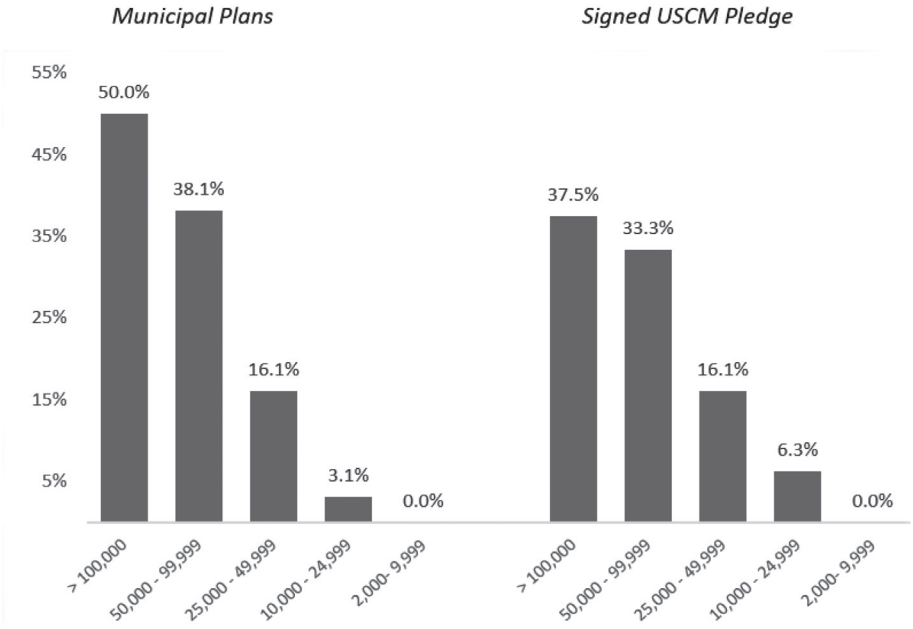
The number of new plans dropped to just one in 2014 and 2015 before a modest uptick, which may be partially attributable to the Paris Agreement's passage in December 2015. Two municipalities adopted plans in 2016, and while no new municipal plans emerged in 2019 or 2020, a pair were adopted in 2021, and another one during the first half of 2022, which was Chicago's widely publicized update to its earlier 2008 plan.

The propensity to have a plan closely depends on a municipality's population, which tends to relate to its available resources and budget. Four of the eight municipalities with populations of 100,000 or more have adopted either a sustainability or climate action plan. Although Joliet, Peoria, Rockford, and Springfield do not have stand-alone climate action or sustainability plans, each, except Rockford, has signed the United States Conference of Mayors (USCM) Climate Protection Agreement pledge.

Among the 21 municipalities with populations between 50,000 and 99,999, eight (38.1%) have plans, seven of which are in metropolitan Chicago: Downers Grove, Evanston, Hoffman Estates, Oak Park, Schaumburg, Skokie, and Wheaton. The other, Normal (population 52,736), is the largest downstate community represented. Just 10 out of 62 (16%) communities with populations between 25,000 and 49,999 have plans, and plans are quite rare among municipalities with fewer than 25,000 (Figure 2). La Grange Park (population

FIGURE 2

PERCENTAGE OF ILLINOIS MUNICIPALITIES WITH CLIMATE ACTION OR SUSTAINABILITY PLANS OR THAT HAVE SIGNED THE U.S. CONFERENCE OF MAYORS PLEDGE, CATEGORIZED BY POPULATION AND TYPE OF PLAN OR PLEDGE



13,475) is the smallest with a sustainability plan, and Warrenville (population 13,553) is the smallest with a climate action plan, with the latter indicating that "a small city can make a difference with global warming" (City of Warrenville, p. iv). As discussed below, the percentage of U.S. municipalities that have signed the USCM pledge follows a similar downward trajectory and falls to zero among municipalities with populations below 10,000.

