

Policy Analysis

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The Myth of the Compact City Why Compact Development Is Not the Way to Reduce Carbon Dioxide Emissions

by Randal O'Toole

Executive Summary

Proponents of compact development argue that rebuilding American urban areas to higher densities is vital for reducing greenhouse gas emissions. Compact city policies call for reducing driving by housing a higher percentage of people in multi-family and mixed-use developments, reducing the average lot sizes of single-family homes, redesigning streets and neighborhoods to be more pedestrian friendly, concentrating jobs in selected areas, and spending more on mass transit and less on highways.

The Obama administration has endorsed these policies. Secretary of Transportation Ray LaHood and Secretary of Housing and Urban Development Shaun Donovan have agreed to require metropolitan areas to adopt compact-development policies or risk losing federal transportation and housing funds. LaHood has admitted that the goal of this program is to “coerce people out of their cars.”

As such, compact-development policies repre-

sent a huge intrusion on private property rights, personal freedom, and mobility. They are also fraught with risks. Urban planners and economists are far from unanimous about whether such policies will reduce greenhouse gas emissions. Some even raise the possibility that compact city policies could increase emissions by increasing roadway congestion.

Such reductions are insignificant compared with the huge costs that compact development would impose on the nation. These costs include reduced worker productivity, less affordable housing, increased traffic congestion, higher taxes or reduced urban services, and higher consumer costs. Those who believe we must reduce carbon emissions should reject compact development as expensive, risky, and distracting from tools, such as carbon taxes, that can have greater, more immediate, and more easily monitored effects on greenhouse gas emissions.

Randal O'Toole is a senior fellow with the Cato Institute and author of Gridlock: Why We Are Stuck in Traffic and What to Do about It (forthcoming).

Compact development policies, admits Transportation Secretary Ray LaHood, are designed “to coerce people out of their cars.”

Introduction

The Obama administration has endorsed proposals to direct metropolitan areas to become more “compact” in order to reduce greenhouse gas emissions. Such a compact-development policy calls for increasing urban population densities, housing more people in multi-family and mixed-use developments, investing more in mass transit and less in infrastructure for personal transportation, and concentrating jobs in selected areas.

The major premises behind this policy are that people living in compact cities drive less, and that the United States cannot meet targets for reducing greenhouse gas emissions without reducing the growth of driving. The “transportation sector cannot do its fair share to meet this [greenhouse gas reduction] target through vehicle and fuel technology alone,” says *Growing Cooler*, a 2008 report from the Urban Land Institute. This is because, the report explains, the predicted growth in driving is greater than predicted reductions in emissions from more efficient cars and alternative fuels.¹

To reduce driving, *Growing Cooler* advocated the use of “compact development” combined with “expanded transportation alternatives.” Compact development, says *Growing Cooler*, means “higher average ‘blended’ densities” along with “a mix of land uses, development of strong population and employment centers, interconnection of streets, and the design of structures and spaces at a human scale.”²

One month after publication of *Growing Cooler*, the Brookings Institute released *Shrinking the Carbon Footprint of Metropolitan America*. The report urged the federal government to use its housing and transportation programs to encourage or require metropolitan areas “to expand transit and compact development.”³

In 2009, the Urban Land Institute and several other groups published *Moving Cooler*, a sequel to *Growing Cooler*. The report claimed that “smart growth”—a combination of compact development and “improved travel op-

tions”—could reduce 2050 greenhouse gas emissions by 9 to 15 percent.⁴

Another 2009 report from the Center for Clean Air Policy promoted “greenhouse gas reductions through smart growth and improved transportation choices” and proposed that cap-and-trade revenues be invested in such programs. The report went further and argued that such changes would be “cost-effective” and even “profitable.”⁵

Most recently, a report from the Transportation Research Board, *Driving and the Built Environment*, concluded that doubling the density of most new development and making other land-use changes such as concentrating jobs, mixed-use developments, and significant transit improvements, could reduce miles of driving and auto-related carbon dioxide emissions by up to 11 percent.⁶

Coming at a time when Congress is debating both climate policy and transportation reauthorization, these reports are clearly aimed at promoting a national smart-growth policy that would dictate land uses and transportation spending for the next several decades. The reports have clearly influenced the Obama administration, which has endorsed the goal of reducing driving through compact-city policies. The secretaries of transportation and housing and urban development have signed an agreement to require metropolitan areas to adopt compact development policies.⁷ Secretary of Transportation Ray LaHood has admitted that these policies are designed to “coerce people out of their cars.”⁸

Yet the reports supporting compact cities contain major flaws. First, they typically overstate the effects of compact development on greenhouse gas emissions. Second, they ignore or vastly underestimate the costs of compact development, alternative forms of transportation, and restrictions on personal mobility. Further, they ignore or underestimate the risks that compact development will not produce the intended effects or that unintended consequences will prove far more costly than any benefits that result.

The reports’ failure to accurately assess benefits and costs obscures the fact that com-

compact city policies are extremely expensive, yet they will likely yield negligible (and possibly negative) environmental benefits. Given limited resources, if other means of reducing greenhouse gases are more cost efficient, then promoting or requiring compact development will make it more difficult to achieve emission reduction targets.

History of Compact City Planning

For more than 75 years, architects and urban planners have proposed compact development as an alternative to low-density suburbs, which they derisively term “sprawl.” In addition to higher-density housing, most compact city proposals also include plans to make neighborhoods more pedestrian-friendly and include investments in mass transit and other alternatives to auto driving. Together, compact development and alternative transportation projects are sometimes called “smart growth.”

Although the term smart growth was not applied to these policies until 1996, the desire on the part of urban planners and some environmentalists for higher urban densities long predates that year or any concerns about global climate change. Criticism of low-density suburbs dates back at least to the 1930s.⁹ First in Europe and later in the United States, those critics have sought to use the power of government to herd large segments of the population into high-density cities and to prevent owners of rural land from developing their property for residential uses.

One of the first to promote such policies was Le Corbusier, a Swiss-French architect who promoted the reconstruction of cities into vast regions of high-rise apartments that he called “Radiant Cities.” His ideas so heavily influenced urban planners throughout the world in the 1940s and 1950s that planning historian Peter Hall calls Corbusier “the Rasputin of this tale,” both because Radiant Cities turned out to be unlivable and because of his authoritarian approach to planning, “the

evil consequences of which are ever with us.”¹⁰

In 1947, the British Parliament passed the Town and Country Planning Act, which could be described as the first modern compact-city law. This law set aside vast regions of rural land as greenbelts and mandated the construction of high-density, high-rise housing within existing cities along Radiant City lines.

Unlike the United States, which built public housing only for the poor, the British government built these apartments for working-class and middle-class families. Many of the buildings proved to be so unlivable, observes Hall, that “the remarkable fact was how long it took for anyone to see that it was wrong.”¹¹ By the late 1960s, few people were willing to live in such apartments even at heavily subsidized rents, and so by 1970, says Hall, “the great Corbusian rebuild was over.”¹²

The United States built its Radiant City housing exclusively for low-income families, but had the same experience. The housing projects became so plagued by crime and vandalism that most have been demolished.¹³

One of the leading critics of the standard urban renewal practices of the 1950s—clearing “slums” and replacing them with high-rise housing—was Jane Jacobs, author of *The Death and Life of Great American Cities*. Jacobs lived in a mid-rise, mixed-use, inner-city neighborhood that was slated for urban renewal, and she sought to prove that her neighborhood was “lively,” and not a blighted slum that needed to be replaced.¹⁴

Urban planners learned a lesson from *The Death and Life*, but it was the wrong one. Instead of realizing that cities are too complicated to be centrally planned, they concluded that central planners should promote Jacobs’s mid-rise neighborhoods instead of Corbusier’s high-rise apartments.

