

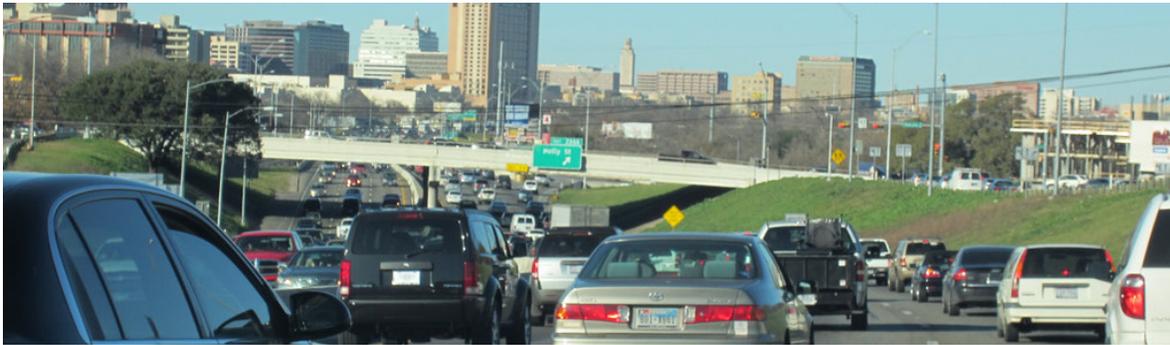
Growing Weirder

Understanding Austin's Growth and Potential

**Environmental sustainability implications
of Austin's regional growth options**

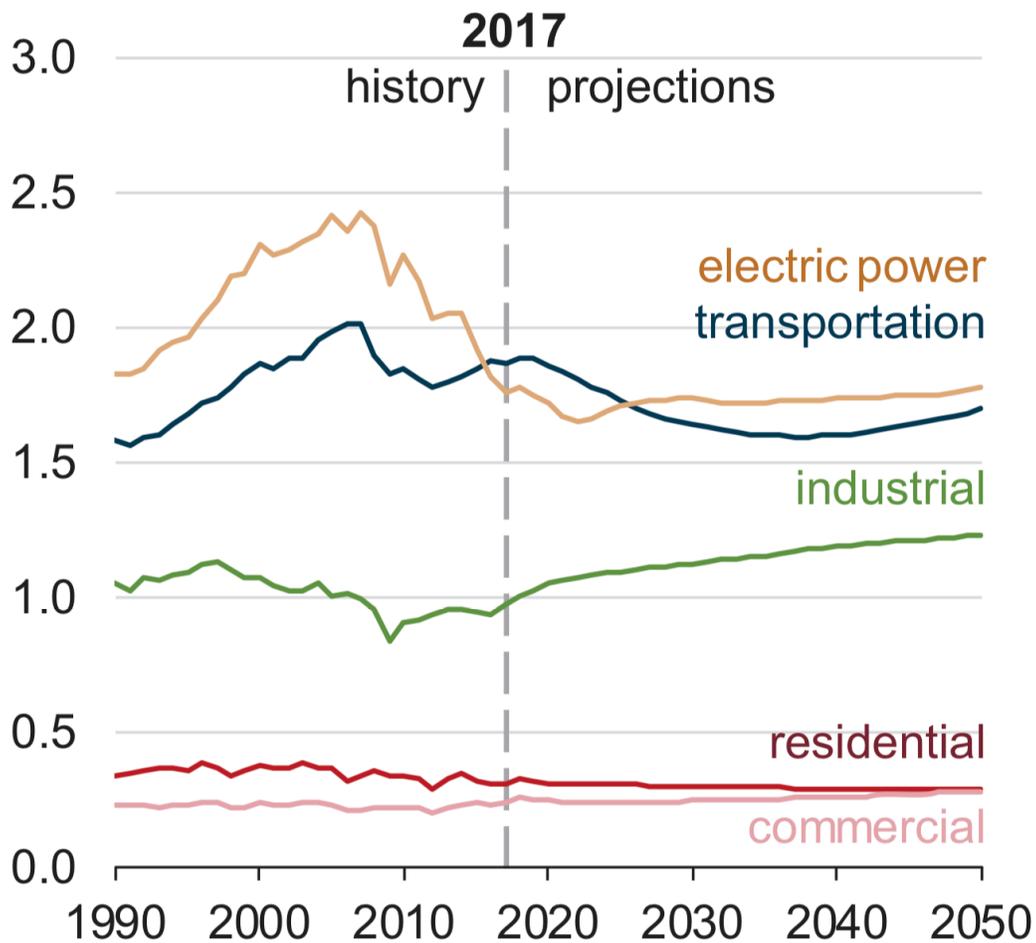
Jay Blazek Crossley
Ashkan Jahangiri
Andrew Mayer
Laura Thomas





Energy-related carbon dioxide emissions by sector (Reference Case)

billion metric tons of carbon dioxide



Growing Cooler

A decade later, the seminal report grows even more important and influential

In 2007, the Urban Land Institute released *Growing Cooler*, a highly-cited landmark publication linking climate change and transportation. It is a good report.

