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Greenventory 2.0: Sustainability Lessons from Small and Midsize Legacy Cities

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Abstract

This working paper builds the policy case for why sustainability presents small-to-midsize legacy cities with a promising pathway for their regeneration. Its conceptual foundation rests at the intersection of three critical lines of analysis: existing sustainability efforts in cities, the unique challenges and opportunities of small and midsized legacy cities, and the challenges and constraints of operating and innovating in smaller cities. While researchers have examined sustainability within legacy cities, most attention has been paid to the policies, plans, and programs from large legacy cities, such as Detroit, Baltimore, Cleveland and Philadelphia. We found little research or policy analysis about the opportunities, challenges, and promising practices for sustainability within small-to-midsize legacy cities. Building on our scan of current sustainability initiatives in smaller and midsize legacy cities (Greenventory 1.0), this working paper seeks to shine a light on the opportunities, success, and challenges faced by this cohort of small-to-midsized legacy cities that are often overlooked at the intersection of legacy cities and sustainability. Our theory of change argues that green and sustainable policies, plans, programs, projects and practices can catalyze, facilitate and sustain the revitalization and regeneration of small-to-midsized legacy cities.

Keywords: Legacy cities, small cities, small legacy cities, urban sustainability, sustainability policy and planning, climate change, climate adaptation, urban greening, resilience.

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Greenventory 2.0: Sustainability Lessons from Small and Midsize Legacy Cities

Introduction

Under the rubric of sustainable development, cities throughout the world have been at the forefront of a growing movement to implement green and sustainable initiatives to tackle climate change. Recognizing that dense urban centers emit most of the planet's greenhouse gas (GHG) emissions, the movement presses for resource conservation, clean air and water, and low-carbon energy and land use practices, with the entwined goals of averting climate disaster and making their communities safe, healthy, equitable, and prosperous. Urban sustainability's three interdependent policy pillars—environment, economy, and equity—set the foundation for the sustainable communities movement. Over the past twenty years, hundreds of American cities from across the country have adopted a portfolio of sustainability plans, policies, and programs that seek to balance sustainability's three policy pillars. Many more sustainable cities seem to be larger cities and growing cities. Only a handful of former industrial "legacy" cities, however, have made sustainability a policy priority, and even fewer of them have been small or midsize.

Our *Greenventory* project seeks to understand why some smaller cities elevate and adopt sustainability as a pathway for their regeneration and why some do not or cannot. We want to explore the type, breadth, and evolution of existing sustainability plans, policies, and programs with an eye toward the shaping of a policy agenda for greening America's smaller legacy cities. Despite barriers and limitations, our project's thesis statement contends that *smaller legacy cities should and can leverage green and sustainable policies, plans, programs, practices, and projects as catalysts for their revitalization and regeneration.*

Starting in the mid-twentieth century, legacy cities underwent significant structural change. They saw a dramatic loss of industrial and manufacturing jobs and, simultaneously, the rise of sprawling suburban development and urban disinvestment. As a result, these cities suffered crushing population losses and rising poverty rates. Thanks in part to racist planning policies, such as redlining and urban renewal, as well as structural racism that is embedded in all systems and policies, communities of color disproportionately suffer from the negative socioeconomic and health impacts exacerbated by these macro-level changes. Today, many legacy cities are beset with abandoned properties, crumbling infrastructure, entrenched poverty, and environmentally contaminated sites. To address these troubles, legacy cities must do more than maintain basic services. They must devise initiatives that first stabilize foundering markets and neighborhoods before they can develop a more comprehensive regeneration strategy that builds on existing strengths and expands green business and job opportunities for existing residents—all with a reduced tax base. Smaller legacy cities labor under even greater fiscal limitations and capacity constraints, due both to their size and to the constant trends in consumer preference for big city living. These cities therefore must find creative ways of advancing sustainability initiatives, even as they are overwhelmed by other more immediate demands.

Legacy cities, from large to small, have much to gain from doing so. Green and sustainable strategies can help them restore and build upon their many assets, both natural and in the built environment, giving them a leg up in the emerging climate-focused economy. Many are situated

on fresh waterways, with access to an essential, imperiled resource, and near fertile farmland. Constructed before the automobile, legacy cities also have "good bones," with well-designed urban parkland and interconnected, walkable neighborhoods that can support large numbers of people living sustainably. Environmental restoration, remediation and redevelopment (when it makes sense) of brownfields (former industrial properties) and other physical assets is critical to spurring next-generation green economic development. Environmental justice also demands it, both as a matter of economic inclusion and improvement of health: low-income, predominately Black, residents tend to live in legacy cities' most environmentally hazardous neighborhoods, with exposure to lead paint and plumbing, exhaust fumes, toxic industry, and poorly maintained housing. In addition, repurposing abandoned buildings and vacant lots, and outfitting both commercial properties and housing with energy-efficient sealants and insulation should offer budget-boosting advantages shared by all.

Legacy cities have been behind the eight ball in the global economy for many decades, and especially since the rise of high-velocity digital innovation in the 1990s. They have long been fraught with deepening, inherited, cumulative socioeconomic, racial, and fiscal inequities. Nonetheless, many legacy cities have tried to get ahead of the green economy curve, catalyzed in part by federal government's green programs and resources, such as the Department of Housing and Urban Development's (HUD's) Sustainable Communities Initiative (2011–2015)[1] and Disaster Resilience Competition[2] along with the Energy Efficiency and Conservation Block Grant (EECBG) program[3] launched in 2009 with Great Recession stimulus funding. Some cities have persevered in these efforts, others have languished due to fiscal constraints and shifting political winds. But we now have a sustainability track record for smaller legacy cities, which are understudied in the broader urban sustainability policy literature, and that record forms the foundation for this working paper.

Our working paper rests at the intersection of three domains—urban sustainability, legacy cities, and the capacities (limitations and assets) of smaller cities. Researchers and practitioners have written about or work within two of the three domains, such as legacy city sustainability or smaller city sustainability, but few have examined the interplay among all three domains. In section one of the working paper, we focus on the domains of legacy cities and the capacities of smaller cities.

Section one outlines our overall approach to this study, which began in 2019 with a scan of current green infrastructure projects in smaller legacy cities, dubbed the *Greenventory 1.0.* Equipped with this baseline information, we conducted a series of virtual informant interviews in the spring of 2020 with practitioners and experts, to deepen our understanding of the challenges faced by those doing sustainability work on the ground. Insights from these interviews were critical to our findings, the heart of our study, that appears in section four. In the first section we also explore the always vexing question of how to define legacy cities of various sizes, geographical locations, and governance structures along with domain of smaller city capacities.

Section two provides a literature synthesis of approaches to framing urban sustainability from a variety of disciplines, theoretical perspectives, and institutional programs. We then discuss how urban sustainability intersects with the defining characteristics of legacy cities, both their assets and their challenges.

With this intersection firmly established, section three rolls out three evolutionary stages of sustainable development initiatives in legacy cities. First generation initiatives typically focus on core environmental programs and services, such as recycling, waste and water treatment, and extend to include brownfields redevelopment. Second generation initiatives often start to address more contemporary sustainability issues, such as climate mitigation, energy conservation, or food insecurity, through GHG inventories and the greening of comprehensive land use plans and zoning and building codes. The creation of a sustainability coordinator or office of sustainability (within local government or outside as a nonprofit) can serve as the anchor and focal point for implementation and expansion of many second generation sustainability efforts. Third generation initiatives remain a work in progress, but seem to take more holistic approaches by blending policies around resilience, climate, and equity/racial justice. They also seek to scale second generation pilots around green jobs, industries, and businesses. Note that local governments, nonprofits, community based organizations, and private sector alliances and cooperatives often work across sectors and across all three generations of sustainability initiatives.

This three-part evolutionary framework sets up the discussion of our interview findings and analysis in section four, which pays particular attention to the difficulty smaller-city civic leaders and their partners face in progressing through the three stages of sustainable development initiatives. Their insights into why these troubles persist and how they might be addressed are invaluable, original contributions to this working paper. Our sustainability insights from the field of small and midsize legacy cities include:

1) Smaller legacy cities must navigate through the challenges of limited capacity, institutional inertia and policy scale;

2) Consistent public commitment and investments in sustainability by local political leadership is essential to support the continuous evolution of sustainability initiatives;

3) Universities, philanthropy, and nonprofits can help fill capacity gaps;

4) State and regional policies, resources, and technical assistance play pivotal roles in the evolution of smaller legacy city sustainability;

5) Learning networks facilitate coordinated regional and local sustainability actions; and

6) Underlying racial and socioeconomic inequities remain difficult for legacy city sustainability initiatives to prioritize and address.

Finally, section five points explicitly toward the future. Drawing from data and analysis in the preceding chapters, it outlines a policy and program agenda for greening America's smaller legacy cities. Over the coming year, we will fill out this outline with more interviews, updated data, and policy tracking to produce a final, fleshed-out policy vision report.

It is our firm conviction that small-to-midsize legacy cities can become leaders in a newer, greener economy, with their own niche contributions to mitigating and adapting to climate

change. All they need is the right policy structure and supportive partners to unleash their potential as equal members of the urban sustainability global network.

Section One: Parameters for Understanding Smaller Legacy Cities

This section establishes the foundation for understanding the context of legacy cities and how their history and struggles shape their strategies and policy pathways for green and sustainable regeneration. It explores some of the recent analysis about legacy cities and defines key concepts and characteristics of small cities and legacy cities. We start by outlining our research approach and parameters for the *Greenventory* project and this working paper and conclude with a discussion of both the assets and limitations of small city capacities.

Our Approach: Initial Research and New Intersecting Domains

In 2019, we undertook a scan of relevant web sites, policy reports, and articles to better understand the landscape of sustainability initiatives going on in small-to-mid sized legacy cities. Specifically, we wanted to explore: 1) the range of local green/sustainability efforts (the seven policy domains categories listed below); 2) the type of activity—policies, plans, programs, projects, and practices, or what we call the 5Ps; and 3) the types of entities, primarily local governments and nonprofits, leading these activities. Our *Greenventory 1.0* report focused on 43 legacy cities where we identified more than 100 policies, plans, programs, and projects. that touched one or more of the following seven policy areas:

- **Green and/or blue infrastructure**: Programs that seek to reclaim or remediate vacant properties by adding green space (for example, community gardens), make physical improvements to existing greenspace (for example, tree planting), stabilizing vacant lots through urban greening treatments, improving water quality/water resources (for example, along riverways), or addressing brownfields.

- **Climate change and/or energy use**: Policies and programs that seek to mitigate or adapt to changing climatic conditions by, among other things, reducing energy use, reducing GHGs, or switching to more sustainable energy sources. Examples include climate action plans, policies that encourage the development of Leadership in Energy and Environmental Design (LEED) certified buildings, or projects that add solar panels to municipal buildings.

- **Green economy and jobs**: Policies that support the development of "green" jobs or create an environment that fosters growth among industries considered "green."

- **Solid waste or recycling**: Policies that seek to reduce the amount of solid waste generated by households or to facilitate more recycling.

- **Food policy**: Policies and plans, often adopted by regional or city food policy councils, that seek to improve the community food systems and/or increase access to nutritious, healthy foods. These actions include specific initiatives (for example, ordinances, health

communications, education and outreach, incubators, etc.) that bring healthy foods to underserved communities along with relevant "farm to table" programs that work with local and regional farmers.

- **Transportation**: Programs and policies that seek to create greater access to multi-model, forms of green transportation (for example, hybrid, hydrogen or electric buses, bikes, city fleets, etc.), more sustainable infrastructure (complete streets) and more transportation choices.

- **City operations and capacity**: Bodies or agencies that are designed to improve the operation of sustainability programs or coordinate sustainability programs citywide.

About three-fourths of cities in our scan included some type of green or sustainable programming. Green and blue infrastructure activities were the most common activities, followed by climate change and energy-use programs. The actions taken by cities were remarkably diverse in terms of both size and potential impact, policy area, and duration. For a complete copy of *Greenventory* 1.0, please visit the Vacant Property Research Network's website.[4]

Although *Greenventory* 1.0 gave us a glimpse into what small and midsize legacy cities were doing or have done with respect to our seven primary policy areas, it did not provide us with a complete picture of how they are doing it, why are they doing it, what barriers prevent them from doing more, and what support mechanisms and strategies would they need to expand and sustain their work. Building on the initial *Greenventory 1.0* scan, the following list of questions helped us establish the research parameters for this project (*Greenventory 2.0*) and for the interviews (see Appendix A: Focus Group Protocol):

1. How does the city's size affect how seriously the community partners (for example, local government, nonprofits, and community partners) take sustainability?