This transition is apparent in a 1973 book, *Compact City*. “The problems of urban development,” write authors George Dantzig and Thomas Saaty, “are too crucial to the future to be left to real-estate developers”—in other words, private landowners who meet market demand by building low-density sub-

Compact development proposals date back at least to the 1930s, and the British Parliament passed the first compact-development law in 1947.

After the developer of a New Urban project designed by Peter Calthorpe went bankrupt, Calthorpe went into the business of helping cities writing codes mandating New Urban development.

urbs. Central planners should insist on higher-density development.¹⁵

The book's main proposals were "in some respects based on Radiant City lines" (which reveals how slow planners are to learn from their mistakes). As an alternative, however, the authors' proposed that density could be achieved using Jacobs's "lively neighborhoods."¹⁶ Either way, the authors call for a top-down planning approach that would give property owners and homebuyers little choice but to accept the dictates of the supposedly omniscient planners.

In the 1980s, a number of architects proposed to build Jacobs's lively neighborhoods from scratch. On the East Coast, Andres Duany suggested that such "neotraditional" neighborhoods would have a stronger sense of community than traditional low-density suburbs.¹⁷ On the West Coast, Peter Calthorpe claimed that pedestrian-oriented "urban villages" would be less "dependent" on the automobile.¹⁸ These ideas soon became known as "New Urbanism."

New Urbanists, however, soon ran into a brick wall of market reality: surveys and actual buying habits have repeatedly shown that the vast majority of Americans aspire to live in a single-family home with a large yard.¹⁹ While New Urbanists accepted some single-family homes, they wanted to increase the percentage of people living in multi-family housing and build single-family homes on tiny lots. There is a small market for high-density, mixed-use neighborhoods, but in many cities that market is easily met by existing older neighborhoods.

As a result, many early New Urban developments were financial failures. After the first developer of Calthorpe's Laguna West, near Sacramento, went bankrupt, a later developer reconfigured and completed it as a traditional suburb. Calthorpe soon went into the business of helping cities write codes mandating New Urban development. Such mandates came to be known as "smart growth," a term that became popular partly because advocates often construe anyone who supports property rights and freedom of choice as promoting "dumb growth."²⁰

The Solution in Search of a Problem

Throughout most of this history, compact development was a solution in search of a problem. Early advocates claimed that denser development was needed to preserve farmlands. Yet the United States has a billion acres of agricultural lands, less than 40 percent of which are actually used for growing crops, while the nation's urban areas occupy only about 100 million acres.²¹ So, compact development for the purpose of farm preservation made little sense.

In the 1970s, advocates of compact development argued that it would reduce air pollution and save energy because people living in compact cities would drive less. Yet it proved to be far easier to simply build cleaner, more fuel-efficient cars than to completely rebuild American cities.

Between 1970 and 2007, for example, urban driving increased by 250 percent, but auto-related air pollution declined by more than two-thirds.²² Meanwhile, Americans responded to higher gas prices in the 1970s and early 1980s by buying cars in the 1990s that were an average of 40 percent more fuel efficient than those available in the early 1970s.²³ In 1991, for example, Americans drove 41 percent more miles than in 1978, while using only 3 percent more fuel.²⁴ After gas prices fell, Americans bought larger cars, but technological improvements produced a continuing increase of ton-miles-per-gallon.²⁵ This shows that considerable progress can be made in improving fuel economy without reducing mobility.

Another early argument for regulating sprawl was that the cost of providing infrastructure to low-density communities was significantly greater than in higher-density areas.²⁶ The most detailed study of this question concluded that low-density suburban development imposes about \$11,000 per residence more in urban-service costs on communities than more compact development.²⁷ Some have questioned this number.²⁸ But even if valid, most homebuyers would gladly

add \$11,000 to the cost of a \$150,000 home in order to have a good-sized yard and not share a wall with next-door neighbors.

In the 1980s and 1990s, some New Urban advocates argued that denser neighborhoods had a stronger sense of community. Studies have found, however, that suburbs actually have more social interactions than denser cities.²⁹ Even the data in Robert Putnam's *Bowling Alone*, which promoted the notion that Americans were losing their sense of community, showed that suburbanites had higher social participation rates than residents of dense cities.³⁰

In the early 2000s, compact-city supporters jumped on the obesity issue by claiming that suburbs make people fat. In fact, even studies prepared by smart-growth supporters found that the differences in obesity rates between low- and high-density areas were trivial. One study found, for example, that about 2 percent more people in low-density Atlanta are obese than in high-density San Francisco.³¹ More careful studies have found "no evidence that urban sprawl causes obesity." In fact, these studies say, compact-city advocates confused cause and effect: "individuals who are more likely to be obese choose to live in more sprawling neighborhoods."³²

If all these reasons for supporting compact cities are wrong, then why is the idea so persistent? The answer, at least in part, says Peter Hall, is that it is a class conflict. Ironically, Hall observes, before 1920 the main goal of urban planners was to move working-class people from high-density inner-city tenements to low-density suburbs. No one complained about urban sprawl when low-density suburbs were occupied solely by the upper and middle classes. But when working-class families started moving to the suburbs—more due to Henry Ford's mass-produced automobiles than to anything urban planners did—conflicts between upper- and lower-class tastes led to a backlash.³³ While often giving lip service to the idea of mixed-income communities, the elites decided to promote policies that made single-family housing unaffordable to all but the wealthy.

Now compact-city advocates have hitched their wagon to the climate-change debate. However, instead of advocating the most efficient (and thus resource-conservative) ways of reducing greenhouse gas emissions, these advocates have co-opted climate concerns to justify their preferences for urban planning. Consider:

- The lead author of *Growing Cooler*, Reid Ewing, was also the lead author of the study (which he brags is "the most widely reported planning study ever") that erroneously claimed suburbs make people obese.³⁴
- *Growing Cooler* co-author Keith Bartholomew was staff attorney for 1000 Friends of Oregon in 1989, where he directed the Land Use-Transportation-Air Quality project that developed much of the modern conception of compact development.³⁵ Another co-author, Don Chen, is a former staff member of the Surface Transportation Policy Project, which has sought to reduce driving since its creation in 1990.
- Many of the organizations behind the *Moving Cooler* report, including the American Public Transportation Association, Environmental Defense Fund, Natural Resources Defense Council, and Environmental Protection Agency, have promoted compact cities for at least 15 years.
- Several people listed on the Center for Clean Air Policy report as having provided "assistance" to the authors have also promoted compact cities.

Some, though certainly not all, of the members of the Transportation Research Board committee that oversaw that organization's report have also long been compact-city advocates.

In other words, these reports have been written or influenced by people who supported compact development long before climate change became a major issue. Now they are using climate change to justify imposing their preferred form of urban planning on major U.S. metropolitan areas.

No one complained about sprawl when suburbs were occupied solely by upper and middle classes. It was only when working-class families moved to the suburbs that critics proposed to force them into compact developments.

If the United States decides to reduce greenhouse gas emissions, other policies are far more cost-efficient than compact development.

