

PLEDGES AND PROGRESS

Steps toward greenhouse gas emissions reductions in the 100 largest cities across the United States

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EXECUTIVE SUMMARY

The COVID-19 crisis has precipitated the largest decline of global greenhouse gas (GHG) emissions on record.¹ Those massive current declines are likely temporary, but they raise important questions about the trajectory of emissions as the economic crisis abates and economic activity resumes.

Plausibly, the places that were highly-committed to action on climate before the pandemic will remain committed, while places that were reluctant to put much priority in climate earlier will be even more reluctant in the midst of economic uncertainty and uncertain priorities.

Given that, it seems important to take the pulse of what the country has been actually saying and doing on climate change, especially through its local commitments to reduce emissions. That requires looking far beyond the gridlock of Washington to the nation's interior — especially to the local level.

One place to start such an assessment is to look at the nation's many Climate Action Plans (CAPs).

Since 1991, over 600 local governments in the United States have developed CAPs that include GHG inventories and reduction targets.²

These local plans — which entail a GHG emission inventory and the establishment of reduction targets, reduction strategies, and monitoring efforts — have been celebrated as an important counterpoint to federal drift.

At their best, the plans have exemplified the hope that “bottom-up” actions could add up to a powerful approach to climate mitigation, especially given rollbacks in federal policy under the Trump administration including the government's withdrawal from the Paris Agreement. Yet, at the same time, questions persist about the efficacy of city pledges. Are they working in the absence of binding national regulations? What kind of results are emerging? How far can city action go without bigger efforts at other levels, including federal? Are city goals or pledges meaningful given the share of emissions from goods and services used by the city occur outside the city boundary and that the city does not have control of?

Hence this report: Given the increasing importance of “bottom-up” action on climate, this analysis inventories the various GHG reduction pledges and commitments of the 100 largest U.S. cities; estimates the emissions savings that could result from those pledges; and then evaluates whether U.S. cities appear to be on track to meet their pledges. In this fashion, the information addresses the current array of results on the ground in order to inform ongoing discussions of the potential and limits of “bottom-up” climate strategies in the COVID era. For the sake of completeness we focus on 2017, the last year of complete records when this research began, though we are mindful that city-based action continues.³

The report draws five major conclusions about an emissions-pledge system that is generating genuine but partial climate actions:

1. Slightly less than half of large U.S. cities have established GHG reduction targets. Where the goals exist, they tend to align with the 80%-decrease-by-2050 mitigation pathway consistent with the Paris Climate Accord, but tend to fall short of the mitigation pathways that limit warming to 1.5° Celsius (C) modeled by the Intergovernmental Panel on Climate Change (IPCC) (i.e., net zero anthropogenic CO₂ emissions around year 2050).⁴

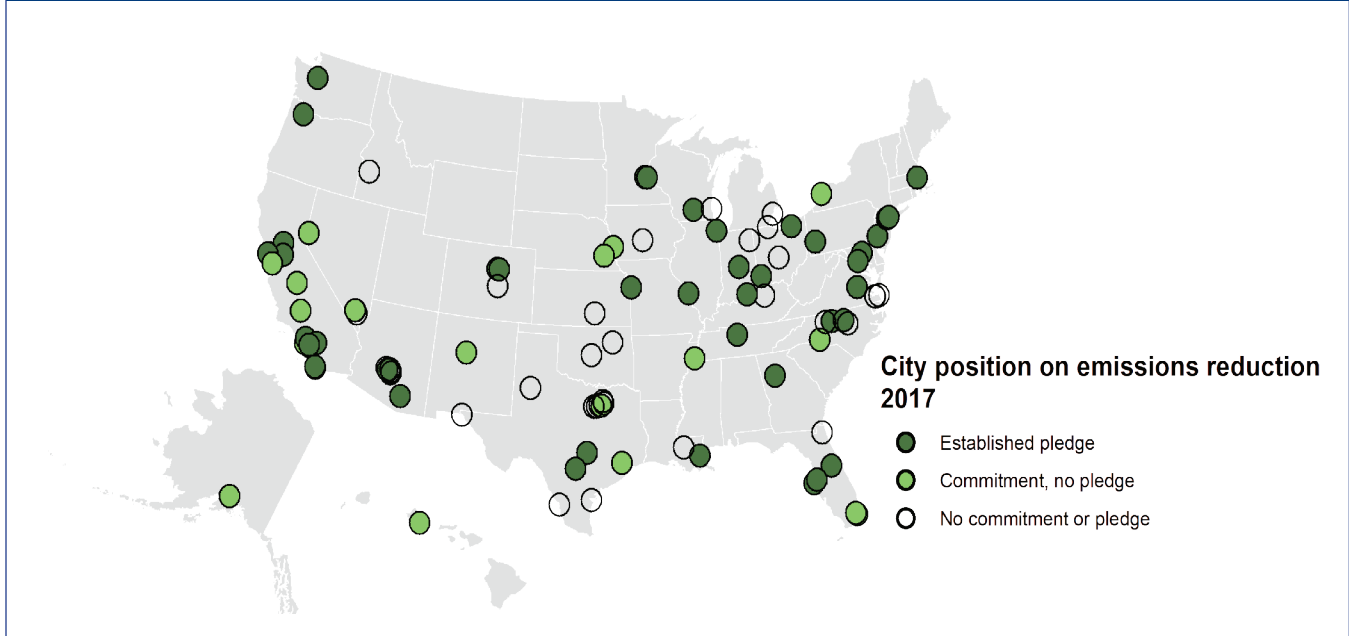
Of the 100 most populous cities in the United States, only 45 have established greenhouse gas reduction targets and corresponding baseline GHG inventories. An additional 22 cities have committed to reducing GHG emissions but have not yet established specific emission

