

# Climate Change, Community Stability, and the Next 150 Million Americans

THAD WILLIAMSON, STEVE DUBB, AND GAR ALPEROVITZ

The Democracy Collaborative at the University of Maryland | September 2010





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We wish to acknowledge the extraordinary support of Lance Lindblom and Peter Teague of the Nathan Cummings Foundation. Not only did the Nathan Cummings Foundation provide the financial support that made possible both the research and dissemination of this report, but, more importantly, their support provided the space necessary to begin to think seriously about the fundamental economic restructuring that will be required to successfully meet the long-term challenge of climate change.

We also acknowledge the exceptional research produced by Democracy Collaborative Research Assistant Weite Zhang on the development of high-speed rail networks in China.

We are also very grateful for the helpful critical feedback provided by a number of readers: Larry Bangs, Noreen Beatley, Jonathan Feldman, Joe Guinan, Jeffrey Lowe, Katharine Nelson, Rolf Pendall, Robert Pollin, Bonnie Richley, Carl Rist, Terry Schwarz, Philip Thompson, Rich Weaver, Brian Yeoman, and Sam Zimbabwe. While it is not possible to address the wealth of feedback these readers provided, we hope our reviewers appreciate how their suggestions influenced this work. All responsibility for errors and omissions, of course, remains our own.

## Introduction and Overview

In all likelihood there will be well over 400 million people living in the United States in 2050, and possibly as many as one billion people by the year 2100. Where will those people live? And *how* can a nation of that size live in a sustainable manner, given that the United States already has a grotesquely disproportionate carbon footprint and has not made any serious progress over the past two decades towards reducing it?

Although global warming will (indeed, already does) impact every society in the world, no other country has precisely this dilemma, or this degree of moral responsibility. Compared to Europe or Japan, per capita carbon emissions are inordinately high, in substantial part because of the sprawling way we organize our metropolitan areas and our high reliance on the automobile. Further, unlike most of those societies, population in the United States continues to steadily grow, and there is little reason to think that trend will subside in the years to come.

Indeed, only now are public officials even beginning the process of seriously coming to terms with the vast ecological challenge facing the United States over the next generation. One sign of hope is the recent explosion of interest in the topic of “green jobs” among both policymakers and academics. The American Recovery and Reinvestment Act of 2009 included significant funding for investments in renewable energy and other types of green jobs, and a variety of research reports on the topics of green jobs and green cities have been published in the past few years.

This level of interest is undeniably a positive step. But almost none of the academic and policy discussion to date has taken seriously how American capitalism as practiced over the past fifty years undermines serious aspirations to build sustainable communities. A community that is not economically sustainable cannot be ecologically sustainable. Likewise a community that is at the mercy of the investment decisions made by corporations concerned only with their bottom line can neither be certain of its economic future nor self-confident enough to undertake an aggressive sustainability initiative at the local level. It is no accident that Austin, Texas—called by some “The Greenest City in America”—is itself both a state capital and host to a major state university, both of which anchor and stabilize the local economy in a manner not currently possible in many cities. The city’s low crime rate and high quality of life (Austin regularly is near the top of “best city to live in” rankings) also means green issues have a higher saliency to local residents than cities facing more significant public safety and economic problems. Critically, policymakers in Austin do not have to spend much time worrying about whether the economic basis of the city will disappear. Most other localities in the United States are not so fortunate.

Likewise, although the social underpinnings of sprawl are well documented, among environmental activists the challenge these socially embedded structures pose to building sustainable urban American communities are rarely fully acknowledged. The automobile, federal housing subsidies, growing affluence, and (in many parts of the country) racial distrust led to the prototypical pattern of the American metropolis: that of a disproportionately poor and minority city with substandard schools and other public institutions surrounded by more affluent suburbs with better schools and more safety. Suburbs themselves are getting more diverse (as is the country as a whole), and suburban areas also can be impoverished. But in general, the social relationships generated by the sprawling twentieth century metropolis—namely the popular view of suburbs as the favored home of successful, “normal” Americans, and cities as the place where we dump social problems—are perhaps the most critical impediment to a restoration of health of *all* American cities. So long as poverty remains disproportionately concentrated in cities, a core cause of sprawl and its related ecologically harmful consequences will persist. Dealing with that problem requires, at bottom, a serious strategy to provide stable and remunerative employment to every community and every neighborhood in the country.

The central argument of this report is that *re-shaping our metropolitan areas for a low-carbon footprint over the next 40 years will require a comprehensive strategy to stabilize the economic basis of American cities.* This in turn requires *changing the rules of the American political economy.* We must make a break with the past not only with respect to energy use and transportation practices, but also with the way we treat cities as disposable items that can be abandoned when conditions change.

There is a broad consensus in the scientific community that developed nations, especially the United States, must reduce their carbon footprints dramatically—by 33–50 percent by 2030 and 60–80 percent by 2050, according to a study led by Reid Ewing of the National Center for Smart Growth. A 2009 *Scientific American* article suggests reductions more on the order of 90 percent are required.<sup>1</sup> Achieving this goal in the United States will be extraordinarily difficult, since the U.S. population is projected to grow at a much higher rate than most developed countries. *Current projections suggest that we will have 65 million more people (totaling 373 million) by 2030, and another 130 million by 2050; some analysts (and also the current Census Bureau “high estimate”) suggest that population may rise to one billion by 2100.*<sup>2</sup>

At present, 39 percent of U.S. carbon emissions come from buildings and 33 percent from transportation, with the remainder coming from industry.<sup>3</sup> So paying attention to the built environment and transportation—over 70 percent of total emissions—is critical. And here the data are clear: cities are much less carbon-intensive than either suburban or rural communities. For example, a report by the International Institute for Environment and Development found that New York City had a per capita average of 7.1 tons of carbon

emitted per resident, compared to 23.92 tons nationwide; likewise, the study found London residents emitted 6.18 tons of carbon each compared to a British national average of 11.19 tons. Nancy McGuckin, in *Transportation Management and Engineering Magazine* reports that carbon emissions in communities with very high densities (5,000–9,999 households per square mile) have *half* the per capita carbon emissions of rural residents (0–50 households per square mile).<sup>4</sup>

As a result, population density matters. This means we must plan not only to cut our per capita carbon footprint dramatically in a relatively short period of time; we also must develop a national strategy for how new population growth can be accommodated to encourage rather than exacerbate efforts to build a more sustainable metropolis. How might this be possible? This report begins by reviewing the findings of researchers concerned with building a more sustainable metropolis. There is overwhelming consensus that the United States cannot continue its historic pattern of sprawl and maintain any hope of reducing its carbon footprint to a dramatic degree. More Americans need to live in environments that are not dependent on automobile travel. In urban areas, densities must increase, and existing suburban places need to be “retrofitted” to accommodate pedestrian, bike, and transit travel. At the same time, aggressive programs to increase energy efficiency in existing buildings and establish tough standards in new ones are required.<sup>5</sup>

Such dramatic change will not be possible unless two underlying (and related) trends are reversed. The first is the general pattern of suburbs capturing a greater share of jobs and households in most metropolitan areas, at the expense of existing cities. The second is the tremendous economic instability faced by most American cities, whose economic futures are dependent on decisions made by mobile investors of capital and by market forces beyond their control.

While many recognize that ecological rationality requires that Americans embrace higher densities, few sustainability advocates have yet come to terms with the deep political-economic factors that produce and reproduce sprawl. Over the past several decades, many large American cities have lost population. Faced with such economic stress, city government tends to focus on economic development and other pressing issues such as crime, violence, and failing schools. Pursuit of ecological sustainability in such places is only rarely a priority.

Arresting these trends will require major efforts to, first, improve quality of life in cities and reduce the gaping social disparities between suburbs and cities; second, reduce gaping social disparities *within* cities (a major cause of “urban decline” of the past half century); and third, stabilize the economic underpinnings of cities—that is, the job base. *The best laid sustainability plans cannot work if jobs and people leave the city.*

The view that American cities are now “recovering” and that the era of sprawl is over has become fashionable. There is, to be sure, some truth to this perception. For instance,

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Washington, D.C. has seen an impressive influx of residents since 2000 after decades of outward flight. Further, the economic crisis has stalled the construction of new malls and planned developments on the metropolitan fringe, and “suburban blight” is a reality in some parts of the country.

These trends are interesting, because they show that changes in trend and in behavioral patterns *are* possible. But they provide no justification for complacency. In fact, a substantial number of American cities have lost population since 1990, despite the revival of some cities.

For example, a 2010 study of residential construction trends of the 50 largest metropolitan areas in two periods—1990–95 and 2003–08—found that while the central city share of residential construction did increase in the latter period, apart from New York, suburban areas still accounted for the majority of new construction—indeed, over 85 percent of new construction in nearly half the areas.<sup>6</sup> In the Washington, D.C. metropolitan area, for instance, the city captured 16 percent of new residential construction in 2008, compared to four percent in the 1990–1995 period—but 54 percent of new construction happened on the urban fringe, compared to 44 percent in 1990–1995 period. Nationally, the proportion of new homes that are single-family detached residences held steady from 2001 to 2006 at about 70 percent, before declining to 59 percent in 2008—a decline that probably owes more to the dramatic fall-off in the housing industry as a whole (a 50-percent decline in new starts) than massive changes in preferences. Other studies have shown that business location patterns continue to decentralize.<sup>7</sup> In short, America’s urban resurgence is still uneven and most growth remains concentrated in suburban or fringe areas. Worse still, as the Washington, D.C. metropolitan area illustrates, urban resurgence is *not* inconsistent with continued sprawl.<sup>8</sup>

More to the point, from an ecological point of view we should not just be concerned with aggregate gains for cities, but with preserving and often growing the centers of *each* metropolitan area. We cannot afford *any* thrown-away cities.

A more challenging argument is that of Joel Kotkin. Kotkin argues that while cities may recover population, most U.S. growth will continue to be clustered in suburbia. Kotkin proposes to cope with this by building more trees in suburban communities to provide shade, building new suburbs on ecological principles, promoting telecommuting, and relying on technological progress. Kotkin notes that we will have to build new communities in many areas to accommodate growth, an important point. Like Kotkin, we have sympathy for a return to the Garden City ideal of planned suburbs surrounded by greenbelt open spaces.<sup>9</sup>

But garden cities are not enough. Kotkin’s analysis simply does not come to terms with the urgency of the demand to cut carbon emissions by up to 90 percent by 2050, or take sufficient stock of the fact that, as economists Edward Glaeser and Matthew Kahn put it,

central cities are more efficient ecologically than “suburbs” nearly everywhere, a difference that can amount to three, five or even seven tons less annual energy consumed *per person*.<sup>10</sup> We agree that existing suburban communities should be made more ecologically sustainable. But Kotkin does not even attempt to show how these improvements (even if they appeared everywhere) could achieve a sufficient reduction in carbon emissions in the context of rapid population growth.

The primary strategy offered by most commentators to date to confront this reality consists of promoting federal investments in urban mass transit and programs to create green jobs in areas such as weatherization of older homes. These are important first steps, but a far more comprehensive approach is required. Such an approach needs to accomplish three goals: (1) preserve and strengthen existing cities, and increase the proportion of metropolitan residents living in pedestrian and transit-friendly neighborhoods; (2) reduce dramatically the need for long daily commutes by automobile, by provision of new transit systems and the retrofitting of existing suburban places; and (3) funnel public investment to encourage new metropolitan residents to move into denser, more sustainable places—some of which may need to be built from scratch as population expands.

Achieving those goals will require—in addition to action by federal, state, and local governments—both effective planning at the regional (multi-state) level, and provision of adequate resources to metropolitan-level actors to implement the needed changes. More fundamentally, however, it will require that the central cities and older suburbs of each metropolitan area be well anchored economically by a stable job base. This report lays out a long-term strategy for accomplishing that goal in older cities; and it posits strategies to accommodate additional population growth in new developments.

Stable, community-anchoring jobs are those which cannot be relocated and moved to different localities (or even different countries). The most obvious examples of such stable jobs are those provided by colleges and universities, hospitals, and government operations. Other examples include firms that rely heavily on government contracts. Finally, there are emerging business forms based on the idea of community ownership in one form or another that are inherently more anchored to their localities because of the nature of their ownership structures. These include, among others, employee ownership, local public ownership, and ownership by community organizations and other nonprofits with deep ties to the community.

Most are familiar with the massive scale of universities and hospitals as employers. Indeed, America’s nonprofit hospitals and universities alone have revenues in excess of \$900 billion (roughly six percent of gross domestic product) and employ more than 8.4 million people. Fewer, however, recognize, that other forms of community-anchored ownership have also proliferated. For example, a 2009 U.S. Department of Agriculture study conducted by University of Wisconsin researchers found that U.S. co-ops have over

130 million members, \$3 trillion in assets, \$650 billion in annual revenue (more than four percent of gross domestic product), and employ over 850,000. The employee stock ownership plan (ESOP) company has also grown rapidly. In March 2010, the National Center for Employee Ownership reported that there were 12.71 million employee-owners of ESOPs, who were owners in whole or part of 10,500 companies, with total assets of \$901 billion; this compares with only 250,000 employee-owners 35 years ago.<sup>11</sup>

Cities with a large proportion of jobs in these community-anchored sectors will be more stable over time and thus more capable of achieving carbon emissions reduction targets. A study of 62 cities over two decades (1980 to 1999) that were home to state capitals and/or state flagship universities with moderate population levels (25,000 to 250,000) bears out this point about the stabilizing effect of community-based institutions. Of these 62 cities, nearly two thirds enjoyed stable populations or moderate growth, while another 21 percent had population growth of greater than 20 percent—a marked contrast with the population decline faced by many U.S. cities during this period.<sup>12</sup>

A central part of a community-stabilizing strategy must be to take existing and new streams of public investment to build up stable, community-based enterprise. Whenever possible, the billions of dollars now being invested in green jobs, for instance, should be targeted towards community-stabilizing organizations rather than become just another profit opportunity for large corporations. Even in economically struggling cities, existing anchor institutions such as hospitals and educational facilities can be leveraged to generate support for community-based enterprise. An important example is the work of the Cleveland Foundation in Cleveland, Ohio to establish a network of worker cooperatives in the Greater University Circle neighborhoods; the cooperatives will initially provide services to local hospitals and universities. Rather than allowing streams of money to leak out of the community or be captured by distant corporations, existing local spending can be used to support place-based enterprise. Explorations are now underway to replicate this model in many different cities, both in northeast Ohio and nationally.

The Cleveland example also illustrates the possibilities of working closely with the health sector. In general, health care (already 16 percent of the economy) is [1] likely to continue to grow as the population ages; and [2] all but certain to be even more heavily impacted by public expenditures as time goes on. For both reasons, health care and other expanding sectors like clean energy are likely to be priority areas in the development of the new city-stabilizing models.

A second part of the strategy must involve targeting new public investment in infrastructure to cities and older suburbs. Particularly urgent are investments in public transportation, but also needed are investments in retrofitting older buildings, new energy distribution systems, and attention to aging schools, bridges, roads, and parks. Sharply increased investment in energy-saving technologies is another key priority.

Such spending can both benefit cities and suburbs directly, and reduce their carbon footprint. It also creates an economic development opportunity. Consider California, which in 2008 passed a \$10 billion state bond measure to help finance a high-speed rail system. Currently high-speed rail engines and related equipment must be bought from abroad, as there is no domestic-owned producer of subway cars, although there are some smaller to medium-sized firms that make subsystems and components and a U.S.-owned firm that makes street cars (Oregon Iron Works).<sup>13</sup> In our view, the United States can and should develop a domestic capacity to produce energy efficient, next-generation, state of the art vehicles in all modes of transportation—rail, subway, and car. Existing manufacturing plants that General Motors and other failing companies plan to scrap or dissolve should be converted to such green manufacturing production.

This general strategy of linking needed public investments and industrial policy to efforts to stabilize the economic basis of cities points in the direction of developing a systemic regional and national growth planning capacity. Such regional planning consists, in the broad sense, of the deliberate direction of capital to localities and regions so as to balance out market trends and prevent communities from falling into steady decay. Given the urgent need to reduce our carbon footprint, we cannot afford to throw away our existing urban centers. A new form of regional planning is required to meet pressing ecological demands.

There is in fact a long track record of various forms of regional planning in Europe, carried out at both the national level and by the European Union. The United States also has isolated examples of regional planning (such as the Appalachian Regional Commission), but a much more deliberate approach will be needed.

Enhancing community stability requires bolstering the economic core of old and new cities by: 1) bolstering and nurturing community-rooted enterprises that can create and sustain long-term employment; 2) leveraging institutional purchasing to support community-rooted enterprises; 3) financing larger scale public investments in the new urban infrastructure to support a low-carbon economy; 4) using industrial policy to build up domestic capacity in key green industries; and 5) systemically allocating public capital and investment to cities threatened by private disinvestment. Implementing a broad strategy that integrates these various elements would permit a dramatic break with the past practice of allowing cities to wither and decay as market forces dictate. It would allow us to stop “throwing away cities.”

Such a strategy can be applied not only to existing cities and suburbs, but also to new communities as our population expands. The United States is almost unique in its status as a steadily growing advanced industrialized nation. In most metropolitan areas, central cities have plenty of room to accommodate increased population. Existing suburbs can also grow denser. But it is unrealistic to believe that all 130 million new Americans—the

vast majority of whom will likely live in metropolitan areas—can be accommodated simply by increasing densities in existing cities and suburbs. And, as noted, beyond 2050 projections of population growth for the century are much larger (over one billion in the “high estimate” of the Census Bureau.)

This leaves two other logical possibilities: locating new development in haphazard fashion on the fringes of metropolitan areas (i.e. sprawl), or locating development in new communities built on state-of-the-art sustainability principles. Here, again, the same tools required to stabilize older cities are vital to achieving long-term sustainability goals.

## CHAPTER ONE:

# A Collision Between Two Trends

The United States stands in the crosshairs of two contradictory imperatives: the need to re-shape its economy to dramatically increase energy efficiency and reduce carbon emissions as much as possible, while *at the same time* accommodating population growth over the next four decades.

There is increasingly widespread recognition of the imperative of urgent and dramatic action aimed at weatherizing homes, developing renewable energy, stopping subsidies for fossil fuel industries, pricing carbon, increasing fuel efficiency, building mass transit, increasing energy efficiency at hospitals and universities, retrofitting commercial buildings, and other steps designed to effect large-scale reductions in Americans' exorbitant (by both global and "rich nation" standards) consumption of energy and spewing of carbon into the atmosphere. The most sophisticated analysis of international carbon footprints to date (taking account of where the goods produced by greenhouse emissions are consumed) shows that the United States in 2001 had a footprint of 29 tons CO<sub>2</sub> equivalent per person — nearly 40 percent larger than the next highest country (Australia), and roughly twice as high as the United Kingdom, Germany, Denmark, and Japan.<sup>14</sup>

The case for dramatic action aimed at rapidly curbing carbon emissions is overwhelming. Currently the atmosphere contains carbon dioxide (CO<sub>2</sub>) equivalent levels of about 386 parts per million (ppm), up from 280 parts per million a century ago. Findings of the Intergovernmental Panel on Climate Change's 2007 report suggest that CO<sub>2</sub> equivalent levels must stabilize at 450 ppm to contain global warming to a "manageable" two degrees Celsius (3.6 degrees Fahrenheit). (Emissions already released guarantee that the climate will warm by at least 1.4 degrees Celsius.) Stabilizing at 450 ppm will require that global emissions peak no later than 2020 and begin declining sharply afterward.<sup>15</sup>

The effects of warming, even if stabilized at 450 ppm, would be substantial, including extinction of 9–31 percent of all species and increased heat waves, floods, droughts and severe weather events. These effects get dramatically worse, however, once warming tips

past the 2-degree Celsius mark. At 4-degrees Celsius, for instance, it is estimated that 30 percent of coastal wetlands worldwide would be lost, 40–70 percent of species extinct, and global food production would begin to decrease. At 5-degrees Celsius, huge ice sheets in Greenland and Antarctica are expected to begin melting, leading to rises in sea levels of 5–11 meters, more than enough to inundate beachfront land across the Gulf Coast and the eastern United States. A sea level rise of 10 meters would displace some 10 percent of the world's population.<sup>16</sup>

Warming above the 2-degree threshold also increases the possibility of positive feedback effects, which might accelerate the pace of climate change, with unpredictable but dire consequences. Further, the full effects of increased CO<sub>2</sub> concentrations will not be felt until well after 2100. The relatively mild impacts likely to be experienced by those now alive and our children and grandchildren pale next to the very long-run effects of global warming above the 2-degree Celsius mark, effects that could impact the earth's climate for millennia. As University of Chicago geophysicist David Archer notes, warming of greater than two degrees Celsius would make the climate "warmer than it has been in several millions years. Dialing the climate up to a new one, outside the range of natural variability, opens the doors to surprises, such as new patterns of atmosphere or ocean circulation, or rainfall and drought, that would be difficult to forecast in advance."<sup>17</sup>

Indeed, some prominent researchers believe that we should aim for a stabilization level substantially below 450 ppm. NASA scientist James Hansen advocates a target stabilization of 350 ppm, while David Archer suggests that a stabilization level of 420 ppm would give humanity a "good" chance of avoiding warming greater than two degrees Celsius. Achieving that level of stabilization would require limiting future carbon emissions to the sum total of those that have taken place to date (roughly 300 Gigatons); this implies, as Archer puts it, using up remaining reserves of gas and oil while stopping the burning of coal immediately.

It is generally accepted that achieving stabilization at the 450 ppm level—a level that itself may be too risky—will require worldwide emission cuts of 60 percent by 2050, including some 80 percent in the developed world. Analysis by researchers at Duke University suggests that achieving that goal is possible if the United States and other G-8 countries begin cutting emissions two percent a year beginning in 2010, with large developing countries such as India and China beginning their own cuts a decade later.<sup>18</sup> Most researchers believe that achieving cuts at a faster rate than two percent a year is unrealistic; hence it is important to begin the process as soon as possible. (Greenhouse gas emissions in the United States in fact rose by 14 percent between 1990 and 2008.)<sup>19</sup>

As Archer points out, dealing with global warming "will require a level of global cooperation that humankind has never before achieved."<sup>20</sup> Large developing countries like India and China as well as other developed countries are unlikely to make serious movement

towards carbon emissions reduction without a similar commitment from the United States. But serious progress in the United States will require rapid and far-reaching action in many areas—action that while technically feasible is politically difficult. Global warming, despite the increased urgency of statements by concerned scientists and the efforts of prominent public figures such as Al Gore, remains a low priority for most Americans.

Serious political progress on global warming in the United States is unlikely so long as it is framed simply as a “cost” or “sacrifice” undertaken by the present generation for the benefit of the future.<sup>21</sup> While there should not be any ambiguity about the reality that current fossil fuel usage has very long-term effects that may persist for thousands of years, it is unrealistic to believe Americans will favor very large-scale changes in their way of life simply for the sake of future generations. Fortunately, progress on global warming can be linked to several other important goals that will provide tangible, short-term benefits for those now alive—such as green jobs, less dependence on foreign oil, more transportation options, more stable urban communities, and an improved quality of life. Efforts to reduce carbon emissions will not be politically sustainable in the long term if not married to the provision of these positive goods.



Less attention has been paid to the other horn of the dilemma: the fact that this dramatic movement towards an ecologically sustainable, climate-stabilizing economy must take place in the context of continued population growth in the United States. Current Census estimates project that U.S. population will reach 439 million people by the year 2050, up from 281 million people in 2000 and some 310 million people in 2010. These new people will become part of the world’s most profligate economy from a per capita consumption point-of-view.

Unfortunately, pointing out that fact has too often been left to those who advocate harsh restrictions on immigration, who would build figurative and literal walls around the nation’s borders to keep out newcomers, and who harbor a dangerous fantasy of using state power to stabilize the U.S. population at its current level (or even reduce it).<sup>22</sup>

We reject all such versions of environmentalist nativism. Immigration and population growth have costs and benefits, but any political vision aimed at shutting borders and stigmatizing immigrants already here is antithetical to building an inclusive, green social justice movement. Instead, we regard the overwhelming likelihood of continued population growth—some 48 percent of which is projected to result from natural birth rates, not immigration—as simply a fact of life in the 21st century.

