Damian Syrnyk

From: BRIAN RICKER <ricker@bendcable.com>
Sent: Saturday, April 23, 2016 9:29 PM
To: Nick Arnis; Damian Syrnyk
Subject: Letter to UGB Committee - Request to add Parcel with All Services on Roper Lane to UGB
Attachments: UGB Letter Ricker 4-21-2016 Glen Vista Roper Parcel With Services.pdf; Roper Lane Entrance 20151 Glen Vista With Services.JPG; UAR Map 20151 Glen Vista.png

Follow Up Flag: Follow up
Flag Status: Flagged

Nick & Damian, Attached is a letter, map and photo concerning a parcel that I own that I would like added to the UGB. Please present this letter and info the the UGB Committee.

My wife and I own a 3 acre parcel at 20151 Glen Vista (Map and Tax Lot 17217C001100) just off of OB Riley Road. The Parcel is adjacent to the Rough Rider subdivision and can be accessed via Glen Vista Road or Roper Lane. Two+ sides of the parcel border the city and the current zoning is designated Urban Area Reserve. When the Rough Rider subdivision was platted, my parcel was slated for development and thought and efforts were given to ready it for development. The Roper Lane road was built in a way to connect directly to the property so the road would give direct access to houses built on my property. The traffic barrier just needs to be removed. The property has city sewer, water at its edge on Roper Lane. Fire Hydrant is on the end of Roper Road next to my property. The property is at a slightly higher grade than the Rough Rider subdivision so the sewer connection will not be an issue. The property has a old 1930 farm house and outbuildings on it of little value that can be raised for development.

I would like the parcel to be added into the new UGB. I think the addition of the parcel to the UGB is no brainer for the UGB Committee and Bend. The parcel appears to meet all objectives of the UGB planning. The parcel compliments existing development at Rough Riders. It makes efficient use of land close to city without sprawl. It is easy to bring into the city from a infrastructure point of view. The parcel requires no city or road work to connect to it and would allow housing opportunities to come on immediately and much faster than most all other proposed additions to the new UGB plan. I am open to any zoning that the Committee thinks the parcel should be in the UGB plan.

Can you please confirm you received my request. Also ... What other information do you need from me to get the parcel added to the UGB proposal?

Thanks ..Brian 541-653-0843

4/21/2016

Brian Ricker
61117 Riverbluff Trail
Bend, OR 97702
541-653-0843
ricker@bendcable.com

UGB Committee
c/o Damian Syrnyk Sr. Planner
City of Bend
UGB Steering Committee

VIA E-MAIL: dsyrnyk@bendoregon.gov

Subject: Easy addition to UGB plan with all services in place on Roper Lane.

Dear Damian & Committee Members

My wife and I own a 3 acre parcel at 20151 Glen Vista (Map and Tax Lot 17217C001100) just off of OB Riley Road. The Parcel is adjacent to the Rough Rider subdivision and can be accessed via Glen Vista Road or Roper Lane. Two+ sides of the parcel border the city and the current zoning is designated Urban Area Reserve.. When the Rough Rider subdivision was platted, my parcel was slated for development and thought and efforts were given to ready it for development. The Roper Lane road was built in a way to connect directly to the property so the road would give direct access to houses built on my property. The traffic barrier just needs to be removed. The property has city sewer, water at its edge on Roper Lane. Fire Hydrant is on the end of Roper Road next to my property. The property is at a slightly higher grade than the Rough Rider subdivision so the sewer connection will not be an issue. The property has a old 1930 farm house and outbuildings on it of little value that can be raised for development.

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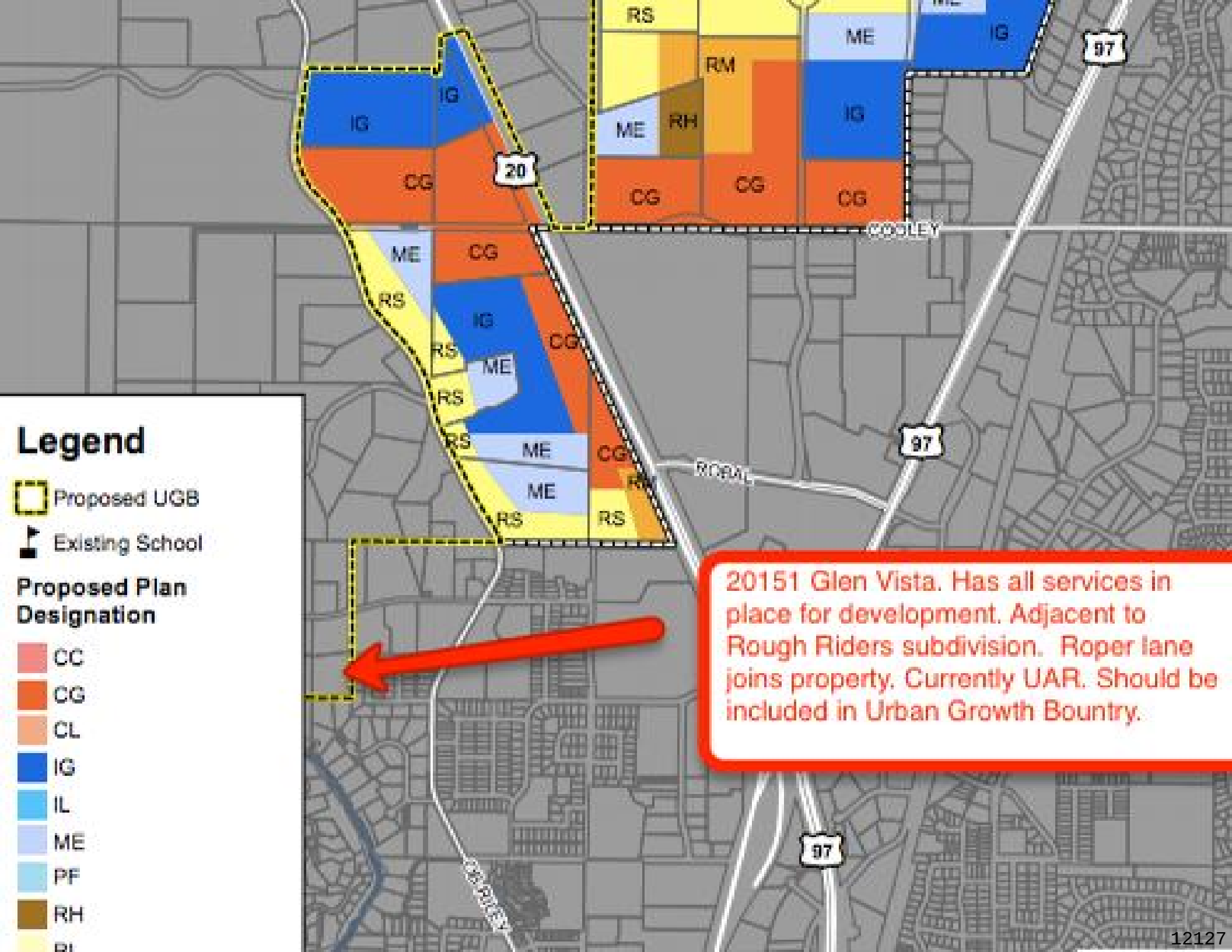
What other information do you need from me to get the parcel added to the UGB proposal?

Sincerely,

Brian Ricker
541-653-0843

Attached is a map and pictures of the parcel.


Legend
Proposed UGB
Existing School
Proposed Plan Designation
CC
CG
CL
IG
IL
ME
PF
RH
RL
RS
RM
20
97
COOLEY
ROPER
20151 Glen Vista. Has all services in place for development. Adjacent to Rough Riders subdivision. Roper lane joins property. Currently UAR. Should be included in Urban Growth Bountry.
12127


12128

CENTRAL OREGON LANDWATCH

50 SW Bond St., Ste. 4 | Bend, OR 97702
Phone: (541) 647-2930
www.centraloregonlandwatch.org

August 25, 2016

via email

Bend City Council
710 NW Wall St.
Bend, OR 97701

cc: Brian Rankin

Re: Bend 2016 UGB Proposal

Dear City Councilors,

Bend has recently entered another period of rapid growth. As we transition from a large town to a small city, it is important to have carefully considered plans in order to manage Bend's growth during that transition. The Urban Growth Boundary (UGB) planning process the city has undertaken over the past several years has created a forward-thinking set of plans to guide our city. The current UGB proposal is a great achievement by the community and LandWatch has been proud to play a role in the public process that lead to its creation.

LandWatch has been at the table advocating for a limited expansion to prevent urban sprawl, protect wildlife habitat, encourage cost-effective growth, and foster affordable housing. Though there have been a number of concessions and trade-offs to reach consensus within the Technical Advisory Committees and Steering Committee, we are supporting this UGB proposal for the following reasons:

REDUCTION OF URBAN SPRAWL

The original UGB proposal, submitted to the state in 2009, was for 8,462 gross acres. According to a report from DLCD, "the size of the expansion [was] over four square miles larger than the amount of land they determined [was] needed" (State Completes Review of City of Bend's Urban Growth Boundary, 2010). At that time, LandWatch appealed the city's boundary because that proposal would have allowed the kind of sprawl that would be expected if Oregon had no land use system.

Studies have shown that urban sprawl requires costlier infrastructure and has a negative effect on quality of life. When people are more spread out, more tax dollars are spent building roads, sewers, and other utilities. The report *Measuring Sprawl 2014* found people who live in areas with less

sprawl have a better quality of life. In fact, people living in more connected and compact metro areas have greater economic opportunity, spend less of their household income on the combined cost of housing and transportation, and tend to be safer, healthier and live longer than their peers in more sprawling metro areas (Exhibit 1). In addition to these benefits, reducing sprawl will help Bend to protect the natural beauty that makes Central Oregon such an attractive place to live and play.

By performing a comprehensive analysis of what can be accomplished within the current urban growth boundary, the city's new UGB proposal expands the city by only 2,380 acres. This represents a 70% decrease in the amount of sprawl as compared with the original proposal. Since Bend is already the least dense city of its size in Oregon, with a lower population density per square mile than even Medford, this is a reasonable reduction of sprawl. The smaller expansion will only be successful, though, if the plans for greater density identified within the current boundary come to fruition.

INCREASE OF DENSITY SENSITIVELY

An understandable concern of current citizens of Bend is that greater density within the existing boundary will affect their neighborhoods. While there are places where that will happen, for the most part, that should not be the case. And though existing problems caused by ADUs and overnight rentals may continue, the UGB plan is designed to put most added density in currently undeveloped areas and sites identified for redevelopment. These redevelopment sites are called Opportunity Areas.

Bend Central District

One of the key Opportunity Areas is the Bend Central District, located approximately between the Bend Parkway on the west and 4th Street on the east and bounded on the north by Revere Avenue and on the south by Burnside Street. It is an important Opportunity Area because it presents a perfect opportunity for infill and redevelopment within the heart of Bend with minimal impact to existing neighborhoods. The City of Bend completed a plan to create a Multi-Modal Mixed Use Area (MMA) in this district in July, 2014. The plan envisions an extension of historic downtown Bend where people can walk, bike, and use transit as easily as they can drive, and it balances a diversity of housing choices for all income levels with moderate scale employment, retail uses and low impact activities like those currently taking place in the Maker's District.

The Residential and Employment TACs recommended "using the recommended draft Special Plan District codes from the MMA project, adopt the Special Plan District as drafted, leaving the existing plan designations in place" at a March 17th, 2016 meeting. As a result of this recommendation, the plans that were shelved in 2014 were included in the current UGB proposal.

As part of the collaboration between Central Oregon LandWatch and Brooks Resources to create the Westside Transect (see below), these two groups agreed to work together to support the concept

of increased urbanization through infill and redevelopment of the Bend Central District. Together, we retained the services of Katherine (Kat) Shultz to complete a peer-review and analysis of Bend's Central District MMA Plan and Code Amendments. Ms. Schultz is a Director at GBD Architects in Portland and has more than 20 years of experience in mixed-use housing and planning.

Ms. Schultz suggested several simple changes to the development standards that could make the district more successful (Exhibit 2). She also suggested mid-term and long-term actions to enhance the plan and address strengthening transit, affordable housing, sustainability, and gentrification. LandWatch and Brooks Resources used her recommendations to propose slight code revisions as a first step toward enhancing the Central District Plan to the Bend City Council (Exhibits 3 & 4).

Central Oregon LandWatch urges the city to adopt the UGB proposal with the revised Central District plans included, as we believe it is key to the success of the entire UGB plan. In fact, one of LCDC's findings in its Remand of Bend's 2009 UGB proposal was that the city relied on density within the Central Area without specific plans in place. This time, the city's claim that the Central District will yield density is substantiated.

ADOPTION OF WESTSIDE TRANSECT

One of LandWatch's main concerns about urban growth boundary expansion has been the development of land west of the current UGB where the city abuts permanent natural areas. This area is an important connection for mule deer and elk winter range. According to *Science Findings*, "mule deer populations in Central Oregon are in decline, largely because of habitat loss," including habitat loss caused by home and road development (Exhibit 5). Residents on the western edge of Bend often experience the migration patterns of the deer and elk who do still live in the area (Exhibit 6).

Another concern is the threat of wildfire. The most dangerous and hard to fight wildfires have historically occurred in the forested areas to the south and west of Bend, according to the Deschutes County Large Fire History 1900-2014 map (Exhibit 7). The Awbrey Hall fire in 1990 destroyed 22 homes just west of the current urban growth boundary (Exhibit 8). In 2014, the Two Bulls fire caused more than 200 homes to be evacuated on the west side, and in 2015 the Shevlin Fire, which was even closer to town on the west side, was able to be subdued quickly only because of a quick response and favorable conditions (Exhibits 9 & 10). For these reasons, LandWatch believes that building at urban densities in the forest west of Bend creates a potentially life-threatening risk for residing, fire-fighting, and evacuating from that area.

At the December, 2015 Steering Committee meeting, Mayor Jim Clinton called for the Boundary Technical Advisory Committee (TAC) to come to a consensus on a proposal for expanding the UGB. Paul Dewey, Executive Director of Central Oregon LandWatch and Kirk Schueler, incoming CEO of Brooks Resources, took the Mayor's request to heart. They met to develop a proposal using the planning concept of the "Transect," which addresses development abutting permanent natural areas.

The Westside Transect concentrates urban-level density closer to the city's core and near community centers such as schools. It creates zones that taper density as the city boundary nears the forest in order to protect homes from wildfire and preserve wildlife habitat. It also provides a higher level of certainty around how the western edge of Bend will develop.

The Boundary TAC overwhelmingly approved the Westside Transect proposal at their meeting on Wednesday, January 20th, 2016. This ground-breaking cooperative effort between Central Oregon LandWatch and landowners creates a vision for the future of Bend's western edge (Exhibits 11 & 12). The premise of the Westside Transect is that the UGB will never expand across Tumalo Creek.

Another important component of the proposal is that building codes shall require use of fire-safe construction materials such as provided by the National Fire Protection Association (used in the Miller Tree Farm development). The next step after approval of the UGB Plan will be the adoption of these codes.

PROVIDING FOR HOUSING AFFORDABILITY

Central Oregon is experiencing a serious housing crisis. Many people who make our community great – the teachers, the firefighters, the nurses – are being pushed out because they can't afford to rent or buy homes.

Housing costs have increased faster than incomes, and now the average family in Bend cannot afford the average home. In addition, there are very few housing units available for rent – vacancy rates have been below 1.5% for the past four years, and as of June, 2016, the vacancy rate for apartments was just 0.62% (Exhibit 13).

As of February 2015, the median home sale prices in Bend were about $314,000, which was higher than prices in Oregon's largest cities, including Eugene, Portland and Salem (Bend Housing Needs Analysis). A family making the Area Median Income of $59,700 cannot afford to buy the average home. More than half of the households in Deschutes County are cost-burdened, meaning they pay more than 30% of their income on housing costs.

Historically, builders have mostly built single family homes in Bend, and as of 2013, the housing mix was 71% single family homes, 4% single family attached, and 25% multi-family. There was debate on the Residential TAC about how much to increase the housing mix. Citizens who were concerned about affordable housing pushed to increase the percentage of multi-family housing in order to provide more options for people who cannot afford single-family homes. The TAC settled on a housing mix for units built between 2014-2028 of 55% single-family detached, 10% single-family attached, and 35% multi-family, which is a significant improvement from historical trends.

However, increased density and increased variety of housing choices are not enough to solve the immense problem. That is why LandWatch encouraged landowners who wanted their land to be

added to the boundary expansion to include deed-restricted affordable housing in their developments (Exhibit 14). As a result of these discussions, four of the expansion areas include landowner-proposed affordable housing requirements in the Comprehensive Plan. Our support for these additions was conditional on the affordable housing component, so it is critical that this will be implemented and enforced by the city when these properties are annexed.

PLANNING FOR COMPLETE COMMUNITIES

Another central organizing principle of the UGB plan you are considering is that new communities be planned so that services and facilities are located close to residential areas so that people have the option to take shorter car trips or to walk or bike to get to where they need to go. In this way, we can use land use planning as a transportation solution to reduce future traffic congestion. This approach also adds zoning for commercial and other services close to existing residential neighborhoods lacking nearby services.

CONCLUSION

Although it is not perfect, the City of Bend's current UGB proposal is a good plan overall to guide Bend's future growth. It should be an indication of success that Central Oregon LandWatch has gone from a lead appellant of the original proposal to now a lead supporter of the current proposal. We believe it is important for preventing urban sprawl, protecting wildlife habitat, encouraging cost-effective growth, and fostering affordable housing. However, the proposal will only be successful if it is implemented within the time allotted.

Since the planning window closes in 2028, there is a great amount of urgency to not only get this UGB proposal adopted, but to also achieve everything in it. Where the plan says codes will be developed, they need to be developed. The policies contained within this proposal should be carried out according to their original intention. Our city's future hangs in the balance of this UGB's success. To that end, LandWatch will be watching this process closely and will not hesitate to take action to ensure we are truly becoming a better Bend.

Sincerely,

Moey Newbold
Advocacy Programs Manger
Central Oregon LandWatch

50 SW Bond St., Ste. 4 | Bend, OR 97702
Phone: (541) 647-2930
www.centraloregonlandwatch.org

EXHIBITS

Exhibit 1 –

"Measuring Sprawl 2014." Smart Growth America, April 2014.

Exhibit 2 –

Schultz, Kat. "Bend Central Area Plan Review." Sponsored by Brooks Resources Corporation and Central Oregon LandWatch, 28 April 2016.

Exhibit 3 –

Dewey, Paul, Schueler, Kirk. "Central District Cover Letter" 1 August 2016.

Exhibit 4 –

"Proposed amendments to the draft chapter Chapter 2.7.3200, Bend Central District." Brooks Resources Corporation and Central Oregon LandWatch, 1 August 2016.

Exhibit 5 –

Kline, Jeff. "Seasonal Neighbors: Residential Development Encroaches on Mule Deer Winter Range in Central Oregon." Science Findings 140 (2012): 1-5.

Exhibit 6 –

Photograph of a herd of elk near Shevlin Commons. 20 October 2015.

Exhibit 7 –

Deschutes County Large Fire History 1900-2014 Map, prepared by Deschutes County Forestry, Ed Keith.

Exhibit 8 –

Awbrey hall fire news stories video

Exhibit 9 –

Leeds, Tyler. "Two Bulls Fire Reaches 6,180 Acres." *The Bulletin*, 9 June 2014.

Exhibit 10 –

Darling, Dylan J. "Wildfire in Shevlin Park quickly corralled." *The Bulletin*, 12 June 2015.

Exhibit 11 –

Leeds, Tyler. “UGB Compromise: Decrease density toward west Bend.” *The Bulletin*, 21 January 2016.

Exhibit 12 –

“Land-use group, Westside land owners reach Bend UGB compromise.” *KTVZ*, 20 January 2016.

Exhibit 13 –

“Rental vacancy rate hits 1.04 percent in region.” *The Bulletin*, 4 June 2016.

Exhibit 14 –

Leeds, Tyler. “Bend hammers out UGB boundary expansion.” *The Bulletin*, 22 April 2016.

Measuring Sprawl 2014

April 2014

Acknowledgments

Smart Growth America is the only national organization dedicated to researching, advocating for and leading coalitions to bring smart growth practices to more communities nationwide. From providing more sidewalks to ensuring more homes are built near public transportation or that productive farms remain a part of our communities, smart growth helps make sure people across the nation can live in great neighborhoods. Learn more at www.smartgrowthamerica.org.

This report is based on original research published by the Metropolitan Research Center at the University of Utah, prepared for the National Cancer Institute at the National Institutes of Health, as well as the Ford Foundation.

The Metropolitan Research Center conducts basic and applied research on the built environment at the metropolitan scale, focusing on key forces shaping metropolitan form such as demographics, environment, technology, design, transportation, arts and culture and governance. It seeks to expand knowledge in city and metropolitan affairs to improve policy and practice and educate the general public on important issues facing communities. Learn more at www.arch.utah.edu/cgi-bin/wordpress-metroresearch/.

This report was made possible with support from the National Institutes of Health and the Ford Foundation.

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Special thanks to David Goldberg, Transportation for America; Chris Zimmerman, Smart Growth America; Gail Meakins, Martin Buchert, and Allison Spain, Metropolitan Research Center; Professor William Greene, New York University; and James B. Grace, U.S. Geological Survey.

Table of Contents

Executive Summary

Some places in the United States are sprawling out and some places are building in compact, connected ways. The difference between these two strategies affects the lives of millions of Americans.

In 2002, Smart Growth America released *Measuring Sprawl and Its Impact*, a landmark study that has been widely used by researchers to examine the costs and benefits of sprawling development. In peer-reviewed research, sprawl has been linked to physical inactivity, obesity, traffic fatalities, poor air quality, residential energy use, emergency response times, teenage driving, lack of social capital and private-vehicle commute distances and times.

Measuring Sprawl 2014 updates that research and analyzes development patterns in 221 metropolitan areas and 994 counties in the United States as of 2010, looking to see which communities are more compact and connected and which are more sprawling. Researchers used four primary factors—residential and employment density; neighborhood mix of homes, jobs and services; strength of activity centers and downtowns; and accessibility of the street network—to evaluate development in these areas and assign a Sprawl Index score to each. This report includes a list of the most compact and most sprawling metro areas in the country.

This report also examines how Sprawl Index scores relate to life in that community. The researchers found that several quality of life factors improve as index scores rise. Individuals in compact, connected metro areas have greater economic mobility. Individuals in these areas spend less on the combined cost of housing and transportation, and have greater options for the type of transportation to take. In addition, individuals in compact, connected metro areas tend to live longer, safer, healthier lives than their peers in metro areas with sprawl. Obesity is less prevalent in compact counties, and fatal car crashes are less common.

Finally, this report includes specific examples of how communities are building to be more connected and walkable, and how policymakers at all levels of government can support their efforts.

Introduction

As regions grow and develop, residents and their elected leaders have many decisions to make. What kind of street network should they build, and how extensive should it be? Should neighborhoods have a mix of homes, shops and offices, or should different types of buildings be kept separate? Will people be able to walk, ride a bicycle or take public transportation through the community, or will driving be the only realistic way for people to get around?

Everyone experiences the outcomes associated with these development decisions. How much families pay for housing and transportation, how long workers spend commuting home, the economic opportunities in communities and even personal health are all connected to how neighborhoods and surrounding areas are built.

Measuring Sprawl 2014 analyzes development in 221 metropolitan areas across the United States, as well as the relationship between development and quality of life indicators in those areas. This report includes a list of the most compact and most sprawling metro areas in the country.

About the research

In 2002, Smart Growth America released *Measuring Sprawl and Its Impact*, a landmark study that has been widely used by researchers to examine the costs and benefits of sprawling development. That report was made available to researchers and has been used in peer-reviewed research in the years since. From that original analysis, sprawl has been linked to physical inactivity, obesity, traffic fatalities, poor air quality, residential energy use, emergency response times, teenage driving, lack of social capital, and commute distances and times.

Measuring Sprawl 2014 is an update and refinement of that research. This report is based on research originally published in the Metropolitan Research Center at the University of Utah in April 2014. The University of Utah's report, titled *Measuring Urban Sprawl and Validating Sprawl Measures,* represents the most comprehensive effort yet undertaken to define, measure and evaluate metropolitan sprawl and its impacts. The first peer-reviewed article based on this research was published in October 2013 in the journal *Health & Place*.

The data from 2010 used in this analysis are the most recent available. The complete analysis, methodology and databases included in the University of Utah's research are available at http://gis.cancer.gov/tools/urban-sprawl/.

Measuring "sprawl"

This study analyzed development in 193 census-defined Metropolitan Statistical Areas (MSAs)—or metro areas—as well as 28 census-defined Metropolitan Divisions, which comprise MSAs, in the largest 11 MSAs. All of the analyzed areas had at least 200,000 people in 2010. MSAs with populations less than 200,000 people were not included in the study.[1] This study also analyzed development in 994 metropolitan counties.

The four factors

Development in both MSAs and metropolitan counties was evaluated using four main factors: 1) development density; 2) land use mix; 3) activity centering; and 4) street accessibility. These factors are briefly explained below.[2]

Development density
Development density is measured by combining six major factors: 1) total density of the urban and suburban census tracts; 2) percent of the population living in low-density suburban areas; 3) percent of the population living in medium- to high-density areas; 4) urban density within total built-upon land; 5) the relative concentration of density around the center of the MSA; and 6) employment density.

Land use mix
Land use mix is also measured through a combination of factors: the balance of jobs to total population and mix of job types within one mile of census block groups, plus the WalkScore of the center of each census tract.

Activity centering
The proportion of people and businesses located near each other is also a key variable to define an area. Activity centering is measured by looking at the range of population and employment size in different block groups. MSAs with greater variation (i.e., a wider difference between blocks with a high population and a low one) have greater centering. This factor also includes a measure of how quickly population density declines from the center of the MSA, and the proportion of jobs and people within the MSA's central business district and other employment centers.

Street accessibility
Street accessibility is measured by combining a number of factors regarding the MSA's street network. The factors are average length of street block; average block size; percent of blocks that are urban in size; density of street intersections; and percent of four-way or more intersections, which serves as a measure of street connectivity.

Scoring

Researchers used these factors to evaluate development in all 221 MSAs and 994 counties. These four factors are combined in equal weight and controlled for population to calculate each area's Sprawl Index score. The average index is 100, meaning areas with scores higher than 100 tend to be more compact and connected and areas with scores lower than 100 are more sprawling.

MSA versus county scales

Census-defined MSAs and the Metropolitan Divisions within them include a wide variety of places within a given region. An MSA's boundaries may include one county (like the Detroit, MI Metropolitan Division, which includes only Wayne County) or many counties (like the Washington, DC MSA, which contains 16 counties).[3]

This difference has a significant impact on how a given region scores on the index, and it is important to note that these census-defined divisions create some counterintuitive outcomes. For example, the greater Washington, DC area ranks 91st on the index based on its MSA. Evaluated at the county level, however, Washington, DC ranks 6th. Many other communities face similar distinctions between scores at the MSA level versus the county level.

