

I. INTRODUCTION

Local climate action matters: it's the level of government best positioned to make change right now. But local climate planning doesn't work, at least in its current form.

“Does local climate planning work?” We first heard this question asked by a sustainability coordinator who oversaw their city’s climate action efforts. It was surprising to us that someone would question the value of the same plan that was intended to be the central guide to their job for the next thirty years.

Yet, the question seemed less absurd the more people we talked to. While not everyone phrased their frustrations as explicitly, we noticed a general consensus emerging that the current climate planning paradigm is broken.

So we set out to answer the question, “Does local climate planning work?” We surveyed 28 cities, looking at their climate plans, budgets, and greenhouse gas inventories. We spoke with dozens of people, working in and alongside local government, to better understand the state of local climate action.

Our conclusion is that no, local climate planning does not work—at least not as well as it should. This report is a discussion of what we found, along with our suggestions on how it can be fixed.

Why local climate action matters

Why does local climate action even matter?

It seems unusual for someone passionate about addressing climate change to hone in on the local level. Other levels of government not only have significantly more resources than their financially strapped municipal counterparts, but they also possess greater legal authority to regulate greenhouse gas (GHG) emissions in the first place. This is evident in the broader public discussion: most are aware of international efforts like the Paris Climate Accords, but few know about the Global Covenant of Mayors.

But for all the energy that climate activists have put into lobbying the international, federal, and even state levels of government, what have they accomplished?

- Internationally, most countries have adopted a variety of targets, benchmarks, and commitments, but there's been little accountability or efforts to directly intervene in reducing emissions.¹
- Federally, the US government has faced substantial political gridlock which has held back serious action on climate. Environmental regulations, such as vehicle fuel efficiency standards and tax credits, have come short of the potential reductions the federal government could engender.
- States have largely been limited to command-and-control interventions like banning the construction of new non-renewable power plants. This limitation is in part due to their weaker financial standing than the federal government² and also because they lack the granularity of control that local governments possess.

If we want to transform land use patterns in our communities to improve walkability, we need local action. If we want to streamline permitting processes to encourage more solar panels, we need local action. If we want to establish robust public transportation that's accessible to all, we need local action.

So, while other levels of government may seem better-equipped on paper to address climate change, we empirically see that local governments are an absolutely critical part of the equation. Making the transition to a carbon neutral future will require participation at all levels of government, but it is local governments that are best equipped to shape that future to meet the needs of their individual communities and bypass the political gridlock and coarseness of international, federal, and state intervention.

Why this report focuses on planning

And then, why the focus on climate planning as opposed to just local climate action more generally?

Municipal climate planning is the bottleneck for taking local climate action. Most cities and counties lack a climate plan at all. But for the 600+ local governments that have chosen to address climate change in

¹ While the US ranks last on the list, no countries score well enough to be ranked "Very High" in climate change performance according to the NewClimate Institute's [Climate Change Performance Index for 2021](#).

² Specifically, states lack the ability to run a budget deficit like the federal government.

a comprehensive manner, a climate action plan (CAP) in some form or another is almost always the starting point.³

CAPs provide a tool for communities to identify where they stand currently with their emissions and to identify mitigation strategies moving forward. For most localities, the CAP is the central jumping off point for all climate action efforts. For many communities, hiring a sustainability professional after adopting a CAP was the beginning of their formal emissions mitigation efforts.

Thus, if we want to understand local climate action, it's helpful to start with the CAP—the central place from which all local climate efforts emanate. And as you'll find in this report, CAPs are indeed quite broken in the vast majority of communities we surveyed.

³ [Hundreds of U.S. cities adopted climate plans. Few have met the goals, but it's not too late.](#) Pulver, Bowman, et al. *USA Today*. August 10, 2021.

II. BACKGROUND ON CLIMATE PLANNING

Traditional municipal planning follows one of three molds. But none of these are well suited to climate planning, which requires scientific rigor, community participation, and implementation guidance.

A quick history of municipal planning

Prior to the early 1900s, municipalities did not engage in much formal planning. Cities and towns merely developed and grew organically, evolving on their own accord to meet the needs of their constituencies. It was after World War II when formal urban and municipal planning took off, especially in the United States.⁴

Modern municipal planning has evolved to develop plans fitting into three broad buckets, each with varying degrees of technical complexity, community engagement, and regulatory mandates (see **Table 1**).

Table 1: Types of Municipal Planning.

TYPE OF PLAN	DESCRIPTION	COMMUNITY INVOLVEMENT	EXAMPLES
State-Mandated Plans	Explicitly required by a regulatory body or needed to secure some amount of state and/or federal funding	Done through a mandated engagement process, such as a public hearing, with little emphasis on inclusivity	Transportation plans, capital improvement master plans, and comprehensive future land use plans
Technical Plans	Designed to accommodate regulatory requirements and engineering standards when delivering constituent services	Rarely involve any community engagement	Stormwater master plan which fulfills the requirements of a MS4 permit
Strategic Plans	Lay out robust visions and guiding principles to help identify short- to medium-term pathways which reach community goals	Extremely inclusive of community feedback and often involve an extensive outreach process during their drafting	Citywide strategic plan which helps set overall priorities for the community

⁴ *Four Critical Junctures in the History of the Urban Planning Profession: An Exercise in Hindsight*. Brooks. *Journal of the American Planning Association*. 1988.

Why climate action is different

Climate planning for local governments doesn't fit neatly into any of the traditional planning buckets. While some states, such as California⁵, require explicit plans to reduce emissions, most CAPs are not produced to satisfy a regulatory requirement.

Climate planning for local governments doesn't fit neatly into any of the traditional planning buckets.

Some cities approach climate planning as if it were a strategic plan, but these plans usually lack the necessary technical details to contextualize the strategies in the plan or confirm that the plan, if implemented in full, is likely to have the intended effect of achieving carbon neutrality.

Other cities rely on engineering firms to develop their plans, which can result in higher quality data and measurement, but less community involvement or recognition of how mitigation strategies interplay with other policy goals of the local community. These plans are also less approachable for local elected officials, municipal staff, and constituents without a technical background in the subject.

Traditional assumptions about how to approach municipal planning fall apart when talking about CAPs, a point that is explored in greater detail in **Sections IV** and **V** of this report.

⁵ The California Environmental Quality Act effectively requires cities to establish a qualified climate action plan with greenhouse gas reduction targets in order to streamline (and significantly reduce the cost of) analysis of emissions associated with future projects.

III. MUNICIPAL CLIMATE PLANNING SURVEY

Of the 28 cities we surveyed, just 9 are on track to meet a 2050 goal. Having a climate plan was better than not, but planning alone was insufficient; staff and funding are needed to improve outcomes.

Our dataset and methods

To evaluate climate planning, we surveyed 28 different cities across the United States.⁶ We looked at 14 C40 cities, the largest American cities which have committed to bold climate action in collaboration with other metropolises around the world. We also investigated 14 smaller cities which are more representative of the typical American community tackling climate change. The full sample is listed below (see **Table 2**).

Table 2: BREAKDOWN OF SURVEY SAMPLE.

C40 CITIES	NON-C40 CITIES
Austin, TX	Albany, NY
Boston, MA	Ann Arbor, MI
Chicago, IL	Baltimore, MD
Houston, TX	Boulder, CO
Los Angeles, CA	Bozeman, MT
Miami, FL	Charleston, SC
New Orleans, LA	Columbia, MO
New York, NY	Denton, TX
Philadelphia, PA	Greensboro, NC
Phoenix, AZ	Knoxville, TN
Portland, OR	Miami Beach, FL
San Francisco, CA	Providence, RI
Seattle, WA	San Mateo, CA
Washington, D.C.	Spokane, WA

We looked at two greenhouse gas inventories for each city, as well as their local budgets. Our findings are reported on the following pages.

⁶ We only surveyed cities with a CAP that is at least four years old (to give them time to demonstrate progress) and who had publicly reported at least two greenhouse gas inventories. This likely makes our results even more conservative than the actual reality of the situation because only the most climate-forward cities regularly track and report their emissions.

Our findings

1) Most cities are not on track to meet their emissions targets.