But is a fact that must be reckoned with. As a matter of logic, new population can be accommodated in one of three ways: through population growth (and in some cases re-settlement) of our central cities and older suburbs; by building new suburbs on the outer

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rings of our metropolitan areas (i.e., via “sprawl”); or by building entirely new communities based on the model not of sprawl but of new *cities* (i.e., high density places acting as independent centers of economic activity).

Virtually everyone familiar with the facts of global warming agrees that continued sprawl—more and more building of outer ring suburban communities predicated on automobile usage, with densities too low to support alternative transportation patterns—is not acceptable, if we are serious about reducing carbon emissions and limiting the impact of long-term climate change.

But simply stating that we must roll back sprawl will not make it so. The economic, social and political forces that have driven suburbanization in the United States for over a century (and especially since 1945) are powerful and will not be easily reversed. Moreover, American suburbs as a general rule are more affluent, have better public schools and amenities, less crime, and a generally higher quality of life than high-density central cities. Many Americans view the suburban life as the good life, and not without some justification.<sup>23</sup>

Consequently, any strategy aimed at steering new population into central cities and older suburbs must aim to improve dramatically the quality of urban life, and put an end to the familiar cycle where those who can leave the city do so. Unfortunately, improving urban “quality of life” has often become a euphemism for strategies which simply aim to disperse poverty and render the poor invisible without actually breaking the cycle of poverty, and for locking up more young men in our nation’s overflowing jail cells without addressing the root causes of crime.

Getting serious about making cities more attractive and livable means getting serious about stabilizing the economic basis of our central cities, and building a full employment economy that extends to not just every central city but to every neighborhood within each central city.

That ambitious goal, in turn, runs headlong into another central feature of our political economy: the fact that the fates of our cities are so often decided not by residents themselves or even their public officials, but by the actions of private corporations who have no particular loyalty to any particular place. If a corporation closes its plant in search of lower labor costs or more pliant regulations elsewhere, or if simple management incompetence causes a large employer to go under, it is the stability of local economies and their residents that is left to suffer.

This phenomenon of economic dependence on the decisions of private economic actors has numerous academic critics. Yet the vast majority of popular commentators—in particular local media outlets who view local boosterism of corporate employers as a civic obligation—regard this corporate dependency as a necessary fact of life, no matter how many times the corporate recipients of this lavish support turn tail and relocate to greener pastures.

We believe there is a better way. Vibrant *and* stable local economies can be built and sustained over the long term by combining traditional urban policies (i.e. targeted tax incentives, community development assistance, job training and human capital initiatives) with explicit attention to the fundamental question of *ownership*. A community whose residents own their own capital—whether in the form of small locally based businesses, cooperatives, worker-owned firms, nonprofits (small and large), public enterprise, or public holdings in private firms—has much greater control over its long-term economic health. To the degree that ownership is localized, such communities are much less at risk of being abandoned by distant owners who see the community and its workers and residents in purely instrumental terms. And to the degree that such economies are not only locally owned, but also internally diverse (not dependent on any single firm) and have a strong anchor in economic activities with long-term staying power (such as education and health care), such communities will be more resilient to the inevitable market fluctuations.

Such resilience and stability is good for its own sake, for a host of reasons ranging from economic efficiency to the health of local democratic politics. But less recognized, economic stability is essential to the development of serious long-term strategies for moving our cities and metropolitan areas in a more ecologically sustainable direction. The best laid plans to turn a city green will fall apart if social and economic pressures cause residents to leave for the sprawling suburbs or perhaps to a fast-growing metropolitan area in another region.

Equally important, there is excellent reason to believe that the *politics* of sustained green mobilization at the local and metropolitan level cannot work unless there is a baseline of economic health, and unless bolstering economic security is a central part of such mobilization. Whether at the national or the local level, when the economy goes sour all other priorities fall by the wayside. Even the real urgency attached to the global climate crisis seems less immediate to elected officials and their constituents than the here-and-now pain of unemployment and insecurity when times are tough. But the urgency of the climate crisis itself means that we can no longer afford for environmentalism to go out of fashion when the economy is struggling.

In short, community economic stability and prospects for serious movement towards carbon reduction and climate stability are locked at the hip, in at least three ways:

1. Creating greener local economies will require the creation of large numbers of green jobs. As author and activist Van Jones has argued, this fact presents a tremendous opportunity to connect the environmental agenda with the concrete economic needs of low-income households and people of color, particularly in our nation's cities. Doing the work that needs to be done to restructure the American economy will create new employment possibilities for skilled and unskilled workers alike.<sup>24</sup> But the positive

**Economic stability is essential to the development of serious long-term strategies for moving our cities and metropolitan areas in a more ecologically sustainable direction.**

- impact of a green jobs wave will be much greater if linked explicitly to strategies for stabilizing *communities* and creating new possibilities for *ownership* by local residents.
2. Making central cities and older suburbs the focus of future population growth over the next 40 years is unlikely to succeed unless the costs and benefits of living in a city start to outweigh the costs and benefits of living in suburbs. Rising gas prices may increase the costs of suburban life, but progress needs to be made at the other end as well: by improving the quality of life in cities, not just for the affluent, but for all residents. Doing that in turn requires a sustained effort to bring full employment, economic stability, and poverty reduction (or elimination) to urban neighborhoods.
  3. The political success of long-term movement towards more sustainable cities and bolstering the long-term economic health of cities are inextricably linked. Support for green programs will be weak unless working-class people can see clear economic benefits, and the long-term commitment of public officials is likely to waver if the city itself is dying or plagued by urgent economic problems.

## The Need for a National Focus on the City

As noted above, recent estimates suggest that the global community needs to achieve a greenhouse gas reduction of at least 60 percent by the year 2050 if the climate is to be stabilized and total warming limited to two degrees Celsius. More pessimistic assessments hold that yet steeper and more rapidly achieved reductions are necessary. And most realistic assessments hold that the United States and other affluent countries need to reduce emissions by more than this global average—perhaps as much as 90 percent or more—to offset the economic activities of developing countries like India and China. Yet recent trends point in precisely the opposite direction, with worldwide carbon emissions rising by nearly 25 percent between 2000 and 2009.<sup>25</sup>

There is no question that reversing this trend will require a coordinated set of policies. In particular, pricing carbon, setting firm caps on carbon emissions, and rapidly ratcheting up energy efficiency standards are widely regarded as crucial elements of a comprehensive carbon emissions reduction strategy.<sup>26</sup> Equally if not more important will be large-scale public investments in renewable energy aimed at generating breakthroughs that reduce the absolute cost of renewable energy to levels comparable to the current cost of fossil fuels.

But achieving serious reductions in carbon emissions will also require paying attention to the questions of where we live, how we get around, and how our communities are developed. The Union of Concerned Scientists' proposed national strategy for carbon reduction envisages some 47 percent of the emissions cuts in the United States between

now and 2030 taking place in the transportation sector, through policies ranging from sharply increased mileage standards to land-use changes.

Such changes will not occur if metropolitan development patterns continue to be based on the premise that all or nearly all adults will own their cars and drive to work. A Brookings study by Edward Glaser and Matthew Kahn shows that low-density development resulted in increased carbon dioxide emissions in the nation's metropolitan areas; by contrast, greater use of rail lowered carbon footprints. These researchers conclude that compact development will require a major change in the way U.S. urban systems have been evolving through the past half-century.<sup>27</sup> The work of Reid Ewing of the National Center for Smart Growth has yielded similar results.<sup>28</sup>

Environmental activists Ted Nordhaus and Michael Shellenberger put the matter yet more bluntly: "Cities, which are the most efficient places to house human populations, are precisely where those of us who are concerned about ecological crises should want people increasingly to live."<sup>29</sup> Adds *Eco-Cities* author Richard Register: "The climate crisis won't be solved by changing light bulbs and inflating your tires more, planting a tree and driving a little less. It's going to require a truly fundamental shift in how we build our cities and live in them."<sup>30</sup>

Making the American metropolis more sustainable is a necessary (though not sufficient) precondition of long-term sharp reductions in carbon emissions. While other, less place-sensitive changes (e.g., appliance efficiency standards and reduction of energy waste) are also important, the ethics of responding to global warming responsibly demands that we undertake long-term and profound changes in the structure of our metropolitan areas. Simply put, the desirability of reducing carbon emissions as much and as quickly as possible obliges us to push each potential lever of carbon reduction as far as we can. Land use patterns cannot be overhauled all at once, but the cumulative possibilities for changing the structure of the metropolis and its built environment in a more sustainable direction over the next 20–40 years are profound.

Such changes will not be easily won, however.

Despite the continuing accumulation of evidence and growing public awareness that a higher density, less automobile-oriented built environment is an essential (though not sufficient) part of a comprehensive strategy to address global warming, to date there has been little systemic effort by environmentalists or others to specify what a city-preserving political economy would look like.

Taking up that effort is crucial, precisely because the political-economic forces that undermine urban economic stability are so entrenched. Those forces include suburbanization and the continued inequalities between suburban and central city locations that continue to make suburbs more attractive locales for many Americans, and capital mobility

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(both domestic and global), which leaves the fate of city economies in the hands of private investors with little vested interest in any particular place.

To be sure, an increasing number of prominent voices have begun to make the necessary connections. Nordhaus and Shellenberger stress the importance of environmentalists paying attention to economic development issues and learning to think in terms of pro-active investments in a sustainable future rather than simply relying on regulatory strategies. Van Jones has shown how the creation of green jobs can both reduce poverty and help offset the impacts of deindustrialization. The Sierra Club and the Steelworkers union have taken in the lead in developing “Blue Green” alliances between environmentalists and union leaders. The Apollo Alliance has played a major role in promoting greater public investment in a clean energy economy. Likewise, on the urban planning side there is enormous interest in the question of how to build more sustainable cities and metropolitan regions that reduce our carbon footprint.

Our aim is to contribute to this emerging understanding by describing how cities can stabilize their local economies over the long terms, as part of a long-term effort to meet the dual challenge of dramatically reducing carbon dioxide emissions while accommodating a significantly larger population.

In the process we highlight two core ideas that we believe must be essential parts of a comprehensive strategy but that have received relatively little attention to date.

The first core idea is that of *green community wealth building*. While “green development” refers generically to forms of economic activity that aim to reduce or mitigate environmental harms, and “green jobs” is used to refer to jobs in these sectors that are remunerative enough to support stable families, *green community wealth building* refers to a bundle of ownership mechanisms which tie capital to local communities and thus undergird the long-term stability of our cities.

Green community wealth building potentially applies to a larger sector of activities than the *green job* category as generally used. Green jobs are commonly defined as activities that contribute directly to energy efficiency, waste reduction, and other improvements in the environment. This is potentially a quite large sector, and as the sector grows it is important that policy take deliberate steps to ensure that new green enterprises are anchored in local communities, rather than dominated by a handful of large corporations.

Yet the green job sector alone has limits in its capacity to stabilize urban economies. If a return to the city is a precondition of reducing our metropolitan areas’ carbon impact (especially in a context of population growth), then ensuring that our cities are stable economically becomes a primary ecological requirement. But specifically green jobs in most cases will not be enough to secure full, stable employment.

Green jobs can be complemented by other locally owned businesses, which contribute to long-term community economic stability. Because these businesses make an

important contribution to long-term ecological sustainability—by sustaining the city itself as a vibrant, stable economic entity—we contend that they merit the label *green community wealth building*. Our use of this term is thus a deliberate attempt to broaden common understanding of what kinds of economic enterprise contribute to the holistic goal of creating sustainable metropolitan areas. It is also a deliberate effort to highlight the question of who will benefit from investments in green technology and other large-scale public investments in coming years.

Green community wealth building can take a variety of forms. These include public ownership, employee ownership, ownership by local nonprofit organizations, ownership by community development organizations, locally based private ownership, and hybrid forms which combine multiple kinds of ownership. Most vibrant and stable cities already have a substantial portion of jobs falling under this ownership category, such as universities, government agencies, and many hospitals. The common criterion unifying these types of ownership is that they are anchored for the long-term in the cities in which they are located, and cannot be outsourced or moved by non-local private owners wishing to get a better deal somewhere else.

Strengthening place-based ownership is an essential building block for long-term strategies to build a sustainable metropolis. Without the economic stability such ownership provides, too many cities will continue to find themselves locked into a zero-sum competition for private capital with other metropolitan areas or, often, their own suburbs.

Of course, existing forms of local ownership do not always meet green criteria in their own operations. Universities and hospitals can waste energy, governments can have a gas guzzling vehicle fleet, and worker-owned firms can pollute or emit too much carbon.

But the *potential* for greening and improving ecological standards for these kinds of enterprises is much higher than for corporate-owned enterprises. In principle, each of these ownership types is either directly controlled by the public or is owned by local residents. A strong local green movement can more easily change behavior in firms like these, through a combination of legal ordinances and public pressure, than when confronted with a large corporation that might pick up and leave if it feels regulations are too tough. Local ownership, in short, gives local activists greater leverage over firms that are falling short of best ecological practices.

Finally, local ownership contributes to the project of building ecologically sustainable cities for the simple reason that cities which are not overwhelmed by economic crisis and instability are far more likely to focus on meeting ecological goals. Nordhaus and Shellenberger's work is controversial in some respects, but clearly there is a positive link between the achievement of economic security and the ability to prioritize environmental concerns, both for individuals but even more so for political entities like cities.

Without the economic stability that community ownership provides, too many cities will continue to find themselves locked into a zero-sum competition for private capital.

*The second major new tool involves regional and national growth planning for economic stability and population stabilization.* As we show below, the government is already involved extensively in economic planning through an array of procurement, regulatory, and incentive programs, as well as the provision of public infrastructure and public facilities. A comprehensive agenda to stabilize the economic basis of America's urban areas will require the use of those existing policy instruments in a coordinated manner.

It will also, however, require the development of new capacities. First, regional development policies must be established which target capital and investment towards stabilizing communities. This means, simply, that cities can no longer be thrown away. Second, in some regions it will make sense to create entirely *new* cities to accommodate new residents. Whether such cities are technically suburbs (parts of existing metropolitan areas) or located in rural areas, these new communities will need to be built from the start on principles of both ecological sustainability and economic stability.

As observers such as Joan Fitzgerald have noted, in the absence of a coherent national strategy, many local governments in cities like Austin and Pittsburgh have launched their own initiatives aimed at creating green jobs and/or reducing the carbon footprint. Fitzgerald cautions, however, that the capacity of such local initiatives to achieve serious, lasting results will be quite limited in the absence of coherent and supportive regional and federal policies.<sup>31</sup> Indeed, the urgency of such large-order policies comes into view when we consider that the goal of policy must be *not* simply to create a few stand-out "emerald cities" but to achieve a major and lasting reduction in the carbon footprint of *every* American metropolitan area in the coming decades.

Achieving that goal will require paying attention both to meeting explicitly ecological criteria *and* to securing the economic bases that makes cities—the most ecologically efficient form of human settlement for affluent nations—stable and viable over the long term.

## CHAPTER TWO:

# Defining a Sustainable Metropolis

Achieving a massive reduction in the carbon footprint of America's metropolitan areas will require dramatic, sustained action aimed at reshaping residential, work and travel patterns. The conventional definition of sustainability is a condition by which a place or society is able to meet the needs of the present without compromising the needs of future generations. In the American context, this means ecologically sustainable metropolises must provide an adequate livelihood to all residents; "adequate" here means not simply satisfying basic needs but also a level of consumption commensurate with Americans' expectations. Solving many ecological problems would become much easier if we assumed Americans would be willing to dramatically cut consumption levels, but, absent major social and political conflict, that is a thoroughly unrealistic proposition. Consequently, we assume that a *politically* and ecologically sustainable metropolis must provide sufficient employment to all households and an overall standard of living at least on par with current consumption levels, while avoiding destruction or over-use of local natural resources and *minimizing* carbon output.

The last part of this definition merits particular attention. Every additional ton of carbon emitted contributes to the long-term CO<sub>2</sub> concentration in the atmosphere, whether it is produced in a community with a relatively large or relatively small carbon footprint. This implies that, at least until the world reaches the point where carbon levels re-stabilize at pre-industrial levels, it will always be desirable to reduce carbon emissions still further. Each additional cutback yields a benefit to the atmosphere. Further, achieving the target carbon emissions cut of 90 percent in the United States will require that some communities exceed rate cuts of 90 percent, given the high likelihood that other communities will fall short of that target. Communities that are especially well positioned to achieve large cutbacks should not rest on their laurels, but should continually find ways to further reduce emissions.

**Solving many ecological problems would become much easier if we assumed Americans would be willing to dramatically cut consumption levels, but, absent major social and political conflict, that is a thoroughly unrealistic proposition.**

Consequently, a sustainable metropolis must be one that continually endeavors to minimize its carbon footprint to the lowest possible level while also maintaining full employment and a politically acceptable level of consumption for residents. Reducing the carbon footprint by 90 percent or more cannot be done all at once, but will require a series of coordinated steps undertaken over a period of decades. Specifically, six essential measures—which will require coordination at the federal, state, and local levels—must be adopted in *each* metropolitan area.<sup>32</sup>

First, *energy efficiency must be dramatically improved in buildings* of all kinds: residential, private nonresidential, public buildings.

Second, there must be *dramatically improved efficiencies in local industrial production* with respect to both carbon emissions and to more conventional pollutants. This requires both increased industrial energy efficiency as well as locating industrial production in sites accessible to freight transportation to reduce carbon emissions involved in transporting industrial products.

Third, there must be *improved efficiencies in vehicle travel* (fewer carbon emissions per mile traveled), to be achieved both by improvements in the vehicles themselves (i.e. mileage) and by shifting from high carbon output per passenger modes such as solo-driven cars to bus and rail.

Fourth, *total vehicle miles traveled must be stabilized*. Improved efficiencies in vehicle travel will not substantially reduce carbon emissions if overall vehicle miles traveled continue to rise. Containing such increases is a particular challenge given projected population growth. In general, stabilizing vehicle miles traveled will require reducing the distance between home and work. It will also require making cities more accessible to pedestrians and bicycles and sufficiently dense so that more non-work-related travel can take place by transportation modes other than the car.

Fifth, *land use patterns must shift* so that new development is both a) higher density and b) is oriented towards “infill” of vacant properties in or near metropolitan centers. Lower density development on the periphery of metropolitan areas almost inevitably implies a high degree of automobile reliance and an increase in vehicle miles traveled.

Sixth, cities must ensure that channeling development back into the city *does not displace long-term residents through gentrification*. Simply replacing poor citizens with rich ones in the city’s center will not reduce the ecological burdens on the metropolis. But a program aimed at increasing total population within or near central cities will tend to increase land and housing values, threatening the tenure of long-term residents who cannot afford higher rents or property taxes. Such pressures can be alleviated, however, by increasing the density of housing development (number of units per acre of land) and through mechanisms such as community land trusts, which protect low- and middle-income residents from involuntary displacement.

To be sure, not even this ambitious agenda is sufficient to achieve cuts in carbon emissions of the magnitude that would lead to an atmospheric stabilization of 450 CO<sub>2</sub> ppm or lower. Similar cuts must be made in other countries. Progress also must be made in clean energy and carbon-capture technologies, development of renewable energy, reversing deforestation and expanding the practice of conservation tillage on cropland.<sup>33</sup> Nonetheless, there is wide agreement that land-use and transportation systems must be far more efficient if there is to be any realistic hope of atmospheric stabilization at an acceptable level of warming.

### THE SUSTAINABLE NEIGHBORHOOD

Macro-level progress in each metropolitan area towards ecological sustainability cannot be achieved without substantial changes in the micro-level reality of American neighborhoods.

Implementing a serious sustainability agenda will require paying close attention to issues of urban form and design. Presently, significant parts of most American cities and the vast preponderance of suburbs are designed to accommodate the automobile.

In recent years there have been several attempts to articulate the idea of ecologically sustainable urbanism. For instance, Peter Newman, Timothy Beatley and Heather Boyer identify seven characteristics of the “resilient city” and its built environment: Reliance on renewable energy; carbon neutrality; decentralized waste, water and power systems; providing more “food and fiber” locally; shifting to a “closed-loop” system in which waste is re-converted into energy; locally-based economic institutions; and sustainable transportation.<sup>34</sup>

In a similar vein, architect and urban designer Doug Farr defines sustainable urbanism as “walkable and transit-served urbanism integrated with high performance buildings and high-performance infrastructure.”<sup>35</sup> Farr argues that sustainable urbanism requires that urban neighborhoods must be well defined, compact, complete and connected.

*Defined neighborhoods of a manageable size* can facilitate the development of social networks and encourage residents to take responsibility for quality of life within their neighborhoods. While Farr cautions that local neighborhoods should seek to avoid externalizing ecological costs, the primary benefit of neighborhood definition is in enhancing urban quality of life.

*Compactness* refers to local density levels. Farr estimates that creating transit-oriented neighborhoods will require that new development be 7–8 housing units per acre, roughly four times denser than current levels. Peter Newman and Jeffrey Kenworthy of Murdoch University come to a similar conclusion: finding that transit use increases significantly when there are at least 14 *people* per acre (the effective equivalent of six housing units per acre). While such an increase will certainly be a challenge, it is achievable. For example,

the five boroughs of New York City (i.e., not just Manhattan) today have an average density of over 16.5 housing units per acre and San Francisco has a housing density of more than 12 housing units per acre.<sup>36</sup> As density increases, transit becomes easier to support and more locations become walkable, making car ownership less essential. Higher levels of pedestrian activity can also make locally oriented business activity more viable and sustainable. Importantly, sufficiently high densities can facilitate larger scale infrastructure improvements (such as to pipe systems), leading to greater energy efficiencies.

*Completeness* refers to the degree to which daily needs can be met within the confines of the immediate neighborhood without the use of a car. In practice, this means residential and commercial uses must be mixed, so that neighborhood residents can easily reach local shops and markets. A complete neighborhood must have a variety of housing types capable of accommodating people at each stage of the life cycle.

*Connectedness* refers to the ease of traveling within a neighborhood. Sidewalks and relatively short blocks are essential in facilitating internal pedestrian traffic. So too are relatively narrow streets that limit the speed of cars to under 30 mph. Streets should be arranged as grids with multiple ways to complete routes, and schools and neighborhood centers should be centrally located to permit children to walk to school.

Finally, neighborhoods must be connected with one another by effective transit service, in what Farr terms “sustainable corridors.” This piece of the puzzle is essential, and is particularly strongly linked with the need to stabilize urban centers’ population. For a transit system to work effectively, *each* area served must have sufficient density to support service (roughly seven units per acre for bus; higher for streetcar and trolley service). Farr calls upon new development to be built “transit ready” — i.e., at a sufficient level of density to support service. An effective transit system also must serve major employment centers. In both cases, it must be presumed that the geographies being served have stable populations and stable employment; otherwise the system will be under-utilized. Properly executed, however, transit-oriented development can become a magnet for new commercial and residential development clustered around transit stops.

## **FROM SUSTAINABLE NEIGHBORHOODS TO A SUSTAINABLE METROPOLIS**

The work of Farr and related authors helps us envision what a sustainable urban neighborhood might look like. The policy goal, however, is broader—that is, to build entire metropolises of sustainable neighborhoods.

Here we examine five of the six key characteristics of sustainable metropolises noted above in greater detail. We leave aside discussion of how to improve the ecological efficiency of industrial production, since this is less directly connected to the questions of spatial organization. Industrial emissions can be most effectively reduced by raising the price

of carbon, either through a cap-and-trade system or carbon taxes. The existence of such a system would also improve the effectiveness of the place-based initiatives described below.

## ENERGY EFFICIENT BUILDINGS

By 2030, about half of the nation's built environment will have been built in the 21st century. With every new generation comes the opportunity to (literally) build the world over. A prime requirement of a sustainable future is that new buildings maximize energy efficiency. Further, older buildings should be upgraded as much as possible.

The nation's oldest housing—that built in 1939 or before—is overwhelmingly located in dense, central-city areas. Preserving older neighborhoods, which typically feature more walkable, less car-oriented neighborhood designs, is a prime imperative for shifting to a sustainable metropolis. Indeed, a key goal should be to make such neighborhoods more attractive.

As Richard Moe points out, the oldest housing units use on average 50 percent more energy per square foot than the newest housing units. Fortunately, as Moe emphasizes, that situation is correctable. Moe recommends that owners of older housing units have an energy audit conducted, with the goal of identifying sources of inefficiency, such as air leaks through doors and vents; lack of insulation in basements and attics; and drafty, older windows.