2. What role does political leadership (primarily state and local) and policy entrepreneurship play in influencing (or not) the adoption and implementation of a community's sustainability efforts?

3. What roles do community-based organizations (CBOs), institutions (for example, local foundations and universities), and local nonprofits play in the adoption and implementation of sustainability efforts?

4. What roles do state and regional governments or entities play?

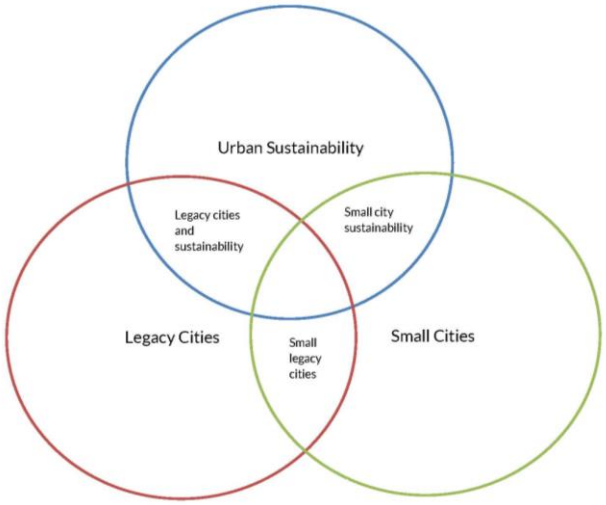
5. Are there policies, programs, or plans that try to address the distinctive challenges confronting smaller legacy cities (for example, vacant lot greening, local food marketing and security, severe neighborhood segregation and inequitable exposure to air and water pollution)? Have green jobs and businesses been prominent (or not) in their sustainability efforts?

6. Are there current learning networks where small-to-midsize legacy cities can talk to each other, problem solve, and share model practices?

By asking these questions of both our interviewees and the existing literature, we seek not only to expand our knowledge of what sustainability programs are under way in small-to-midsize legacy cities, but also to identify the challenges they face, how they are (or aren't) addressing those challenges, and how to support their sustainability efforts moving forward. Rather than focus only on factors that make greening policies more likely to get off the ground, this analysis also explores how implemented policies can become more effective. Central to this project is our thesis, that *smaller legacy cities can leverage green and sustainable policies, plans, programs, practices and projects as catalysts for their revitalization and regeneration*.

As mentioned above, conceptually, this project brings together research in three domains: urban sustainability (or sustainable communities), legacy cities, and the capacities (limitations and assets) within smaller cities (see figure 1). Previous work has united any two of these three domains. At this point, many people have studied sustainable communities, and a few have explored sustainability in legacy cities. Others have examined sustainability in smaller cities of all backgrounds,[5] or researched the challenges and opportunities found in smaller legacy cities. But only a handful of writers have woven together all three, and to our knowledge just one has completed a book on the subject.[6]

Figure 1: Three Domains



Schilling and Velasco, 2020

We believe that policymakers and researchers should take this critical intersection very seriously, since smaller legacy cities play an important role in many state and regional economies, are home to millions of people, and have the natural resources and built environment necessary to fostering a low-carbon, green economy that can serve as a pathway for resilient regeneration—both for their residents and for worldwide efforts to tackle climate change.

The Dimensions of Legacy Cities: Size, Location, History, and Governance

Legacy cities across the nation share a few predominate characteristics. Generally, they are former manufacturing powerhouses located mainly in the Midwest, mid-Atlantic, and New England states, and to a lesser extent the South. Home to corporate headquarters, global transportation nodes, large assembly plants, and/or parts suppliers, they once served as regional economic centers feeding both local and national prosperity, and historically employed millions of immigrants and Black and white migrants from rural areas, particularly the South. Beginning in the 1920s, with the Northeastern textile industry, and ramping up into heavy industry in 1950s, they began losing their industrial economic strength to the South and then overseas. With outsourcing and federally supported mid-century white suburbanization policy, these cities lost jobs, population, and a robust tax base. Today, all legacy cities have lost at least 20 percent and as much as 60 percent of their populations from their peak, leaving poor, predominantly Black and Latinx residents to languish in deteriorating, emptied neighborhoods with high unemployment and minimal fiscal capacity to support schools, services, and infrastructure maintenance.

Defining Large Legacy Cities

The similarities among legacy cities, though substantial and harrowing, end there, however. As it turns out, population size matters. Large legacy cities, first of all, are relatively easy to define, which makes them easier to study using current data-gathering tools. Both the US Census and the United Nations (UN) Department of Economic and Social Affairs put the large-city population floor at 500,000. Secondly, large cities are endowed with much more civic and economic infrastructure, such as wealthy philanthropies, corporate and trade association headquarters, large anchor institutions (universities, medical centers, museums and other arts organizations), and national sports teams. They also carry more political clout in state legislatures and in the US Congress. Fourth, as the Brookings Institute has found, a key factor in legacy city regeneration during the age of digital innovation is scale.[7] Finally, and perhaps relatedly, young adults and empty nesters have been avid participants in the 21st century urban revival, preferring to live in large, amenity-rich cities rather than in smaller urban centers.[8]

Defining Small and Midsize Legacy Cities

It is much trickier to determine size parameters for small towns, small cities, and midsize cities.

For example, the U.S. Census does distinguish between Metropolitan Statistical Areas (with at least one urban cluster of 50,000 or more population) and Micropolitan Statistical Areas (with at least one urban cluster with a 10,000 population but no larger than 50,000), but this does little for our exploration of smaller cities' sustainability policies as it does not capture important insights and comparisons among local governments of various smaller urban scales. Moreover, since legacy cities have lost significant population—as much as 60 percent—the 500,000 threshold between large and midsize cities is not terribly useful. For example, at its peak in 1950, Buffalo was a large, prosperous industrial city of 580,000; today, it has a population of 255,000, so it has the legacy built environment of a large city with a much-reduced midsize population. So how does one arrive at an upper-limit threshold for midsize legacy cities, especially in the era of

gigantic multi-million-population global cities? Students of small and midsize legacy cities routinely wrestle with these methodological problems and arrive at their own working definitions or research question workarounds. Their efforts to do so, along with their rich analyses, have helped us to craft our own.

A 2019 Brookings Institution report, led by Alan Berube, defines "legacy communities" as those anchored by cities of between 20,000 and 200,000 population.[9] The Federal Reserve Banks of Atlanta, Boston, Chicago, and New York, with The Funders' Network for Smart Growth, considered those with populations between 50,000 and 250,000, which most would view as more midsize.[10] For the purposes of their seminal 2013 Lincoln Institute of Land Policy analysis, Alan Mallach and Lavea Brachman also confined themselves to cities with populations of at least 50,000, which enabled them to compare smaller cities like Youngstown (61,000 in 2019) and midsized cities like Syracuse (145,000 in 2019) with still-large cities like Detroit (670,000 in 2019) and Baltimore (593,000 in 2019).[11] And in a 2017 Lincoln Institute report, Torey Hollingsworth and Alison Goebel examine small and midsize cities with 30,000 to 200,000 residents, though like most of their peers, they do not identify a strong dividing line between small and midsize.[12]

Our preliminary study of smaller legacy cities suggested, however, that demarcating small and midsize populations would likely be critical to our analysis. In fact, research by others, notably those by Berube and Hollingsworth and Geobel, indicate that small cities have had a tougher time gaining regenerative traction than midsize ones. Further, large legacy cities such as Detroit and Philadelphia outperform both on economic prosperity indices. Further, they suggest that the difference lies in their comparatively reduced capacity, from local government staffing levels to smaller anchor institutions, business partners, and downtown districts.

Given the focus of this working paper, the extent and efficacy of sustainable programming in small and midsize legacy cities, it seemed that capacity differentials would likely play a major role in our findings. To arrive at our population groupings, we relied on the common categories used by practitioners involved with two local government associations (the National League of Cities and the International City/County Management Association), who organize their training, technical assistance, research, and policy advocacy around clusters of similar-size cities. In addition to working with large cities, they target small cities and towns in the range of 10,000 to 50,000 (sometimes even smaller populations), and medium-size cities in the range of 75,000 to 200,000. Building on these categorizations, we established the population parameters for this work paper: 1) **small cities** with populations of between 20,000 and 75,000; and 2) **medium-sized cities** in the range of 75,000 to 250,000. Following our research of the literature and our interviews, we also examined cities slightly smaller and larger than that covered by our population parameters.

Distinguishing Characteristics of Small-to-Midsize Legacy Cities

Small-to-midsize legacy cities share many characteristics with their larger peers, and many of the challenges and opportunities present in larger cities are present in smaller ones. However, small-to-midsize legacy cities also face unique challenges that lay at the intersection of their identity as both legacy cities and small cities. For example, while many larger legacy cities have had major

job loss, they often still retain the headquarters of Fortune 500 companies or are home to major research universities. Smaller legacy cities, on the other hand, are much less likely to have those assets to build upon. Our research found that smaller legacy cities often have limited municipal capacity to implement new programs. In many smaller cities, there may be only be one or two individuals tasked with developing and coordinating green and sustainable initiatives, and they often have other job responsibilities. Note that our comparative analysis here initially relies on the literature and work of those who researchers and practitioners that helped design and develop the legacy city framework.

Despite the limitations, small-to-midsize cities still play a crucial role in their regional and state economies, particularly in states in the Midwest and Northeast. For example, in Ohio, one-third of the state's population lives in and around these cities, generating about a third of the state's economic output. Small-to-midsize legacy cities also have many strong assets upon which to build sustainable, livable communities. Similar to their larger peers, small-to-midsize cities have an abundance of low-cost housing and low-cost land in dense, walkable communities with historic buildings. These neighborhoods afford a high quality of life with easy access to a range of amenities.

Below we outline three additional characteristics that shape the historical inheritance and prospects of small-to-midsize legacy cities. These qualities also frame our research, interviews, and analysis for this working paper and our overall *Greenventory* project. In addition to population size, they too influence the capacity and resources small and midsize legacy cities have at their disposal to adopt and implement sustainability plans, policies, programs, practices, and projects.

- **Metropolitan Context and Regional Proximity:** The economic, political, and geographic context of the metropolitan region can exert great influence on the communities within and adjacent to its boundaries. Metropolitan economic growth and distress play a positive or negative role in the short-term health and long-term trajectory of the core cities within their region. A 2017 report by the Manhattan Institute situates and compares several important demographic and economic indicators (population loss, employment, gross domestic product (GDP), educational achievement, and cost of fixed municipal services) at the county level as part of its composition of distressed or stagnating cities index with a special focus on what it will take to turn around stagnating metropolitan economies. This report contends that repairing the economic health of the region is the only pathway to effectively regenerating smaller legacy cities.[13]

  Geographic proximity of smaller legacy cities to each other and within a region(s) can also influence city trajectory and deployment of broader economic policies and programs. For example, while these legacy cities still have challenges, the upstate New York midsize legacy cities from Syracuse and Rochester to Buffalo have benefited in some ways from their proximity to each other and from the relative strength of their economic regions compared with, say, a more isolated smaller legacy city such as Youngstown, Ohio.

- **A Continuum of Urban Types:** Another relevant characteristic that frames what a city can accomplish is its urban type. Within the urban planning field, the trajectory, evolution, and development patterns of cities are influenced by their spatial location, history, governance, and land use policies and regulations, among other factors.[14] Metropolitan regions typically contain a mix of cities, from core cities with traditional downtowns or main streets to smaller towns and townships with various suburban and exurban jurisdictions. Although these settlements range dramatically in population size, they create practical frameworks that can help us better understand what might facilitate or impede efforts for advancing sustainable development within these different types of legacy cities. Our continuum includes central cities, inner-ring suburbs, exurban municipalities, towns, and rural townships. Some central cities are the seat of county government and therefore have formal jurisdictional ties to towns both nearby and distant. As such, they tend to have their own development patterns consisting of a central business district linked to professional service jobs, retail, commerce, and relationship networks. Suburban cities also have their own typology that include first suburbs often built during the early 1900s along street car lines from some of the nation's largest cities along with 1970s–1990s exurban suburban cities that were built on undeveloped lands far from these central cities thanks in part to land use policies that facilitated sprawl. Thus, the populations can range dramatically from several hundred or a few thousand for inner ring burbs to the "boomburbs" with several hundred thousand.[15] As country's suburban population continues out pace rural and urban populations,[16] the suburbs will become the battleground for sustainability, especially climate and energy mitigation and adaption.