We find that just 2 in 5 cities are on track to meet their emissions targets. This is evident in the graph shown below (see **Figure 1**). Cities above the line are *not* on track to meet their reduction goals, while those below the line are.⁷ Immediately, this tells us that creating a CAP provides no guarantee that one actually achieves their emissions goals; in fact, several cities with CAPs have actually increased their overall emissions since adopting the CAP.

Are municipal climate plans on track to meet their emissions goals?

Cities **above the line** are *not* on track to meet their reduction goals, while those **below the line** are currently on track based on their latest emissions inventory.

● C40 City ● Non-C40 City

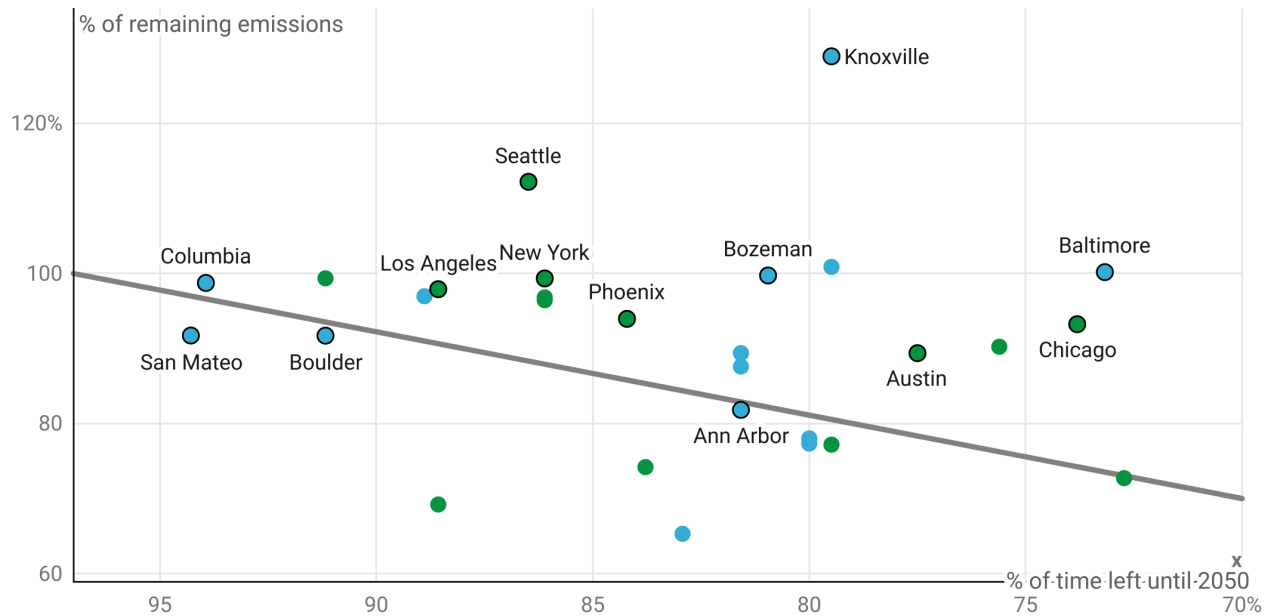


Figure 1: Graph of emissions reduction goals vs. actual progress.

⁷ Our methodology here assumes a linear reduction—that is, cities need to reduce an equal amount of their emissions each year. In reality, this is a generous interpretation of the situation as climate change probably requires accelerated reduction efforts, meaning emissions are mitigated at a greater rate now than later. Almost no communities would be on track if we applied this standard, however. We also assume that all cities have a goal of net-zero by 2050, as recommended by the IPCC. Some cities have more ambitious targets, but we have not reflected that in this report in order to compare everyone equally.

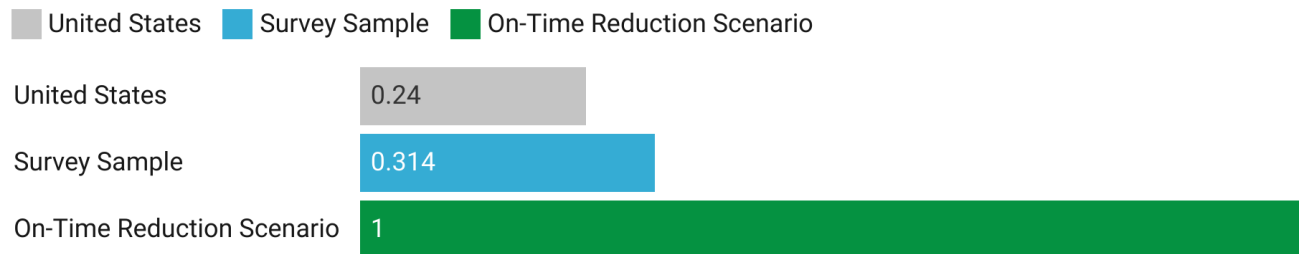
2) Cities with a CAP outperform their peers with no climate plan whatsoever, but only slightly.

US cities with a climate action plan perform about 31% better, over the life of the plan, than the US as a whole when it comes to greenhouse gas emissions (see **Figure 2**).⁸ That comes with a big but: to be on track to achieve net-zero emissions by 2050, those cities should be reducing emissions at a rate more than three times what they're currently achieving. Sure, these cities are ahead of the curve relative to their peers, but they're far behind the curve relative to the reality of a warming planet.

Do cities with a climate plan reduce emissions more than those without one?

This graph compares emissions reductions for the US as a whole* with our own sample of cities that have an active climate plan in place. Cities with a CAP outperform the US baseline, but neither group is on track to actually reduce emissions on time by 2050.

Each bar represents the average rate of emissions reductions.



**We look at overall emissions for the United States because we don't know the counterfactual (i.e., what emissions look like for cities without GHG inventories).*

Figure 2: Graph comparing emissions reduction for the US as a whole, the survey sample, and an ideal scenario.

⁸ It's impossible to disambiguate whether possessing a CAP *causes* a municipality to achieve greater emissions reductions, or if it's merely a predictor for other things which drive reductions. For example, politically liberal cities are more likely to have a CAP, but they are also more likely to be located in a liberal state that has policies such as robust renewable portfolio standards. Thus, some of the achievements made by these cities are likely caused not by the CAP but by actions at other levels of government or in the private sector.

3) The average city spent less than half a percent of its budget on climate action.

Of the communities surveyed, fewer than 1 in 5 cities spent more than *half a percent* of their most recent operating budget on combating climate change (see **Figure 3**). This number seems even more extraordinary when you consider the fact that this statistic describes the cities that are the most active in the US in taking climate action. In Los Angeles, the second-largest city in the country with an operating budget of \$11 billion and a mayor who co-founded Climate Mayors, less than \$2 million is earmarked for climate change—that is less than two hundredths of one percent.

Even the highest-performing cities dedicate a small fraction of the budget to climate mitigation: Ann Arbor, MI has the highest percentage of its budget dedicated to climate change, at 4.15%. Meanwhile, Los Angeles spends more than 15% of its operating budget on police; Spokane, WA spends 75 times as much on fire protection as on climate action. Ann Arbor spends approximately as much on pools, ice skating rinks, and golf courses as it does on climate. Charleston, SC spends more on its marina than its climate activities. Cities are treating climate spending like it's an amenity rather than an emergency service.

AN INVITATION TO COLLABORATE

We're developing a climate equity mapping tool to help climate professionals centralize equity concerns in the planning process.

It will assign geographic areas in your community an equity score which you can then use to prioritize investment, climate projects, and more.

If this interests you and you're willing to be a beta tester and work with us on improving the product, we'll launch it in your community for **free**. Sign up below:

[SIGN UP](#)

How much do cities spend on climate action?

The amount cities spend on climate action, measured as a percent of their most recent operating budget.