Rebuilding American cities to more compact standards would certainly qualify as a megaproject. Bent Flyvbjerg, a Danish planner who has studied numerous megaprojects, observes that megaproject advocates are often guilty of *optimism bias*, in which they overestimate benefits and underestimate costs, and *strategic misrepresentation*, in which they skew data to make their project look more favorable than it really is.³⁶

For example, *Growing Cooler* optimistically estimated that building 60 percent of new urban development to compact standards would reduce 2030 carbon dioxide emissions by 79 million tons.³⁷ Somewhat more realistically, *Moving Cooler* estimated that building 64 percent of new urban development to compact standards would reduce 2030 carbon dioxide emissions by only 22 million tons, indicating that *Growing Cooler* overestimated the effects of compact development by nearly four times.³⁸ In its own example of optimism bias, however, *Moving Cooler* projects that the cost of building up to 90 percent of all new urban development in the U.S. to compact standards would be only \$1.5 billion.³⁹

Policy advocates who couch their ideas in language that disguises the weaknesses of their proposals are guilty of strategic misrepresentation. For example, *Growing Cooler's* repeated statement that transportation accounts for one-third of greenhouse gas emissions (modified to 28 percent in *Moving Cooler*) obscures the fact that urban driving of personal vehicles—the form of transportation advocates seek to reduce through compact development—accounts for less than 13 percent of emissions, while the other 20 percent comes from freight, mass transportation, and intercity travel.⁴⁰

A careful reading of the various compact-city reports reveal numerous other optimism biases and strategic misrepresentations that overestimate the benefits and underestimate the costs of these proposals. Correcting these biases and misrepresentations reveals that compact development would be a wasteful and inefficient way of achieving greenhouse gas reductions.

Compact Cities and Greenhouse Gases

All of the reports discussed in this paper take it for granted that the United States must reduce carbon dioxide emissions by as much as 80 percent from 1990 levels—which would mean 83 percent from 2007 levels. Though many climatologists dispute this goal, such disputes are beyond the scope of this paper.⁴¹

Instead, the point of this paper is that *if the United States decides to reduce greenhouse gas emissions, there are more cost-efficient policies to achieve this goal than compact development*. Given that resources are limited, any project that reduces greenhouse gas emissions in a non-cost-effective manner will simply make it more difficult to meet emission reduction targets.

According to a McKinsey and Company report, the United States can meet emission reduction targets by investing in projects that cost less than \$50 per ton of carbon-dioxide-equivalent emissions. Close to half of the reductions, the company found, would actually have a negative cost: though they may require up-front investments, they would save money in the long run by reducing energy costs. These projects would include designing cars and light trucks that are lighter-weight and have less wind and rolling resistance.⁴²

In contrast to McKinsey's rigorous analysis of cost-effectiveness, none of the reports advocating compact development show that such policies would be cost-effective, and most do not even mention cost-effectiveness. In fact, to the extent that compact development can reduce greenhouse gas emissions at all, it would do so only at a cost far greater than \$50 per ton. This means it should be among the last policies to be adopted in response to climate concerns.

Growing Cooler

Growing Cooler insists that reductions in the growth of driving are needed so that transportation will contribute its "fair share" of greenhouse gas reductions.⁴³ But what is fair? The report implies that, since transportation

accounts for a third of emissions, it should provide a third of total emission reductions. This ignores the fact that emissions reductions can be achieved in other sectors much more cheaply and easily, which would be far more efficient for society. For example, the McKinsey study found that more than half of the cost-effective opportunities for emission reductions are in the electricity sector, while transportation offers only 15 percent of such opportunities.⁴⁴ Unless advocates of compact development can prove that their policies would cost less than \$50 per ton, proposals to reduce driving to meet emission-reduction targets are almost certain to be cost-ineffective.

Even among transportation investments, *Growing Cooler* provides no evidence that compact development is a cost-effective solution to greenhouse gas emissions. Instead, it relies on a weak metaphor of a three-legged stool, the legs being more fuel-efficient cars, alternative fuels, and reduced driving. The first two “legs” alone will not meet emission-reduction targets, says the report, so we must reduce driving.⁴⁵

The only evidence the report offers that the first two legs are insufficient is based on the corporate average fuel economy (CAFE) standard in the Energy Independence and Security Act of 2007, which called for increasing the average fuel economy of cars to 35 miles per gallon by 2020. The report also accounts for a federal requirement that alternative fuel use be increased so as to reduce carbon dioxide emissions by about 10 percent. The report shows that the emission reductions from these two standards will be offset by increases in driving. This leads to the conclusion that driving must be reduced.⁴⁶

In effect, the report assumes that no further increases in fuel efficiencies or alternative fuels are possible beyond those in the 2007 law. That assumption has already been proven obsolete, because in 2009 auto manufacturers accepted an even tighter CAFE standard of 35.5 mpg by 2016. The report further assumes that auto manufacturers will make no additional improvements in fuel efficiency or alternative-fueled autos after 2020. *Growing Cooler*

tracks emissions through 2050, yet it effectively assumes technology will freeze after 2020, barely a quarter of the way through the time-horizon of the report. Accepting that this is unlikely greatly shrinks the imperative to reduce driving.

Data buried in the back of *Growing Cooler* suggest that, to the extent that reductions in driving can contribute at all to greenhouse gas reductions, only a small share of that contribution will come from compact development. The report evaluates four policies that together, it concludes, could reduce driving by 38 percent. Of those policies, the two *smallest* reductions in driving come from increased investments in transit, which would reduce driving by only 4.6 percent, and increased population densities, which would reduce driving by 7.7 percent.

The greatest reduction in driving comes from an assumption that fuel prices will rise at rates that are significantly faster than historical levels (possibly through higher fuel taxes), which would reduce driving by 14.4 percent. This is closely followed by a policy of reducing investments in new highways, which would increase the growth in congestion and reduce driving by 11.4 percent.⁴⁷

In other words, two-thirds of the projected reductions in driving come from making driving more expensive, not from land-use changes or investments in alternatives to driving. This reveals that compact-city policies are far less effective than its proponents imply, and that the compact-city agenda is far more coercive—relying more on punitive pricing measures than changes to the built environment—than its proponents admit.

In an effort to show that its policies are not necessarily coercive, *Growing Cooler* argues that increasing numbers of Americans want to live in more compact cities. The report relies heavily on the projections of an urban planning professor named Arthur Nelson, who claims that by 2025 the United States will have a surplus of single-family homes on large lots and all new construction will have to be multi-family housing or single-family homes on small lots.⁴⁸

Most of the reductions in driving in *Growing Cooler* come from policies that make driving more expensive, not from compact development.

Those who believe we should reduce carbon emissions should reject compact development as expensive, risky, and likely to distract attention from more cost-effective emission-reduction programs.

However, Nelson himself is guilty of optimism bias. He claims that only 25 percent of Americans want to live in single-family homes on large lots, while 37 percent want small lots (less than one-sixth of an acre) and 38 percent prefer multi-family housing. These numbers, he says, are “based on interpretations of surveys” reported by urban planners Dowell Myers and Elizabeth Gearin.⁴⁹ Yet the Myers-Gearin paper completely contradicts Nelson’s “interpretation,” citing survey after survey finding that 75 to 85 percent of Americans aspire to live in single-family homes with a yard.⁵⁰

If compact-city advocates truly believed in Nelson’s numbers, they would not need to use regulation to increase densities of American cities. Builders responding to market demand alone would make cities denser. But in fact, achieving *Growing Cooler’s* compact-city goals will require a degree of coercion from the federal government that is unprecedented in American history: limits on rural land development, mandated changes to existing residential areas, and huge taxpayer-supported subsidies to entice people to live in higher-density complexes.