reduction targets or completed a baseline GHG emission inventory upon which to base a reduction plan. In that sense, U.S. cities’ pledge-setting is sub-optimal in its coverage and design, with less than half of large cities setting targets, and most targets remaining non-binding.

With that said, the GHG reduction targets established by cities frequently comport with good practice in that they often target 80% GHG emissions decreases by the year 2050 — in line with the mitigation pathways modeled by the IPCC that limit warming to 2°C but slightly behind the mitigation pathways that, if scaled globally, would limit warming to 1.5°C. City-based climate commitments appear to be on the upswing. Seventeen of the 45 cities with plans have implemented new or updated plans since the Trump administration took office in January 2017.

2. Overall, roughly 40 million people (about 12% of the total U.S. population and 60% of the total population of the 100 largest U.S. cities) live in bigger cities with active and fully-formed climate action plans.

The 45 cities with fully-established greenhouse gas reduction targets and corresponding baseline GHG inventories encompass a total population of roughly 40 million people. The smallest city is Richmond, Virginia (with a 2017 population of about 227,000) and the largest is New York, New York (with 8.6 million residents). Larger cities are more likely to maintain climate plans than smaller ones. And while California is a hot spot of activity, with plans in place in 11 cities, the plans are relatively evenly-distributed across the nation.



3. Collectively, the total annual reduction in emissions achieved by the 45 cities with both targets and completed inventories (in their respective target years) would equate to approximately 365 million metric tons carbon dioxide equivalent (CO₂e).

The savings contributions from city CAPs vary widely but are adding up. In aggregate, the prospective total annual reduction in emissions achieved by all 45 cities (in their respective target years and compared to the emissions in the city's chosen baseline year) would equate to approximately 365 million metric tons CO₂e — the equivalent of removing about 79 million passenger vehicles from the road. Alternatively, the total annual emissions reduction pledged by the 45 cities with climate action plans, if achieved, would be comparable to the 300 to 450 million metric tons of emissions reductions scored in 2018 where natural gas has replaced coal for generating electricity. There are many uncertainties and assumptions that go into an analysis like this, and those can have a big impact on the calculations of long-term emission reductions. In addition to all the usual caveats, the pandemic has added another one by affecting, among other things, travel behavior—not just right now but possibly in durable ways into the future.

With that said, the collective prospective reduced emissions from the 45 cities equate to roughly 7% of the emis-

sion reductions to which the U.S. originally committed to achieve by year 2050 in relation to the Paris Agreement. What's more, the 45 cities would need to achieve an additional emissions reduction of 124 million metric tons CO₂e per year in order to meet the IPCC's modeled mitigation pathway for limiting warming to 1.5° C (i.e., net-zero anthropogenic CO₂ emissions by around 2050). One additional note: The 365 million metric tons that would be reduced on an annual basis by year 2050 if all 45 cities reached their GHG reduction targets translates to roughly 6% of total U.S. GHG emissions in 2017 assuming emissions without the plans would remain the same from the baseline year to the target year. Six percent is not an insignificant number, but it is a far cry from the level of emission reductions that the IPCC suggests needs to occur in order to avoid many of the more significant impacts of climate change.