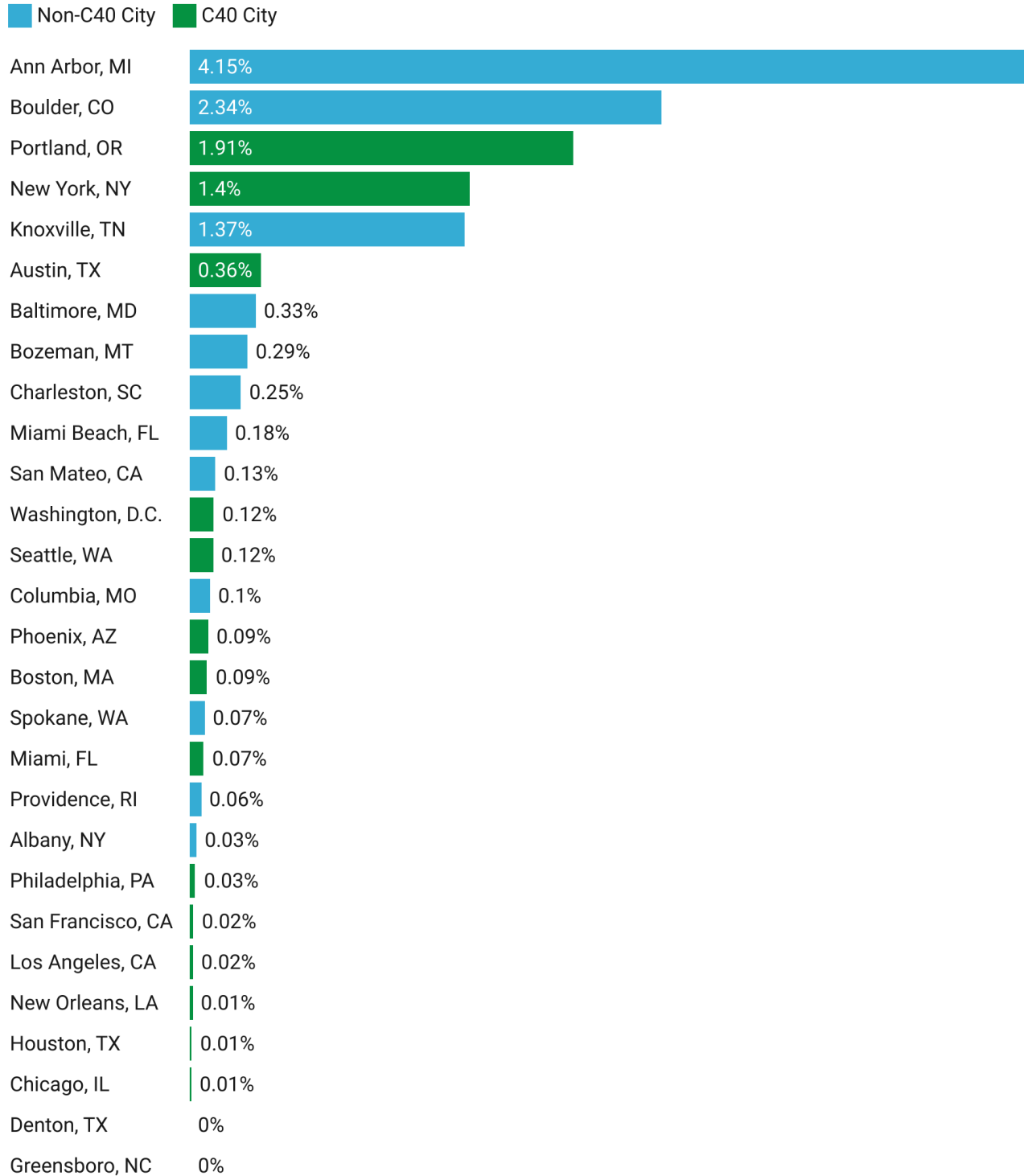


Figure 3: Graph comparing municipal spending on climate action.

4) Cities that spend the most money on climate action tend to achieve greater emissions reductions.

Local government spending on climate is so meager that it’s difficult to gather statistics on it: there’s no convincing evidence that increased spending on climate mitigation moves the needle on emissions because so few cities have meaningfully tried it. Debating the impact of spending 0.07% of the budget vs. just 0.02% says little.⁹

Here’s what we can say: of the cities surveyed, three spent more than 1.5% of their budget on climate action. All three of them are “below the line” in our first graph—that is, they’re on track to meet their emissions targets. Meanwhile, only a third of those with spending at or below the median of 0.1% of one’s annual budget are on track to meet their targets. While it’s possible to succeed with limited funding, it’s not likely (see **Figure 4**).

Does greater spending on climate action lead to greater emissions reductions?

Cities **above the line** are *not* on track to meet their reduction goals, while those **below the line** are currently on track based on their latest emissions inventory. The **size** of each bubble represents the amount the city spends on climate action, measured as a percent of their most recent operating budget.

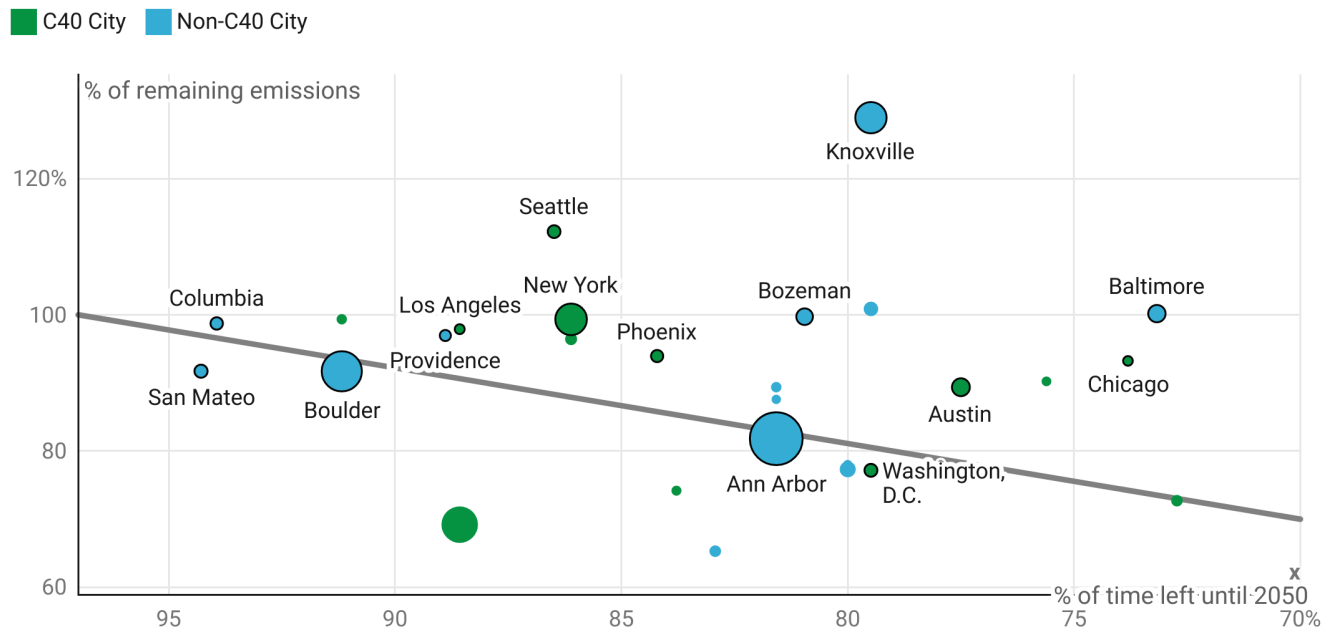


Figure 4: Graph analyzing the relationship between emissions achievements vs. amount spent on climate action.

⁹ We didn’t even try to run a regression on the relevant variables of interest, as there is so little variation in spending and too small a sample size of cities with robust emissions data that formal statistics isn’t worthwhile.

5) C40 cities did no better than non-C40 cities at achieving their emissions targets.

We initially expected the data to show C40 cities doing better, on the whole, than cities with fewer resources (due to absolute size). The data did not support this hypothesis—in fact, there were no significant differences when comparing C40 cities to the smaller cities we surveyed, except that the average C40 city spent about half as much, proportional to their budget as a whole, on climate-related activities than the surveyed non-C40 cities.¹⁰

In the graph below (see **Figure 5**), you actually see non-C40 cities outperforming C40 cities slightly in their emissions reductions. In reality, this difference is not statistically significant.¹¹ C40 and non-C40 cities are functionally identical in their reduction achievements.