Our findings are presented at the MSA scale because much of the data, such as economic mobility, is only available at this level. Health data is available at the county level, so in those cases we provide analysis at that scale. Future versions of this analysis would benefit from economic mobility, transportation and housing costs and health databases available at more refined scales. For more information about index scores and findings at the county scale, see Appendix B. For information about the data sources available at different geographic scales, see Appendix C.

The 2014 Sprawl Index rankings

Based on the index standards described in the previous section, we evaluated development in 221 metro areas in the United States.

The most compact, connected metro area in the United States is, perhaps not surprisingly, New York, NY, with an index score of 203.4. The country's most sprawling metro area is Hickory, NC, with an index score of 24.9.

To provide a more comprehensive look at how communities compare, we also present here the most compact and most sprawling MSAs by size. Among large metro areas (defined as having a population more than one million people), New York, the national leader, is the most compact and connected. Atlanta, GA, is the most sprawling, with a score of 41.0.

Of medium metro areas (defined as having a population between 500,000 and 1 million), Madison, WI, is the most compact and connected with a score of 136.7 and Baton Rouge, LA, is the most sprawling, with a score of 55.6. Of small metro areas (defined as having a population less than 500,000), Atlantic City, NJ, is the most compact and connected, with a score of 150.4, whereas Hickory, NC, is the most sprawling.[4]

Most compact, connected metro areas

Tables 1–4 rank metro areas that are more compact and connected, with homes and jobs closer together.

TABLE 1

Most compact, connected metro areas, nationally

Rank	Metro area	Index score
1	New York/White Plains/Wayne, NY-NJ	203.4
2	San Francisco/San Mateo/Redwood City, CA	194.3
3	Atlantic City/Hammonton, NJ	150.4
4	Santa Barbara/Santa Maria/Goleta, CA	146.6
5	Champaign/Urbana, IL	145.2
6	Santa Cruz/Watsonville, CA	145.0
7	Trenton/Ewing, NJ	144.7
8	Miami/Miami Beach/Kendall, FL	144.1
9	Springfield, IL	142.2
10	Santa Ana/Anaheim/Irvine, CA	139.9

TABLE 2

Most compact, connected large metro areas

Large metro areas are defined as having a population more than one million.

Rank	Metro area	Index score
1	New York/White Plains/Wayne, NY-NJ	203.4
2	San Francisco/San Mateo-Redwood City, CA	194.3
8	Miami/Miami Beach/Kendall, FL	144.1
10	Santa Ana/Anaheim/Irvine, CA	139.9
12	Detroit/Livonia/Dearborn, MI	137.2
15	Milwaukee/Waukesha/West Allis, WI	134.2
21	Los Angeles/Long Beach/Glendale, CA	130.3
24	San Jose/Sunnyvale/Santa Clara, CA	128.8
25	Oakland/Fremont/Hayward, CA	127.2
26	Chicago/Joliet/Naperville, IL	125.9

TABLE 3

Most compact, connected medium metro areas

Medium metro areas are defined as having a population between 500,000 and 1 million.

Rank	Metro area	Index score
13	Madison, WI	136.7
28	Allentown/Bethlehem/Easton, PA-NJ	124.4
37	Bridgeport/Stamford/Norwalk, CT	121.7
41	Stockton, CA	120.3
52	New Haven/Milford, CT	116.3
54	Scranton/Wilkes-Barre, PA	115.8
64	Oxnard/Thousand Oaks/Ventura, CA	113.8
66	Modesto, CA	113.3
67	Wilmington, DE-MD-NJ	112.9
68	Lancaster, PA	112.6

TABLE 4

Most compact, connected small metro areas

Small metro areas are defined as having a population less than 500,000.

Rank	Metro area	Index score
3	Atlantic City/Hammonton, NJ	150.4
4	Santa Barbara/Santa Maria/Goleta, CA	146.6
5	Champaign/Urbana, IL	145.2
6	Santa Cruz/Watsonville, CA	145.0
7	Trenton/Ewing, NJ	144.7
9	Springfield, IL	142.2
11	Reading, PA	137.9
14	Burlington/South Burlington, VT	135.1
16	Boulder, CO	133.7
17	Appleton, WI	132.7

Most sprawling metro areas

Tables 5–8 rank communities that are the least dense, least connected and most likely to separate land uses.

TABLE 5

Most sprawling metro areas, nationally

Rank	Metro area	Index score
212	Kingsport/Bristol/Bristol, TN-VA	60.0
213	Augusta/Richmond County, GA-SC	59.2
214	Greenville/Mauldin-Easley, SC	59.0
215	Riverside-San Bernardino/Ontario, CA	56.2
216	Baton Rouge, LA	55.6
217	Nashville-Davidson/Murfreesboro/Franklin, TN	51.7
218	Prescott, AZ	49.0
219	Clarksville, TN-KY	41.5
220	Atlanta/Sandy Springs/Marietta, GA	41.0
221	Hickory/Lenoir/Morganton, NC	24.9

TABLE 6

Most sprawling large metro areas

Large metro areas are defined as having a population more than one million.

Rank	Metro area	Index score
182	Houston/Sugar Land/Baytown, TX	76.7
184	Richmond, VA	76.4
189	Rochester, NY	74.5
192	Birmingham-Hoover, AL	73.6
196	Memphis, TN-MS-AR	70.8
197	Charlotte/Gastonia-Rock Hill, NC-SC	70.5
201	Warren/Troy/Farmington Hills, MI	67.0
215	Riverside-San Bernardino/Ontario, CA	56.3
217	Nashville/Davidson/Murfreesboro/Franklin, TN	51.7
220	Atlanta-Sandy Springs/Marietta, GA	41.0

TABLE 7

Most sprawling medium metro areas

Medium metro areas are defined as having a population between 500,000 and 1 million.

Rank	Metro area	Index score
185	Little Rock/North Little Rock/Conway, AR	76.1
191	Durham/Chapel Hill, NC	73.8
195	Jackson, MS	72.3
199	Knoxville, TN	68.2
200	Columbia, SC	67.5
207	Chattanooga, TN-GA	63.6
208	Greensboro/High Point, NC	63.5
213	Augusta/Richmond County, GA-SC	59.1
214	Greenville/Mauldin-Easley, SC	59.0
216	Baton Rouge, LA	55.6

TABLE 8

Most sprawling small metro areas

Small metro areas are defined as having a population less than 500,000.

Rank	Metro area	Index score
204	Green Bay, WI	65.4
205	Fort Smith, AR-OK	64.8
206	Lynchburg, VA	64.0
209	Winston-Salem, NC	63.4
210	Florence, SC	61.1
211	Lake Havasu City-Kingman, AZ	60.1
212	Kingsport/Bristol/Bristol, TN-VA	60.0
218	Prescott, AZ	49.0
219	Clarksville, TN-KY	41.5
221	Hickory/Lenoir/Morganton, NC	24.9

What sprawl means for everyday life

The researchers found that as Sprawl Index scores improved—that is, as areas became less sprawling—several quality of life factors improved along with them.[5]

- People have greater economic opportunity in compact and connected metro areas.
- People spend less of their household income on the combined cost of housing and transportation in these areas.
- People have a greater number of transportation options available to them.
- And people in compact, connected metro areas tend to be safer, healthier and live longer than their peers in more sprawling metro areas.

The researchers controlled for socioeconomic factors. Below is more information about each of these quality of life indicators.

People in more compact, connected metro areas have greater economic mobility.
Could metro areas with homes and jobs far apart and limited connections between those areas directly affect the ability of low-income children to get ahead as adults?

The researchers compared the 2014 Sprawl Index scores to models of upward economic mobility from Harvard and the University of California at Berkeley.[6] They examined the probability of a child born to a family in the bottom quintile of the national income distribution reaching the top quintile of the national income distribution by age 30, and whether communities' index score was correlated with that probability.

Compactness has a strong direct relationship to upward economic mobility.

The researchers found that compactness has a strong direct relationship to upward economic mobility. In fact, for every 10 percent increase in an index score, there is a 4.1 percent increase in the probability that a child born to a family in the bottom quintile of the national income distribution reaches the top quintile of the national income distribution by age 30.

For example, the probability of an individual in the Baton Rouge, LA area (index score: 55.6) moving from the bottom income quintile to top quintile is 7.2 percent. In the Madison, WI area (index score: 136.7) that probability is 10.2 percent.

People in more compact, connected metro areas spend less on the combined expenses of housing and transportation.
The cost of housing is often higher in compact areas compared with sprawling ones. However, families' transportation costs are often significantly lower in these places. Shorter distances to travel and a wider range of low-cost travel options means individuals and families in these places spend a smaller portion of their household budget on transportation. How do the two expense categories relate in compact areas versus sprawling ones?

The researchers found that the average percentage of income spent on housing is indeed greater in compact communities than in sprawling areas. Each 10 percent increase in an index score was associated with a 1.1 percent increase in housing costs relative to income.[7]

The researchers also found that the average percentage of income spent on transportation is smaller in compact areas than sprawling ones. Each 10 percent increase in an index score was associated with a 3.5 percent decrease in transportation costs relative to income.[8] For instance, households in the San Francisco, CA area (index score: 194.3) spend an average of 12.4 percent of their income on transportation. Households in the Tampa, FL metro area (index score: 98.5) spend an average of 21.5 percent of their income on transportation.[9]

Perhaps the most notable finding was that the combined cost of housing and transportation declines as an index score increases. As metropolitan compactness increases, transportation costs decline faster than housing costs rise, creating a net decline in household costs.[10] An average household in the San Francisco, CA metro area (index score: 194.3) spends 46.7 percent of its budget on housing and transportation, while an average household in the Tampa, FL metro area (index score: 98.5) spends 56.1 percent of its budget on the same items.[11]

The combined cost of housing and transportation declines as an index score increases.

People in more compact, connected metro areas have more transportation options. Part of the reason transportation costs are lower in more compact areas is that these areas have a wider range of options for how to get around—nearly all of which cost less than driving or are even free.

The researchers found that people in metro areas with higher index scores walk more: For every 10 percent increase in an index score, the walk mode share (i.e., the portion of travelers who choose to walk) increases by 3.9 percent.

The researchers found that people in high-scoring metro areas take transit more: For every 10 percent increase in an index score, transit mode share (i.e., the portion of travelers who choose to use transit) increases by 11.5 percent. This means, for example, that a person in the Lincoln, NE metro area (index score: 132.0) is two and a half times more likely to choose transit for his or her transportation needs than a similar person in the Greenville, SC area (index score: 59.0).

The researchers also found that people in high-scoring metro areas own fewer cars and spend less time driving. For every 10 percent increase in an index score, vehicle ownership rates decline by 0.6 percent and drive time declines by 0.5 percent.[12]

Data about transportation options are even more compelling at the county level. See Appendix B for that information.

People in more compact, connected areas have longer, healthier and safer lives. Health data are available at the county level; for this reason, health outcomes are assessed at this scale rather than the MSA level. At the county level, an area's compactness is also related to individuals' health.[13]

First and foremost, people in compact, connected counties tend to live longer. For every doubling in an index score, life expectancy increases by about four percent.[14] For the average American with a life expectancy of 78 years, this translates into a three-year difference in life expectancy between people in a less compact versus a more compact county.

Driving rates (and their associated risk of a fatal collision), body mass index (BMI), air quality and violent crime all contribute to this difference, albeit in different ways. Counties with less sprawl have more car crashes, but fewer of those crashes are fatal. For every 10 percent increase in an index score, fatal crashes decrease by almost 15 percent. That means a person in Walker County, GA, for example, has nearly three times the chance of being in a fatal crash as compared with a similar person in Denver County, CO.

The researchers found that BMI is strongly and negatively related to index scores. As a county's index score decrease (that is, as a metro area sprawls more), the BMI of its population increases, after accounting for sociodemographic differences. For example, a 5'10" man living in Arlington County, VA is likely to weigh four pounds less than the same man living in Charles County, MD.[15] Similarly, the likelihood of obesity increases. People in less sprawling counties also have significantly lower blood pressure and rates of diabetes.

Seeking better quality of life

As this research shows, metro areas with more compact, connected neighborhoods are associated with better overall economic, health and safety outcomes—on average a better quality of life for everyone in that community. As residents and their elected leaders recognize the health, safety and economic benefits of better development strategies, many decisionmakers are re-examining their traditional zoning, economic development incentives, transportation decisions and other policies that have helped to create sprawling development patterns. Instead, they are choosing to create more connections, transportation choices and walkable neighborhoods in their communities.

The following are examples of cities in metro areas that performed well on each of the four index factors, as well as the local public policies that contributed to their success.

LAND USE MIX

Santa Barbara, CA

Santa Barbara, CA—the fourth most compact, connected metro area nationally—had the best score among small metro areas for its land use mix. Several public policies have contributed to Santa Barbara's high land use mix score.

Forward-thinking zoning codes
The City of Santa Barbara's zoning codes allow residential uses in most commercial zones.[16] This is as a result of a public planning process in the 1990s that sought to create more affordable housing. The process resulted in amendments to the General Plan and Zoning Ordinance that encouraged mixed use developments in certain areas.[17] Now, mixed use is characteristic of Santa Barbara's urban form.

Encouraging mixed use in the general plan
The City of Santa Barbara also made this strategy a development priority by including it in the city's 2011 General Plan Update. The update outlined three principles of development, one of which is to "encourage a mix of land uses to include strong retail and workplace centers, residential living in commercial centers with easy access to grocery stores and recreation, connectivity and civic engagement and public space for pedestrians."[18]

County-level support
Santa Barbara County, which encompasses the City of Santa Barbara, maintains community plans for unincorporated areas of the county. The county has established mixed use zones and encourages mixed use in many of the community plans in order to encourage a variety of uses throughout the county.[19]

ACTIVITY CENTERING

Madison, WI

The City of Madison, WI—the most compact, connected medium-sized metro area in the country—also had the highest score nationally for activity centering, meaning people and businesses are concentrated downtown and in subcenters. Several public policies have contributed to Madison's high activity centering score.

Homebuyer assistance programs
Madison has several programs that help residents purchase homes, many of which encourage residency downtown and reinvestment in existing housing stock.[20] One example is the Mansion Hill—James Madison Park Neighborhood Small Cap TIF Loan Program.[21] This program provides zero percent interest, forgivable second mortgage loans to finance a portion of the purchase price and the rehabilitation costs of a residential property located in the Mansion Hill—James Madison Park neighborhood of downtown Madison.

A comprehensive focus on downtown development
In 1994, Madison adopted a series of strategic management system goals, which outlined ways for Madison to "share in the growth that is occurring in Dane County…in such a way to balance economic, social and environmental health."[22] Directing new growth toward existing urban areas, increasing owner-occupied housing in the city and creating economic development areas were all among the strategies recommended to achieve these goals. The goals later influenced the city's 2006 comprehensive plan.[23]

Downtown Plan
In 2012, the City of Madison adopted a new Downtown Plan, which aims to strengthen Madison's downtown neighborhood. The plan includes nine strategies to guide the future growth of this core neighborhood while "sustaining the traditions, history and vitality that make Madison a model city."

STREET ACCESSIBILITY

Trenton, NJ

The street connectivity factor examines average block sizes; percent of urban blocks that are small; density of intersections; and percent of intersections that are four-way or more.

Trenton, NJ—the seventh most compact, connected metro area nationally—had the highest score for street connectivity among all small- and medium-sized metro areas. A number of public policies helped Trenton achieve its high street connectivity score.

A city designed for people
Trenton is the historic center city of the larger metro area, and a number of small town centers surround it. This interconnected network of city and town centers encouraged reinvestment within the existing city grid.

Transportation Master Plan
Trenton's Transportation Master Plan focuses on maintaining the existing transportation network, using investments to support downtown and supporting multimodal options for all the neighborhoods.[24] A walkable city, by definition, has small blocks and frequent intersections. The plan also places a high priority on key objectives to reach these goals, such as improve and maintain the city's transit infrastructure, encourage transit-supportive land uses and avoid increases in street capacity unless addressing a critical transportation problem.

Investing in transportation
Greater Trenton has a long history of investing in transportation. In 1904, the state legislature appropriated $2 million to improve roads when other states with similar programs spent less than one-third that amount. Today, the metro area predominantly uses county bonds to maintain its road network and make improvements to its rail and bus service.

DEVELOPMENT DENSITY

Los Angeles, CA

Los Angeles, CA, had the second-highest density score in the country, topped only by the New York metro area, an outlier nationally. Several public policies have contributed to Los Angeles's high development density score.

A plan for development around transit stations
In 2012, Los Angeles' Department of City Planning began an initiative to create detailed plans for development surrounding 10 light rail stations. The Los Angeles Transit Neighborhood Plans project "aims to support vibrant neighborhoods around transit stations, where people can live, work and shop or eat out, all within a safe and pleasant walk to transit stations."[25]

Allowing higher density in exchange for affordable housing
Los Angeles' Affordable Housing Incentives Ordinance gives developers the option to build up to 25 percent above the otherwise allowable residential density level if they include affordable housing in their project.[26] It also reduces parking requirements and expedites the development approval process.

A zoning code for Los Angeles today and tomorrow
In 2013, Los Angeles began a multi-year process to update its zoning code, which was first drafted in 1946. While this process is nascent, the city plans to have a new code in place by 2017. The new code will be web-based, easier to use and create a unified development code for projects downtown.

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These public policies have helped Santa Barbara, Madison, Trenton and Los Angeles achieve high index scores. These are by no means the only policies, however, that can improve how a community is built and the quality of life for the people who live there. For more ideas about local policy that can help your town grow in better ways visit www.smartgrowthamerica.org.

Conclusion

How we choose to build and develop affects everyone's day-to-day lives. How much we pay for housing and transportation, how long we spend commuting to and from work, economic opportunities in our communities and even personal health are all connected to how our neighborhoods and surrounding areas are built.

This study shows that life expectancy, economic mobility, transportation choices and personal health and safety all improve in less sprawling areas. As individuals and their elected leaders recognize these benefits, many decisionmakers choose to encourage this type of growth through changes to public regulations and incentives.

This report represents a rigorous statistical analysis of how communities have developed in the United States. It is not, however, a complete picture of every community across the country.

The analysis included in this research is an important part of understanding how communities have developed in the United States. We recognize that qualitative information—such as the design of the streets and buildings, the quality of park space and the types of businesses nearby, among many other factors—also has a significant impact on the quality of life within a neighborhood and a region.

Local elected officials, state leaders and federal lawmakers can all help communities as they seek to grow in ways that support these improved outcomes. Smart Growth America helps communities understand the long-term impact of their development decisions. We work with public and private sectors so local communities can achieve multiple outcomes such as increased economic mobility and improved personal health. By providing this type of research, alongside best practices used in many of these communities, we hope more places will closely consider development decisions as a key to long-term success.

This report is an opportunity to reflect on many communities' successes, and to highlight the places where we, as a country, can do better. Visit www.smartgrowthamerica.org to learn more about our work and how your community can grow in more compact, connected ways.

Appendix A: Full 2014 metro area Sprawl Index rankings

Table 1A below contains the Sprawl Index scores for all 221 metro areas included in the 2014 analysis, as well as the score for each metro area in the four sprawl factors, based on 2010 data. All regions are census-defined Metropolitan Statistical Areas unless marked with an asterisk (*). Those places with an asterisk are Metropolitan Divisions, which comprise MSAs. Composite scores are controlled for population.