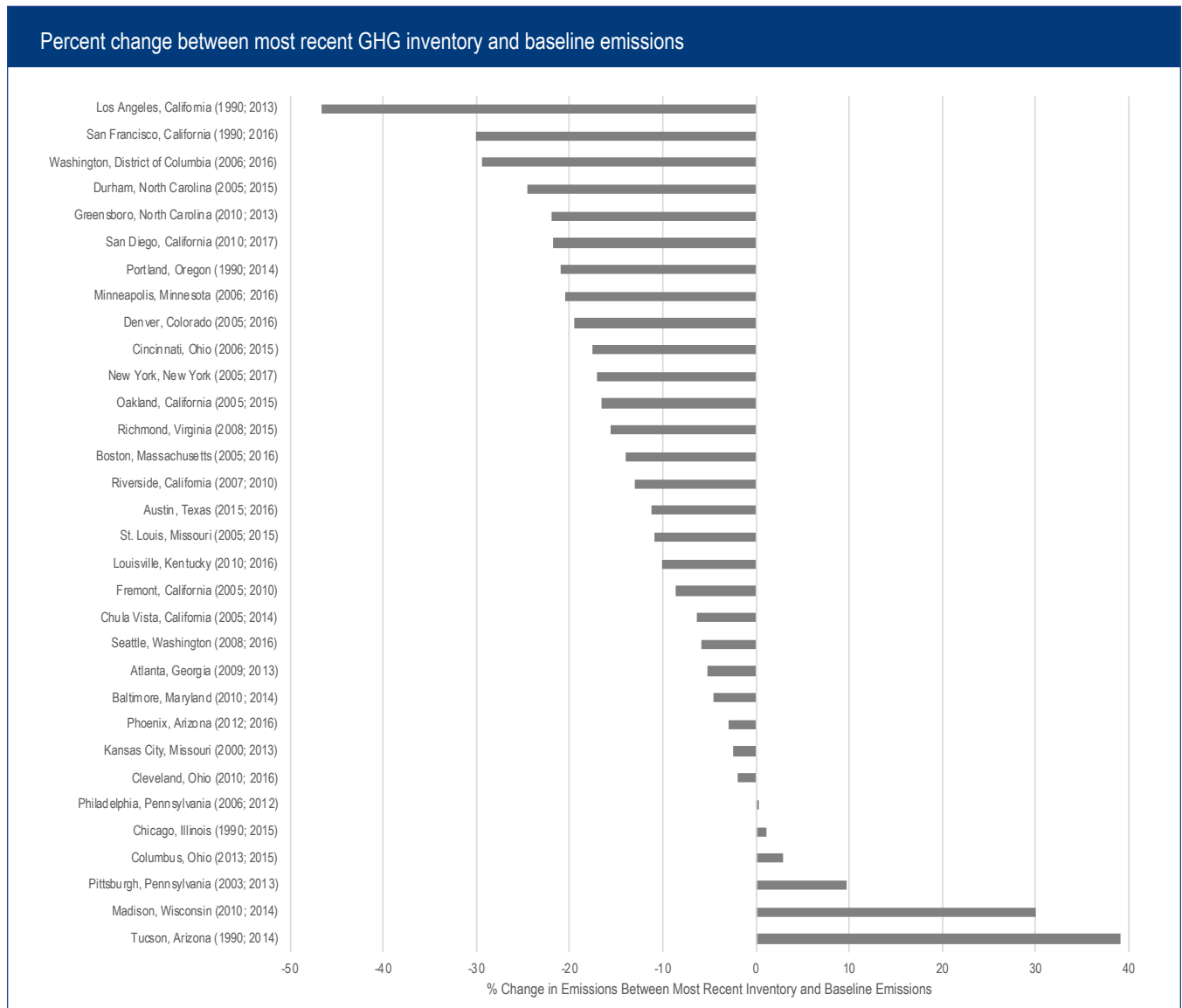
4. Despite genuine achievements in many cities, roughly two-thirds of cities are currently lagging their targeted emission levels.

Of the 45 cities with GHG reduction targets and corresponding baseline GHG inventories, 32 have conducted at least one additional GHG inventory since 2010. The remaining 13 cities do not appear to have any publicly-available GHG inventories for the years subsequent to the

establishment of their climate action plan. However, of the 13 cities without GHG inventories subsequent to setting their GHG reduction target(s), six had a baseline year of 2014 or later for their climate action plan. Therefore, GHG inventories for these locations are likely to be conducted and/or published in the near-term.