Do C40 cities outperform their non-C40 peers?

This graph compares emissions reductions between C40 and non-C40 cities in our survey. Non-C40 cities outperform their C40 peers, but this difference is not statistically significant.

Each bar represents the average percentage decrease in emissions, annually, relative to the total amount of emissions at the time of the CAP's adoption.



Figure 5: Graph comparing emissions reductions for C40 and non-C40 cities.

¹⁰ An interesting outlier is New York City, whose overall budget is almost ten times the next largest budget (Los Angeles), and who spends four times what all of the other cities combined do on climate change. Despite this, NYC’s spending still only accounts for 1.40% of their overall budget.

¹¹ According to a two-sample T-Test which assumes equal variances:
 $\hat{p} = 0.489, \alpha = 0.01$

6) The cities least on track to meet their emissions targets are severely understaffed.

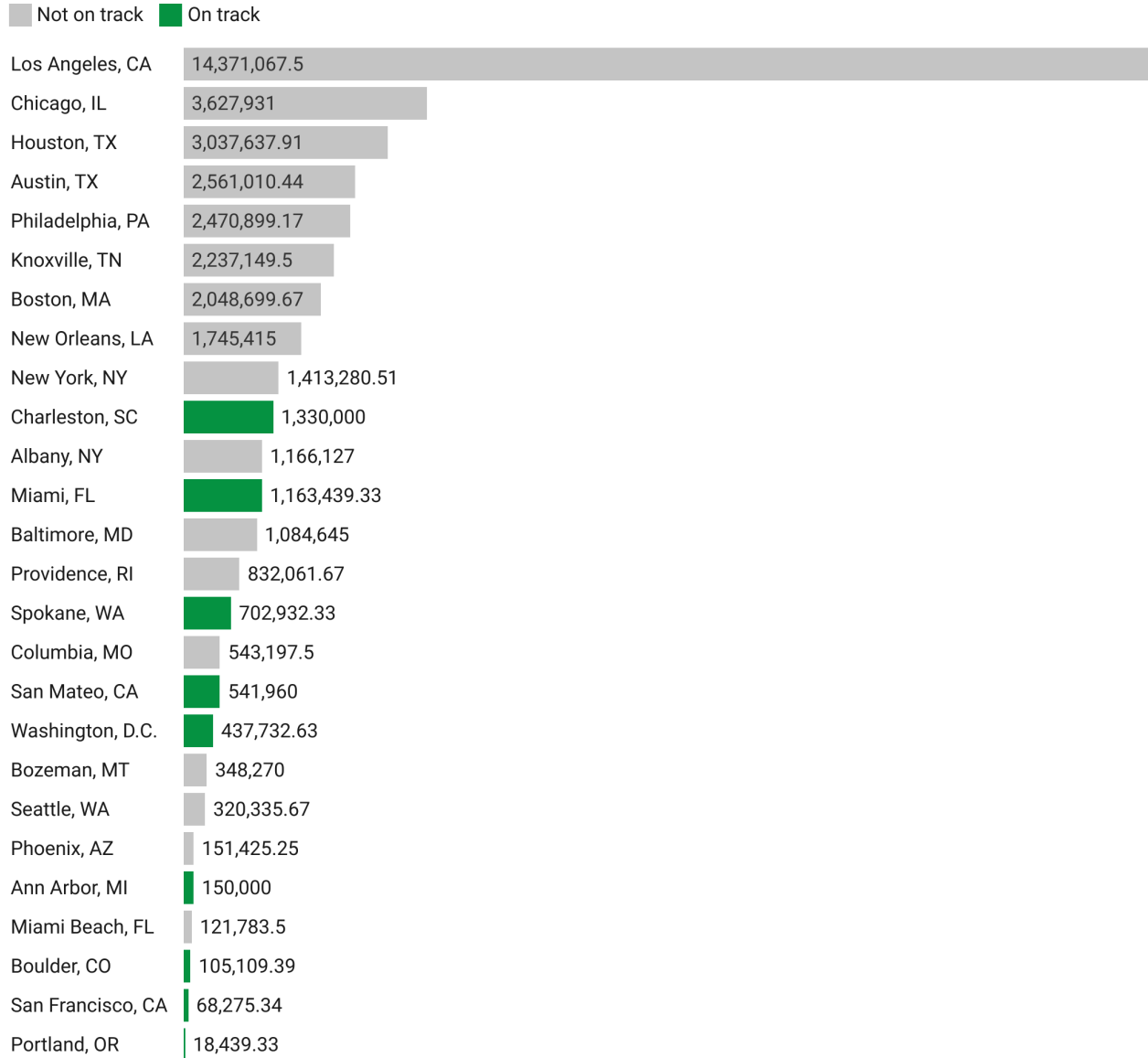
As a general rule, every city's department or office dedicated to climate action is understaffed. However, we found that the cities least on track to meet their emissions targets are also likely to be significantly more understaffed than their peers (see **Figure 6**).

If we imagine each staff person dedicated toward local climate action is assigned a particular amount of emissions that must be mitigated, some staff are significantly more burdened than others. For example, a climate professional in Los Angeles is "responsible" for mitigating over 779 times as many emissions as their counterpart in Portland, OR. Almost every city that is off track in meeting its emissions targets is likewise relying on staff members to handle orders of magnitude more emissions than their counterparts in cities that are on track.

In general, it was hard to tell from our survey whether better climate planning caused cities like Portland and Ann Arbor to outperform their peers. However, we did find that there's little evidence that climate planning in its current form has worked for most communities, at least to the extent necessary to accomplish the scientific consensus as to the bare minimum reduction needed. The data is clear: the existing planning paradigm is broken and municipalities are in need of a course correction if they want to tackle climate change in any substantial manner.

Do cities have a large enough staff to address climate change?

Each bar represents the amount of remaining emissions that must be mitigated in the city *per* climate staff member. Larger values mean each member of the city's climate action team is responsible for helping mitigate a proportionally larger amount of greenhouse gas emissions.*



*Greensboro, NC and Denton, TX were excluded from the graph because insufficient data was available to determine the amount of FTE dedicated toward their city's climate action efforts.

Figure 6: Graph comparing the amount of staff dedicated toward climate action between cities.

IV. WHY LOCAL CLIMATE PLANNING FAILS

There are six reasons driving climate plan failure, largely related to lacking or improper focus, failure to plan for, monitor, & measure progress, and the inflexibility of traditional, static plans.

Why is the current climate planning paradigm so broken?

In our interviews with climate professionals and through our survey, we uncovered six main reasons that climate planning fails to help municipalities reach their emissions goals. We outline each reason below, as well as provide a proposed solution based on evidence from communities that have succeeded in meeting their targets.

1) Cities lack the jurisdictional authority to tackle the climate crisis

A number of climate professionals we spoke with pointed to the fact that cities have control over only a limited scope of climate mitigation activity within their boundaries. No city will be able to 100% reduce the emissions within its boundaries, and every city must rely extensively on other levels of government and private actors to take part in mitigation efforts.

The biggest sources of carbon emissions for a city are usually transportation activities and electricity consumption. Cities have limited tools to encourage EV adoption, particularly for heavier vehicles, and excepting those cities with their own electric utilities, most have little to no control over the mix of electricity provided to their residents. Cities can encourage renewable energy generation through solar and wind incentives, develop programs to reduce overall electricity used, and create an EV-friendly environment, but most actual action must be accomplished either by private activity (e.g., voluntary reduction in grid energy use or buying a plug-in electric vehicle) or state or federal action (e.g. vehicle emissions standards or utility regulation).

Solution: Local governments should focus on the actions that are within their jurisdictional authority.

To start, it's worth considering what cities do have control over. All local governments recognize they have significant authority over their own municipal emissions, however those typically constitute around 1% of overall community emissions.¹²

What's more significant are community emissions, which municipalities have far more power to influence than at first glance. Local governments control water and wastewater systems, recycling and solid waste operations, and building regulations, and they can exert significant pressure on clean transportation adoption (transit, bike and pedestrian, and zero-emissions vehicle purchase), carbon sinks, grid-based and rooftop renewable energy, and lower-impact commerce and industry, among other things.