Our work here - to empower communities and elected officials with better information and analysis to help build a sustainable, equitable Austin region - is based upon *Growing Cooler*.

Carbon emissions from transportation account for over a third of our national emissions, and have been a larger problem than the US energy sector since 2014.

Growing Cooler found transportation emissions can only be meaningfully reduced by reducing vehicle miles traveled (VMT) by choosing compact development. We agree with this general framework.

Many efforts - including the emphasis by the City of Austin - to curb transportation emissions have focused on reducing tailpipe emissions without questioning VMT. The result has been no improvement in the national fuel economy from 1990-2005 and a 50% increase in VMT. 70% of the increased VMT is directly attributable to our sprawl, with only 13 % from growth.

Population growth is generally slightly associated with a reduction in per capita VMT, a reflection of shifting trends towards compact development. Characterized by density & regional diversity of land use, compact development is a low-cost method of reducing VMT. As we grow together, we grow more efficient.

A local push for compact development to manage existing demand could yield a 30% reduction in VMT and a concomitant 10% reduction in vehicle based carbon emission by 2050.

Compact development allows for safe access by all modes of transportation, while meaningful access by transit and other modes are not possible to provide to people living in low density sprawl.

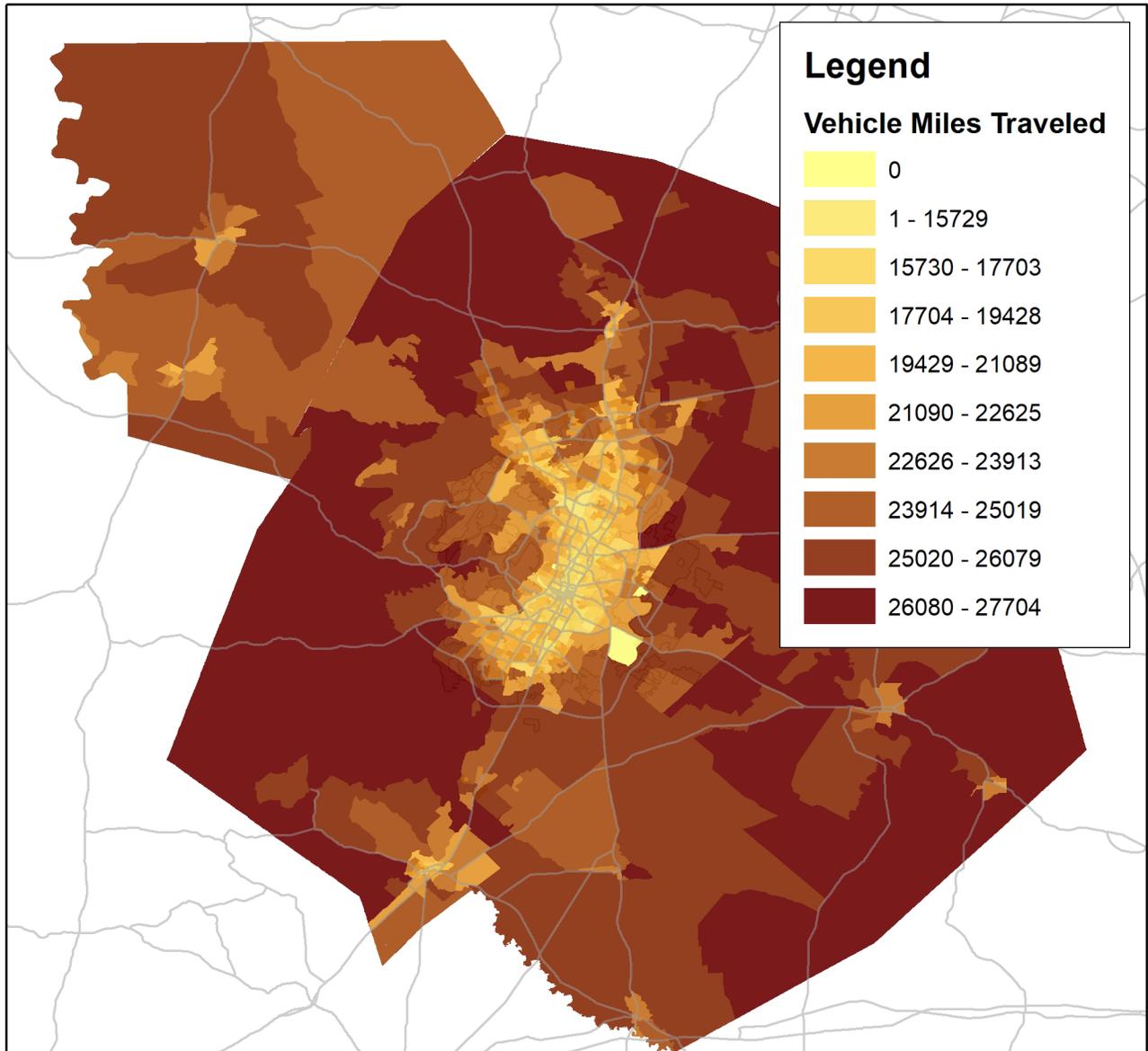
Water quality and existing forestry are protected by compact development. There are also public health benefits through increased access to healthy lifestyles, improved air quality, and reduced pollution.