- **Intergovernmental Dynamics, Municipal Powers and Forms of Government:** The legal structure of local governments and the range of powers they are granted by state constitutions and state statutes can shape the municipalities' ability to adopt and implement local sustainability initiatives. Certainly, federal government agencies and regulations play important roles when it comes to environmental, housing, and transportation infrastructure programs and policies. Sometimes local governments benefits from federal resources and agency actions (such as HUD's challenge grants from the 2011–2015 Sustainable Communities Initiative or the Department of Transportation's [DOT's] sustainable transportation TIGER grants), while in other cases the local governments must also ensure their operations comply with federal rules. For example, many legacy cities are the subject of federal and state environmental litigation (for example, consent decrees) that require costly infrastructure upgrades to their antiquated stormwater and sewer systems.

  Local government relationships with their state government can also be fraught with conflict. Under the tenets of municipal law, local governments derive their existence from state constitution and/or state statutes. Some states give local governments almost sovereign authority to act under the legal concept of Home Rule. A handful of states follow a more traditional model (known as Dillon's Rule) that imposes strict limits on local government powers, as they must be expressly granted by the state government. Other states fall somewhere in between Home Rule and Dillon's Rule. Under the legal doctrine of preemption, if a local government ordinance, program, or policy exceeds their

express powers or conflicts with state powers, a court would likely invalidate the ordinance or policy.

Within the sustainability field, state agencies and state powers can preempt local government policies sand laws, especially in the fields of environmental regulations, solid waste management/recycling and energy generation. On the other hand, state policies can require or incentivize local development initiatives. Massachusetts, for example, subsidizes development in locally designated Smart Growth districts, with zoning ordinances requiring dense residential or mixed-use development with a high percentage of affordable housing units. California's Transformative Climate Communities grant program offers grants and technical assistance to help struggling cities adapt their built environments, so they are more climate resistant.[17]

As this discussion illustrates, small legacy cities have to navigate a complex policy ecosystem as they leverage their unique assets for revitalizing their neighborhoods and regenerating their communities. Any policy initiative or programmatic interventions they attempt must adapted to these structural barriers, systemic limitations, and the legacy of socioeconomic and racial disparities that come from decades of neglect, decline, and disinvestment.

Smaller City Capacities

The second domain that intersects and influences smaller legacy cities is capacity. Within the field of public policy and the practices of public administration, local governments have a range of approaches and models to document, track, and assess their capacity to adopt, administer, implement and measure the impact of their interventions. Much depends on the range of policy and programs goals that drive the assessment, such as improving efficiency or effectiveness, expanding partnerships and networks, and engaging or empowering community residents. Although performance measures and management systems have become more common for some standard municipal services,[18] they can be difficult to adapt and apply to sustainability related policy goals and objectives along with other built environment interventions.

A common approach for measuring capacity is by tracking staffing allocation (full-time equivalents [FTEs] by function) and program budgets per capita over time. Although one would assume more resources and more staff would lead to more capacity that can provide more services, these additional resources and staff may not generate the desired outcomes and achieve the stated policy goals. And of course, more municipalities and their partners, often with support from foundations, commission consultants to evaluate the impacts and range of potential outcomes from their interventions. Beyond the personnel tallies within and across municipal service delivery programs, local governments and their partners should also consider their level of experience, expertise, and track records. A smaller city might have fewer staff, but they may have staff designing and leading creative and innovative strategies that maximize their performance and efforts.

Within the broader sustainability field dozens of cities have adopted different types of sustainability indicators and organizations, such as the US Green Building Council, have

established standards for the green performance of buildings and neighborhoods,[19] but they do not always include or seem as relevant for smaller cities who may only have sufficient staff to get policies, plans, and programs launched and not dedicated resources to track performance and outcomes over time.

A 2017 climate adaptation planning report by the Adaptation Clearinghouse offers insights in the capacities that local governments need in moving their climate action plans into implementation.[20] With support from the Summit Foundation, the research team completed a content analysis of 30 climate adaption plans (six were from large non-U.S. cities) and interviewed 24 practitioners to better understand the implementation roadblocks and opportunities for action. While having a plan is a good start, for cities have to move beyond temporary capacities, they must continuously develop and expand ongoing proficiencies, partnerships and resources. Too often, the energy and momentum decline or stop once plans are adopted. The report also acknowledged that equity must be central to effective climate adaption by engaging and empowering vulnerable populations in the planning process and beyond. As more cities develop adaptation plans, the uncertain work turns towards implementing those plans. Challenges to implementation include: a lack of urgency, reluctant to diminish ongoing land and economic development, unclear authority, capital or fiscal constrictions, lack of metrics, and potential for unequal application and treatment of climate change to vulnerable communities. In response to these challenges, the report offers seven essential capacities for urban adaption that can more broadly apply to the implementation of any sustainability policy, plan or program:

- Scientific Foundation
- Communications
- Equitable Adaptation
- Inclusive Community Engagement
- Intergovernmental alignment
- Technical Design
- Financial Resources.

As we discuss later in this working paper, sustainability plans of all types represent affirmative expressions of a community's policy goals and priorities. If done right, the public process of developing and adopting the plan can also forge partnerships and elevate sustainability (often climate) as a pressing policy priority. The challenge for cities, especially smaller legacy cities, is implementing the plan. For example, recent content analysis of the famous Youngstown 2010 right sizing comprehensive land use plan ranked the effort high on ambition but low on execution.[21]

In considering these essential local government capacities, the critical context for advancing sustainability in smaller legacy cities is their capacity to change systems, transform outdated organizational cultures, and cultivate innovative leadership and management. Sustainability is not currently the status quo or priority for most smaller cities, let alone smaller legacy cities. The practice of innovating within local government is all about changing the status quo to address complex problems and to put in place policies, programs and practices that can more readily adapt to rapid changes within the world, the country, the community, and neighborhoods. Innovating in smaller legacy cities, however, is more problematic given their unstable fiscal

health and structural problems providing essential municipal services. Policy innovations, such as sustainability, happen in different waves or stages. Thus, it becomes important to create the right climate that enable innovations to gain a foothold within smaller legacy cities so that leaders and managers can enable staff and their partners to examine, explore and identify the right balance and mix of sustainability interventions (5Ps) that will work for their community and address the underlying socioeconomic problems unique to smaller legacy cities.

Section Two: Urban Sustainability

Below is a detailed discussion of our remaining domain—urban sustainability. In this section, we explore the multiple dimensions and frameworks of urban sustainability to help build the conceptual foundation and make the policy case for why smaller legacy cities should and can adapt and recalibrate these frameworks to address their challenges and leverage their assets. Our analysis below covers contemporary concepts and terms related to urban climate mitigation, climate adaptation and resilience, environmental justice, and equitable development. It also relies on a synthesis of the academic, policy, and practice literature that spans sustainability and legacy cities covering. Given the breadth and depth of the articles and insights, we could not cover all of the articles or explore all of the potential connections. Our discussion covers articles and reports from the fields of urban planning, policy, public administration, public health, geography, and environmental studies.

Urban sustainability is valuable in its own right as a means of reversing the damage inflicted on all communities through decades of environmental neglect, ruthless winner-take-all economics, and deeply ingrained, structural socioeconomic and racial inequities. Climate change, however, ups the ante, shaping the various forms sustainability should take in all types of communities—urban, suburban, and rural. Climate changes brings greater urgency and new integrative opportunities for sustainable community development. Moreover, since international and federal governance has not taken sufficient lead on climate change in a timely manner, it has fallen to urban leadership, across the globe and within the U.S., to take the initiative in mitigating GHG emissions and adapting to climate change.

As a fairly new concept, urban sustainability can trace its roots reaching back to the early 19th-century Garden City movement. Today, in the aftermath of the suburban experiment, urban sustainability places much greater stress on reinvesting in cities, restoring urban density and advancing racial equity. Sustainable communities reframe and readjust the distribution of resources, opportunities, and services for present and future residents along sustainability's three pillars of environmental protection, economic development, and equity promotion.[22] Modifying older forms of conservationist environmentalism that sought to protect "nature" from the resource demands of urban life, the newer urban sustainability lens urges planners and policymakers to bring critical perspectives to the histories of metro-urban land use and resource allocation, and to the entanglements of nature in the built environment, urban food systems, economic development, and public health.[23]

Sustainable Communities Frameworks: Putting the Three Pillars into Action
As the concept of sustainable development evolved and was applied at the local level, researchers, policymakers and practitioners adapted its core principles and concepts into practical policy frameworks that policymakers, government managers/staff, nonprofit leaders, and advocates use to design, develop, and implement sustainability policies, plans, programs, etc. within their communities. Ecocity is one such framework that offers a blend of urban design and planning with environmental and natural resource conservation goals. It arose in 1975 from the Berkeley nonprofit Urban Ecology, which now manages an extensive international network of dedicated Ecocity Builders.[24] The biophilic framework[25] and its designated cohort of communities incorporates into ecocity planning an emphasis on landscape and open space design, environmental management, community engagement, and public health. Mark Roseland's Sustainable Community Development[26] framework seeks to operationalize sustainability through a series of strategies and tactics within the context of community development, while the 2017 multi-authored *Guide to Greening Cities* offers practical advice from the frontline experiences of local government sustainability officers and leaders.[27] Other integrating frameworks focus on one type of intervention or one sustainability policy area. For example, LEED for Cities and Communities is a certification process for building and infrastructure standards that local governments can apply to citywide and neighborhood plans.[28] Ecodistricts establish sustainability principles, strategies, and standards for small geographies at the district level, and often pilot new technologies for later application to larger geographies.[29]

Urban Climate Mitigation

Climate change mitigation efforts have two primary goals: 1) To reduce GHG emissions and dependence on fossil fuels through low-carbon energy development and energy-efficient practices; and 2) to sequester carbon through green and blue carbon sinks, facilitating soil health, and other means. The policies adopted by cities to achieve these goals vary widely. However, as over 70 percent of the world's cities are currently facing the effects of climate change and nearly all are at risk, common strategies and sectors have emerged. Global urban mitigation efforts generally fall into five sectors: energy use, transportation, waste management, water and wastewater recycling, and green infrastructure.

Urban climate mitigation depends on local assessment and action, and it is critical that federal and global bodies delegate revenue and authority to city leaders. As there is a more direct line of communication between residents and city government officials, mayors and planners are often nimbler and more accountable to a population's needs than state, federal, or global governing bodies.[30] The regional variations in climate change impacts necessitates an iterative urban sustainability platform lead by adaptive, responsive officials. As sustainability relates to the built environment, this is especially true.[31]

Despite structural and bureaucratic challenges, cities have claimed self-governance and alignment with many sustainability efforts, including mitigation measures. The C40 Cities Climate Leadership Group and US Conference of Mayors offer international and national platforms for sharing and adapting local climate and energy policies and emerging practices. Larger and more visible cities and their leaders tend to dominate these and other local government networks. Over the years, professional associations, such as the National League of

Cities,[32] the National Association of County Officials,[33] and the International City/County Management Association,[34] have sponsored peer learning activities (including webinars and learning cohorts) on sustainability that often involve local officials from smaller cities and towns. Regional networks such as the Sustainable States Network,[35] Climate Mayors,[36] and the Lehigh Valley Sustainability Network[37] are devoted to climate change and other sustainability issues, and also provide local policymakers, city/county officials and staff, and nonprofit organizations with opportunities not only for peer learning, but also for coordination of sustainability actions and policies across smaller cities and towns. Securing tangible action on sustainability policy, and particularly the technical demands of mitigation efforts, requires cooperation not just between scales of governance, but also among sectors. The private and nonprofit spheres can act as either ally or adversary in these objectives, and many exist as resources and tools for city governments to expand capacity.

Urban Climate Adaptation and Resilience

Due to decades of inaction on mitigation, climate change is bearing down on the planet with ever-increasing intensity. The 100 Resilient Cities initiative defines urban resilience as "the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience."[38] The challenges faced by 21st century cities are rapidly shifting. From the impacts of environmental degradation to natural disasters and pandemics, a resilience framework is necessary to help cities prepare, adapt, and transform their systems to meet manifold climate challenges. Elevating all three sustainability pillars should drive holistic city resilience.

An urban resilience framework stresses the interdependence of systemic benefits and risks. Chronic stresses such as unemployment; lack of efficient, accessible transportation; and food insecurity weaken cities, and make it harder to bounce back from acute shocks such as natural disasters and public health crises. While some legacy city leaders view sustainability objectives as accessory considerations, urban resiliency literature asserts that sustainability success is instead integrated into the holistic health and development of cities and cannot be separated from other economic and social goals. The City Resilience Framework (CRF), developed by the Rockefeller Foundation, in partnership with the Arup engineering and architectural firm, identifies four essential resilience systems: health and well-being, economy and society, infrastructure and environment, and leadership and strategy.[39] Each is composed of four "drivers" that operationalize these systems.