City actions are not limited only to those that can be controlled by regulation: land use decisions, municipal operations, water/wastewater, and solid waste. Cities are also active shapers of citizen decision making, including how property owners make decisions relating to energy use, whether commuters use public transit or private vehicles, and how and where people fuel those vehicles.

We noticed a discernible difference between city staff that had internalized their full jurisdictional authority—including authority to influence behavior rather than simply direct it—and those who had not. What's more, the former group recognized they were part of a much larger ecosystem of actors that are all working together toward a greener future. Paradoxically, acknowledging the limitations and constraints before them made them significantly more productive than their peers who had adopted a (self-fulfilling) defeatist mindset.

2) Municipal climate professionals lack funding and resources to accomplish their goals

Lack of resources, without a doubt, is the number one reason that climate professionals cited for being unable to accomplish their goals. And we agree with them—our survey revealed that the average city spends 0.49% of its budget on climate action—less than half of a single percent.

What's even more surprising is that a large percentage of the cities surveyed had declared a "climate emergency" as well. It's hard to

¹² While we didn't formally track this metric, we found municipal emissions to account for about 0.75% to 1.4% of community-wide emissions in most places.

square this pronouncement with the amount of dollars that municipalities actually spend on climate action. If climate change is truly an emergency, cities should spend money on combating it like they do other emergencies such as fire and crime. No local government in the US would dream of sending a firefighter into a burning building without a truck and a crew behind them, yet dealing with an emergency alone is precisely what we ask of most cities' solo or part-time sustainability officers. Worse, it's what we ask of some staff who focus full-time on their primary job and have climate planning added to an already-full portfolio.

If climate change is truly an emergency, cities should spend money on combating it like they do other emergencies such as fire and crime.

Solution #1: Give climate professionals the budget they need to accomplish municipal emissions targets.

This is an obvious solution, but one that local elected officials have failed to take seriously in the past decade since municipal climate planning has become mainstream. Every climate professional is overworked, underpaid, and working hard to achieve results for their community with a shoestring budget. Cities are asking their climate professionals to perform neurosurgery in a dark room with a butter knife; to blame them for the failure of the surgery is, at best, ignorant of the conditions necessary for success. The failure to create meaningful and effective climate action is not an individual failure on the part of one or two professionals, but rather is rooted in a system that resists spending on climate action simply because it has not done so in the past.

Because practically every municipality in the country is resource-strapped, funding local climate action requires either (1) increasing taxes or other revenue or (2) cutting funding for other programs. A few communities, like Boulder, CO, chose the former option: they adopted a

special tax to fund their climate action plan, approved by their voters. The latter option is less palatable, both because there's little bloat in existing municipal budgets (is it really wise to cut the city's affordable housing program or decrease water facility maintenance frequency?) and even if there were, making such changes would be politically untenable. Voters, no matter how much they support climate action in the abstract, routinely indicate on surveys that actually funding mitigation efforts are at the bottom of their priority list.¹³

This means the only really viable option for funding local climate action is to increase revenue. For solidly liberal communities like Boulder or Ann Arbor¹⁴, raising taxes may be a viable option. But how can climate action be funded in other communities, especially those where more moderate voters may be less likely to support major tax increases? And can we do this in a way that frees marginalized and low-income communities from shouldering the burden of the increased revenue?

Part of the solution must be convincing decision makers to take climate action. The low-hanging fruit for personal and corporate action has already been picked; those who feel good about recycling already do so. Progress in persuading other individuals, businesses, and local government leaders to take action lies along the avenue of co-benefits: we must convince people to take action on climate because it not only advances our environmental goals, but also simultaneously accomplishes other policy aims.

A great case study of this can be found in the market for electric vehicles (EVs). Initially, when EVs were undifferentiated from traditional cars beyond their environmental benefits, consumers were unwilling to make the jump. It was only when companies like Tesla made EVs luxurious, fast, and aesthetically unrivaled that they began to go mainstream.¹⁵

Climate professionals should aim to do the same with their mitigation programs. Emissions come from nearly everywhere, so reducing them provides a window to tap into nearly every policy area imaginable. This presents an opportunity for achieving other ambitious goals such as improving equity outcomes, addressing public health concerns, and promoting economic development.

¹³ According to a recent [Pew Research survey](#), "Dealing with climate change" ranks just 15th of a group of 19 policies that voters think our government should address.

¹⁴ Ann Arbor, MI is in the midst of considering a 20-year climate change tax consisting of a 1 mill property tax increase, raising an anticipated \$130-150 million for climate action. (Source: [The Detroit News](#))

¹⁵ Even the Prius mostly became popular because its saved consumers on fuel costs during peak gasoline prices in the late 2000s. It's hard to imagine the Prius becoming popular if there wasn't a cost-saving component to it. Popular car research site [edmunds.com](#) put the hybrid on its [list of ugliest cars ever made](#), describing it as "The polliwog of green piety. Efficiency reduced down to the point of ennui."

Solution #2: Make existing funding go further in achieving emissions reductions.

Like any governmental effort, it's unlikely local climate action will ever be fully funded to the desire that the hardworking public servants who staff these programs would like. This means climate professionals need to learn how to get the biggest bang for their buck with the dollars that are appropriated to them.

Unfortunately, climate plans rarely include any form of a cost-benefit analysis or projected emissions reductions from each proposed mitigation strategy. This leaves most climate professionals working in the dark, with only their intuition as to what strategies are worth implementing or are the most effective at achieving their goals.

Conducting thorough cost-benefit analyses when deciding between different mitigation strategies has three key benefits:

1. They provide leverage, allowing a municipality to get the biggest climate bang for their buck.
2. They provide a clear means of articulating the otherwise invisible effect of proposed mitigation programs to decision makers within the community. Of the climate professionals we spoke with that had conducted a cost-benefit analysis, all found it to be a powerful tool to advocate for funding with their elected officials.
3. They're a useful tool for communicating with external stakeholders as well. They can demonstrate to the public the utility of the local climate program and also make the city significantly more competitive in applying to grant opportunities because there is data to back up the effectiveness of the implemented programs.

3) Climate plans lack concrete, actionable goals

Part of the reason climate funding is so anemic is that most cities have elected to leave their climate plans as aspirational, rather than actionable. A majority of the CAPs we reviewed had strategies such as this:

“Explore the feasibility of reducing or eliminating solar permitting fees.”

This type of strategy lacks concrete action—what does “explore” mean? And how does it reduce emissions? The expected emissions reduction

from exploring a change in solar permitting fees is precisely zero, because such a strategy provides no guidance for actually driving emissions reductions in a direct manner. If a city were to complete this strategy, it would have some knowledge of whether it could reduce or eliminate solar permitting fees. That's it.

It may be true that exploring feasibility would lead to useful information about how to drive actual reductions, but it puts a significant burden on staff to translate these vague strategies into something actionable. It reduces a city's CAP from an actual plan to achieve carbon neutrality into a list of research projects for an already under-resourced climate action team to complete. And this isn't a one off problem—it was endemic in the majority of reduction strategies we came across. Most “climate action plans” are simply plans to plan, not plans to act.

Most “climate action plans” are simply plans to plan, not plans to act.

Contrast this aspect of CAPs with other plans that cities regularly create, like a capital improvement plan (CIP). CIPs, in most cities, include a prioritized list of shovel-ready projects that will begin once funds become available. They're action-oriented, identifying exactly which resources are needed to accomplish them. They also reflect community input and are optimized for the unique priorities of constituents. While these features of a CIP are not enough alone to make a CAP successful (something we explore in **Section V**), they're substantial improvements on the existing structure of climate plans.

Most CAPs, by contrast, lack this shovel-readiness and prioritization—they're simply a grab-bag list of project ideas that could, foreseeably, be part of a municipal climate strategy. Even if cities were confronted with a sudden influx of funding to accomplish their climate goals, current climate plans don't position their communities for success.¹⁶ And since cities don't know how to spend dollars on climate, the benefits seem less concrete and climate projects are put aside in favor of shovel-ready projects with traditional benefits.