Growing Cooler promotes compact development and discourages sprawl. Cities, counties, and MPOs can curb transportation emissions by adopting land use codes that promote infill and mixed uses to build complete communities for all.

Our work on *Growing Weirder* is an attempt to build on *Growing Cooler's* wisdom and apply it to current policy debates across the Austin region.

We're analyzing vehicle miles traveled, carbon emissions, traffic, and climate emissions costs of various CodeNEXT and regional growth proposals, and seeking solutions.

Preserving the livability of the Austin region requires making these difficult decisions today, based upon the best available data.



Vehicle Miles Traveled (VMT) is a crucial measure of how much individuals, neighborhoods, and entire metropolitan areas travel.

Traditionally, VMT has been regarded as an unavoidable consequence of regional growth. Many elected officials actively work to sustain VMT increases, believing economic growth to be dependent on VMT. Texas transportation planners continue to allocate billions of dollars based on the notion that we must allow VMT growth. However, this assumption is

not necessarily correct. Nationwide per capita VMT has a slight negative correlation with growth. TxDOT's own data also suggests economic growth and VMT are decoupling.

VMT does have concrete negative consequences; every additional mile travelled increases traffic and the risk of collisions. Crashes cost Texans \$162 billion every year, while congestion drains a further \$14 billion in unproductive time spent in cars. With an annual statewide VMT of 258 billion, every mile driven is respon-

Vehicle Miles Traveled

Tell me your address, and I can tell you how much your neighbors drive.

	SuperUrban	Urban	Suburban	Rural
People	11,434	735,639	672,614	592,271
Households	3,296	272,582	251,433	207,080
Total VMT	44,693,190	5,206,634,672	5,568,521,504	5,236,638,780
VMT per capita	3,909	7,078	8,279	8,842
Carbon per capita (tonnes)	1.96	2.93	3.43	3.69
Total carbon (tonnes)	15,923	2,157,910	2,310,421	2,186,908

sible for \$0.63 of property and vehicle damage. The human cost is also steep; ten people die every day on Texas roads, causing immeasurable pain and suffering.

Our transportation decision-making system also hides the cost of “free” roads, underrepresents people of color, and provides scant data on the true costs of our transportation system. Given the steep risks associated with distances travelled, planners must explicitly aim to reduce VMT.

Transportation is responsible for over one third of carbon emissions in the United States. These emissions are a simple function of fuel efficiency and VMT. The federal government has successfully regulated fuel efficiency through increased mileage standards for vehicles & the gas tax. On an individual and local level, VMT reduction is the most significant way to reduce

carbon emissions. VMT can be reduced through use of public transportation and location efficiency, which is achieved by positioning housing, work, and schools in compact, easily-accessible locations.

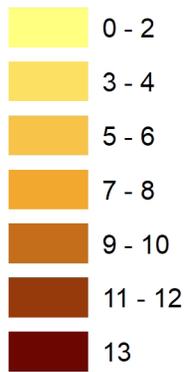
Unfortunately, the availability of low-carbon lifestyle options depends on our urban environment. As the Austin region grows from two to four million people over the coming decades, the decisions made in CodeNEXT and the 2045 Regional Transportation Plan will determine how many people are allowed affordable access to sustainable, healthy, walkable urban neighborhoods.