- **Health and well-being:** meet basic needs, support livelihoods and employment, ensure public health services

- **Economy and society:** promote cohesive and engaged communities, ensure social stability, security, and justice, foster economic prosperity

- **Infrastructure and environment:** provide and enhance protective natural and man-made assets, ensure continuity of critical service, provide reliable communication and mobility

- **Leadership and strategy:** promote leadership and effective management, empower a broad range of stakeholders, foster long-term and integrated planning

While small-to-mid sized legacy cities are not usual partners in these global resilience initiatives (as they often focus on large urban centers), the priorities identified by such initiatives are essential for localities of all scales to consider. Moving forward, a "whole community" approach to resilience can be helpful as the focus on community assets (built, natural, and social) rather than vulnerabilities is seen to help leaders broaden their disaster planning thinking to include strengthening existing assets and supplementing areas where assets are inequitably distributed.[40] [41] Importantly, whole community resilience often begins with an inventory of a community's built, natural, and social assets and uses these opportunities, rather than vulnerabilities, to engage stakeholders in planning.[42]

Cities are also experimenting with different implementation styles, and are paying note to the ways that policy implementation strategies influence resistance to or acceptance of resilience.[43] Organizations such as PUSH Buffalo[44] in western New York, for example, advance objectives of sustainable economic and environmental justice through resident-centered programs that aim to create strong neighborhoods with high-quality affordable housing, and access to living wage jobs and high-quality education, healthcare, and transportation. By centering resilience, legacy cities of all sizes can become better suited to weather future crises, both acute and chronic, that stand to compound existing socioeconomic inequities.

COVID-19—The Intersection of Climate Change and Resilience

The COVID-19 pandemic massively disrupted (and continues to disrupt) social and economic systems in the US, and the disparate impacts of the virus are clearly rooted in social determinants of health. Higher rates of cases and mortalities in the US have been reported in Black, Indigenous, and people of color (POC) communities.[45] Compared to predominately white communities, these communities are also more likely to be home to "essential" workers with lower incomes, weaker personal safety nets, housing insecurity, and physical health susceptibilities due to the impacts of chronic stress, lower rates of healthcare coverage, medical racism, and the public health impacts of environmental racism.[46] Additionally, the communities that are more acutely experiencing the impacts of housing and economic distress due to COVID-19, including job-loss and inability to pay rent, are largely low-income communities of color.

Many experts, including the UN Secretary General,[47] posit that the COVID-19 pandemic is a sort of "resilience test run" for the large-scale impacts of climate change. COVID-19, similar to climate change, has disrupted cities and their communities in both the short-term, with immediate deaths and health risks, and in the long-term, with unemployment and projected macroeconomic downturn. As a result, building in resiliency acknowledges the focus on structural challenges—racism, economic disparities, social inequities, among others—embedded in city systems. Indeed, the same structural issues that exacerbate vulnerability to the coronavirus often characterize frontline climate change communities.

The dramatic impact of COVID-19 on U.S. cities demonstrates that most are not prepared for impending crises and underlines the urgent need for resilience frameworks that respond to a range of acute and chronic concerns. In our stakeholder interviews, some of our legacy city

partners shared that the economic impact of the pandemic has raised the potential of budget cuts to already underfunded sustainability programs. In some cities, this means that development and adoption of key mitigation and resilience strategies such as GHG inventories and climate adaptation plans have been delayed. While addressing climate change via sustainability is sidelined by some decision makers as a less urgent area of policy and practice for smaller legacy cities, we offer that resiliency requires in-depth overhauls of economic, social, and public health norms in order to create holistically resilient communities. This same action is necessary for equitable pandemic response, and encourages long-term economic health. As such, our insights from stakeholders on the ground make it clear that state and local government should not cut or postpone climate resilience efforts. Instead, the public sector should maximize the opportunity for bold, structural change inspired by the difficult lessons of the COVID-19 pandemic by infusing infrastructural and institutional improvements into climate adaptation and resilience strategies and plans.

The Intersection of Sustainability with Legacy Cities

In the United States, 1 in 8 people live in a legacy city. In states such as Pennsylvania and Ohio, as many as 1 in 3 reside in a legacy city.[48] City governance plays a key role in contextualizing equitable, environmentally conscious, economically viable development. Through much of the twentieth century, America's legacy cities were a primary focal point for not only manufacturing and heavy industry, but also retail and professional services. This trajectory began to change in the 1960s and 1970s as these cities lost jobs and, subsequently, population. The declining economic and population base left many legacy cities with diminished tax bases and corresponding capacity restrictions, entrenched poverty, and large swaths of vacant resident, commercial, and industrial properties. As a result, legacy cities face a host of structural challenges that limit their ability to adopt and implement new initiatives. These challenges include the following:[49]

- **Declining population:** Since their population peak, legacy cities have lost between 20 and 60 percent of their population. For large cities, such as Philadelphia, this translates to over 500,000 people. Smaller legacy cities were also hit hard by this shift. For example, Gary, Indiana lost 100,000 people, which is over half of its peak population. Though some cities have managed to stem the loss in population, other cities have continued on this trajectory. In a study of legacy city population trends, City University of New York (CUNY) researchers found that 67 percent of cities studied continued to lose population between 2000 and 2010.[50] The continued downward trajectory of the population in legacy cities is devastating for a number of reasons, but also limits city capacity because fewer residents means less economic activity, less jobs, and less money collected in local taxes Local government must still provide essential services and as costs to provide those services increase it squeezes city programs and staff to do more with less.

- **Suburbanization:** An analysis by the Brookings Institution found that between 1982 and 1997, the amount of urbanized land in the U.S. increased by 47 percent, but the population only grew by 17 percent.[51] This phenomenon is particularly hard on legacy cites, where suburbanization without growth is intensified by urban unemployment and poverty. In central and western regions of upstate New York, for example, urbanized land

grew by 30 percent between 1982 and 1997, but the population grew by only 2.6 percent.[52] This expansion led to a 21 percent increase in the built environment and infrastructure buildout. In other words, development consumed more land, placing greater stress on both the natural environment and a tax base that now had to support infrastructure debt and expanded school, police, and emergency services.

- **Oversupply in housing reducing property values:** Because legacy cities are built to house significantly more people than they currently do, there is an oversupply in housing, which can create a downward pressure on housing values. Moreover, because the oversupply translates as large stretches of vacant and abandoned properties, it can make communities less attractive to new residents, which further depresses property values. For cities, property values are critically important because it represents a large chunk of municipal revenue.

- **Aging housing stock and weak demand:** Much of the housing inventory in legacy cities was built 50 to 100 years ago and can be even older. Without continual maintenance supported by a reasonably strong housing market, housing can fall into disrepair and may no longer be habitable. However, because many legacy cities continue to face weak demand for their housing, property owners have less incentive to invest in updating their properties. This in turn can create a cycle of disinvestment and decline.[53] Moreover, older housing is more likely to have environmental issues, including lead and asbestos.[54]

- **Decaying infrastructure:** Similar to the housing stock, much of the infrastructure (highways, plumbing, sewer, wastewater treatment) in legacy cities is aging. While this can create complications with economic development, critically, it can create environmental issues.[55] One notable example is the Flint Water Crisis, in which a switch in water supply and outdated pipes led to contaminated water being delivered to people's homes. Furthermore, as with many issues of environmental contamination, the burden fell hardest on the city's Black residents.[56]

- **Reduced employment base:** Legacy cities shed hundreds of thousands of manufacturing and other factory jobs during the period of deindustrialization.

- **Entrenched poverty:** Decades of population loss have led to entrenched poverty in nearly all legacy cities. Residents are more likely to be low-income, less likely to work, and less likely to have formal education than residents of the suburbs.

In addition to these characteristics, two other challenges require lengthier consideration: capacity limitations, which are particularly acute in smaller legacy cities, and racial inequities made more intense by the pincers of deindustrialization and suburbanization.

Environmental Justice and Equitable Development

As the Black Lives Matter movement persistently voices, structural anti-Black racism and white supremacy pervade American culture and institutions. For two key historical reasons, it is especially intractable in the so-called Rust Belt, where cities have a special charge to pursue

environmental justice. The 20th century war industries prompted many Black people in the American South to move north for employment, and entwined Black Americans in the fate of urban manufacturing centers. In legacy cities, deindustrialization overlapped discriminatory postwar housing and suburbanization policies, making the role of exclusionary zoning, redlining, urban renewal and other racist government policies central to current inequities.

Structural racism too emerges as an inextricable overlay of urban sustainability, prompting serious engagement with environmental justice scholarship and practice.[57] The rise of industrialization brought with it the negative capitalist externalities of hazardous waste and pollution that were situated in low-income communities, usually communities of color, out of sight from more affluent white populations. Environmental justice demands a critical analysis of how the government's environmental decisions about allocation, conservation, and mitigation are made for the explicit benefit of those with social and political capital.

Environmental justice also asks urban sustainability leadership to consider the ways that racial and socioeconomic inequities influence increased vulnerability to climate change impacts (for example, heat islands, water scarcity, lack of food access) and limit participation in urban greening, green economies, and green technologies. Through this lens, urban sustainability must grow to encompass affordable housing, green jobs at a living wage, civil and migrant rights, ecological revitalization, and inclusive economic development. Efforts to enhance greenspace, energy efficiency, and environmental health that do not address racial disparities in environmental hazards and access are not an expansion of sustainability but are, rather, derailed from the movement's core value of equity.[58]

Relatedly, equitable development focuses on policy levers and programs that reduce disparities and promote community well-being through place-based action.[59] Unlike other place-based approaches, equitable development is driven by an explicit focus on vulnerable groups and historically underserved populations. The field also focuses on innovative sustainable design and policy development to sustain environmental justice priorities.[60] Community leaders who align with equitable development strategies assert that to facilitate regional prosperity, all communities must have access to employment, economic opportunities, safe and affordable housing, education, transportation, and healthy built-environments.[61] By building from existing assets, networks of regionally clustered small-to-midsize legacy cities could see great success in widespread regeneration by using this frame. Richmond, California's 2016 Climate Action Plan[62] "features health equity and climate justice as important aspects of the document framework," and is a powerful example of how midsized legacy cities can adopt and implement equitable development strategies.

Perhaps most publicly, the proposed Green New Deal is one manifestation of the broader sustainability field's movement from small-scale, incremental, neutralizing efforts towards large-scale, justice-focused structural change.[63] The Green New Deal demands action on a range of policy domains—including a national shift towards zero emission and renewable energy; energy efficiency, and smart grids; redesigning transportation systems; ensuring all workers receive a living wage, as well as strengthened anti-discrimination, health and safety, and wage laws across labor sectors; and public ownership and returns on investment in Green New Deal activities. Notably, the plan also lays out the need for the United States to provide high-quality health care;

affordable, safe, and adequate housing; economic security; and access to clean water, clean air, healthy and affordable food, and nature to all residents.[64] This movement towards environmental justice serves as a critical check to eco-centric urban sustainability, reinforcing the mutual need to address the concrete ways that adversely impacting the environment in turn adversely impacts human populations.

A greening focused strategy in legacy cities has the potential to produce material benefits for communities of color, low-income communities, and other marginalized groups as these strategies can directly address the root cause of many environmental, social, and economic inequities. Unfortunately, despite decades of activism and increasingly public state involvement, many critical scholars share that the movement has not been able to broadly improve the environmental quality of impacted communities. A growing analysis of environmental justice progress in the 20 years since President Clinton's executive order on environmental justice (Executive Order 12898 of February 11, 1994) suggests that incremental policy change cannot address these concerns, and call for activists to invest in solutions beyond regulatory and judicial state action.[65]

Addressing environmental racism requires bold, structural change beyond the city level, but local action (whether within or beyond the state) is an essential component of broader goals of reparations, redressing harm, and equitable access to environmental benefits. For municipalities that do opt to engage in sustainability work, focusing programs to benefit those communities most vulnerable to environmental degradation and pollution could produce greening strategies that work to not only secure health, wellness, and new economic sectors, but also advance racial equity.

The Promise of Sustainability in Legacy Cities

Despite the difficulties faced by legacy cities, they also have many strong assets that can be built upon. Mallach and Brachman note that while most legacy cities remain on a downward economic trajectory, their past histories of economic prominence has bequeathed a legacy of assets that can be built upon.[66] For example, legacy cities have great urban form that creates a strong sense of place. Traditional downtowns, historic neighborhoods, and a network of parks and museums enhance the livability and attractiveness of those cities for current and prospective residents. Additionally, legacy cities are home to valuable institutional assets including universities that bring research grants, well-educated professionals, and a regular flow of young adults who relocate to these cities. Many legacy cities also have a strong, established network of nonprofit and neighborhood-based organizations which can supplement and augment city capacity challenges. Finally, as legacy cities' cores were built before the spread of automobiles, they are often designed to be pedestrian-friendly and support multimodal transportation. While dense transit networks have been removed from many, their prior existence in such cities presents an opportunity for return.