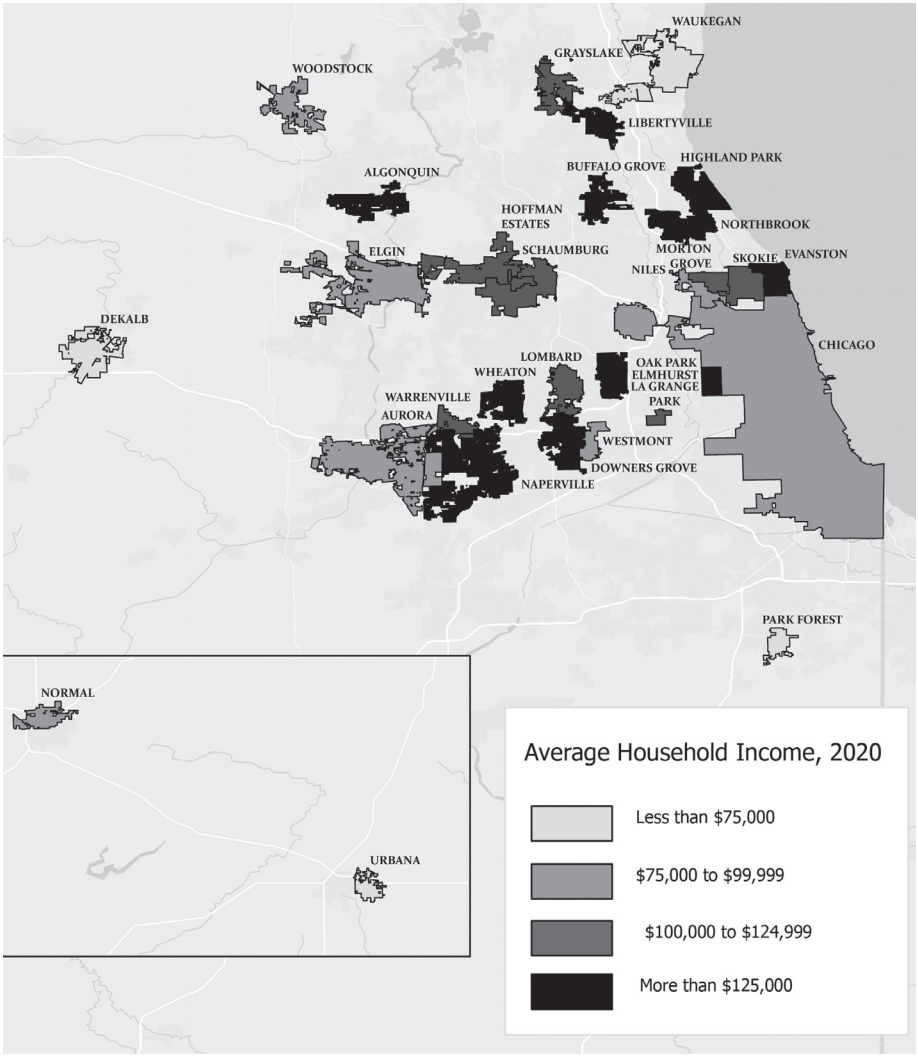
A geographic portrayal of municipalities with plans shows that they tend to be (1) clustered in more affluent parts of metropolitan Chicago, particularly the north and west suburbs; (2) large "city suburbs" with dense populations, such as Evanston and Oak Park; and, (3) satellite cities of Chicago with significant populations, including Aurora, Elgin, and Waukegan (Figure 3). This spatial representation also shows that a significant number of them have median household incomes of $125,000 or more, and a high proportion are located in the northern and western suburbs of Chicago. Downers Grove and Northbrook are the highest-income municipalities that have adopted plans. Although we did not measure the relationship between median income and the presence of plans among municipalities, the pervasiveness of plans in affluent communities, particularly in suburban Chicago, suggests that this relationship is worthy of additional analysis.

Among Chicago's Southland communities, only Park Forest has a plan. Among Chicago's numerous inner-ring suburbs with median household incomes of less than $75,000, based on the 2020 Census, a plan is in place only in Niles. Only Bloomington and Normal are represented downstate. Such patterns suggest that climate action and sustainability plans are most pervasive in high-income municipalities that typically also have considerable planning resources. However, many municipalities apparently think creating a plan is a priority only after more basic planning objectives are met.

Most plans establish a benchmark year with data from which progress is measured, which is often a point several years before the plan was adopted. A few plans do not provide a benchmark, in which case the year of the plan's adoption is presumably it by default. Others discuss the need to create a benchmark. The 2019 Oak Park/River Forest plan, for example, sets out to "[d]evelop a benchmarking system so homeowners and businesses can see how they compare to their neighbors."