The Center for Neighborhood Technology maintains a H+T Affordability Index that provides detailed data on the financial and environmental costs of housing and transportation across the US. It forms the basis of our analysis on VMT and transportation-related carbon emissions.

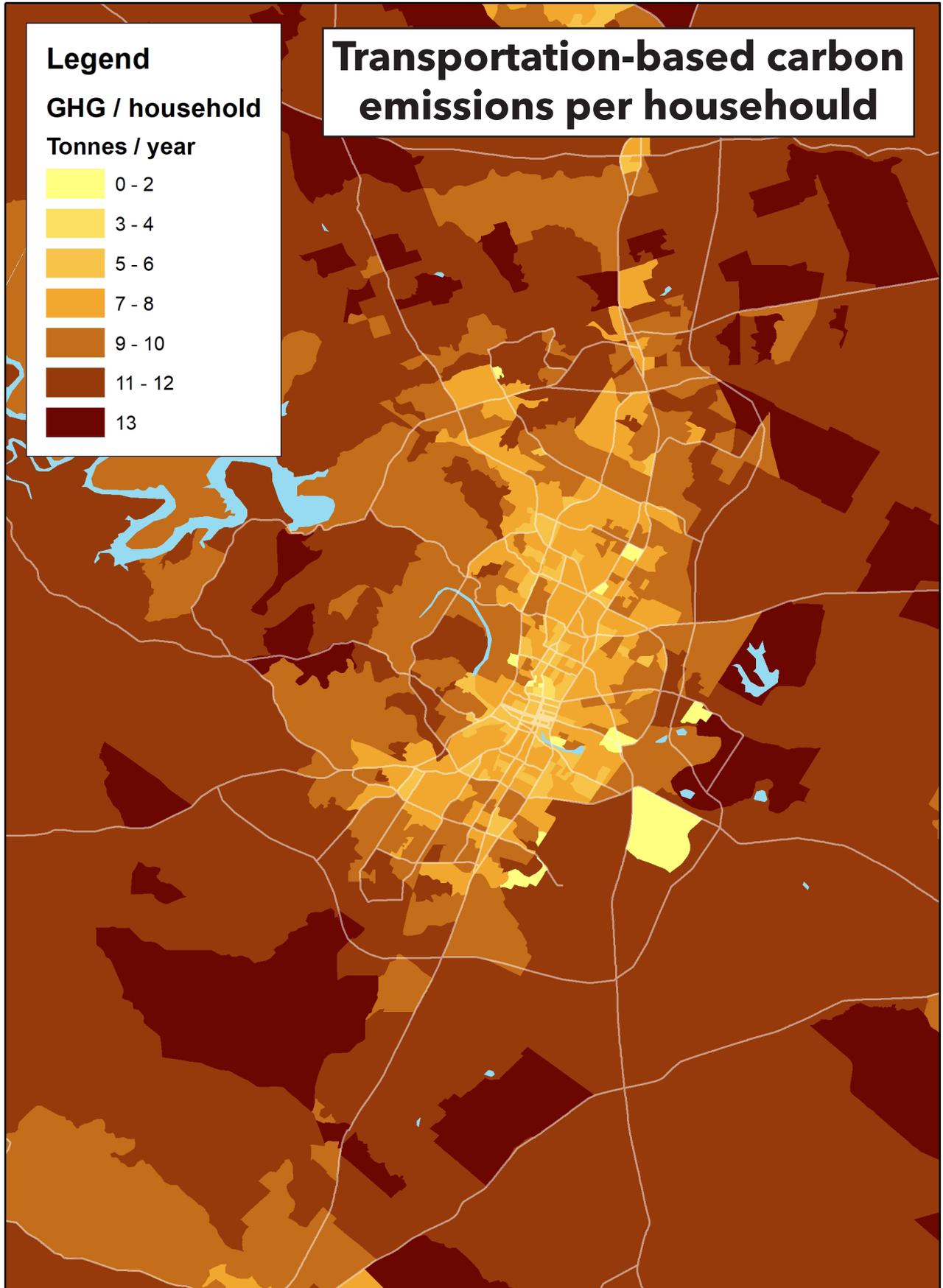
Legend

GHG / household

Tonnes / year



Transportation-based carbon emissions per household



Carbon Policy

Transportation-based carbon emissions vary by where you live across the region

We must reduce our metropolitan carbon emissions to play a responsible role in the 21st century world community. Unfortunately, many of our public policies continue to increase our carbon footprint--especially land use and transportation policies.