Once identified, homeowners can undertake weatherization work to plug the leaks; doing so would be a major source of green jobs. According to Moe, retrofits that yield a 20-percent energy savings would reduce carbon emissions by two metric tons per house per year. Moe proposes a goal of retrofitting three million homes over the next 10 years.<sup>37</sup>

The potential market for a serious weatherization effort is far larger, however. In 2000, the Census reported that 17.4 million housing units were built in or prior to 1939, and 8.4 million more units were built during the 1940s. All told, about 22 percent of the nation's housing stock was over 50 years old in 2000, and nearly 50 percent was at least 30 years old.<sup>38</sup>

In short, there is a vast potential market for weatherizing America's older homes, and from an ecological point of view this is vastly more efficient than discarding existing homes, even if the newer housing that replaces those homes is a more efficient user of energy from the start. The biggest obstacle to this market materializing is the up-front cost to present homeowners.

Many advocates propose tax credits to encourage homeowners to improve energy efficiency. A particularly promising approach is that developed by the Center on Wisconsin Strategy and in the process of being implemented by the City of Milwaukee, the ME-2 program.<sup>39</sup> This program enlists the support of public and private lenders to loan capital to homeowners to undertake weatherization work. The loan is paid back over time automatically via the owner's utility bill, with a proportion of energy savings resulting from

**By 2030, about half of the nation's built environment will have been built in the 21st century. With every new generation comes the opportunity to literally build the world over.**

the work devoted to loan repayment. This approach allows owners to begin significant weatherization work at little or no up-front cost, and to begin realizing immediate savings from reduced energy bills even as the loan is re-paid. The program has also been designed so that renters can participate and to give owners who may move shortly after the weatherization work is complete reason to participate.<sup>40</sup>

Improving the energy efficiency of existing buildings, especially older residences, is often called the “low hanging fruit” of green urbanism. But equally important over the long haul will be optimizing the efficiency of newer buildings.

Here the obstacles are not technical. The design knowledge exists to create buildings that are in fact carbon neutral, that is, powered only by non-carbon generating sources. The specific layout (relative to the sun) of buildings can impact the “external load” on buildings, and use of computer modeling can produce reliable estimates of the amount of energy different types of buildings will require in different regional and climate settings. Opportunities for further energy savings lie in paying attention to the design of infrastructure (such as roads) and streetscapes; for instance, increased tree planting in urban areas can help cool the city during the summer months and reduce energy demand, as well as absorb carbon dioxide. When densities are sufficiently high and demand reasonably consistent, further savings can be generated by adoption of “large district energy systems”—neighborhood-based power generators serving a geographically bounded area. Such district power generators can cut costs by up to two thirds compared to conventional power plants, which must convey energy over much larger distances.<sup>41</sup>

### **INCREASING TRANSPORTATION EFFICIENCY**

In 2000, some 75.7 percent of American workers drove alone to work, with an additional 12.2 percent carpooling. Just 4.7 percent took transit to work, with 3.3 percent walking or biking and a further 3.3 percent working at home (the remainder used other means of transportation).<sup>42</sup> From a carbon emissions point of view, solo automobile travel is vastly less efficient than well designed mass transit.

That generalization disguises some important wrinkles, however. There is substantial variability in the emissions per passenger emitted by different kinds of cars. Likewise, the efficiency of mass transit depends heavily on usage levels. In the United States, at present buses actually use more energy per passenger mile than cars and trucks because American buses often run nearly empty; rail uses only about two thirds of the energy used by cars per mile. In Germany, however, which has a much better developed transit system, buses are significantly more efficient than either car or rail travel, using less than 60 percent as much energy per passenger mile and 80–85 percent as much energy as rail.<sup>43</sup>

Increasingly sophisticated studies have begun to estimate the total vehicle life-cycle costs of different modes of transportation; these studies take into account all the energy

use associated not just with the use of different vehicles but also their production and disposal. These studies show that in general rail travel is more efficient than car travel, but there is significant variation between (for instance) the energy use of a Prius and that of a Ford Explorer.<sup>44</sup>

As important as the comparison between transportation modes is, it is also worth noting that the American system consumes more energy and is less efficient than (for instance) Germany's *across the board*. The average per mile energy use of Germany's least efficient transportation mode (cars) is one quarter less than the most efficient mode in the United States (heavy rail), and less than half that of cars in the United States. Similar comparisons hold for other sectors, with the most spectacular difference in the transit bus sector; German buses use less than one fourth as much energy per passenger mile as American buses.<sup>45</sup> These large differences are the product of an overall *system* of transit and metropolitan development organized around providing alternatives to the car and a more compact city. In thinking through possibilities for the next stage of American metropolitan development, this is a more relevant point of comparison than simply tallying up the difference between the relative efficiencies of different modes of travel within the existing car-centered transportation infrastructure of the United States.

Indeed, the average American in 2001 traveled over twice as many miles by car (9,200) as the average German (4,400 in 2002), and took two-thirds of trips under one mile by car, compared to only 27 percent in Germany. The average German took six times as many public transportation trips as the average American, and took nearly one-third of all trips by bicycle or foot, compared to 10 percent in the United States.<sup>46</sup>

These large-scale differences reflect the different price structures for travel by car. Brookings Institution researchers report that the per mile cost of operating a Honda Accord in 2006 was \$.72 in the United States, compared to \$1.09 in Germany; that sales taxes on cars are 19 percent in Germany compared to 6 percent in most U.S. states; that obtaining a driver's license costs over \$2,000 in Germany, compared to roughly \$100 in the United States; and most significantly, that gas taxes in Germany total \$3.60 a gallon, compared to \$.42 in the United States. In addition, Germany's urban traffic planning is designed to slow traffic (making alternative transportation modes more appealing, and also reducing traffic fatalities), and parking spaces in Germany are both less plentiful and more expensive.

Further, the German motor vehicle fleet is more energy efficient than America's, with an average mileage that is about 50 percent higher for both cars and light trucks. Annual registration fees in Germany are higher for larger vehicles, while in the United States SUVs are exempt from the "gas guzzler tax."<sup>47</sup>

Clearly, the German transportation system is designed to increase the cost of driving and to ensure drivers pay a higher share of driving's social costs. What is important, however, is not simply the mode of transportation or vehicle efficiency, but also total travel demand.

## STABILIZING VEHICLE MILES TRAVELED

Per capita vehicle miles traveled in the United States more than doubled between 1969 and 2001. That trend is clearly unsustainable. Consequently, the Congress for the New Urbanism's "2030 Community Challenge" calls for undoing that increase by cutting per capita vehicle miles traveled by roughly half.<sup>48</sup> As noted above, urban planners believe that properly designed "complete" neighborhoods can contribute to that goal. Complete neighborhoods are neighborhoods that strive to incorporate the following features: identifiable centers (including public spaces) and edges; sufficient compactness to be walkable; relatively small, connected streets (often on a grid pattern) that encourage pedestrian activity; a mix of land uses including mixed-income housing, commercial areas and work places; the presence of "third places" (informal community gathering places such as bars, coffee shops, bookstores); provision of public parks, squares, plazas, playgrounds; and provision of explicitly civic spaces. Farr describes a neighborhood as exhibiting an "excellent" level of completeness when it is possible to reach at least 70 percent of the following locations by foot: bank, child care facility, community center, convenience store, hair care, hardware store, indoor recreation facility/health club; laundry; library; live-work housing; medical/dental office; park; pharmacy; place of worship; police/fire station; post office; restaurant; school; senior care facility; share car; supermarket; third place; transit stop.<sup>49</sup> People living in such neighborhoods will have less need to make non-work-related trips by car. Street-level improvements such as greenery, trees and improved lighting can also encourage pedestrian activity.

Complete neighborhoods also are in position to establish a policy of "carless housing" (housing sold without garage or on-street parking space included as part of the sales price). Walking and transit-oriented neighborhoods also can support corner stores and locally owned businesses.

Such neighborhood-level changes will be most effective when combined with municipal travel demand management. Increased density, mixed land uses, walkable locations, and good access to a range of destinations via transit have cumulative impacts on the number of vehicle miles traveled. But the cost of parking is estimated to be most important. Politically, increasing the cost of parking will be difficult in cities where there are no plausible alternatives to car-based travel. In such circumstances, Jeffrey Tumlin recommends "cash-out" programs that allow employees to receive the cash value of a parking spot if they use alternative means to get to work. Related to this, minimum-parking requirements should be dropped for most new urban developments and maximum-parking requirements should be added to discourage sprawl. Although only financially feasible in high-density urban environments, when possible many planners also recommend moving surface parking underground to make streets more pedestrian friendly. In locations where there is sufficient density, car-sharing initiatives can further reduce reliance

on the car while allowing urban residents to access cars for particular trips. Other studies have found that the provision of free transit passes through employers or neighborhood associations can greatly increase transit use.<sup>50</sup>

Local strategies to reduce automobile-based travel obviously will be more effective when enhanced by regional and federal policies. Particularly important are policies aimed at getting drivers to pay for the full social cost of driving. Every vehicle mile traveled increases carbon emissions, the risk of accident, and roads and related infrastructure costs. Consequently, drivers should be charged (most likely via a gasoline or carbon tax) for those costs. When driving results in congestion (as in urban rush hours), congestion tolls can be used to discourage peak-hour driving. As a practical matter, in the United States such measures will almost certainly need to be combined with a rebate system for lower income drivers, especially in areas where there is no feasible alternative to the car for commuting.

Regionally, directing new investment to infill locations as opposed to the outer suburban fringe will help make metropolitan areas more compact and more easily serviced by public transit, reducing the need for new residents to undertake long car-based commutes.

Every vehicle mile traveled increases carbon emissions, the risk of accident, and roads and related infrastructure costs.

## LAND USE

Efforts to reduce vehicle miles traveled are intimately connected to local land-use patterns. There is good reason to think that rising gasoline prices as well as federal policies aimed at increasing the cost of driving will reduce demand for traditional, car-centered suburbs. Other observers believe that demographic changes (such as the increase in retirees) and perhaps also changes in preferences will increase demand for high-density, transit-oriented locations.<sup>51</sup> Already, Vauban, Germany (outside Freiburg) provides a successful example of a “carless suburb” — a new locality built on the assumption that residents will *not* own cars, and that exhibits many of the planning features noted above. Another such development is in the planning stage in the Oakland (CA) region.<sup>52</sup>

Nonetheless, important changes in land use policies will also be required to facilitate a shift towards higher density developments.

First, suburban zoning policies, which commonly mandate car-oriented, low-density development, will need to be altered. Such policies often include parking requirements for new buildings as well as stipulation of minimum lot size and prohibitions on multi-family housing. As economist Jonathan Levine has shown, such local zoning policies can be a significant obstacle to developers interested in planning higher density developments.<sup>53</sup>

Second, adoption of urban growth boundaries at the metropolitan level, following the well-documented experience of Portland (OR), will often provide a useful tool to redirect development towards the center and put a firm limit on the extent of outward development.<sup>54</sup>

Third, numerous existing suburban locales will need to be “retrofitted” to accommodate higher densities. This can be achieved by redevelopment oriented around new transit stops, or by transforming car-oriented locations into mixed-use, pedestrian-friendly spaces. Authors Ellen Dunham-Jones and June Williamson have provided dozens of examples of such retrofitting and also sketched a plan for how sprawling regions such as Atlanta might grow in a more compact fashion over the next half-century. In their view, significant land use change in the suburbs will require not simply gradual shifts in response to shifting market and demographic trends but also more dramatic alteration of the built environment. Successful retrofitting implies, in particular, that redevelopment efforts are linked to the expansion of mass transit as well as other types of public facilities. Influenced by such thinking, the City of Atlanta has taken major steps toward implementing this vision. The City’s “Beltline” project is a 25-year, \$2.8 billion initiative that seeks to add 22 miles of light rail transit to Atlanta’s public transit system in an effort to expand green space and trails, while also promoting new development encircling Atlanta’s urban core. Over its 25-year project span, the BeltLine is expected to generate more than \$20 billion of new economic development, create 30,000 new full-time jobs, and generate 48,000 yearlong construction jobs. As part of the process, \$240 million is being set aside in bond funds to finance affordable housing. In September 2008, the Beltline’s Affordable Housing Advisory Board issued a report to the City indicating a strong preference for using some of those funds to support the establishment of “one or more community land trusts.”<sup>55</sup>

Looking at this issue more broadly, the current economic strain faced by many suburban shopping malls and some newer suburban housing developments presents an opportunity for land and buildings to be acquired and re-developed on a different basis. Some private developers may take up this task, but the public can and should also move to act directly by acquiring and assembling land. A maximally effective suburban retrofitting agenda will thus require availability of substantial public resources (for acquiring land), effective planning of such re-developments, and intelligent linkages of local-level development with regional transportation and job planning.

### **GENTRIFICATION**

In the past, some advocates of a more compact metropolis have simply ignored the issue of gentrification and the potential impact of rising urban land values on existing low and middle-income residents. Renters are particularly vulnerable to displacement as land values rise, and some owners also may find themselves priced out of their own homes as property tax assessments rise.

Such outcomes are not inevitable. First, if the number of housing units per acre rises in a given city, that increase in housing supply can help offset demand-driven upward pressure on housing prices. Second, government can take direct steps to enable long-term

urban residents to stay in the city. Policy steps include property tax relief for fixed or low-income residents, provision of public housing, and perhaps most interesting, the further development of urban community land trusts. Urban land trusts essentially take properties off the real estate market and allow their residents to stay indefinitely; gains from the re-sale of units are capped so as to keep the properties affordable in perpetuity.

Addressing equity and equitable development is important for both ecological and political reasons. It represents no net gain ecologically when existing urban residents are displaced to suburbs or other metropolitan areas involuntarily. The point of building a more compact metropolis is to increase the number of people who live in the city, not to have affluent suburbanites trade places with poorer city residents. Politically, it will be difficult if not impossible to build local coalitions on behalf of an aggressive sustainability agenda if many low-income residents believe that such changes will threaten their ability to stay in their own neighborhoods.

Newman, Beatley and Boyer thus raise the prospect of the “divided city” as one possible unpleasant scenario for our urban future, particularly if world oil prices skyrocket in response to dwindling supplies and over-reliance on fossil fuels. The traditional American pattern of poorer central cities surrounded by affluent suburbs could invert as “those with sufficient wealth . . . move to those cities or parts of the city where there are opportunities to live better with less oil. The divided city will increasingly exist through forced electronic and armed security. It is a city of fear.”<sup>56</sup> It also may become the city of the future in the absence of a major concerted effort to re-build metropolitan areas that are not only ecologically but also economically and socially sustainable.

**Addressing equity and equitable development is important for both ecological and political reasons. It represents no net gain ecologically when existing urban residents are displaced to suburbs or other metropolitan areas involuntarily.**

## CHAPTER THREE:

# Why Ecological Sustainability Requires Economic Sustainability

In Chapter Two, we explored several of the essential components of sustainable neighborhoods and metropolises. In the process, we spelled out an ambitious agenda for making very substantial changes to both the neighborhood character and overall growth patterns of metropolitan America, with the aim of effecting a transformation in settlement, transportation, and energy use patterns over the next generation.

In this chapter we demonstrate why long-term economic stability at the local level is a prerequisite—or more precisely, a co-requisite—of metropolitan-level ecological sustainability. Efforts to reduce the carbon footprints of metropolitan areas by 50 percent and eventually much more will falter if the economic underpinnings of those metropolitan areas are not secure.

Movement towards the low-carbon metropolis will require a number of specific steps aimed at directly reducing carbon emissions in local transportation, residential, and industrial sectors and at shaping land use patterns in ways compatible with a low-carbon economy. Achieving and sustaining progress on those specific steps in turn will require metropolitan areas to have sufficient fiscal and political resources to carry out needed investments, implement needed regulations, and follow through on promised commitments. No account of a sustainable metropolis can ignore the question of how to generate the fiscal resources and political will needed to make and sustain specific ecological changes.

Our argument, consequently, is two pronged. First, we argue that long-term economic stability can make an important contribution to the *direct* steps cities and their suburbs need to take to reduce their carbon footprint over the long term. Second, we argue that such stability is essential if metropolitan areas are to secure the fiscal resources and political will needed to sustain ecological efforts over time.

Efforts to reduce the carbon footprints of metropolitan areas by 50 percent and eventually much more will falter if the economic underpinnings of those metropolitan areas are not secure.

Before we set forth the details of this argument, it is important to distinguish our position from three competing views.

The first view, associated with some forms of radical environmentalism, argues that to achieve ecological sustainability we will need a dramatic, across-the-board reduction in consumption. The quest for economic growth is the problem, not the solution, in this view.

The problem with that argument is that there is no plausible scenario by which democratically elected governments will deliberately seek lower living standards, and no plausible scenario in which residents living in or close to the poverty line will make carbon reduction their top priority.

To be sure, moving toward a political-economic system in which productivity gains are used, not to increase consumption of material goods, but rather for free time and non-material goods should remain a primary aim of green-minded activists. But movement towards that goal will be impossible as long as a substantial number (often a majority) of people feel economically insecure—either because they do not have enough to get by now, or because they worry they may not have enough to get by in the short- or long-term future. Indeed, few economists and politicians today, despite our collective obsession with GDP statistics, celebrate economic *growth* as an end in itself. Rather, growth is presumed to be good because of the consequences it brings: increased employment, lower poverty. There may be better ways to achieve those worthy ends than to focus on growth, but pressures for growth will not subside if economic insecurity is widespread.

A second view takes almost diametrically the opposite position, arguing that the reductions in carbon emissions that can be attained by attempts to build greener cities are too small to justify an extensive effort. This view has a partial truth in that building more energy efficient, less wasteful cities in the United States alone would not stabilize worldwide carbon emissions. But there is absolutely no chance of large developing countries like India or China taking serious steps to pursue a less carbon-based form of development if wealthy countries in general and the United States in particular fail to make very substantial changes. Moreover, there are strong ethical reasons why the most affluent countries (who historically have emitted the most carbon) should take the most aggressive (and expensive) steps to reduce our own emissions.<sup>57</sup>

A third view argues that carbon reduction cannot be achieved through limits on demand, but only through large-scale technological breakthroughs. There is no question that new technology to enhance energy efficiency in everything from homes to vehicles must play an essential role in a shift to a more sustainable economy. But, barring extraordinary luck, there is little reason to believe that breakthroughs in technology alone will solve our problems in the absence of other changes. A more plausible view is that policies that mandate sharply reduced emissions can help *stimulate* creative technological advances that make such reductions easier to achieve.

**The task, then, is to move toward an ecologically sustainable metropolis that is also politically and economically sustainable.**

As several writers have urged, such efforts should be complemented by large-scale direct public investment. Nordhaus and Shellenberger have noted that the private sector has neither the ability nor incentive to carry out the scale of research-and-development needed.<sup>58</sup> What is required is something of the order and magnitude of the Manhattan Project. As noted below, such massive public investment in turn could and should be organized in ways that help sustain long-term community economic stability in the places where such investment takes place. The observation that we will need better technology, however, must not be an excuse for doing nothing now.

The task, then, is to move towards an ecologically sustainable metropolis that is also politically and economically sustainable. As noted above, regional and national-level policies can play an important role in shaping the rules of the economy of the whole. Establishment of a federal “cap and trade” system and/or carbon tax; new fuel taxes designed to raise the cost of driving; and federal funding for investments in mass transit, new technologies and other green investments all would affect the context of local and metropolitan-level efforts to build more sustainable cities. The nearly \$80 billion devoted to green jobs and clean energy in the 2009 American Recovery and Reinvestment Act, for instance, could prove an important first step in helping cities nationwide improve local energy efficiency while creating good green jobs for local residents.<sup>59</sup>

While national policies are critical, regional, state, and local policy shifts will be needed as well. The aim here is not to spell out the exact division of labor between different levels of government, but we assume that many of the steps that must be taken at the local and regional level will take place in the context of a nationwide effort.

Why is community economic stability so important for metropolitan-level ecological sustainability? Consider again the six core ecological requirements of a low-carbon metropolis described in Chapter Two. These include:

1. Improved energy efficiency in buildings of all kinds: residential, commercial, industrial, and public.
2. Improved efficiencies in local industrial production with respect to both carbon emissions and more conventional pollutants
3. Improved efficiencies in vehicle travel (fewer carbon emissions per mile traveled), to be achieved both by improvements in the vehicles themselves (i.e. mile efficiency) and by shifting from high to low carbon-intensive modes of travel.
4. Stabilizing total vehicle miles traveled.
5. Shifting land use patterns so that new development is both a) higher density and b) is oriented towards “infill” of vacant properties in or near the center(s) of the metropolitan area.
6. Ensuring that channeling development back into the city does not displace long-term residents.

Long-term economic stability is a prerequisite for achieving these goals. In the case of items 4 and 5, the link is direct. If major employers continue to move to greenfield suburban locations, that will induce increases, not reductions, in total vehicle miles traveled. Such job sprawl in turn induces further residential suburban development. Stabilizing existing central city jobs and developing new ones is essential if long-term trends of sprawl and automobile reliance are to be reversed.

In other cases, the link is indirect. Achieving these ecological objectives will require fiscal and political resources. There must be sufficient funding available for localities to finance needed, ongoing investments in weatherization, energy efficiency, mass transit and the like. There must be sufficient political resources to hold producers to tough standards on carbon emissions and pollution more generally, and to create and implement long-term plans to make the city more sustainable. There must be fiscal and political resources available to prevent involuntary displacement of long-term residents.

None of this is possible if the very economic foundation of a given metropolitan area is at risk of decline or disappearance. To take a simple example, investments intended to expand commuter bus or rail must draw on planning projections of how many people need to be moved and by what routes. If too few people use the new routes, the new services cannot be cost effective and cannot reduce ecological costs (since the projected users are now traveling a different route somewhere else, likely by car). Simply put, one requirement of a more sustainable future is higher densities in the developed portions of our metropolitan areas. This means putting more people into the same amount of space. But this cannot happen if employment opportunities are not sufficient to accommodate this larger population, or if such opportunities vanish in a few years.

A more prosperous local economy, on the other hand, implies that more resources will be available for *ongoing* investments in improving the efficiency of buildings and in alternative modes of transit. Adequate resources also might allow localities to take more far-reaching experiments intended to reduce their carbon footprints. For instance, author George Monbiot proposes reducing shopping trips by car and putting an end to big-box development by dramatically expanding home delivery from local warehouses. This implies getting businesses to either dramatically change their business practices, or local governments taking the lead themselves and providing that service.<sup>60</sup> Either approach would require resources to use as incentives to change existing practices or to finance new municipal businesses engaged in large-scale home delivery. Similarly, to take a more familiar example, establishing bus-only lanes and related measures to increase the ease, comfort and desirability of in-town and out-of-town travel by bus is expensive. Cities with strong, stable tax bases will be best positioned to make such innovative investments that can help cut overall carbon emissions.

Perhaps most importantly, economic stability provides the political basis for establishing and sustaining a long-term ecological commitment at the local level. In most American cities most of the time, local leaders do not have (what they would regard as) the luxury of making ecological concerns their top priority. Instead, their top priorities are keeping and attracting business investment and thereby maintaining prosperity. This in turn tilts public policy in the direction of the business groups who can supply such investment, and away from broader public goals. In cases where business prosperity does not obtain, city government tends to focus on rebuilding a business-friendly environment, often by recruiting new businesses with tax incentives and pledges to accommodate needed land use changes.

Fortunately, some policy steps that reduce metropolitan carbon footprints also provide significant non-environmental benefits for existing cities. These include funds for weatherization programs of older urban homes and the energy savings such programs will generate; the use of carbon or gasoline taxes to increase the marginal cost of driving; the possible development of new forms of bus travel between cities and their suburbs that might make bus travel faster and more efficient; and policies intended to promote infill development.

But these policies taken alone are unlikely to provide sufficient economic and population stability to metropolitan regions. If the core industries undergirding metropolitan economies decline and disappear, then the best laid plans to green the metropolis will fail. Moreover, even the creation of green jobs and in-fill development in urban communities does not guarantee improved economic stability if these measures are offset by the loss of private investment.