FIGURE 3

ILLINOIS MUNICIPALITIES THAT HAVE ADOPTED CLIMATE ACTION OR SUSTAINABILITY PLANS, BY MEDIAN HOUSEHOLD INCOME



Map Credit: Lily Baird, using household income data from the 2020 U.S. Census.

To better understand the orientation of the plans, the authors used 12 Tone Matrix, a product developed by Brandon Bordenkircher (a co-author of this article) that uses natural-language processing and text-as-data technology that

allows users to search through several documents for multiple search terms simultaneously. The documents were fed into this software, which tokenized the words, splitting complete sentences into a list of single terms and formatting the words by removing punctuation. All "stop words" (e.g., common words like "the, "is," and "if") were removed before each word was "stemmed," removing "ing" and "s" in order to reduce them to their root. Analytical methods similar to this have been used for tapping into public documents to extract topical content and generate objective organizational data. Anastasopoulos et al. (2017), for example, used the 12 Tone Matrix to search through 125,000 pages of California state budgets from 2012 to 2017 to gain insights into the direction of state and local programs and policies.

The 12 Tone Matrix software found that all plans mentioned transportation, transit, land use development, water, waste diversion, and recycling while 90% mentioned GHG emissions. More than 80% of plans mentioned green infrastructure, transit-oriented development, fleets, and the use of incentives. Newer plans, however, have a much stronger orientation toward social equity, a term that deals with broad concepts of fairness and justice in public policy and administration (Wooldridge & Bilharz, 2017). Dividing the plans into those created before the Paris Agreement (2008-2015) and after (2016-2022), it is notable that terms related to equity — including diversity, inclusion, and culture, for example — appeared in just 45% of plans from 2008-2015 but are in 70% of the more recent plans. The 12 Tone Matrix analysis also found that Chicago's 2008 plan does not include the word "equity" but that it appears 162 times in its 2022 update. Evanston's use of the word increased from two to 15 times between its 2008 plan and the 2018 revision. Themes related to community input, identified by phrases including "public input," "community input," "citizen involvement," "citizen driven," "collaboration," and "participation" also rose, appearing in 68% of earlier plans (2008-2015) and in 80% of more recent plans (2016-2022).

The shifts are consistent with the Google Trends indicator, which assigns points from zero to 100 and measures interest in certain terms based on the frequency of Boolean searches. This indicator shows a steady increase in the search term "social equity" from 2008 to 2022 in the United States. The term ranked 36 of 100 in January 2008 (with low scores indicating low interest) and 100 of 100 in April 2022 before falling to 80 of 100 by September of that year (Google Trends, 2022).

TABLE 2

COMPONENTS OF AND TARGETS WITHIN FIVE CLIMATE ACTION AND SUSTAINABILITY PLANS

	CITY OF CHICAGO	CITY OF EVANSTON	CITY OF ELGIN	VILLAGE OF NORTHBROOK	VILLAGES OF OAK PARK AND RIVER FOREST
Name of Plan	Climate Action Plan (2022)	Climate Action & Resilience Plan (2018)	Sustainability Action Plan (2011)	Climate Action Plan (2021)	Sustainability Plan (2011)
Energy	Install 5 megawatts of co-owned community solar projects and increase community renewables to 20 megawatts by 2025.	100% renewable electricity use by 2030. Reduce building energy use by 35% from 2005 levels by 2035.	Reduce thermal energy from interior working environments of business districts by 30%.	Reduce 29% total energy from 2010, increase on-site distributed renewables to 10%, and achieve 2% natural gas "fuel switching" by 2030.	Increase energy efficiency in buildings and homes 3% per year or 30% over 10 years.
Transportation	Increase bike-share and shared micromobility (SM) trips 30% by 2030. Enable walk, bike, transit, and SM for 45% of trips and have zero-emission transit by 2040.	Reduce vehicle miles traveled (VMT) to 50% of 2005 levels by 2050.	Not quantified.	Decrease VMT by 15%, increase transit from 11.8% to 14% and walk/bike from 2% to 3%, and have 20% of vehicles sold using alternative fuel by 2030.	Decrease VMT by 30% by 2020 annually and increase public transit and alternative transport use by 3% annually.