TABLE A1

Metropolitan Statistical Areas Sprawl Index Scores, 2014

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
1	New York-White Plains-Wayne, NY-NJ*	384.29	159.34	213.49	193.80	**203.36**
2	San Francisco-San Mateo-Redwood City, CA*	185.97	167.17	230.92	162.83	**194.28**
3	Atlantic City-Hammonton, NJ	96.33	100.10	154.52	130.71	**150.36**
4	Santa Barbara-Santa Maria-Goleta, CA	112.28	148.85	109.48	122.05	**146.59**
5	Champaign-Urbana, IL	100.00	123.27	153.64	82.81	**145.16**
6	Santa Cruz-Watsonville, CA	98.88	146.15	107.90	112.18	**145.02**
7	Trenton-Ewing, NJ	115.88	128.00	97.36	139.06	**144.71**
8	Miami-Miami Beach-Kendall, FL*	160.18	136.41	117.91	166.90	**144.12**
9	Springfield, IL	90.39	100.51	160.03	96.74	**142.24**
10	Santa Ana-Anaheim-Irvine, CA*	161.91	155.02	79.64	181.81	**139.86**
11	Reading, PA	102.22	121.83	129.72	113.76	**137.90**
12	Detroit-Livonia-Dearborn, MI*	125.20	124.65	107.48	183.98	**137.17**
13	Madison, WI	101.00	115.83	168.11	94.85	**136.69**
14	Burlington-South Burlington, VT	88.32	102.21	168.79	70.68	**135.06**
15	Milwaukee-Waukesha-West Allis, WI	113.31	126.73	153.40	130.35	**134.18**
16	Boulder, CO	106.89	115.32	100.09	118.95	**133.68**
17	Appleton, WI	90.65	99.81	156.72	79.92	**132.69**
18	Lincoln, NE	111.55	132.99	96.74	96.78	**131.95**
19	Laredo, TX	104.20	117.12	99.89	106.87	**131.25**
20	Erie, PA	97.73	130.61	113.69	88.92	**130.39**
21	Los Angeles-Long Beach-Glendale, CA	187.39	160.18	115.66	154.40	**130.33**
22	Spokane, WA	98.98	115.82	108.57	128.26	**129.40**
23	Medford, OR	89.67	115.31	128.06	80.42	**128.86**
24	San Jose-Sunnyvale-Santa Clara, CA	149.50	148.76	86.80	131.45	**128.76**
25	Oakland-Fremont-Hayward, CA*	136.28	145.75	88.11	159.44	**127.24**
26	Chicago-Joliet-Naperville, IL*	145.50	140.09	143.24	160.21	**125.90**
27	Eugene-Springfield, OR	95.35	125.70	116.84	91.29	**125.63**
28	Allentown-Bethlehem-Easton, PA-NJ	98.76	128.59	101.10	135.97	**124.40**
29	Vallejo-Fairfield, CA	105.38	132.03	79.32	115.90	**124.16**
30	Salem, OR	93.11	123.48	113.50	98.10	**123.35**
31	Yakima, WA	90.95	117.91	133.08	65.81	**123.19**
32	Ann Arbor, MI	103.27	105.04	123.11	89.95	**122.76**
33	Philadelphia, PA*	141.01	142.25	115.95	140.06	**122.42**
34	Tuscaloosa, AL	85.85	68.60	154.72	92.03	**122.18**
35	Fargo, ND-MN	99.18	118.65	106.96	73.56	**121.82**
36	South Bend-Mishawaka, IN-MI	90.94	94.08	111.91	118.68	**121.71**
37	Bridgeport-Stamford-Norwalk, CT	110.63	132.86	118.02	100.81	**121.64**
38	Fort Lauderdale-Pompano Beach-Deerfield Beach, FL*	140.93	136.53	61.79	153.66	**121.41**
39	Las Vegas-Paradise, NV	142.12	105.02	136.42	114.29	**121.20**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
40	Reno-Sparks, NV	100.78	93.69	137.29	94.06	**120.85**
41	Stockton, CA	106.54	135.75	82.11	121.04	**120.28**
42	New Orleans-Metairie-Kenner, LA	104.84	117.83	96.09	149.94	**119.74**
43	Charlottesville, VA	91.16	86.08	141.81	71.77	**119.08**
44	San Luis Obispo-Paso Robles, CA	89.90	119.8	103.87	88.53	**118.90**
45	Huntington-Ashland, WV-KY-OH	84.25	67.73	142.77	108.91	**118.43**
46	Bellingham, WA	85.29	92.75	113.43	96.89	**118.01**
47	Corpus Christi, TX	98.68	118.31	90.15	110.41	**117.29**
48	Waco, TX	87.96	96.10	100.62	107.83	**117.11**
49	Nassau-Suffolk, NY*	123.33	144.75	81.01	155.85	**117.04**
50	Lexington-Fayette, KY	99.56	110.42	115.34	95.11	**116.76**
51	Saginaw-Saginaw Township North, MI	86.77	93.77	110.97	93.62	**116.62**
52	New Haven-Milford, CT	106.86	127.52	113.51	97.82	**116.29**
53	Seattle-Bellevue-Everett, WA*	121.27	123.99	121.68	131.86	**116.11**
54	Scranton--Wilkes-Barre, PA	91.28	116.46	95.07	123.01	**115.84**
55	Savannah, GA	90.08	84.94	115.36	115.03	**115.81**
56	Charleston, WV	83.81	67.01	136.8	112.05	**115.68**
57	Baltimore-Towson,*	115.97	123.21	123.12	136.35	**115.62**
58	Salinas, CA	101.65	116.00	102.94	90.70	**115.19**
59	Fort Collins-Loveland, CO	94.53	106.30	96.44	100.59	**115.15**
60	Rockford, IL	94.78	110.04	91.83	107.05	**114.98**
61	Bethesda-Rockville-Frederick, MD*	115.08	123.84	98.97	118.94	**114.66**
62	Olympia, WA	89.23	80.87	121.00	98.73	**114.63**
63	Santa Rosa-Petaluma, CA	93.70	132.31	91.91	96.82	**113.92**
64	Oxnard-Thousand Oaks-Ventura, CA	107.91	133.35	78.01	118.31	**113.87**
65	Lubbock, TX	97.23	116.70	87.56	90.44	**113.41**
66	Modesto, CA	109.91	140.69	62.32	102.89	**113.28**
67	Wilmington, DE-MD-NJ*	102.42	109.29	96.53	120.29	**112.94**
68	Lancaster, PA	95.61	110.05	124.31	84.74	**112.64**
69	Manchester-Nashua, NH	95.10	104.38	114.15	89.28	**112.19**
70	Cedar Rapids, IA	92.94	105.64	104.67	81.25	**111.81**
71	College Station-Bryan, TX	102.49	94.65	91.03	91.47	**111.72**
72	Lansing-East Lansing, MI	101.03	92.21	141.56	72.80	**111.61**
73	Beaumont-Port Arthur, TX	85.37	88.45	112.62	113.76	**111.54**
74	Lafayette, LA	90.03	87.35	115.90	92.72	**111.44**
75	Harrisburg-Carlisle, PA	93.54	102.14	99.29	119.17	**111.4**
76	Gainesville, FL	94.58	87.63	102.79	99.45	**111.36**
77	Tyler, TX	85.76	72.48	122.62	93.19	**110.66**
78	Peoria, IL	88.93	100.39	109.76	97.72	**110.49**
79	Chico, CA	91.18	114.46	88.79	79.93	**109.94**
80	Portland-Vancouver-Hillsboro, OR-WA	111.14	136.12	100.81	124.98	**109.85**
81	Newark-Union, NJ-PA*	126.86	139.67	90.43	113.76	**109.62**
82	Las Cruces, NM	89.33	84.27	108.16	89.06	**109.17**
83	Bremerton-Silverdale, WA	90.48	87.55	112.87	86.20	**108.86**
84	Norwich-New London, CT	87.22	84.71	137.44	71.04	**108.85**
85	Provo-Orem, UT	104.53	123.55	77.37	100.08	**108.45**
86	Omaha-Council Bluffs, NE-IA	102.64	120.53	99.67	103.54	**108.42**
87	Columbus, GA-AL	94.45	84.78	125.19	77.79	**108.38**
88	Portland-South Portland-Biddeford, ME	86.06	79.09	157.47	80.24	**107.72**
89	Amarillo, TX	96.16	109.27	76.98	91.56	**107.49**
90	Tacoma, WA*	103.62	105.56	92.25	119.05	**107.48**
91	Washington-Arlington-Alexandria, DC-VA-MD-WV*	122.35	117.61	133.16	125.91	**107.21**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
92	Denver-Aurora-Broomfield, CO	118.31	119.44	109.11	125.16	**107.10**
93	Canton-Massillon, OH	90.54	106.64	76.45	117.92	**106.99**
94	Salt Lake City, UT	117.77	125.49	93.32	97.63	**106.96**
95	Lafayette, IN	95.46	90.63	94.82	83.10	**106.55**
96	Flint, MI	89.57	90.58	114.82	97.49	**106.48**
97	Buffalo-Niagara Falls, NY	107.94	127.67	102.46	95.10	**106.36**
98	Colorado Springs, CO	102.94	108.37	75.94	121.76	**106.33**
99	Merced, CA	93.90	114.76	96.48	66.25	**105.86**
100	El Paso, TX	114.90	99.42	73.41	128.66	**105.64**
101	Davenport-Moline-Rock Island, IA-IL	91.78	121.21	70.03	102.95	**105.59**
102	North Port-Bradenton-Sarasota, FL	97.45	101.45	84.95	126.69	**105.49**
103	San Diego-Carlsbad-San Marcos, CA	125.08	130.37	100.90	119.95	**105.18**
104	York-Hanover, PA	90.92	95.83	113.20	90.32	**105.12**
105	Kennewick-Pasco-Richland, WA	92.84	108.63	81.96	85.86	**105.03**
106	Des Moines-West Des Moines, IA	97.68	120.63	99.46	82.83	**104.90**
107	Virginia Beach-Norfolk-Newport News, VA-NC	106.41	105.24	102.38	131.60	**104.45**
108	Providence-New Bedford-Fall River, RI-MA	105.40	83.28	112.77	141.95	**104.34**
109	Greeley, CO	87.33	99.05	94.05	85.82	**103.61**
110	Camden, NJ*	105.39	125.72	78.53	120.07	**103.22**
111	Akron, OH	94.55	113.13	90.69	106.81	**103.15**
112	Duluth, MN-WI	85.24	89.56	117.03	77.22	**103.14**
113	Lake County-Kenosha County, IL-WI*	101.65	112.39	67.78	132.08	**103.10**
114	Austin-Round Rock-San Marcos, TX	100.42	99.66	138.78	102.88	**102.44**
115	Sioux Falls, SD	97.68	104.85	95.96	60.16	**101.75**
116	Dayton, OH	93.65	114.40	95.13	105.55	**101.48**
117	Toledo, OH	95.30	120.34	85.46	95.85	**100.90**
118	Houma-Bayou Cane-Thibodaux, LA	83.73	75.47	106.77	86.11	**100.13**
119	Ogden-Clearfield, UT	100.96	120.39	62.22	103.52	**99.58**
120	Sacramento-Arden-Arcade-Roseville, CA	111.65	119.11	104.19	108.92	**99.27**
121	Cape Coral-Fort Myers, FL	91.87	81.41	91.52	126.34	**99.22**
122	Tallahassee, FL	91.64	68.25	130.77	79.80	**98.95**
123	Charleston-North Charleston-Summerville, SC	95.29	89.19	108.94	99.03	**98.53**
124	Tampa-St. Petersburg-Clearwater, FL	105.18	105.35	93.00	150.09	**98.49**
125	West Palm Beach-Boca Raton-Boynton Beach, FL*	110.73	121.02	69.66	118.46	**98.18**
126	Albuquerque, NM	103.60	102.57	99.36	97.51	**98.07**
127	Mobile, AL	92.43	88.23	78.79	112.30	**97.48**
128	Edison-New Brunswick, NJ*	109.41	125.05	69.02	137.91	**96.77**
129	Gary, IN*	94.53	107.73	82.31	106.33	**96.70**
130	Syracuse, NY	94.75	100.93	122.57	69.91	**96.65**
131	Binghamton, NY	89.70	88.92	102.07	69.84	**95.97**
132	Pittsburgh, PA	96.16	115.14	107.78	119.33	**95.45**
133	Albany-Schenectady-Troy, NY	95.40	105.96	108.19	86.04	**95.12**
134	Topeka, KS	88.98	83.12	102.18	71.38	**94.82**
135	Hagerstown-Martinsburg,*-WV	84.10	74.10	112.54	78.51	**94.13**
136	Roanoke, VA	90.65	85.88	83.67	93.21	**93.77**
137	Hartford-West Hartford-East Hartford, CT	100.12	113.10	119.54	72.59	**93.50**
138	Columbus, OH	101.58	112.24	95.56	112.19	**93.00**
139	Fresno, CA	101.75	126.18	81.45	82.42	**92.24**
140	Wichita, KS	95.63	107.27	88.57	83.65	**91.74**
141	Evansville, IN-KY	91.57	92.59	86.07	84.34	**91.67**
142	Visalia-Porterville, CA	91.94	106.37	79.64	83.98	**91.55**
143	Montgomery, AL	90.01	85.97	98.71	80.50	**91.20**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
144	Boise City-Nampa, ID	95.80	110.45	75.15	91.88	**91.06**
145	Deltona-Daytona Beach-Ormond Beach, FL	91.35	88.02	66.48	116.35	**89.68**
146	Myrtle Beach-North Myrtle Beach-Conway, SC	83.43	54.95	104.88	95.40	**88.70**
147	Minneapolis-St. Paul-Bloomington, MN-WI	105.92	110.34	111.41	108.60	**88.69**
148	Lakeland-Winter Haven, FL	87.51	54.24	95.32	128.15	**87.64**
149	Gulfport-Biloxi, MS	86.03	69.80	80.53	97.52	**87.61**
150	Fort Wayne, IN	92.42	93.70	89.90	73.85	**86.67**
151	Tulsa, OK	90.54	92.40	93.54	103.35	**86.65**
152	Dallas-Plano-Irving, TX*	111.46	105.90	94.21	129.74	**86.15**
153	Cleveland-Elyria-Mentor, OH	105.11	123.72	95.54	84.96	**85.62**
154	Utica-Rome, NY	90.87	83.53	98.35	61.91	**84.71**
155	Raleigh-Cary, NC	96.99	87.30	109.43	88.16	**84.25**
156	Orlando-Kissimmee-Sanford, FL	102.40	85.79	89.29	129.14	**83.97**
157	Springfield, MO	89.10	89.25	75.99	91.87	**83.96**
158	Indianapolis-Carmel, IN	98.11	99.65	98.42	102.31	**83.89**
159	McAllen-Edinburg-Mission, TX	94.43	76.78	90.99	104.60	**83.89**
160	Killeen-Temple-Fort Hood, TX	89.16	79.86	78.17	94.80	**83.12**
161	Louisville/Jefferson County, KY-IN	98.44	89.48	93.12	102.87	**82.92**
162	Oklahoma City, OK	94.64	96.26	89.86	100.38	**82.07**
163	St. Louis, MO-IL	97.68	108.29	93.86	113.80	**82.06**
164	Bakersfield-Delano, CA	101.29	114.13	76.82	73.14	**81.78**
165	Jacksonville, FL	96.81	82.50	90.17	111.76	**80.85**
166	Cincinnati-Middletown, OH-KY-IN	98.75	107.80	98.95	93.67	**80.75**
167	Port St. Lucie, FL	92.74	77.05	62.73	106.43	**80.75**
168	Macon, GA	84.72	71.90	86.32	74.47	**79.92**
169	Poughkeepsie-Newburgh-Middletown, NY	89.38	95.38	97.49	70.30	**79.51**
170	Grand Rapids-Wyoming, MI	91.39	91.78	99.15	74.75	**79.18**
171	Tucson, AZ	100.79	90.96	78.71	94.72	**78.92**
172	Fort Worth-Arlington, TX*	103.71	100.89	72.55	117.21	**78.56**
173	Phoenix-Mesa-Glendale, AZ	111.60	102.36	96.37	111.33	**78.32**
174	Holland-Grand Haven, MI	86.45	81.52	78.64	71.71	**78.17**
175	Youngstown-Warren-Boardman, OH-PA	87.36	100.76	74.10	81.52	**78.08**
176	Huntsville, AL	86.18	58.29	89.43	99.31	**78.02**
177	Palm Bay-Melbourne-Titusville, FL	96.94	79.64	60.02	105.42	**77.91**
178	Kansas City, MO-KS	96.84	109.49	80.45	103.52	**77.60**
179	San Antonio-New Braunfels, TX	100.67	93.56	95.15	102.43	**77.37**
180	Wilmington, NC	85.89	73.12	83.92	84.13	**77.27**
181	Pensacola-Ferry Pass-Brent, FL	88.54	81.12	75.12	88.65	**76.84**
182	Houston-Sugar Land-Baytown, TX	108.3	102.66	92.56	129.43	**76.74**
183	Asheville, NC	80.71	64.12	97.61	88.53	**76.52**
184	Richmond, VA	96.36	78.08	101.95	92.83	**76.41**
185	Little Rock-North Little Rock-Conway, AR	88.00	75.36	93.55	90.35	**76.08**
186	Naples-Marco Island, FL	91.57	81.95	55.19	90.69	**75.23**
187	Brownsville-Harlingen, TX	90.92	77.74	51.43	105.96	**74.69**
188	Ocala, FL	80.80	41.30	105.49	91.78	**74.67**
189	Rochester, NY	96.12	103.86	96.77	62.00	**74.50**
190	Spartanburg, SC	81.26	68.26	91.26	72.48	**74.00**
191	Durham-Chapel Hill, NC	91.59	74.84	80.27	84.98	**73.84**
192	Birmingham-Hoover, AL	86.67	67.88	99.52	105.21	**73.55**
193	Longview, TX	81.66	71.62	81.06	68.46	**73.06**
194	Shreveport-Bossier City, LA	87.79	76.94	72.39	84.53	**72.63**
195	Jackson, MS	87.35	64.41	105.46	73.8	**72.30**
196	Memphis, TN-MS-AR	96.6	77.76	94.23	90.62	**70.77**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
197	Charlotte-Gastonia-Rock Hill, NC-SC	94.55	84.71	103.05	86.93	**70.45**
198	Kalamazoo-Portage, MI	85.55	75.00	85.58	64.97	**70.32**
199	Knoxville, TN	88.10	60.62	100.77	82.53	**68.22**
200	Columbia, SC	89.63	69.14	108.38	66.63	**67.45**
201	Warren-Troy-Farmington Hills, MI*	97.88	110.33	70.54	96.17	**67.03**
202	Fayetteville-Springdale-Rogers, AR-MO	84.55	67.95	80.67	81.81	**66.26**
203	Fayetteville, NC	91.13	71.69	72.57	71.77	**66.02**
204	Green Bay, WI	89.90	90.49	66.77	53.34	**65.35**
205	Fort Smith, AR-OK	80.74	56.78	75.30	86.02	**64.84**
206	Lynchburg, VA	81.51	57.07	76.38	77.42	**63.97**
207	Chattanooga, TN-GA	86.14	61.15	94.27	72.90	**63.63**
208	Greensboro-High Point, NC	88.22	80.57	84.94	70.70	**63.50**
209	Winston-Salem, NC	86.43	68.62	87.42	68.47	**63.44**
210	Florence, SC	81.22	51.13	87.85	61.44	**61.06**
211	Lake Havasu City-Kingman, AZ	85.24	55.15	73.04	65.97	**60.13**
212	Kingsport-Bristol-Bristol, TN-VA	78.73	40.53	89.67	82.87	**60.00**
213	Augusta-Richmond County, GA-SC	85.25	60.69	88.47	73.85	**59.18**
214	Greenville-Mauldin-Easley, SC	86.69	72.89	81.15	71.40	**58.98**
215	Riverside-San Bernardino-Ontario, CA	103.72	111.18	77.03	80.33	**56.25**
216	Baton Rouge, LA	91.27	72.03	69.74	80.40	**55.60**
217	Nashville-Davidson-Murfreesboro-Franklin, TN	91.54	63.92	96.17	77.00	**51.74**
218	Prescott, AZ	82.33	53.19	58.15	69.96	**48.96**
219	Clarksville, TN-KY	84.48	39.67	74.47	60.83	**41.49**
220	Atlanta-Sandy Springs-Marietta, GA	97.80	85.47	89.89	75.92	**40.99**
221	Hickory-Lenoir-Morganton, NC	78.64	40.46	67.00	56.95	**24.86**

Appendix B: County-level information

County-level findings

Table B1 below shows Sprawl Index scores for all metropolitan counties. As discussed on page 10 of this report, this research shows that people in high-scoring metro areas have more transportation options than people in lower-scoring metro areas. In addition to conducting this analysis at the metro-area level, the researchers also examined this question at the county level, where the findings and their implications for everyday life are even more compelling.

High-scoring counties have lower rates of car ownership. For every 10 percent increase in an index score, car ownership decreases by 3.8 percent. High-scoring counties have higher rates of walking. For every 10 percent increase in an index score, the proportion of people who choose to walk as a mode of transportation increases by 6.6 percent. More people in high-scoring counties ride public transit. For every 10 percent increase in an index score, the proportion of transit users in the county increases by 24 percent. People in high-scoring counties spend less time driving. For every 10 percent increase in an index score at the county level, people spend on average 3.5 percent less time driving.

Data were not available for a limited number of counties. Factors are provided where available.

TABLE B1

County-level Sprawl Index Scores, 2014

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Blount County	AL	90.36	37.85	74.28	60.14	56.60
Calhoun County	AL	91.58	86.70	117.70	104.38	100.11
Chilton County	AL	89.98	52.55	81.61	62.37	64.14
Colbert County	AL	95.11	104.27	76.99	124.68	100.33
Elmore County	AL	91.59	60.63	86.59	85.71	76.15
Etowah County	AL	93.78	91.28	116.86	93.10	98.43
Houston County	AL	94.83	102.37	98.64	88.97	95.20
Jefferson County	AL	99.01	110.72	122.44	126.81	118.64
Lauderdale County	AL	94.46	84.43	105.63	88.50	91.48
Lawrence County	AL	89.38	51.74	86.98	66.67	66.75
Lee County	AL	96.48	87.90	104.17	84.55	91.50
Limestone County	AL	91.62	58.45	89.78	82.64	75.51
Madison County	AL	97.61	98.59	103.31	114.82	104.53
Mobile County	AL	99.06	108.17	93.94	113.78	104.72
Montgomery County	AL	102.14	120.67	118.34	105.98	114.89
Morgan County	AL	96.47	95.35	116.51	101.04	102.96
Russell County	AL	94.83	90.91	78.65	93.54	86.71
St. Clair County	AL	91.04	55.96	81.95	84.47	72.65
Shelby County	AL	94.43	91.33	88.20	92.91	89.53
Tuscaloosa County	AL	96.71	101.44	136.82	110.56	114.39
Walker County	AL	90.60	65.74	86.66	92.50	79.62
Coconino County	AZ	95.58	105.89	159.70	80.11	113.04
Maricopa County	AZ	110.50	118.07	118.48	118.04	120.56
Mohave County	AZ	96.20	90.76	97.35	95.37	93.58
Pima County	AZ	102.91	109.55	129.25	101.54	113.66
Pinal County	AZ	96.42	74.63	93.08	100.74	88.90
Yavapai County	AZ	96.00	89.71	88.28	86.40	87.49
Yuma County	AZ	99.68	105.56	142.91	107.38	117.54
Benton County	AR	95.22	95.05	104.81	89.33	95.07
Craighead County	AR	95.83	97.46	113.68	76.68	94.83
Crawford County	AR	92.25	90.19	82.88	80.03	82.74
Crittenden County	AR	96.93	115.43	79.24	89.18	93.93
Faulkner County	AR	95.11	92.10	83.67	74.78	82.83
Garland County	AR	92.69	89.51	116.53	103.18	100.60
Grant County	AR	89.11	79.34	77.98	60.72	70.67
Jefferson County	AR	94.66	97.82	96.55	113.66	100.85
Lincoln County	AR	88.97	51.59	72.47	62.71	60.74
Lonoke County	AR	91.76	79.64	91.84	75.65	80.69
Madison County	AR	88.44	61.16	73.67	72.44	67.05
Miller County	AR	97.29	106.83	82.03	115.58	100.54
Poinsett County	AR	89.31	105.78	77.99	71.03	82.34
Pulaski County	AR	100.95	111.48	116.72	127.01	117.74

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Saline County	AR	92.78	80.99	106.43	75.80	86.10
Sebastian County	AR	97.44	103.71	93.42	108.24	100.89
Washington County	AR	98.58	104.46	109.89	91.83	101.50
Alameda County	CA	137.65	143.40	115.28	151.09	146.57
Butte County	CA	99.20	121.87	106.28	91.90	106.08
Contra Costa County	CA	112.02	128.70	100.81	121.28	119.84
El Dorado County	CA	96.18	88.17	84.58	77.80	83.17
Fresno County	CA	103.35	127.85	104.03	94.25	109.31
Imperial County	CA	99.38	132.78	99.61	82.71	104.58
Kern County	CA	102.91	121.33	99.62	92.21	105.08
Kings County	CA	100.77	115.21	108.98	90.98	105.04
Los Angeles County	CA	152.55	145.20	121.62	141.02	150.67
Madera County	CA	96.68	110.34	104.67	69.69	94.12
Marin County	CA	109.25	141.52	96.85	111.15	118.57
Merced County	CA	100.54	122.04	112.80	85.94	106.74
Monterey County	CA	109.05	122.36	110.26	101.72	113.71
Napa County	CA	102.69	135.45	131.01	110.28	125.09
Orange County	CA	134.15	142.55	95.13	144.21	136.66
Placer County	CA	101.97	116.93	90.93	98.05	102.49
Riverside County	CA	105.36	117.55	108.49	98.38	109.41
Sacramento County	CA	115.28	128.54	135.70	129.68	134.50
San Benito County	CA	103.10	115.79	78.56	105.10	100.81
San Bernardino County	CA	106.82	122.13	95.87	92.42	105.45
San Diego County	CA	118.35	129.64	121.82	116.14	127.15
San Francisco County	CA	250.84	153.79	258.47	215.72	251.27
San Joaquin County	CA	106.50	132.92	104.79	118.62	119.85
San Luis Obispo County	CA	97.52	124.79	111.43	102.74	111.53
San Mateo County	CA	130.72	144.53	93.82	131.35	131.72
Santa Barbara County	CA	116.62	139.70	112.02	116.13	126.69
Santa Clara County	CA	131.02	139.68	107.58	132.85	135.11
Santa Cruz County	CA	104.20	138.71	114.16	107.34	120.35
Shasta County	CA	96.00	110.79	114.25	88.66	103.07
Solano County	CA	106.86	130.60	103.94	114.95	117.80
Sonoma County	CA	100.37	131.12	101.87	97.67	109.81
Stanislaus County	CA	107.86	135.71	94.54	107.84	114.52
Sutter County	CA	98.92	119.22	126.45	82.89	108.68
Tulare County	CA	100.44	117.82	102.53	93.41	104.49
Ventura County	CA	110.13	131.48	99.80	114.98	117.82
Yolo County	CA	107.3	126.92	98.50	110.10	113.53
Yuba County	CA	97.57	95.43	82.17	89.37	88.80
Adams County	CO	106.63	122.25	82.26	122.37	110.59
Arapahoe County	CO	114.44	124.30	102.43	134.20	123.81
Boulder County	CO	107.71	122.00	111.33	115.52	117.87
Broomfield County	CO	105.87	113.80	83.11	129.14	110.09
Clear Creek County	CO	90.58	67.38	–	117.81	–

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Denver County	CO	129.34	137.67	174.54	181.54	170.48
Douglas County	CO	102.77	97.61	92.17	97.77	96.94
Elbert County	CO	88.27	44.14	72.69	50.26	54.30
El Paso County	CO	104.62	119.18	95.89	123.96	113.79
Jefferson County	CO	106.94	125.25	90.89	112.99	111.40
Larimer County	CO	100.68	117.76	111.95	103.05	110.57
Mesa County	CO	101.69	113.73	124.35	107.33	114.88
Pueblo County	CO	100.43	112.15	112.96	121.67	114.91
Teller County	CO	94.68	82.25	81.88	108.04	89.53
Weld County	CO	97.29	114.35	111.18	95.06	105.65
Fairfield County	CT	110.88	131.47	125.41	101.99	122.04
Hartford County	CT	107.85	126.56	138.02	92.46	120.50
Middlesex County	CT	95.74	116.02	98.90	81.98	97.68
New Haven County	CT	107.16	128.91	137.15	102.88	124.04
New London County	CT	96.76	106.51	131.52	85.24	106.33
Tolland County	CT	96.05	89.61	97.77	63.29	83.17
Kent County	DE	94.72	97.37	102.26	89.82	95.00
New Castle County	DE	108.44	126.15	111.75	121.39	121.40
District of Columbia	DC	193.52	138.05	219.97	185.15	206.37
Alachua County	FL	100.66	110.17	115.43	107.74	110.74
Baker County	FL	89.21	63.21	89.68	61.02	69.39
Bay County	FL	99.21	105.55	93.70	115.16	104.31
Brevard County	FL	102.39	103.2	86.39	110.4	100.75
Broward County	FL	120.61	133.24	95.43	148.86	131.01
Charlotte County	FL	94.98	97.96	103.74	114.83	103.64
Clay County	FL	97.16	92.55	98.14	95.40	94.71
Collier County	FL	99.42	104.70	83.67	105.06	97.74
Duval County	FL	106.31	113.10	118.71	125.06	119.96
Escambia County	FL	99.94	109.08	100.14	116.67	108.16
Flagler County	FL	96.82	82.32	79.96	99.05	86.78
Gadsden County	FL	90.27	57.12	83.72	95.13	76.69
Hernando County	FL	96.20	80.29	108.25	102.08	95.84
Hillsborough County	FL	106.16	115.63	127.60	128.18	124.51
Indian River County	FL	97.10	101.81	112.72	132.01	113.79
Lake County	FL	95.53	87.32	121.33	116.84	106.64
Lee County	FL	98.87	104.60	119.36	121.83	114.11
Leon County	FL	102.05	106.83	149.96	99.11	118.31
Manatee County	FL	102.17	114.33	112.33	129.01	118.27
Marion County	FL	93.51	83.3	140.38	98.85	105.07
Martin County	FL	98.62	110.16	106.69	113.84	109.26
Miami-Dade County	FL	137.38	132.85	131.33	156.48	149.93
Nassau County	FL	93.25	78.04	98.01	97.21	89.42
Okaloosa County	FL	100.20	113.18	109.67	105.87	109.14
Orange County	FL	108.01	110.76	118.48	124.47	119.5
Osceola County	FL	98.45	86.64	87.23	114.77	95.92

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Palm Beach County	FL	107.77	125.08	107.06	118.32	118.40
Pasco County	FL	99.18	100.48	84.02	117.84	100.48
Pinellas County	FL	114.66	132.11	93.74	163.76	132.94
Polk County	FL	96.76	90.29	115.86	120.94	107.53
St. Johns County	FL	97.43	86.85	85.06	106.86	92.48
St. Lucie County	FL	100.74	97.46	102.45	120.07	106.54
Santa Rosa County	FL	92.28	93.99	81.78	80.59	83.78
Sarasota County	FL	101.61	116.04	113.62	124.42	117.59
Seminole County	FL	105.12	116.39	81.81	121.13	107.72
Volusia County	FL	99.33	107.91	100.70	115.72	107.47
Wakulla County	FL	89.66	45.54	78.68	79.41	66.29
Barrow County	GA	92.36	70.78	85.30	72.18	74.92
Bartow County	GA	90.76	77.69	86.60	80.47	79.63
Bibb County	GA	98.07	113.15	103.59	112.70	108.69
Bryan County	GA	89.84	61.04	81.95	71.54	69.79
Butts County	GA	91.10	82.26	87.09	67.51	77.24
Carroll County	GA	92.24	80.47	108.64	59.41	81.28
Catoosa County	GA	93.34	79.45	88.25	78.55	80.91
Chatham County	GA	99.64	117.03	126.17	126.88	122.03
Chattahoochee County	GA	97.14	100.48	70.87	98.62	89.61
Cherokee County	GA	97.06	94.58	80.91	83.44	86.10
Clarke County	GA	100.91	115.76	98.31	92.89	102.49
Clayton County	GA	106.35	106.15	84.62	98.10	98.49
Cobb County	GA	106.99	116.91	91.39	107.76	107.28
Columbia County	GA	96.83	95.43	80.24	72.04	82.48
Coweta County	GA	92.69	85.33	81.74	72.61	78.64
Dade County	GA	89.57	56.36	80.64	69.91	67.30
Dawson County	GA	89.94	63.53	86.08	69.43	71.24
DeKalb County	GA	111.99	120.73	96.18	100.65	109.34
Dougherty County	GA	97.65	109.27	95.60	107.90	103.30
Douglas County	GA	95.83	89.53	103.33	70.96	87.25
Effingham County	GA	91.03	60.74	84.13	75.90	72.13
Fayette County	GA	93.23	94.36	100.88	78.34	89.51
Floyd County	GA	92.92	90.67	103.37	89.35	92.52
Forsyth County	GA	96.31	91.93	97.11	68.48	85.41
Fulton County	GA	107.63	122.60	146.48	108.57	126.94
Glynn County	GA	92.87	102.00	95.73	111.38	100.62
Gwinnett County	GA	106.36	111.94	88.70	89.68	98.95
Hall County	GA	94.45	89.10	139.3	87.59	103.3
Haralson County	GA	90.08	73.41	78.3	82.15	75.97
Harris County	GA	89.51	34.28	71.89	62.25	55.12
Henry County	GA	95.26	81.75	86.07	74.28	80.21
Houston County	GA	99.67	97.7	89.66	91.56	93.23
Jones County	GA	90.26	80.32	81.59	59.82	72.19
Lamar County	GA	90.01	68.75	79.24	69.42	70.75

