



CLIMATE KNOXVILLE ACTION GLOBAL CHANGE

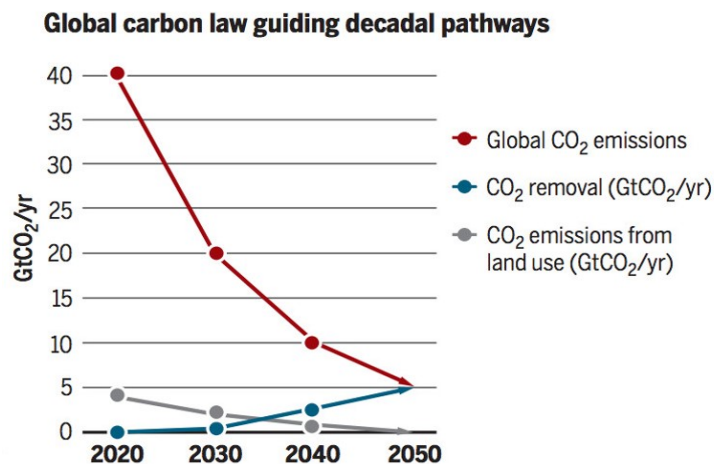
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Recode Knoxville
Metropolitan Planning Commission

Climate change unfolds as the largest game changer our city will face in terms of how we live and move. We will live through a massive reordering of our civilization as we move deeper into the age of climate change. Through the policies and infrastructure that the City puts in place today will have a large impact on how well Knoxville weathers the gathering storms of climate change, an age of great disruption within all dimensions of how we live in our place and within the world.

Future plans need to be focused both on reducing our carbon emissions and to adapting to the all-encompassing effects of climate change. If we imagine the future will resemble the past, then we dangerously ignore the reality of climate change and put ever more people in harm's way.

It is critically important that we align our zoning map with TOD so that the City has an important tool to help move us toward a zero carbon emissions by 2050.



The City has reduced the carbon emissions of its operations by 20% relative to 2005 levels. The community of Knoxville has reduced its carbon emissions by 8% over the same time period. The challenges of becoming a zero-carbon emission community by 2050 are daunting. To meet this goal, both emissions from buildings and gasoline-fueled vehicles must approach zero, and zoning codes can be an important driver in reducing carbon emissions.

Zoning codes influence our community's carbon emissions. In smart growth cities, residents tend to own fewer vehicles, drive fewer annual miles, and rely more on alternative mobility modes. A U.S. Environmental Protection Agency (EPA) study identified substantial energy conservation and emission reductions if development shifts from the urban fringe to infill (1). The study found that individual households that shift from urban fringe to infill locations typically reduce VMT and emissions by 30-60%,

and in typical U.S. cities, shifting 7-22% of residential and employment growth into existing urban areas could reduce total regional VMT, congestion and pollution emissions by 2-7%.

Another EPA study calculated both transportation and building energy savings from smart growth land use policies (2). Travel to a building often uses as much energy as is consumed in the building. Residents reduce total building and transportation energy consumption 64% by living in an attached energy efficient (green) home in an urban location, and by 75% by living in a multifamily energy efficient home, compared with the same household living in a typical detached single-family house in an auto-dependent suburb. Housing location and type have greater impacts on total energy use than do vehicle or home energy efficiency (3).

Higher densities do reduce vehicle travel. More connected street systems do significantly reduce automobile travel. Researchers have found that roadway connectivity has the second greatest impact on travel activity, after regional accessibility, of all land use factors analyzed.

There is little doubt that policies that increase density tend to reduce vehicle travel and emissions. Compact neighborhoods typically generate 20-40% less vehicle travel per capita than conventional, lower-density neighborhoods. These reductions result partly from density itself and partly from associated factors such as increased regional accessibility, land use mix and transport diversity (better walking and public transit options). To the degree they are interrelated, policies that increase density will reduce vehicle travel and emissions. For example, encouraging more compact, urban infill instead of lower-density urban-fringe development will almost certainly reduce per capita vehicle travel because it increases density, accessibility, mix and transport diversity.

Transit Oriented Development has many other benefits besides climate mitigation: affordable housing, strong transit systems, vibrant communities, and attraction of talent. We need the zoning codes to change so that they support TOD. Transforming the way our City develops is a long-term enterprise, but removing the zoning barriers to multifamily housing by right and TOD opens the way for these infrastructural changes to occur so that we may reap the benefits.

Good news is that many within the city, especially our mobility agencies, understand and value transit oriented development. Increasing density along all of our transit corridors, as pictured by KAT in its comments, is the important step that only Recode Knoxville can take. Coupled with city investments to make these same areas more walkable and bikable will both reduce carbon emissions and prepare our city for a climate changing world.

Thank you.

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- (1) Environmental Protection Agency (2007). Measuring the air quality and transportation impacts of infill development; at www.epa.gov/dced/pdf/transp_impacts_infill.pdf
- (2) Hernandez, D., Lister, M., and Suarez, C. (2011). Location efficiency and housing type: Boiling it down to BTUs. Environmental Protection Agency; at www.epa.gov/smartgrowth/location_efficiency_BTU.htm.
- (3) Wilson, A. and Navaro, R. (2007). Driving to green buildings: The transportation energy intensity of buildings. *Environmental Building News*, 16(9); at www.buildinggreen.com/auth/article.cfm?fileName=160901a.xml.