	CITY OF CHICAGO	CITY OF EVANSTON	CITY OF ELGIN	VILLAGE OF NORTHBROOK	VILLAGES OF OAK PARK AND RIVER FOREST
Ecosystem	Plant 75,000 trees over 5 years in underserved areas. Set green alley and infrastructure targets for flood mitigation.	Plant 2,000 net-new trees by 2050.	Not quantified.	Expand land pollinator restoration coverage by 110 acres by 2030, increase tree cover from 37.1% to 40.8%, and reduce impervious surface area by 5% by 2040.	Not quantified.
Waste	Divert 90% of commercial, industrial, and institutional waste by 2030 and 90% of residential waste by 2040.	Have 75% waste reduction by 2035 and zero waste by 2050.	Within 5-7 years, divert 30% of organics from the waste stream.	Reduce waste to 7.4% below 2010 levels by 2030 and increase landfill diversion to 50% by 2030.	Increase community-wide residential waste diversion from landfills from current 38% to 62% by 2020.
Water	Develop water and soil quality measurement and mitigation strategy.				
By 2023	Reduce water use of top 20 customers (large institutions and businesses).	Reduce per capita water use by 17% to 94 gallons per capita daily by 2040.	Reduce water use to 39.1% below 2010 levels by 2030.	Not quantified.	

	CITY OF CHICAGO	CITY OF EVANSTON	CITY OF ELGIN	VILLAGE OF NORTHBROOK	VILLAGES OF OAK PARK AND RIVER FOREST
Greenhouse Gasses	Reduce 62% GHG from 2017 to 2040.	Be carbon neutral by 2050.	Not quantified.	Reduce GHG 35% below 2010 levels by 2030 and 80% below by 2050.	Reduce GHG in buildings and homes 3% per year or 30% over 10 years.

CASE STUDIES OF FIVE MUNICIPAL CLIMATE/SUSTAINABILITY PLANS IN ILLINOIS

This section reviews five municipal climate/sustainability plans that are among the most extensive in the state: Chicago, Evanston, Elgin, Northbrook, and Oak Park/River Forest (Table 2).

The City of Elgin's Sustainability Action Plan (2011) draws heavily on the work of "citizen groups establishing sustainability goals for Elgin's unique character" for the purpose of "recommending paths to achieve these goals" (p. iv). The Sustainability Action Plan has a strong orientation toward conservation and waste reduction and calls for cutting water consumption by 17% to 94 gallons per capita daily by 2040 and "[w]ithin 5-7 years, to divert 30% of organics from the waste stream" (p. 48). Another notable aspect is the plan's separation of recommended policy actions into short-term (less than five years) and longer-term categories to facilitate the setting of priorities. Although the plan does not have an explicit GHG goal, the city subsequently signed the USCM's Climate Protection Agreement, which commits them to reducing carbon emissions to below 1990 levels. A section outlining metrics, or "indicators," helps the city "guide and measure our progress towards goals" in areas ranging from average house size, the mix of land uses, and walkability (p. 103-106).

The Oak Park/River Forest Sustainability Plan (2011) differs from most other plans in having been adopted by a cluster of public institutions, in this case, "two village governments, three public school districts, two hospitals, two universities, two park districts, two public libraries, and two townships" (p. 8). Created by the Oak Park-River Forest Community Foundation, a local nonprofit, with the support of a consulting team and made possible

by the financial support of both the Grand Victoria Foundation and a local foundation dedicated to these two communities, it calls for reducing vehicle miles traveled by 30% by 2020 and "increas[ing] energy efficiency to reduce energy consumption in all buildings and homes in the community an average of 3% per year for a total of 30% over 10 years" (p. 16). The document seeks to assure that "[e]ach school in Oak Park/River Forest integrates sustainability into [the] curriculum" by "linking sustainability with math and other core curriculum subject areas" (p. 13). This focus on K-12 education is typical of municipal plans in the state (p. 14). Like Elgin's plan, much emphasis is placed on community input.

The City of Evanston's Climate Action and Resilience Plan (2018) updates the municipality's 2008 climate action plan. The 2018 plan was also among the first to be supported by a professionally designed website, allowing readers to quickly grasp the plan's essential components without referring to the lengthy plan itself. Among other targets, it calls for 100% reliance on renewable energy by 2030, reducing the number of vehicle miles driven by 50% compared with 2005 levels by 2050, and reducing the energy consumption of buildings by 35% of 2005 levels by 2035, a target that applies to all buildings in the city. The plan sets a course for citywide carbon neutrality by 2050 and makes waste reduction a priority, noting that such diversion "has held steady at around 20% since 2012, which is far below its potential" (p. 15). The municipal government is expected to have "an outsized role in bringing together coalitions, partnerships, and the wider community to meet the goals" while also considering that "the measure of success between now and 2050 may shift considerably as metrics evolve, and as new technologies and trends emerge" (p. 8, 11).