Shrinking the Carbon Footprint

The Brookings Institution report is the only one considered in this paper that deals with greenhouse gas emissions from sources other than transportation. Not only will compact cities reduce driving, says the report, but they will also reduce the energy consumption and greenhouse gas emissions from housing and other buildings.

Buildings, the report points out, account for even more carbon emissions than transportation—39 percent vs. 33 percent.⁵¹ The report advocates compact development to reduce these costs through “smaller homes and shared walls in multi-unit dwellings.”⁵²

As with *Growing Cooler’s* demand that we reduce driving, the Brookings report fails to show that compact development is a cost-effective way of saving energy or reducing greenhouse gases from residential or other buildings. According to the Department of

Energy, single-family homes actually consume less energy per square foot than multi-family homes. Despite their shared walls, two- to four-unit multi-family homes use 25 percent more energy per square foot, while residences with five or more units use 8 percent more, than single-family detached homes.⁵³

This means the Brookings study is really proposing to save energy by forcing Americans to drastically reduce the size of their living spaces. Yet it is likely that technological improvements—better insulation, designs that take better advantage of solar heating opportunities, and so forth—could achieve far more energy savings at a lower cost without requiring dramatic changes in lifestyles. Just as compact-city advocates consider technological solutions that make driving more energy-efficient to be inadequate, the Brookings report implicitly considers technological solutions that make single-family housing more energy-efficient to be insufficient.

Cost-Effective GHG Reductions

The Center for Clean Air Policy report shares a co-author, Steve Winkelman, with *Growing Cooler*—along with many of the latter report’s arguments. But it also claims to prove that compact development is a cost-effective means of reducing greenhouse gases. In fact, the report claims that reducing per capita driving by 10 percent “can be achieved profitably, when factoring in avoided infrastructure costs, consumer savings and projected tax revenue growth.”⁵⁴

Typically, the report offers almost no real-world data to support this conclusion. Instead, it relies on the projections of urban planners in Atlanta, Portland, Sacramento, and elsewhere for how their policies will affect energy consumption and other behaviors. Though it calls these “case studies,” the report’s arguments suffer from optimism bias and strategic misrepresentations.⁵⁵

For example, CCAP reports that Sacramento’s “smart-growth plan is projected to reduce emissions [at] a net economic benefit of \$198 per ton carbon dioxide.” Yet Sacramento has been using smart-growth plans requiring com-

compact development and investments in transit for decades, but the environmental gains from these efforts seem to be minimal. The region's 2006 plan openly admitted that its smart-growth plans imposed "during the past 25 years have not worked out." Despite building light rail, the share of transit riders who "have access to an automobile [and] can otherwise choose to drive" is decreasing. Despite efforts to promote compact development, both jobs and residences continued to decentralize. Despite the region's failure to build new roads to accommodate growth, "lack of road building and the resulting congestion have not encouraged many people to take transit instead of driving."⁵⁶ Despite the failure of past plans, Sacramento adopted a plan that continued these failed policies and projected benefits that were based more on hope than experience.

The CCAP report breathlessly notes "that \$73 million invested in the Portland Streetcar helped attract \$2.3 billion in private investment within two blocks of the line."⁵⁷ What it does not say is that, at the same time that it built the streetcar line, Portland spent more than \$665 million subsidizing new developments along the line, including building parking garages for retailers, subsidizing an aerial tram, parks, and parking garages for a development near the Oregon Health Sciences University, and providing 10 years of property-tax waivers to many residences that were built along the streetcar line.⁵⁸

Except for the property-tax waivers, most of these subsidies came from tax-increment financing, which effectively transfers tax revenues from schools, fire, police, and other essential services to property developers. Far from being "profitable," as CCAP claims, such transfers give residents a choice between declining urban services and higher taxes to replace the funds lost to schools and other urban services.

CCAP claims that the Atlanta development Atlantic Station will reduce greenhouse gas emissions "at a net cost savings, because municipal tax revenues from the project will be greater than what is required to pay back the initial project loan."⁵⁹ As in the case of Port-

land, the "initial project loan" is a \$75 million tax-increment financed subsidy to the developers.⁶⁰ What CCAP does not reveal is that the tax revenues required to repay this subsidy would otherwise go to schools and other essential urban services for Atlantic Station.

The problem with relying on projections rather than reality is that the projections are often made by planners who themselves suffer from optimism bias and strategic misrepresentation. For example, planners typically portray tax-increment financing as a way of "self-financing" economic development. Yet the new development requires the same urban services as existing development, but the taxes that would have gone to those services are transferred to the developers instead.

In most cases, subsidies to economic development are, at best, a zero-sum game: if planners subsidize it to take place in a dense section of a city, it will not take place somewhere else. So planners cannot claim the benefits of that development as a net gain for the city or region; in fact, the tax subsidy is a net loss. At worst, such subsidies are a negative-sum game: by increasing taxes or reducing urban services, they discourage employers from moving to or remaining in the region. As a study in Illinois found, communities that use tax-increment financing actually "grow more slowly than those that do not."⁶¹

In Sacramento and Portland, at least, tax increases ordinarily require voter approval. But tax-increment financing is exempt from this requirement. Far from being profitable, cities that use tax-increment financing to support compact development are effectively stealing from schoolchildren, firefighters, and other recipients and providers of urban services—and, in turn, stealing from the taxpayers who agreed to fund those services.

Moving Cooler

While *Moving Cooler* is in many ways a sequel to *Growing Cooler*, it maintains a patina of greater objectivity because it was written by a consulting firm, Cambridge Systematics, rather than by employees of organizations that have supported compact development for two

CCAP's claims that compact development is "cost effective" are based on projects in which cities effectively steal money from schools, fire, and police to subsidize developers.

It is more cost-effective to dedicate renewable energy to electric cars and plug-in hybrids, which can be recharged overnight when electricity demand is low, then to use it for transit in daytime, when demand is high.

decades. Yet *Moving Cooler* relies on many of the same sources as *Growing Cooler*, and background documents specifically cite *Growing Cooler* as the source of many of the new report's assumptions.

For example, *Moving Cooler* uses Arthur Nelson's projections, "as cited in *Growing Cooler*," of the future demand for various types of housing.⁶² It based its estimate of the reductions in driving due to "pedestrian-friendly environments" on a paper by Ewing (a *Growing Cooler* co-author) and Cervero, "also cited in *Growing Cooler*."⁶³

Cambridge Systematics also relied on a paper by the Center for Clean Air Policy for nearly all of its numbers relating to high-speed rail.⁶⁴ This paper contained many examples of optimism bias and strategic misrepresentation. For example, the paper assumed that high-speed trains would operate 70 percent full.⁶⁵ Yet Amtrak trains in 2008—a banner year for passenger trains due to high gas prices—were only 52 percent full.⁶⁶

Unlike most of the other reports considered here, *Moving Cooler* compares compact development with other ways of reducing vehicle-related greenhouse gas emissions, including parking and highway pricing, carbon taxes, ride-sharing and similar commuting strategies, intelligent transportation systems, and highway capacity expansions.⁶⁷ Though the report estimates the costs and emission reductions from "expanded," "aggressive," and "maximum" levels of each strategy, it does not take the next step of calculating the cost per ton of abatements.