¹⁶ For example, only a handful of communities are using the State and Local funding from the American Rescue Plan Act to build green infrastructure, despite guidance that allows for nearly any emissions-reducing project to qualify. For details, see our [ARPA Memo](#).

Solution: Develop CAPs with SMART goals¹⁷ that are action-oriented, not aspirational.

How might we fix the strategy we called out above?

“Explore the feasibility of reducing or eliminating solar permitting fees.”

Let's do the "exploring" part while creating the climate plan itself. The average solar permit in the city that created this goal costs \$745, and all permits issued in the city net \$7,495,400 in revenue. Given a projected pace of 350 installations per year, solar permitting results in \$260,750 in revenue annually, or about 3.5% of the total permitting revenue.¹⁸ Reducing or eliminating that revenue would mean either reduction in other services or a need to increase other revenue. Either of those options may be politically unpalatable, but the initial feasibility study is done.

We can now focus on rewriting the strategy so that it actually captures what to do next. A better strategy might have been to simply "Reduce or eliminate solar permitting fees." The discussion of the strategy could explain the back-of-the-napkin calculations we just described, and recommend something like this:

Reduce or eliminate solar permitting fees. Solar permits account for about 3.5% of the city's overall permitting fee revenue, or around \$260,000 in revenue annually. Revenue loss from reducing solar permitting fees can be offset by adding solar installations to the city's existing list of Express Permitting options, significantly reducing staff time.

¹⁷ When we say SMART goal, we mean a goal that is specific, measurable, attainable, responsible, and time-bound. These are goals that can actually be accomplished and are action-oriented, as opposed to aspirational. *Note:* we say "responsible" instead of "realistic" or "reasonable" because we find it to better reflect the needs of local climate planning (i.e., it emphasizes sensitivity to external concerns like equity and responsiveness to the overall goal of combating global warming).

¹⁸ We used from figures from an actual city with this strategy to calculate these numbers.

An even better solution would be more concrete, providing dates for implementation and an exact reduction in fees:

Reduce solar permitting fees by \$100 per kW of capacity installed, with a maximum of a \$750 discount, until grid-supplied power is 100% renewable. Solar permits account for about 3.5% of the city's overall permitting fee revenue, or around \$260,000 in revenue annually. The solar capacity discount would reduce that revenue by an anticipated \$100,000. Revenue loss from reducing solar permitting fees can be offset by adding solar installations to the city's existing list of Express Permitting options, significantly reducing staff time. Based on current projections, 100% of the electric power in the city will be renewable by 2025.

In just fifteen minutes of research, we've translated a vague strategy into something actionable that local climate professionals can implement. Of course, it may or may not be feasible given current fiscal and political constraints. However, like a capital improvement plan, the CAP now features a "shovel-ready" project to be implemented as soon as it can be made viable.

4) Climate plans lack a mechanism to track ongoing progress

SMART goals must be measurable. Measuring ongoing progress is critical for maintaining transparency, promoting accountability, and helping to adapt to ever-evolving circumstances.

C40 cities are required to track ongoing progress, so all such cities had reported regular updates in our survey. Of the remaining, non-C40 cities, slightly less than half attempted annual or periodic updates (as opposed to simply creating a new plan every five years or so). The rigor of these updates varies; many are used more as a messaging tool than a serious attempt to evaluate and report on progress.

Of course, this is no fault of the climate professionals drafting these progress updates. When the consultants they hired to create their original CAPs left them with an aspirational, rather than actionable plan, how are staff expected to report on a laundry list lacking measurable objectives?

Solution #1: Develop a comprehensive set of KPIs for every strategy in a CAP prior to its adoption.

In the same way CAPs need to be made actionable while they're being drafted, it's important that key performance indicators (KPIs) are identified prior to the plan's adoption. These KPIs should be tracked on an ongoing basis and reported in some formal manner at least annually to ensure the plan is on track.

Using the solar permitting example from above, a good process-based KPI might be the number of permits issued. This KPI would be ideally paired with a goal in the plan, for example:

KPI: Annual number of solar permits issued

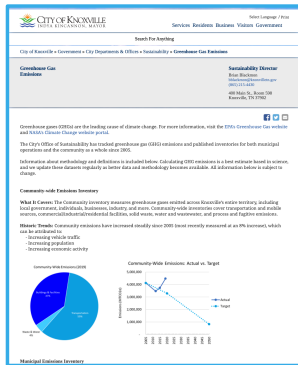
GOAL: Increase the above KPI by 10% YoY for three years consecutively

"You can't manage what you don't measure."¹⁹ KPIs and progress monitoring tools are important because they add tools of accountability and transparency to a city's CAP. Currently, most municipalities can't honestly answer a constituent if they were to ask, "Is the city meeting its climate targets this year?" Staff and elected officials should be armed with the tools needed to accurately answer this question. The goal-setting and measurement also encourages performance, including putting resources behind accomplishing a goal: nobody wants to report that they didn't meet a target.

Solution #2: Regularly track the city's greenhouse gas emissions through an inventory process at least annually.

A strong progress monitoring system includes not only robust KPIs, but also regular GHG inventories. Inventories are cumbersome to complete, the data collection process is frustrating, and the results can be difficult to interpret, but they're still the best tool to get at the ground truth regarding a community's overall emissions.

¹⁹ A famous quote by Peter Drucker.



A screenshot of the Knoxville, TN's page which clearly communicates their GHG inventory to the public and also features the raw data for download.

Very few of the communities we looked at completed GHG inventories on a regular schedule²⁰, and even fewer publicly reported the results in an accessible fashion. An exception is Knoxville, TN who make the raw data publicly available on their [webpage](#), the only municipality we looked at to do so.

Frequent emissions monitoring through GHG inventories enables communities to better understand the effect their mitigation programs are having on actual emissions. What's more, they can reveal inaccurate assumptions in other downstream climate modeling efforts. For example, a city might find reduction strategies are less effective than predicted and can adjust accordingly.

5) Climate plans are unable to adapt and evolve as circumstances change

Even if a city were able to draft an action-oriented CAP, identify KPIs for every strategy, and fully fund the plan, they'd soon find that external circumstances would reduce the relevance of the plan—it would rapidly become stale.

Many climate plans—particularly those developed by external consultants—are written as a static report, creating a snapshot of a dynamic situation as it exists at the time of publication. The challenge with this approach is that, compared to other municipal planning situations, climate action is inherently more volatile: the science is rapidly developing, federal and state responses are evolving, activists are becoming more numerous and vocal, and mitigation technology is improving quickly. A document that proposed strategies in 2018 wouldn't anticipate that the number of EV charging stations would double by 2020 or that a global pandemic would dramatically accelerate adoption of teleworking technology.

²⁰ One major limitation of this research study is that we could only measure progress on emissions reduction in communities that had publicly released at least two GHG inventories. Uncoincidentally, these communities are also probably better than average at tackling climate change. Therefore, our findings in this report are probably even more conservatively stated than the reality of the situation municipalities across the country are actually facing.

Compared to other municipal planning situations, climate action is inherently more volatile: the science is rapidly developing, federal and state responses are evolving, activists are becoming more numerous and vocal, and mitigation technology is improving quickly.

Solution: Shift toward a framework of dynamic planning, specifically optimized for the needs of climate action.

The solution to evolving circumstances is neither abandoning planning nor rewriting the CAP each year. CAPs provide the guide rails to local climate action that we so desperately need; yet, we also lack the resources and precious time to lock ourselves into an analysis-paralysis loop where we must constantly update them as assumptions change.

Instead, municipalities should adopt a more flexible approach to climate planning. Overarching goals like long-term emissions targets (e.g., achieving carbon neutrality by 2050) and major resource commitments (i.e., earmarking money for climate action) can be adopted by the city council. However, the everyday strategies we employ to tackle climate change may need to change regularly, and the plan should include predefined points where this reflection and analysis can occur.

