

How zoning affects greenhouse gas emissions

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Climate change is a global challenge often met on a local level. Local governments shape how their communities are developed through land use controls. Their policy decisions related to housing density, location,

and building standards have a profound impact on climate—buildings produce nearly 40% of U.S. carbon emissions, and personal vehicles account for 10% of global CO₂ emissions. Urban density is particularly important for reducing greenhouse gas emissions.

There is a burgeoning consensus among climate-minded policymakers and scholars that loosening zoning regulations to promote greater density while simultaneously tightening building efficiency standards can reduce emissions and address housing shortages that affect communities across the U.S.

In his [paper](#) titled "Climate Zoning," Christopher Serkin, Elisabeth H. & Granville S. Ridley Jr. Chair in Law at Vanderbilt Law School, argues that this approach "can be self-defeating." He advocates for a situational approach where local governments consider their specific environmental and economic circumstances.

"Climate Zoning" is published in the *Notre Dame Law Review*.

"Solving the problem of carbon emissions in our built environment will require more than the steady diet of neoliberal deregulation that dominates the current discourse," Serkin writes. "Land use and building code reforms are a crucial part of the mix, but not blunt ones."

Looser zoning's effect on density

Fewer restrictions may promote development activity, but there is no guarantee that it will result in greater density.

For example, allowing accessory dwelling units as a right, or eliminating single-family zones, may produce additional development in the urban core; these regulatory changes might actually produce even more development in suburban or exurban areas.

"Regulatory reforms aimed at marginally increasing density...may surprisingly be worse for (greenhouse gas) emissions if they produce islands of density far away from shopping and jobs," the paper notes.

In certain MSAs, looser zoning can create an unconventional situation where cities end up growing from the outside in, reducing density and failing to mitigate emissions. The paper cites Houston, Phoenix, and Nashville as cities that are both lightly zoned and not particularly dense.

"The impact of zoning reform on density is likely to vary depending on local and regional context," Serkin writes. Deregulation will not necessarily produce greater density, despite the claims of many zoning reformers.

The impact of green building codes

Regulations that impose green standards, like LEED Certifications, are designed to reduce greenhouse gas emissions within a municipality. However, they tend to increase construction costs and the final price tag for housing consumers. This is a problem if low-carbon places increase housing costs to an extent that shifts development to high-carbon places instead.

The problem, fundamentally, is that the location of housing matters a lot for [greenhouse gas emissions](#). Homes in the Midwest may require more energy to heat and cool than in California due to temperature variation through the year. Some energy grids are more decarbonized than others.

The biggest variation in emissions, however, exists between the suburbs and urban core. The suburbs of San Diego (the city with the lowest standardized household CO₂ emissions) produce more household carbon emissions than the urban core of Memphis (the city with the highest standardized rate).

While green building requirements increase energy efficiency and reduce emissions in individual homes, the concurrent increase in housing costs may end up having a net negative effect.

"Even the best-intentioned green building codes designed to reduce emissions can actually increase carbon emissions if they push people instead to more carbon-intensive places," Serkin writes.

Strategies for crafting climate-focused land use regulations for low- and high-carbon places

Rather than wholesale relaxing of zoning restrictions or implementing of green building standards, Serkin advocates for a model of climate-conscious zoning on the local government level, bolstered by support from state government and resources from the federal government.

Serkin argues that federal government can influence emission-reducing development by providing local governments with granular geographic data on carbon emissions—"carbon maps," as he calls them—and using Community Development Block Grant programs (CDBGs) to encourage growth and density in low-carbon places. "The principal tools for addressing the climate impacts of the built environment belong to local governments, however," he notes.

The paper's recommendations for local governments "depend for the most part on whether the specific municipality is a high-carbon or low-carbon place."

Low-carbon areas like the urban core should promote growth; loosening certain zoning regulations can do just that, but local governments also need to ensure that compliance requirements (including, ironically, environmental reviews) and approval processes do not create delays that

sideline projects and deter development. The paper also proposes more unconventional regulatory responses like imposing maximum unit sizes and density minimums, encouraging the use of eminent domain to assemble land for more development in the urban core, and increasing government development activity.

For high-carbon places like suburbs and exurbs, Serkin argues for more aggressive regulatory efforts, "because there is less concern about reducing development activity altogether." Stricter codes, energy impact fees, protections for agricultural land, and conservation easements are among his recommendations.

The paper also contains universal strategies for adoption everywhere. Streamlining the siting of renewable energy infrastructure can remove barriers to decarbonizing energy grids. Eliminating parking requirements and single-use residential zoning, adding walking / biking infrastructure, and preserving vegetation can reduce emissions and encourage density.

State governments can support local efforts by directing investment towards mass transit and away from highways and infrastructure that supports suburban commuting. "Specific strategies vary by place but fundamentally involve making other forms of transportation easier and more appealing than driving," Serkin writes.

More specifically, the paper advocates the creation of urban growth boundaries, such as greenbelts, that promote development inside urban areas and designate land outside the boundaries for agriculture or other low-intensity uses. These often require state involvement due to the fractured nature of some MSAs.

In a similar vein, it also calls for states to loosen environmental regulations in central cities to promote development. Serkin is careful to note that these reforms "need not—and, indeed, should not—relax

environmental rules statewide."

Land use regulation (or de-regulation) is not one-size-fits-all

The paper embraces the power of zoning in the fight against [climate change](#), "because it helps to shape where people live and work." It cautions that the "predominant responses among scholars and policymakers in recent years"—deregulation to promote density, green building codes to reduce carbon emissions, and statewide land use controls to ensure change—do not consider the varying factors of low- and high-carbon environments.

"What [local governments](#) need, instead, is a set of prescriptions that vary by place," Serkin concludes. "This more granular approach recognizes that we cannot deregulate our way out of the climate crisis, but also that more situational zoning is required with a menu of options for increasing density and reducing carbon emissions."

More information: Christopher Serkin, [Climate Zoning](#) (2024)

Provided by Vanderbilt University

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