The Village of Northbrook's Climate Action Plan (2021) stands out for its emphasis on pursuing "GHG emission reduction goals … compatible with the 2015 Paris Agreement," calling for "80% or greater reductions [of carbon emissions] by 2050," and on the community's desire to "re-affirm the Village's commitment to the Metropolitan Mayors Caucus' Greenest Region Compact" (p. iii). The plan also sets defined targets for expanding walking, biking, and transit use. By 2030, Northbrook envisions achieving a total energy reduction of 29% from 2010 and an increase in on-site distributed renewables to 10% (section 3-5). Such measures, together with achieving 2% natural gas "fuel switching" per year (which involves enticing households and businesses to switch energy sources) are envisioned to give Northbrook the distinction of being "the first Climate Resilient community in Illinois, leading in the

social and economic transitions necessary to reduce village-wide greenhouse gas emissions" (p. ii). The 418 residents and 31 planning staff members that provided input over a 12-month period exemplify the extensive community involvement in this plan's creation. Like Chicago's and Evanston's plans, it is supported by an interactive webpage.

The City of Chicago's Climate Action Plan (2022) proclaims that "Chicago cannot solve the global climate crisis on its own, but the city will continue to be a global leader in the fight" (p. 2). Building on the city's earlier plan, it notes that "[w]hile the 2008 climate action plan was ahead of its time … [i]t is time for an update that reflects the latest climate science, community needs, and commitment to a more just society" (p. 2). The richly illustrated document has more than 40 targets, which are listed in a three-page section of the report (p. 38-40) to allow for easy reference. The plan calls for city investment to give it "five megawatts of co-owned community solar projects" and to "increase Chicago-based community renewables to 20 megawatts" by 2025 (p. 57-58). It aims to "[r]etrofit 90% of total city-owned and sister agency-owned buildings by 2035" (p. 39) and to attain "100% electrification of delivery fleets" by the same year (p. 40). Ambitiously, the plan calls for increasing bike-share and shared micromobility trips, which include Lyft and Uber rides, by 30% by 2030 while enabling walking, biking, transit use, and shared mobility options for 45% of trips by 2040 (p. 76). The city also sets a target of having zero-emission transit by 2040 (p. 85). It assigns each target an "action code" on an "implementation table" that lists the timeframe for each action and the city departments involved.

As these examples suggest, statistical targets are pervasive in Illinois plans. Among all 32 plans adopted by Illinois municipalities, more than two-thirds (69%) establish targets for reducing GHG emissions generated by all activities within the community. Reductions of 50%-60% by either 2040 or 2050 are particularly common targets. Plans created before 2015, when the Paris Agreement set 2050 as the recommended year for carbon neutrality, are less likely to have mid-century targets.

There is less consistency in the inclusion of measurable targets among the various thematic categories, such as for energy and water conservation. Our review shows the presence of measurable community-wide targets in the 32 plans varies by category.

- **Energy.** 44% of plans have measurable targets. Plans with targets generally focus on reductions based on the type of facility or activity, often measured in kilowatts. Municipally-owned facilities are often slated for the largest reductions.
- **Transportation and mobility.** 41% have measurable targets. Targets often focus on reducing vehicle miles traveled or the share of trips taken on modes of travel other than private automobiles, such as walking and biking.
- **Ecosystem.** 28% have measurable targets. These targets often involve habitat restoration, measured in acres, or the number of trees planted.
- **Waste.** 48% have measurable targets. These targets tend to focus on reductions in solid waste generated, often measured in pounds per capita, or the volume of recycling activity undertaken.
- **Water.** 44% have measurable targets. These targets nearly always focus on reducing water consumption per capita.

Altogether, 20 of the 32 plans reviewed have at least one measurable community-wide target in one of these categories, and the remaining dozen do not. We did not include targets applying to small segments of the community (such as those directed solely at downtown businesses) or those set by partner organizations (such as local utility providers). In addition to the hard targets, many plans include soft ones, which can encompass goals such as staging a certain number of public events, educating a certain number of citizens, or having campaigns to promote responsible environmental behaviors.