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Lee County	GA	90.74	63.81	80.13	67.38	69.06
Liberty County	GA	96.95	85.66	100.72	88.85	91.21
Lowndes County	GA	95.78	102.08	106.87	91.72	98.88
McDuffie County	GA	89.94	68.85	78.49	72.18	71.40
Madison County	GA	89.81	53.09	73.41	61.79	61.49
Meriwether County	GA	89.17	52.92	79.40	65.55	64.31
Monroe County	GA	89.72	49.47	77.43	66.44	63.06
Murray County	GA	90.63	57.18	84.75	68.86	68.85
Muscogee County	GA	103.92	119.01	133.98	108.41	120.64
Newton County	GA	94.48	61.24	123.65	77.77	86.46
Oconee County	GA	90.84	85.05	74.86	69.72	74.87
Oglethorpe County	GA	88.61	22.76	70.81	45.28	45.49
Paulding County	GA	93.49	68.19	83.49	74.96	74.76
Pickens County	GA	90.19	68.61	81.67	61.08	68.89
Richmond County	GA	99.09	111.4	124.13	104.91	112.49
Rockdale County	GA	95.92	93.91	82.64	86.78	87.13
Spalding County	GA	93.04	83.74	102.12	85.73	88.83
Terrell County	GA	88.84	78.95	78.22	74.53	74.90
Walker County	GA	91.84	77.95	88.88	75.62	79.24
Walton County	GA	91.96	71.8	87.33	54.96	70.32
Whitfield County	GA	94.64	87.29	115.72	88.51	95.63
Worth County	GA	88.76	52.25	84.69	68.22	66.48
Ada County	ID	103.58	124.60	102.02	108.68	112.28
Bannock County	ID	101.28	123.06	128.18	124.04	124.18
Bonneville County	ID	98.84	118.52	99.62	109.57	108.39
Canyon County	ID	98.64	112.28	90.60	106.10	102.41
Gem County	ID	92.23	83.41	76.44	113.29	89.06
Jefferson County	ID	89.10	69.82	83.29	88.98	78.26
Kootenai County	ID	97.55	113.96	122.32	101.44	111.14
Nez Perce County	ID	99.34	116.89	92.82	113.12	107.00
Alexander County	IL	89.05	–	70.12	121.33	–
Bond County	IL	91.76	87.79	129.58	109.49	105.89
Boone County	IL	96.36	95.37	81.63	85.74	87.08
Champaign County	IL	109.28	127.58	141.54	107.66	127.19
Clinton County	IL	89.17	87.01	82.04	94.50	85.06
Cook County	IL	151.40	141.34	155.66	170.12	169.04
DeKalb County	IL	99.94	111.36	84.27	93.39	96.51
DuPage County	IL	111.41	135.96	88.41	126.48	119.67
Ford County	IL	90.00	136.48	78.31	83.16	96.19
Grundy County	IL	92.99	101.16	86.63	110.27	97.17
Henry County	IL	90.62	116.08	84.59	81.22	91.31
Jersey County	IL	89.46	78.12	85.72	85.66	80.72
Kane County	IL	108.34	120.57	90.86	109.06	109.11
Kankakee County	IL	95.65	119.77	105.98	97.47	105.96
Kendall County	IL	94.30	90.54	82.01	95.42	88.08

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Lake County	IL	103.98	121.02	97.08	118.15	112.71
McHenry County	IL	98.53	105.24	83.23	95.57	94.49
McLean County	IL	104.94	120.63	110.85	102.41	112.27
Macon County	IL	95.56	114.15	112.75	97.28	106.24
Macoupin County	IL	92.20	111.71	78.10	115.16	99.10
Madison County	IL	96.83	119.34	103.17	114.28	110.62
Marshall County	IL	89.56	95.57	68.03	113.51	89.47
Menard County	IL	88.81	90.20	83.80	84.09	83.22
Mercer County	IL	88.81	97.30	71.15	95.19	84.98
Monroe County	IL	89.84	90.63	77.62	91.70	84.14
Peoria County	IL	100.95	120.84	143.87	112.87	124.81
Piatt County	IL	88.83	107.89	81.61	83.39	87.90
Rock Island County	IL	101.09	128.28	104.97	116.10	115.93
St. Clair County	IL	96.60	114.62	90.19	113.08	104.58
Sangamon County	IL	97.54	115.25	157.52	108.44	124.88
Tazewell County	IL	96.01	107.55	85.37	110.59	99.85
Vermilion County	IL	91.84	99.84	112.75	117.88	107.05
Will County	IL	101.35	114.01	92.55	100.58	102.68
Winnebago County	IL	100.8	123.79	117.91	120.01	119.75
Woodford County	IL	89.23	111.21	85.84	94.01	93.77
Allen County	IN	100.69	113.30	110.06	100.51	107.76
Bartholomew County	IN	96.38	101.42	108.25	114.65	106.54
Boone County	IN	94.39	103.90	79.83	90.61	90.12
Brown County	IN	92.73	36.11	76.30	63.42	58.47
Carroll County	IN	89.42	86.26	86.24	85.98	83.54
Clark County	IN	97.57	113.96	86.06	107.2	101.51
Clay County	IN	91.51	101.15	76.58	109.38	93.25
Dearborn County	IN	91.96	82.67	89.51	96.29	87.50
Delaware County	IN	103.15	118.8	91.63	109.13	107.18
Elkhart County	IN	94.95	104.81	89.66	114.82	101.34
Floyd County	IN	101.1	121.02	86.15	99.15	102.35
Franklin County	IN	90.85	54.82	78.33	95.48	74.56
Gibson County	IN	92.92	109.39	77.46	124.54	101.36
Greene County	IN	90.44	93.15	82.02	88.86	85.62
Hamilton County	IN	99.85	104.30	81.69	94.95	93.93
Hancock County	IN	93.31	95.10	82.93	84.80	86.14
Harrison County	IN	91.11	56.70	85.50	61.31	66.71
Hendricks County	IN	95.72	91.32	79.42	89.16	85.98
Howard County	IN	98.37	114.28	95.94	109.61	105.75
Jasper County	IN	89.52	90.18	73.22	51.82	69.90
Johnson County	IN	98.31	116.23	81.08	102.48	99.40
Lake County	IN	102.28	124.13	124.40	126.26	124.35
LaPorte County	IN	95.04	104.81	108.11	96.11	101.29
Madison County	IN	96.40	113.83	107.92	112.32	109.63
Marion County	IN	108.62	123.19	125.02	127.04	126.50

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Monroe County	IN	104.36	112.59	163.85	98.52	125.06
Morgan County	IN	94.61	85.99	85.60	99.46	89.15
Ohio County	IN	91.06	97.13	78.90	99.39	89.41
Owen County	IN	91.06	35.65	78.62	99.32	69.87
Porter County	IN	96.95	108.40	88.88	87.95	94.37
Posey County	IN	92.19	75.20	81.37	81.92	78.10
Putnam County	IN	91.01	96.03	82.78	73.04	81.95
St. Joseph County	IN	100.67	117.65	124.80	131.20	123.48
Shelby County	IN	98.24	116.00	82.26	97.84	98.21
Sullivan County	IN	89.97	94.33	85.42	79.03	83.81
Tippecanoe County	IN	104.58	112.14	101.52	96.00	104.5
Tipton County	IN	89.55	85.73	80.10	62.84	74.17
Vanderburgh County	IN	101.79	119.70	120.43	116.35	118.41
Vermillion County	IN	103.23	90.48	79.32	155.06	108.87
Vigo County	IN	96.90	111.19	114.75	128.65	116.27
Warrick County	IN	99.66	102.11	81.65	82.32	89.18
Washington County	IN	94.15	67.81	80.30	87.16	77.70
Wells County	IN	89.98	90.10	83.04	70.18	78.93
Whitley County	IN	90.31	89.14	84.12	56.30	74.69
Benton County	IA	88.87	108.97	90.60	97.81	95.65
Black Hawk County	IA	99.10	129.91	94.20	118.50	113.18
Bremer County	IA	89.00	112.79	82.24	77.70	87.91
Dallas County	IA	95.45	106.94	79.89	91.67	91.77
Dubuque County	IA	100.57	130.56	115.08	106.99	116.81
Harrison County	IA	89.16	113.13	76.21	76.79	85.87
Johnson County	IA	103.02	124.12	157.95	85.78	122.39
Jones County	IA	89.77	115.53	71.55	95.83	91.37
Linn County	IA	100.19	118.29	121.29	103.21	113.58
Madison County	IA	90.62	124.56	70.25	103.16	96.40
Mills County	IA	89.93	84.78	77.08	92.04	82.25
Polk County	IA	102.96	129.31	116.94	112.82	119.60
Pottawattamie County	IA	97.53	120.78	95.92	99.22	104.25
Scott County	IA	100.21	128.03	85.19	130.22	113.79
Story County	IA	96.60	115.01	125.73	97.63	111.05
Warren County	IA	93.98	105.61	82.31	83.56	89.09
Washington County	IA	90.00	104.89	78.56	86.53	87.36
Woodbury County	IA	97.33	125.17	117.13	122.41	119.60
Butler County	KS	95.93	116.69	81.59	76.86	90.86
Douglas County	KS	100.21	127.37	99.68	98.22	108.05
Franklin County	KS	89.92	101.1	85.19	101.84	93.07
Geary County	KS	96.96	–	84.76	128.69	–
Harvey County	KS	90.56	115.17	75.64	73.36	85.7
Jackson County	KS	88.64	77.77	79.63	44.65	65.47
Johnson County	KS	104.45	125.43	86.47	101.88	105.76
Leavenworth County	KS	95.13	99.39	87.24	93.72	92.25

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Miami County	KS	89.17	87.98	79.03	102.93	87.08
Osage County	KS	89.37	97.03	68.66	75.02	77.91
Pottawatomie County	KS	89.00	–	81.55	95.3	–
Riley County	KS	98.61	–	93.38	105.56	–
Sedgwick County	KS	102.93	118.91	117.57	112.30	116.34
Shawnee County	KS	98.59	111.59	125.79	108.80	114.14
Sumner County	KS	88.32	98.41	84.72	92.96	88.76
Wyandotte County	KS	101.91	113.88	103.10	127.92	114.79
Boone County	KY	99.70	101.93	95.37	84.83	94.26
Bourbon County	KY	97.22	93.99	80.83	92.96	88.94
Boyd County	KY	94.45	98.55	126.68	104.55	107.65
Bullitt County	KY	95.94	83.26	81.17	86.62	83.25
Campbell County	KY	102.73	124.27	85.29	109.72	106.95
Christian County	KY	97.34	94.37	87.11	104.06	94.59
Clark County	KY	93.45	102.00	79.27	98.84	91.64
Daviess County	KY	99.18	109.86	121.56	106.12	111.6
Fayette County	KY	110.05	128.66	134.26	116.37	128.22
Grant County	KY	90.59	52.57	80.01	76.95	68.44
Greenup County	KY	94.52	87.52	78.55	112.22	91.41
Hardin County	KY	95.48	90.76	131.65	93.87	103.72
Henderson County	KY	99.09	105.95	76.39	103.24	95.15
Henry County	KY	89.37	76.60	77.64	85.73	77.68
Jefferson County	KY	109.11	119.34	118.64	123.85	122.42
Jessamine County	KY	94.35	102.50	84.93	91.02	91.41
Kenton County	KY	104.06	117.51	88.49	119.32	109.28
Larue County	KY	89.43	63.30	84.72	65.93	69.47
Meade County	KY	93.39	46.63	84.90	78.41	69.46
Nelson County	KY	91.95	66.86	78.24	89.54	76.81
Oldham County	KY	94.48	74.42	80.90	81.70	78.36
Scott County	KY	95.24	97.32	80.79	97.28	90.72
Shelby County	KY	95.85	91.76	112.29	86.78	95.79
Spencer County	KY	91.13	31.97	75.02	76.42	60.36
Warren County	KY	101.86	102.72	124.59	100.77	109.46
Woodford County	KY	93.43	105.61	79.51	90.95	90.36
Ascension Parish	LA	92.32	90.20	93.22	86.92	88.20
Bossier Parish	LA	95.13	94.84	83.39	90.35	88.54
Caddo Parish	LA	98.39	108.22	98.44	110.2	104.82
Calcasieu Parish	LA	95.68	105.58	123.81	94.14	106.07
De Soto Parish	LA	89.07	61.88	140.34	77.66	90.19
East Baton Rouge Parish	LA	103.91	113.92	97.85	114.04	109.39
Grant Parish	LA	88.67	34.23	66.17	64.67	53.79
Iberville Parish	LA	93.41	93.69	84.62	92.02	88.54
Jefferson Parish	LA	113.17	132.12	84.47	148.19	124.62
Lafayette Parish	LA	99.95	114.45	110.96	106.53	110.08
Lafourche Parish	LA	95.04	99.35	143.72	98.05	111.43

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Livingston Parish	LA	93.18	62.05	84.88	75.38	73.3
Orleans Parish	LA	121.91	137.94	153.63	214.43	172.01
Ouachita Parish	LA	95.23	94.61	111.60	108.52	103.15
Plaquemines Parish	LA	90.01	91.73	81.72	104.87	90.00
Pointe Coupee Parish	LA	91.55	71.09	–	98.29	–
Rapides Parish	LA	93.23	98.11	100.74	101.17	97.87
St. Bernard Parish	LA	100.03	121.48	80.94	130.72	110.48
St. Charles Parish	LA	93.42	97.97	81.23	108.41	94.01
St. John the Baptist Parish	LA	97.39	101.63	88.78	109.44	99.13
St. Martin Parish	LA	90.60	70.42	94.32	86.13	81.51
St. Tammany Parish	LA	95.66	94.37	97.06	109.33	98.87
Terrebonne Parish	LA	96.62	103.72	99.01	107.65	102.21
Union Parish	LA	89.87	71.18	70.25	78.43	71.48
West Baton Rouge Parish	LA	92.80	93.51	81.41	106.35	91.81
Androscoggin County	ME	94.76	103.78	136.26	91.39	108.27
Cumberland County	ME	98.75	114.38	138.89	90.26	113.36
Penobscot County	ME	92.40	98.83	131.29	77.32	99.95
Sagadahoc County	ME	91.37	75.85	95.72	87.89	84.47
York County	ME	92.68	89.80	93.72	78.52	85.70
Allegany County	MD	94.56	117.81	106.32	116.79	111.21
Anne Arundel County	MD	105.04	115.29	100.72	118.53	112.50
Baltimore County	MD	109.47	130.43	100.71	118.19	118.58
Calvert County	MD	95.09	73.94	82.27	107.81	87.08
Carroll County	MD	95.33	95.07	100.64	94.25	95.35
Cecil County	MD	93.63	88.61	89.42	100.50	91.20
Charles County	MD	97.94	88.84	83.65	107.96	93.17
Frederick County	MD	97.32	108.73	104.01	100.82	103.44
Harford County	MD	100.16	109.82	96.6	99.78	102.01
Howard County	MD	104.93	128.35	97.95	107.27	112.17
Montgomery County	MD	117.80	129.94	123.29	116.70	127.72
Prince George's County	MD	112.70	124.13	90.27	125.16	116.51
Queen Anne's County	MD	91.01	67.98	77.17	76.61	72.44
Somerset County	MD	91.18	73.80	82.53	110.34	86.69
Washington County	MD	97.32	110.91	127.59	95.52	109.90
Wicomico County	MD	96.00	106.22	124.92	114.15	113.05
Baltimore city	MD	163.61	143.97	183.84	196.44	190.94
Barnstable County	MA	–	–	–	119.45	–
Berkshire County	MA	–	–	–	95.18	–
Bristol County	MA	–	33.82	–	120.97	–
Essex County	MA	–	36.98	–	122.20	–
Franklin County	MA	–	–	–	83.51	–
Hampden County	MA	–	32.99	–	112.97	–
Hampshire County	MA	–	–	–	85.50	–
Middlesex County	MA	–	38.77	–	122.51	–
Norfolk County	MA	–	34.74	–	117.59	–

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Plymouth County	MA	–	–	–	104.20	–
Suffolk County	MA	–	53.29	–	201.99	–
Worcester County	MA	–	30.90	–	98.17	–
Barry County	MI	90.18	57.23	87.88	75.47	71.80
Bay County	MI	96.11	112.33	108.40	104.10	106.61
Berrien County	MI	94.04	108.26	90.63	99.01	97.45
Calhoun County	MI	95.50	103.98	103.91	94.09	99.21
Cass County	MI	89.45	65.94	94.70	73.69	75.91
Clinton County	MI	91.92	77.85	131.40	63.62	88.88
Eaton County	MI	94.44	101.46	85.64	72.87	85.60
Genesee County	MI	97.37	109.34	123.51	103.52	110.66
Ingham County	MI	109.11	118.48	141.89	104.33	123.32
Ionia County	MI	92.27	71.44	96.34	76.97	80.10
Jackson County	MI	94.83	98.29	137.01	86.66	105.30
Kalamazoo County	MI	97.50	106.35	113.21	90.33	102.33
Kent County	MI	99.67	119.56	128.07	96.76	113.92
Lapeer County	MI	92.22	70.09	131.99	63.03	86.52
Livingston County	MI	92.30	81.87	104.20	80.88	87.13
Macomb County	MI	107.83	131.48	92.09	106.26	111.9
Monroe County	MI	92.58	95.56	109.24	75.47	91.42
Muskegon County	MI	96.94	110.29	96.74	107.62	103.66
Newaygo County	MI	89.64	63.71	82.85	79.68	73.43
Oakland County	MI	103.79	122.43	99.39	107.48	110.46
Ottawa County	MI	96.62	104.73	106.96	84.83	97.83
Saginaw County	MI	96.26	111.36	121.05	101.28	109.46
St. Clair County	MI	95.48	93.49	115.33	87.56	97.42
Van Buren County	MI	90.64	78.99	85.30	71.88	76.88
Washtenaw County	MI	105.17	117.06	155.39	87.03	120.43
Wayne County	MI	112.50	126.50	136.09	148.34	139.00
Anoka County	MN	101.07	111.72	98.03	105.23	105.07
Benton County	MN	99.34	111.80	83.26	89.21	94.82
Blue Earth County	MN	97.06	–	81.38	83.73	–
Carlton County	MN	89.72	89.44	86.19	89.97	85.88
Carver County	MN	94.80	100.10	82.70	100.41	93.05
Chisago County	MN	91.23	72.57	80.16	79.33	75.77
Clay County	MN	101.35	118.95	84.41	81.24	95.56
Dakota County	MN	104.83	115.9	86.85	107.32	104.71
Dodge County	MN	90.15	114.35	78.13	95.81	93.19
Hennepin County	MN	114.74	127.82	151.96	129.69	139.24
Houston County	MN	89.84	94.39	70.75	100.51	85.94
Isanti County	MN	91.07	89.01	80.16	86.90	83.30
Nicollet County	MN	97.81	–	77.60	107.27	–
Olmsted County	MN	98.99	108.08	166.15	100.70	123.35
Polk County	MN	89.65	106.65	85.6	58.59	81.20
Ramsey County	MN	117.31	135.35	105.13	148.75	133.66

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
St. Louis County	MN	95.96	113.02	140.27	103.63	116.70
Scott County	MN	96.04	104.74	81.51	85.26	89.75
Sherburne County	MN	92.57	80.55	85.40	79.35	80.37
Stearns County	MN	95.49	112.29	109.13	96.54	104.25
Wabasha County	MN	89.66	101.77	80.16	119.28	97.11
Washington County	MN	100.91	108.44	82.51	109.35	100.38
Wright County	MN	92.03	88.12	85.17	74.14	80.87
Copiah County	MS	90.59	89.53	72.41	81.93	79.29
DeSoto County	MS	95.25	88.58	99.48	78.18	87.83
Forrest County	MS	95.34	105.53	96.31	100.75	99.35
George County	MS	90.76	69.74	77.91	92.68	78.23
Hancock County	MS	92.04	77.68	80.99	112.70	88.44
Harrison County	MS	97.88	105.23	107.35	113.32	107.51
Hinds County	MS	100.02	107.02	141.59	102.57	116.18
Jackson County	MS	95.32	88.99	120.77	104.57	103.05
Lamar County	MS	90.94	85.24	82.62	69.99	77.50
Madison County	MS	96.21	91.29	91.18	87.79	89.40
Marshall County	MS	89.58	45.70	77.07	80.95	66.29
Rankin County	MS	94.27	82.77	81.61	77.70	79.89
Simpson County	MS	89.83	72.44	81.01	94.49	80.34
Stone County	MS	90.38	88.05	70.63	94.96	82.31
Tate County	MS	92.63	63.13	71.62	95.88	75.76
Tunica County	MS	88.41	60.42	81.24	70.41	68.56
Andrew County	MO	88.73	86.17	72.60	76.11	75.86
Bates County	MO	89.22	111.73	80.53	106.69	96.26
Boone County	MO	98.98	107.90	126.76	103.07	111.60
Buchanan County	MO	101.70	120.56	95.28	141.17	118.55
Callaway County	MO	90.40	82.96	97.28	84.65	85.87
Cape Girardeau County	MO	95.78	–	114.42	102.52	–
Cass County	MO	94.15	94.94	79.62	83.45	84.89
Christian County	MO	91.93	89.25	81.10	90.63	85.12
Clay County	MO	97.62	113.96	88.28	98.64	99.52
Clinton County	MO	90.37	103.72	78.89	114.83	96.15
Cole County	MO	94.77	101.06	122.96	85.07	101.22
Crawford County	MO *(pt.)	89.11	–	71.96	88.13	–
Franklin County	MO	91.10	94.49	82.43	93.59	87.87
Greene County	MO	100.74	119.9	88.95	115.29	107.86
Jackson County	MO	105.14	126.53	136.74	127.96	130.44
Jasper County	MO	94.90	113.72	88.44	114.86	103.76
Jefferson County	MO	96.02	87.54	85.42	99.04	89.90
Lafayette County	MO	89.16	87.92	74.98	94.53	83.13
Lincoln County	MO	90.59	52.94	85.39	93.02	75.34
Moniteau County	MO	90.40	117.93	68.41	89.59	89.37
Newton County	MO	92.11	83.25	102.74	93.49	91.02
Platte County	MO	98.15	104.96	79.77	94.12	92.73

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Ray County	MO	89.65	108.59	73.35	65.04	79.98
St. Charles County	MO	104.37	118.40	86.54	121.39	109.70
St. Louis County	MO	107.75	126.19	95.35	120.59	115.76
Warren County	MO	90.25	65.09	88.50	88.94	78.76
Washington County	MO	89.88	65.15	71.89	94.61	75.21
Webster County	MO	89.70	58.65	78.35	95.58	75.45
St. Louis city	MO	126.98	137.55	194.29	185.95	177.33
Carbon County	MT	88.78	68.92	85.23	93.01	79.76
Cascade County	MT	97.85	123.74	127.17	118.61	121.28
Missoula County	MT	98.92	119.30	111.04	110.74	112.64
Yellowstone County	MT	103.87	120.17	119.97	115.07	118.66
Cass County	NE	89.10	86.96	86.25	95.22	86.59
Dakota County	NE	98.92	114.43	75.16	122.40	103.44
Douglas County	NE	110.08	132.45	125.37	138.38	133.58
Lancaster County	NE	109.75	133.02	115.33	121.45	125.13
Sarpy County	NE	101.37	112.49	87.29	118.08	106.08
Saunders County	NE	88.71	95.50	88.74	85.06	86.74
Seward County	NE	89.14	99.79	77.47	81.06	83.40
Washington County	NE	89.99	86.51	117.82	94.88	96.59
Clark County	NV	119.01	116.44	140.45	122.06	130.94
Washoe County	NV	103.05	110.72	131.45	103.68	115.45
Carson City	NV	104.88	133.53	80.10	118.62	111.73
Hillsborough County	NH	101.22	116.91	121.07	97.04	111.45
Rockingham County	NH	94.00	101.41	97.51	82.02	92.08
Strafford County	NH	95.77	105.80	88.23	82.45	91.23
Atlantic County	NJ	103.00	114.8	142.81	120.73	125.70
Bergen County	NJ	128.56	150.29	86.86	143.25	134.43
Burlington County	NJ	100.52	120.12	99.61	99.94	106.38
Camden County	NJ	115.67	137.68	105.55	141.06	131.58
Cape May County	NJ	97.81	117.44	101.22	145.73	119.65
Cumberland County	NJ	99.51	113.21	119.51	98.78	109.80
Essex County	NJ	161.02	146.99	128.46	148.71	158.50
Gloucester County	NJ	100.59	121.22	87.46	104.71	104.41
Hudson County	NJ	223.23	156.67	92.82	176.49	178.73
Hunterdon County	NJ	93.84	90.14	95.20	74.00	85.21
Mercer County	NJ	114.81	128.87	109.53	119.34	122.92
Middlesex County	NJ	118.29	135.37	114.47	132.03	131.64
Monmouth County	NJ	105.74	133.26	84.28	121.16	114.04
Morris County	NJ	103.00	125.29	87.76	100.05	105.09
Ocean County	NJ	105.44	110.28	91.35	129.32	111.5
Passaic County	NJ	143.82	148.45	101.63	135.66	140.93
Salem County	NJ	94.41	98.00	80.11	92.91	89.08
Somerset County	NJ	101.83	120.78	86.24	103.35	103.86
Sussex County	NJ	95.74	89.17	86.54	87.85	87.14
Union County	NJ	140.17	153.96	89.87	148.90	141.99

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Warren County	NJ	95.86	119.17	85.21	97.52	99.29
Bernalillo County	NM	110.26	122.46	113.45	131.01	124.38
Dona Ana County	NM	99.20	106.04	114.72	103.66	107.46
Sandoval County	NM	97.97	91.24	110.10	85.16	95.09
San Juan County	NM	93.52	88.26	135.96	78.81	98.91
Santa Fe County	NM	99.91	106.29	116.83	88.05	103.50
Valencia County	NM	94.94	85.92	108.47	76.38	89.17
Albany County	NY	107.10	128.39	135.96	104.63	124.04
Bronx County	NY	336.70	143.95	100.25	211.61	224.01
Broome County	NY	99.92	115.80	121.53	93.89	109.84
Chemung County	NY	98.96	117.49	130.79	99.06	114.63
Dutchess County	NY	97.07	110.29	128.55	81.19	105.40
Erie County	NY	109.71	131.45	111.78	93.59	114.70
Herkimer County	NY	96.91	100.82	82.72	80.37	87.62
Kings County	NY	355.50	142.16	199.99	225.25	265.20
Livingston County	NY	93.13	102.59	78.75	53.09	77.11
Madison County	NY	94.67	96.7	85.84	57.89	79.49
Monroe County	NY	106.45	123.67	121.06	93.28	114.04
Nassau County	NY	128.98	149.38	111.6	160.85	147.65
New York County	NY	654.01	144.57	400.25	230.33	425.15
Niagara County	NY	100.04	115.62	92.59	94.32	100.81
Oneida County	NY	101.65	107.32	112.12	84.48	101.76
Onondaga County	NY	104.46	122.19	142.75	96.45	120.80
Ontario County	NY	94.36	101.34	91.19	62.58	84.03
Orange County	NY	101.31	113.59	90.33	87.33	97.65
Orleans County	NY	94.19	97.46	78.22	53.47	75.78
Oswego County	NY	96.64	90.83	108.43	70.57	89.4
Putnam County	NY	94.19	95.77	83.82	88.92	88.21
Queens County	NY	266.34	147.42	91.93	224.01	204.16
Rensselaer County	NY	99.20	109.08	97.62	92.25	99.41
Richmond County	NY	175.08	131.67	78.94	179.98	152.34
Rockland County	NY	117.77	134.18	81.37	105.52	112.27
Saratoga County	NY	95.36	98.37	102.26	80.90	92.70
Schenectady County	NY	107.32	130.66	104.18	110.94	116.78
Schoharie County	NY	90.59	78.79	84.01	56.05	71.39
Suffolk County	NY	105.86	126.74	94.53	115.53	113.48
Tioga County	NY	94.68	75.76	82.48	64.79	74.00
Tompkins County	NY	102.44	95.84	144.53	72.43	104.82
Ulster County	NY	95.12	96.80	124.18	81.42	99.22
Warren County	NY	94.99	105.93	183.56	89.94	123.51
Washington County	NY	92.47	80.23	80.51	59.21	72.33
Wayne County	NY	92.68	85.72	85.91	55.37	74.62
Westchester County	NY	129.24	146.99	93.74	123.66	129.58
Alamance County	NC	95.78	102.85	94.52	96.28	96.66
Alexander County	NC	91.03	78.52	79.96	55.54	70.00