Obviously, achieving metropolitan economic stability is a major challenge. Some analysts, such as Richard Florida, project a continued decline of “rust belt” cities, although Florida notes that the long process of suburbanization may begin to reverse itself, especially with a suitable boost from public policy. Other analysts have projected a return of some relatively affluent groups to central cities as well.<sup>61</sup>

Such analyses are helpful, but they rarely take seriously the critical ecological imperative that we need carbon emissions reductions in every metropolitan area of in the United States, not just those where conditions are favorable. Cities with steadily declining or erratic economies will not have sufficient fiscal and political resources to make and sustain the needed investments to move to a low-carbon future. Likewise cities experiencing very rapid growth are unlikely to improve per capita carbon efficiency, especially if much or most of the growth takes the form of new development on the urban outskirts.

These observations, juxtaposed against the hard *requirement* that all metropolitan areas reduce their carbon footprint, suggest the need for explicit planning aimed at both stabilizing existing cities and ensuring that growth takes places in a way that minimizes the

impacts on carbon footprint. Strictly speaking, this does not mean that all metropolitan areas must remain at their current size. Some may decline in population. What is critical is that such declines be planned and accounted for, and not allowed to accelerate into uncontrolled declines.

Likewise, as noted above, in some places projected growth may be too large to be absorbed by existing metropolitan areas in a sustainable fashion. When a metropolitan area has become sufficiently large and sufficiently developed such that low-density development on the perimeter of cities is the *only* plausible way new population can be accommodated, then that metropolitan area has reached its maximum sustainable population. In that case, it would be better for new residents to move to entirely *new* cities rather than add to the sprawl around existing metropolitan areas. In the short term, many American cities and their older suburbs have ample room for infill and redevelopment, especially if combined with proactive steps to prevent displacement of existing residents via gentrification (such as through the use of land trusts and property tax relief for poorer residents). But other cities continue to grow rapidly, and over the long term it's possible that even cities with stagnant populations now may become overbuilt. In such cases, a policy of planned decentralization involving the creation of new urban centers (either in existing suburbs or in some cases, rural areas) will be appropriate.

The logic of our argument thus runs as follows: serious movement towards dramatic reductions in the carbon footprint of every metropolitan area requires that each metropolis has sufficient fiscal and political resources to undertake the needed investments to develop and implement region-specific plans for achieving carbon emissions reductions. This in turn requires that the economic basis of each metropolitan area be stable, and not undercut by the threat of capital flight.

This is not to say that cities and metropolitan areas that face severe economic stress are incapable of innovative policy responses. Indeed often communities hardest hit by economic pain will be among the first to attempt innovative policies aimed at stabilizing capital in place. But capacity to undertake innovative policies and capacity to implement and sustain over time a comprehensive sustainability agenda are two different questions—particularly when we consider that a large part of the metropolitan sustainability agenda *must* be the re-settlement of population into higher density, less energy-consuming areas. Achieving that goal, however, means we must squarely confront long-standing trends in the American political economy that have systematically undercut urban economic stability.

Consider the case of Kenosha, Wisconsin. Kenosha is a relatively small city (population 96,000 in 2008) that has been synonymous for decades with both automobile production and the United Auto Workers. The shutdown of a major facility formerly owned by American Motors Corporation in 1988 (after it had been acquired by Chrysler) laid-off

**The fundamental issue is that, to greater and lesser degrees, the economic stability of any given locality or region in the United States depends on the decisions of controllers of capital to locate investment in a particular place.**

some 5,500 workers. Now the city faces a further blow as a result of the recent closure of its remaining Chrysler plant, formerly employing 850 people. The job losses mean that the city tax base will decline, city budgets will be strained, and workers and their families will eventually look for work in other communities—with no guarantees that jobs comparable to those lost will be available, anywhere. After the AMC closings in 1988, Kenosha began remaking itself into a bedroom community for people with jobs in Chicago and Milwaukee. Hence the city is better positioned than many to adjust to the latest closing. But it will no longer be a community in which working-class people can work, live, and raise children without having to make long commutes. The official unemployment rate in the city as of February 2010 stood at 13.1 percent.<sup>62</sup>

The fundamental issue is that, to greater and lesser degrees, the economic stability of any given locality or region in the United States depends on the decisions of controllers of capital to locate investment in a particular place. If a corporate employer leaves or cuts back employment in a city, that decision will negatively impact the locality. This fact has important consequences for state and local politics; at the top of the agenda for almost all elected officials is “economic development.” Elected officials at the state and local level believe that attracting and keeping corporate investment is part of their job.

That reality in turn has two consequences. First, if “economic development” is at the top of the agenda, and successful economic development means subsidies and other assistance to mobile corporate employers, then sustainability will generally take a back seat. Second, there are winners and losers in this process.

Localities in the United States are in competition at three different levels. First, metropolitan regions (and states) compete with one another to attract jobs and investment. Second, within metropolitan regions, specific localities compete with one another. Third, American metropolitan areas as a whole compete with the rest of the world to attract and keep investment. This system of competition for scarce private investment is directly responsible for the chronic economic instability that has led many cities to experience remarkable population declines, even in a context of overall population growth.

Since 1950, American cities have experienced substantial population instability. In some cities, populations peaked in 1950 or 1960 and have declined ever since, in a few cases by truly massive amounts. In others, city populations have fallen and then recovered to offset partially the earlier losses. And in numerous Sun Belt cities, population has exploded.

Why do these trends matter?

First, increasing the proportion of citizens who live in urban environments must be a major strategic objective for advocates of a more sustainable metropolis. Second, undertaking and sustaining a systematic local agenda and long-term plan to reduce a region’s carbon footprint while meeting economic needs requires that metropolitan areas and in particular central cities have adequate fiscal and political resources to tackle the challenge.

That will be difficult, if not impossible, if city leaders are primarily worried about losing their tax base.

Long-standing trends of urban population fluctuations provide a stark reminder of the challenge we face. Consider data on how the populations of medium and large-sized cities have altered between 1950 and 2008. Table 1 shows changes over time in the absolute numbers as well as the proportion of the U.S. population living in one of the 112 cities or boroughs with a 1950 population of over 100,000.<sup>63</sup> These 112 cities include many declining industrial cities, but also many cities (especially in Texas and California) that have seen strong growth over this time period.

**Table 1. Total Population Living in Cities Above 100,000 People in 1950**  
(Thousands of people)

|      | <b>Big City Population</b> | <b>Total U.S. Population</b> | <b>Big City Share of Population</b> |
|------|----------------------------|------------------------------|-------------------------------------|
| 1940 | 39,252                     | 132,122                      | 29.7%                               |
| 1950 | 44,511                     | 150,697                      | 29.5%                               |
| 1960 | 47,504                     | 179,323                      | 26.5%                               |
| 1970 | 49,571                     | 203,305                      | 24.4%                               |
| 1980 | 46,804                     | 226,542                      | 20.7%                               |
| 1990 | 48,514                     | 248,709                      | 19.5%                               |
| 2000 | 51,225                     | 281,425                      | 18.2%                               |
| 2008 | 53,695                     | 304,060                      | 17.7%                               |

*Based on 112 cities and boroughs with 1950 population above 99,500.*

*Source: County and City Data Book, U.S. Census; 1952, 1967, 1977, 1994, and 2007 editions; 2008 Census Population Estimates available at [www.census.gov](http://www.census.gov).*

Total population in these cities grew impressively in the 1940s. That growth continued in absolute terms in the 1950s and 1960s, but their share of national population began to decline markedly. In the 1970s, these cities experienced an absolute decline in population, a decline only partially made up by the slow growth of the 1980s. Since 1990 total population in these cities has increased at a steady clip, but the portion living in these well-established cities has continued to decline, albeit at a slower rate during the 2000s.

Moreover, as Table 2 shows, population density within these central cities has declined markedly since 1950. In short, *even leaving aside the large proportion of metropolitan growth taking place in suburban areas over this time period*, American central cities have become substantially less dense compared to mid-century. In fact, average population densities

in these larger city centers fell by roughly one third between 1950 and 2005, whether we consider a raw average (counting each city equally) or an average weighted by city size (counting larger cities more, according to their relative population). This observation suggests that there is room in most central cities to accommodate more people and a higher level of density than currently observed.

**Table 2. Population Density in America’s Largest Cities, 1950 and 2005**  
(persons/sq. mile)

|   | 1950   | 2005   |
|---|--------|--------|
| Central City Density, Unweighted Average    | 9,397  | 6,464  |
| Central City Density, Weighted by City Size | 16,085 | 10,420 |

*Based on 112 cities and boroughs with 1950 population above 99,500. Source: County and City Data Book, U.S. Census; 1952 and 2007 editions.*

The more important part of the story, however, is that trends in city population growth are very unbalanced. Some cities such as Phoenix and Houston have experienced phenomenal growth. But many other cities have seen their population fall for over half a century. In fact, in 2008, 68 of the 112 cities had population *below* their peak (since 1940), and in 62 of the cities, 2008 population was at least 10,000 below their peak. In 56 of the cities — one half of the sample — population in 2008 was lower than it was in 1950.

While cities on aggregate have been gaining population since 1990, it is important to recognize that the long-term trend of instability remains in place. Just since 1990, 44 of these 111 cities (excluding Louisville, which merged with its neighboring county in the 1990s) have lost population; in 36 of these cities, population losses in the recent period exceed 5,000 people. Hardest hit have been cities in Ohio, New York, and Pennsylvania, but significant population loss also has taken place in cities like Birmingham, Norfolk, Richmond, and (pre-Katrina) New Orleans. In short, the pattern of a large proportion of our major population centers continuing to shed people has not been arrested, despite recent aggregate gains for larger cities as a whole. Table 3 lists cities by the size of their decline in 2008 from their peak point.

**Table 3. Population Losses in America’s Large Cities, 1940–2008**

*Gap between 2008 Population and Peak Population for a Given City since 1940 Among Cities With Population Greater than 99,500 in 1950  
(Cities with Decline from Peak of less than 10,000 People Excluded)*

| <b>Loss of 10,000–50,000</b> | <b>Loss of 50,000–150,000</b> | <b>Loss of 150,000–500,000</b> | <b>Loss of &gt; 500,000</b> |
|------------------------------|-------------------------------|--------------------------------|-----------------------------|
| (29)                         | (19)                          | (10)                           | (4)                         |
| Mobile, AL                   | Birmingham, AL                | Washington, DC                 | Chicago, IL                 |
| Berkeley, CA                 | Hartford, CT                  | Baltimore, MD                  | Detroit, MI                 |
| Bridgeport, CT               | Gary, IN                      | Boston, MA                     | St. Louis, MO               |
| New Haven, CT                | New Orleans, LA (2005)        | Buffalo, NY                    | Philadelphia, PA            |
| Wilmington, DE               | Flint, MI                     | Brooklyn, NY                   |                             |
| Savannah, GA                 | Minneapolis, MN               | Manhattan, NY                  |                             |
| Peoria, IL                   | Kansas City, MO               | Cleveland, OH                  |                             |
| Evansville, IN               | Jersey City, NJ               | Pittsburgh, PA                 |                             |
| South Bend, IN               | Bronx, NY                     | Cincinnati, OH                 |                             |
| Des Moines, IA               | Rochester, NY                 | Newark, NJ                     |                             |
| Kansas City, KS              | Syracuse, NY                  |                                |                             |
| Baton Rouge, LA              | Akron, OH                     |                                |                             |
| Cambridge, MA                | Dayton, OH                    |                                |                             |
| Fall River, MA               | Toledo, OH                    |                                |                             |
| Lynn, MA                     | Youngstown, OH                |                                |                             |
| New Bedford, MA              | Scranton, PA                  |                                |                             |
| Somerville, MA               | Providence, RI                |                                |                             |
| Springfield, MA              | Norfolk, VA                   |                                |                             |
| Worcester, MA                | Milwaukee, WI                 |                                |                             |
| Duluth, MA                   |                               |                                |                             |
| St. Paul, MN                 |                               |                                |                             |
| Camden, NJ                   |                               |                                |                             |
| Trenton, NJ                  |                               |                                |                             |
| Albany, NY                   |                               |                                |                             |
| Utica, NY                    |                               |                                |                             |
| Canton, OH                   |                               |                                |                             |
| Erie, PA                     |                               |                                |                             |
| Reading, PA                  |                               |                                |                             |
| Richmond, VA                 |                               |                                |                             |

Cumulatively, in 2008, if all 68 of the cities operating below their peak population levels had retained their peak level populations, 8.3 million more people would have been living in these cities. Table 4 shows what the 2005 population of these 112 cities might have been in several alternative scenarios: if these cities had retained the same share of the national population as in 1950; if they had maintained the same (weighted) population density as in 1950; if (weighted) population density had declined only half as quickly, to an average of 13,000 people per square mile; and if each city in 2008 had population matching its peak level over the 1940–2008 period.

**Table 4. Projected 2008 Big City Population Under Alternative Scenarios**  
*Aggregate Population of 112 Cities and Boroughs With 1950 Population Above 99,500*

| <b>Projected Big City Population (thousands)</b>                |        |
|---|--------|
| Actual 2008 Population  | 53,695 |
| Maintaining Same Percent of National Population (29.7%) as 1950 | 90,306 |
| Maintaining 1950 Density (16,085 people/square mile)            | 82,887 |
| Slower Density Decrease (13,000 people/square mile)             | 66,990 |
| Each City at Peak Population Level (Since 1940)                 | 62,016 |

This data indicates that, at a minimum, these 112 larger cities can accommodate between 8.5 and 13 million more people rather comfortably (with just a modest increase in density), and as many as 29 million more people (roughly nine percent of the total population) if central city densities were restored to their 1950 levels. Put another way, it is reasonable to conclude that existing older cities *as they are*—that is, even without significant retrofitting or major rebuilding of the existing infrastructure to accommodate higher densities—are capable of housing an additional 10–20 million people, which, by itself, would be a significant ecological gain.

If many older cities lost population between 1950 and 2008, where did those people go? From an ecological point of view, the most important part of the answer is where they did *not* go; they did not go to new higher density cities. Rather, they went overwhelmingly either to suburbs or to fast-growing central cities in the Sunbelt. Either way, those who left established cities became more likely to adopt a car-oriented, energy-intensive way of life.

We have focused here on relatively large cities, those with populations above 100,000. This focus makes sense given that it is these communities which continue to have the greatest capacity to absorb new population, and which, conversely, have lost the greatest numbers of people due to out-migration since the mid-twentieth century. But such

instability is also present among smaller cities.<sup>64</sup> If we consider an additional 43 cities with a 1950 population between 74,500 and 99,500, a similar though not quite identical story emerges. Total population in these cities increased at a faster clip—from 3.72 million to 5.95 million people, a 60 percent increase—than in the larger cities between 1950 and 2005, although at a significantly slower rate than the population as a whole, which grew 97 percent over the same time period. That growth was driven by the explosion of several cities with a relatively modest 1950 population, such as San Jose, Albuquerque, Fresno, and St. Petersburg, each of which in 2005 had over 249,000 residents (topped by San Jose’s 912,000). Many other cities in this sub-sample experienced modest growth over the same time period, growing to roughly 100–150,000 residents. In 19 of 43 cases, however, population in these modestly sized cities declined between 1950 and 2005. In 15 of these cities, declines were of at least 8,000 people, and 9 cities (21 percent of the sub-sample) lost over 30,000 people—one-third or more of their 1950 populations. These rapidly declining smaller cities included East St. Louis, IL; Saginaw, MI; Binghamton, Niagara Falls, and Schenectady, NY; Altoona, Harrisburg, and Wilkes-Barre, PA; and Huntington, WV. Smaller cities, too, have often been thrown away in the past half-century of American metropolitan development.

The real question, of course, concerns the implications going forward if this pattern of instability persists. Simply put, if over the next fifty years roughly half of existing population centers continue to lose population, prospects for achieving sustainability will be seriously harmed. Contrary to the complacent view that “competition” for people and investment between cities is healthy, an ecological view recognizes that we cannot afford to continue throwing away or under-utilizing our established urban environments.

Instead, we need to ensure both that *each* major settlement is economically stabilized, and that population densities in cities reverse their historic downward trend. Achieving such stabilization would have the further economic benefit of conserving and keeping in use existing infrastructure, rather than abandoning existing buildings and related infrastructure at the same time that new development takes place elsewhere.

**Contrary to the complacent view that “competition” for people and investment between cities is healthy, an ecological view recognizes that we cannot afford to continue throwing away or under-utilizing our established urban environments.**

## CHAPTER FOUR:

# Projecting Future Population and Transportation Trends

In the previous chapter we examined the profound economic and population instability of America's large urban centers over the past half-century. This chapter turns to the future by examining several alternative scenarios for how future demographic growth and transportation use might proceed. This exercise is useful for two reasons. First, it illustrates just how unsustainable our current course is. Second, it provides at least an initial picture of the magnitude of the changes that will be required in how we organize metropolitan life over the next generation and beyond.

We begin by considering the general question of how many people will live in central cities compared to suburbs in 2030 and 2050. The central city-suburb dichotomy can be overstated with respect to demographics (suburbs are more diverse racially and economically than in the past), but generally speaking central city residence is a good rough proxy for relative density and compatibility with transit and pedestrian-oriented development. To be sure, there are opportunities to "retrofit" many suburban locations, and many central city locations will need to be overhauled to reduce dependency on the automobile. But very large increases of population in the suburbs will likely produce additional sprawl and car dependency, even in the presence of policies intended to steer more growth toward older, inner-ring suburbs.<sup>65</sup>

We now turn to the future by examining several alternative scenarios for how future demographic growth and transportation use might proceed.

Consider some trends. From 2000 through 2008, suburbs in the nation's largest metropolitan areas (with population greater than 1,000,000) grew at roughly 1.25 percent a year, compared to roughly 0.7 percent growth for cities in that same time period.<sup>66</sup> Scenario A projects those trends all the way from 2000 to 2050 (for all metropolitan areas). In this scenario (as in the others), it is assumed the number of rural residents in the United States will remain roughly constant at about 55 million people, that net population growth

will be absorbed in either existing metropolitan areas or the incorporation of currently rural counties into existing or new metropolitan areas, and that (consistent with Census estimates) total population in 2050 will reach approximately 438 million.<sup>67</sup> Projections for 2030 and 2050 are rounded to the nearest million; proportion calculations are based on the exact figures.

### Scenario A: Continuation of Current Trend: Suburbs Growing Faster Than Central Cities

|                         | 2000          | 2030        | 2050        |
|-------------------------|---------------|-------------|-------------|
| Central City Population | 85.3 million  | 105 million | 121 million |
| Suburban Population     | 140.7 million | 204 million | 262 million |
| City Share of Total     | 37.7%         | 34.0%       | 31.6%       |

Scenario A—a straightforward projection of trends from 2000 to 2008—depicts a future in which the central city share of metropolitan population continues to fall and the number of people living in suburbia increases by about 45 percent by 2030 and about 86 percent by 2050. In this scenario, suburbs would capture over three-quarters of metropolitan population growth. A demographic pattern of this kind would put maximum stress on our carbon footprint.

Note also that in Scenario A, while overall central city population would continue to increase, it is likely that *many specific cities would stagnate or further decline and that significant growth would be limited to a minority of cities*. This is a recipe, in other words, for continued community economic instability, a fact with severely negative ecological consequences.

In Scenario B, we look at what would happen if growth trends in the most recent years—since 2005—continued. Since 2005, the gap in the growth rate between cities and suburbs has narrowed. This scenario projects out annual growth of just over one percent (1.06%) for both cities and suburbs.

### Scenario B: Cities and Suburbs Grow at Same Annual Rate

|                         | 2000          | 2030        | 2050        |
|-------------------------|---------------|-------------|-------------|
| Central City Population | 85.3 million  | 117 million | 145 million |
| Suburban Population     | 140.7 million | 193 million | 238 million |
| City Share of Total     | 37.7%         | 37.7%       | 37.7%       |

In this development pattern, the ratio between city and suburban population remains constant over the entire time period. However, in absolute terms, suburbs would gain over 50 million residents by 2030 and nearly 100 million by 2050. Under this scenario, suburbs would capture about 63 percent of the increase in metropolitan residents between 2000 and 2050.

Scenario C considers what would happen if central cities began to grow at a significantly faster rate than their suburbs. In this projection, central cities grow between 2000 and 2050 at an impressive clip of 1.6 percent a year, while suburban growth slows to 0.625 percent a year.

| <b>Scenario C: Cities Growing at Faster Rate than Suburbs</b> |               |             |             |
|---|---------------|-------------|-------------|
|   | <b>2000</b>   | <b>2030</b> | <b>2050</b> |
| Central City Population                                       | 85.3 million  | 137 million | 189 million |
| Suburban Population   | 140.7 million | 170 million | 192 million |
| City Share of Total   | 37.7%         | 44.7%       | 49.5%       |

Scenario C produces radically different consequences. Under this scenario, central city population would more than double by 2050, and most of the current gap between central city and suburban populations would disappear, although a majority of metropolitan residents would still live in the suburbs. Central cities would capture about two-thirds of the growth in metro population over the entire 2000 to 2050 period.

Even this scenario, however, would put substantial stress on our carbon footprint. Over 50 million new people would live in the suburbs. Further, density would necessarily increase very sharply in many central cities, which would require re-design and upgrading of urban infrastructures. Finally, as in all the scenarios, much will depend on the degree to which future suburban growth takes the form of revitalizing older, inner-ring suburbs and planned new higher density communities, as opposed to low-density sprawl.

Scenario C would, nonetheless, be far more conducive to achieving a rapid reduction in our carbon footprint than either Scenario A or B. Achieving something like Scenario C would require a powerful change of policy. It is inconceivable that cities will be able to capture a majority of future population growth if their quality of life and public goods do not improve sharply and if cities do not have a strong, robust, and secure employment base.

## **Transportation Scenarios**

As noted above, the central city-suburb dichotomy provides only a rough approximation of the relative sustainability of places. Overall carbon emissions and car use must decrease dramatically in both cities and suburbs. Increasing density in and of itself does

not guarantee this will happen. Increased density does, however, facilitate land-use and transportation patterns that minimize the number of miles people travel and make it possible to travel those miles in a more carbon-efficient manner. But what will it take to stabilize the number of vehicle miles traveled between now and 2030 and beyond, in the context of a steadily growing population? Exploring this question will help illustrate why massive public investments in overhauling our transportation infrastructure are both an urgent priority (something we should begin immediately) and an inevitable eventuality (something we simply cannot avoid over the long run).

### INTRA-CITY TRAVEL

First consider alternative scenarios for intra-city transportation—everyday travel within the same metropolitan area. We assume that something like Scenario C above is operative and that dense central cities—as well as older, relative dense inner suburbs—are capturing an increasing metropolitan population share. How might that translate into reduced transportation-related stress on the urban footprint?

Suppose highway travel increases at the same rate from 2005 to 2030 as it did between 1980 and 2005, when total vehicle miles traveled increased by 95 percent. This would entail an increase in vehicle miles traveled from just under three trillion miles to roughly 5.85 trillion miles in 2030.

Under this scenario, fuel efficiency per car would need to fall by roughly one half simply to keep the amount of emissions derived from cars constant (i.e. doubling miles per gallon). Achieving a *reduction* in automobile-related carbon emissions of greater than 50 percent over this same period would require a 75-percent reduction in carbon emissions per mile traveled—that is, a quadrupling of current miles per gallon, holding the carbon content of fuel constant. A team of researchers at MIT has concluded that doubling average fuel economy by 2035 is a technical possibility if there is a dramatic overhaul, starting as soon as possible, of the kinds of vehicles being built. Improvements in propulsion and engine systems must be devoted in significant measure to improving fuel efficiency (as opposed to vehicle size or performance), *and* a very high proportion of the fleet must become hybrids.<sup>68</sup>

It is reasonable to regard such an increase in fuel efficiency as the maximum achievable goal by roughly 2030–35. Achieving that goal will take dramatic action, including likely direct public intervention into the kinds of vehicles that are produced. In order for such an improvement to translate into actual cuts in carbon emissions, however, the gains cannot be offset by further increases in miles driven. Motor vehicle use, at a minimum, must stabilize.