CLIMATE PLEDGES SIGNED BY ILLINOIS MUNICIPALITIES

Many municipalities have signed agreements that commit their governments to climate policy action, at times in addition to or in lieu of their own plans. A number of Illinois municipalities have signed either the USCM's Climate Protection Agreement, which was initiated in 2005, or the MMC's Greenest Region Compact, introduced in Illinois in 2007, with some having signed both. The former is part of a nationwide effort while the latter is intended primarily for communities in the greater Chicago region.

The USCM's Climate Protection Agreement calls on signatories to commit to taking climate action steps that mirror the goals outlined in the Kyoto Protocol, which took effect in 2005, the same year this pledge emerged. Signatories are expected to meet (or surpass) the protocol's goals for GHG emissions while

also taking further actions to discourage urban sprawl, promote reforestation, and other initiatives. Whereas many municipal plans primarily focus on local opportunities for eco-friendly action, signatories of this pledge are expected to urge their state governments and the U.S. Congress to promote bipartisan legislation reducing emissions. Participants are expected to push for a national emissions trading system, which, at present, lacks support in many statehouses and on Capitol Hill.

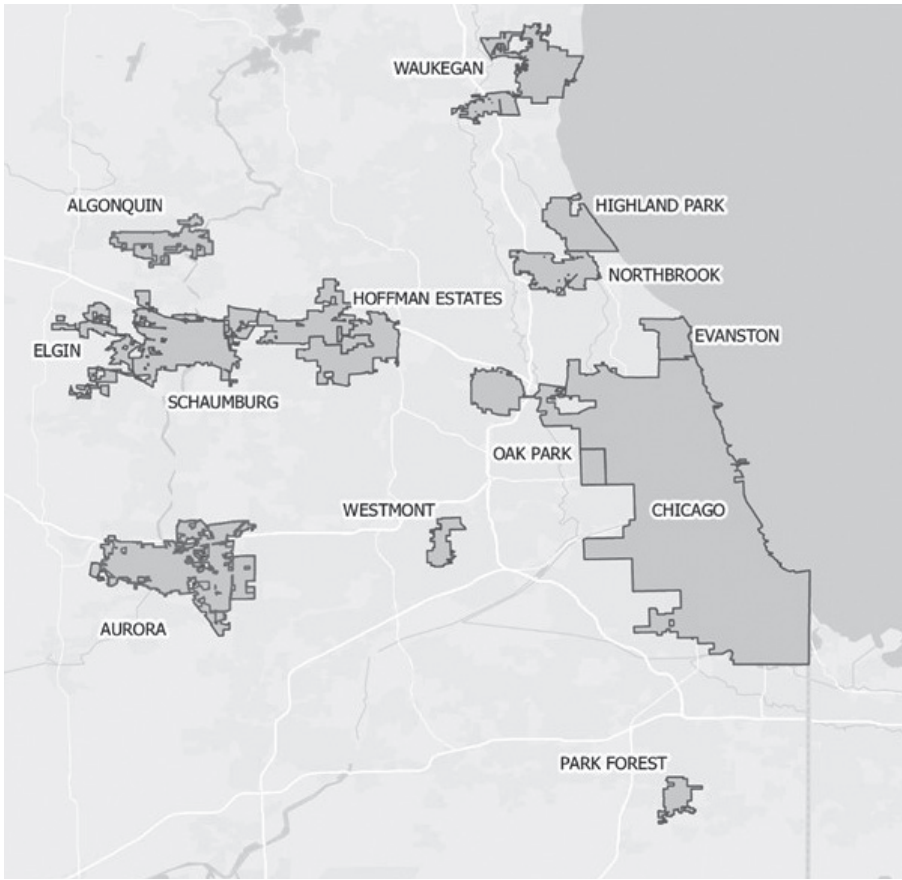
Around 1,110 municipalities across the country, including 57 in Illinois, have signed the USCM's Climate Protection Agreement, with the newest signatory being Deerfield, which signed in 2020. Among the 20 most populous cities in the state, 13 (65%) have made the pledge. More than one-third (38%) of those with a population greater than 100,000 as well as one-third (33%) of those between 50,000 and 99,999 have signed, whereas only roughly 1 in 6 (16%) between 25,000 and 49,999 have done so. Two of the smallest Illinois municipalities to have signed the pledge are South Roxana (population 1,891) and Spring Valley (population 5,582). The modest participation of small communities likely reflects the difficulty the sponsoring organization has in forging close relationships with the tens of thousands of smaller municipalities across the country. Illinois alone, for example, has 1,295 cities, villages, and incorporated towns.