Climate professionals discuss the importance of creating resilient communities, but we also need to build resilience into our planning processes themselves. A framework of dynamic planning means that a

resource-strapped municipality initially focused on cheaper programs such as performance contracts for municipal operations can build an energy-efficient water treatment plant when federal dollars come through. They're not locked into a rigid sequence of actions that was adopted five years ago when conditions were much different.

For dynamic planning to work, municipalities will need to move beyond the climate plan being just a prettily-formatted, 100+ page PDF document. What's more, the current model primarily relies upon one-off engagements with external consultants, rather than leveraging an ongoing relationship to continually refresh the CAP. This may require either moving the technical expertise in-house or retaining the expert for a longer term.

An excellent example of more dynamic planning can be found in the **Strategic Energy Plan (SEP)** that Santa Barbara, CA drafted to help them meet their 100% renewable energy by 2030 goal. For every strategy in the plan, they include a thorough and detailed guide to implementation. They identify the amount of FTE required to implement each strategy, associated timelines & major milestones, and also draw upon case studies from other municipalities that have done similar work. Each strategy is designed to be modular, so as available funding changes, they can move around the strategies and ensure they're still meeting their overall goal.



An excerpt from Santa Barbara's Strategic Energy Plan which provides an implementation timeline for proposed strategies.

6) Climate plans aren't data-driven or scientifically rigorous

At the end of the day, a CAP is an emissions mitigation tool. Every municipality, collectively, must be aiming to reach carbon neutrality by 2050, or we will suffer major global consequences.²¹ This means that CAPs should be, first and foremost, *scientific* plans addressing how each municipality can play its part in achieving carbon neutrality.

We found that most of the plans we reviewed used at least a rough GHG inventory to focus their planning on the relevant sectors. Where data broke down was in analyzing the expected impact of proposed strategies on emissions. Only two of the surveyed plans included concrete estimates of expected reductions, with the rest assigning a high-medium-low rating (or a similar star-type rating system) or simply leaving no clues as to the expected value of each strategy. Just one plan showed a “balance” for carbon emitted and carbon to be reduced, meaning it was the only plan that, if fully implemented, was designed to actually achieve the goals it set forth.

²¹ This is consistent with [global targets](#) set by the Intergovernmental Panel on Climate Change (IPCC).

Ultimately, the inability for most CAPs to establish a clear nexus between their planning efforts and actually achieving carbon neutrality undermines the utility of these plans.

Solution: Climate plans should rely upon scientific evidence and data to model the effect of their reduction strategies.

Estimating emissions reductions can be hard work, but for the most straightforward and impactful tasks, it can be done accurately and quickly. Converting fossil fuel electricity generation to renewable sources is very easy to quantify, whether that's done by rooftop or community solar or by decommissioning a power plant and replacing it with a new one.

Strategies designed to influence constituent behavior (e.g., adding bike lanes to encourage biking among residents) are more difficult to model, but that doesn't make it any less important. At least a range of estimated emissions reduction can be predicted, and this value adjusted over time as GHG inventories provide real evidence.

Using the bike lane example, we can model expected outcomes by understanding the underlying variables. We know that adding a protected bike lane increases ridership by anywhere from 21% to 171%.²² Factors contributing to where in the range adding a particular bike lane will fall include immutable factors (the length of the route, extreme heat, cold, & rain, the distribution of purpose of trips, whether the route allows for two-way bike traffic) and ones that the city can influence (the perception of safety, availability of bikeshare programs alongside bike lanes, routes that focus on commutes).

So, by approximating a subset of these other variables, it is possible to model where in the range of increased ridership a particular bike lane project might fall, and then from there determine how much carbon is reduced by the increase in bike ridership.

Including this type of information is valuable not only because it allows CAPs to better steer toward the overall emissions target, but also because it promotes flexibility with the planning process. For example, a cost-benefit analysis to compare the effectiveness of different reduction strategies is not really possible without knowing the amount of emissions mitigated by each strategy in the first place. Furthermore, knowing the mitigation potential of each strategy allows a climate professional to adjust planning accordingly as budgets change. If one strategy can only be funded 50% in a given budget year, the planner

²² [Equitable Bike Share Means Building Better Places for People to Ride](#). National Association of City Transportation Officials. July 2016.

knows exactly what impact that will have on meeting the overall emissions target and can compensate in other ways.

Potential emissions reductions are not the only data that need to be estimated. In addition to quantifying cost, cities should aim to quantify co-benefits, as well. This can make acceptance of a strategy more palatable, and can assist with identifying parallel sources of funding. Local governments can also measure qualitative metrics, which can assist policymakers with determining how to allocate resources. For example, quality-of-life descriptors for homes with rooftop solar can make funding low-income weatherization and solar-readiness more attractive to decisionmakers.

V. HOW WE GOT HERE

Taking the same approach to climate planning as other municipal plans hasn't worked. Local governments need a new, dynamic strategy to create an environment that engenders climate success.

While the previous section discussed reasons that climate planning has failed us, we wanted to take a moment to reflect on why climate planning adopted this planning paradigm in the first place. Stepping back a bit can help us understand how we might pivot moving forward.

Local governments have approached climate change with the same tools cities have used for decades to address more conventional planning problems, but new tools are needed to tackle the climate crisis.

If you recall from **Section II**, municipalities generally group their planning activities into one of three buckets. The trouble with climate planning is that none of these buckets quite fits, yet local governments attempt to apply these same tools nevertheless.

Recognizing there are technical aspects to a CAP that they lack the internal expertise to handle, local governments frequently hire consultants to help develop their plans. They then try to fit the resulting plans into their existing framework of capital improvement planning so that the politically palatable amount of dollars can be funneled through the plan to achieve at least the high-priority projects.

This doesn't work for climate. First, the system of earmarking a certain amount of cash for roads, water pipes, and other types of infrastructure doesn't exist for climate mitigation and adaptation work. Traditional, consultant-driven plans work primarily because governments expect to spend a large portion of their budget on roads and bridges. The culture simply doesn't exist, even in the most progressive of American cities, to spend more than an infinitesimal amount of a local government's annual budget on mitigating climate change. While traditional plans don't need to anticipate political roadblocks and get creative about funding, climate plans do.

Most local government planning also has vastly different overall goals than climate planning. Making a transportation master plan functions as a prioritized wishlist; providing available funding to the projects in

priority order results in an improvement to the overall transportation system as roads are eventually built or expanded and older infrastructure is replaced.

Thinking of climate planning in this way when there isn't a sufficient funding stream results in tackling projects with lower impact, lower complexity, and lower non-staff cost first, leading to a rapid depletion of existing staff capacity. This, in turn, generates poor results and a vicious cycle of lackluster progress leading to reduced enthusiasm for further investment.

Too, partial results on a transportation plan still result in concrete, tangible benefits for residents. But partial results on a climate plan result in falling further behind on the race to net-zero and likely subpar outcomes. A road widened for five miles instead of the 25-mile planned length still results in better traffic flow for those five miles. Mitigating just a fifth of global emissions results in a catastrophic increase in the amount of wildfires that will occur in the Western US nearly identical to what would happen if we did nothing at all.²³

More importantly, though, the traditional consulting-driven plan doesn't work for climate because it is fundamentally unsuited to the type of work that climate mitigation requires. Traditional local government plans are about building capacity, whether it's increased road capacity, a higher number of affordable housing units, or the revitalization of a downtown business district. Climate planning must be about *reducing* capacity: our capacity to consume fossil fuels and produce greenhouse gases.

The traditional consulting-driven plan doesn't work for climate because it is fundamentally unsuited to the type of work that climate mitigation requires.

²³ [Climate Change 2021 - The Physical Science Basis: Summary for Policymakers](#). Intergovernmental Panel on Climate Change. August 7, 2021.

Municipalities need to create a fourth bucket of planning: a dynamic planning paradigm which is more flexible, conscious of limited resources, and updated using data on an ongoing basis.