Building on these inherent assets, legacy cities seem uniquely positioned to adopt and implement a cohesive suite of wide-ranging sustainability initiatives that foster green and equitable economic and community development opportunities. First, they have a strong incentive to be at the forefront of green and sustainable initiatives because their industrial past has left them with

lingering environmental issues, such as brownfields and contaminated waterways, that require remediation for reuse.

Second, there is opportunity for efficiency gains by upgrading their outdated infrastructure to be more sustainable. For example, many cities have combined water systems that degrade water quality by mixing sewer and rainwater during periods of intense storms. Upgrading these sewer systems can improve water quality in nearby bodies of water, such as the Great Lakes, which are critical economic engines for their neighboring regions.

Third, sustainability can be a catalyst for more inclusive and equitable economic growth and attracting new residents. Legacy cities can compete with other metropolitan areas by leveraging their physical and natural assets. Neighborhoods with an abundance of parks, trees, and good air and water quality can be highly attractive to new residents who bring with them new businesses. Moreover, sustainability can be linked to an overall economic development strategy. In Detroit, for example, land is being repurposed to support urban farming and residents are being retrained in green economy jobs.[67] Another good example of this is the planning and coordination advanced by Sustainable Cleveland, a 10-year initiative to reposition the city as a vibrant, livable urban center with public amenities and thriving businesses. Each year between 2009 and 2019, the city emphasized a different environmental theme and coordinated local action in support of that theme.[68]

Fourth, large numbers of people—nearly 17 million—live in a legacy city, generating over $430 billion in economic activity.[69] Baltimore, Detroit, and Philadelphia still boast hundreds of thousands of residents and anchor vitally important regional economies. In states such as Pennsylvania and Ohio, many residents still reside in *smaller* legacy cities. In Ohio, for example, a third of the population lives within a legacy city or the surrounding region.[70] This means that implementing sustainability initiatives has the potential to benefit millions of people, and to allow those millions to reduce their environmental impact by living more sustainably. Low-carbon economic development measures can also boost the state economy.

Small, Gritty, and Green

The bottom line is that smaller legacy cities have a lot of assets and potential. In her 2012 book, *Small, Gritty, and Green: The Promise of America's Smaller Industrial Cities in a Low-Carbon World*, Tumber explore the sustainability promise of American's smaller industrial cities.[71] Her argument rests on the compelling narratives she captured from local leaders, entrepreneurs, and green community organizations about their ideas and drive to leverage different sustainability strategies to revitalize and regenerate a loose network of smaller legacy cities scattered across the northeast and Midwest. She contends that small scale urbanism can be a virtue in a low carbon future. Smaller industrial cities, she points out, have greater population density even in their diminished state. These cities also have highly productive land within their municipal boundaries or nearby, that can be used to re-localizing agricultural or developing wind and solar farms among other activities. Additionally, these cities have a workforce that can be retooled for producing renewable technologies. Tumber acknowledges the importance of regional dynamics and their influence over these cities as poor land use decisions and sprawl developments accelerated their decline and demise. Thus, sound regional planning and development decisions could remedy these past mistakes and help point smaller legacy cities in the green direction.

When her book was published in 2012, the national sustainability policy scene seemed to have great potential to adopt policies and programs, tied to Great Recession stimulus funding, that could reduce fossil-fuel use and launch a low-carbon, green energy future. While we made early progress, shifting political winds seems to have put a pause on the low-carbon future Tumber envisioned, despite overwhelming scientific evidence that climate change impacts are growing more intense.

Section Three: The Evolutionary Stages of Legacy City Sustainability

Despite its promise for legacy city regeneration, sustainability remains a challenge for many legacy cities. Only a handful of legacy cities have been capable of putting in place a suite of sustainability policies, plans, programs, projects and practices—the 5Ps (see below). Most of these first wave, green legacy cities such as Cleveland, Pittsburgh, Philadelphia, and Detroit were able to align strong political leadership, external grants, and the capacity and expertise of innovative nonprofits. During the Nutter Administration (2008–2016), the city of Philadelphia's impressive portfolio of sustainability milestones included the creation of the Mayor's Office of Sustainability[72] along with adoption of Greenworks[73] (the city's first sustainability plan) and the water department's award winning green infrastructure plan, Green City, Clean Waters.[74] Many of these green elements were later infused within the city's new comprehensive land use plan (2011) and zoning code (2015).

Legacy cities embark on their own sustainability pathways as they navigate the tensions inherent in elevating, activating, and balancing sustainability's three core principles of environment, equity and economy in communities with long histories to the contrary—environmental degradation, racial inequity, and economic decline and disinvestment. Each legacy city must adapt and customize sustainability frameworks and practices to address how these three core principles interact within local dynamics. As with any policy movement, the pace for launching and institutionalizing new policies and practices unfolds in different stages and depends on the interactions of many variables and actors. The receptivity of local leaders and the community at large can also shift over time, changing how the best-laid plans operate and function. Moreover, the scope and timing of policy actions by international bodies (for example, the United Nation's Agenda 21 (1992); Sustainable Development Goals (2015); and the Paris Climate Accord (2016)); along with federal and state green policies and programs (for example, the Department of Housing and Urban Development's Sustainable Communities Initiative) have greatly influenced the speed and the timing of how legacy cities progress along their respective sustainability pathways.

Legacy cities have a particularly difficult challenge of aligning sustainability's three core principles with the pressing priorities and challenges unique to the history and context of legacy cities. Sustainability alignment and balance are difficult for communities that often must address and adapt to a continuous series of chronic shocks, such as high unemployment, declining population, high poverty, racial segregation, and fiscal instability. Legacy city fiscal challenges greatly inhibit the capacity of political leaders, public officials, and in some cases civic leaders to think beyond the current crisis. Thus, designing and launching sustainability initiatives can seem

distant, abstract, and perhaps irrelevant for legacy cities, unless it can be shown to make progress on current priorities.

Based on our synthesis of the literature, the results from our scan in *Greenventory 1.0*, and our recent interviews with practitioners from local governments and nonprofits, below we discuss critical milestones and common sustainability pathways for legacy cities. While these patterns generally apply to any legacy city, we also consider how these sustainability interventions play out in smaller and midsize legacy cities. We also acknowledge that when it comes to the type of sustainability intervention or action, certainly, cities do not always follow the logical progression from policy to plan to program as opportunities arise that demand greater flexibility.

First Generation Sustainability Initiatives

"First generation" sustainability initiatives usually seem to start with someone who works to disrupt the status quo and elevate sustainability as a higher, and perhaps necessary, policy priority. This catalytic energy often comes from new leaders, maybe a new mayor or councilperson; or from the local university where sustainability is being studied, supported and nurtured; or from a regional or local nonprofit, or community-based organization. Collectively, the city and their partners can then establish the right tone and climate for adopting first generation sustainability actions, and set the stage for launching second generation sustainability plans and policies.

These early sustainability initiatives typically revolve around common or core environmental activities and services. The city may reframe, reposition and/or merge traditional environmental activities and services, such as recycling, solid waste treatment, air and water quality, and urban greening under the rubric of sustainability. In Erie, Pennsylvania, for example, the county repositioned its recycling coordinator as also its part time sustainability coordinator, with additional responsibilities across departments that address sustainability issues, such as climate action. Because city staff, nonprofit partners, and the community recognize and are familiar with many of these first generation environmental activities, a sustainability coordinator provides a common avenue for local leaders to introduce sustainability and address its three core principles. Another common first generation action is the greening of local government operations—for example, ensuring the energy efficiency of municipal buildings, car fleets, and buses, and greening and relocalizing city procurement processes.

Brownfields redevelopment represents another classic first generation sustainability program. Brownfields are vacant, abandoned, or underused commercial and industrial properties with environmental contamination, real or perceived. Virtually all legacy cities, great and small, have brownfields of varying scales and complexities, from corner commercial properties and gas stations to massive former manufacturing and steel plants. After more than 25 years of policy experience, many legacy cities are adept at leveraging longstanding US Environmental Protection Agency (EPA) and state environmental agency grants, technical assistance, and relevant cleanup rules and requirements. Moreover, the recycling of land offers opportunities to address all three of sustainability principles: removal of contamination improves the sites' air, water, and land quality (the environment); most adaptive reuse and redevelopment of old industrial buildings involves economic and/or community development benefits such as new

businesses that support the tax base and bring in new jobs; and environment justice lies at the heart of many brownfields redevelopment projects through their use subsidies in exchange for community benefit agreements.

Second Generation Sustainability Initiatives

In adopting and later implementing "second generation" sustainability initiatives**,** it seems that some level of external influence or peer learning is often necessary to generate sufficient public support and policy momentum. Sometimes, the work of national or regional organizations or professional associations may create opportunities for benchmarking or peer learning that highlight model practices based on the experiences of other cities that may or may not be legacy cities. For example, in 2005 the U.S. Conference of Mayors (USCM) established its climate action initiative that required its members to pledge their cities to meeting the original emission targets set forth in the Kyoto Protocol. These pledges resulted in hundreds of cities undertaking their first inventory of GHGs (a second generation practice). By 2007, more than 1,000 mayors had signed the USCM climate protection pledge. By taking the climate protection pledge, and then promoting it within their communities and across the nation, these mayors elevated the issue of climate change in many communities, including in several legacy cities.[75] While few, if any, U.S. cities actually met the emission targets set forth in the original Kyoto Protocol, in 2017 mayors across the U.S. started another round of pledges in response to the Trump administration's departure from the Paris Climate Accord.[76]

The Local Policy Continuum or The 5Ps

Legacy cities can adopt and implement a range of sustainability interventions that have the potential to address sustainability's three core policy principles—environmental quality, equity, sustainable economic development. Each type of action has its own characteristics and parameters that can influence the scale and scope of the interventions along with a city's implementation capacity. Local governments are often the starting point as they provide an array of relevant municipal services and deploy the policy levers that manage the sustainability ecosystem such as housing regulations, transportation programs, and zoning codes. In some communities, nonprofit intermediaries lead the intervention and/or coordinate collective impact initiatives in collaboration with local governments and other relevant stakeholders (for example, state agencies; anchor institutions (such as universities and community foundations); businesses; and community-based organizations). Note that our continuum follows the activities of these leaders and stakeholders throughout the policy process from adoption through evaluation. Below, we outline five intervention types within a local policy continuum. These offer a cohesive framework for understanding the built environment's dynamic policy ecosystem and for supporting our subsequent analysis.

1) **Public Policies** involve formal actions by governing bodies and public officials that establish goals, requirements, and regulations, and in some cases resources and funding to address past, present, or future public problems and/or community needs. At the local level, the legislative body (for example, a city or town council or county commission) may enact regulatory ordinances that are enforceable laws and/or binding policy resolutions or statements.

2) **Plans** present a formal expression of local governments' long-term policy goals and short-term policy priorities while providing their leaders, staff and communities with a blueprint for immediate and future policy action. Communities routinely go through elaborate public engagement processes and detailed data and socioeconomic analyses to adopt a wide array of master plans and comprehensive plans with elements that cover the built environment: transportation; housing; environmental; land use; natural resources; sustainability; public health; food systems. Some states consider these plans as legally binding while others consider them mere guidance. Plans may also include strategic policy plans or frameworks that may not be formally adopted.

3) **Programs** detail the local governments' staffing, resources, and activities designed to implement policies and plans. Many programs are organized and managed by different local agencies, departments, and offices that each follow their respective policies and plans. Programs can also be designed or led by local nonprofits, community-based organizations and other institutions.

4) **Projects** are established when the local government and its partners transform the policy, plan, and program into "on the ground" action, often in a specific place or space such as a neighborhood greening project or affordable housing development. Sometimes projects are pilots or demonstration projects that test a new or innovative policy, plan, or program before expanding or scaling the effort.

5) **Practices** are specific processes, forums, or tactics that become a customary approach or activity in support of implementing a policy, plan, or program. Often practice evolves from informal ways of organizing and streamlining work into more formal procedure manuals and guidebooks. In some cases, communities of practice arise from local professionals adapting and adopting similar approaches to address policy problems and priorities and then sharing them with other communities working on the same issue or problem.