However, if the labor force participation rate remains the same and the proportion driving alone to work remains constant between 2007 and 2030, over 25 million more Americans (130 million total) will drive alone to work in 2030. If a policy goal were set of keeping the number of people driving alone to work constant, then the proportion of

The most direct way to get people out of cars would be to dramatically expand public transit.

solo drivers in the work force must fall from 76 to 61.4 percent. Achieving that goal would mean shifting 14.6 percent of the American workforce out of solo driving—but the percentage of Americans now taking public transit, walking to work, or working at home *combined* now totals just 11.9 percent of the work force.<sup>69</sup> Each of those sectors will need to double in size, and the carpooling sector of the workforce must also grow by about 25 percent, simply to keep the absolute number of solo car commuters at its current level.

Incentives for telecommuting and planning strategies that sharply increased the number of jobs located close to residences could plausibly increase the proportion of jobs that are at home or accessible by bicycle or by foot. The most direct way to get people out of cars would be to dramatically expand public transit. Suppose as a mid-range goal we aimed to triple the percentage of Americans using transit by 2030, from 4.8 percent to roughly 15 percent of the workforce. In real terms, this would mean increasing the number of Americans using transit to get to work from 6,684,000 in 2007 to 25,683,000 in 2030. This represents a multiple of 3.84 compared to 2007 (we will round this multiple up to an even “4” for the rest of this example).

### Table 5. Alternative Trend Summary

*Reducing Automobile and Transportation Related Carbon Emissions, 2005–2030*

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**Current Trend:** Automobile miles travel increase 95 percent by 2030. Achieving a 50-percent reduction in automobile-related carbon emissions relative to current levels thus would require a 75-percent reduction in emissions generated per mile. Proportion of people driving work (85 percent) and driving solo to work (76 percent) assumed to remain roughly the same between 2000 and 2030.

**Alternative Trend I:** Automobile miles traveled stabilize between 2005 and 2030 (no net increases). Achieving a 50-percent reduction in automobile-related carbon emissions relative to current levels thus requires a 50-percent reduction in emissions generated per mile by 2030 (roughly same level as maximum feasible goal defined by MIT researchers). Proportion of people driving to work must fall from 76 to 61 percent by 2030 to keep same number of drivers on the road and accommodate population growth. Proportion of people using transit, walking, biking must more than double by 2030 in proportional terms; absolute number of people using transit must nearly quadruple.

**Alternative Trend II:** Same as alternative trend I, plus sufficient increases in efficiency of transit to offset increased vehicle miles traveled, and significant slowing in the rate of increase for total travel demand due to long-term shifts in urban design towards mixed use and closer integration of home, work, and commercial activity.<sup>70</sup>

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Note, however, that the goal must not be simply to reduce car-generated emissions, but emissions from the transportation sector as a whole. That means that there must be additional efficiencies in the non-auto sector to offset increases in vehicle miles traveled by other modes of transportation. For the purposes of this analysis, we make the simplifying assumption that a) increased load efficiencies in transit (i.e. more passengers per trip, particularly bus trips) as well as b) general motor vehicle energy efficiencies (for buses) and c) mode-specific efficiency improvements in rail will be sufficiently large to offset large increases in vehicle miles traveled by these modes. These requirements do not of course apply to biking and walking.

How much public investment would be required to support a system (more accurately, a network of systems) to transport nearly 26 million people to work by 2030? In 2008, transit agencies spent a combined \$54.2 billion, including \$36.4 billion in operating costs (roughly 37.7 percent funded out of fares and agency resources), and \$17.8 billion in capital costs.<sup>71</sup> If the goal were to quadruple public transit use, this would likely involve roughly a quadrupling of operating costs and a yet higher increase in annual capital costs, since expanding the system will often require building completely new infrastructure. Moreover, a major requirement of this new investment is not simply to increase the quantity, but also quality, of public transportation. Buses and subway cars must be clean, comfortable and safe, and systems as a whole must be efficient, reliable, and have a near-perfect safety record if they are to become widely accepted and used by middle-class and affluent people. For the purposes of this estimate, we will assume that a ramped-up system would involve annual operating costs of roughly \$140 billion (40 percent funded out of fares and other internal resources) and \$100 billion of annual capital spending, with a total annual expense to the public of roughly \$240 billion. It is likely that as systems become more mature and operate at closer to capacity, user fares should be able to account for a larger share of operating costs, reducing the required public subsidy.

Note that this approach is in many ways a modest goal. It would mean that the United States in per capita terms would have far more automobile commuters than any other Western country and that a majority of metropolitan residents would still not use public transit. If non-work-related car trips increase in quantity or distance, then holding the number of solo auto commuters steady will not stabilize total vehicle miles traveled. The assumption that the United States will actually achieve a doubling in fuel efficiency in cars by roughly 2030 is probably optimistic. Finally, keep in mind that the goal of policy should not simply be to hit a 50-percent target, but to reduce carbon emissions *as far as possible*—including by at least 90 percent by 2050. It is important to note here that 2030 cannot be seen as a stopping point for the needed reconfiguration of the transportation system. As population continues to grow, more efficient modes of transportation must also grow in capacity.

These considerations suggest that an even more ambitious scaling-up of mass transit use in the United States would be prudent. A reasonable long-term goal would be to cut the proportion of solo auto commuters in the United States by one half, to 38 percent. This might entail increasing the proportion of carpoolers from roughly 10 percent to 15 percent, doubling the proportion of people working at home or walking or biking to work from just over seven percent to 15 percent, and increasing transit use up to 30 percent, comparable with that of other industrialized nations. (The balance would continue to travel by taxi, motorcycle, or other means).

Attempts to estimate the cost of a system that served 30 percent of the commuting population are necessarily uncertain. In particular, while mass transit (like highway travel) does not cover all of its costs, a system that attracted more riders on each vehicle trip might generate a greater share of its own income. A reasonable first approximation is that such a system might when fully developed cost about \$115–130 billion in net operating costs (operating costs minus fare revenue), and about \$200 billion a year in capital expenses.<sup>72</sup>

As elaborated in subsequent chapters, that level of public investment could and should be targeted to place-based economic development strategies.

### **INTER-CITY TRAVEL: REPLACING AIR TRAVEL AND LONG CAR TRIPS WITH HIGH SPEED RAIL**

Travel between cities and regions will also need to evolve over the coming decades to minimize carbon emissions.

In normal economic times, nearly 600 billion revenue passenger miles are traveled each year in the United States on passenger airlines (equivalent to nearly 2,000 miles per person).<sup>73</sup> This total—which refers to domestic flights alone—will rise to 730 billion passenger miles per year by 2030 due to population growth if travel per person remains constant. (In fact, plane travel has been growing more rapidly than population in recent years.)

Plane travel is perhaps the worst form of travel from the standpoint of carbon emissions, and while incremental improvements in airplane fuel efficiency over the next twenty years are possible, on current trend these will be more than offset by continued increases in miles traveled. To reduce the impact of this sector, the only plausible solution is to stabilize the number of miles traveled as quickly as possible. A reasonable goal of national policy would be by 2030 to make high-speed rail the norm for trips under 300 miles and at least competitive with air travel at somewhat longer distances.

Inter-city rail travel by Amtrak in 2008 totaled just under 6.2 billion passenger miles a year.<sup>74</sup> An ambitious but not unreasonable goal would be to increase this figure to 100 billion passenger miles a year, in preference to short and medium-length air journeys. Canadian analysts Richard Gilbert and Anthony Perl have proposed a \$2 trillion investment in high-speed rail in North America between now and 2025, or about \$140 billion

a year for 15 years.<sup>75</sup> The goal would be to construct 25,000 km of dedicated, double-rail track for high-speed trains traveling 125 mph or faster.

The optimal speed that a high-speed rail system might achieve in the United States without seriously sacrificing fuel economy (at maximum achievable speeds, fuel economy may begin to decline) is at this point unknown and obviously dependent on how technological developments unfold in this area. Nonetheless, here we will cautiously assume that a workable high-speed rail system in the United States will operate at average speeds of about 125 mph. That cautious perspective on maximum attainable speed also serves as an important reminder that to become more competitive with air and car travel, a restructured train system should rely not just on speed but also on big improvements to comfort, ease of travel, and reliability.

As it stands, Amtrak's current highest-speed train, the Acela, averages 82 miles per hour from Washington to Boston, and Amtrak officials state that the average speed cannot be significantly increased with existing infrastructure. Building a train system capable of maintaining average speeds of 125 miles per hour will require an almost entirely new system of dedicated rail.<sup>76</sup>

A typical current shuttle flight from Washington to New York City (LaGuardia) is 70 minutes. If we assume that travel time to and from the station, as well as time spent in security and waiting, is roughly 90 minutes less for a rail trip than for the average airline passenger, then the rail system needs to be able to make the Washington-New York trip in no more than 2 hours, 40 minutes to match the air travel time. Currently the Acela can make the trip in 2 hours, 42 minutes; but a train averaging 125 miles per hour would make the trip in 1 hour, 50 minutes (2 hours, allowing for stops). Achieving that speed and a high degree of reliability would make rail much more attractive.

Such a train could also make the Washington to Boston trip in about 3 hours, 32 minutes (4 hours, allowing for stops), which would be slower than air (85 minutes) but much more competitive. (The same trip on the Acela is presently scheduled at 6 hours, 37 minutes.) Airplanes would still have a huge time advantage on cross-country trips (at 125 miles per hour, a train would take over 21 hours to reach Los Angeles from Washington, not counting stops), and a substantial advantage on trips from the coasts to the Midwest (Washington to Chicago would be 5 hours, 36 minutes plus stops, compared to under 2 hours, 45 minutes for the same trip by plane), although it is likely that even for trips of that length some travelers would choose rail if the experience were competitive on other dimensions (price, reliability, comfort).

A serious effort to make rail competitive cannot be done on the cheap—first-class infrastructure, equipment, and service will be required, and the object should explicitly be to capture substantial market share from air travel. Small-scale investments will not get the United States anywhere close to the twenty-fold increase in rail passenger travel that

Getting serious and reducing carbon emissions means the government must engage directly in the kinds of economic planning that have been eschewed by both American liberals and conservatives, and, at least on some occasions, must move to re-organize private industry itself.

will be required over the next 20 years. Policy should focus first on improving inter-city rail service in highly congested regions, building on Amtrak's existing strategy to develop a dozen high-speed rail corridors nationwide. There are few estimates of the price tag for a long-term strategy, but the Gilbert and Perl estimate of roughly \$2 trillion over 15 years is a reasonable benchmark for an aggressive program aimed at making rail competitive with planes and cars on trips shorter than roughly 600 miles.

Harvard economist Edward Glaeser has recently pointed out that unlike improvements in urban mass transit, which will probably most immediately benefit poor and working class Americans, inter-city high speed rail will likely provide the most benefits to relatively affluent Americans.<sup>77</sup> This is correct, but it is not a reason not to undertake such investments. From a carbon-reduction standpoint, making longer distance travel more efficient is as urgent as reducing commuting by automobile. Fairness suggests, however, that taxes used to build high-speed rail should target upper-income business travelers, either in the form of generalized carbon tax that adds the per capita cost of carbon use onto the price of each airline ticket (or gallon of jet fuel consumed), or as a specific surtax on airplane tickets.

Either strategy would obviously affect the profitability and perhaps the very viability of the commercial airline industry. If the latter is the case, then public action to take control of the airlines will be justified and vastly preferable to subsidizing unprofitable carriers. The cruel fact is that not all sectors of the current economy can continue in their current form. Flatly stated, it is not in the public interest for passenger revenue miles traveled by commercial airlines to increase; rather, it would be better if such mileage stabilized or even decreased. It may prove difficult for existing carriers to remain profitable in such a climate. This example illustrates a theme developed below: getting serious about reducing carbon emissions means the government must engage directly in the kinds of economic planning that have been eschewed by both American liberals and conservatives, and, at least on some occasions, must move to re-organize private industry itself.

## Summing Up

In our view, there is no reason to think that American's largest cities are anywhere near a firm ceiling in terms of how many people they can accommodate comfortably (i.e. without severe costs to quality of life). Most cities have fewer people than they did at their historic peak and overall metropolitan density has fallen. As the data reviewed here suggests, even without a systemic effort to retrofit our larger cities, such cities could accommodate at least 10 or 20 million new people above current levels.

Note, however, that population is projected to increase by *130 million* people between now and 2050. It seems unlikely that all of this population growth can be accommodated

in one of the established large cities. But if a large share settles in low-density suburbs, that will severely hamper efforts to move towards an ecologically sustainable metropolis. This observation suggests two conclusions: first, that “retrofitting suburbia” is exceedingly important; and second, that it will be desirable to create new population centers based on high density, economic stability, and ecologically sustainable principles. These new cities would be different in kind from the instant, fast-growing mega-suburbs that have proliferated in the Sun Belt. Such large suburbs often contain over 100,000 residents, organized into a relatively low-density environment centered on the automobile and predicated on large-scale commuting.

One further point is important to stress. The projected increase in population in the United States will not automatically lead to balanced growth within and across our metropolitan areas. Given the need to reduce our carbon footprint and accommodate new people at the same time, it is illogical and wasteful to allow existing cities to deteriorate any further. Indeed, it may be helpful here to stipulate some basic aims for balanced metropolitan growth over the next 30 years:

1. Existing centers of metropolitan areas should have stable and in many cases growing populations.
2. Cities which now are seriously under-utilized (with large swaths of vacant industrial and residential land) should be revitalized and grow in size.
3. Overall densities in metropolitan areas must increase. This is to be accomplished by increasing the proportion of metropolitan-area residents who live in central cities, retrofitting some suburban places to accommodate greater density, and limiting low-density growth on the perimeter of metropolitan areas (sprawl).
4. Such increases in density must be accompanied by and contribute to large-scale shifts in our urban transportation patterns which will make serious reductions of our carbon footprint feasible.

None of these aims—not even the minimal first goal—will be achievable without a deliberate effort to secure the economic stability of our urban economies and reduce the dependence of cities on the economic location decisions of mobile capital.

## CHAPTER FIVE:

# A Toolbox for Promoting Long-Term Economic Sustainability

To achieve the twin goals of securing economic stability and transitioning to a low carbon footprint economy in every metropolitan area, new tools are required. The old rules of metropolitan economic life, in which civic livelihood is dependent on the choices (and market performance) of corporate shareholders and private equity investors who live elsewhere and see the community as merely a profit location, simply cannot produce sustainable communities. In fact, the old rules pit communities against one another—both within and across metropolitan areas—as businesses aggressively seek tax breaks and subsidies before making major investments. *Yet almost none of the emergent literature on sustainable cities challenges the fundamental dependence of most urban places on investments made by non-local private actors.*

On the other hand, the idea that public action should sustain communities threatened by disinvestment is hardly alien to our political culture. For example, the largely successful experience with the military base conversion efforts of the 1990s, in which the federal government provided resources and assistance to communities impacted by base closings, shows that when we are serious about sustaining communities, we have the capacity to do so. Communities such as Myrtle Beach, South Carolina were able to assume control of base land and property and convert it to other uses (in Myrtle Beach's case, an airport), cushioning the blow of the base closures and laying the groundwork for long-term economic health.<sup>78</sup>

## Existing Policy Approaches

Federal policy towards central cities over the past half-century has been schizophrenic. Large-scale policies and subsidies have encouraged suburbanization and harmed traditional high-density neighborhoods while other federal programs have sought to foster urban development. The Obama Administration, drawing on the ideas of urban scholars

at the Brookings Institution and elsewhere, has promised a more rational approach to federal urban policy, starting with the creation of a White House Office of Urban Affairs.

In June 2009, the U.S. Department of Housing and Urban Development, U.S. Department of Transportation, and the U.S. Environmental Protection Agency joined together to form the Interagency Partnership for Sustainable Communities, which aims to scale back policies which exacerbate sprawl and make sure that affordable housing exists in close proximity to jobs and transportation. The Obama administration has also launched the “Promise Neighborhoods” and “Choice Neighborhoods” programs, which aim to foster comprehensive models for improving urban education and public housing. In addition, as described below, the Administration is increasing money invested in public transit and boosting spending on community development.<sup>79</sup>

Other urban researchers have specified a more expansive urban agenda for the federal government. One major priority emphasized by Bruce Katz and his colleagues at the Brookings Institution is making the metropolitan region the programmatic scale for federal policies and using federal funds and rules to strengthen the role and power of metropolitan planning organizations. Katz faults the federal government for “failing to lead” on key questions such as surface transportation, carbon emissions reduction, and immigration policy while often acting as an impediment to local and regional innovation through “one size fits all” rules. As Katz et al. put it, “The question the federal government has to ask is not, ‘Does this policy work for 50 states?’ but ‘Have we clearly defined the outcome we seek to achieve with this policy and arrayed the tools provided so that 363 very different metropolitan areas with very different capacities can achieve the end result?’<sup>80</sup>

Katz et al. go on to propose the creation of a national Surface Transportation commission to coordinate transportation planning across metropolitan areas, as well as a National Infrastructure Bank to underwrite needed investments. In addition, they advocate formation of a strong data collection capacity at the metropolitan level, creation of a National Innovation Fund, and a strong effort to encourage regional collaboration at the metropolitan level.

Taken on its own terms, this is an important and ambitious agenda. There is no question that rationalization of urban policy will be essential. This reform agenda, however, simply does not address the fundamental reality of urban economic instability resulting from the dependence of cities on mobile capital investment.

This chapter thus focuses on direct strategies that local, state, and federal governments can employ to stabilize the economic basis of community. The first involves intelligent targeting of resources already available to government; the second involves encouragement of “green community wealth building”—various forms of ownership that stabilize capital effectively in a community. In the following chapter, we go on to consider larger order regional and industrial policies that must play an essential role in stabilizing metropolitan communities.

Procurement policies are a potent tool for encouraging the development of specific geographic communities.

## Targeting Existing Government Resources

A comprehensive strategy for stabilizing the economic underpinnings of sustainable metropolises should begin by making concerted use of existing government tools to steer and stabilize investment in particular areas.

Most straightforwardly, *procurement* policies are a potent tool for encouraging the development of specific geographic communities. On a modest scale, governments can give preferences on bids (commonly of 5–10 percent) to local firms, thus directing more government business to particular regions. Alternatively, governments might begin factoring in the total social costs (including pollution generated by long-distance transport) into bid solicitations, again with the intent of favoring producers closer to home. Christopher McCrudden has documented the variety of ways governments around the world have used procurement policies to advance social aims, from promoting minority- and women-owned businesses to assisting development in economically troubled regions.<sup>81</sup>

In certain large-scale cases, government demand for new equipment or products can create new industrial centers. As Ann Markusen and Jonathan Feldman each have noted, there are many examples of this with respect to military spending and military contracting (such as Colorado Springs, Colorado). It is not unimaginable that in the near future the government might similarly act to create or expand communities based on the promise of long-term government contracts to acquire new and advanced ecologically-oriented products and technologies.<sup>82</sup>

Public facility *siting* practices are another mechanism for stabilizing urban communities. The idea is simply that when new public facilities are constructed, they should be located in existing communities to promote compact development. In some cases, public facilities can also play a helpful role in contributing to suburban “retrofits” of the kind discussed above.

## DEPOSITS, LOANS, AND VENTURE CAPITAL

Governments control an enormous amount of financial resources, more of which could be used to stabilize urban communities. Funds deposited in community-based financial institutions, for instance, strengthen the financial position of those institutions and enable them to undertake more lending in local communities.

Governments can also establish revolving loan programs aimed at making more resources available to local enterprises in a geographically targeted area.

Numerous states and localities have also established venture capital funds in which the state provides start-up capital to promising new firms in exchange for an equity stake. In some cases these funds have produced dramatic financial returns for investing localities. From a stability point of view, geographically targeted venture capital funds can help create new jobs in specific regions.<sup>83</sup>

## **PUBLIC PENSION FUNDS**

Teacher and government employee pension funds represent a standing source of capital that also could be more deliberately used to target investments to particular places. Two statewide funds with a long track record of steering investment to either their home state or particular places within that state are Retirement Systems of Alabama and the California Public Employee Retirement System (CALPERS). Rather than simply seek the highest market-rate return, these funds have contributed to the health of their states' economy by aggressive investment in businesses that will employ workers in their respective states.<sup>84</sup>

## **INFRASTRUCTURE SPENDING**

As with the siting of government buildings, infrastructure projects by state and federal government have an enormous potential to shape the American metropolis. Federal government spending on highways and automobile travel (to the exclusion of other modes of transportation) starting in the 1950s is commonly blamed for contributing to suburbanization and the development of car-dependent metropolitan landscapes across the country.

Such spending could and should instead be directed towards strengthening urban centers, primarily by shifting priorities from new road building to mass transit and inter-city rail. The \$13 billion already committed by the Obama Administration to high-speed rail is a step in this direction.

State governments also have the capacity to shape development patterns at the local level through their infrastructure spending policies. An early effort along these lines was in Maryland under Governor Parris Glendening during the 1990s, when the state linked funding for new school and infrastructure to the adoption by counties of smart growth plans. The aim was to use new spending to strengthen existing urban areas rather than to subsidize further sprawl.

## **TARGETED TAX BREAKS**

The federal government has offered a variety of programs aimed at giving tax incentives to employers who operate business and hire employees from high-poverty area. The most well developed version of this, the Empowerment Zone/Enterprise Community program initiated by the Clinton Administration in the 1990s, combined incentives with targeted job training funds and related support. Tax incentives are a rather weak tool for promoting community stability but, when tied to accountability provisions, may have a role to play in re-balancing metropolitan areas.

## **COMMUNITY DEVELOPMENT SPENDING**

Federal and state governments spend money directly on community development in urban areas, though federal spending was sharply cut during the 1980s. Specific federal

programs include the Community Development Block Grants (federal grants used by localities to design and implement development projects) and the Community Development Financial Institutions (CDFI) Fund, which helps capitalize financial institutions serving high-poverty areas. The 2009 American Recovery and Reconstruction Act increased CDBG spending by \$1 billion and also increased spending on a variety of housing-related programs by some \$12 billion.<sup>85</sup>

The Obama Administration's 2011 budget contains numerous proposals to expand community development initiatives. Highlights include \$1 billion to capitalize a national Affordable Housing Trust Fund; \$4 billion for the National Infrastructure and Innovation Fund; \$250 million for the Choice Neighborhood program, which aims to “transform” areas with highly concentrated poverty via improvements in housing, transportation, and job access; \$250 million for the Community Development Financial Institutions (CDFI) Fund; \$5 billion in New Markets Tax Credit allocation authority; and \$688 million for the Inter-agency Partnership for Sustainable Communities, to name a few highlights.<sup>86</sup>

In short, existing streams of government spending and activity can be—and, in some cases, have been—directed towards stabilizing cities economically. New spending streams from the federal government as well as existing public pension funds represent particularly large pools of money that could make a significant impact on community stability.

## **Green Community Wealth Building**

Much government spending is aimed at urban areas. However, even when well intentioned, it often has only a temporary impact on community economic stability. A central premise of much federal urban development policy is that proactive steps can make urban communities more attractive investment sites. Even when this approach is successful, however, the communities concerned remain fundamentally dependent on the investment decisions of outside parties, whose concern is profit-making, not community well-being.

An exception is when the government itself creates new permanent employment in a community, such as when building a new office facility or expanding a public university system. There is enormous potential, however, for government to re-focus economic development spending so that it benefits enterprises permanently located in the community. One important example is the Ohio Employee Ownership Center, which uses a relatively modest amount of funding (\$550,000 budget, with state funds providing roughly a quarter of that amount, according to a 2009 estimate) to assist workers to buy the companies where they work from owners who are retiring or to preserve their businesses when shutdowns are threatened. Founded in 1987, the Center to date has helped retain 14,400 jobs at 77 companies at a cost of roughly \$500 per job retained. The Center estimates that total worker equity in these businesses today exceeds \$300 million.<sup>87</sup>

Efforts to direct resources to particular places will be much more effective when they are targeted towards institutions and firms with long-term roots in the community—that is, when they are used to expand *green community wealth*.

The object of green community wealth building is to increase the proportion of capital held by actors with a long-term or permanent commitment to a given locality or region. In some cases, smaller, privately held companies can fit this description, when the owners have for personal or historical reasons extremely strong ties to a particular location. In publicly traded firms, however, the central objective is to maximize profit for shareholders. Consequently, such firms inevitably must treat particular communities instrumentally. They will invest in the most profitable feasible location, for as long as it remains the most profitable feasible location.