Those costs range from pennies to \$5,900 per ton. Of 47 strategies considered, only 21 are estimated to cost \$50 per ton or less, and in some cases the cost is less than \$50 at only some levels of implementation. For example, "expanded incident management" costs \$37 per ton, but "maximum incident management" costs \$161 per ton.⁶⁸

Even though the report provides readers with enough data to calculate costs per ton, many of the cost and benefit estimates are questionable. For example, maximum expansions of transit service are estimated to pro-

duce 1.5 billion metric tons of greenhouse gas reductions. This seems questionable considering that transit produces about the same amount of greenhouse gases per passenger mile as automobiles.⁶⁹

To reach this conclusion, Cambridge Systematics assumed that new technologies would reduce greenhouse gas emissions per passenger mile from buses by 26 percent and from rail transit by 50 percent or more, even if passenger loadings remain about the same as they are today.⁷⁰ This is extremely unlikely, particularly for rail transit. America's automobile fleet turns over every 18 years, so by 2050 we will have two completely new generations of automobiles on the roads, many of which will be lighter and have less wind- and rolling-resistance than today's cars. But rail transit fleets turn over only once every 30 to 40 years, and there is little reason to think that future vehicles will be significantly more fuel-efficient than the ones on the rails today.⁷¹

Moreover, both bus and rail transit vehicles are significantly less fuel efficient, per passenger mile, today than they were in 1980.⁷² This is mainly due to a decline in passenger loadings that has resulted from expansions of service into areas that make little use of transit. Cambridge Systematics' assumption that a huge expansion of transit service will not reduce average passenger loads is likely to be optimistic.

The one way in which transit expansions could significantly reduce greenhouse gas emissions is if the transit were powered by non-fossil-fuel sources of electricity. But it would be more cost-effective to dedicate such electricity to electric cars and plug-in hybrids, which can be recharged overnight when electricity demand is low, and allow daytime use of that electricity for other purposes.

Even with Cambridge Systematics' generous assumptions regarding improvements in transit efficiencies, the cost of the maximum transit expansions is more than \$2,000 per ton, while the cost of lesser expansions exceeds \$1,700 per ton. This is far more than can be considered cost-effective under the McKinsey report's guideline of \$50 per ton.

According to *Moving Cooler*, compact-development strategies are very cost-effective, ranging from \$1 to \$9 per ton. But the costs projected by Cambridge Systematics are extremely low. It claims that compact development nationwide would cost the same \$1.5 billion under the expanded (43 percent of new development is compact), aggressive (64 percent), and maximum (90 percent) levels of deployment of compact city policies.⁷³ At apparently no extra cost, the maximum level is projected to reduce greenhouse gas emissions by more than 9 times the expanded level.

This report will show that compact development will cost far more than \$1.5 billion. But even under the maximum level, Cambridge Systematics estimates that compact development will reduce greenhouse gas emissions by just 38 million tons in 2030, or about a half a percent of current U.S. emissions. By 2050 this would increase to 73 tons, or about 1.3 percent of current emissions.⁷⁴

Driving and the Built Environment

The Transportation Research Board report, *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and Carbon Dioxide Emissions*, has an even stronger claim to objectivity than *Moving Cooler*. The report was written under the supervision of a 12-member committee that included a mix of planners and transportation engineers. Some members of the committee—most notably Dianne Brake of PlanSmart NJ, Andrew Cotugno of Metro (Portland’s metropolitan planning organization), and Rolf Pendall of the Cornell University City and Regional Planning Department—have been unabashed supporters of compact development, but others have been more skeptical.

“Evidence from the literature,” says the report, indicates “doubling density is associated with about 5 percent less VMT [vehicle miles traveled] on average.” When “other land-use factors” such as mixed uses and pedestrian-friendly design are taken into account, “reports find that VMT is lower by an average of 3 to 20 percent.”⁷⁵

The report compares a base case (no action)

with two scenarios: one in which 25 percent of all future urban development is built to twice the existing urban densities and one in which 75 percent is built to twice the current densities. The report arbitrarily assumed that residents of compact developments would drive 12 percent less than average under the 25-percent scenario and 25 percent less than average under the 75-percent scenario.⁷⁶ This is particularly optimistic considering that the report’s own literature review found driving reductions of just 3 to 20 percent.

Based on these assumptions, the report projects that total miles of driving would be 1 percent less than the base case under the 25-percent scenario, and up to 11 percent less under the 75-percent scenario. The report adds that “the committee disagreed about whether the changes in development patterns and public policies necessary to achieve the high end of these findings are plausible.”⁷⁷

In preparing this report, the committee commissioned five background papers. Most of these papers offer little support to those who promote compact development as a way of reducing greenhouse gas emissions.

One paper by University of California economist David Brownstone reviewed the literature on relationships between “the built environment” and driving (as measured by vehicle miles traveled, or VMT). He concluded that there is a “statistically significant link” between the built environment and VMT—but that the available evidence suggests “the size of this link is too small to be useful.”⁷⁸ Brownstone also wonders “why controlling VMT should be a policy goal,” since mobility has a high value and evidence suggests that people respond to higher fuel prices by buying more fuel-efficient cars more than by reducing driving.⁷⁹

A paper by transportation engineer Kara Kockelman (who was also on the TRB committee) and colleagues at the University of Texas reviews alternative means of reducing greenhouse gas emissions. The paper concludes that policies emphasizing higher fuel-economy standards will be much more cost-effective at reducing emissions than land-use policies aimed at reducing driving. In fact, the

A literature review by University of California economist David Brownstone found that the link between the built environment and driving is “too small to be useful.”

There is no consensus among researchers about how much compact development would reduce driving, suggesting this is a highly risky proposition.

paper says, compact development and transit improvements could both substantially *increase* emissions rather than reduce them—the first by increasing congestion (which leads cars to emit more pollution) and the second because transit construction and operations both emit substantial amounts of greenhouse gases.⁸⁰

George Mason University transportation engineer Michael Bronzini wrote a paper on the relationship between land use and truck traffic. He concluded that “low-density development does increase truck traffic” and that “it appears that smart-growth measures could be effective in reducing truck VMT.”⁸¹ However, Bronzini did not assess the cost-effectiveness of such measures.

A paper on housing trends by John Pitkin and Dowell Myers seriously questions Arthur Nelson’s claims that cities should be substantially rebuilt at higher densities to meet the demand for those densities. “Nelson and others have placed too great an emphasis on changing preferences as the driver of changing development patterns,” says the paper. The report found “scant evidence of any net shift of total or elderly population toward central cities,” where development is typically denser.⁸² Where Nelson projected that changes in tastes would lead to substantial reconstruction of urban areas, Pitkin and Myers expect “lower replacement rates” and more reliance on existing housing.⁸³ This suggests that government mandates to rebuild urban areas to higher densities will be far more expensive than suggested by compact-city advocates.

A paper by urban planner Genevieve Giuliano and colleagues at UCLA concludes that two-thirds to three-fourths of jobs in modern urban areas are not located either in downtowns or other urban and suburban centers; instead, they are finely dispersed throughout urban areas. This suggests that concentrating employment, one of the goals of compact-city advocates, will be expensive. The paper also expresses doubt that accomplishing this goal will have significant effects on driving.⁸⁴

Taken together, these papers suggest that using compact development to reduce green-

house emissions is a highly risky proposition. There is no consensus among researchers about how much compact development would reduce driving, and the 25-percent reduction assumed by *Driving and the Built Environment*’s 75-percent scenario is outside the range of literature reviewed by the report. Claims that demand for compact development is increasing also appear overstated, and there are numerous uncertainties about the benefits and costs of such policies as concentrating employment and construction of transit improvements. These risks suggest that all the various compact-development reports are likely to have overstated the benefits and underestimated the costs of compact-city policies.