Within a policy area, a community, local government, or nonprofit partner might use a combination of these approaches to address sustainability issues. For example, in determining how best to implement its current climate action plan, a local government might complete a community planning process that adopts an urban forestry master plan. By planting and preserving trees the local government intends to improve air quality, sequester carbon, provide more greenspace for resident enjoyment, and reduce urban heat island impacts—all policy goals that relate to health and the built environment. To implement the master plan, the city subsequently funds a new program and new position (urban forester) along with enacting a regulation that requires city permit approvals before cutting down trees. The city also works with several urban greening organizations that can provide outreach, education and technical assistance to the community and property owners. One of the groups then creates a practice guidebook, with city approval, for how landowners can better maintain trees on their property, what types of trees are climate tolerate, and when to seek city permits. The city's urban forester also convenes a quarterly urban greening working group comprised of other mid-level staff from multiple departments (planning, public works, police, water utilities, and so on) to better streamline their respective responsibilities under the plan, program, and ordinance.

For some legacy cities, especially the larger and midsize, the transition to "**second generation"** sustainability initiatives can happen as part of natural progression. As policymakers and staff gain experience with first generation interventions, they begin to understand and see the connections with sustainability's three policy principles, and thus recognize the need to expand the scope of their current activities. Another common catalyst is learning from peer cities that have successfully become second generation sustainability cities. A close partnership with sustainability nonprofits and/or universities can generate further community interest and support that provides external pressure for the local government to take on second generation activities. And finally, timely grants and resources from philanthropy and/or the federal and state government can provide the city, especially smaller cities, with a solid pathway to becoming a second generation city. Based on these drivers and the success of their first generation activities, second generation sustainability initiatives typically involve one or more of the following:

- **Plans and Codes:** These actions include local government stand-alone sustainability plans, sustainability elements with comprehensive land use plans, and climate action and/or energy plans.[77] Sometimes, these planning efforts are part of a regular process to update a municipal comprehensive land use plan. Other times, the local government adopts a stand-alone strategic framework plan with a sustainability focus or adopts individual elements or master plans that cover one sustainability domain, such as urban forestry plan or food security plan. Once a green plan is in place, local governments should revise their relevant zoning, building, and environmental code so they are consistent with the goals of their sustainability plan. In Pittsburgh, Pennsylvania (a larger legacy city), they produced a climate action plan focused on GHG emissions reductions, resiliency, and a 100 percent renewable energy target. In Pittsburgh, the internal lift of creating the climate action plan and GHG inventory was expedited by the city's involvement with the 100 Resilient Cities program, which provided a grant that enabled the city to double the size of the sustainability office and increase capacity. In other cities, such as Erie, Pennsylvania, county officials are currently working on climate vulnerability assessments and aim to use the analyses to create climate action plans.

- **Programs and Practices:** Looking at progress over the past decade, relatively new sustainability staff positions can be seen to transform[78] the organizational culture and structure within city hall, as well as leverage external partnerships, networks, and grants and other funding resources. Many sustainability coordinators start as part-time positions, leveraging resources and responsibilities from preexisting environmental programming. Other cities elevate the sustainability coordinator position by creating an office of sustainability with staff that seems on par with other municipal departments, however, few cities seem to have formally elevated those positions and provide independent, standalone resources.

- **Project Implementation:** Legacy cities often leverage federal and state grants and technical assistance programs in addition to grants from national and regional foundations in order to implement identified projects and programs. Examples include the U.S. EPA's Brownfields Redevelopment Grants, the one-time Energy Efficiency Community Development Block Grant (CDBG), U.S. Department of Transportation's Tiger Grants and the Regional Planning and Challenges grants (2011–2015) offered as

part of HUD's Sustainable Communities Initiative. Additionally, organizations such as the Sustainable States Network help connect legacy cities with these state-level resources, and act as a bridge between governmental scales via technical assistance and resource aggregation.

The Urban Sustainability Directors Network

The Urban Sustainability Directors Network (USDN) works to fill a key gap in urban sustainability by connecting frontline practioners and sustainability staff with opportunities for peer learning, collaboration, and thought partnerships. Over 1,000 local government professionals are active in the Network, and they facilitate quick information exchange so that staff can capitalize on available resources and opportunities. USDN members can also access grant programs including the USDN Innovation Fund, the Peer Learning Exchange grant program, and the Partners for Place grant program to scale project innovations. USDN's collaborative funding model, which has granted more than $8.8 million to more than 200 innovative projects and programs, has also supported the creation of network resources such as the "Guide to Greening Cities,"[79] and "A Guidebook on Equitable Clean Energy Program Design for Local Governments and Partners"[80] guidebooks.

Third Generation Sustainability Initiatives

Few legacy cities have fully adopted or implemented the "third generation" of sustainability initiatives. Successful regeneration of legacy cities will depend on this transformation to third generation, but only a handful of larger legacy cities (Pittsburgh, Cleveland, Detroit, Philadelphia, and Baltimore) seem to have the capacity and political will to continue moving in this direction. For our *Greenventory* project, it was difficult to find smaller legacy cities at this developmental stage.

From the lessons and insights we found through our *Greenventory* project, we identify three primary policy goals or priorities that illustrate the third generation of sustainability's 5Ps: 1) ensuring climate change policies and plans infuse and embed adaptive resilience principles and practices; 2) elevating racial and environmental justice actions throughout all sustainability interventions; and 3) supporting the meaningful development of green business, green jobs through the lens of equitable development. Third generation sustainability also involves expanding first and second generation 5Ps along with putting in place more formal and "adaptive" systems that can carry sustainability forward across political, economic, and fiscal changes. Another sign are more permanent and long lasting shifts in organizational cultures within city hall and in regional or local businesses and industry alliances.

- Climate Change and Adaptive Resilience: This suite of interventions will be critical for legacy cities, especially smaller cities that have strong histories of community resilience that could expand the engagement with communities and magnify the impact of climate and resilience initiatives. Although a larger legacy city, Pittsburgh's efforts provides some insights. In 2014, Pittsburgh was selected to participate in the Rockefeller Foundation's prestigious 100 Resilient Cities program that enabled city officials and staff to combine/blend their sustainability and resilience programming under one roof and begin to make policy and programs connections between sustainability and resilience.

- Green Jobs and Businesses: One of the missing links for many legacy cities is an ability to transform the regional and local economic base into green industries, businesses, and jobs. Larger legacy cities with relatively stable regional and local economic growth and development (for example, Philadelphia and Pittsburgh) seem able to attract and cultivate preliminary levels of green industries and businesses, such as alternative energy (for example, solar) manufacturing and installation or green infrastructure development and maintenance. Yet, smaller legacy cities in weaker economic regions already have trouble maintaining or attracting new industries and jobs let along ensuring or requiring they be green business and jobs. Without deliberate federal and state economic resources and policy support for green industries and jobs, it will be hard for smaller legacy cities to meet this third generation benchmark.

- Racial and Environmental Justice: Providence, Rhode Island's 2019 Climate Justice Plan,[81] and Richmond, Virginia's *RVAgreen 2050* Climate Action and Resilience Plan[82] are examples of concrete moves into the "third generation" from two midsize legacy cities. As of September 2020. Richmond is about half way through a robust community driven planning process with the goal of adopting *RVAgreen* in midyear 2021. Richmond's sustainability office leveraged the success of the Providence plan in framing the content and process for *RVAgreen.* Providence that offers a strong "third generation" model for small-to-midsized legacy cities to emulate. The Providence plan opens with a powerful acknowledgement of how anti-Black racism formed the capitalist economy of the city, beginning with labor by enslaved people, and it formally recognizes that the land now called Providence was stolen from Indigenous communities. It then connects these two forms of colonial violence with the postindustrial, contaminated landscape that disproportionately impacts communities of color in the city. From an environmental justice framing, these recognitions of racial capitalism and Indigenous genocide are essential, and provide a baseline for the city to redress harm. Throughout the document, Providence centers environmental justice frontline communities, and makes equitable development a core tenant of all intended action—an equity intensification that is a key component of third generation sustainability initiatives.

  The Providence plan also acknowledges that "changing light bulbs is not going to solve the climate crisis," and urges moving from reliance on individual environmental actions to climate initiatives that "fundamentally transform the energy system that fuels [the] economy." So far, this conviction is mainly aspirational. But in pursuing collaborative governance, equitable housing access, community health, regenerative economies, and clean energy and transportation, among other domains, the Providence plan centers racial equity solutions, many of them community-based, and illustrates the interconnectedness of resilient city systems.

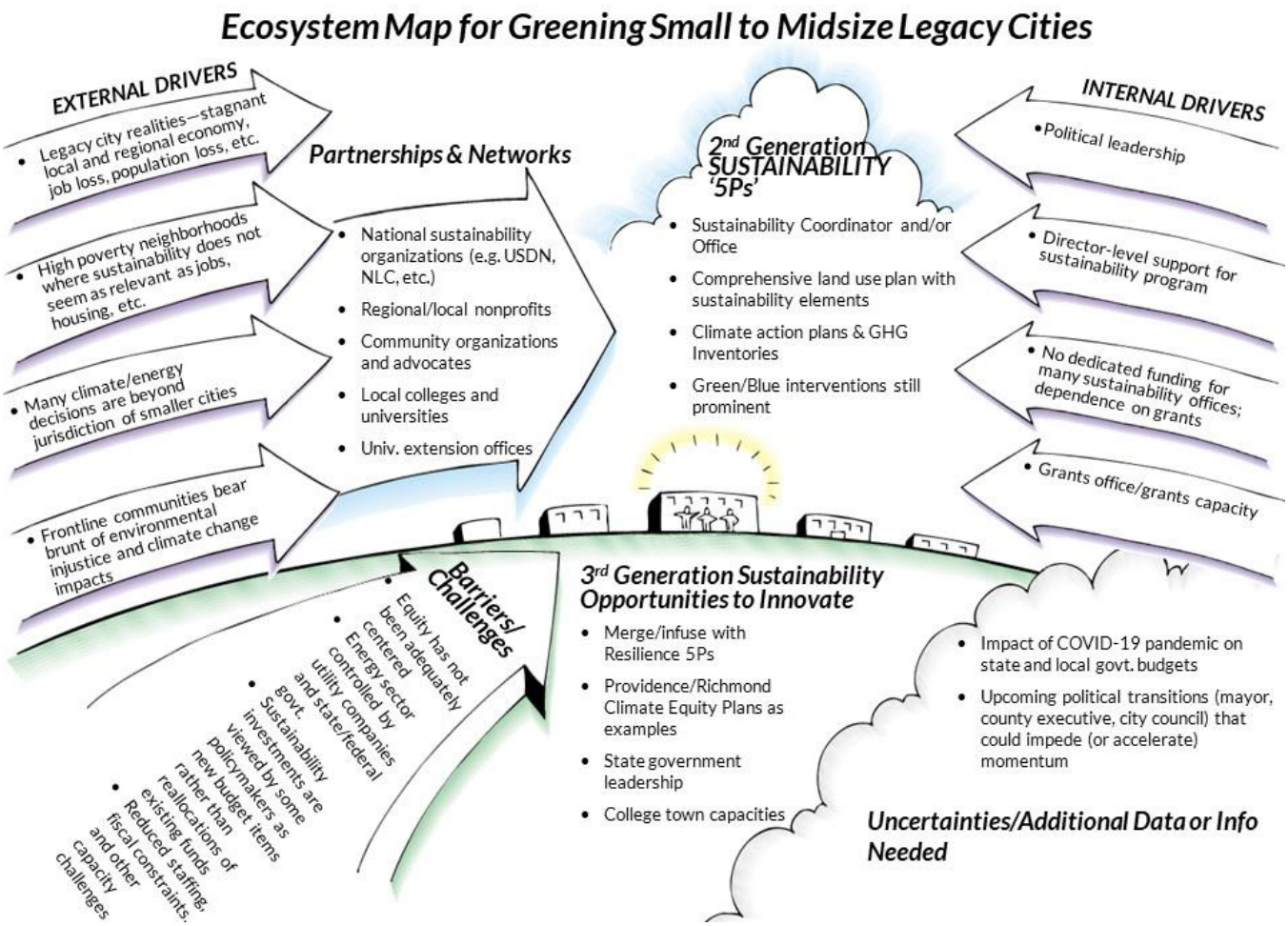
Section Four: Insights from the Field in Small and Midsize Legacy Cities

For this next section we return to our project thesis statement, that *smaller legacy cities can leverage green and sustainable policies, plans, programs, practices and projects as catalysts for*

their revitalization and regeneration. Our research guided us toward insights that helped support our thesis statement and begin to answer the questions we posed at the beginning of this report. Our analysis in this section relies heavily on the valuable insights and experience from the participants in our virtual focus groups. Below we discuss some of the challenges they confront and also some of the strategies and tactics they are using to navigate around those barriers and keep their organizations and residents on the path to a more sustainable, vibrant, and healthy community. COVID-19 made it difficult for them and for us to speak with more local government officials and their partners (and to conduct interviews in person). But we were able to find answers most of our research questions, though perhaps not in as much depth or breadth as we would like, and to generate new questions for future inquiry. Please see Appendix B: Virtual Focus Groups for a list of participating cities and organizations.