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Anson County	NC	89.44	65.32	80.36	52.48	64.49
Brunswick County	NC	90.81	69.18	88.65	85.96	79.34
Buncombe County	NC	95.14	101.18	126.22	94.85	105.50
Burke County	NC	90.80	78.73	87.53	75.57	78.72
Cabarrus County	NC	96.20	97.46	88.76	88.00	90.65
Caldwell County	NC	92.41	74.22	123.75	80.60	90.83
Catawba County	NC	93.56	91.54	85.36	88.36	86.99
Chatham County	NC	91.14	56.42	79.76	62.63	65.23
Cumberland County	NC	100.01	104.64	91.45	90.81	95.86
Currituck County	NC	90.42	69.81	77.63	76.98	73.10
Davie County	NC	91.08	61.13	81.22	60.37	66.45
Durham County	NC	102.68	108.43	103.83	103.70	105.89
Edgecombe County	NC	91.45	83.77	99.40	93.79	90.02
Forsyth County	NC	98.47	107.56	110.15	95.01	103.53
Franklin County	NC	91.13	52.43	78.63	63.74	63.96
Gaston County	NC	95.33	103.37	110.64	94.20	101.12
Greene County	NC	90.47	47.46	83.61	40.96	56.56
Guilford County	NC	100.36	113.56	102.77	95.45	103.84
Haywood County	NC	91.09	79.15	80.84	102.68	85.39
Henderson County	NC	92.12	98.21	84.83	93.59	90.13
Hoke County	NC	91.51	57.98	83.07	70.19	69.27
Johnston County	NC	93.03	70.60	103.97	64.44	78.53
Madison County	NC	89.40	44.18	77.93	90.45	69.03
Mecklenburg County	NC	105.91	115.35	135.51	101.84	118.52
Nash County	NC	91.58	88.78	88.52	79.45	83.68
New Hanover County	NC	102.34	118.86	107.70	121.50	115.92
Onslow County	NC	94.97	82.72	104.59	82.75	88.95
Orange County	NC	99.40	106.99	120.04	75.56	100.63
Pender County	NC	91.15	64.41	81.67	60.61	67.72
Person County	NC	91.24	74.11	81.98	61.12	71.08
Pitt County	NC	98.36	104.23	117.55	87.14	102.30
Randolph County	NC	92.22	84.74	100.63	57.18	79.39
Rockingham County	NC	90.85	72.36	83.70	76.47	75.79
Stokes County	NC	90.59	52.98	81.84	64.72	65.29
Union County	NC	94.98	81.73	100.88	84.45	88.01
Wake County	NC	103.07	115.17	134.61	96.60	115.62
Wayne County	NC	93.55	78.79	130.76	84.88	96.20
Yadkin County	NC	90.06	70.68	79.45	49.29	65.08
Burleigh County	ND	96.52	118.46	128.76	90.68	110.87
Cass County	ND	99.52	125.90	113.31	97.15	111.34
Grand Forks County	ND	104.24	124.99	97.01	96.71	107.25
Morton County	ND	91.13	108.21	82.17	85.86	89.69
Allen County	OH	95.85	114.27	117.83	118.07	114.54
Belmont County	OH	92.89	98.58	83.73	112.11	95.99
Brown County	OH	90.42	54.19	85.62	78.68	71.22

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Butler County	OH	101.42	116.84	94.22	101.13	104.30
Carroll County	OH	89.77	69.05	94.41	68.25	75.19
Clark County	OH	96.98	111.55	97.15	102.52	102.60
Clermont County	OH	98.23	97.66	83.05	84.14	88.34
Cuyahoga County	OH	112.92	133.64	119.54	109.64	123.93
Delaware County	OH	97.21	109.37	84.07	87.68	93.15
Erie County	OH	96.77	121.77	104.84	102.29	108.11
Fairfield County	OH	95.20	100.29	89.76	89.15	91.91
Franklin County	OH	111.37	131.41	124.87	127.88	130.18
Fulton County	OH	90.59	113.35	82.43	93.65	93.69
Geauga County	OH	90.84	82.83	86.85	50.20	71.79
Greene County	OH	97.09	114.93	85.08	94.01	97.19
Hamilton County	OH	110.12	134.12	141.56	113.68	131.43
Jefferson County	OH	95.10	103.84	109.52	107.80	105.14
Lake County	OH	100.55	123.58	82.99	88.29	98.55
Lawrence County	OH	93.75	81.53	83.82	104.35	88.45
Licking County	OH	95.01	99.59	98.19	106.48	99.77
Lorain County	OH	98.61	117.13	93.18	95.05	101.26
Lucas County	OH	105.01	131.81	114.29	116.4	121.33
Madison County	OH	92.38	85.12	84.52	84.97	83.25
Mahoning County	OH	98.98	121.53	107.96	102.09	109.66
Medina County	OH	96.03	105.54	93.20	57.23	84.83
Miami County	OH	92.97	103.49	85.25	95.62	92.84
Montgomery County	OH	102.99	130.21	114.82	117.40	120.67
Morrow County	OH	89.85	49.60	83.41	46.82	58.82
Ottawa County	OH	93.01	98.23	86.34	94.39	91.15
Pickaway County	OH	95.16	82.72	83.74	78.20	80.99
Portage County	OH	94.89	103.80	90.32	100.22	96.60
Preble County	OH	90.05	70.46	86.69	100.99	83.63
Richland County	OH	94.98	105.89	118.65	103.59	107.30
Stark County	OH	98.73	120.66	98.80	120.61	112.26
Summit County	OH	101.67	125.68	109.41	114.42	116.17
Trumbull County	OH	95.85	111.81	91.49	95.52	98.31
Union County	OH	94.04	77.41	81.94	86.51	81.01
Warren County	OH	97.43	106.62	84.37	88.63	92.75
Washington County	OH	93.06	88.20	86.67	83.86	84.77
Wood County	OH	94.89	111.78	91.96	82.11	93.91
Canadian County	OK	97.03	97.68	82.74	92.01	90.35
Cleveland County	OK	101.04	107.98	106.44	102.24	105.59
Comanche County	OK	99.03	118.45	98.20	116.33	110.11
Creek County	OK	90.09	85.48	84.46	104.69	88.85
Grady County	OK	91.37	75.37	86.82	102.85	86.23
Le Flore County	OK	89.15	67.37	83.45	99.19	80.78
Logan County	OK	89.70	68.27	90.56	98.34	83.21
McClain County	OK	89.63	80.94	81.73	88.92	81.43

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Oklahoma County	OK	103.44	120.48	122.50	117.89	120.32
Okmulgee County	OK	89.76	90.51	83.84	122.81	95.86
Osage County	OK	93.63	66.07	86.07	96.84	81.87
Pawnee County	OK	88.73	75.14	77.53	99.62	81.37
Rogers County	OK	92.33	79.74	87.59	95.45	85.82
Sequoyah County	OK	89.78	72.88	91.90	101.22	86.03
Tulsa County	OK	102.60	121.46	117.13	113.15	117.17
Wagoner County	OK	93.20	77.70	83.08	102.13	86.14
Benton County	OR	100.72	123.18	126.52	95.34	114.46
Clackamas County	OR	101.80	126.17	90.03	96.25	104.50
Columbia County	OR	93.28	102.74	80.42	84.73	87.73
Deschutes County	OR	95.73	115.65	115.30	80.19	102.17
Jackson County	OR	97.76	122.20	122.65	91.71	110.84
Lane County	OR	101.73	127.48	138.05	98.88	120.90
Marion County	OR	101.62	130.36	123.77	101.10	117.96
Multnomah County	OR	120.53	142.82	150.58	166.68	157.06
Polk County	OR	94.97	105.79	80.13	83.85	88.86
Washington County	OR	110.39	132.91	85.02	113.10	113.09
Yamhill County	OR	99.08	122.85	81.32	93.49	98.97
Allegheny County	PA	109.54	133.89	145.40	135.70	139.34
Armstrong County	PA	92.89	85.75	101.54	84.86	88.95
Beaver County	PA	95.17	110.16	84.42	111.13	100.28
Berks County	PA	108.58	126.11	116.00	110.71	119.40
Blair County	PA	97.22	121.95	124.31	123.01	121.01
Bucks County	PA	102.39	126.03	79.87	99.58	102.49
Butler County	PA	93.68	105.26	120.02	79.27	99.44
Cambria County	PA	95.43	107.43	120.16	119.48	113.43
Carbon County	PA	93.36	98.43	90.96	97.65	93.81
Centre County	PA	110.10	115.70	149.49	91.83	121.21
Chester County	PA	98.81	117.12	91.20	89.11	98.81
Cumberland County	PA	98.59	111.24	85.52	112.72	102.55
Dauphin County	PA	104.58	124.71	129.24	125.68	126.61
Delaware County	PA	119.69	141.69	83.25	137.90	126.07
Erie County	PA	102.74	130.88	122.48	102.40	118.48
Fayette County	PA	93.03	102.25	96.86	108.42	100.17
Lackawanna County	PA	101.86	133.13	134.53	123.50	129.39
Lancaster County	PA	102.63	119.90	128.60	94.47	114.41
Lebanon County	PA	96.31	122.77	84.72	116.98	106.56
Lehigh County	PA	111.48	134.36	115.73	137.75	131.38
Luzerne County	PA	99.44	121.47	93.27	114.55	109.08
Lycoming County	PA	97.09	120.85	113.98	117.91	115.74
Mercer County	PA	95.34	106.25	83.44	87.04	91.17
Montgomery County	PA	107.67	136.32	85.84	109.26	112.35
Northampton County	PA	103.88	133.01	101.8	124.28	119.89
Perry County	PA	89.79	63.67	91.33	79.02	75.93

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Philadelphia County	PA	206.38	144.48	178.43	209.98	207.19
Pike County	PA	91.08	56.19	144.75	90.61	94.51
Washington County	PA	95.07	106.69	93.55	102.25	99.23
Westmoreland County	PA	95.84	111.77	104.88	108.50	106.63
Wyoming County	PA	90.40	51.38	86.24	74.76	69.28
York County	PA	99.69	112.24	115.21	96.33	107.42
Bristol County	RI	109.79	144.16	83.56	135.16	122.96
Kent County	RI	103.82	122.09	81.70	122.57	109.54
Newport County	RI	99.45	121.07	99.03	118.74	112.10
Providence County	RI	121.10	142.01	141.75	134.74	144.11
Washington County	RI	94.03	102.13	88.56	97.10	94.26
Aiken County	SC	93.29	79.37	103.25	96.65	91.33
Anderson County	SC	92.29	82.54	110.42	81.70	89.56
Berkeley County	SC	98.30	88.34	80.72	78.85	83.00
Charleston County	SC	103.20	119.32	138.48	116.56	124.50
Darlington County	SC	91.78	86.08	84.55	73.08	79.62
Dorchester County	SC	103.61	98.38	81.02	84.79	89.83
Edgefield County	SC	89.95	55.96	76.27	60.96	63.08
Fairfield County	SC	89.55	49.53	76.12	74.02	65.00
Florence County	SC	96.07	90.47	109.63	83.71	93.64
Greenville County	SC	98.68	106.59	100.39	91.07	98.97
Horry County	SC	94.78	90.85	112.78	101.88	100.09
Kershaw County	SC	90.43	61.70	129.24	61.49	81.95
Laurens County	SC	89.91	59.53	87.21	79.89	73.63
Lexington County	SC	94.92	94.04	88.00	80.44	86.54
Pickens County	SC	92.45	92.02	97.27	82.26	88.63
Richland County	SC	101.53	109.51	144.33	110.91	120.94
Spartanburg County	SC	93.37	97.98	112.28	90.54	98.16
Sumter County	SC	93.59	86.69	119.72	90.32	96.94
York County	SC	95.01	95.83	94.28	80.22	89.05
Lincoln County	SD	92.75	107.03	82.73	77.53	87.38
Meade County	SD	89.23	75.07	81.40	103.16	83.84
Minnehaha County	SD	102.86	120.06	105.90	107.25	111.40
Pennington County	SD	96.18	101.49	117.26	95.04	103.15
Anderson County	TN	92.32	81.10	121.37	89.51	95.04
Blount County	TN	94.52	79.63	87.08	89.16	84.33
Bradley County	TN	94.75	85.38	114.48	87.22	94.26
Carter County	TN	93.30	77.41	129.08	96.48	98.82
Cheatham County	TN	93.65	56.61	86.41	61.81	67.92
Chester County	TN	91.73	79.08	69.11	55.42	66.93
Davidson County	TN	104.68	111.86	121.78	111.57	115.76
Dickson County	TN	91.19	65.43	90.57	73.70	75.01
Fayette County	TN	89.34	50.43	89.51	51.46	62.32
Grainger County	TN	89.49	45.66	74.08	70.51	62.01
Hamblen County	TN	95.73	85.00	142.29	95.50	105.85

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Hamilton County	TN	98.48	101.33	119.36	103.40	107.13
Hawkins County	TN	90.78	69.01	90.10	81.51	78.33
Jefferson County	TN	91.49	63.63	91.38	79.72	76.69
Knox County	TN	99.46	102.38	136.24	96.83	111.03
Loudon County	TN	90.60	74.46	83.62	96.59	82.71
Macon County	TN	90.08	45.11	73.25	47.03	54.34
Madison County	TN	95.08	104.99	108.51	91.26	99.95
Marion County	TN	89.77	69.94	73.16	87.72	74.91
Montgomery County	TN	97.02	80.87	113.11	75.99	89.57
Robertson County	TN	91.68	72.06	85.62	63.10	72.35
Rutherford County	TN	97.98	90.60	108.29	83.25	93.72
Sequatchie County	TN	90.25	76.45	78.98	57.33	69.36
Shelby County	TN	105.33	109.94	122.61	114.90	116.68
Smith County	TN	90.53	70.87	66.08	83.13	71.76
Sullivan County	TN	93.76	86.37	119.66	101.34	100.36
Sumner County	TN	97.36	86.46	115.60	76.15	92.28
Tipton County	TN	92.75	59.76	87.84	64.39	69.90
Trousdale County	TN	90.52	71.81	67.37	64.82	66.68
Unicoi County	TN	94.94	90.30	80.78	113.03	93.38
Union County	TN	89.52	50.58	82.78	73.69	67.32
Washington County	TN	94.93	91.12	94.03	93.77	91.74
Williamson County	TN	97.00	85.43	133.03	87.19	100.84
Wilson County	TN	93.71	71.92	85.24	70.33	75.10
Aransas County	TX	91.90	104.27	84.03	122.27	100.78
Atascosa County	TX	89.05	79.50	85.77	94.63	83.87
Austin County	TX	88.89	64.78	86.07	82.34	75.38
Bandera County	TX	89.19	38.15	69.25	101.83	67.91
Bastrop County	TX	89.76	76.25	87.26	96.10	84.01
Bell County	TX	99.90	110.30	106.90	110.75	108.80
Bexar County	TX	107.69	116.02	115.57	118.94	118.40
Bowie County	TX	93.73	106.36	80.75	99.24	93.71
Brazoria County	TX	96.54	96.26	92.15	97.38	94.42
Brazos County	TX	105.72	112.86	101.13	110.13	109.43
Burleson County	TX	89.32	100.91	77.93	109.68	93.00
Caldwell County	TX	89.63	89.32	84.60	100.93	88.78
Calhoun County	TX	97.89	104.62	74.17	145.39	106.98
Cameron County	TX	100.34	102.76	87.93	110.32	100.42
Chambers County	TX	88.91	43.66	75.63	77.45	63.87
Clay County	TX	88.03	67.28	76.56	111.02	81.95
Collin County	TX	106.24	114.06	85.45	118.59	107.69
Comal County	TX	93.66	86.53	108.62	88.26	92.76
Coryell County	TX	97.23	77.14	87.93	86.13	83.70
Dallas County	TX	116.03	123.21	125.52	139.21	132.85
Delta County	TX	88.85	80.30	68.73	127.14	88.95
Denton County	TX	104.96	107.37	91.25	114.16	105.61

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Ector County	TX	101.41	123.37	112.23	111.89	115.45
Ellis County	TX	92.65	86.97	84.65	100.12	88.75
El Paso County	TX	109.16	113.33	102.45	125.22	115.85
Fort Bend County	TX	104.19	96.20	101.96	111.59	104.41
Galveston County	TX	100.94	113.67	106.27	130.51	116.24
Grayson County	TX	93.05	103.96	92.14	102.59	97.39
Gregg County	TX	96.10	114.14	103.02	99.15	103.92
Guadalupe County	TX	96.53	93.38	84.13	94.73	90.14
Hardin County	TX	89.38	75.62	84.66	83.17	78.78
Harris County	TX	112.9	122.96	115.12	138.63	128.31
Hays County	TX	95.58	87.83	131.77	84.13	99.78
Hidalgo County	TX	100.21	101.69	104.76	109.10	104.98
Hunt County	TX	91.85	76.80	100.17	94.77	88.50
Jefferson County	TX	99.99	118.66	127.39	137.42	126.37
Johnson County	TX	94.62	85.00	88.74	91.72	87.39
Kaufman County	TX	91.56	77.63	83.06	108.05	87.46
Kendall County	TX	94.46	97.53	79.63	72.72	82.42
Lampasas County	TX	89.18	74.92	86.25	95.76	82.98
Liberty County	TX	89.41	54.79	90.70	83.18	74.12
Lubbock County	TX	101.82	123.12	97.75	110.77	110.57
McLennan County	TX	96.64	112.13	100.28	109.99	106.02
Medina County	TX	88.53	55.51	85.30	81.66	71.88
Midland County	TX	103.45	123.85	110.90	119.62	118.27
Montgomery County	TX	95.68	87.52	111.61	84.05	93.32
Nueces County	TX	104.85	127.12	106.59	121.30	118.91
Orange County	TX	90.28	87.97	84.52	104.13	89.54
Parker County	TX	90.72	77.89	87.88	79.00	79.62
Potter County	TX	101.40	118.20	99.33	132.71	116.32
Randall County	TX	101.51	122.09	78.97	110.72	104.20
Rockwall County	TX	97.13	97.42	79.27	94.18	89.89
Rusk County	TX	89.28	80.54	82.05	67.69	74.59
San Patricio County	TX	93.48	114.78	84.07	111.29	101.14
Smith County	TX	95.50	100.31	119.02	100.60	104.88
Tarrant County	TX	108.94	119.35	100.17	128.90	118.12
Tom Green County	TX	97.73	119.81	103.96	106.90	108.97
Travis County	TX	108.45	120.81	148.98	110.66	128.09
Upshur County	TX	90.15	67.18	79.57	86.71	75.86
Victoria County	TX	103.10	120.55	119.38	119.70	119.82
Waller County	TX	95.59	60.29	82.16	92.14	77.94
Webb County	TX	101.78	122.77	102.69	121.89	115.53
Wichita County	TX	98.04	121.94	121.17	110.29	116.25
Williamson County	TX	101.28	106.24	98.74	101.69	102.51
Wilson County	TX	89.22	46.70	88.44	72.24	67.33
Wise County	TX	89.07	68.46	80.23	80.04	74.03
Cache County	UT	100.03	120.88	128.98	82.21	110.14

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Davis County	UT	103.45	125.21	80.47	105.19	104.52
Juab County	UT	88.62	93.30	78.14	83.59	82.20
Salt Lake County	UT	112.04	129.10	106.26	116.30	120.12
Summit County	UT	90.70	90.55	91.28	75.60	83.61
Tooele County	UT	97.75	102.75	79.12	75.88	85.94
Utah County	UT	108.21	127.19	89.82	106.36	109.98
Washington County	UT	95.06	98.96	84.85	91.60	90.67
Weber County	UT	105.74	124.44	97.16	108.01	111.17
Chittenden County	VT	101.56	121.65	152.59	89.97	120.78
Franklin County	VT	92.87	95.99	82.45	75.67	83.25
Grand Isle County	VT	89.13	86.07	69.37	90.87	79.60
Albemarle County	VA	95.30	102.67	87.34	78.58	88.59
Amherst County	VA	89.69	70.62	84.60	75.08	74.72
Appomattox County	VA	89.68	39.87	90.05	58.37	61.45
Arlington County	VA	174.41	153.20	95.54	177.13	163.28
Bedford County	VA	89.97	55.41	91.02	73.51	71.54
Botetourt County	VA	89.85	72.00	83.63	88.06	79.00
Campbell County	VA	91.88	77.31	83.38	109.02	87.87
Caroline County	VA	89.04	40.80	74.87	77.09	62.65
Chesterfield County	VA	100.63	98.15	114.36	102.77	105.03
Clarke County	VA	89.87	79.72	79.01	86.65	79.55
Dinwiddie County	VA	90.02	49.10	78.23	71.08	64.75
Fairfax County	VA	117.83	123.70	113.17	114.82	121.96
Fauquier County	VA	90.61	73.98	90.24	80.50	79.57
Fluvanna County	VA	92.01	71.24	75.82	69.22	71.02
Franklin County	VA	91.30	47.21	88.85	77.48	69.94
Frederick County	VA	93.79	81.33	87.14	85.85	83.61
Gloucester County	VA	92.66	69.24	89.69	99.14	84.43
Goochland County	VA	90.23	55.11	75.26	78.66	68.17
Greene County	VA	90.55	59.72	70.10	78.44	68.03
Hanover County	VA	94.37	84.41	82.56	88.35	84.10
Henrico County	VA	105.97	114.27	86.41	123.03	109.38
Isle of Wight County	VA	90.76	75.64	77.65	79.82	75.95
James City County	VA	93.70	97.02	79.60	106.28	92.61
King William County	VA	90.95	56.69	79.27	102.10	77.57
Loudoun County	VA	102.68	116.85	81.49	113.55	104.60
Mathews County	VA	92.20	52.08	72.32	78.22	66.77
Montgomery County	VA	95.29	95.57	85.40	102.18	93.19
New Kent County	VA	89.75	43.95	80.36	72.40	64.13
Pittsylvania County	VA	89.61	42.72	80.80	66.85	62.08
Powhatan County	VA	94.07	44.51	74.52	65.38	61.61
Prince George County	VA	90.96	66.68	75.53	81.97	73.19
Prince William County	VA	106.28	106.57	94.52	115.14	107.11
Pulaski County	VA	91.55	84.58	83.02	103.9	88.33
Roanoke County	VA	96.03	110.04	80.69	98.89	95.46

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Rockingham County	VA	90.09	73.51	86.01	88.97	80.60
Scott County	VA	89.25	50.38	78.01	92.28	71.54
Spotsylvania County	VA	97.94	84.86	88.47	92.55	88.57
Stafford County	VA	98.78	84.11	81.07	88.85	85.09
Sussex County	VA	102.08	63.80	–	–	–
Warren County	VA	93.50	92.21	88.78	94.07	90.07
Washington County	VA	90.49	77.47	81.92	90.19	81.06
York County	VA	97.29	99.00	86.14	108.50	97.13
Alexandria city	VA	176.94	154.32	115.16	173.76	169.56
Bedford city	VA	94.78	123.63	72.04	113.62	101.29
Bristol city	VA	105.00	130.60	82.35	145.26	119.97
Charlottesville city	VA	128.80	148.33	210.83	152.37	175.93
Chesapeake city	VA	103.40	108.24	88.28	109.52	102.98
Colonial Heights city	VA	108.95	135.66	77.65	153.60	123.97
Danville city	VA	99.84	126.20	121.82	120.33	121.54
Fairfax city	VA	116.97	152.84	73.00	131.05	123.34
Falls Church city	VA	127.12	177.53	72.72	164.07	144.69
Fredericksburg city	VA	120.16	145.13	97.72	154.28	137.06
Hampton city	VA	110.55	123.19	114.92	150.96	131.48
Harrisonburg city	VA	122.83	143.99	144.42	131.80	145.19
Hopewell city	VA	112.29	124.58	79.39	185.81	132.25
Lynchburg city	VA	104.80	130.42	104.85	132.31	122.87
Manassas city	VA	115.54	140.36	76.57	150.36	126.17
Manassas Park city	VA	129.66	128.88	82.19	133.50	123.45
Newport News city	VA	112.21	121.94	86.53	137.18	118.28
Norfolk city	VA	129.98	131.46	210.96	179.44	179.57
Petersburg city	VA	101.48	127.00	104.35	144.23	124.34
Poquoson city	VA	97.09	105.92	77.55	104.32	95.22
Portsmouth city	VA	111.16	129.35	88.86	163.76	129.42
Radford city	VA	105.79	135.40	81.24	156.21	124.84
Richmond city	VA	120.46	133.06	160.69	172.23	158.90
Roanoke city	VA	109.84	129.71	120.97	155.62	136.69
Salem city	VA	107.30	128.88	76.93	140.41	116.91
Suffolk city	VA	95.77	99.14	103.14	98.02	98.76
Virginia Beach city	VA	111.75	123.10	86.61	137.93	118.77
Williamsburg city	VA	108.92	118.37	158.90	136.03	138.61
Winchester city	VA	114.03	135.13	133.91	150.19	142.10
Asotin County	WA	106.62	134.33	77.00	134.97	116.72
Benton County	WA	98.56	118.73	109.61	97.28	107.64
Chelan County	WA	97.97	126.31	120.30	99.04	113.78
Clark County	WA	102.63	123.40	89.55	105.28	106.59
Cowlitz County	WA	96.07	103.40	128.01	99.00	108.37
Douglas County	WA	103.94	116.98	82.17	91.30	98.23
Franklin County	WA	101.59	119.22	82.23	111.14	104.48
King County	WA	114.85	128.93	159.34	131.70	142.60

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Kitsap County	WA	98.92	107.82	115.62	96.04	105.81
Pierce County	WA	103.02	117.02	126.32	119.43	120.78
Skagit County	WA	96.68	112.71	101.76	99.87	103.48
Snohomish County	WA	103.47	116.86	122.73	100.03	113.62
Spokane County	WA	101.37	122.39	122.32	127.12	123.13
Thurston County	WA	97.83	103.71	132.90	95.16	109.35
Whatcom County	WA	95.83	110.62	115.26	99.00	106.54
Yakima County	WA	98.64	124.46	128.18	89.38	112.84
Berkeley County	WV	94.85	90.23	97.70	94.03	92.67
Boone County	WV	90.83	61.03	–	123.52	–
Brooke County	WV	91.02	93.32	87.28	116.81	96.34
Cabell County	WV	98.52	112.81	183.48	119.12	135.99
Hancock County	WV	94.13	110.72	86.79	118.07	103.07
Jefferson County	WV	91.79	75.67	87.64	98.81	85.44
Kanawha County	WV	96.10	108.14	147.64	125.60	124.48
Marshall County	WV	92.36	89.16	137.78	120.37	112.53
Mineral County	WV	90.81	75.55	159.67	111.67	111.91
Monongalia County	WV	98.42	117.16	120.10	115.01	116.02
Morgan County	WV	89.50	67.70	90.00	74.66	75.31
Ohio County	WV	95.76	115.77	150.91	129.79	129.14
Preston County	WV	88.93	44.98	90.63	80.67	70.06
Putnam County	WV	93.37	87.87	78.21	99.34	86.98
Wayne County	WV	93.73	81.82	84.99	106.16	89.48
Wood County	WV	96.66	116.84	107.75	121.08	113.37
Brown County	WI	99.46	115.40	101.30	91.01	102.26
Calumet County	WI	94.95	80.84	87.75	80.59	82.35
Chippewa County	WI	92.19	85.15	89.40	88.50	85.86
Columbia County	WI	90.01	92.46	87.63	90.90	87.68
Dane County	WI	106.96	126.20	153.67	106.96	129.63
Douglas County	WI	95.01	99.68	81.91	108.53	95.30
Eau Claire County	WI	98.55	115.50	116.85	96.62	108.70
Fond du Lac County	WI	95.54	109.78	153.06	94.09	116.57
Iowa County	WI	89.19	78.00	83.48	83.09	79.07
Kenosha County	WI	100.80	119.03	123.52	118.90	119.67
Kewaunee County	WI	92.15	103.67	77.23	79.49	85.01
La Crosse County	WI	98.49	119.38	88.95	117.4	107.65
Marathon County	WI	94.14	102.58	121.29	83.21	100.38
Milwaukee County	WI	128.75	139.35	178.96	155.69	164.06
Oconto County	WI	88.82	49.35	77.77	66.91	62.99
Outagamie County	WI	99.06	120.79	164.21	97.96	125.91
Ozaukee County	WI	95.11	116.53	106.77	87.76	101.95
Pierce County	WI	94.38	92.07	143.31	81.67	103.61
Racine County	WI	100.48	122.63	111.62	107.68	113.40
Rock County	WI	97.51	113.90	108.04	98.59	105.70
St. Croix County	WI	92.02	87.72	93.45	67.27	81.19

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Sheboygan County	WI	97.60	115.59	94.01	98.77	101.88
Washington County	WI	94.74	96.05	128.67	75.35	98.36
Waukesha County	WI	96.89	112.13	147.79	101.06	118.28
Winnebago County	WI	100.65	118.29	97.48	113.49	109.45
Laramie County	WY	100.71	112.98	132.64	114.68	119.28
Natrona County	WY	100.14	116.47	136.24	117.49	122.22

Appendix C: Quality of life analysis

In addition to analyzing development at the Metropolitan Statistical Area (MSA) and county levels, the researchers also generated index scores for the census-defined urbanized areas (UZAs) within MSAs. For more information about the methodology of the research and for UZA scores, see the full report at http://gis.cancer.gov/tools/urban-sprawl/.