There have been two iterations of the MMC's Greenest Region Compact (GRC) — the initial one in 2007 and the most recent agreement, launched in 2016, called GRC2, in which signatories pledge to pursue 49 goals ranging from energy and waste reductions to more efficient transportation (MMC, n.d.). GRC2 includes a framework document that serves as "a self-assessment checklist to inventory your municipal accomplishments" (MMC, n.d.). The caucus gives signatories considerable flexibility to choose the best course of action so that "municipalities of all sizes and resource levels can use the framework to undertake appropriate and impactful sustainability actions" (MMC, n.d.). Among the 275 municipalities in its service area, 161 have signed the GRC2, which is indicative of the caucus's comparatively high level of success in enlisting smaller communities. Thirteen Illinois municipalities are part of the GRC2, have adopted the USCM agreement, and have a municipal plan (Figure 4).

Some communities have found complementarities between signing one of these agreements and adopting a plan. A significant number appear to have used the targets established in a pledge as an impetus for choosing a target in their plan.

FIGURE 4

MUNICIPALITIES THAT HAVE A CLIMATE ACTION OR SUSTAINABILITY PLAN, ARE PART OF THE LATEST VERSION OF THE THE GREENEST REGION COMPACT (GRC2), AND HAVE ADOPTED THE U.S. CONFERENCE OF MAYORS PLEDGE



Map Credit: Lily Baird.

The MMC describes this benefit by noting that "[f]or communities with their own sustainability plan, the GRC can be used as a tool to support and enhance sustainability efforts in your community" (MMC, n.d.). Prior to signing an pledge, mayors or municipal staff typically must formalize their participation through a board resolution. Signing a pledge is often accompanied by media coverage and public events, which can be a springboard to further action. Such activities can make board members more interested in having a stand-alone plan.

DISCUSSION AND CONCLUSION

In Illinois, some municipalities outline their policies for dealing with the climate crisis in climate action plans while others adopt sustainability plans. In each case, municipal plans typically establish dates for reaching explicit environmental targets that are set many years into the future, with GHG reduction being the most holistic objective. Some plans measure the extent to which past policies have allowed the community to achieve their targets and how future actions could help move toward the intended goals.

Municipal plans that lack measurable targets should not be dismissed as lacking substance and rigor. Some were clearly written with a different purpose, such as helping staff and citizen advocates better understand how a municipality's diverse set of existing policies affect climate outcomes. Such plans often discuss, for example, the status of programs to encourage the electrification of fleets, increase the energy efficiency of homes and businesses, and expand or improve open space. Some review the progress made toward revamping building codes and strategies to promote transit-oriented development and bike plans. Some plans without clear targets are akin to informal report cards on climate change policies, which can help bring staff in siloed departments together to build momentum for more integrated planning efforts. Another distinctive aspect of plans without measurable environmental targets is that they have soft goals, such as objectives centering on public education or staff training.

Our review shows that many plans include details about policies that are high priorities for achieving climate action goals. Less comprehensive plans, however, may lack specific measurable targets and descriptions of policy actions, resulting in ambiguity about how various goals will be achieved. The City of Chicago's 2022 plan is an exception, having a well-articulated list of actions it expects each municipal department to pursue as well as a summary of the recommended timeframe and metrics that will be developed. Each proposed action is accompanied by an action status indicator that provides information about whether work has begun.

This review of 32 municipal sustainability and climate plans in Illinois leads us to offer several recommendations to help municipal leaders ensure their plans remain vibrant and relevant and are not relegated to dusty shelves and the back corners of websites. Those recommendations are:

- Provide details about policy measures, such as changes to municipal building codes, public utility agreements, transportation investments, and zoning that will be pursued to achieve climate action goals.

- Divide recommended policy measures, and the climate action targets that are established with them, into short-term (less than five years) and longer-term categories. The separation of more immediate and distant goals in the Elgin (2011) and Chicago (2022) plans exemplifies how this can be done effectively. Such a division not only helps with strategic planning but helps assure that some actions are feasible within the short planning horizons of many elected officials. When short-term goals are met, it creates opportunities for celebrating progress, which can create a positive feedback loop among citizens, staff, and elected officials.