Overstating the Benefits

Growing Cooler says its policies can reduce the growth rate of driving by 38 percent.⁸⁵ *Moving Cooler* says that smart-growth policies can reduce total greenhouse gas emissions by 9 to 15 percent.⁸⁶ In fact, a close reading of these and other reports reveals that compact development has minimal effects on driving and greenhouse gas emissions.

- *Growing Cooler* found that building 60 percent of new urban development to compact standards would reduce 2030 carbon dioxide outputs by 79 million tons, or 1.3 percent of current levels.⁸⁷
- *Moving Cooler* was far less optimistic, projecting that building 64 percent of new development to compact standards, including more pedestrian- and bicycle-friendly design and “high-quality transit,” would reduce 2030 carbon dioxide outputs by only 22 million tons, or less than 0.4 percent of current emissions.
- *Moving Cooler*’s maximum effort of making 90 percent of new development compact would reduce 2030 greenhouse gas emissions by 0.6 percent, and 2050 emissions by 1.2 percent below current levels.
- *Driving and the Built Environment* projected that building 75 percent of new devel-

opment to twice current densities would reduce 2050 driving by 11 percent, thereby reducing greenhouse gas emissions by, at most, 1.4 percent below current levels.

The similarity between the *Moving Cooler* and *Driving and the Built Environment* disguises a huge debate among urban planners and economists over how much differences in driving are due to the “built environment” and how much are due to “self selection.” Many studies have found that people who live in dense, mixed-use areas drive less than people in low-density suburbs, but it is likely that a large part of this is because people who want to drive less choose to live in dense, mixed-use neighborhoods with intensive transit service.

Growing Cooler dismissed this concern by citing a literature review of studies of the effects of density and urban design on driving. “Virtually every quantitative study reviewed for this work,” the literature review is quoted as saying, “found a statistically significant influence of one or more built environment measures on the travel behavior.”⁸⁸ *Growing Cooler* neglected to quote the very next sentence of the literature review: “However, the practical importance of that influence was seldom assessed.”⁸⁹ In other words, “statistically significant” does not mean “large”; it only means “measurable.” As David Brownstone’s literature review for TRB concluded, the effects themselves are likely to be “too small to be useful” in reducing greenhouse gas emissions.⁹⁰

Even if the effects projected by these reports are realistic, they hardly make the case for implementing compact-development policies. As one reviewer of the TRB report concluded, “increasing population density in metropolitan areas would yield insignificant carbon dioxide reductions.”⁹¹ But if they are so insignificant, how can the authors of so many of these reports argue that compact development policies are essential or that they can reduce emissions by 9 to 15 percent?

One way is by conflating compact development with other policies. *Growing Cooler*

admits that increasing the cost of auto driving, through taxes and congestion, has a far greater effect on driving than compact development and transit improvements. Moreover, note that *Growing Cooler* does not project that compact development will reduce emissions, only that it reduces the *growth* in driving—and then only by 7.7 percent.

Moving Cooler’s claim that “smart growth” could reduce greenhouse emissions by 9 to 15 percent is based on a “bundling” of compact development with other policies, including taxes on existing parking, a freeze on all new parking, HOV lanes, urban nonmotorized zones, and mandates that employers alter their employees’ commuting habits.⁹² While *Moving Cooler* claims there are synergistic effects between these policies, it never verifies this claim by comparing the implementation of these other policies with and without the compact-development policies.

Compact-development advocates are so intent on seeing their policies implemented that they never objectively assess the cost-effectiveness of those policies by themselves. A careful look reveals that compact-city programs contemplated by these reports could cost Americans trillions of dollars.

Underestimating the Costs

While advocates of reducing greenhouse gas emissions might argue that every little bit helps, the truth is that it only helps if it is cost-efficient; cost-inefficient investments would effectively crowd out cost-efficient programs and make it more difficult to achieve reduction targets. Yet the cost of compact development is likely to be extremely high.

The *Moving Cooler* report inexplicably claims that compact development will cost a mere \$1.5 billion no matter whether 43 percent, 64 percent, or 90 percent of new development is compact. But at least one member of the TRB committee believes costs will be much higher. “It’s an enormous amount of effort to achieve a tiny amount of outcome,” says Brookings Institution researcher An-

Compact-development advocates are so intent on seeing their policies implemented that they never objectively assess the cost-effectiveness of those policies, which could cost Americans trillions of dollars.

Portland's mayor supports putting 300,000 new residents in high-density developments "within one-quarter mile of all existing and to-be-planned streetcar and light-rail transit stops."

thony Downs, regarding the TRB 75-percent scenario. "If your principal goal is to reduce fuel emissions, I don't think future growth density is the way to do it."⁹³

Here are some of the costs that compact-city mandates will impose on Americans:

- Loss of property rights
- Reduced geographic mobility
- Higher housing costs and lower homeownership rates
- Higher taxes or reduced urban services to subsidize compact development
- Increased traffic congestion
- Higher consumer costs
- Reduced economic mobility

Property Rights

States that have attempted to use compact development to reduce driving have engaged in a substantial amount of coercion, much of which is aimed at limiting the property rights of private landowners. In 1991, Oregon's land-use planning commission required metropolitan planners to use land-use tools to reduce per capita driving by 20 percent.⁹⁴ To reach this goal, the state severely limits what private landowners can do in rural areas, while it mandates high-density development on private land in urban areas.

For example, private landowners in rural Oregon are allowed to build a house on their own land only if they own at least 80 acres, they actually farm it, and they earn at least \$80,000 per year from farming it. The state's land-use agency is proud that only about 100 homes per year have been built in rural areas since this rule was adopted in 1993.⁹⁵ Nearly 98 percent of the state has been zoned "rural" or some similarly restrictive zone.⁹⁶

Meanwhile, about 1.25 percent of the state has been classified as "urban," or inside of an urban-growth boundary. (The remaining 1 percent is zoned "rural residential," meaning 5 to 10 acre minimum lot sizes.) While some cities have expanded their growth boundaries in response to population growth, Portland is instead intent on "growing up, not out." Even where the Portland boundary has been ex-

panded, planners have placed so many obstacles to home construction that it appears the new areas will never be developed.⁹⁷

To accommodate growth without expanding boundaries, Portland-area planners have rezoned dozens of neighborhoods of single-family homes for apartments, using zoning so strict that if someone's house burns down, they will be required to replace it with an apartment.⁹⁸ Portland's mayor, Samuel Adams, supports putting all new residents—an estimated 300,000 by 2035—in high-density transit-oriented developments "within one-quarter mile of all existing and to-be-planned streetcar and light-rail transit stops."⁹⁹

Naturally, these sorts of policies generate stiff resistance from rural property owners who do not want their land "downzoned" and urban homeowners who do not want their neighborhoods "densified." Considering the uncertainty about whether compact development can even have a significant effect on greenhouse gas emissions, this sort of controversy is bound to distract attention from the more serious debate over whether, and by how much, emissions should be reduced—a distraction that emissions-reduction advocates should want to avoid.

Compact-city advocates argue that zoning that prevents developers from building apartments in neighborhoods of single-family homes is itself a restriction on property rights that should be lifted. But such zoning was originally put in place to protect property values. In the absence of zoning, developers have found that sale prices are enhanced when they place covenants on properties that prevent the mixture of single-family housing with other uses. Historically, most zoning of undeveloped areas has been responsive to market demand. Once developed, zoning aims to protect existing property values, and as such it is merely an alternative to such covenants. Compact-city zoning is far more prescriptive, often mandating unmarketable changes to existing uses that can significantly reduce property values, at least for the current owners.