To provide a better understanding of what data sources informed analyses at the MSA, county and UZA levels, an overview is below in Table C1.

TABLE C1

Data sources used to evaluate quality of life outcomes, by geographic scale

Outcome	Data Source	Geography	Relationship to sprawl
Housing affordability	Location Affordability Index[27]	MSA	positive and significant
Transportation affordability	Location Affordability Index	MSA	negative and significant
Combined housing and transportation affordability	Location Affordability Index	MSA	negative and significant
Upward mobility	Equality of Opportunity databases[28]	MSA	negative and significant
Average household vehicle ownership	American Community Survey[29]	MSA, county, UZA	positive and significant
Percentage of commuters walking to work	American Community Survey	MSA, county, UZA	negative and significant
Percentage of commuters using public transportation (excluding taxi)	American Community Survey	MSA, county, UZA	negative and significant
Average journey-to-work drive time in minutes	American Community Survey	MSA, county, UZA	positive and significant
Traffic crash rate per 100,000 population	States[30]	County	negative and significant
Injury crash rate per 100,000 population	States	County	negative and significant
Fatal crash rate per 100,000 population	States	County	positive and significant
Body mass index	Behavioral Risk Factor Surveillance System (BRFSS)[31]	County	positive and significant
Obesity	BRFSS	County	positive and significant
Any physical activity	BRFSS	County	not significant

Outcome	Data Source	Geography	Relationship to sprawl
Diagnosed high blood pressure	BRFSS	County	positive and significant
Diagnosed heart disease	BRFSS	County	not significant
Diagnosed diabetes	BRFSS	County	positive and significant
Average life expectancy	Institute for Health Metrics and Evaluation[32]	County	negative and significant

Endnotes

1 This study excludes Metropolitan Statistical Areas (MSAs) with populations less than 200,000 people due to data availability and because impacts are more difficult to measure at smaller scales.

2 For a more detailed explanation of how Sprawl Index scores are calculated, see Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

3 The Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area includes District of Columbia, DC; Calvert County, MD; Charles County, MD; Prince George's County, MD; Arlington County, VA; Clarke County, VA; Culpeper County, VA; Fairfax County, VA; Fauquier County, VA; Loudoun County, VA; Prince William County, VA; Rappahannock County, VA; Spotsylvania County, VA; Stafford County, VA; Warren County, VA; Alexandria City, VA; Fairfax City, VA; Falls Church City, VA; Fredericksburg City, VA; Manassas City, VA; Manassas Park City, VA; Jefferson County, WV. From: http://www.whitehouse.gov/sites/default/files/omb/bulletins/2013/b-13-01.pdf.

4 Metropolitan areas with populations less than 200,000 were not included in this analysis.

5 See the full analytical report for more information on these assessments: Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures.* Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

6 The Equality of Opportunity Project. Retrieved March 27, 2014, from www.equality-of-opportunity.org/.

7 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. (Page 89) Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

8 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. (Page 90). Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

9 U.S. Department of Housing and Urban Development (HUD). *Location Affordability Index*. Available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/location_affordability.

10 See note 10.

11 These calculations represent a weighted average of census block group values based on transportation and housing cost data from the HUD's Location Affordability Index. Available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/location_affordability.

12 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. (Pages 73–74). Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

13 Data for health outcomes is not available at the metropolitan level. The researchers use information available at the county level to inform these conclusions.

14 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures.* (Page 83). Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

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16 City of Santa Barbara. Uses permitted in various zones. Available at www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=17638.

17 City of Santa Barbara. (2011). *General Plan Update.* (Page 105). Available at www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=16916.

18 City of Santa Barbara. (2011). Land Use Element. (p. 2). Available at https://www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=16898.

19 Learn more about the County of Santa Barbara's Long Range Planning Division at http://longrange.sbcountyplanning.org/landuse_element.php.

20 Learn about Madison, WI's homebuyer assistance programs at www.cityofmadison.com/dpced/economicdevelopment/home-loans/228/.

21 Learn more about the Mansion Hill—James Madison Park Neighborhood Small Cap TIF Loan Program from the City of Madison's Economic Development Department at http://www.cityofmadison.com/dpced/economicdevelopment/mansion-hill-james-madison-park-neighborhood-small-cap-tif-loan-program/229/.

22 City of Madison, WI. (2006, January). Appendix 4: City of Madison Strategic Management System Goals and Strategies re: Growth Management. *City of Madison Comprehensive Plan, Volume I.* Available at http://www.cityofmadison.com/planning/ComprehensivePlan/dplan/v1/chapter5/v1c5.pdf.

23 For more information about Madison, WI's comprehensive plan see www.cityofmadison.com/planning/ComprehensivePlan/.

24 City of Trenton, NJ. (2004, January). Trenton Transportation Master Plan: Phase One Summary Report. Available at: http://www.trentonnj.org/documents/housing-economic/city_master_plan/phase%20one%20summary%20report.pdf.
25 Learn more about the Los Angeles Transit Neighborhood Plans project at www.latnp.org/.
26 City of Los Angeles. (2008, February). Ordinance No. 179681. Available at cityplanning.lacity.org/Code_Studies/Housing/DensityBonus.pdf.
27 U.S. Department of Housing and Urban Development. *Location Affordability Index*. Available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/location_affordability.
28 The Equality of Opportunity Project. *Mobility in All Commuting Zones*. Available at www.equality-of-opportunity.org/index.php/city-rankings/city-rankings-all.
29 U.S. Census Bureau. *American Community Survey*. Available at www.census.gov/acs/www/.
30 Crash data were obtained from all states via online databases or email/phone request. Survey years ranged from 2008 to 2011, with the majority between 2010 and 2011. The individual state crash data were compiled into a national database that includes nearly 6.1 million crashes, 1.8 million injury crashes and 30,000 fatal crashes.
31 See note 15.
32 Institute for Health Metrics and Evaluation. Available at www.healthmetricsandevaluation.org/.

Smart Growth America is the only national organization dedicated to researching, advocating for and leading coalitions to bring better development to more communities nationwide. From providing more sidewalks to ensuring more homes are built near public transportation or that productive farms remain a part of our communities, smart growth helps make sure people across the nation can live in great neighborhoods. For more information visit www.smartgrowthamerica.org.

GBD

April 28, 2016

Kirk Schueler
Brooks Resources Corporation
409 NW Franklin Avenue
Bend. OR 97702

To: Brooks Resources Corporation and Central Oregon LandWatch

RE: Bend Central Area Plan Review Report

BEND CENTRAL AREA PLAN REVIEW

Since 2004, the City of Bend has been developing a master concept plan for the Central Area of Bend to prepare for and guide the area's anticipated growth. As a part of that process the City of Bend prepared the Central Area Plan (CAP) (Bend Central Area Plan), which summarizes the community's vision for the Plan area. That effort was followed by the Bend Central District Multi-Modal Mixed Use Area (MMA) plan (Bend Multimodal Mixed-Use Area Plan), which focused on guiding the design of the area's transportation and land use concepts, General Plan Amendments, Transportation System Plan (TSP) Amendments and Development Code Amendments.

BACKGROUND

Recognizing that the City of Bend is at a critical point in implementing the plan for the Central Area, Brooks Resources and Central Oregon LandWatch requested that GBD Architects provide peer review of the CAP, MMA and the proposed General Plan and Development Code amendments. The goal of the peer review was twofold: 1) to identify opportunities to make the district more successful and 2) to identify items that could potentially be detrimental to the design and efficiency of future development in the area.

GBD Architects has more than 44 years of experience in sustainable urban planning and design. We focus our experience on solving problems and creating better places for humans to be more human. Our mixed-use project experience includes large redevelopment projects in local urban centers including Portland's Brewery Blocks, Lake Oswego's Foothills District, Bozeman's Story Mill District as well as international urban centers in Kunming and Beijing China. It should be noted that we are an architecture firm first - which means that our experience and expertise is derived from designing sustainable mixed-use buildings that form the fabric of complete communities.

REVIEW PROCESS

To gain an understanding of the overall vision for the CAP area (which is bounded on the west by the Deschutes River, on the north by Butler Market Road, on the east by fourth street and on the south by Colorado Avenue), we began by viewing existing conditions via Google maps we also looked up the Cascades East Transit Bend Service Map and reviewed the final 2007 CAP final report and all accompanying appendices and graphics. This effort provided the basis for an analysis that was informed by the community's goals of urban design, access, mobility and development opportunities.

With the foundation of the CAP, we reviewed the 2014 Draft Bend Central District MMA Plan (which is bounded on the west by the Bend Freeway and railroad tracks, on the north by NE Revere Ave, on the east by 4th street and on the south by railroad tracks south of NE Burnside Ave) and associated project documents as well as the 2014 Draft MMA Plan and Code Amendments.

This memorandum serves to document our review findings with an eye towards strengthening the success of the Plan area and identifying elements that may be a barrier or burden on potential development

PLAN ELEMENTS THAT COULD MAKE THE DISTRICT MORE SUCCESSFUL

Bend's vision for the Central Area Plan District is bold and exciting. It has the potential to guide the creation of a well-designed complete neighborhood that benefits Bend through improved walkability and safety, expanded housing choices, strengthening of commercial opportunities and leveraging of existing transit investment. With much to be accomplished to make the goals and vision of the district a reality, this is an opportunity to think beyond classic urban planning by tackling larger community issues. The proposed plan lays the groundwork for enhanced transit, eco-district solutions and incentives for affordable housing options. The Plan also sets up the potential for higher rents and gentrification if not addressed now. The District will only truly be successful if its evolution leads to positive change for the entire Bend community. To that end we suggest incorporating: an enhanced transit system, tools to encourage the development of affordable housing, additional sustainability measures and a local action plan to tackle the potential displacement of the District's current lower income households and businesses.

Strengthening Transit

The Central District appears to be well-served by transit with the Hawthorne Transit Station near the center of the District. This is an excellent foundation for the District to build on. The Plan recommends transit improvements that include transit demand management (TDM), bus bulb-outs, shelters and better pedestrian access to transit stops – all of which should serve to increase ridership.

With Bend facing unprecedented growth and traffic congestion even further encouragement of transit should be considered. The re-development of the Central District should include studies into a transit loop that connects the Central District to the Historic Downtown Core and potentially the Old Mill District. While a streetcar may not be the appropriate solution for Bend, the concept can still be applied. Infrequent transit users can be intimidated by a bus system that can take them miles out of the way if they get on the wrong bus. A dedicated loop with a clearly identifiable vehicle - whether it be a trolley, streetcar, electric bus, or bus of a unique size and shape or color – can help to alleviate the fears of new riders and visitors while providing greater connectivity and transit options for all.

Affordable Housing

Since Bend, like much of the region, is facing an influx of new residents who require housing, it is critical that Bend utilizes all available options to encourage the creation of affordable housing. Rezoning and redevelopment offer great opportunities to put more tools into play. Seattle recently struck what has been called "The Grand Bargain" with their development community that will allow larger and taller developments as long as developers set aside a percentage of their units as affordable. Their Housing Affordability and Livability Agenda (see: Seattle Mayor Murray's summary of HALA and appendix A) outlines an action plan with a multi-pronged approach to developing and preserving affordable housing. There are numerous elements in the plan that Bend should consider, but specific elements related to the

Central Area Plan include: 1) land banking, 2) incentive zoning for the development and preservation of low-income housing and 3) inclusionary housing.

As the Central Area district evolves land values will increase, which can make it challenging to build affordable homes. The City should consider setting aside public-owned land to be used strategically for the creation of affordable homes near transit and job centers. Providing housing for low-income workers and families near transit, jobs, schools, and services leaves more money in their pockets and reduces congestion and pollution.

Consideration should be given to providing zoning incentives that promote the creation of affordable housing. This can be accomplished by providing additional development potential in the form of floor area and height that can be earned when the project meets certain thresholds. Examples include dedicating a certain percentage of units as affordable at a designated median family income level. To make this incentive work, economic analysis needs to be performed to ensure that the additional density remains a bonus not a burden. In February of this year, the Oregon Legislature lifted the state ban on affordable housing mandates (State of Oregon HB 2564A - Inclusionary Zoning Bill). Bend should consider enacting inclusionary zoning to ensure that new development either includes affordable units or pays into an affordable housing fund and implements a construction excise tax to bolster the City's capacity to build housing with services for at-risk families. If the City decides to implement either of these tools to create more affordable housing, up-zoning (additional density) in proportion to these requirements should be provided to new developments. If either density bonus provisions or density offsets to mandates are being considered for implementation, base density standards and building heights should be re-evaluated.

Resilience and Sustainability

The MMA lays a strong foundation for a sustainable community by connecting neighborhoods, promoting transit/walking and bicycling, supporting compact complete community development, and planning for natural storm water facilities. But, the redevelopment of the Central District provides the opportunity to consider greater district strategies that serve to reduce infrastructure development, promote natural resource protection, and support a healthier community. Consideration should be given to integrating LEED for Neighborhood Development (See: Citizen's Guide to LEED ND or Appendix B) and/or forming an EcoDistrict (EcoDistricts.org) to encourage development of district wide solutions to energy reduction & creation, water treatment and re-use, heat island effect, carbon reduction and habitat creation with open space, eco-roofs and street trees and waste reduction. Additionally, consideration should be given to making sure the district is resilient which means understanding the capacity of the district to absorb and transform with change in both the built environment and natural environment whether it be a sudden disturbance such as a major earthquake or one that takes place over a period of time such as a drought.

Gentrification

Development can benefit existing residents through better access to shopping and services, improved walkability, and better transit. This will also enhance a neighborhood's attractiveness to new residents and will increase property values. For many, neighborhood revitalization is a positive change. For others, it provokes concern. Negative consequences can include involuntary displacement of lower income households and a change in the ethnic and racial make-up of a neighborhood's residents and businesses.

For example, the City of Portland spent millions of dollars investing in revitalizing North Portland, which some now argue caused more harm than good to Portland's traditional African American communities. Census tracks that were 31% African American in the 1990's are now 15%. Therefore, when the City of

Portland and Metro began studying a transit and development project along SE Powell and Division (Powell Division Transit Action Plan), they integrated the revitalization plans with a local action plan to build a community development strategy that supports residential and commercial stability and economic development. (See Appendix C for table of action Plan elements)

The economic analysis, appendix D of the CAP, states that the Central Area is lightly populated with just 122 residents. The household incomes of those residents are significantly lower, the households are smaller, and the median age is lower than that of the City as a whole. They are twice as likely as Bend residents as a whole to be renters rather than owners. The demographics support the development of urban housing, but if that housing is not affordable, then the current residents will be displaced.

Today the Central Area also has a unique employment profile with fewer industrial based jobs and more leisure, hospitality, and government based jobs. Bend is expecting a higher level of job growth in higher paying office and service jobs. If these jobs locate in the Central Area, they will provide opportunities for advancement, but they may also displace lower paying employment opportunities for those with less education.

With planning for the Central Area in the early stages, Bend has the opportunity to implement a local action plan that addresses issues related to redevelopment of the district. This action plan will support residential and community stability so that current residents and business are able to benefit from the revitalization of the District.

DEVELOPMENT STANDARDS THAT COULD MAKE THE DISTRICT MORE SUCCESSFUL

In addition to reviewing the CAP and the MMA, we reviewed the draft special planned district (named the BC-MMA) code language, which is intended to be included within the existing planned district code language in Chapter 2.7 of the Bend Development Code (BDC). We also reviewed the existing design guidelines in BDC Chapter 2.2.800 (BDC Chapter 2.2) and the existing site plan review regulations of BDC Chapter 4.2 (BDC Chapter 4.2). This memorandum highlights some of the broader topics that we recommend be re-considered or modified. A redlined version of the BC-MMA is attached to this memo (Appendix D) and includes detailed comments on specific language.

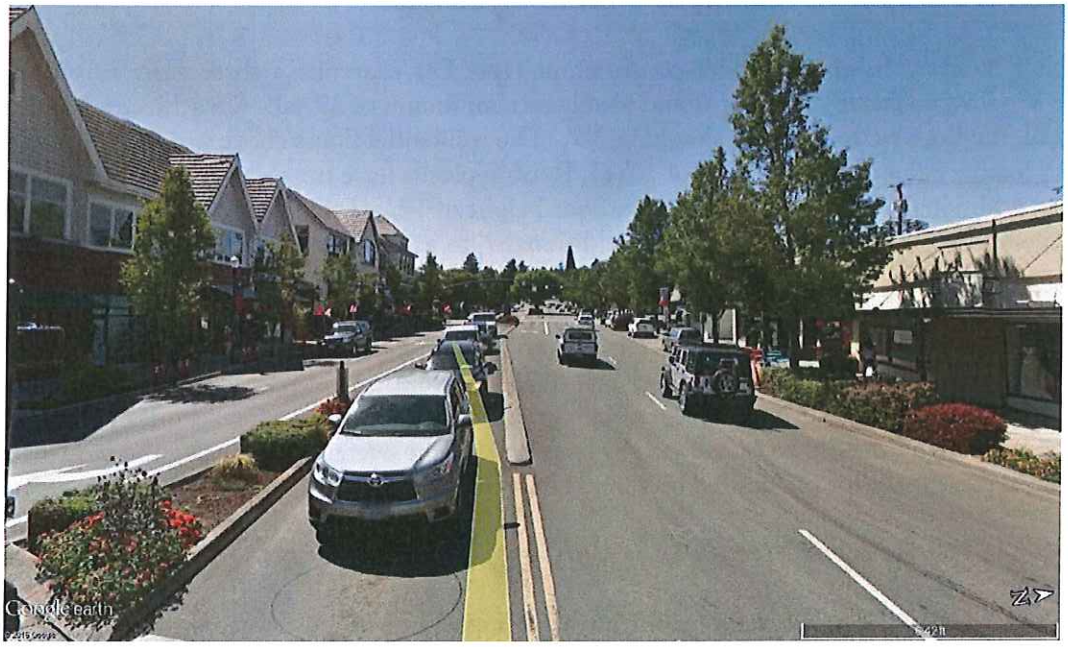
Third Street

Third (3rd) Street runs north/south the entire length of the Central Area and is a regional connector. As stated in the MMA, on-street parking serves as a buffer for pedestrians. Parked cars narrow the field of vision for motorists and encourages them to maintain a slow speed and provide the means for adding curb extensions that narrow the street crossing distance. On-street parking also encourages retailers, businesses, and multi-family residential lobbies to front the street since visitors are able to park in front of the entry. Interestingly enough, no street parking is being proposed for 3rd Street. We would recommend removing the bike lanes from 3rd street to accommodate on-street parking. As stated in the CAP – "all streets are not equal." Not all streets need to accommodate bikeways. Bikeways are proposed for both 2nd and 4th, which are local streets with less traffic moving at slower speed. These streets can provide the necessary connections to the bike network.

The Development Standards propose requiring buildings to setback 10' from the street with landscaping along the face of the building. Landscaping will block views, create barriers to retail and will limit the

potential of having restaurants and cafes spill out to the sidewalk. We recommend removing the BDC landscaping requirement and instead require street trees north of Greenwood along the curb.

Example of no street parking: Macadam Avenue, Portland OR– While the buildings are required to have active uses and doors on the street, retailers locate their main front door off the parking area on the back. Pedestrians rarely walk along the street. Note the landscaping along the storefront blocking views into the retail.



Example of street parking: A Avenue, Lake Oswego, OR – The buildings are required to have active uses and doors on the street – which they do. Pedestrian often walk along the street. Note that landscaping is along the curb and leaving a clear view into the storefronts.

The street section along the length of 3rd street appears to vary from 80'-100.' This is the widest street in the District yet building height is restricted to 65' and requires setbacks for portions of the building that are higher than 45'. The CAP states, "Building heights adjacent to a street edge should be at least as tall as half the width of the right of way." Allowing taller facades along 3rd Street will serve to create a more intimate room for pedestrians and slow vehicular traffic. Sections 2.2.700 Pedestrian Amenities and Section 2.2.800- Human Scale of the BDC provides the necessary requirements to create environments that are comfortable for pedestrians. If the desire is to break down the scale of taller buildings, we would recommend requiring vertical breaks such as bays or a change in materials.

Section 2.7.3050 Parking

Many cities have removed minimum parking requirements (Strongtowns.org). As a means to promote alternative transportation, consider maximum parking requirements and let the marketplace determine minimum parking requirements. In today's market, lenders require higher minimums than those that are being proposed. If there is concern about parking spilling out into the surrounding neighborhood, residential parking permit programs can be implemented to prioritize on-street parking for residents and their guests.
If removing all parking minimums is too big a step, consider eliminating parking minimums for all retailers and metering on-street parking for short term use. This lowers the barrier to entry and prioritizes on-street parking for retail customers and visitors to the district. Large retailers that need more parking to support their operations will still have the option to build parking they feel is required.

Section 2.7.3030 Development Standards – Building Height

When establishing building heights consider construction type. For example: a three story mixed-use residential Type V (all wood frame) building would ideally be a minimum of 37' tall. To achieve a 12' clear space for the retail, the floor to floor height should be 15'. The residential floors above would ideally have 9' ceilings, which require a floor to floor height of 10'-6". Roofs typically have trusses that can increase floor to floor height an additional 18", requiring a floor to floor height of 12.' If the building was a mixed-use office building the overall height would increase an additional 7' to accommodate 12' clear ceilings in the office area.

In Oregon, wood frame construction typically maxes out at 6 stories (Type III construction – also known as 5 over 1) with the floor of the uppermost level below 75' to avoid triggering high-rise construction requirements. It is anticipated that in 2018 Oregon will update the code to allow for 7 stories (5 over 2). Zoning code building heights should be established by backing into the overall height using the number of desired stories, ideal clear space for the desired uses, and construction type.

Section 2.7.3030 Development Standards – Building Height Setbacks

Requiring buildings to stepback at a certain height introduces steel into wood frame construction at the floor level of the steback to support the gravity loads of the building above. This is expensive and can create complex fire proofing details to resolve. Instead of requiring height stepbacks, consider alternative methods

to break down the scale of the building such as vertical breaks in materials, bay windows and balconies. If building height stepbacks are to be maintained, make sure the established heights correlate to floor to floor heights that are derived from construction type (see paragraph one under Section 2.7.3030 Development Standards – Building Height above).

CONCLUSION

Many of the key elements that make neighborhoods more inviting and vibrant are included in the proposed plan and development standards. There is a strong foundation in the work accomplished to date, but additional consideration should be given to some elements in the proposed policies and development standards. This is a unique opportunity to transform the Central Area into a neighborhood where people walk to the grocery store or bike to dinner, and where they take transit to get to work -thereby reducing both traffic congestion and carbon emissions. Strategically thinking now about tackling the challenges of affordable housing and displacement and implementing tools into the plan will be key in turning the additional development potential into a public benefit for all. Finally, the development standards should incorporate a deeper understanding of construction practices and building types as well as more progressive thinking on parking standards and should go further in transforming 3rd street into a more urban and pedestrian friendly environment.