Based on their most recent GHG inventory data, 26 of the 32 cities that had at least one additional inventory since 2010 experienced a decrease in emissions compared to

their baseline emission levels, while six cities experienced an increase. Los Angeles, California has experienced the largest decrease in emissions (about 47% below 1990 baseline levels), while Tucson, Arizona has experienced the largest increase in emissions amid sprawling growth (39% above 1990 baseline levels), followed by fast-growing Madison, Wisconsin. The nearby figure summarizes the difference between the most recent GHG inventory and baseline emission levels for each city.



Note: The first number in parentheses next to the city name represents the baseline year. The second number represents the year of the most recent GHG inventory.

Overall, about two-thirds of cities are currently lagging their targeted emission levels. Greensboro, North Carolina performed the best relative to its targeted emissions level (with emissions 20% below its target) and Chicago, Illinois, performed the worst (with inventoried emissions 50% higher than target levels). On average, the cities analyzed in this study will still need to reduce their annual emissions by 64% by 2050 in order to reach their ultimate GHG reduction targets.

5. Overall, the development and implementation of city GHG plans and pledges — while important and encouraging — leaves room for improvement in terms of reach, rigor, and ambition.

Notwithstanding the early achievements of the best city GHG reduction plans and pledges, most cities' activities suffer from shortcomings. Of the 45 cities analyzed in this report, none have GHG inventories for years 2018 or 2019, and only two have GHG inventories for 2017 (an additional 10 have inventories for 2016). Similarly, the lower rate of activity among the smaller cities (only six of the climate action plans came from among the group of cities with the 76th- to 100th-largest populations) suggests the challenges that resource constraints can pose for developing GHG reduction targets and related emissions inventories. Another hindrance to the overall success of city-led climate action plans may be rooted in the fact that the GHG reduction targets set by cities are mostly non-binding, with the exception of those in California cities. That ensures that most communities have no real incentive to meet tough GHG reduction targets.

Finally, scope and boundary issues are surely hindering progress. Factors like population growth, economic development, and changes in the local industry mix are not always explicitly discussed in climate plans. Likewise, cities' boundaries usually mean their emissions plans cannot reach and influence emissions that take place at the regional scale, whether it be commuting, suburban sprawl, or regional electricity generation.

In sum, this assessment highlights the great potential of “bottom-up” climate action to reduce one nation's emissions in meaningful ways through city action.⁵ Overall, the leadership of about half of America's larger

cities stands as an important counter to federal drift. With that said, more ambitious and rigorous efforts are needed in order to make the nation's “bottom-up” climate commitments more effective. Along these lines, municipalities, states, the federal government, non-governmental organizations (NGOs), philanthropies, and companies should work to:

- **Improve the quality of pledges.** Activists, policy entrepreneurs and politicians have focused a lot on bold announcements, which have a role to play, but the pledges need to include more useful plans for how emissions will be reduced, including how those efforts will be politically sustainable. More of the political activism that is driving pledging should focus in this area. Philanthropy may have a role by helping cities get organized with mitigation planning.
- **Emphasize implementation.** Activists should put more attention here, especially if they think action by cities will help fill in the gaps and push decarbonization across the economy when Washington is failing to act. Pioneer cities should put more focus on how they are turning pledges into reality and also reveal information that makes it possible to check those claims. Several NGOs are doing detailed plan comparisons for nations, inspired by the Paris Agreement, and that laser focus on implementation reality should come to cities too.
- **Develop better models to estimate actual emissions changes.** In the end, people want to know whether city-level action really reduces emissions — below the levels that might have otherwise occurred. This kind of counterfactual analysis is always hard, but it is possible to do better than current approaches (e.g., assuming emissions trajectories will be flat) with models that disentangle the factors under control of city planners and policy makers and those that vary largely beyond local control.
- **Encourage learning.** To help convert aspiration to reality, stronger mechanisms for peer review of city plans are badly needed — so that the community of activists and planners can learn, faster, what works.

And, more importantly, the lessons from the leaders can catalyze more “followership” — so that the actions that are still concentrated in a subset of the American population become more pervasive here and abroad.

In short, many cities have distinguished themselves through their efforts to reduce their GHG emissions. Now much more stringent action has become urgent.