As we grow from a population of two million to four million, we have the opportunity to lower our carbon footprint significantly by allowing existing and new residents better options to live healthy, low-carbon lifestyles, by reducing car dependency.

Austin's urban grid, density, transit and pedestrian access, and multimodal street safety dictate how much it costs to access the benefits of this American metropolis. While environmental costs can be less obvious, they are expressed in carbon emissions, air quality, and loss of trees and open space.

Today's Austin provides low-carbon lifestyles for a very select few, but that select few contains a diverse mix of socio-demographics. Long-standing traditional urban street grids continue to provide both rich and poor Austinites with low-carbon lifestyles. Allowing more housing in the environmentally sound existing urban grid means more people having access to the current benefits, while also reducing the carbon footprint and travel needs of those there today.

More people in your neighborhood will mean more services at your fingertips, including retail, schools, and offices within

walking distance as well as allowing for high quality, frequent transit access.

There are areas of our region where the average household emits ten times as much transportation-based carbon than in other, more efficient parts of our region.

A key element of transportation based carbon emissions is that the tailpipe emissions are not the only contribution to global warming for every mile you drive. A new car - whether it is electric or internal combustion - already has an amount of embedded carbon when you buy it.

The factory, parts, and materials contributed to global warming before the engine was ever turned on. Some estimates show that this amount of embedded carbon is about equal to the amount that a new internal combustion car will release over its life cycle.

But this isn't all. Driving requires roads and parking spots. The Austin region has more lane miles per capita than most Texas metros. All of those miles of road required extensive green house gas emissions through bulldozing the road, bringing the material, paving the road, and ongoing maintenance.

Cutting the Austin region's vehicle miles traveled is a crucial element of climate responsibility, which will primarily be determined by our regional growth policies, especially CodeNEXT and the 2045 Regional Transportation Plan.

Each additional person allowed to live in the region, but not inside the City of Austin = **0.46 additional tonnes of carbon emissions** annually.

Adopting CodeNEXT V.2 today would mean 108,951,401 less vehicle miles traveled in 2027 compared to currently-used segregation zoning. This would be equivalent to planting **2 million trees** every year.

These are very conservative estimates of the benefits of allowing more people to live within the City of Austin. As more people and jobs are added to our neighborhoods, each one of us actually ends up driving less and emitting less carbon, while gaining greater access to people and opportunities. This proposal is a rare environmental / societal win-win.

Code Impacts on Carbon

Average housing + transportation costs as a percent of regional typical income

We drive a lot in Texas. Americans drive more than most wealthy nations, and Texans in our major metropolitan regions drive more than most Americans in other major metropolitan regions.

Austinites, in particular, drive more than those in most other Texas metros, meaning the region lags behind Houston and Dallas in responsibly addressing climate change.

If you live in the City of Austin, you're responsible for an average of 7,602 vehicle miles traveled every year. However, if you live in the Austin region but outside the City, you're averaging 8,259 miles a year.

Each additional man, woman, & child not allowed to live in the City of Austin, who instead lives in the more car-dependent parts of the region means around 2 miles more of driving every day.

Transportation accounts for more greenhouse gas emissions for Americans than energy. On average, every person living outside the City of Austin accounts for 0.46 more tonnes of transportation based carbon emissions than if they lived inside the city, based upon the VMT differences.

When we analyze potential future growth scenarios, we often underestimate the difference between living in and out of the City. Even so, the distinction is important.