Sincerely,

GBD Architects Incorporated

Katherine Schultz, AIA, LEED AP
Director

LINKS AND APPENDICES

Links

1. Bend Central Area Plan
   http://bendoregon.gov/index.aspx?page=783

2. Bend Multimodal Mixed-Use Area Plan
   http://bendoregon.gov/index.aspx?page=783

3. Seattle Mayor Murray's summary of HALA
   http://murray.seattle.gov/housing/#sthash.3jB6apXE.T0oPcSyy.dpbs

4. State of Oregon HB 2564A - Inclusionary Zoning Bill
   https://olis.leg.state.or.us/liz/2015R1/Measures/Overview/HB2564

5. Citizen's Guide to LEED ND
   https://www.nrdc.org/sites/default/files/citizens_guide_LEED-ND.pdf

6. EcoDistricts.org
   http://ecodistricts.org/about/vision-mission-values

7. Powell-Division Transit Action Plan
   http://www.oregonmetro.gov/sites/default/files/TransitActionPlanMay2015.pdf

8. BDC Chapter 2.2
   http://www.codepublishing.com/OR/Bend/html/BendDC02/BendDC0202.html

9. BDC Chapter 4.2
   http://www.codepublishing.com/OR/Bend/html/BendDC04/BendDC0402.html

10. Strongtowns.org
    http://www.strongtowns.org/journal/2015/11/18/a-map-of-cities-that-got-rid-of-parking-_minimums

Appendices

A. HALA Report 2015

B. Citizens Guide LEED-ND

C. Action Plan Chart

D. GBD Review Comments of Bend MMA Code and Plan Amendments

Brooks Resources Corporation

CENTRAL OREGON LANDWATCH

August 1, 2016

Dear City Council:

Brooks Resources and Central Oregon LandWatch are pleased to present the attached jointly sponsored peer-review and analysis of Bend's Central District MMA Plan and Code Amendments.

Brooks and LandWatch retained the services of Katherine (Kat) Schultz to complete this review. Kat is a Director at GBD Architects in Portland and has more than 20 years of experience in mixed-use housing and planning. She is passionate about uncovering opportunities and challenges inherent in planning for smart growth and works to gain a broad perspective on the issues facing her community through her work not only as an architect but also as a Chair of Portland's Planning and Sustainability Commission.

Brooks and LandWatch share a common interest in the ultimate success of the Central District as we believe it is key to Bend's transition to a more urban city with a variety of housing and transportation options. To that end, we tasked Kat with reviewing the plan and code amendments with her experienced eyes to find ways to encourage the District's transformation. Kat's review and analysis recommends some highly specific amendments to the draft MMA Code language as well as additional thoughts on elements of the MMA Plan that should be considered for long term implementation.

The planning effort and documents for the Central District represent a great planning effort and a solid final product. However, there are a few simple code changes that could be adopted with the UGB amendments as a first step toward making certain the Central District Opportunity Area is successful. In summary, Kat's proposed code amendments would accomplish the following:

- Parking Standards – reduce minimum requirements to 0 and let the market determine what is needed. In alternative, at least consider eliminating or at least further reducing

parking for retail uses. The Central District could then be utilized as a special case study area for the larger Bend Parking Study.

- Building Height – 75' allows for economical 5-over-1 wood construction and stays below high-rise construction building codes, which alone can greatly increase building costs. This may be increased to 5 over 2 in 2018 in state code. Heights should be established by backing into overall desired height using the number of desired stories.
- Eliminate requirements for step-backs as building height increases, with possible exception of along 4th Street adjacent to residential zones. Step backs greatly increase the cost of construction with questionable benefit. Consider alternative means of height mitigation such as bays, stories in gable roofs or balconies to achieve similar visual effect without as significant impacts on building costs.
- Eliminate requirements for additional setbacks from the street for taller buildings, especially along the already very wide 3rd Street corridor. Additional setbacks would be counter-productive in nearly every way imaginable.

Utilizing Kat's report and recommendations, we have made suggested edits to the current draft of the MMA Code for your consideration. See Attached "Track Changes" version of draft MMA Code that identifies these specific proposed amendments.

However, simply amending the code, either as currently proposed or with the changes we are suggesting, is only a starting point to ensure the City gets the desired outcomes for redevelopment in the Central District. There are follow up steps that need to be considered and implemented to make the most of the opportunity. These include:

Mid-term actions: follow up actions that should be considered for near term study and implementation.

- Analyze current and projected parking demands in the downtown and Central District; consider adopting parking demand management measures like parking permits and meters.
- Implement inclusionary zoning regulations as allowed by state law and consider other means of encouraging workforce housing in this area.
- Study feasibility and consider implementing an Urban Renewal district to fund public investment in the Central District.
- Consider investing in street section improvements in the Central District to trigger private development; ie, Colorado/Arizona couplet.
- Consider developer incentives to invest in Central District (see attached "Downtown Boise Housing Incentives" brochure.)

Longer term strategies: Issues and ideas to consider now and that could be put into play as the Central District develops.

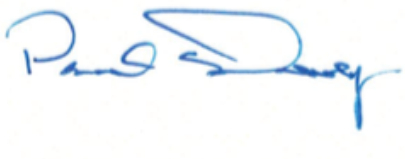
- Update/Revise Transit Plan, consider a special loop system between the Central District, downtown, and Old Mill with a distinctive vehicle.
- Sustainability should be an ongoing theme in the Central District. Consider incentivizing the creation of an "Eco District" within the Central District.
- Gentrification – as the district attracts residents and becomes a success, values will rise and existing residents and businesses could be displaced. Strategies to mitigate these impacts have been employed in other cities that can be implemented to help alleviate these concerns.

Thanks for your time and attention on this topic. Attached is additional information including:

1. Kat Schultz' Bend Central Area Plan Review
2. Brooks/COLW proposed amendments to the draft Chapter 2.7.3200, Bend Central District
3. Boise, Idaho "Redefine Downtown" summary documents as an example of what that city has done to encourage redevelopment and housing within and adjoining their downtown.

Sincerely,

Kirk Schueler, Brooks Resources



Paul Dewey, Central Oregon LandWatch

Chapter 2.7

SPECIAL PLANNED DISTRICTS

***

The Bend Central District (BCD) code proposal is the final product of a 2012/13 TGM Grant developed through an 18-month public process that included interested citizens, property and business owners and staff. In October 2014 the City Council received a presentation on the project. The Bend Central District is one of the Opportunity Areas identified through the UGB process.

Article XIV. Bend Central District

***

2.7.3200 Bend Central District (BCD)

The Bend Central District is intended to implement the goals and objectives for the creative redevelopment of the central Third Street Corridor and surrounding areas west to the Parkway and east to and including 4th Street as indicated below:

- Provide for a wide range of mixed residential, commercial and office uses throughout the area and, depending on the parcel and its surroundings, vertical mixed use (i.e., a mix of uses within the same building), with an emphasis on retail and entertainment uses at the street level.
- Provide a variety of residential development types and greater density of development, with a transition area adjacent to the existing residential neighborhood east of 4th Street.
- Provide for development that is supportive of transit by encouraging a pedestrian-friendly environment.
- Provide development and design standards that support the goals of the Plan
- Limit development of low-intensity uses while allowing continuation of existing industrial and manufacturing uses.
- Provide reduced parking standards and encourage alternative parking arrangements.

The Bend Central District has distinctly different characteristics within the Bend Central District boundary. Subdistricts that recognize and support these characteristics are established as follows:

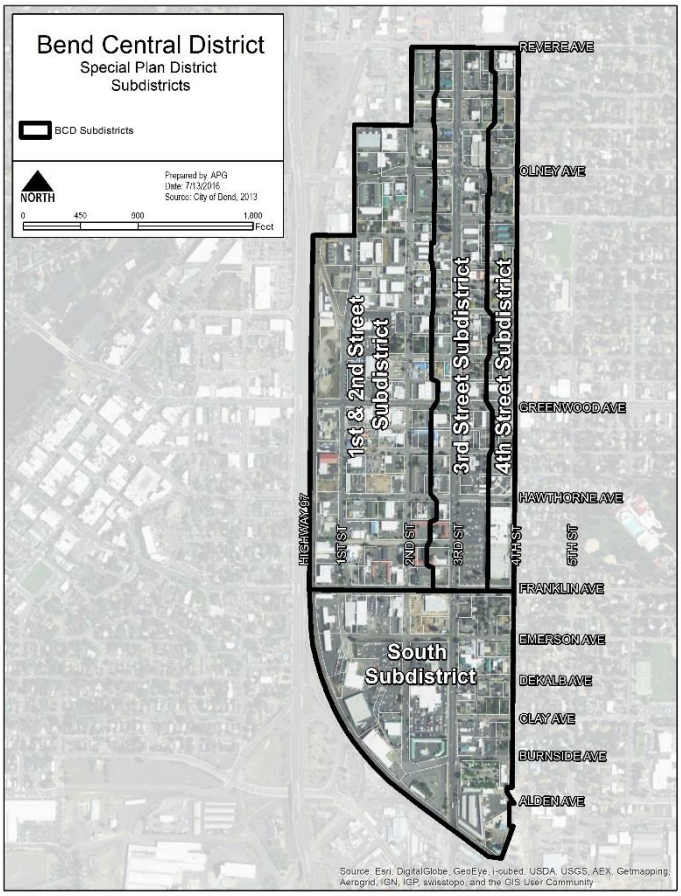
1. 1st/2nd Street Subdistrict. Applies to properties in the vicinity of 1st and 2nd Streets within the BCD and is intended to provide for a mix of office, higher density residential, live/work and small-scale retail uses while also allowing for continuation of existing light industrial/manufacturing uses in the area.

2. 3rd Street Subdistrict. Applies to properties in the vicinity of 3rd Street between Revere and Franklin Streets and is intended to provide a range of mixed uses including large-scale commercial, retail and limited residential uses.

3. 4th Street Subdistrict. Applies to properties in the vicinity of 4th Street within the BCD and is intended to provide a transition between the more intense central area and existing residential neighborhoods to the east.

4. South Subdistrict. Applies to properties south of Franklin Avenue along and between 2nd and 3rd Streets and is intended to provide a range of mixed uses including high density multifamily and office space above ground floor retail/service uses.

Figure 2.7.3210 Sub-district Map



2.7.3210 Applicability.

A. Applicability. In addition to the provisions of the underlying zone, the standards and requirements of this section apply to lands within the BCD boundary as depicted on Figure 2.7.3210. These provisions modify existing standards of the Bend Development Code by applying requirements, limiting allowable uses, or allowing exceptions to general regulations. Where there is a conflict between the provisions of the Bend Central District and those of the underlying zone or other portions of the Development Code, the provisions of this refinement plan shall control.

2.7.3220 Land Uses.

A. Permitted and Conditional Uses. The land uses listed in Table 2.7.3220 are allowed in BCD sub-districts, subject to the provisions of this chapter. Only land uses that are listed in Table 2.7.3220 and land uses that are approved as "similar" to those in Table 2.7.3220 may be permitted or conditionally allowed. The land uses identified with a "C" in Table 2.7.3220 require Conditional Use Permit approval prior to development, in accordance with BDC Chapter 4.4. Land uses identified with an "L" in Table 2.7.3220 are allowed with limitations in accordance with Subsection (D).

B. Existing Uses. Uses and structures that are not in conformance with the provisions in this section but that were lawfully established within the BCD prior to the adoption of this code are considered a permitted use. Expansion or enlargement 25 percent or less of the above referenced uses or structures that are nonresidential will be subject to the provisions of BDC Chapter 4.2, Minimum Development Standards Review, Site Plan Review and Design Review. For expansion or enlargement greater than 25

percent, the conditional use criteria, standards and conditions within BDC Chapter 4.4, Conditional Use Permits, will also apply. Conditions of prior approvals will continue to apply unless modified in conformance with BDC 4.1.1325, Modification of Approval.

C. Determination of Similar Land Use. Similar land use determinations shall be made in conformance with the procedures in BDC 4.1.1400, Declaratory Ruling.

Table 2.7.3220
Permitted Uses in the Bend Central District by Subdistrict

Land Use	1st/2nd Street	3rd Street	4th Street	South
Residential				
Single-Family Detached Dwelling	N	N	N	N
Attached Single Family Townhomes	N	L (see Subsection D1 below)	P	P
Multifamily Residential	L (see Subsection D1 below)	L (see Subsection D1 below)	P	P
Residential as part of mixed use development	P	P	P	P
Commercial				
Retail Sales and Service	L (see Subsection D2 below)	P	L (see Subsection D2 below)	P
Retail Sales and Service (auto dependent*)	N	N	N	N
Retail Sales and Service (auto oriented*)	N	C	N	N
*Medical Marijuana Dispensary and Marijuana Retailer	L (see Subsection D2 below)	P	L (see Subsection D2 below)	P
*Marijuana Wholesale (more than 75% of sales are wholesale)	P	P	C	C
*Marijuana Testing, Research and Development Facilities	P	P	L (see Subsection D3 below)	P
Restaurants/Food Services				
– with drive-through*	N	C	N	N
– without drive-through	P	P	P	P
Offices and Clinics	P	P	L (see Subsection D3 below)	P
Conference Centers/Meeting facility associated with a hotel/motel	C	P	N	C
Lodging (bed and breakfast inns, vacation rentals, boarding houses, timeshare)	P	P	P	P

Land Use	1st/2nd Street	3rd Street	4th Street	South
Hotel/Motels	P~~C~~	P	C	C
Commercial and Public Parking, structure	P~~C~~	P~~C~~	C	P~~C~~
Commercial and Public Parking, surface lot	P~~N~~	P~~N~~	P~~N~~	P~~N~~
Commercial Storage				
– enclosed in building and on an upper story	C~~P~~	C	P	N
– not enclosed in building	N	N	N	N
– enclosed in building on ground floor (i.e., mini-storage)	N	N	N	N
Entertainment and Recreation				
– enclosed in building (e.g., theater)	L/C (See subsection D6 below)	~~P~~L/C(See subsection D6 below)	N	L/C (See subsection D6 below)
– not enclosed (e.g., amusement)	C	C	N	C
Wholesale Sales (more than 75% of sales are wholesale)	P	P	C	C
Hospital	C	C	C	C
Public and Institutional				
Government – point of service intended to serve the entire City (e.g., City Hall, main library, main post office, main Department of Motor Vehicles service center)	P	P	P	P
Government – branch service intended to serve a portion of the City	P	P	P	P
Government – limited point of service (e.g., public works yards, vehicle storage, etc.)	N	N	N	N
Parks and Open Space	P	P	P	P
Schools	P	P	P	P
Institutions of Higher Education	P	P	P	P
Child Care Facility	P	P	P	P
Clubs and Places of Worship	P	P	P	P
*Utilities (above ground)	P	P	P	P
Industrial				
Manufacturing and Production	L (see Subsection E3 below)	N	N	N
Warehouse	L (see Subsection E4 below)	N	N	N

Land Use	1st/2nd Street	3rd Street	4th Street	South
Transportation, Freight and Distribution	C	N	N	N
Production businesses (e.g., IT support centers, biotechnology, software/hardware development, broadcast and production studios)	P	~~C~~P	~~C~~P	~~C~~P
Industrial Service (e.g., cleaning, repair)	L (see Subsection D3 below)	N	N	N
Marijuana Grow Sites and Marijuana Producing when designated as Mixed-Employment, Industrial General or Industrial Light on the Bend Area General Plan on the Bend Area General Plan	L(see Subsection D4 below)	L (see Subsection D4 below)	N	L (see Subsection D4 below)
*Marijuana Processing of Cannabinoid Concentrates and Cannabinoid Products when designated as Mixed-Employment, Industrial General or Industrial Light on the Bend Area General Plan on the Bend Area General Plan	L (see Subsection D4 below)	L (see Subsection D4 below)	N	L (see Subsection D4 below)
*Marijuana Processing of Cannabinoid Extracts when designated as Mixed-Employment, Industrial General or Industrial Light on the Bend Area General Plan on the Bend Area General Plan	L (see Subsection D4 below)	L (see Subsection D4 below)	N	L (see Subsection D4 below)
Miscellaneous				
Small scale alternative energy systems (i.e., rooftop wind turbine or solar panels)	P	P	P	P

Key to Permitted Uses

P = Permitted
N = Not Permitted
C = Conditional Use
L = Permitted with limitations, subject to Subsection (D) below

D. Limitations. The following limitations apply to those uses identified as "L" in Table 2.7.3220.

1. New residential uses. In order to ensure that the subdistricts retain their established employment focused character, new residential uses in the 1st/2nd St and 3rd St subdistricts are limited as follows:

a. Residential uses that are part of a mixed use development in which non-residential uses occupy at least the floor area equivalent to the entire ground floor area of the development area permitted.

b. Residential uses that are part of a mixed use development in which non-residential uses occupy less than the floor area equivalent to the entire ground floor area of the development area are conditional.

c. Residential uses that are not part of a mixed use development are prohibited.

2. Retail sales and service. Retail sales and service uses must not exceed 30,000 square feet per business. Total area of retail sales and service uses combined must not exceed 50,000 square feet per building.

3. Offices and clinics. Offices and clinics must not exceed 15,000 square feet per business.

4. Manufacturing, production and industrial services. Uses must not exceed 20,000 square feet per business and must minimize potential external effects as follows:

a. All operations must be conducted entirely within an enclosed building.

b. Potential nuisances such as noise, odor, electrical disturbances and other public health nuisances are subject to Chapter 13.45

c. Roof-mounted mechanical equipment, such as ventilators and ducts, must be contained within a completely enclosed structure that may include louvers, latticework, or other similar features. This screening requirement does not apply to roof-mounted solar energy systems or wind energy systems.

5. Warehousing. Warehousing must be accessory/secondary to a primary permitted use (it may not be a single use) and must not exceed 15,000 square feet per building.

6. Entertainment and Recreation. Entertainment and Recreation uses where permitted in ~~all~~ subzones of the BCD that are enclosed in a building shall not exceed 50,000 square feet without a conditional use permit.

2.7.3230 Development Standards.

A. The following table provides numerical development standards within the BCD.

Building setback standards apply to any new buildings and any building expansion, including primary structures and accessory structures. Setbacks provide opportunity for pedestrian amenities; building separation for fire protection and building maintenance; sunlight and air circulation; noise buffering; and visual separation. Building setbacks are measured from the building foundation to the respective property line.

Table 2.7.3230
Development Standards in the Bend Central District by Sub-District

Standards	1st /2nd Street	3rd Street	4th Street	South
Minimum Lot area	No minimum	No minimum	No minimum	No minimum
Lot width	30 feet	30 feet	30 feet	30 feet
Minimum front yard setback	5 feet[1]	10 feet[1~~2~~]	5 feet[1]	5 feet[1]
Maximum front yard setback	10 feet	15 feet	10 feet	10 feet
Rear and side yard setback	None or 10 feet (see Section C below)~~10 feet~~	None or 10 feet (see Section C below)	None or 10 feet (see Section C below)	None or 10 feet (see Section C below)
Maximum building height[2~~3~~]	65 feet or~~to~~ 85 feet (see Sections B and E below)	65 feet or 85 feet (see Section E below)	45 feet	65 feet ~~to~~ or 85 feet (see Sections B and E below)

Notes:

1. In ~~the 1st/2nd Street, 4th Street and South~~all Subdistricts, the first 5 feet of the required ~~5-foot~~ front setback will be a dedicated pedestrian easement and will be developed according to the applicable cross section for the fronting street.

~~2. In the 3rd Street Subdistrict, the first 5 feet of setback (measured from the street) will be a dedicated pedestrian easement and will be developed according to the applicable cross section for the fronting street. The remaining 5 feet of setback shall be landscaped according to Chapter 3.2.300.~~

2~~3~~. Equipment used for small scale alternative energy production does not count towards maximum building heights.

B. In the 1st/2nd Street, 3rd Street and South Subdistricts, buildings may be a maximum of 85 feet in height that:

1. Provide at least 10% of any residential units at affordable rates in conformance with BDC 3.6.200(C), or

2.~~.~~For buildings that do not have a residential component, provide at least 75% percent of required parking within the building footprint of structures.~~, such as in rooftop parking or under-structure parking may be a maximum of 85 feet in height.~~ Parking on the ground floor shall have a pedestrian-oriented ~~retail~~ active façade facing the primary street (see paragraph E.2 below for examples).~~.~~

C. Rear and side yard setback.

1. There is no rear or side yard setback required, except when abutting a Residential Zone. In such cases, the rear or side yard setback is 10 feet for all portions of the building 35 feet in height or less. Step-backs or other architectural features such as vertical breaks, balconies, bays or stories within gable roofs are required for portions of a building that exceeds 35 feet in height or the height limit of the abutting residentially designated district, whichever is greater.

2. When a public alley abuts a side or rear yard of property, the width of the alley can be included in the additional setback calculation as described in subsections (1) and (2) of this section for the purpose of offsetting the impacts of the building height over 35 feet. The alley does not eliminate the required 10-foot building setback.

D. Multiple Frontage Lots. For buildings on sites with more than one frontage or through lots, the minimum front yard setback standards in Table 2.7.3230 shall be applied as follows.

1. For corner lots with two frontages, the maximum setback standards indicated in Table 2.7.3230 shall be applied to all street frontages.

2. For through lots with two frontages, the maximum setback standards indicated in Table 2.7.3230 shall be applied to only one of the frontages; provided that where the abutting streets are of different street classification, the maximum setback standard shall be applied to the street with the higher classification.

3. For properties with three or more frontages, the maximum setback must be met on two abutting frontages.

E. Buildings exceeding 65 feet in height are allowed subject to the following provisions:~~Building height step-backs in the 1st/2nd Street, 3rd Street and South Subdistricts. Where portions of a building are higher than 45 feet, 60 percent of the street-facing facades higher than 45 feet must be set back one foot from the street-facing property line for every one foot that the building exceeds 45 feet in height, with a minimum step-back of 10 feet and a maximum step-back of 15 feet. The required step-back may be reduced by one foot for each foot below the 45-foot height level that the step-back begins, e.g., for a~~

~~building that begins its step-back at the 35-foot height level (10 feet below what is required) the required step-back can be reduced by 10 feet.~~

~~1. Affordable housing developments in conformance with BDC 3.6.200(C) are exempt from the street-facing facade step-back standards of subsection E provided:~~

~~a~~1. Buildings ~~with exterior walls greater than 50 feet in horizontal length~~ shall be constructed using ~~the installation of~~ a combination of architectural features and a variety of building materials. Landscaping should be planted adjacent to the curb line to create a streetscape as illustrated in Figures 2.7.3230 and 2.7.3260. ~~walls.~~ Ground story walls that can be viewed from public streets shall be designed with non-reflective windows totaling a minimum of 25 percent of the wall area and using architectural features (see 2, below). For new buildings, the front building façade must be at the minimum setback for at least 50% of the lot frontage; outdoor public gathering spaces such as plazas are encouraged and count toward the setback requirement; off-street parking is not allowed between the front building façade and the street.~~Walls that can be viewed from public streets shall be designed with windows totaling a minimum of 10 percent of the wall area and using architectural features and landscaping (abutting the building) for at least 50 percent of the wall length.~~

~~b~~2. Architectural features include, but are not limited to, the following: recesses, projections, wall insets, arcades, window display areas, awnings, balconies, window projections, landscape structures or other features that complement the design intent of the structure and are acceptable to the Review Authority.

Figure 2.2.3230
Illustration of ~~Step-Backs and~~ Use of Architectural Features

F. Buffering. A 10-foot-wide landscape buffer is required along the side and rear property lines between nonresidential uses and any adjacent Residential ~~Districts~~Zones. The buffer is not in addition to (may

overlap with) the side and rear setbacks required in subsection (B) of this section. The buffer shall provide landscaping to screen parking, service and delivery areas and walls without windows or entries. The buffer may contain passive outdoor seating and bicycle parking but must not contain trash receptacles or storage of equipment, materials, vehicles, etc. The landscaping standards in BDC Chapter 3.2, Landscaping, Street Trees, Fences and Walls, provide other buffering requirements where applicable.

2.7.3240 Design Standards

A. All development. Development in the BCD is subject to the design guidelines in BDC Chapter 2.2.800, Subsection (I) except as established below. The standards of this section are in addition to the regulations of BDC Chapter 4.2, Minimum Development Standards Review, Site Plan Review and Design Review Standards. The standards of this section are in lieu of the BDC 2.2.600, Commercial Design Review Standards.

1. Section 2.2.800(I)(3) - Physical, Visual and Experiential Connections. The intent and general approach of this section apply. However, the language referring to traditional business zones and traditional storefront buildings does not apply here.

2. Section 2.2.800(I)(5) - Integrate Building Parapets and Rooftops. The intent and general approach of this section apply. However, the language referring to ornamentation on traditional CB Zone buildings does not apply here. In addition, rooftop solar panels and wind turbines are exempt from the screening requirement.

3. Section 2.2.800(I)(10) - Urban Materials. Does not apply.

B. Single use residential buildings. Single use residential buildings including duplexes, triplexes and multifamily are also subject to the provisions in Sections 2.1.900 and 2.1.1000, with the following exception:

1. The common open space requirement in 2.1.1000(B)(1) does not apply to any property with a residential building located within one-quarter mile of a public park.

2.7.3250 Parking

A. In the BCD, the following parking requirements supersede parking requirements in BDC Table 3.3.300, Required Off-Street Vehicle Parking Spaces. Unless otherwise noted here, other sections of BDC Chapter 3.3, Vehicle Parking, Loading and Bicycle Parking apply.

1. The minimum number of required off-street vehicle parking spaces is established below. Off-street parking spaces may include spaces in garages, carports, parking lots, and/or driveways if vehicles are not parked in a vehicle travel lane (including emergency or fire access lanes).

a. Residential uses: 1 space per unit

b. Commercial uses:

i. ~~Commercial~~ Retail or restaurant uses totaling ~~smaller~~ less than 5~~1~~,000 square feet of floor area: none

ii. ~~Commercial~~ Retail or restaurant uses in excess of 5~~1~~,000 square feet or more of floor area: 1 space per 1,000 square feet of gross floor area in excess of 5,000 square feet.

c. Entertainment uses: Determined by conditional use

d. Hotel/motel: 1 space per room

e. Office uses: 1.5 spaces per 1,000 square feet of floor area

f. Light industrial/manufacturing uses: 0.7 spaces per 1,000 square feet of floor area

g. Public and institutional uses, government uses: 1.5 spaces per 1,000 square feet of floor area

~~2. Credit for On-Street Parking. If retail or other active commercial use is provided on the street-facing ground floor, the amount of off-street parking required may be reduced by one off-street parking space for every on-street parking space abutting the development, consistent with BDC 3.3.300(B)(2).~~

2~~3~~. Mixed-Use Developments. If more than one type of land use occupies a single structure or parcel of land with no single use occupying more than 80% of the total square feet of the building, the total requirements for off-street automobile parking shall be 75 percent of the sum of the requirements for all uses.