As a way to better understand all of the factors that impact and influence the ability of smaller legacy cities to become greener and more prosperous, inclusive, and equitable, we developed a simple ecosystem map (figure 2) that captures many of the insights and observations gleaned from our research, interviews, and analysis. The map focuses on a critical juncture in the evolution of smaller legacy city sustainability initiatives when they evolve and expand from second to third generation sustainability interventions (the 5Ps). Certainly, many of the drivers, partnerships, barriers and challenges at play here are also at play when cities launch first generation initiatives, but most of our interviews and research found examples from smaller legacy cities that were first generation cities moving to second generation or solid second generation cities.

Figure 2: Ecosystem Map



Schilling and Velasco, 2020

As the map shows, both external and internal drivers can either facilitate or prevent change within the local government or the broader community in smaller legacy cities. Common external drivers include macroeconomic and market conditions (for example, for smaller legacy cities that could include long standing job and population loss, high poverty, fiscal instability, etc.) along with current conditions among residents and the physical places they live. Internal drivers are those factors within local government that can impact the pace and trajectory of sustainability changes in smaller legacy cities. Our ecosystem map also captures the pivotal role that networks, and partnerships play in supporting legacy city sustainability. Similar to aspects of a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, the bottom sections of the map represent the wide range of barriers and uncertainties that can inhibit policy innovations and systems change as well as the positive opportunities for making change. Below, we recount in more detail the persistent themes and insights uncovered in our virtual interviews and focus groups.

Smaller legacy cities must navigate through the challenges of limited capacity, institutional inertia, and policy scale

Across our conversations with stakeholders, the size of the city presents a series of challenges. Smaller cities typically have less government capacity and fewer resources for staff. Our interviewees also noted a relationship between city size and the number and complexity of sustainability programs. For example, larger cities, even midsized cities such as Richmond, Virginia or Providence, Rhode Island have designated sustainability offices that enable them to lead cross agency sustainability efforts. Smaller municipalities, such as Erie County, Pennsylvania and the City of Erie, did not have dedicated resources for a sustainability office, and thus it takes more time for part time sustainability staff to launch and then manage the current or future sustainability programs.

Institutional inertia is also a key challenge facing sustainability programming. For example, many legacy cities' water plans were developed in the 1970s in the aftermath of the Clean Water Act, and have been only sparingly changed since. When considering legacy infrastructure, redoing plans is a major lift and thus leaves these cities with "zombie" projects from decades past. Additionally, in some legacy cities such as Erie, Pennsylvania, sustainability coordinator/management positions were originally waste management or public works jobs. While leaders in the city saw a need to broaden the scope of the position to capture environmental sustainability, the origins of the position in waste management skews the distribution of responsibilities and limits many from expanding into other policy and programmatic realms. As such, environmental action is often reactive rather than proactive and guided by existing policies, programs, and regulations.

Some sustainability issues, namely transportation, energy sourcing, and energy use, normally lie outside the jurisdiction of cities and are instead the responsibility of counties, regional bodies, and states. Moves to renewable energy and energy efficiency are key concerns for climate change impact, but are more effectively handled at larger scales of governance. Many sustainability professionals in legacy cities expressed support for reform in this domain, but ultimately chose not to center resources on energy sustainability for this reason. Cities often don't have control over utility investment in renewables, and struggle to push for change without unified cross-regional effort. However, some offered that resources and stipends to incentivize business and household efficiency could be useful at the municipal level. In New Jersey, state leaders are focused on helping local governments take advantage of subsidies offered by energy utilities. These subsidies are made possible by state policy.

Community networks are seen to influence the adoption of green policies in target cities, and those with smaller populations can actually facilitate more robust relationships between sustainability professionals, central city staff, and community advocates. These tightknit, community-involved networks can make it easier for leaders to pave meaningful, forward-looking, coordinated local action. For cities that fall into the midsize population range, the scale of community sustainability action often shifts to the neighborhood level (rather than to the municipality as a whole). Low-income and low-capacity municipalities can have trouble building and later nurturing these community networks as they have to devote more attention to even the most basic level of municipal services. Strong volunteer and community capacity with social

norms committed to environmental and neighborhood advocacy can supplement reduced staff capacity, driving action forward.

Consistent public commitment and investments by local political leadership is essential to support continuous evolution of sustainability initiatives

As discussed in our earlier analysis and synthesis, different fields, levels of government, and professional/nonprofit organizations may use different sustainability frameworks that focus on a particular sustainability policy area, such as green buildings or climate mitigation or sustainability plans. These somewhat competing frameworks produce competing priorities and present a major challenge to unified community action. While some cities rely on an ecocentric form of sustainability that elevates natural resource conservation, holistic equity and justice-centered sustainability initiatives often mobilize around issues of disproportionate pollution exposure, decreased access to environmental benefits, and other issues important to the environmental justice movement. Economic development and public health, when centered in equity, can be a powerful motivator for broadening community support for sustainability.

Environmental sustainability actions can vary within and among national party affiliations and their local chapters. For example, the existence of and attention towards climate change represent perhaps the most divisive sustainability policy issues within the country as the Republican and Democratic party positions occupy opposite sides of the continuum. Such increasing politicization of climate change and other related sustainability issues makes it difficult even for local officials to take actions that might be inconsistent with their respective parties' positions. However, many of our interviewees report that conservative politicians in their cities appear to be less tied to party environmental platforms and receptive to pragmatic local action, a promising entry point for broadening support. In fact, in some legacy city communities, the current presidential administration's actions to repeal previous environmental policies around climate change policy are what framed the issue as an urgent concern for cities of all sizes and types. The Trump administration's impact has motivated some cities such as Pittsburgh to rally around an equity-focused lens, recognizing the increased vulnerability of minority populations. Pennsylvanian stakeholders we interviewed reported an uptick in climate work since the 2016 election thanks in part to growing public sentiment about the federal government lack of motivation and action to address climate change or support climate mitigation and adaption policies, programs, and regulations. For example, the 2008 Pennsylvania Climate Change Act requires the state Department of Environmental Protection to compile an annual inventory of GHG emissions. While this data collection is at the state level, organizations such as Sustainable Pittsburgh are working to extract and translate GHG inventories for municipalities' use in climate action plans.

Sustainability success is seen to be greatly influenced by political leadership. In legacy cities, there is often a struggle with gaining traction, cultivating community buy-in, and communicating linkages between environmental sustainability and socioeconomic issues. This divide has led many leaders in small-to-midsize legacy cities to craft sustainability language that emphasizes chronic socioeconomic stressors and decenters ecology, as these stressors are often perceived as more acute and urgent than natural disasters, ecological degradation, and climate change. They are also widely and immediately shared. Importantly in our interviews, economic and racial

inequity were identified as chronic concerns, and should be centered as such in order to guide equitable action.

Additionally, state policy and politics can dramatically impact what can be done in local government. For example, Pennsylvania currently has a Democratic governor and a Republican legislature, and is positioned at the center of the energy market on the East Coast. To generalize policy action, the Republican-led legislature in Pennsylvania has had little interest in pushing for renewable energy as this would require an undoing and reframing of the fossil-fuel-based energy market. The state's renewable energy portfolio standards are due to expire, and sustainability advocates are skeptical that it will be renewed. Without state support on energy, it is difficult for local governments to access resources needed to encourage energy efficiency and clean energy investments.

As we have shown, capacity and resource stressors are pronounced in these cities. As a result, practioners in legacy cities report that climate resilience policy is often viewed not as a whole new investment rather than as a reprioritization of city funding and actions. When faced with current underfunding, it is essential that sustainability and resilience professionals use language that emphasizes that climate and sustainability plans are not new allocations but instead involve shifting existing resources.

Universities, philanthropy, and nonprofits can help fill capacity gaps

Many small-to-midsize legacy cities have significant university or college presences, which can be effective assets and partners in support of local government sustainability initiatives. Student research and internships, which are often for course credit or have stipends for students made possible through research grants, can help staff city sustainability offices and programs. Local university professors can also provide capacity through their scholarship and research on local sustainability policies and projects as well as supervise graduate student teams as part of service learning studios and/or degree capstone reports and projects. In Richmond, Virginia, the city's sustainability office works regularly with students and professors at Virginia Commonwealth University. Some universities have green teams and sustainability programs and/or institutes that can concentrate resources on hyperlocal sustainability research. The stakeholders that we spoke with from local universities and colleges in smaller legacy cities mentioned that city leaders and staff often embrace them as allies and partners in advancing the local sustainability agenda.

Several smaller legacy cities partner with and rely upon a new type of green community development corporation (CDCs). Coming out of the 1960s, part of the traditional legacy city narrative involves work by dozens of CDCs to revitalize neighborhoods, build affordable housing, and empower local residents. Several CDCs, such as Buffalo's People United for Sustainable Housing (PUSH) and Youngstown's Neighborhood Development Corporations (YNDC) have shifted their focus and have embraced sustainability and urban greening as one of the primary strategies for revitalizing some of their cities distressed neighborhoods. Along similar lines, a national sustainability intermediary, Groundwork USA, coordinates a network of 20 community development "trusts" that work at the intersection of community development, brownfields redevelopment and urban greening. Many of these affiliates operate within small to midsized legacy cities such as Lowell, Massachusetts and Yonkers, New York.

While nonprofits can help alleviate capacity stress on municipal government, tension can also arise when city governments work to increase capacity and presence in the sustainability sphere. City staff relay that sometimes nonprofits may view the city's efforts to expand and establish their sustainability program as a threat if the city and the nonprofit are getting resources from the same local foundations. Alliance-building between public and nonprofit sectors is essential to united, mutually beneficial action.

Limited municipal resources lead many cities to rely on grants from philanthropic foundations, which feed into national networks committed to joint and shifting priorities, and can greatly influence a city's own sustainability priorities. One of city interviewees explained that if the philanthropic industry is currently focused on waste reduction efforts, cities are likely to realign their focus with these objectives. Even if waste reduction may not be he communities' most pressing issue, it is embraced, reflecting a mentality that *some* level of sustainability action and investment is better than no action. Some of stakeholders we talked with noted that in their community, philanthropic institutions' priorities can often guide the trajectory of sustainability actions in these cities. Sometimes the priorities of the foundation, city government, and the community align and sometimes the foundations' investments steer the community away from issues local sustainability experts have identified, with research and evidence, as more pressing. Further, some interviewees shared that efforts to shift taxpayer dollars toward sustainability work were faced with pushback from philanthropy, which saw this move as a power shift that decreased the foundations' influence rather than gaining the partnership of an effective, if more autonomous, municipal sustainability program.

Also, our interviewees stressed that it is important to highlight the distinct role played by community organizers and advocates who work on the ground to elevate underrepresented voices, though they are sometimes colloquially lumped in with nonprofits. As many critical experts have demonstrated, nonprofits should not be equated with community movements;[83] and at their most useful they can support organizers with resources, labor, connections, and research. Across our interviews, stakeholders in both the public and nonprofit sectors spoke to the fact that community engagement is necessary for sustainability success, especially in small to midsized legacy cities where local government employees often lack necessary capacity. Fragmentation among these sectors is a barrier to unified action, and some cities are working to develop a centralized repository of priorities, issues, and projects to form partnerships that unify and leverage existing resources.

State and regional policies, resources, and technical assistance play pivotal roles in the evolution of smaller city sustainability

State and regional entities can facilitate and increase local sustainability capacity. While larger cities in our scan tended to have more capacity, smaller cities in their regions with a strong sustainability drive could overcome some of those limitations. For example, the largest regional concentration of sustainability programs in our *Greenventory 1.0* scan was in upstate New York, driven by several state policies and programs that support local green and sustainable programs. Several cities in upstate New York participated in state programs, but those cities also tended to have citywide initiatives of their own.

Funding and technical assistance from state and regional bodies has proven to be critical to many smaller legacy cities, once again reflecting their limited capacity. However, these resources can be difficult to identify and apply for, necessitating assistance from organizations such as the Sustainable States Network (described below). Even when grants are available, the application process and amount of research and effort necessary to design and develop a cross sector, multi-party sustainability proposal can overwhelm smaller cities. Thus, nonprofit and university partners may take the lead in working with the smaller city on their grant application and in some cases may become the host for the grant depending on the type of grant. Additionally, though many state agencies are explicitly tasked with coordinating with local government projects, several stakeholders expressed frustration that the state government does not always know how to work on the local level. Local coordination and knowledge—political, environmental, socioeconomic, and historical—on the part of the state is necessary for successful and sustained collaboration.