- Set targets for climate policy that leverage the support that exists for other municipal priorities. For example, planting trees can draw on public support for the importance of trees in beautification, lowering utility bills, enhancing living standards, and raising property values. Similarly, transit-oriented development can add cultural and commercial dynamism to urban areas, providing benefits unrelated to environmental ones. The extensive linkages between the Oak Park/River Forest (2011) plan and other local goals, including education and healthcare, make the plan outstanding in this regard.

- Emphasize goals related to facilities, land, and services directly managed by the municipality, over which local officials have a great deal of control. The emphasis on municipally-owned facilities in Evanston's (2018) and Northbrook's (2021) plans is notable in this regard. Moreover, standards for new businesses and residential homes should be markedly different than those for existing ones due to the municipality's role in development approval.

- Use climate change policy in community branding and placemaking, drawing public attention to the "green" aspect of the community.

It may behoove some municipalities to express more distant targets, such as those more than 15 years in the future, on a per capita basis rather than having them be absolute amounts. This would ensure that targets remain achievable despite local population growth — and mean that a community would not attain its targets primarily because of having fewer residents.

This is particularly important for mid-century (i.e., 2050) environmental targets, whose achievement could be greatly affected by population shifts and demographic change.

Another challenge to implementation is the absence of well-established processes, overseen by an independent organization, to evaluate the progress that smaller and mid-sized communities are making toward municipal climate goals. The 94 cities that have joined the C40 Cities Climate Leadership Group serve as useful examples of how such accountability can be established. Each C40 city has committed to monitoring, evaluating, and reporting their progress toward their climate goals. Chicago, by virtue of being a C40 member, apparently stands alone among Illinois communities for having committed to a process overseen by an independent organization. Communities can also submit themselves to a process called voluntary local review (VLR), which leads to the creation of a report measuring their progress toward the United Nations Sustainable Development Goals. The communities that are undergoing these reviews, however, tend to be relatively large, much like those in C40. In the past five years, for example, Los Angeles, New York, Orlando, and Pittsburgh have made VLR reports that detail their progress publicly available. (For details about the program, refer to its United Nations' webpage at https://sdgs.un.org/topics/voluntary-local-reviews.) Unfortunately, neither a similar organization nor a widely accepted evaluation process has gained traction in helping smaller communities in Illinois hold themselves accountable for the climate action commitments they have made. New monitoring and oversight organizations are needed to assure that goals are backed by meaningful action.

Another issue that warrants emphasis is the high degree to which the achievement of certain goals will depend on the actions of actors outside the boundaries of the municipality. For example, efforts to reduce vehicular travel will invariably be affected by the actions of adjacent municipalities related to fuel taxation, land use, and roadway construction. Similarly, the amount of solid waste generated will depend on regulations established by nearby governments and decisions made by private businesses in other localities. This issue needs to be more fully acknowledged in plans and suggests a need for regional, state, and federal efforts to foster greater coordination in goal formation among communities near each other. Similarly, our analysis also indicates that new strategies are needed to entice smaller municipalities to develop even basic climate action plans. State government leadership could help lessen this problem, although leadership alone will not be sufficient.

Wheeler's 2008 study made clear that resource limits often stand in the way of plan development and implementation. Fortunately, there are many consulting firms that have experience in drafting plans that could help such communities overcome limitations on staff resources. Officials in these communities could also draw on the favorable publicity when passing a resolution to join a climate agreement by including in the same resolution a call to find the budget necessary to create a climate plan, even if the initial plan is modest. In situations in which opposition exists to creating quantitative targets, communities could consider committing to improving their relative standing among their peers. For example, a municipality could commit to being in the top 20% of similarly-sized places with respect to the reduction of waste.

Regardless of the approach taken, municipal leaders should recognize that there is no one-size-fits-all approach to climate change policy, and local actions are important (Jordan & Jeppesen, 2000). Communities can learn from experimentation, and with regional alliances like the MMC, national bodies like the USCM, and international collaborations such as ICLEI, and C40. Alongside the 30 currently active plans in Illinois, there is a growing body of precedents, best practices, and attainable goals to draw upon. Local governments in Illinois and beyond can, therefore, tailor their strategies to reflect local conditions and implement municipal policies that advance substantive measures to mitigate the impacts of climate change in an era in which federal agencies and policies appear unable to do so.

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