

Forget Curbing Suburban Sprawl

Building denser cities would do little to reduce CO₂ emissions, a new NAS report concludes.

By Phil McKenna, Thursday, September 03, 2009

Urban sprawl has rightly been blamed for contributing to increasing fuel consumption in the United States, since many commuters have little choice but to drive to work. But policies designed to make cities more compact will do little to reduce gas consumption by 2050, in time to prevent the worst effects of climate change, according to a new report from the National Academy of Sciences (NAS).

Urban planners hoping to help mitigate CO₂ emissions by increasing housing density would do better to focus on fuel-efficiency improvements to vehicles, investments in renewable energy, and cap and trade legislation now being voted on in Congress, according to [the study](#), released Tuesday. It concludes that increasing population density in metropolitan areas would yield insignificant CO₂ reductions.

Even if 75 percent of all new and replacement housing in America were built at twice the density of current new developments and those living in the newly constructed housing drove 25 percent less as a result, CO₂ emissions from personal travel would decline nationwide by only 8 to 11 percent by 2050, according to the study. If just 25 percent of housing units were developed at such densities and residents drove only 12 percent less as a result, CO₂ emissions would be reduced by less than 2 percent by 2050.

Policy changes aimed at reducing emissions through city planning have to come at the local or state level. An exception to the nationwide trend of sprawling suburban homes is Portland, OR, where residents drive 17 percent fewer miles per day than the national average because of boundaries set on urban growth and a light rail system that both got their start in the mid-1970s. The state of California followed Portland's lead in 2008 by passing land-use policies with a goal of curbing urban sprawl, reducing automobile travel, and as a result, cutting statewide greenhouse-gas emissions by 3 percent by 2020.

One of the study's authors doubts whether major increases in housing density are even possible. "I think the 75 percent figures are completely unrealistic," says [Anthony Downs](#) of the Brookings Institution. "Twenty-five percent is much closer to realistic and that may even be high. Nationally we've had no increase in housing density in the last 30 years; I don't see that reversing."

Downs points out that Portland is an exception to the national rule. "Portland is only one out of 350 metropolitan centers in the country that has strong transportation and housing policies directed at increasing population density. It's not exactly a groundswell movement," he says.

Changing local zoning rules to increase population density across the country would face a lot of opposition from homeowners without yielding significant emissions reductions, Downs adds. "It's an enormous amount of effort to achieve a tiny amount of outcome," he says. "If your principle goal is to reduce fuel emissions, I don't think future growth density is the way to do it."

A better way to curb emissions from personal transportation, which is responsible for 19% of all man-made CO₂ emissions in the United States, is by improving the vehicle itself, says [Henry Jacoby](#), a professor of management at MIT who studies energy use and climate change. "The bigger bang will come from changing the emissions per mile of the fleet we will have in 2050," Jacoby says. "If all new housing stock was very dense, you could cut total driving by 25 percent, but the things I'm talking about affect the other 75 percent."

Jacoby says that a number of measures toward this end are already under way, including government subsidies for cleaner-burning biofuels and plug-in hybrids, efficiency controls on new vehicles, and higher Corporate Average Fuel Economy (*CAFE*) requirements. All these measures will have a greater impact on emissions reductions, and "just the recent tightening of CAFE standards has had a bigger effect than increased housing density would by 2050," he says.

A [supplemental study](#) released by the NAS concludes that an immediate 0.1 percent reduction in the weight of all vehicles nationwide would be 10 times more effective at reducing greenhouse gas emissions than an immediate 0.1 percent increase in housing density nationwide. [Kara Kockelman](#), an associate professor in the department of civil engineering at the University of Texas at Austin and lead author of this study, says an expansion of public transportation combined with housing density increases could actually increase CO₂ emissions if the current levels of usage persist.

"If we are adding someone to a bus system that already exists, that is great, but if you are doubling your bus service, in most cases that is a bad idea in terms of carbon reduction," she says. "If you could instead fill existing passenger vehicles or double the fuel economy of an SUV, you would get much greater CO₂ reductions."

Jacoby says that recent legislation, such as the increase of CAFE standards, will go a long way toward reducing transportation CO₂ emissions, but adds that to achieve significant emission reductions through all sectors of society, much more will need to be done.

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