Many of our interviewees offered that a key future role for states with legacy cities will be coordinated vulnerability assessments that can inform the creation of locally appropriate climate action plans. We were not able to interview stakeholders in state government due to outreach challenges posed by COVID-19. In the next stage of this project, however, we want to explore the state role in depth and investigate this suggestion.

Learning networks facilitate coordinated regional and local sustainability actions

In our discussions, three networks emerged as highly influential for small-to-midsize legacy cities: the Sustainable States Network, cohorts facilitated by the National League of Cities, and the Urban Sustainability Directors Network Regional Partner Networks. Our interviews included leaders in the Sustainable States Network and National League of Cities. Moving forward, we aim to deepen our engagement with these entities and conduct interviews with representative partners and staff.

- **Sustainable States Network (SSN)**[84] is comprised of 13 statewide municipal sustainability certification/recognition programs across the United States that participate in the National Network of Statewide-Local Sustainability Organizations (N2S2O). Collectively, these programs provide tools, technical assistance, funding, and leadership to over 1,423 rural, suburban, and urban local governments including many small-to-midsize legacy cities.

- **The National League of Cities (NLC)**[85] Leadership in Community Resilience cohort model is a response to the 100 Resilient Cities initiative. The program targets small-to-midsize cities (though not specifically legacy cities) and seeks to adopt sustainability and resilience lessons from megacities and test what is transferrable across population and capacity scales.

- **Urban Sustainability Directors Network (USDN)**[86] Regional Partner Networks facilitate peer learning across regions in the United States and Canada. The organization provides a private online portal for members to share information and insights, and is designed for use by urban sustainability practitioners. USDN centralizes grant

applications and provides funding opportunities to partner organizations within the networks.

Underlying racial and socioeconomic inequities remain difficult for legacy city sustainability initiatives to prioritize and address

Our research for this working paper reinforces the notion that a diverse array of sustainability policies, plans, programs, practices, and projects prevail among smaller legacy cities—a chief finding of our *Greenventory* 1.0 scan. Of the legacy cities with a healthy portfolio of interventions (5Ps), most were first generation and second generation sustainability actions. We found few smaller legacy cities involved with third generation sustainability interventions such as merging climate change and resilience, tackling equity in a more systematic fashion, or moving towards green jobs and other structural economic problems found in legacy cities.

One notable activity among smaller legacy cities is their strong emphasis on green and blue infrastructure programs and projects. Several cities, such as Youngstown, found success using green and sustainable programs to directly address issues of property blight and abandonment by greening vacant lots for pocket parks, stormwater mitigation, urban agriculture and community gardening[87]—all viable strategies for addressing critical environmental and socioeconomic problems found in most smaller legacy cities. Vacant lot greening can help stabilize neighborhoods and facilitate social cohesion and collective neighborhood led revitalization. Several of these smaller legacy cities rely on powers of county land bank authorities to repurpose vacant lots for these and another green infrastructure projects. A handful of legacy cities are also working with community development intermediaries to use vacant lot greening for youth development[88] while others make it a proving ground for entry-level green jobs around stormwater management and landscape treatment and maintenance.[89] While these activities represent a good starting point, smaller legacy cities will need more support from higher levels of government to incubate new green industry and businesses that build upon the successful workforce development efforts spawned by vacant lot greening.

Conclusion: Building the Case for a Policy and Program Agenda for Greening America's Legacy Cities

Based on the insights and observations gleaned from our *Greenventory* work, many small and midsize legacy cities have made great strides in adopting and implementing a wide range of first and second generation sustainability policies, plans, programs, projects, and practices. But they cannot sustain their momentum and policy progress, nor will other smaller legacy cities embrace sustainability as a pathway for regeneration, without supplemental capacity and technical assistance from national, regional and local nonprofit organizations, universities, and institutions. "Market-based solutions" alone obviously can't address the depth and breadth of their cumulative socioeconomic challenges. Racial and economic inequality have been worsened by decades-long economic development projects and privatization policies. Smaller legacy cities confront numerous strategic, political, policy, and managerial challenges in not only making the case for sustainability, but building the necessary community momentum to move those ideas into action. Many of the successful or advanced smaller cities that we found or spoke with relied

upon their networks and partners to advance their first and even second generation sustainability interventions (for example, the 5Ps).

Legacy cities are resilient by nature, having weathered a myriad of chronic and acute socioeconomic and environmental crises. Sustainability does offer a promising pathway for their regeneration and rebirth in a climate constrained future, but they cannot get there on their own. Consistent support from higher levels of government—federal, state and regional—will not only be essential, but will require a more deliberate and mindful policy and program agenda that can comprehensively address the socioeconomic and environmental challenges unique to smaller legacy cities. Such an agenda should acknowledge and leverage these cities' numerous assets while providing the necessary policy flexibility for a cohort of diverse cities to customize their sustainability initiatives to fit regional and local dynamics. Any proposed policy agenda must further accelerate investments and interventions to slow and adapt to the rapid advance of climate change while addressing immediate global health concerns including the current COVID pandemic. As legacy cities drive towards sustainability and environmental justice, they will need guidance, support, and leadership to do the difficult work of dismantling pervasive structurally racist systems and policies found throughout all levels of government in the United States.

One of our framing questions for this project is what level of government would be best suited to design, invest, and lead a regenerative sustainability agenda for smaller legacy cities. Considering the state of the nation right now, it seems that motivated state governments, together with regional agencies and robust nonprofit intermediaries, are in the best position to act. Collective and international actions that oppose many long standing environmental policies, programs, and accords by the current federal executive administration leads us to this recommendation. Plus, the administration's consistent rejection of climate science and the dismantling of environmental and climate experience and expertise in federal agencies would not provide the necessary infrastructure to advance a sustainability agenda for smaller legacy cities.

Despite the current circumstances, we should consult the federal government's relatively recent track record of model sustainability programs and initiatives. Over the past twenty years, federal agencies promulgated and managed a portfolio of sustainability policies and programs that provided direct support and resources to local government. Among these initiatives are the Energy Efficient Block Grant Program, numerous US EPA Brownfields Redevelopment technical assistance and cleanup/assessment, along with HUD's 2009–2016 Sustainable Communities Initiative (SCI) that ran two prominent competitive grants programs: 1) regional grants for coalitions regional governments for creating or implementing regional sustainability plans; and 2) local government sustainability challenge grants. HUD, EPA, and the Federal Emergency Management Agency (FEMA) also came together to as part of its efforts to help cities hit hard by the Great Recession, and the federal government has launched initiatives that tried to address some of the major challenges confronting legacy cities. For example, the Strong Cities, Strong Communities Initiative (SC2)[90] provided two rounds of assistance to roughly 14 cities, several that were small-to-midsized, that included a mix of grants, technical assistance and capacity building. The National Resource Network (NRN), part of the SC2 suite of programs, operated as a national technical assistance clearing house with a special expertise on fiscal inability of distressed cities. They deployed teams of consultants and practitioners to assist local governments. The Massachusetts State Department of Economic Development adapted this

model that continues to provide capacity building resources for smaller cities and towns. And just last year, HUD, in partnership with Local Initiatives Support Corporation (LISC), launched the most recent iteration of the NRN model—the Distressed Cities Technical Assistance Program—that focuses on the fiscal challenges of smaller units of local government.[91]

What is missing from the federal playbook is connecting the technical assistance and capacity building suite of programs (symbolized by SC2) with the grants and activities launched under the umbrella of SCI's program framework. The next federal administration should devote substantial political capital and resources towards developing initiatives that occupy this policy sweet spot around a regenerative form of sustainability. The Community Regeneration Sustainability and Innovations Act of 2009[92] or CRSI perhaps offers the best glimpse of what this regenerative sustainability model might look like. Introduced in Congress in 2009, the bill would have established a cross federal agency collaboration to support cohorts of legacy cities with grants, technical assistance and resources to adopt and implement relevant sustainability actions. Buffalo arose as a theoretical testing ground for some of CRSI's ideas under the rubric of the "living lab" that was premised on similar comprehensive green regeneration initiatives in Germany.[93]

In the absence of federal sustainability support, state support will be crucial for smaller legacy cities. Although state governments offer differing levels of political, technical, and financial support for various environmental and sustainability actions, states have a long track record as laboratories of policy innovation within our federal system. Many federal environmental laws and policies were first developed and tested by the states. Although we were not able to interview state environmental officials, our research did identify important state roles and actions that are helping cultivate sustainability in smaller cities. A state-driven sustainability policy and program agenda would rely on regional entities and counties as their implementation foot soldiers. As a microcosm of the broader federal system, states, counties, and cities have a long standing policy and legal relationship, some of it positive and some of it negative. However, our research suggests that they could provide a critical vehicle for building the sustainability capacity of smaller cities. Moreover, many of the identified sustainability challenges and solutions go beyond the jurisdictional boundaries of smaller and even midsize cities, thus, counties and regional entities operate at a more optimum scale when it comes to many sustainability problems.

Regardless of what level of government leads on sustainability, it seems that a successful policy and program agenda, should build on these and other examples. Below, we offer a glimpse into what a more robust green policy agenda for legacy cities might look like, and would have to consider:

- Design and adopt policy and financial incentives that encourage more sustainable land uses and climate resilient developments and communities;

- Target state community and economic development incentives that would incubate green industries and business;

- Provide workforce development opportunities for a wider array of entry-level green jobs from urban greening landscaping to construction and maintenance of other types of sustainable infractions;

- Develop and provide dedicated grants to smaller cities to experiment with a wide variety of sustainability interventions, program and projects;

- Establish a network of regional/county level sustainability offices and agencies whose mission is to assist, support, and build capacity of smaller cities within their jurisdictions;

- Expand the home rule powers of local governments, especially smaller cities, to conduct vulnerability assessment, inventory GHGs, and adopt sustainability policies and plans;

- Develop regional networks within and across states to provide technical assistance and peer learning opportunities to leverage the geographic clustering already found in many smaller legacy cities cluster in regions (Ohio, upstate New York, Massachusetts);

- Empower nonprofit intermediaries to convene and coordinate cross sector sustainability initiatives that can better align local policy and programs among and between government, private, and public sectors;

- Develop modes of community participation and leadership that ensure sustainability actions are developed with environmental justice and equity at their core; and

- Create the data and performance measuring infrastructure and expertise within smaller cities or their countywide partners that can help track and assess progress across a variety of sustainability interventions (5Ps).

As we look out on the policy horizon, perhaps the current COVID-19 pandemic, coupled with the outcry for racial justice and the constant drum beat of climate change, could generate the necessary policy convergence that together could drive the green regeneration of small and midsized legacy cities. At a time when our nation stands at political and policy crossroads about the importance of smaller cities within the context of the current global pandemic and a climate-constrained future, we believe this working paper outlines a promising pathway for regenerating smaller legacy cities in more equitable, inclusive ways.

Appendix A: Virtual Focus Group Protocol

Introductions (Name, Role, Department/Organization)

Share out: Current Priorities

- What are your organization's/city's/county's primary sustainability goals?
- What sustainability initiatives are you currently working on?

- What metrics do you use to measure programmatic success? Do you conduct formal evaluations?

Questions: Challenges to Sustainability Capacity and Implementation

- What are the primary challenges or obstacles your organization/city/county faces in attempting to achieve those goals?
    - Prioritizing challenges? Funding? Staff availability? Technical knowledge?
- How would you describe your organization's/city's/county's internal capacity to implement new programs?
- How does your location within your region or state influence your ability to implement programs?

Discussion: Solutions to Capacity and Implementation Challenges

- What is one thing (relating to state policy) that if changed would make it easier to implement programs?
- How can potential partnerships (with nongovernmental organizations, state agencies, etc.) be leveraged to increase your ability to implement new initiatives?
- How can the regulatory/policy environment in your state or region be changed to support more sustainability initiatives?

Discussion: Next Steps, Intended Future Policy/Program Action

- What is one step that can be taken to increase internal capacity to implement new initiatives?
- What is one new partnership that you can form to help with implementation?
- What is one new idea you would like to see your organization/city/county implement and how can you get started?

Appendix B: Virtual Focus Groups

Name	Organization Type
County of Erie, Pennsylvania	Local government
National League of Cities	Nonprofit
City of Pittsburgh, Pennsylvania	Local government
City of Lansing, Michigan	Local government
University of New Hampshire Cooperative Extension	University
City of Kalamazoo, Michigan	Local government
Sustainable Princeton	Nonprofit
City of Chicopee, Massachusetts	Local government
City of Richmond, Virginia	Local government
Sustainable States Network	Nonprofit

Virginia Commonwealth University	University
Groundwork USA	Nonprofit

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