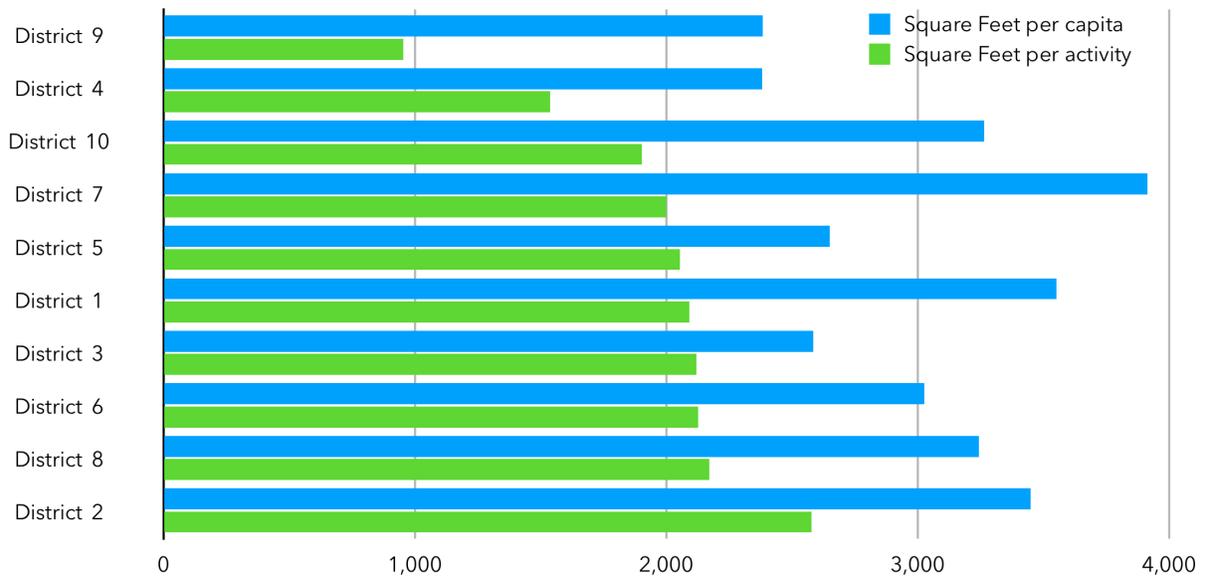
The more people an attractions are nearby, the less people have to drive long distances to get to them. The land development code must be tweaked to allow every neighborhood to develop into a complete community.

A progressive, climate responsible CodeNEXT can meaningfully reduce future carbon emissions and traffic.

Most calculations herein are based on our analysis of CNT data. as explained in our Affordability report. Please explore the source data here: <https://htaindex.cnt.org>

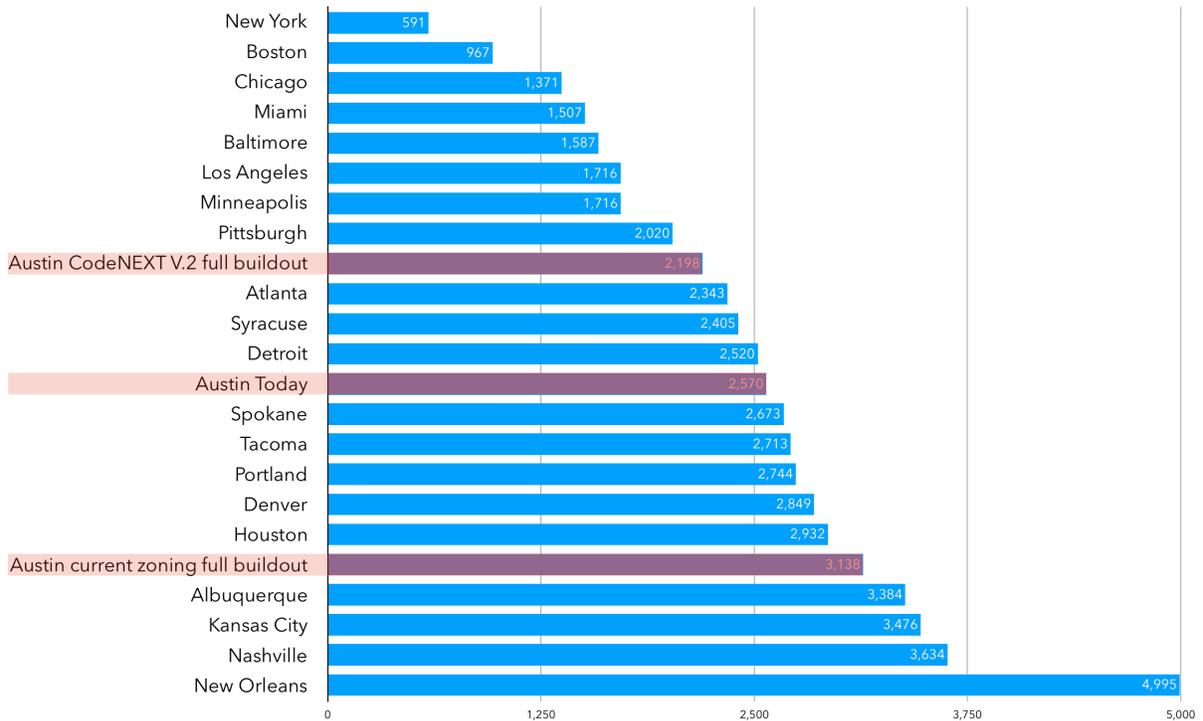


Impervious Surface By Austin Council District



Population is 2010 Census estimates as presented by the City of Austin Demographer online. Jobs were derived from the CAMPO Regional Forecasts baseline 2010 data using the percent clip method to extract the data to council districts from TAZs. Activity Intensity is the amount of jobs and population in an area. So an activity means someone lives there or works there.