In contrast, green community wealth is inherently tied to place. Local, state, and regional public enterprises, employee-owned and controlled firms, neighborhood-owned enterprises, and nonprofits (large and small) all, in contrast, are inherently rooted in particular communities, and in many cases defined by those communities. Communities with a higher proportion of such capital with long-term staying power are better positioned to achieve economic stability and plan effectively for the future, including for the transition to a low carbon future.

Green community wealth also brings equity benefits. As many have pointed out, green jobs will likely soon be a booming, multi-billion industry, but it remains unclear who will benefit most from that boom—a few large corporations, or people living and working in cities themselves. There are strong reasons for taking aggressive steps to ensure that it is the latter.

First, as noted in Chapter One, providing a basis of economic security to both communities and *households and individuals* is essential to building political support for a sustained green transition. If low-income and minority constituencies fail to embrace the green economy, urban politicians will continue to place other priorities higher.

Second, green community wealth building can be an important tool in neighborhood revitalization that *benefits existing residents* and reduces poverty (rather than moving poor people around). Reducing poverty is a key step in improving the quality of life in central city and older suburban neighborhoods, making them more attractive options for residents.

Third, narrowing inequalities is important for its own sake; the levels of inequality now characteristic of our metropolitan areas are an affront to even mild conceptions of social justice, and make collective political and public action across class and race lines more difficult. In the long term, too, there is good reason to believe that narrowing income and wealth inequalities substantially must be an important part of challenging consumerist acquisitiveness and building an ethos of ecological responsibility, by making consumption less important as a status marker. Most of the place-based, green community wealth

**The object of green community wealth building is to increase the proportion of capital held by actors with a long-term or permanent commitment to a given locality or region.**

building forms discussed here (small privately held firms are the exception) offer the prospect of helping to “spread the wealth around” in a quite literal sense.

Finally, community ownership of green jobs is likely to yield more long-term employment in urban communities than a traditional corporate-driven strategy. Traditional employers have an incentive to keep labor costs low, and hence will use workers only for as long as they are needed on a particular job (such as weatherizing homes). Community-controlled enterprises, in contrast, are motivated by the desire to maximize employment over the long term. Instead of treating employees as disposable workers, such employers will seek ways to find new work and new training for its work force. If (some time down the road) all available weatherization work has been completed, community-based organizations will seek ways to generate new work and develop new skills for its members, rather than jettison the work force.

Community ownership can take a variety of forms, including public ownership, ownership by community development corporations or nonprofit organizations, and employee ownership. Success stories in each of these areas are well documented, and each of these models have been shown to be viable by the tests of experience.

As we have stressed, stable community-based ownership can make a vital contribution to economic stability and an ecologically sustainable metropolis even when the enterprise concerned does not work specifically in the green sector. Given that the green sector will be a rising segment of the economy, however, it makes sense for federal and state policy to put particular emphasis on nurturing green sector businesses that are owned by and run for the benefit of local community residents. Government contract dollars, loans and investments should be targeted at enterprises that exemplify stable green community wealth building practices.

Even in the inhospitable policy climate of most of the past decade, numerous models of green sector, community-based ownership have developed around the country. The website *community-wealth.org* has, over the past five years, developed a comprehensive map of many of the best examples drawn from nearly 20 different community ownership and wealth building strategies. In 2010, the Democracy Collaborative released a report titled *Growing a Green Economy for All: From Green Jobs to Green Ownership* that highlighted a number of additional community-based industry leaders.<sup>88</sup> Here are just a few of the many examples of community ownership in the area of “green collar” jobs:

**DC Greenworks** runs a group of nonprofit social enterprises that train and employ local “at-risk” youth in the nation’s capital. D.C. TreeKeepers assists local neighborhoods that are interested in initiating a community greening project. D.C. RainKeepers provides rain barrels and training to households interested in disconnecting one or more rain downspouts from the storm sewer system. D.C. Greenwork’s Green Collar Job Training Program reaches out to the city’s low-income, ethnically diverse population to foster new

job opportunities and training in the urban forestry, nursery, and landscaping industries. And D.C. Greenworks' Low-Impact Development program offers installation services to local businesses and households, such as greenroofs and rain gardens.

**EBO Group** in Sharon, Ohio is an engineering firm with 70 employee-owners and \$24 million in annual sales. The company, founded in 1978, originally developed custom-designed clutches and brakes, but in recent years has shifted focus to developing more energy-efficient batteries for plug-in hybrid vehicles and other storage devices that use recyclable sources of power, such as solar energy.

**Namasté Solar** in Boulder, CO is a 100-percent, employee-owned (ESOP) company that has gained an estimated 20-percent share of the Colorado solar installation market. Founded in 2005, Namasté Solar has grown from three to 55 employee-owners. In 2008, its revenues totaled \$14.5 million and it has become a market leader in Colorado, with a portfolio of more than 750 projects total that generate more than four megawatts of energy. In the four year period of 2005–2008, Namasté Solar was the 56th fastest growing company in the nation overall, had the 4th fastest growth of all energy companies and ranked number-one in growth in the solar industry.

**Pioneer Valley Photovoltaics Cooperative** ("PV Squared") in Greenfield, MA is a worker-owned business with 15 employees and \$4 million in sales that provides turnkey renewable energy system installations for homes, businesses, municipalities, and institutions. PV Squared custom designs and installs solar electric and hot water systems, small wind turbine technologies, and micro-hydroelectric facilities.

San Francisco-based **Recology** (formerly Norcal Waste Systems), is a recycling firm that has been 100-percent employee-owned for more than two decades, providing hauling, recycling, reusing and composting for over 50 jurisdictions in California. Today Recology employs 2,200, and serves 570,000 residential and 55,000 commercial customers. Since becoming employee-owned, \$55.7 million has been paid out to employee-owners in profit distribution.

### **THE CLEVELAND MODEL: BUILDING ON WHAT CITIES ALREADY HAVE**

Such initiatives offer important precedents. But for community-based ownership to become capable of significantly bolstering community stability, it must be scaled up. The challenge is to develop a flow of resources capable of not just sustaining single initiatives but also starting new community-based firms. Perhaps the most impressive effort to do just that is now taking place in Cleveland, where the Cleveland Foundation, in partnership with the Ohio Employee Ownership Center and ShoreBank Enterprise Cleveland, is undertaking a long-term project to build a network of cooperatives in the city based on the highly successful Mondragón model, with particular focus on the city's Greater University Circle neighborhoods.

Crucially, the Cleveland approach aims to leverage the city's existing "anchors" — in this case, hospitals and universities — so as to provide a long-term market for the new cooperatives. This innovation is crucial. Although many cities, including Cleveland, are under severe economic stress, most cities do have long-term stable institutions with large amounts of buying power. These include government operations, universities, and medical facilities. These relative stable institutions already help anchor neighborhood and cities economically; the Cleveland model aims to take it a step further and use the economic power of anchoring institutions to generate new community-based enterprises.

The first of Cleveland's planned network of "Evergreen Cooperatives" opened in September 2009. The **Evergreen Cooperative Laundry** is a state-of-the-art, ecologically 'green,' commercial facility capable of handling 10 million pounds of health care bed linen a year. It has significant scale contracts with major hospitals and clinics in University Circle, but will also serve the city's larger commercial nursing home market. The 13,000-square-foot laundry was capitalized with \$5.7 million of public, private, and philanthropic investment. Its sophisticated business plan provides all Evergreen employee-owners a living wage and health benefits. After seven years on the job, if business plan projections are realized, each employee will have a \$65,000 equity stake in the enterprise.

In October 2009 an employee-owned, community-based energy company — **Ohio Cooperative Solar** — began operations, which include large-scale installations of solar panels for the city's largest nonprofit health, education, and municipal buildings. Another business in development is **Green City Growers**, which will build and operate a year-round hydroponic food production greenhouse in the midst of urban Cleveland. The greenhouse will be capable of producing more than four million heads of fresh lettuce and hundreds of thousands of pounds of basil and other herbs a year. Many additional worker-owned enterprises are in the planning stage.

In each case, like the initial enterprises, the co-op businesses are focusing both on the specific procurement needs of the large hospital and university anchor institutions in the area as well as the local market in general. Foundations, anchor institutions, banks, and the municipal government have all contributed resources to stimulate the growth of the overall complex of firms. The **Evergreen Cooperative Development Fund** is currently capitalized by a \$3 million grant from The Cleveland Foundation and has already attracted additional support from local foundations and area universities and hospitals. Ultimately, the group aims to raise \$100 million in investment capital.

The Cleveland model is important for its own sake and because it points in the direction of *community-based economic planning* for long-term stable jobs. The notion that systematic planning of land use and transportation is a requirement for creating sustainable metropolitan areas is now widely accepted (see Chapter Two) and, with the Obama Administration's promotion of its Sustainable Communities programs, an instrument of

federal policy. But such planning cannot succeed if the economic basis of cities collapses. A coherent sustainable communities policy also must pay direct attention to the question of how to lay the basis of long-term economic stability by nurturing a green community wealth building economy.

As we have noted, the new resources being directed towards developing a green industrial sector in the United States offers an opportunity to promote economic stability. But also crucial are more effective use of existing public resource flows and existing economic anchors within cities. The relatively informal arrangements of the Cleveland model, in which nonprofits are cooperating with public institutions and private employers, indicates that “planning” need not connote remote government officials drawing up a blueprint and then imposing it. Rather community economic planning can be collaborative, with multiple institutional actors involved. Indeed, if it is to draw fully on the resources available in typical urban areas, it will need to be collaborative.

One of the most crucial roles government and policy can play in this process is to leverage its large and growing expenditures in health care and education (meds and eds) to support shared ownership enterprise and help stabilize urban communities. To a very substantial extent, the American economy is already “planned,” and the importance of planning will only increase as the resources devoted to health care, education, and the green sector increase. Communities should capitalize on those resource flows to assure that they benefit and help nurture truly community-based enterprises.

**The relatively informal arrangements of the Cleveland model, in which nonprofits are cooperating with public institutions and private employers, indicates that “planning” need not connote remote government officials drawing up a blueprint and then imposing it.**

## **Future Possibilities: Public Investments in Green Research and Development**

Finally, needed public investments in research and development offer yet another route to both directly creating jobs to stabilize particular communities and to creating opportunities to support new green community wealth building models. Shellenberger and Nordhaus make a compelling case for a massive, multi-year investment in clean energy research and development. They propose investing \$300 billion over ten years. \$300 billion over the next decade is in fact a modest proposal, relative to the annual defense budget, or to what China has committed for such research—a reported \$440-\$660 billion over ten years. Other proposals have called for as much as \$80 billion a year. This spending would be devoted to basic research; additional money could be invested in existing non-carbon energy technologies, in building a better energy grid that allows for decentralization of energy sources, and importantly, in using public money to create markets for new technologies through large-scale orders that allow producers to achieve vital efficiencies of scale. (Shellenberger and Nordhaus thus suggest spending upwards of \$200 billion in

buying solar cells in order to bring down the per unit price of such cells and make them affordable and accessible to the broader market.)<sup>89</sup>

Each segment of this investment strategy would have the further potential to boost community-based firms drawing roughly on the Cleveland model. New or university-based research centers could contract with newly formed local cooperatives to provide basic services; production of newer technologies as well as existing ones such as solar cells could be undertaken by new public or semi-public firms; sustainable, pedestrian-oriented housing in close proximity to work could be provided for new employees at the research centers. Federal investment, in other words, could act not simply to boost progress towards cleaner energy but as a fulcrum for establishing new, sustainable neighborhoods and communities.

What's especially promising about the Cleveland model is that it could be applied in hard-hit industries and working-class communities around the nation. The key link is between national sectors of expanding public activity and procurement, on the one hand, and a new local economic entity, on the other, that "democratizes" ownership and is deeply anchored in the community. In the case of health care, the link is also to a sector in which some implicit or explicit form of "national planning" is likely to emerge, particularly if, as seems likely, present trends of decreasing employer health care provision and increasing public sector provision continue.

In 2008 public authorities bought roughly 800 new rail and subway cars along with roughly 16,000 buses and smaller "paratransit" vehicles. Total current capital outlays on vehicles alone amount to \$5.3 billion; total annual investment outlays (vehicles plus stations and other infrastructure) are \$17.8 billion.<sup>90</sup> The American Public Transit Association estimated in December 2008 that a \$47.8 billion investment in transit capital projects could generate 1.3 million new green jobs in two years alone.<sup>91</sup> There are also strong reasons to expedite the retirement of aging buses and replace them with more efficient energy-saving vehicles with better amenities such as bike racks and GPS systems—the procurement of which would, in turn, create more jobs. Additionally, as noted above, the development of an inter-city rail network requires large public expenditures that, according to Canadian analysts Richard Gilbert and Anthony Perl, could be on the order of \$140 billion a year.

The principles implicit in the nascent Cleveland effort point to the possibility of an important new strategic approach. If implemented broadly, it provides the possibility to leverage economic activities heavily financed by the public to target jobs to communities in distress. More broadly, it provides a methodology for federal, state, and local officials to begin to create and give stability to *green community wealth building* enterprises that are both democratically owned and can contribute to the community economic stability necessary to build truly sustainable cities.

## CHAPTER SIX:

# Building National and Regional Planning Capacity

In the previous chapter, we discussed two important tools for enhancing community economic stability: intelligent targeting of public resources, and the nurturance of “green community wealth building” enterprises. There is tremendous potential for developing coordinated local strategies that combine use of these tools and also take advantage of existing urban economic anchors in order to jump-start the generation of a significant, stable green community wealth sector in urban neighborhoods.

But even though these strategies are crucial, they are not in themselves sufficient to meet the task of stabilizing the economic base of every American metropolitan area. Regional economic planning will also be required. While this idea has not been widely discussed in recent years, the idea of regional economic planning has a long lineage.

To avoid confusion, it is important to distinguish regional economic planning from metropolitan-area planning. Successfully moving to a low-carbon economy will certainly need both kinds of planning, along with new institutions capable of carrying out planning effectively.

But while the idea of metropolitan planning is familiar, regional economic planning has been neglected. The object of regional economic planning, simply put, is to create a national policy framework that targets capital towards particular regions. Examples in the United States include the Appalachian Regional Commission and many activities of the Economic Development Administration. The Pentagon, although not often thought of us as such, through its network of domestic military bases, is the United States’ largest regional planning agency. In Europe, regional funds both within and across countries have played an important role in the economic integration of the continent dating back to the 1970s.

Regional planning has been on the U.S. national political agenda before. In fact, in the late 1960s and early 1970s the Nixon Administration undertook substantial exploration of possibilities for expanding regional planning so as to assure balanced growth throughout the nation and keep impoverished regions from being left behind.<sup>92</sup>

Leaving regions and metropolitan areas behind economically is no longer an option if we wish to make serious progress on our ecological goals.

Leaving regions and metropolitan areas behind economically is no longer an option if we wish to make serious progress on our ecological goals. To reiterate, the imperative is to ensure that every metropolitan area makes very substantial carbon cuts over the next generation, a task that will require new investments and an overhaul of building and transportation patterns in each metropolitan area. This is not possible politically or fiscally if local communities do not have a strong, stable economic base.

Green community wealth building provides a crucial micro-level strategy for enhancing such economic stability. But even pushed to its furthest possible degree, green community wealth building cannot guarantee stability. In any market system, there will be some churning and Schumpeterian “creative destruction.”

The task of regional economic planning is not to prevent such market destruction and creation, but to act as a balancing agent, such that a downturn in one sector or for one particular firm does not jeopardize the stability and viability of the entire community. A regional economic planning apparatus would act proactively to put back to use infrastructure, industrial facilities, and workers left unused because of a shutdown. In some cases this might mean assistance in allowing workers to buy up facilities and keep them running. In other, more difficult cases, it might involve re-training workers for new skills and re-fitting facilities for work in a different industry. In either case, affected localities would be able to draw on resources from a regional entity whose aim is to help secure the long-term stability of each community within the region.

This conception involves regional bodies playing a more proactive role than simply offering incentives to businesses to relocate or expand, or offering funds for localities to undertake infrastructure projects, job training programs, establish revolving loan funds and the like. Such instruments—the principal policies deployed by the European Union and also bodies like the Appalachian Regional Commission—have a role to play in a more expansive regional policy.

But the approach we favor involves public regional bodies taking a more direct role in creating jobs. A regional fund, for instance, might capitalize, provide technical assistance for, and help launch new enterprises that will eventually be spun off as worker or local community-owned firms. In some cases, establishing substantially scaled public enterprises might be appropriate, especially in energy and transportation. For instance, a major new public initiative to invest in non-carbon energy technologies might be linked with new public enterprises that will deploy the new technologies on an experimental basis.

Regional economic planning is an essential mechanism for obtaining long-term economic stability. But it is an even more important tool for carrying out the *transition* to a low-carbon economy.

Why? Because one consequence of that transition is that many industries that have had prominent roles in the American economy for generations must shrink in size and

output as we convert to a low-carbon way of life. In some cases, such industries must disappear altogether. Two large, obvious examples are coal and automobiles, both of which have powerful lobbies.

An essential task for the green movement is creating a strategy that will allow those communities that are most directly affected by the declines in these industries to accept and even embrace the needed transition to a new kind of economy. That can only happen, in turn, if the decline and downsizing of the automobile industry does not mean the extinction of the Detroit metropolitan region, or if the decline and demise of coal production does not mean the extinction of the communities in southwest Virginia and elsewhere where coal is produced.

### **COMMUNITY STABILITY AND GREEN INDUSTRIAL POLICY**

Effective national planning to preserve particular places often can be married successfully to green industrial policies—that is, policies aimed at building and sustaining markets and production capacities for green forms of energy and technology. Support for the creation of a domestic capacity to produce state-of-the-art mass transit equipment is one example. Another involves steps to increase domestic capacity to produce solar, wind, and other alternative sources of power.

As Joan Fitzgerald has documented, Germany in particular has been highly successful in using regulatory policy to nurture a domestic alternative energy capacity. Like many European countries, Germany has aggressively used “feed-in-tariffs” to build stable demand for renewable energy. Feed-in-tariffs require that utilities buy all the renewable energy available to them, at a fixed price, over a sustained period of time. This approach in effect guarantees stable demand at a profitable price for suppliers of renewable energy. Germany is already yielding substantial economic benefit from this approach by becoming a leading supplier of wind energy (second to China) and second-leading supplier (behind Japan) of solar energy.<sup>93</sup>

In the area of high-speed rail, China has used industrial policy to develop a domestic high-speed rail manufacturing industry. As late as 2003, China remained completely dependent on foreign producers for its high-speed trains. For example, the world’s first “MagLev” Train (Magnetic Field driven train) that runs between downtown Shanghai and Shanghai’s Pudong Airport was made and assembled entirely in Germany. A later deal in 2005 with the German-firm Siemens, however, showed a very different pattern. In 2005, China negotiated the purchase from Siemens of 60 trains for €1.3 billion, with three trains fully made in Germany and 57 in China. Part of the deal involved Siemens agreeing to instruct Chinese producers in nine key production technologies. This deal with Siemens was one of many deals cut with technology providers as a price of doing businesses with the Chinese government. All told, China assigned 100 researchers, 960 engineers, and 5,000

technicians to the technology transfer effort. Such technology transfer requires, of course, not just understanding the imported technologies, but also developing the internal capacity to make modifications and improvements. As of March 2010, China had developed 947 of its own high-speed train patents as a result of this national effort.<sup>94</sup>

High-speed rail is also a major employer, particularly in the area of construction. In April 2009, the 820-mile Beijing-Shanghai high-speed rail project (about U.S. \$32.3 billion in total investment), alone, on any given day, employed about 136,000 workers. According to Chinese government data, each dollar of high-speed rail investment has resulted in \$10 in private spending and investment in the broader economy.<sup>95</sup>

In short, while, as Fitzgerald highlights, cities and states are taking many steps on their own, it is hard to imagine a response on the level of a China or Germany without federal backing. Support from the federal government and a national green development policy are essential. Moreover, to succeed, it is crucial that sustainability policy not simply help American companies become green, but also stabilize American communities.

### **CONNECTING THE DOTS IN DETROIT: A LONG-TERM STRATEGY FOR THE AUTO INDUSTRY CRISIS**

In the first half of 2009, the crisis of the American automobile industry became one of the most visible challenges facing the Obama Administration and the nation. Federal funds were committed to bail out Chrysler and General Motors, with the government taking significant ownership stakes in both companies.

The Obama Administration, to its credit, has taken advantage of its extraordinary leverage over the industry to push through an increase in fuel efficiency standards, which will reach 36 miles per gallon by 2016. That is an important step after two decades in which the auto industry has consistently blocked higher standards, though yet higher standards (as well as numerous other policy steps) will eventually need to be adopted to move the U.S. close to the goal of 50-percent carbon reductions by 2030.

But fuel efficiency is not the only environmentally relevant issue with the “auto bailout.” Also relevant is what will happen to places like Kenosha, Flint, and Detroit itself. To date, the Obama Administration’s policy has seemed more concerned with reconstituting GM as a profitable private enterprise than with preserving communities. This gets matters exactly backward. The policy priority should be first to secure the economic viability of existing communities by keeping productive facilities in use. The second priority should be maintaining a healthy domestic automobile industry that can move from being a world laggard to a world leader in fuel efficiency and vehicle design. The last priority should be maintaining the viability of General Motors as a corporation.

Stating matters this way does not mean that policy should keep all existing car plants open. Some plants will need to stop making cars. The crucial question is whether, once

they stop making cars, those plants will simply be left to idle while former employees join the unemployment rolls or the ranks of low-wage service workers.

In fact, the current crisis facing the auto industry represents an important opportunity both to preserve communities and to establish a powerful new precedent and principle. There is widespread consensus that the scale of mass transit and both inter-city and intra-city rail in the United States must expand very substantially over the next twenty years, for the ecological reasons described herein. This means that transit systems must make massive infrastructure investments and acquire large quantities of new equipment.

What would a serious commitment to a national high-speed rail system look like? As noted above, Gilbert and Perl have proposed that the United States build some 25,000km in dual track devoted to new high-speed rail service between now and 2025, as well as additional, incremental upgrades of existing rail lines to facilitate increased and faster service. Gilbert and Perl estimate that a total of \$2 trillion in investment (roughly \$140 billion for 15 years) in infrastructure and equipment will be needed to meet transportation needs while shifting to a transportation system based on electricity-powered rather than gasoline-powered vehicles. In China, the government plans to spend up to RMB 4 trillion (U.S. \$586 billion) to lay 30,000km (18,750 miles) of high-speed rail track by the middle of the next decade; in 2010 alone, China is adding 1,200 miles of track to its network.<sup>96</sup> Gilbert and Perl recommend marked increases in the price of gasoline; programs to allow citizens to trade-in older, less fuel-efficient cars; and efforts to make train travel as comfortable as possible to help cushion the transition to what would, in effect, be a different transportation system.

Gilbert and Perl's proposal is very ambitious, but already there is significant political movement in that direction, including the \$13 billion President Obama has pledged to the development of high-speed rail in some ten different corridors around the country over the next five years. As yet, however, there is no explicit connection between the increased investments in mass transit and the automobile industry crisis.

Some politicians, such as Wisconsin Governor Jim Doyle, have grasped the logic, however. Specifically, Doyle has raised the prospect of converting an idle GM plant in Janesville, Wisconsin to production of transit vehicles.<sup>97</sup> Doyle's logic could be extended further: Factories that used to make cars could instead begin making mass transit vehicles, as well as electric and super-high efficiency cars. Currently there is no American-owned manufacturer of high-speed rail vehicles, although some subway cars are assembled in the United States by foreign firms. States and regions seeking to upgrade to high-speed rail, such as California (which in 2008 passed a \$10 billion state bond measure to help finance a statewide system), will likely need to buy equipment from foreign manufacturers such as Alstom of France, in the absence of a concerted effort to create a domestic capacity to manufacture state-of-the-art mass transit vehicles.

The key principle underlying a community-supporting green industrial policy must be the preservation of existing communities and their productive capacities on a long-term basis.

How might public policy go about establishing a domestic capacity to supply America's public transit authorities with needed subway and rail cars? One possibility is to create an entirely new public-private partnership in which a new firm is guaranteed long-term contracts and the government takes an ownership stake in exchange. Another possibility is to restructure an existing firm such as GM, and again offer long-term contracts and assistance in transitioning assembly lines to produce the new vehicles in exchange for public equity. Employee ownership also could be part of the equation.