We need to approach mitigating climate change differently. Plans don't work without resource commitment, so we need to make plans that identify available funding and staff, accurately forecast what resources initial implementation and maintenance will need, and suggest where that money can be sourced. Plans don't work without flexibility, so instead of a paradigm where we hire consultants to make a plan, click print, then disappear, we should create a system that fosters ongoing, dynamic planning that is regularly reviewed and can be altered as new circumstances arise. Plans don't work when they are merely aspirational, so we should put the force of appropriation and direction into the plans, rather than simply viewing them as a wishlist. And plans don't work when they set up a chain reaction of failure, so we need to have plans that are robust enough to withstand failure and still meet ambitious targets.

With these changes, we can overcome the broader planning and motivation problems that plague local government climate action. On the one hand, scientists and activists have made an excellent case demonstrating what the problem is and why it's important to address. This is why we've seen a proliferation of cities creating climate plans and joining various initiatives pledging to make reduction a priority. On the other hand, politicians and the public haven't made climate action a priority, and this is largely driven by a sense of helplessness and unfamiliarity with what solutions actually work: the result is at least temporary satisfaction, even among activists, with traditional, and ultimately largely ineffectual, plans.

A FREE RESOURCE FOR YOU

The American Rescue Plan Act ("ARPA") passed in March 2021 provides substantial funding to local governments for COVID recovery.

The money can be used for five different categories of use, one of which includes climate projects in the categories of mitigation, adaptation, and resilience.

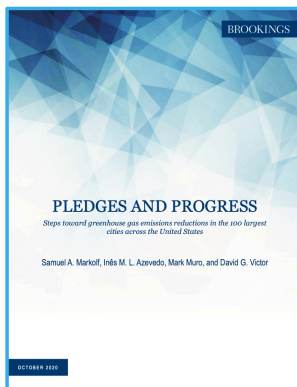
We wrote a memo to assist climate professionals and local governments in identifying eligible projects. Read it here:

GET THE MEMO

VI. WHAT OTHERS ARE SAYING

Two reports over the past year offer different views on local climate planning. This report should be considered in context with other discussions, and together we can build a better planning paradigm.

We are not the first (nor will we be the last) to critically analyze local climate planning and its drawbacks. These reports come on the heels of two other reports that are worth mentioning in the context of our own observations.



[READ REPORT](#)

The Brookings Report

In October 2020, the Brookings Institution published *Pledges and Progress: Steps toward greenhouse gas emissions reductions in the 100 largest cities across the United States*.

They found, similar to this smaller survey, that $\frac{2}{3}$ of cities with climate pledges were falling behind their stated goals. Additionally, they noted that climate plans "leave room for improvement in terms of reach, rigor, and ambition," even identifying some of the same core failings that our own report details.

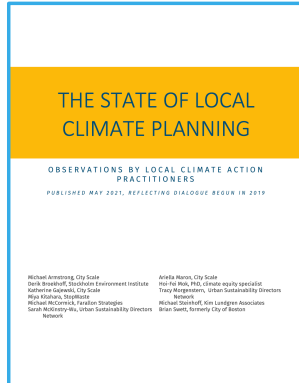
Most importantly, the Brookings report highlighted two key findings which mirror our own emphasis: (1) CAPs should do a better job of emphasizing implementation (i.e., being action-oriented) and (2) CAPs should be accompanied by better modeling to estimate the actual emissions impact of different reduction strategies.

One critique of the Brookings report is that it accepts the climate targets municipalities set for themselves at face value. While these pledges are useful and important motivational tools for each community, the Brookings report doesn't provide a peer-to-peer comparison which would standardize progress toward emissions reduction overall.

It's valuable to know, on a standardized basis, who is on track to contribute toward their share of global emissions reductions, so that we may alter course as necessary. This approach (the same one we took in this report) allows us to identify communities where climate action may be more expensive or less politically tenable and distribute

resources accordingly to ensure everyone gets across the finish line by 2050.

The City Scale Report



[READ REPORT](#)

A nonprofit called City Scale released its own report, entitled *The State of Local Climate Planning*, in May 2021, culminating 18 months of discussions among local climate practitioners regarding the planning process.

Where the Brookings study was a more data-driven analysis of whether or not cities had met their publicly stated climate pledges, City Scale's report focuses more on the reflections and perspectives of a small group of experienced, local practitioners.

The authors of the report echo our own sentiments in a few important ways:

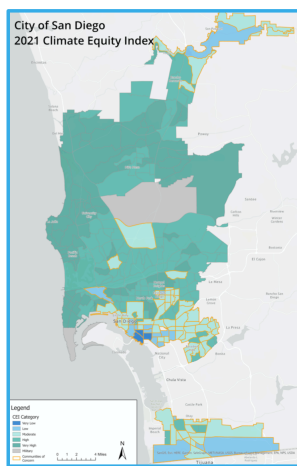
1. They point to the siloed nature of current local climate planning and its inability to simultaneously advance other policy areas. As we mentioned earlier in this report, one of the best ways to advocate for funding local climate action is to develop reduction strategies which achieve far more than just emissions reductions.
2. They recognize that local governments have had few mechanisms thus far to share collective planning experiences and “course correct” the planning process. This emphasis on governmental inertia resembles what we said earlier about the traditional, consultant-driven roots of all municipal planning and how that doesn't work as well for local climate action.
3. They share in our frustration that climate professionals are often so caught up in measurement and planning activities that they have little capacity to do actual implementation work. At the end of the day, all the measurement and planning is pointless if it leads to no actual emissions reductions in the real world.

However, the City Scale report is quite critical of GHG inventories and what they see as an obsession with data collection and measurement. While we agree that local practitioners must move beyond a paradigm where most of their time is spent on data collection and gathering rather than action, this can't be at the expense of building scientific evidence and data into our planning activities. Just as stopping production of cars, rather than gradually shifting to the production of electric vehicles, is too drastic an action, so is eliminating data and reporting of greenhouse gas emissions rather than shifting to a far less labor-intensive model of the inventory process.

As was mentioned extensively throughout our report, many of the deficiencies with the current planning paradigm lie in the lack of data

and evidence to help create accountability and transparency in the planning process. Turning further away from data, as tedious and difficult to gather it may be, will only leave practitioners further in the dark. Like the Brookings report mentions, we actually need more data to take smarter action on climate and spend the limited dollars we do have more effectively.

We'd even reckon that much of the reason GHG inventories are so frustrating for local practitioners is because they come without accompanying tools to assist in fully taking advantage of them. Without a means to model the effects of different reduction strategies, a way to perform cost-benefit analyses, and KPIs to assist with progress monitoring, inventories are like standardized tests: they're useful to check in on a student's progress, but largely pointless without a capable teacher and well-designed, research-backed lesson plans to actually achieve that progress.



A snapshot of San Diego's Climate Equity Index tool that they use to help address equity concerns in their planning processes.

Furthermore, there are countless opportunities to utilize data to persuade internal and external stakeholders to better align themselves with local climate professionals. We've already spoken about how data can convince local elected officials, but it can also drive equity outcomes too. A great example of this is San Diego, CA, which utilized a community-driven engagement process to create their [Climate Equity Index](#). Community-based organizations and other local groups assisted the City in choosing a key set of indicators regarding quality of life, climate vulnerability, and other important factors. The resulting index is then used by City staff to prioritize infrastructure investment and broader municipal planning. In this way, data can be made far less technocratic in its deployment: built by the community for the community.

VII. CONCLUSION

This isn't the last word on municipal climate planning. CivForge welcomes you to collaborate in building a new climate planning paradigm with us. Together, we can achieve a greener future.

Thank you for taking the time to read this lengthy report! We wanted to conclude by inviting you to collaborate on accelerating local climate action with us.

If anything in this report resonated with you, we encourage you to reach out and share your reactions, ideas, and feedback with us.

This report is a formalization of many problems we've observed in local climate planning over the years. Seeing the challenges that municipalities have faced in addressing climate change has been a combination of humbling, frustrating, and motivating for us. So we've been hard at work building something which we think will allow cities to better tackle climate change.

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It's called Meso, and you can learn more about it [here](#). If this type of thing excites you, we encourage you to reach out to us. We're always seeking feedback and looking for ways to better equip climate professionals with the tools they need.

Don't be a stranger; we're all in this battle together. Let us know how we can best support you.