Square feet of impervious surface per person in major US cities



Impervious Surface

Average housing + transportation costs as a percent of regional typical income

According to numbers from the City of Austin Watershed Department, the proposed CodeNEXT Version 2 would have been a slight improvement over current zoning in terms of the total amount of impervious surface expected in the City of Austin by 2027 - comparing both options using a fantasy scenario where all entitlements are actually used.

However, our potential future development affects impervious surface in part by controlling the number of people allowed to live inside the City of Austin or outside.

Allowing people to live inside the City of Austin helps ease the heavy impervious surface costs of subsidizing growth outside the City, reducing flooding. Allowing higher population densities inside the city - as CodeNEXT V.2 does - would yield environmental benefits for the region.

As far as we know, this analysis has not been redone for the most recent drafts of CodeNEXT, but the impervious surface benefits are likely similar or better in Version 3.5 than Version 2.

Today in the region - according to TXDOT's "FY2005 - 2016 Roadway Data Tables" - the people of Travis County are responsible for 55% of the amount of roads and streets per capita that the people of Hays County are, as shown in the chart to the left.

Low density car dependent neighborhoods require more roads per person, which means more flooding.

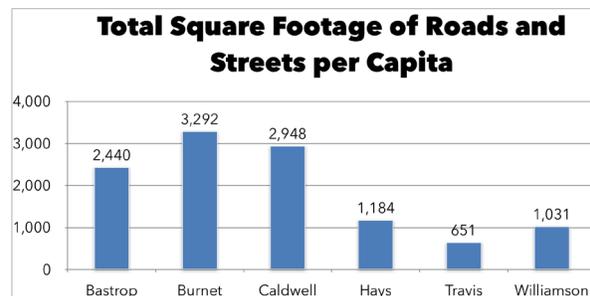
Current projections of impervious surface coverage contradicts anyone citing environmental, flooding, heat island, or water quality fears as reasons to vote against CodeNEXT V.2 (see chart opposite).

A full buildout of CodeNEXT V.2 will result in about 1,000 fewer acres of impervious land than a buildout of current zoning. Each resident of the City of Austin would be responsible for almost 1,000 fewer square feet of impervious surface.

This means roughly 1% of the city would be left open rather than paved, giving clear indication that the new proposal is more environmentally friendly than its alternatives.

In addition, the current zoning code is responsible for many of Austin's localized flooding problems. As we move further into the anthropocene towards an ever-increasing number of unexpected weather events, efficient land development codes are vital in disaster preparedness.

Passing CodeNEXT would reduce future total regional impervious surface, and dramatically reduce impervious surface per capita for residents of the City.





Dedication ceremony for the Rio Grande Protected Bike Lane
Photo Credit: our friends at BikeTexas
(Some rights reserved)

UNO: Austin's CodeNEXT Pilot

There's a place in Texas with astounding environmental results of public policy

West Campus is a Texas neighborhood that has radically changed since - some of us lived there in - the 90s due to leadership and direction from Austin City Council, with astounding metrics on what has been achieved in terms of people living better.