The key principle underlying a community-supporting green industrial policy must be the preservation of existing communities and their productive capacities on a long-term basis. A deal which gives General Motors public funds that are used to re-locate production abroad makes no sense from this perspective. Likewise, deals that keep factories open for a time but allow private owners to close them according to their convenience do not merit public support. What is required is a policy that assures productive capacities stay in use and provides assistance as necessary in cases where conversion to a different product is required. Most often this will mean adopting some form of community, public or worker ownership in the enterprise.

In this example, the key to medium-run and eventually long-run viability would be awarding a portion of public contracts for high-speed rail to those plants which are retooled to produce buses, subway cars, and the like. A domestic content requirement for federal and state purchases of mass transit equipment would instantly create demand for such equipment. (Domestic content requirements are already common in federal purchases of vehicles.) While it is desirable that domestic manufacturers eventually compete with one another for contracts and that product quality be world-class, awarding a portion of long-term contracts to newly converted facilities is a sensible way both to allow those facilities to get off the ground economically and to create a domestic mass transit manufacturing capacity.

### **SOUTHWEST VIRGINIA**

Southwest Virginia, one of the nation's leading producers of coal, poses a rather different regional economic planning challenge. Almost all serious analysts of climate change believe that the United States should cut back and eventually phase out coal production. Geophysicist David Archer calculates that burning all remaining reserves of coal would launch the planet's atmosphere into a hothouse not seen on Earth for millions of years, with likely devastating effects on human and animal welfare alike.<sup>98</sup>

Yet coal currently is the source for roughly half of the electricity generated in the United States, and some industry advocates argue for the potential of "clean-coal" technologies designed to capture carbon before it is released. Coal production cannot disappear overnight. But our capacity as a society to have a rational policy debate about coal and its

future will be distorted so long as it is mixed up with the question of maintaining jobs and communities. Local leaders in Southwest Virginia already recognize that their economy must diversify, but they do not want to see the region's economy collapse due to a shift away from coal.

This means that there must be coherent and credible planning for a post-coal future for Southwest Virginia that is at least as prosperous as the past. One elegant approach, already being undertaken by some utilities (with the backing of local environmental activists), is to make investments in renewable energy production in the region, such as wind power. Feasibility studies are now being undertaken, and if Southwest Virginia turns out to be ripe terrain to host wind power, that would be a happy accident.

But the region's economic future should not be dependent on such fortune. A more direct approach is that taken by former Governor Mark Warner, who sought to turn the region into a center for high-technology production. In 2005, Warner brokered a deal in which two federal contractors, CGI-AMS Inc. and Northrop Grumman Corp., would locate data storage and software development facilities in rural Lebanon, Virginia, as well as a call center, in exchange for state information technology contracts worth hundreds of millions of dollars annually. The firms in turn would create hundreds of high-paying jobs for software engineers, many of whom likely would be graduates of Virginia Tech and other area colleges.

The overall strategy, largely successful to date, was to establish the Lebanon area as a high-tech cluster capable of attracting and keeping highly skilled workers and luring new firms to the area to take advantage of this skilled worked force. To be sure, the process is also problematic. The broader process by which large firms are re-locating some work from metropolitan to rural areas—dubbed “farmshoring”—while preferable to overseas outsourcing still pits community against community. Further, both of the firms involved here are large-scale defense contractors, and the deal with Warner could be seen as an effort by the firms to use their economic (and hence political) muscle to obtain an attractive, lower cost location. Moreover, in 2009 and 2010 Northrup Grunman has come under severe criticism in Virginia for inadequacies in the information technology services it has provided to the state of Virginia as part of the deal, including “years of missed deadlines and poor service.” Some critics have also questioned the cozy relationship between the corporation and state government (the company recently agreed to re-locate its headquarters to northern Virginia after receiving incentives totaling at least \$12 million).<sup>99</sup>

In a context in which states remain dependent on private corporations for investment, any public-private deal needs to be subjected to critical scrutiny. But state and especially federal government are not without leverage—notably the ability to award contracts—in dealing with private corporations. What is most interesting about the Southwest Virginia example is that it shows how it is possible to use existing public funds (contract dollars)

to steer significant investment into a region in a deliberate, coordinated way. If taken to scale, the Warner strategy could lead to the development of what would amount to a new *city* in the Lebanon area.

That possibility is of interest from the standpoint of helping coal country shift to a post-carbon economy. But is also of interest from an ecological point of view. As noted from the outset, the United States must accommodate 130 million new people by 2050. If sprawl is no longer a defensible or practical option, the remaining options are that existing cities must increase their populations; that existing suburbs must become denser, less car-dominated places; or that entirely new urban areas must be created.

In practice all three avenues for accommodating population growth must be utilized. Least discussed is the question of building new cities. Our contention is that given the practical and political limitations on drastically increasing central city and suburban densities, it would be preferable to explicitly plan to build new urban concentrations rather than allow metropolitan populations to continue their pattern of sprawl.

New cities could arise either in currently rural regions, probably building on existing towns, or could take the form of higher density suburbs. High-density suburbs linked to the central city and with one another by mass transportation could serve as an update of Ebenezer Howard's vision of planned decentralization, outlined in his influential 1898 text *Garden Cities of To-Morrow*. Howard's vision played a key role in catalyzing the New Towns movement in the United Kingdom, which led to the construction of over two dozen new towns in the first half of the twentieth century. The New Towns did not meet all of Howard's aspirations for social harmony and opening the countryside to the working class, but are widely credited with helping curb sprawl and preserve open space in Great Britain.<sup>100</sup>

An advantage of pursuing new city development in the current context is that it permits ecologically sustainable design to be implemented right from the beginning. Neighborhoods can be designed approximating the principles laid out by Farr and others (see Chapter Two), and can be built on the premise of minimizing car use and maximizing transit links with other communities.

The key challenge facing any proposal to build new cities is how to stabilize their economic base. In the United States, developer-built new communities have been most successful when they have acted in effect as large suburbs of stable metropolitan anchors (such as Columbia, MD and Reston, VA). In other cases, military or aeronautics investments by the federal government have helped create new cities almost from scratch.

From a sustainability point of view, minimizing the numbers of new city residents who are engaged in long-distance commutes, especially by car, must be a key goal. This means that jobs need to be created where people live. One rather desperate strategy for achieving that goal is the "hit a home run" incentive policy, whereby a locality aims to offer sufficient incentives to mobile capital to persuade a major employer to locate in town.

On occasion, that strategy works (as for Smyrna, TN when it lured Nissan to transform the small town in the 1980s), but only at a cost to other communities (those who lose the re-located jobs or who lose out in the bidding process) as well as to the taxpayer.

A better strategy is, again, to build on green community wealth building principles from the start. This means developing forms of place-based capital, often with the help of a public or quasi-public anchoring institution such as a college, university, hospital, or research facility. The new city's major employer could be supported at least in the near-to-medium term by an award of public contracts or by brokered long-term contracts with community-based firms in other cities.

Eventually, of course, the city must be able to produce goods or services of value in a competitive market. But public support can be crucial in the nurturing stage, and in helping the city adjust when market conditions change.

In short, the same tools that can be and are being used to stabilize existing cities can in principle be applied to the development of new cities that are sustainable from the start and provide an alternative to sprawl.

## CHAPTER SEVEN:

# Policy for a Post-Carbon Economy

An integrated plan to build and sustain green, low-carbon communities over the next two generations must consist of *four tiers of actions*.

First are *national policies* that aim to dramatically reduce carbon emissions. Most important in this respect are mechanisms to *raise the price of carbon emissions*, in general, and gasoline in particular. In theory a cap-and-trade emissions program with stiff, steadily strengthening standards might achieve this. Or, it might be achieved more directly by carbon taxes or higher gasoline taxes. (The effective price of a gallon of gas in the United States is less than half of the price of a gallon in the United Kingdom, largely because of stiff British gas taxes.) Direct taxes on carbon or gasoline, as is widely recognized, should be accompanied by rebates for lower income consumers to avoid regressive income distributive effects.

*A second key plank is sharply increased public investment in research and development for alternative energy sources and improved carbon efficiencies in vehicles, buildings, agriculture, and other major sectors.* As much as \$80 billion a year—equivalent roughly to current spending on research and development in the military sector—has been recommended for research of this kind.

*A third key plank, already widely accepted by policymakers, is direct public investment in green jobs* that directly mitigate carbon emissions and increase energy efficiency, such as planting trees, weatherizing and rehabbing older homes, and supporting the operation and maintenance of transit systems.

*A fourth key plank, discussed in some detail above, involves direct public investments in a greener urban infrastructure, with particular focus on the transit sector* (development and expansion of intra-city mass transit, and long-term development of an effective high-speed rail alternative to car and air travel for short to medium length inter-city journeys). This also involves investments in retrofitting low-density suburban places and eventually the construction of new state-of-the-art sustainable urban communities. Clearly, the present

gas tax—the revenues of which are likely to erode due to increased fuel efficiency and increased transit ridership—will not be adequate to finance these investments; however, an increased carbon tax, as set forth in the first plank listed above, could help finance such investments.

*A fifth plank, less often discussed, involves direct public control of firms in key sectors.* These include, most obviously, energy production and vehicle production. To the extent that oil companies and other energy producers push for continued fossil fuel production subsidies and resist efforts to accelerate the development of renewable forms of energy, there is a strong political case to be made for nationalizing the larger companies. More fundamentally, in the long term, there is a stark contradiction between capitalist business models based on maximizing profit extraction from the use of natural resources and the strong public interest in reducing fossil fuel consumption over the long term. The transition from a fossil fuel economy to a renewable economy is unlikely to be painless, but it need not be complicated by the political demands of existing fossil-fuel firms to retard the transition in order to defend their own profitability.

In the vehicle production sector, again there is a potential conflict between the public interest in dramatically increasing fuel efficiency and attractive profit-making strategies for manufacturers, which in the 1990s and early 2000s led U.S. car producers to emphasize the sale of larger, more expensive, and less efficient vehicles (such as the SUV). The Obama Administration, in its takeover of General Motors, has emphasized the need for the reconstructed GM to build smaller cars. But that recommendation will not remove the structural conflict between the interests of car producers and that of minimizing America's carbon footprint if GM is simply restored as an investor-owned operation. A privately owned GM will want to see more cars on the road and more highways, regardless of the ecological consequences. Likewise, public ownership of large vehicle manufacturers would facilitate a more seamless transition from production of cars to production of transit and rail vehicles and infrastructure.<sup>101</sup>

*Sixth, the federal government must take direct steps in its own operations to minimize its carbon footprint.* Potential action in this regard ranges from retrofitting existing buildings, building new facilities to the highest possible standards, integrating facilities with regional and local sustainability plans, *systematically using procurement power*<sup>102</sup> to favor alternative energy sources and more sustainable communities, and changing behavior with respect to energy and transportation use.

This list of major national-level policies that are prerequisites of a serious national effort to reduce our carbon footprint 50 percent by 2030 is not exhaustive. The federal government also has a critical role to play in directly supporting the economic basis of communities. Taken alone, regional and local efforts to build sustainable communities will fail. But national policies taken alone are also inadequate, unless they are complemented

by a strategic effort to secure the economic basis of our urban areas—that is the economic basis of sustainable, low-carbon footprint communities.

*The second tier of action involves engaging in regional-level strategies to stabilize urban communities.* Specifically, federal and state investment spending should be oriented towards strengthening the economic foundations of existing central cities. Direct government investments should focus on strengthening cities, and government contracts should (as in the case of Southwest Virginia) be used to steer new private investment into urban areas. Communities threatened by disinvestment should receive assistance in saving and converting productive facilities to new uses in a timely manner. What is required is a much more thorough development of regional policy, guided by the firm principle that we cannot afford to discard any urban community.

An effective approach to community-stabilizing policy will likely require the creation of new institutional bodies located at a regional level—perhaps ten to twelve regional units would suffice—that are capable of playing close attention to local economic conditions and trends and acting proactively to preserve threatened cities. These new bodies, of course, must have access to resources adequate to carrying out this mission. As an initial estimate, ten regional development bodies capitalized at \$5 billion a year each and rising over time to \$10 billion a year would be able to carry out more extensive, longer-term efforts to bolster region's cities than any individual state can now realistically undertake. Participating states and localities might be required to end “beggar-thy-neighbor” tax incentive programs aimed at raiding jobs from other localities as a precondition for participation in this effort—a deal few if any localities would turn down, given the size of this proposed investment program. Specific tasks regional bodies might undertake include feasibility studies for refurbishing closing or closed facilities; providing financial support to help workers or other local groups acquire ownership of such facilities; equity investments in new or emerging firms in targeted localities; support for targeted job training for displaced or marginalized workers; and a range of other investments aimed at bolstering targeted cities’ long-term viability.

*A third tier of action requires strengthening metropolitan-level institutions.* This may entail either building on existing organizational forms (such as Metropolitan Planning Organizations) or beginning from scratch. Metropolitan-level organizations are the logical institutional scale at which to implement place-specific strategies for enhancing mass transit, retrofitting low-density places and where necessary high density places, and making city-specific investments in green infrastructure. Urban planning to limit the further spread of auto-oriented development is also generally best carried out at the metropolitan level.

There will necessarily be an inherent tension, however, between the need for comprehensive reform policies and permitting metropolitan-scale organizations to make decisions

about specific local questions (i.e. the route of a new mass transit line, or whether to adopt a firm growth boundary).

Strengthening central cities requires a systemic effort to improve the quality of life and quality of public goods (especially schools) available in cities and in older suburbs; a systemic effort to undo restrictive suburban zoning rules that ban high densities; and aggressive use of public housing and/or land trusts to prevent involuntary displacement of poor and working-class households from cities as neighborhoods become more desirable and expensive over time. These reforms involve a redistribution of costs and benefits in favor of older, often poorer urban neighborhoods and, as such, are more likely to face opposition if decision-making on these matters is left to metropolitan agencies where suburban voters often dominate. Metropolitan-level institutions, in other words, do not inherently or automatically work to reduce sharp inequalities between places, even when they do contribute to rational planning of public investments and initiatives across municipal borders. Clearly, metropolitan planning organizations have not always encouraged public involvement and engagement: a strong community engagement process will be critical if their decisions are to have public legitimacy and garner public support.

Careful attention to institutional design will be required to address this problem. One attractive solution is to incentivize local and metropolitan governments to act in ways that strengthen cities and reduce inequalities across jurisdictions, by making access to funding conditional on support for reforms. Another approach is to give regional-scaled bodies the capacity to act directly to reduce metropolitan-level inequalities. There is no perfect solution to this problem, and, even under ideal circumstances, it will take at least a generation to meaningfully reduce the impact of accumulated spatial inequalities. But if we are serious about preserving and strengthening cities, there is no alternative to developing a serious strategy to do just that over the coming decades.

*The fourth and final tier of the overall strategy is direct creation of new wealth-building institutions that stabilize jobs in place over the long term.* This involves a fundamental redefinition of “economic development” away from its current focus on out-competing other communities for capital to instead focus on stabilizing the economic roots of all urban areas. As noted above, achieving this means that each community must have stable employment anchors not in jeopardy of being relocated. Public institutions, employee-owned firms, and various types of community ownership all meet these criteria. Funding to capitalize the creation of new community-based institutions should be made available at the regional and metropolitan level to enable these types of capital ownership to grow more quickly.

## **PUTTING IT ALL TOGETHER**

Each of these planks is important on their own, but the power of the overall strategy comes from combining them in practice. In particular, direct and indirect public investments

**Clearly, metropolitan planning organizations have not always encouraged public involvement and engagement: a strong community engagement process will be critical if their decisions are to have public legitimacy and garner public support.**

aimed at building a new green infrastructure and a new transportation infrastructure should aim to strengthen and dramatically expand the community-controlled job sector. Table 6 highlights key elements of what such a comprehensive approach would entail:

**Table 6: Summary of Integrated Policy Strategy**

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***A. National policies aimed at dramatically reducing carbon emissions***

- Cap/spend (permit-sale revenue model) or carbon taxes
- Higher gas taxes
- Public investment in R&D, transit infrastructure
- Public investment in alternative energy; possibly direct control of energy producers
- Direct investment in vehicles production
- Invest in retrofits, weatherization
- Establish public standards on new buildings

***B. Development of Regional Planning Capacities***

- Create new regionally scaled institutions capable of directing capital and resources to particular metropolitan regions and localities
- Coordinate larger scale national investments in transportation across metropolitan regions
- Provide regional development funds to assist poor localities to make green investments

***C. Metropolitan-level action aimed at slowing/stopping sprawl, reducing carbon footprints***

- Employ federal and regional resources to strengthen metropolitan centers
- Retrofit existing low-density, suburban places, making them transit-ready
- Use planning to target location of new jobs
- Use systemic approach to improve quality of life and public goods (especially schools) in older cities and suburbs
- Endeavor to undo restrictive suburban zoning across the country that is blocking higher densities
- Ensure supply of public housing and land trusts to prevent involuntary displacement
- Implement growth boundaries to avoid sprawl

***D. Direct Green Community Wealth Building Institutions***

- Create metropolitan and regional funds to sustain new community wealth-building enterprises
  - Leverage federal public investment to further develop and enhance such institutions:
    - Green job investment
    - Research and development capacity
    - Education
    - Health care
    - Public transportation infrastructure
    - Community development spending
-

A comprehensive approach, as outlined above, would require public sector spending in the following areas: research and development on alternative energy sources; urban infrastructure in general and public transit infrastructure in particular; other types of “green infrastructure” including weatherization and retrofitting of buildings; the establishment and expansion of green spaces within cities; education; health care; and community economic development. Taken together, this public spending will represent a massive stream of resources.

Many of those resources would consist of direct spending by government bodies on employment. Such spending should be targeted so as to strengthen existing cities and older suburbs. Other public spending would take the form of goods and services acquired from the private sector. Here it is crucial that such spending be organized so that community-based firms rooted in particular places acquire a substantial and over time growing share of contracts.

Historically, much public spending has been used to strengthen the position (economically and politically) of large corporate entities, the military-industrial complex being the classic example. Large scale public investments in green infrastructure and related public goods run a risk of reproducing a corporate-dominated economy that fails to nurture long-term community stability, unless deliberate steps are taken to favor community-based firms. This can be done in two ways: by assuring that contracts and procurement are to a reasonable degree steered towards local firms in each metropolitan area; and, when goods and services are logically best provided by a larger, more complex entity (such as a firm specializing in railcar production), that this entity itself be organized in a democratic, publicly accountable basis.

Public flows of investment in green jobs, health care, education, and general government represent an enormous opportunity to expand community stability and nurture community-based ownership (or “green community wealth building.”) Looking at ways to capitalize upon existing and forthcoming public investments so as to maximize their community stabilizing and wealth building potential is the logical place to start.

**Public flows of investment in green jobs, health care, education, and general procurement represent an enormous opportunity to expand community stability and nurture community-based ownership.**

## CHAPTER EIGHT:

# Conclusion

Neither sustainable urbanism nor the green jobs discourse has fully faced up to the need to secure the long-term economic stability of cities, as a precondition for achieving sustainability, or to the fact that the existing political-economic system militates against just that outcome.

Tackling climate change represents a policy challenge of the highest magnitude. No single step or series of steps in itself is sufficient to achieve climate stabilization, but as many steps in the right direction as feasible *must* be taken, and taken in rapid order, if the world community is to contain long-term damage from climate change to a manageable level.

Where we live and how we travel are two factors that are under our control, and two factors that demonstrably impact carbon emissions. This is particularly true in the United States, which is far more dependent on the automobile than any other industrialized nation, and has a much larger carbon footprint per capita as well.

There is growing interest and awareness in the connections between urban America and climate change from two directions. On the one hand are the writings of those concerned with how to build a sustainable metropolis and with designing a better urban transportation pattern. On the other hand are the writings of advocates concerned with creating green jobs, and targeting those jobs to low and middle-income residents, often in urban areas.

There are obvious links between those two agendas. But more is required. Neither sustainable urbanism nor the green jobs discourse has fully faced up to the need to secure the long-term economic stability of cities, as a precondition for achieving sustainability, or to the fact that the existing political-economic system militates against just that outcome.

Cities are now in competition with one another and with their suburbs for jobs and population. That fact is bad in itself—it creates an unbalanced growth pattern in which some places rise rapidly and while others are thrown away, and has helped make car-dependent suburbs the dominant form of residential life in the United States. It is also bad because of the political priorities the competition creates. Local public officials often see their primary job as “economic development,” with sustainability taking a distant back seat. Finally, long-term plans to build transit and otherwise retrofit metropolitan areas will fall apart for both technical and political reasons if the communities being planned

hemorrhage jobs and people. If the goal is to reduce the carbon footprint of *every* metropolitan area, that outcome cannot be accepted.

These considerations point to the need to develop comprehensive strategies aimed at stabilizing jobs and capital in existing urban areas, and, where appropriate, also applying those strategies to the development of new urban communities. This report has identified three primary strategies for achieving that end: developing place-based forms of “green community wealth building” that are inherently rooted in the community; tapping into resource flows generated by public spending as well as quasi-public institutions (meds and eds) to nurture and support place-based ownership; and larger order green development policies which place top priority on preserving communities and their productive capacities. We argue that the urgent need to expand green jobs and the green industrial sector, as well as the likelihood of increased public spending on health care in coming years, present a particular opportunity to not only “create jobs” in urban areas but to create lasting forms of community-based ownership that assure that these jobs have staying power and that communities capture the full benefits of the new economic activity.

Clearly much more work needs to be undertaken to develop this set of proposals. Just as we need a coherent national strategy for beginning to reduce carbon emissions at least two percent a year, starting immediately, we need a coherent national strategy for planning the next wave of population growth in the United States.

This strategy must include more precise estimates of how many more people existing cities can accommodate, how many people might go to older inner suburbs, how many might go to “retrofitted” suburbs, and how many should go to entirely new cities.

In the near term, probably the most sensible approach is to focus on steps to strengthen and make more attractive dying and struggling cities. This in itself is a massive challenge, and will require confronting an array of policies and institutional arrangements which have made suburbs more attractive places to live (for most Americans) than cities and have made cities economically dependent on the decisions of mobile capital. In the longer term, increased attention to the question of new cities will be necessary, and it makes sense for state and federal policymakers to begin launching demonstration projects now as a prelude to fuller development in subsequent decades. Indeed, a coherent example of a new American city that was ecologically sustainable and economically stable from the start could provide a useful benchmark for existing cities attempting to reduce their own carbon footprints.

Equally important, however is further development of the strategies implicit in the “Cleveland model” for developing green, place-based ownership on a much wider scale, and in our proposal (echoed by many others) to develop a community-respecting green industrial policy. While any national strategy must admit of countless local variations, we believe it is possible to specify a general policy approach for stabilizing local economies

**A coherent example of a new American city that was ecologically sustainable and economically stable from the start could provide a useful benchmark for existing cities attempting to reduce their own carbon footprints.**

and strengthening the essential foundations of both local democracy and ecological sustainability.

Clearly, we are only on the threshold of developing operating principles for a post-carbon, green community wealth building economy that meet the sustainability challenge posed by climate change. The Cleveland experiment, to highlight just one development cited above, is only in its infancy. Even more significantly, full public understanding of the enormity of the *economic*, as well as environmental, challenge posed by climate change is *far* from being achieved.

On the other hand, we believe many of the principles upon which national policy should draw are already clear. These include: adopting national policies, such as taxes on carbon, that will encourage rapid reductions in carbon emissions; creating regional-level, multi-state institutions to engage in long-term economic planning that can guide the transition to a new, low-carbon economy; a strengthening and democratization of metropolitan planning organizations to plan the redesign of metropolitan areas to build walkable communities that can radically reduce transportation and building emission; and, last, but not least, developing policies that encourage the growth and the direct creation of new green community wealth building businesses that stabilize jobs in place over the long term. By taking conscious steps in these directions, we believe, America can begin to meet the dual challenges of population growth and climate change.

## Appendix A: Notes on Public Procurement and Public Enterprise

As discussed throughout this report, while meeting the challenge of climate change will require a mix of efforts from private and public actors, the unique challenges of the enormous economic transition require a substantial government role. Here then are some added notes on the challenges posed by the policy tools of public procurement and public enterprise.