A case can be made that zoning restrictions should be relaxed so that developers can meet

the market demand for higher-density housing. But relaxing restrictions is very different from imposing tighter restrictions that mandate high-density housing. Even when relaxing restrictions, property owners should be given the opportunity to form homeowner associations that can write protective covenants that will protect their neighborhood's property values, as has been suggested by University of Maryland professor Robert Nelson.¹⁰⁰

Mobility

Americans are the most mobile people on earth, and that mobility is an important part of America's economic well-being. Research has proven that there is a strong correlation between mobility and economic productivity. Regions in which workers can reach more jobs within a 25-minute commute, or employers have access to more workers within 25 minutes, grow faster and provide higher incomes than less mobile regions.¹⁰¹

Contrary to implications often made by compact-city advocates, transit is not an adequate substitute for automobility. Even the best public transit systems in the world are slower, reach fewer destinations, and fail to go at all times when automobiles can be available. This is revealed by comparing travel in Europe with that in the United States.

In 2004, the average American traveled more than 15,000 miles by auto, compared with 6,600 miles for the average western European (residents of the fifteen countries in the European Union in 2000). Meanwhile, the average European traveled less than 1,300 miles by bus and rail compared with more than 600 miles by the average American.¹⁰² The 700 additional miles of bus and rail travel hardly make up for the 8,800 fewer miles of auto travel.

When gasoline prices briefly reached \$4 per gallon in 2008, numerous media reports indicated that Americans were driving less and taking transit more. Yet the increases in transit usage actually made up for only a tiny percent of the decline in driving. In the second quarter of 2008, for example, Americans traveled 25 billion fewer passenger miles in urban areas by

car, but transit ridership grew by only 700 million passenger miles, or less than 3 percent of the drop in urban auto travel.¹⁰³

Even to the extent that transit can replace auto trips, the cost is very high. Counting all capital and operating costs, including subsidies, Americans spend about 24 cents per passenger mile on auto travel.¹⁰⁴ By comparison, urban transit costs an average of 81 cents per passenger mile.¹⁰⁵ Nor is it likely that these costs will decline if transit use increases. More than 40 percent of all American transit ridership is in the New York metropolitan area, but New York transit operating costs per trip or passenger mile are only about 20 percent less than the national average.

Housing

Planners create compact cities by using urban-growth boundaries or similar tools that create artificial land shortages. Given the resulting high land prices, higher percentages of home buyers settle for multi-family housing where they might have preferred single family, or settle for small lots where they might have preferred large yards.

In short, compact-development policies greatly increase the costs of all types of housing as well as retail, commercial, and industrial development. States that have required cities to write compact-development plans have significantly less affordable housing than states that do not.¹⁰⁶ Such states also suffered from the worst housing bubbles in the recent financial crisis, while states that did not require such plans tended not to have any bubbles.¹⁰⁷

Arguably, at least some of these higher costs are a zero-sum game: for every land or homebuyer who must pay more, there is a seller who earns a windfall profit because of the artificial shortage. But at least some of the costs are a deadweight loss to society.

For example, in regions with no urban-growth mandates, cities and counties compete for new development, and the tax revenues that it brings in, by keeping permitting costs low and approval times short. Urban-growth boundaries limit this competition, and cities typically respond by significantly increasing

Mass transportation is not an adequate substitute for automobility, as it tends to be slow and doesn't go where people want to go when they want to go there.

By making housing more expensive, compact-development policies are likely to impose a deadweight cost on society of at least \$1.7 trillion.

permit costs and the risk that property owners will never get a permit to build. One study found that such policies increased permitting costs from \$10,000 per home in relatively unregulated Dallas to \$100,000 per home in San Jose, which adopted compact-development policies in 1974.¹⁰⁸

Many cities have responded to the housing affordability problems created by their compact-development policies by mandating that developers sell 10 to 20 percent of their homes at below-market prices to low-income buyers. This leads to developers to both raise the price of other homes to make up for the losses on the share they must sell below market and to build fewer homes, which creates further affordability problems.¹⁰⁹

Growing Cooler and *Moving Cooler* rely on Arthur Nelson's estimate that 89 million new or replaced homes will be built between now and 2050.¹¹⁰ If 80 percent of this construction takes place in metropolitan areas and suffers a deadweight cost of \$25,000 per housing unit because of compact-development policies, the cost will reach nearly \$1.7 trillion.

Even to the extent that someone gains when others are forced to pay higher prices for homes and land, the economy as a whole loses for several reasons. First, less affordable housing tends to mean lower homeownership rates. Studies show many positive benefits associated with homeownership. For example, children in low-income families that own their own homes do significantly better in school than those in low-income families that rent.¹¹¹

Areas with high rates of rental housing are traditionally associated with higher unemployment rates. But research has found that compact-city policies can reverse this relationship. Artificial shortages of housing increase the costs of selling and moving, and so discourage people who own their own homes from relocating to a city with more jobs.¹¹²

Urban areas that make themselves unaffordable using compact-city policies end up with dramatically different income distributions from the rest of the country.¹¹³ Low- and even middle-income families are forced to move out, turning the urban area into "Dis-

neyland for yuppies" (as California demographer Hans Johnson put it) or "boutique cities catering only to a small, highly educated elite" (as Harvard economist Edward Glaeser put it).¹¹⁴ While that might be good for the region's short-term tax revenues, it slows economic growth and reduces the opportunities for economic mobility that are available to low-income families in more affordable housing markets.

Taxes and Urban Services

Creating artificial land shortages that boost housing costs is not enough for compact-city planners in many regions. Most cities have supplemented this with subsidies to high-density, mixed-use developments that supposedly reduce driving. The biggest source of these subsidies is probably tax-increment financing, which was discussed under the CCAP report.

Other subsidies include property-tax waivers for favored kinds of development, below-market sales of public land to developers who promise to build at certain densities, and public financing of infrastructure that would otherwise have been built by the developer. Many cities also streamline approval processes and/or waive impact fees for denser developments.

While *Moving Cooler* estimates that the total cost of increasing the density of 90 percent of all new urban development in the United States would be just \$1.5 billion, Portland alone has committed nearly this amount in subsidies to developers of high-density projects. The city has committed more than \$230 million in subsidies to the famous Pearl District (River District) and nearly \$290 million in subsidies to the South Waterfront District (North Macadam), both of which are on the streetcar line; more than \$300 million to the Interstate Corridor on the Yellow light-rail line; more than \$164 million for the Gateway District on the Blue light-rail line; \$75 million for the Lents District on the Green light-rail line; more than \$72 million for Airport Way on the Red light-rail line; and \$66 million to the Central Eastside District, on a

planned streetcar and light-rail line.¹¹⁵ This only counts tax-increment financed subsidies and not tax waivers, below-market land sales, or other subsidies.

As described above, projects supported through tax-increment financing and property-tax waivers increase the burdens on Portland schools, fire, police, public health, and other programs, but dedicate the taxes that would have gone to those programs to developers instead. The result is that these other programs have seen declines in both the quality and quantity of services they can provide to the rest of the city.

In many cases, Portland subsidies have exceeded \$100,000 per housing unit. If subsidies averaging \$25,000 per housing unit are applied to 60 percent of the new homes built in metropolitan areas between now and 2050, the total subsidies will exceed \$1 trillion. This assumes 89 million new homes built between now and 2050, as estimated by Arthur Nelson, 80 percent of which would be within metropolitan areas. But the Pitkin and Myers paper commissioned for the TRB study calculates that Nelson overestimated the rate of new construction by 50 percent, which means subsidies would have to be even greater to reach compact-development targets.¹¹⁶

Combined, the deadweight losses from compact-development regulations and subsidies are likely to exceed \$2.8 trillion. If these regulations and subsidies produce the maximum reductions in greenhouse gas emissions projected by *Moving Cooler*, the cost per ton of abated emissions will be nearly \$2,000—well above the \$50-per-ton cost-effectiveness threshold set by the McKinsey report. Of course, this does not count other costs of compact development, such as congestion and effects on consumer prices.