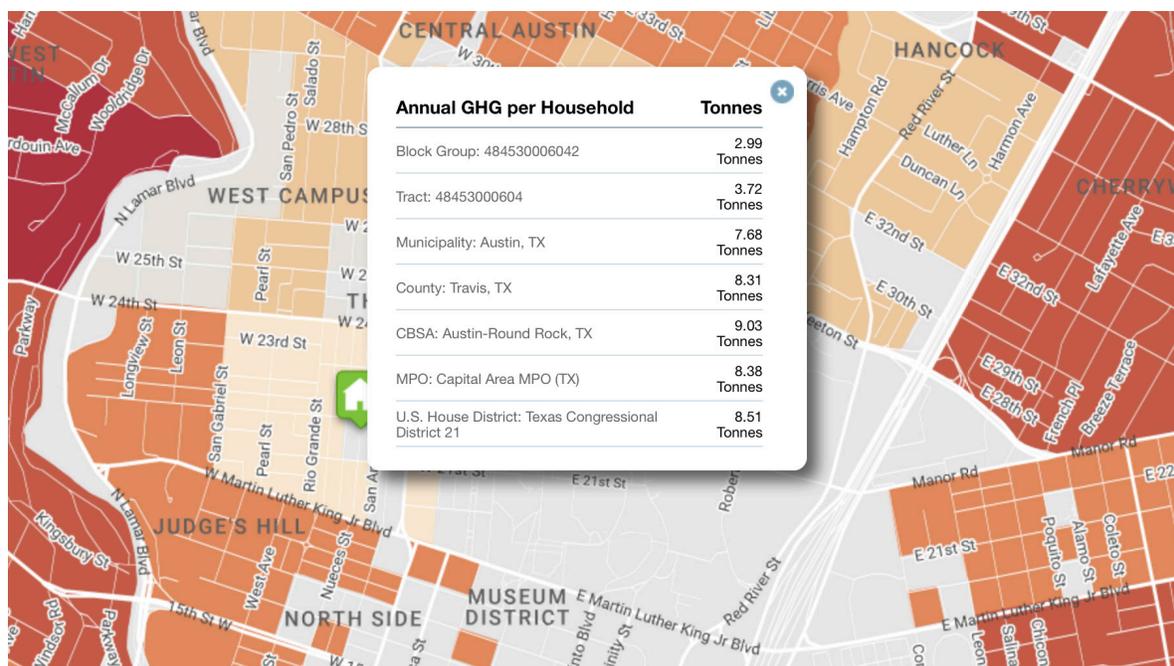
Clearly the area has gained safe street improvements faster than anywhere else in Texas. According to Dan Keshet's blog *Austin on Your Feet*, the student-rich neighborhood now contains double the apartments that were available 15 years ago.

While rents in West Campus have risen dramatically, its residents are driving less than other Texans. West Campus is easily the

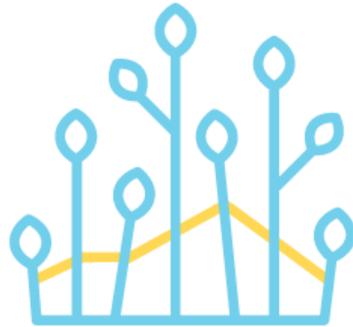
most eco-friendly place to live in the Austin region - if not all of Texas - with residents of West Campus emitting just 23% of the regional population's average transportation-based carbon emissions.

For urban planning and climate responsibility purposes, students' trips to class are equal to work commutes. City Council's effort to provide convenient, affordable access by all modes for students demonstrates the power of transit improvements.

We are very well aware of the costs and benefits. These policies have allowed affordable, low-carbon lifestyles to many Texans, and should be spread beyond West Campus.



Growing Weirder is made possible by the generous contributions of these equitable sustainability focused entities:



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Growing Weirder

Understanding Austin's Growth and Potential



We can tell a new story of Texas metropolitan growth that empowers communities to engage in more productive conversations to build the future they want.

We can provide the analysis decision-makers and the public need to optimize our freedoms, our environment, and our quality of life. We can begin to shift our thinking to treat our growth as a shared responsibility and opportunity to complete our communities.

We intend to substantially impact the outcomes of City of Austin's CodeNEXT, Capital Area Metropolitan Planning Organization's Regional Transportation Plan, Capital Metro's Project Connect, City of Austin Strategic Mobility Plan, state legislation, and various related public processes, such as local budgets and bond proposals.

Displacement is real. Profit and abundance are real. Successful mixed-income, mixed-use community building is also real. We need to determine strategies and best practices that will minimize displacement, maximize affordable housing units in accessible and affordable locations, and achieve citizen priorities. The region's policy-makers and finance community need to learn the lexicon of location efficiency.

We need a holistic set of understandings of growth, best practices for equitable policy making, and synergistic transportation policies to produce true affordability.

Ultimately this work is intended to provide affordable access to a high quality of life to all the people of Austin.

We must measure our success by the ability of low income and disadvantaged people to live comfortably and access all the benefits of a modern city. We are trying to change the paradigm of growth, development, and transportation in their favor, but it will take time.

This report is part of a series of in-depth investigations on the various consequences of our major land use and transportation policy decisions. This is necessarily messy- our built environment impacts every aspect of how we live our lives in ways that aren't obvious and that we are only beginning to understand.

Other Growing Weirder reports took a closer look at affordability, how City of Austin policies limit the amount of people allowed to live in the City, and the potential for Equitable Transit Oriented Development strategies to build a more sustainable region.

Growing Weirder

Understanding Austin's Growth and Potential



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Executive Director

Jay Blazek Crossley, M.P.Aff.

Policy Analyst

Ashkan Jahangiri

GIS Analyst

Andrew Mayer

Strategic Development Intern

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Updated and republished June 8, 2018

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