### GOVERNMENT CONTRACTS AND PUBLIC ACCOUNTABILITY

The question of how ostensibly private firms that are substantially if not primarily dependent on government contracts should be organized is a major question any serious plan to expand public sector spending to new forms of the economy must wrestle with. Major public intellectuals like John Kenneth Galbraith have in the past periodically called for public control of defense firms to reduce the conflict between the profit-seeking behavior of these firms and the public interest. A study of military contractors by urban scholar Rachel Weber in 2001 points out the numerous ways in which the behavior of these firms disregards other “stakeholders” (such as taxpayers) and calls for extensive reform of the entire sector.<sup>103</sup> Generally speaking, the larger the firm that is being created or consolidated by public spending, the stronger the case will be for building in formal mechanisms for democratic accountability into the structure of the firm, if not being nationalized outright. Even in this case, however, there is a risk that the firm will generate growth interests potentially at odds with the public interest—i.e., political demands for more contracts made without respect to the rational needs of the public. In the case of entities producing environmental goods, this conflict is unlikely to be as severe or as flagrantly in violation of the public interest as has often been the case with military contractors who manage to secure contracts for large-scale weapon systems that are not needed and don’t work. Even so, careful thought about the organization of firms dependent on public contracts is called for going forward.

### THE POTENTIAL ROLE OF PUBLIC ENTERPRISE

Over time, reliance on indirect forms of planning (such as government contracts) may not be enough, particularly for communities that have been ravaged by deindustrialization or that need to transition to a different economic base. In those cases, regional planning to create new economic anchors and direct investment towards localities will be essential. This may involve new forms of public or semi-public enterprise.

Much discussion about public enterprise is based on patently ideological biases as well as grossly inflated claims or assumptions about the supposed inherent inefficiencies of government-owned enterprises. The verdict of much academic research, however, is that, properly managed, government-owned enterprises can be efficient, profitable for owning governments, and can advance strategic objectives. A recent history of public enterprise in Europe shows, for instance, how public ownership in the transportation and energy sectors helped leveraged economy-wide growth during the twentieth century.<sup>104</sup>

Public enterprise is a potentially crucial tool for advancing certain ecological objectives, and also for advancing strategic economic objectives. The United States' recent takeover of General Motors, for instance, has been justified and accepted largely on the basis of "strategic" reasons—namely that the entire American economy would suffer if the corporation simply collapsed. As argued above, however, the lack of an orientation towards using the power of public ownership to directly advance critical public goals such as community stability and ecological sustainability in the GM takeover represents a major missed opportunity. The federal government could use its ownership stake in GM to forward a principle of preserving as many communities as possible and to direct GM towards making not just more fuel-efficient vehicles but also transitioning into production of mass transit equipment.

More generally, there are strong reasons to consider public enterprise as a possible tool to advance ecological goals in strategically critical sectors such as transportation and energy production. Here three kinds of reasons for employing public enterprise are relevant. The first is simply to counter the political power of self-interested private enterprises that have the clout to block, delay or compromise rational energy and transportation policies. The second is when the firms involved are in fact producing negative public impacts whose output needs to be minimized, not maximized. Private enterprise is incompatible with minimizing such negative externalities, and conversely, minimizing such public effects is incompatible with profitability. Third, public enterprise can be used as a form of industrial policy, to jump-start particular industries or particular technologies.

Even within its own narrow assumptions—that to be efficient, public enterprises must mimic the behavior of private firms—the long-standing, ideologically driven critique of public enterprise has often overstated the relative inefficiencies of public enterprise while ignoring those associated with the private sector. But as we have shown, in some cases organizing sectors primarily on the basis of private, profit-maximizing firms is both ecologically irrational and contrary to the public interest. More generally, the public sector has a crucial role to play in proactively stabilizing communities economically, and it will not be able to play that role to its full potential until policymakers, following the lead of many cities and states already engaged in successful public enterprise, adapt a more pragmatic and rational attitude towards public ownership as a key policy tool.

## Appendix B: Future Research Questions

This report is but a preliminary effort to assess the primary contours of the massive challenge facing policymakers over the next forty years and to begin outlining an integrated strategy for meeting it.

A host of questions need further exploration. We will leave aside here issues regarding the science of global warming, efforts to track changes in the global climate, and attempts to develop more precise projections of future trends; we also leave aside matters regarding the development of new technology in crucial areas such as energy and transportation.

Even setting those considerations aside, four major areas require further investigation. The first involves more *detailed assessment of medium and long-term trends in the United States that impact society's ability to dramatically reduce its carbon footprint* in a timely fashion, as well assessment of the degree of change in the built environment and transportation systems that must occur for such reduction to be realized. To take one obvious example, the various scenarios described in this report for future development do not take into account regional variations in expected demographic shifts or in needed transportation investments.

*One useful way to proceed would be to undertake a thorough assessment aimed at identifying those metropolitan areas that are most vulnerable to economic displacement over the next decade.*

*A second major area for future research involves developing effective policy proposals at the local, regional, and national level.* More detailed research on how large-scale public investments in green jobs and green technology, research and development, infrastructure, and health care might both directly create green jobs that you can own and thereby bolster community wealth is needed. The key questions are first, what a rational national investment strategy in each sector would look like, and second, how that investment can be leveraged so as to bolster long-term economic stability in urban communities. For instance, a specific plan for a national high-speed rail system would allow policymakers to estimate future demand for crucial supplies such as new railway cars, and in turn take steps to assure that supplying that market helps provide lasting jobs to an American community.

Similarly, detailed research is needed to estimate the cumulative costs of a serious national-level strategy to build sustainable economies in all metropolitan areas, and to specify strategies for covering or offsetting such costs. In this regard, detailed studies of the waste involved when existing cities decay or allow infrastructure to go under-utilized, at the same time that other communities are growing rapidly, would be welcome and helpful in illustrating some of the costs of the existing ways of doing business and the

possibilities for generating *greater* efficiencies through policies aimed at sustaining communities over time.

Further research on local and state-level initiatives in green community wealth building is also warranted, not just to collect examples of good models, but to help answer critical questions about how to raise community wealth-building institutions to scale and generate ongoing, stable financing of existing and new enterprises.

Additionally, more detailed assessment of the impact of this overall set of strategies on carbon emissions should be undertaken. This is a complex question involving many interacting parts. For instance, calculating likely trends in emissions generated by the transportation sector would require careful estimates of how a city-stabilizing strategy would impact transportation, as well as projections of the plausible fuel efficiency for each transportation mode. We have refrained from making such estimates in this report, pending more detailed data collection and analysis.

*A third major area for future research concerns viable institutional mechanisms for implementing the kind of agenda described above.* Specifically, a robust planning capacity is needed within each metropolitan area to channel future development in a sustainable manner and to identify local opportunities to reduce the carbon footprint. Mechanisms are also needed to redress inequalities within metropolitan areas, and to stabilize the economies of the most vulnerable places. Likewise, regional (generally multi-state) bodies are needed to steer capital into particular places and cushion instability. More research, including examination of existing proposals and practices, is needed to specify how such institutions should work, how they are to be governed, how they are to be funded, how are they to be held accountable, who is to staff them, and the like. Most researchers recognize that the existing patchwork of institutions in metropolitan America is ill-suited for the sort of pro-active, comprehensive planning needed to shift our urban economies into a more sustainable direction; hence, finding a workable model or models for organizing metropolitan America institutionally is an urgent task.

*A fourth major area for research would involve conducting a model demonstration feasibility study for one or more particular metropolitan regions.* Such a study, building on the important example provided by the Center for Neighborhood Technology's recent comprehensive report on Chicagoland's carbon footprint, would have several aims: analyzing the current sustainability of each metropolitan area relative to its peers and to the stringent requirements of sharply reducing carbon; identifying local opportunities to shift new and existing developments in a much more sustainable direction; assessing the long-term economic stability of the metropolitan area; and identifying opportunities to strengthen local stability, in particular through building up green community wealth building structures.<sup>105</sup> Simply put, we need good working models of how the array of ideas discussed in this report might function on the ground, simultaneously, in at least one metropolitan area, and ideally in several metropolitan areas of diverse size and regions.

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## Endnotes

1. Reid Ewing, Keith Bartholomew, Stephen Winkler, Jerry Walters and Don Chen, *Growing Cooler: The Evidence on Urban Development and Climate Change*, p. 4. David Biello, "How Much Is Too Much?: Estimating Greenhouse Gas Emissions," *Scientific American.com*, April 29, 2009.
2. United States Census Bureau, "Projections of the Population and Components of Change for the United States: 2010 to 2050." Table 1. Released August 14, 2008; United States Census Bureau. "Annual Projections of the Total Resident Population as of July 1: Middle, Lowest, Highest, and Zero International Migration Series, 1999 to 2100." Released January 13, 2000, revised February 14, 2000.
3. US Green Building Council, *Green Building and Climate Change*, Washington, DC: USGBC, March 2008.
4. Michael Szabo, "City-dwellers emit less CO<sub>2</sub> than countryfolk, study," *Reuters*, March 23, 2009, [www.reuters.com/article/idUSTRE52M0E120090323](http://www.reuters.com/article/idUSTRE52M0E120090323), accessed July 23, 2010; Nancy McGuckin, "The 'Carbon Footprint' of Daily Travel," *Transportation Management and Engineering Magazine*, January 2010, p. 2.
5. It is of course possible that rural areas of the future could be designed to be self-sustaining and therefore not have the carbon footprint of today's rural areas. We also recognize that the location of many U.S. cities in coastal areas makes them vulnerable to flooding should sea levels rise significantly (Brian Yeoman, Personal Correspondence, November 5, 2009). Naturally, one goal of the policies outlined here is to take action to forestall such catastrophic scenarios.
6. U.S. EPA. "Residential Construction Trends in America's Metropolitan Regions." See Table 1, p.7.
7. Elizabeth Kneebone, "Job Sprawl Revisited."
8. A pattern of a partly re-developed center with continued sprawl may mean that a region's older suburbs have been allowed to deteriorate; or it may mean that existing inner suburban counties have resisted new development, thus pushing development further out; or both.
9. Joel Kotkin, *The Next One Hundred Million Americans*, Chapter Three, esp. pp. 79–87.
10. Edward Glaeser and Matthew Kahn, "Green Cities, Brown Suburbs."
11. Gar Alperovitz, Steve Dubb, and Ted Howard, *Rebuilding America's Communities: A Comprehensive Community Wealth Building Federal Policy Proposal*, p. 20. Steven Deller, Ann Hoyt, Brent Hueth, and Reka Sundaram-Stukel, *Research on the Economic Impact of Cooperatives*, p. 11. National Center for Employee Ownership, *A Statistical Profile of Employee Ownership*, [www.nceo.org/main/article/php/id/2](http://www.nceo.org/main/article/php/id/2), accessed July 22, 2010.
12. Thad Williamson, David Imbroscio, and Gar Alperovitz, *Making a Place for Community: Local Democracy in a Global Era*, pp. 17–19.
13. Jonathan Feldman, "From Mass Transit to New Manufacturing," *The American Prospect*, pp. A12–A16; Jonathan Feldman, Personal Correspondence, July 17, 2010.
14. Edgard Hertwich and Glen Peters, "Carbon Footprint of Nations: A Global, Trade-Linked Analysis." See also [carbonfootprintofnations.com](http://carbonfootprintofnations.com) for ranking of countries based on this approach.
15. David Archer, *The Long Thaw*, passim; Michael Mann and Lee Kump, *Dire Predictions*, passim; Mark Maslin, *Global Warming*, passim.
16. Mann and Kump, *Dire Predictions*, pp. 109–110.
17. Archer, *The Long Thaw*, p. 160.
18. Prasad Kasibhatla and William Chamiedes, "G-8 Leadership is Critical to Reducing Energy-Related CO<sub>2</sub> Emissions."
19. U.S. Energy Information Administration. *Emissions of Greenhouse Gases in the United States 2008*, p. 1.
20. Archer, *The Long Thaw*, p. 159.
21. Ted Nordhaus and Michael Shellenberger, *Breakthrough*, passim.
22. See Andrew Ross, "Greenwashing Nativism," for a discussion.
23. Thad Williamson, *Sprawl, Justice and Citizenship*, Chapter Three.
24. Van Jones, *The Green Collar Economy*, passim.
25. This estimate is despite a slight drop in worldwide carbon emissions in 2009 compared to 2008. Emissions in 2009 were 39 percent higher than 1990 levels. See J. Olivier and J. Peters, "No Growth in Total Global CO<sub>2</sub> Emissions in 2009," table A1, p. 12.
26. Rachel Cleetus, Steven Clemmer, and David Friedman, *Climate 2030: A National Blueprint for a Clean Energy Economy*, passim.
27. Glaeser and Kahn, "Green Cities, Brown Suburbs."
28. Ewing et al, *Growing Cooler*, passim.

29. Nordhaus and Shellenberger, *Break Through*, p. 126.
30. Richard Register, "Cities Can Save the Earth."
31. Joan Fitzgerald, *Emerald Cities*, passim.
32. The following analysis draws on several recent discussions of sustainable urban communities, including Ellen Dunham-Jones and June Williamson, *Retrofitting Suburbia*; Ewing et al, *Growing Cooler*, Douglass Farr, *Sustainable Urbanism*, Peter Newman, Timothy Beatley and Heather Boyer, *Resilient Cities*, Richard Register, *Eco-Cities*; and David Owen, *Green Metropolis*.
33. Maslin, *Global Warming*, passim.
34. Newman, Boyer, and Beatley, *Resilient Cities*, passim.
35. Farr, *Sustainable Urbanism*, p. 42.
36. U.S. Census Bureau, "New York (city), New York," *State & County QuickFacts*, Washington, DC: U.S. Department of Commerce, April 22, 2010, <http://quickfacts.census.gov/qfd/states/36/3651000.html>, accessed July 23, 2010. U.S. Census Bureau, "San Francisco County, California," *State & County QuickFacts*, Washington, DC: U.S. Department of Commerce, April 22, 2010, <http://quickfacts.census.gov/qfd/states/06/06075.html>, accessed July 23, 2010. (Note: the City of San Francisco is also a California county).
37. Moe, "This Old Wasteful House."
38. Census, Summary File 3. Tables H-34, H-35.
39. Another example of a similar program is the Cambridge Energy Alliance in Cambridge, Massachusetts (Noreen Beatley, Personal Correspondence, November 11, 2009).
40. See Jones, *Green Collar Economy*, page 118.
41. Farr, *Sustainable Urbanism*, passim.
42. U.S. Census, Summary File 3, Table P-30.
43. Buehler, Pucher, and Kenet, "Making Transportation Sustainable: Learning from Germany."
44. See for instance Bandivadekar, Anup. *Evaluating the Impact of Advanced Vehicle and Fuel Technologies in U.S. Light-Duty Fleet*.
45. Buehler, Pucher, and Kenet, "Making Transportation Sustainable."
46. Ibid.
47. Ibid, Table 2.
48. Farr, *Sustainable Urbanism*, pp. 204–211.
49. Farr, *Sustainable Urbanism*, p. 132.
50. Farr, *Sustainable Urbanism*, pp. 160–67. See also Center for Transit-Oriented Development, *Hidden in Plain Sight: Capturing the Demand for Housing near Transit*, especially p. 12.
51. Robert Fishman, "The Fifth Migration"; Arthur Nelson, "Leadership for a New Era."
52. Elisabeth Rosenthal, "In German Suburb, Life Goes On Without Cars." For more information about the proposed Quarry Village development near Oakland, see <http://www.quarryvillage.org/>
53. Jonathan Levine, *Zoned Out: Regulation, Markets, and Choice in Metropolitan Land-Use*, passim.
54. The example of Portland, Oregon, is illustrative of a broader range of innovation in land use planning that is beyond the scope of this report. To name just a few other examples: a number of communities, such as Kentlands in Maryland and Seaside in Florida have used "form-based code" to successfully promote the building of mixed-use, mixed-income, pedestrian friendly neighborhoods. Other communities—such as Montgomery County, Maryland, and Seattle, Washington—have used "transfer of development rights" programs to encourage infill development. Yet other communities, including Calvert County in Maryland and Lancaster and Montgomery County in Pennsylvania have created "purchase of development rights" programs that enable government or private entities to buy development rights before real estate prices skyrocket, thereby taking "edge lands" out of the market and reoriented development toward existing cities (Katharine Nelson, Personal Correspondence, November 13, 2009).
55. Ellen Dunham-Jones and June Williamson, *Retrofitting Suburbia*, see pp. 230–34 and throughout. Beltline Affordable Housing Advisory Board, Affordable Housing Trust Fund Recommendations, Atlanta, GA: BeltLine, September 17, 2008, page 6. Atlanta BeltLine, Inc., *BeltLine Basics*, Atlanta, GA: ABL, 2009, <http://beltline.org/BeltLineBasics/BeltLineBasicsOverview/tabid/1691/Default.aspx>, accessed Dec. 1, 2009.
56. Newman, Beatley and Boyer, *Resilient Cities*, p. 50.
57. For discussion, see among others Steve Vanderheiden, *Atmospheric Justice*, passim.
58. Nordhaus and Shellenberger, *Break Through*, pp. 121–124.
59. Bob Baugh, Executive Director, AFL-CIO Industrial Union Council, presentation on "Clean Transportation and Good Jobs: Building America's Transportation Manufacturing Sector", *Good Jobs, Green Jobs* conference, Washington, DC: May 5, 2010. Specifically, this \$80 billion included: \$11 billion for development of a " smart grid,

\$3.4 billion for carbon sequestration research, \$2 billion for battery research, \$15 billion for green building, \$11 billion for weatherization and public housing energy efficiency, \$20 billion for wind tax incentives, \$8 billion for high-speed rail, \$1 billion for green jobs training and related programs, \$7.5 billion for a tax credit to support plug-in-hybrid cars, and \$580 million in research and development funds for the Manufacturing Extension Partnership and the National Institute for Standards and Technology.

60. George Monbiot, *Heat*, pp. 189–203.

61. Richard Florida, "How the Crash Will Reshape America." *Atlantic Monthly*, March 2009.

62. John Nichols, "The Case for Kenosha"; "Mixed Signals From the Economy." *Kenosha News*, March 31, 2010.

63. New York City is treated here as five separate cities; while the City's total population has slightly grown in the period since 1950, three of the five boroughs have had substantial population losses over that time period.

64. One qualifying city, Columbus, GA, is excluded from this tally because of its subsequent consolidation with Muscogee County, GA.

65. For purposes of this discussion, we also simplify by looking at national averages, even though, of course, there is considerable variation in residential development patterns among different U.S. metropolitan areas. For more information, see: Committee for the Study on the Relationships Among Development Patterns, Vehicle Miles Traveled, and Energy Consumption. *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO<sub>2</sub> Emissions*. Washington, DC: Transportation Research Board, 2009.

66. William Frey, "Big City Populations Survive the Housing Crunch."

67. Frank Hobbs and Nicole Stoops, "Demographic Trends in the Twentieth Century." Unlike the earlier analysis focusing on the 112 cities and boroughs with the largest population in 1950, the following analysis pertains to residents of all Census-designated central cities (over 400 in 2000), many of which have population well below 100,000. In 2000, roughly 34 million people lived in central cities other than the 112 cities and boroughs discussed in Tables 1-4. Current Census projections suggest that U.S. population will reach 438 million in spring 2050.

68. Anup Bandivadekar et al., "On the Road in 2035." See esp. pp. 138–142 for description of scenarios for achieving a doubling of overall fuel economy by 2035.

69. U.S. Census Bureau, *2008 American Community Survey*, Table B-08101, Washington D.C.: U.S. Department of Commerce, 2009. If we count bicycle commuters (not separately tabulated by the American Community Survey), this figure would likely rise to roughly 12.1–12.2 percent.

70. By way of comparison, Reid Ewing and his research team estimate that in a scenario between 2007 and 2030 in which urban density rises one percent a year, highway miles increase 0.5 percent a year, transit miles increase 6.3 percent a year, and real fuel price increases 2.4 percent, total vehicle miles will increase about 30 percent over the same time period, assuming 1.2 percent annual population and income growth, compared to a 48-percent increase in a scenario in which urban density and fuel costs do not increase and highway miles continue to grow at 1.5 percent a year. As Ewing cautiously notes, "This is still above the path toward climate stabilization, but much closer than with technology alone." Ewing goes on to suggest that achieving stabilization will require not only stronger policy instruments, but also "fundamental behavioral changes" not easily predicted by mathematical models. Ewing et al, *Growing Cooler*, 127.

71. American Public Transportation Association, *2010 Public Transportation Fact Book*, Washington, DC: APTA, April 2010, pp. 20, 22.

72. This estimate is admittedly very rough. The assumptions here are that the operating costs of serving 30 percent of commuters (6.25 times the current percentage) would be 7–8 times higher than current (2008) operating expenses, and that associated capital costs would be roughly 10–12 times higher than current levels. These increased costs are due both to the need to serve a greater (and continually growing) number of people and because this level of increase would probably involve extending public transit to communities that may be less conducive to high transit use (initially) than the existing high-density areas where most public transit is currently located. On the optimistic side, it is also assumed that good planning could increase the proportion of operating costs paid for out of fare revenues up to 55 percent (from less than 40 percent today). Obviously all of these assumptions are subject to revision. The key point here is that the level of investment required would be very large. These figures suggest combined expenditures on public transit of roughly two percent of current GDP annually. This figure seems large, but transportation's overall share now of GDP is estimated to nearly 10 percent, with expenditures on transportation accounting for 17–21 percent of a typical household's budget. See U.S. Chamber of Commerce, "The Transportation Challenge: Moving the U.S. Economy," pp. 84–97. The policy proposed here, in short, involves a redistribution of the already very large proportion of income spent on transportation away from private motor vehicles towards public transit.

73. Revenue passenger miles reached its most recent peak at 595 billion miles in 2007 before falling back to 541 billion miles in 2009 due to the economic crisis. See U.S. Bureau of Transportation Statistics "Revenue Passenger Miles," [http://www.transtats.bts.gov/Data\\_Elements.aspx?Data=3](http://www.transtats.bts.gov/Data_Elements.aspx?Data=3), accessed August 10, 2010.

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The Democracy Collaborative at the University of Maryland was established in 2000 to advance a new understanding of democracy for the 21st century and to promote new strategies and innovations in community development that enhance democratic life.

The Collaborative is a national leader in the field of community development through our Community Wealth Building Initiative. The Initiative sustains a wide range of projects involving research, training, policy development, and community-focused work designed to promote an asset-based paradigm and increase support for the field across-the-board.

Our research, strategy and policy website — [www.Community-Wealth.org](http://www.Community-Wealth.org) — is updated quarterly and is a comprehensive source for information about the community wealth building movement nationwide.

A current flagship project of The Democracy Collaborative is the Evergreen Cooperative Initiative in Cleveland, Ohio. In partnership with The Cleveland Foundation, the Ohio Employee Ownership Center at Kent State University, and many of Cleveland's major health and educational "anchor institutions," the Collaborative has designed and is helping to implement a comprehensive wealth building effort in six low-income neighborhoods. The Initiative is building community-based businesses that will employ hundreds of local residents. Each new start-up company is organized as a green worker cooperative. For more about the Initiative, visit [www.Community-Wealth.org](http://www.Community-Wealth.org).

## CLIMATE CHANGE, COMMUNITY STABILITY AND THE NEXT 150 MILLION AMERICANS

In a remarkably short period of time, discussion of sustainability has gone from the margins to the mainstream. And yet few pause to think about the enormous transformation required not simply in our ecological practices, but in how our economy is organized, if the United States — and indeed the world — are to successfully build a sustainable, post-carbon economy.

The change required is immense. The United States may need to reduce carbon emissions to *one tenth* of current levels within 40 years, even as it must provide for a population expected to rise by 150 million.

This report marks a bold attempt to address the question of how to create communities that are *sufficiently stable economically* so that ecologically sustainable development can be implemented and the political support to achieve needed carbon emissions reductions generated.

Curbing carbon emissions requires far more than technical know-how. We must change not only our energy use and transportation practices, but also where and how we work and live. It also requires ending the commonplace economic practice of treating built communities as disposable items that can be abandoned when market conditions change.

The challenge is daunting. Yet it also presents an opportunity. Putting forth a vision of *green community wealth building*, in which community-anchored enterprises, linked to sophisticated and decentralized planning, support stable and sustainable local economies, this study outlines how truly integrated approaches can help America meet the sustainability challenge.

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