Congestion

Increasing roadway congestion appears to be a deliberate part of compact-city plans. If people cannot easily travel long distances, planners hope, they will be more willing to live in denser developments. In 1996, for example, the Twin Cities Metropolitan Council decided

to limit the “expansion of roadways” in the hope that “as traffic congestion builds, alternative travel modes will become more attractive.”¹¹⁷

Similarly, Portland decided to allow rush-hour congestion to reach “level of service F” (a traffic engineering term meaning stop-and-go traffic) in most of the city’s highways. When asked why, transportation planner Andrew Cotugno (who was a member of the TRB committee) responded that relieving congestion “would eliminate transit ridership.”¹¹⁸

Even if congestion were not a deliberate goal of compact-city planners, it would clearly be a major result of such plans. Using census data, *Moving Cooler* estimated that increasing densities from an average of 3,000 people per square mile by an additional 133 percent to an average of 7,000 people would reduce per capita driving by less than 15 percent.¹¹⁹ That many more people driving 15-percent less each still means a 100-percent increase in total vehicle miles of travel. Since compact-city planners would oppose any new highways to accommodate that travel, there would obviously be a huge increase in congestion.

Congestion, of course, imposes huge costs on commuters and businesses. It also impacts the environment, as autos in stop-and-go traffic consume far more fuel and emit more pollution and greenhouse gases per mile than autos in free-flowing traffic. In fact, the focus on reducing miles of driving is misguided because miles driven are not proportional to greenhouse gas emissions, since congestion is the leading cause of such disproportionality.

Consumer Costs

Compact development advocates often argue that the loss of mobility resulting from less auto driving can be mitigated by increased accessibility from mixing retail and other uses with, or within walking distance of, residential areas. Why drive when you can simply walk downstairs from your condo and go grocery shopping or have a cup of coffee? “Millions of people could be liberated from their vehicles” if neighborhoods were redesigned to make things accessible without requiring mobility,

Compact development increases traffic congestion because large increases in densities are required to get small reductions in per capita driving.

Mobility is a key component of the American dream, and proposals to reduce mobility should be viewed with the same suspicion as proposals to limit freedom of speech or freedom of religion.

argues Robert Cervero (who was on the TRB committee).¹²⁰

This ignores, however, the nature of the modern retail industry. Major supermarkets and other stores can offer a wide variety of low-cost goods only because large numbers of customers can reach them by car. Shrink the pool of customers by limiting them to those within walking distance and costs rise—while the variety of goods offered declines. Prices rise further when people become captives of one store; the competition that exists when people can reach several stores in one short auto trip encourages retailers to adopt innovative programs that reduce costs.

Moreover, like homebuyers, retailers in compact communities will have to pay more for land, adding further to consumer prices. Thus, the higher prices that are typically found in “accessible” versus mobile communities are not a zero-sum game: the retailers are not earning fatter profits; they are merely suffering higher costs due to inefficient management.

Economic Mobility

Several studies have found that auto ownership is a key factor to helping low-income families move into the middle class. One found that people without a high-school diploma were 80 percent more likely to have a job and earned \$1,100 more per month if they had a car. In fact, the study found that owning a car was more helpful to getting a job than getting a high-school-equivalent degree.¹²¹ Another study found that closing the black-white auto ownership gap would close nearly half the black-white employment gap.¹²²

As a result, numerous analysts have noted that efforts to reduce per capita driving will have their greatest impact on low-income families. “Their most severe effects” of mobility restrictions, says Alan Pisarski, “will fall on those groups that either have recently attained mobility or are just now on the verge of attaining it.”¹²³

Transit improvements will not make up for this loss in economic mobility. “Public transit is not a reasonable substitute for the private

vehicle for most people, poor or not poor,” says UCLA planning professor Genevieve Giuliano.¹²⁴ For example, an analysis of job accessibility in Cincinnati found that people living in low-income neighborhoods could reach 99 percent of the region’s jobs within 20 minutes by car, but only 21 percent of the region’s jobs in a 40-minute trip by transit. Furthermore, building light rail, the study found, would actually reduce job accessibility for low-income workers.¹²⁵

Economic mobility is the American dream, and geographic mobility is a key component of that dream. No matter how noble the intentions, proposals to reduce mobility should be viewed with the same suspicion as proposals to reduce freedom of speech or freedom of the press.

Getting the Prices Right

Compact development is an indirect and risky way of reducing greenhouse gas emissions. It depends on people responding to compact cities in the ways that planners hope; on the assumption that reduced greenhouse gas emissions from reduced driving will not be offset by increased emissions from more driving in stop-and-go traffic; and on planners’ faith that the costs of unintended (and intended) consequences such as unaffordable housing, congestion, and reduced worker productivities will not be greater than the benefits.

Those who are skeptical of the need to reduce carbon dioxide emissions should naturally reject compact-city schemes as an unnecessary and expensive imposition on personal freedom and mobility. Those who support policies to reduce carbon dioxide emissions should also reject compact-development programs as risky, cost-ineffective ideas that will divert resources and attention away from genuine emission-reduction programs.

One of the most effective ways of reducing carbon emissions is simply to price them using a revenue-neutral carbon tax whose income is offset by reductions in income or

other taxes. Moving Cooler estimates that carbon pricing would be 10 times more effective at reducing auto-related emissions than compact development, and that the vast majority of that reduction would come from people buying more fuel-efficient cars, not driving less.¹²⁶

Carbon pricing would allow people to choose for themselves whether they respond to higher fuel prices by buying more fuel-efficient cars, using alternative fuels, “eco-driving” in a more fuel-efficient manner, or driving less. Those who choose to drive less could also decide whether they want to live in high-density communities or continue to live in low-density communities but adjust other driving habits, perhaps by living closer to work, trip chaining, or shopping at one-stop supercenters instead of several smaller stores.

Carbon pricing would also have more immediate effects on energy use and carbon emissions than compact development, which will take decades to implement. *Moving Cooler* predicts that, in 2020, maximum use of carbon pricing would reduce auto-related emissions more than 30 times as much as maximum use of compact development, while in 2030 it would be 12 times as much.¹²⁷

These more-immediate effects mean that carbon pricing would be easier to evaluate and fine-tune in order to ensure that any emission-reduction targets are met. By comparison, the slow deployment of compact development, combined with the indirect effects it has on driving and carbon emissions, means that decades will pass and hundreds of billions of dollars will be spent before we know if it is even working.

Finally, carbon pricing would not only be easier to implement than compact development, it would affect all producers of carbon emissions, notably including fossil-fuel-powered electrical plants. This means one tool can address far more sources of carbon emissions, while compact development mainly influences urban auto driving, which produces less than 13 percent of greenhouse gases.

No policy is immune to political abuse, and carbon taxes could easily turn into just

one more source of pork barrel (as seems to have happened to the recent cap-and-trade proposal). If climate change worries prove baseless, a carbon tax is not even necessary. But for those who insist on reducing carbon emissions, a true, revenue-neutral carbon tax makes far more sense than intrusive government policies aimed at coercing people out of their homes and cars and forcing them to live in politically correct multi-family housing and to ride on politically correct mass transit.

Notes

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