34. The total number of required vehicle parking spaces for an industrial, commercial, or office use may be reduced by up to 10 percent in exchange for providing on-site public open space/green space at the following ratio: one vehicle parking space per 500 square feet of public open space/green space. This reduction is in addition to any reductions taken under Chapter 3.3.300.D.

2.7.3260 Special Street Standards

A. The BCD considered special street standards for streets inside the refinement plan area. The intent of the special street standards is to develop complete streets that enable safe travel for all modes of travel including transit, motorists, pedestrians, cyclists and freight users. On street parking, bicycle lanes and wider sidewalks were identified as elements necessary for safe travel. Below is a typical concept cross section.

Figure 2.7.3260

Street Design Concept for 2nd/4th Streets

These special street standards will be developed as part of the City's Transportation System Plan (TSP). Until the special standards are available, the Transportation Improvement Standards of Chapter 3.4 must apply in the BCD.

B. To accomplish new streets, additional street widths and street improvements envisioned for the BCD the following requirements shall apply.

1. The required 5-foot front yard setback along all street frontages must be dedicated as a public easement with site plan approval. This is in addition to any additional right of way that may be required by Chapter 3.4.

2.7.3270 Low Impact Stormwater Management

A. The use of low impact development (LID) techniques to manage stormwater on site is encouraged consistent with the City's Central Oregon Stormwater Manual. Techniques can include, but are not limited to, the following:

1. Use of on-site pervious paving materials to minimize impervious surfaces allowed within off-street and on-street parking areas and other areas within a development site.

2. Provision of an eco-roof or rooftop garden

3. Use of drought tolerant species in landscaping

4. Provision of parking integrated into building footprint (above or below grade)

5. Provision of rain gardens and bioretention areas on site to filter stormwater runoff

6. Shared stormwater facilities between adjacent properties

2.7.3280 Landscaping

A. The landscaping standards of Chapter 3.2 apply to the BCD except as noted in this section.

B. The minimum required landscaping shall equal 10 percent of the gross lot area for the following uses:

1. Residential – duplex and triplex units and multiple-family developments

2. Commercial and office developments

3. Industrial developments. Seventy-five percent of the required 10 percent site landscaping shall be located within the front yard setbacks and parking areas or other areas visible to the public, unless otherwise required as a condition of approval

4. Mixed-use developments

C. Green roofs and rooftop gardens may be counted toward meeting up to ~~50~~ 100 percent of the landscaping requirement.

D. Landscaping in the public right-of-way (for example, street trees and bioswales) may be counted toward meeting the landscaping requirement.

PNW
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Research Station

Science
FINDINGS

INSIDE

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"Science affects the way we think together."
Lewis Thomas

Seasonal Neighbors: Residential Development Encroaches on Mule Deer Winter Range in Central Oregon

"The question is not whether your part of the world is going to change. The question is how."
—Edward T. McMahon

Situated in the high desert east of the Cascade Range, Deschutes County in central Oregon boasts a pleasant climate and a unique combination of geological features, making it a mecca for year-round outdoor recreationists. Hunters, fishermen, campers, hikers, mountain bikers, rock climbers, water sport enthusiasts, off-road vehicle riders, skiers, golfers, and wildlife viewers have helped make it the fastest growing county in Oregon.

Nick Myatt/ODFW

In the winter, mule deer migrate to lower elevations in central Oregon. Roads and residential development are disrupting this migration.

A booming outdoor recreation industry, coupled with traditional activities related to timber sales, ranching and agriculture, have boosted Deschutes County's population nearly sevenfold since 1960. Most of that growth occurred in the past 20 years—the population almost doubled between 1990 and 2010, concentrated around the county seat of Bend and four major destination resorts. A report released by the county in 2004 anticipates about 70 percent more population by 2025.

The area's civic leaders, land use planners, and public land managers are charged with a delicate balancing act: fostering a vibrant economy while working to ensure that the area's attractions remain healthy and sustainable for future generations. So when two large areas of private forest in central Oregon were being considered for high-density housing and

IN SUMMARY

Mule deer populations in central Oregon are in decline, largely because of habitat loss. Several factors are likely contributors. Encroaching juniper and invasive cheatgrass are replacing deer forage with high nutritional value, such as bitterbrush and sagebrush. Fire suppression and reduced timber harvests mean fewer acres of early successional forest, which also offer forage opportunities. Human development, including homes and roads, is another factor. It is this one that scientists with the Pacific Northwest Research Station and their collaborators investigated in a recent study.

As part of an interagency assessment of the ecological effects of resort development near Bend, Oregon, researchers examined recent and potential development rates and patterns and evaluated their impact on mule deer winter range.

They found that residential development in central Oregon is upsetting traditional migratory patterns, reducing available habitat, and possibly increasing stress for mule deer. Many herds of mule deer spend the summer in the Cascade Range and move to lower elevations during the winter. An increasing number of buildings, vehicle traffic, fencing, and other obstacles that accompany human land use are making it difficult for mule deer to access and use their winter habitat. The study provides valuable information for civic leaders, land use planners, and land managers to use in weighing the ecological impact of various land use decisions in central Oregon.

recreation, the Pacific Northwest Research Station was asked to evaluate the potential ecological impacts.

Jeff Kline, a research forester and economist with the station, created a set of fine-scale land use projections to support the resulting interagency assessment of the possible ecological effects of the proposed resort on a parcel known as Skyline Forest. Because a primary interest was the impact on mule deer winter range, Kline also used his land use projections to separately evaluate where future development is likely to affect the deer's traditional migratory patterns in the greater Bend area.

KEY FINDINGS

- In the central Oregon study area, mule deer that summer in the mountains migrate to lower elevations for wintering. Increasing residential development in their traditional winter range is causing direct and indirect habitat loss that could contribute to a decline in mule deer population.
- By 2000, development in traditional mule deer crossing areas was sufficient to disrupt migratory patterns.
- Projections suggest greater development in the future, especially in key wintering areas and along migration corridors.
- Even at low building densities, development could adversely affect mule deer migration and winter use through fencing, collisions with motor vehicles, and human activities on private and public property.

LAND USE PROJECTIONS IN CENTRAL OREGON

As a foundation for his land use projections, Kline used historical data that was originally created by counting buildings in aerial photos taken during the 1970s, '80s, '90s, and 2000s. The data are used to construct a statistical model that correlates new buildings with population trends and certain socioeconomic variables, such as the buildings' location relative to cities and transportation corridors. The model forecasts where buildings will be built in the future if trends follow the rates and patterns of the past.

"My projections are what you might call 'naïve projections,'" says Kline. "They just say 'here's what happened in the past, and if we follow the same pattern and the same correlation in the future, this is what would happen.'"

When Kline overlaid maps of mule deer habitat with maps showing his land use projections, a major problem was revealed: land development is increasingly infringing on mule deer habitat and blocking passage between the deer's summer and winter ranges. By 2000, development was already present in many locations within mule deer winter range, "some of it at sufficiently high densities to influence winter use and migratory patterns," says Kline.

The problem is not so much that development is spreading out across the wide area of the deer's winter range, he notes, but that it tends to locate in "key choke points." It affects the deer's ability to move freely among the lower elevation areas where they are accustomed to wintering. "In some locations, development coincides with narrow sections of winter range with the potential to disrupt movement of individuals throughout the range," says Kline.

Jeff Kline

The population of Deschutes County, Oregon, nearly doubled between 1990 and 2010, with most of the growth concentrated around the city of Bend.

In addition, as residential development increases, land managers with responsibility for protecting adjacent public lands are removing brush and trees within defined limits to protect property against fire. These preventive measures reduce forage and cover needed by wintering mule deer. "Residential developments have a footprint that extends way beyond the development," says Glen Ardt, a wildlife habitat biologist with the Oregon Department of Fish and Wildlife (ODFW) who collaborated with Kline on the study. "There is also indirect loss of habitat due to disturbance from the people and pets that radiates out from these residences."

STRESSED OUT IN CENTRAL OREGON

Along with Rocky Mountain elk and bald eagles, mule deer are often used as iconic representations of the Old West. They provided essential life support for Native Americans and early pioneers, and they continue to be a valuable economic, aesthetic, and ecological resource for central Oregon. In fact, deer hunting and wildlife viewing are major sources of revenue for the state. According to ODFW, residents and nonresidents spent $517.9 million on activities related to hunting and $1.02 billion on activities related to wildlife viewing in 2008.

Despite long-term management by ODFW, average spring mule deer population in the Upper Deschutes management area has shrunk by nearly 55 percent since 1960. Several factors are likely at play, including fewer quality foraging opportunities brought about by various changes on the landscape. Invasive cheatgrass and encroaching juniper are crowding out more nutritious plants such as bitterbrush and sagebrush. Wildfire suppression and less timber harvesting has led to fewer acres of early successional forest, which provide foraging opportunities for the deer. Human development in the deer's traditional winter habitat is another factor.

Laurie Houston

Recreational opportunities in Deschutes County have attracted visitors and new residents but may negatively affect the deer's browsing habits.

Like many Oregonians and visitors from around the world, mule deer enjoy spending time in the high Cascades in the summer. They browse on the forest undergrowth and accumulate fat reserves for the coming winter. However, as forest composition in the mountains has changed in recent decades due to fire suppression, it is becoming harder for mule deer to find nutrient-dense forage, says Ardt.

"A lot of white fir has come in underneath the ponderosa pine and has reduced the amount of forage that's out there. Forage for deer, like bitterbrush and buckbrush, gets shaded out when the forest canopy overtops it and it doesn't get the sunlight it needs to live," he says. In addition, more traffic on forest roads and an intensification of recreational activities—off-road vehicle use and mountain biking in particular—disturbs wildlife and affects browsing habits. Consequently, many deer enter the cold season without a sufficient layer of fat to sustain them through the winter.

Deer are not equipped to handle deep snow, so by the time a foot or so has accumulated in the higher elevations, they migrate down the mountain, attempting to spread out on the desert west and east of Bend. Dodging motor vehicles and finding quality forage in the flatlands are only two of the challenges they face as winter approaches. With each passing season, they encounter more and more obstacles along the paths they have traditionally used to access their winter range.

"Not only do you have loss of habitat (owing to development and recreation), but you have development breaking up the habitat and inhibiting movement," says Kline. "In the mountainous West, the most likely place people are going to develop is the lower elevation flats, so you have development locating right where the grazing animals want to congregate in the wintertime."

Ardt believes that a main contributor to the decrease in the mule deer population in central Oregon is stress. Insecurity in their environment causes deer to react much as humans do when faced with the unexpected. "When disturbance occurs, wildlife either freeze, flee, or fight. And just because they don't flee, it doesn't mean they aren't being disturbed," he says. "Studies have shown that when an animal is disturbed, its cortisol level goes up—that's a stress hormone."

Even if forage is available, the deer may not browse if they are disturbed, and undernourished or stressed-out deer can die prematurely. Stress also can cause a doe in poor condition to abort or reabsorb a fetus, says Ardt, which further reduces the herd. "If they are disturbed, they are using energy they wouldn't otherwise, which can be critical in mid to late winter when their body condition is at its poorest or during the post-fawning and rearing periods when energy demands are higher," he says.

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USDA United States Department of Agriculture

Forest Service

TRACKING MIGRATORY PATTERNS

In the 1960s, the ODFW conducted its first study to try to determine exactly how mule deer move from their winter range to their summer range in central Oregon. At that time, deer were trapped, tagged, and collared, which provided a way for biologists, foresters, loggers, hunters, and others to observe deer movements and report sightings to the ODFW. "These methods allowed us to better identify summer and winter ranges, project movement between the two, and determine animal distribution between wildlife management units," says Ardt.

In 2005, the agency embarked on a new study to update and refine its understanding of deer behavior and movement. The Oregon Department of Transportation (ODOT) provided funding to the ODFW to purchase global positioning system (GPS) collars that are helping to determine mule deer crossing behavior on Highway 97, the main highway that runs north and south through the Bend metropolitan area and separates the deer's summer and winter ranges.

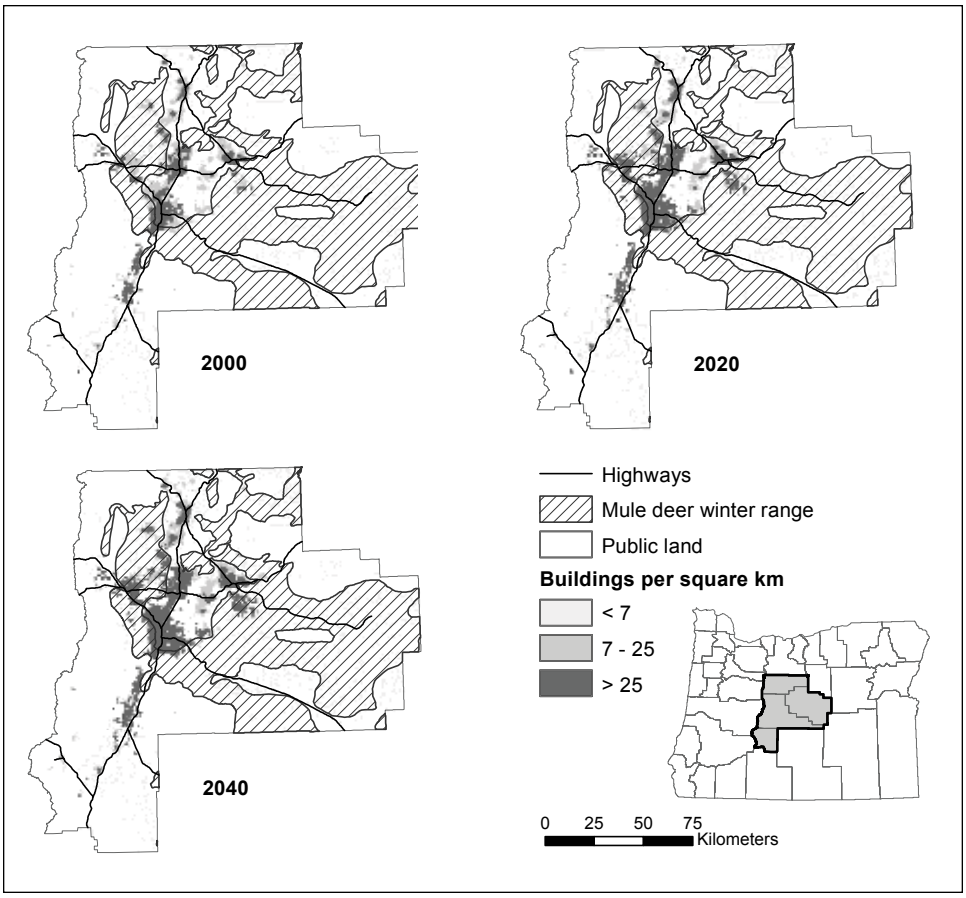
A total of 457 mule deer in central and south-central Oregon have been fitted with GPS collars and 250 of these collars have been recovered. The remaining collars are expected to be recovered within the next year. Although observations from the 1960s revealed that deer were moving across Highway 97 to the flatlands east of Bend to winter, data collected from the GPS collars indicate that deer are choosing to go north instead of east. "A lot of that is probably due to the amount of traffic that's on Highway 97 now between Bend and Sunriver [a popular resort]," says Ardt. As it turns out, more deer are killed on secondary and residential access roads than on the main highway.

One might wonder why, if people and cars stress them so much, deer can be found munching on the landscaping in people's backyards in the winter. Ardt speculates that it's because it is where they have always wintered, and data from GPS tracking supports that theory. "Telemetry data show deer moving through another deer's summer or winter area to get to their own, thereby showing their strong fidelity for a particular area," he says. It's the homing instinct in action.

Jeff Kline

Jeff Kline

Mule deer outfitted with GPS collars revealed strong fidelity to a particular area, even if it meant crossing major roads to get there.



By 2040, development in and around Bend, Oregon, is projected to further constrain mule deer access to winter habitat.

WANTING OUR DEER AND DEVELOPMENT, TOO

Kline's projections indicated that the Skyline Forest property could be developed as early as 2020. He says this finding originally was met with some skepticism because the property is currently zoned as forest land, but he points out that zoning laws can change and land developers can work around existing codes.

"Just because land is zoned the way it is doesn't mean that things won't happen—things do happen—people get exceptions," he says. "And the history in our land use data suggests that it is so—we can see development in areas that were previously forest and farmland. The land use planning system gives some level of protection, but it's not infallible. Some people tend to think of it as a permanent protection, but it really isn't."

It would seem that Skyline Forest is an example of how things can change. The property's owner wanted to build a resort, but the Deschutes Land Trust has been working to conserve as much of the land as possible. In June 2009, the Oregon legislature passed a bill that permitted the property's current owner to develop a small portion of the land if they sell the remainder to the trust for preservation. The owner was given a five-year time limit on the deal, but the downturn in the housing market has stalled the plans, so the future of Skyline Forest is still unknown.

Kline says his projections give landscape planners and managers data to inform their decisionmaking about what conservation measures may be necessary for certain plots of land, given population trends and past development patterns. "They could use information like this to figure out where development is likely to be," he says. "We're not trying to make any judgments about whether development is good or bad. We're just saying, 'here's how buildings are growing on this landscape.'"

Jeff Kline

Conservation easements and land use zoning are tools that could be used to maintain existing mule deer migration corridors.

Several options are available that could meet a variety of land use goals in the area, says Kline. "Land use planning might do the job, but there might be other things to consider that would augment planning," he says, such as establishing conservation easements or an outright purchase of land that is set aside for habitat conservation. He also suggests that policymakers might consider providing consistent or increased funding to existing state programs that protect and enhance critical winter habitat.

"The fate of animals is...indissolubly connected with the fate of men."
—Émile Zola

LAND MANAGEMENT IMPLICATIONS

- Resource managers may want to initiate or expand efforts to work with landowners, local land use planning officials, and nonprofit conservation organizations to consider how to address anticipated development within mule deer winter range.
- Modified land use zoning, conservation easements, and land purchases might be considered to help maintain existing migration corridors and minimize disturbances associated with new development.
- Policymakers might consider providing more consistent or increased funding to existing state programs that protect and enhance habitat.

FOR FURTHER READING

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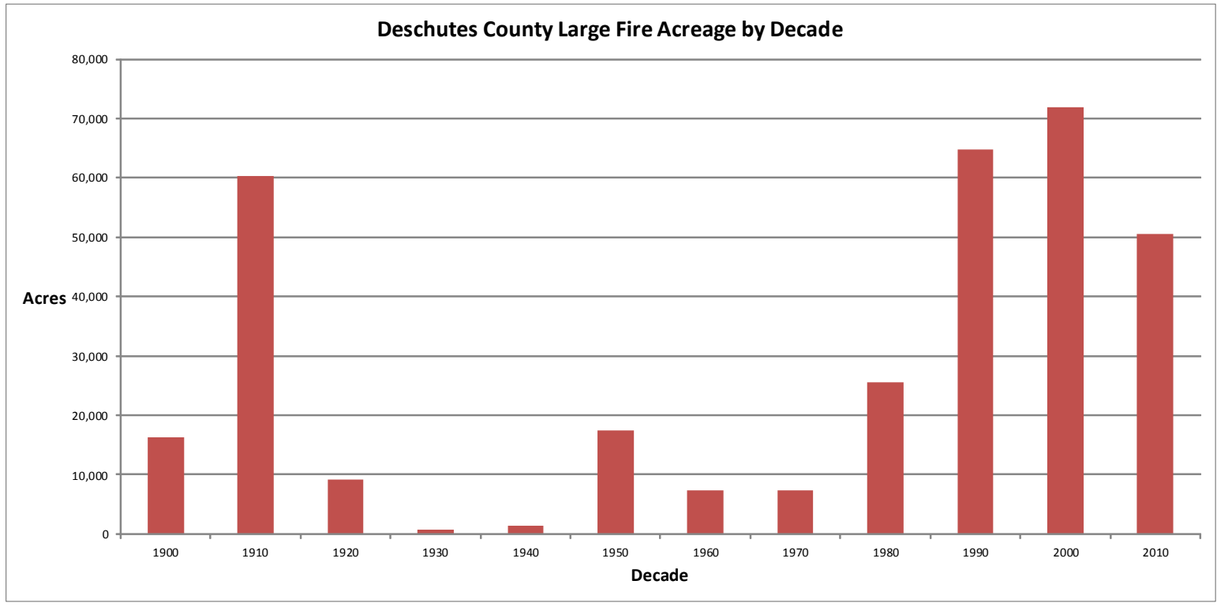
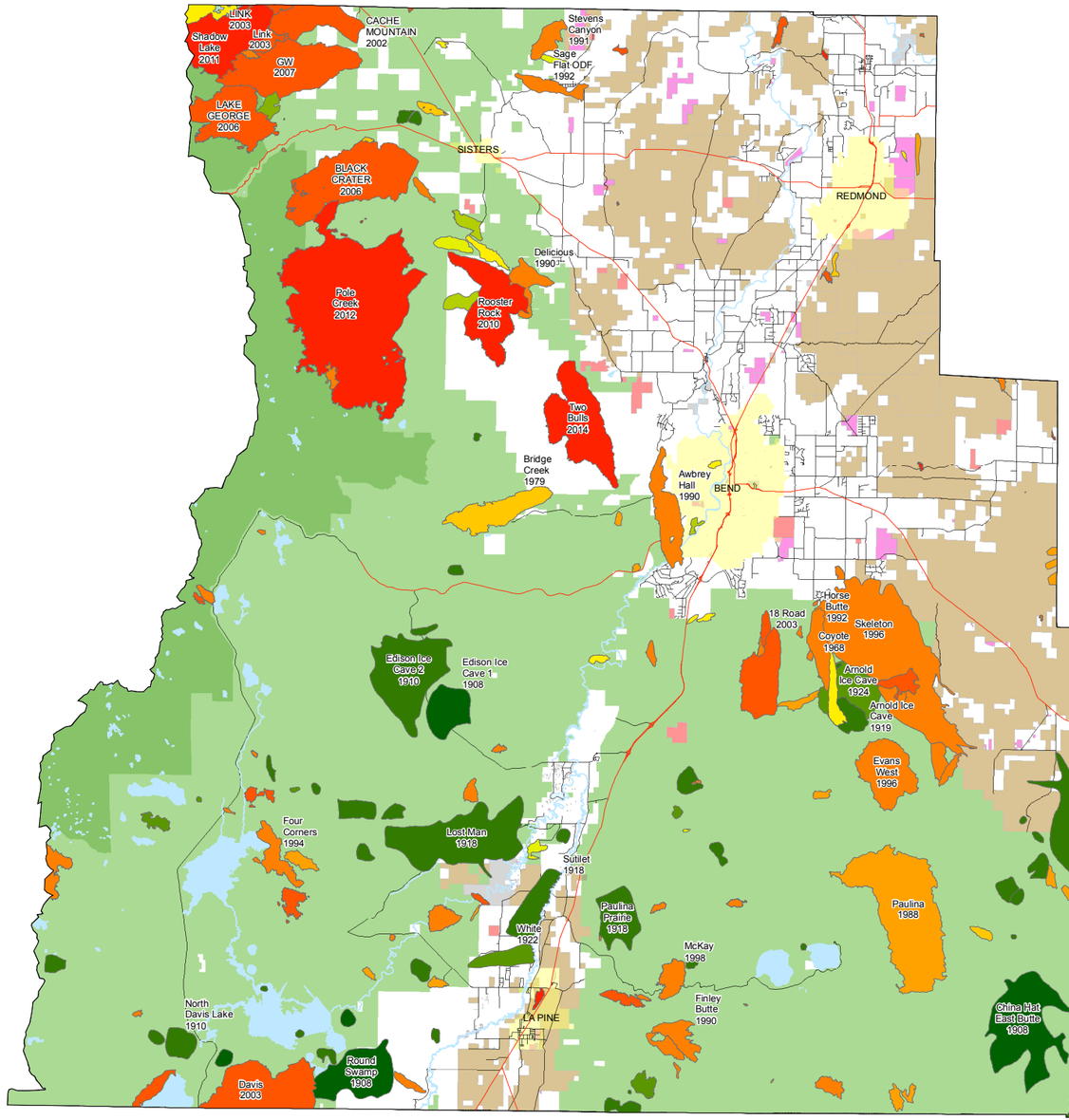
12217

Deschutes County Large Fire History
1900 - 2014





Land Ownership

- USFS
- BLM
- ODSL
- OPRD
- PRIVATE
- Wilderness Area
- Deschutes County

FIRE OCCURENCE BY DECADE

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010

Map Prepared by Deschutes County
Forestry
Ed Keith
61150 SE 27th Street
Bend, OR 97702
541-322-7117

0 5 10 20 Miles

NORTH

12218

Two Bulls Fire reaches 6,180 acres

By Tyler Leeds The Bulletin Published Jun 9, 2014 at 12:01AM

The Two Bulls Fire continued to burn two miles west of Bend Sunday, affecting 6,180 acres of private and public lands by sundown. No portion of the fire was contained Sunday evening.

Around 350 crew members focused Sunday on establishing what authorities described as a "preliminary line" down the east side and southern edge of the fire, an attempt to prevent the fire from moving closer toward the city. According to Lisa Clark, spokeswoman for the Central Oregon Interagency Dispatch Center in Prineville, crews planned to continue working on the line overnight. Clark noted wind had been "tame" Sunday, but forecasts predicted stronger winds today and Tuesday, which could pose a challenge for holding the line.

"So far it's looking good at the containment line, where the goal is to take it down to mineral soil, as the fire can even creep across roots," Clark said. "The idea is to make the line wide enough so that a tree falling down wouldn't cross it."

Despite progress throughout the day, Clark said the line will continue to be called preliminary.

"Because it's so close to the west side of Bend, we don't want to say there's containment and have people think everything's good," she said. "There's still the risk we could get wind or heavy fire activity and push across the line."

Past evacuations

Central Oregon is no stranger to big wildfires, or even to wildfire evacuations.

Here, a look at some past fires that have resulted in evacuations:

2012: Crossroads subdivision residents evacuate as the Pole Creek Fire burns more than 27,000 acres. The fire destroys four cars parked at the Pole Creek Trailhead and forces the evacuation of hikers and campers.

2007: The GW Fire burns more than 7,500 acres and forces the evacuation of much of Black Butte Ranch.

2005: About 200 La Pine residents and 500 area visitors are evacuated when the Park Fire burns on 143 acres nearby.

2004: The Log Springs Fire near Warm Springs burns 4,000 acres and

The fire sparked evacuations originally affecting about 200 homes west of the city, though that number was cut to 40 when residents from the Saddleback subdivision were allowed to return home Sunday evening.

Nonetheless, that area was still on a Deschutes County Sheriff's Office Level II notice Sunday evening, meaning residents are asked to be ready to leave at a moment's notice. Also on Level II are residents south of Shevlin Park Road, west of Mt. Washington Drive and north of Century Drive. A Level I notice, which asks people to prepare and be ready to evacuate, was issued for residents in the rest of NorthWest Crossing, as well as the area north of Shevlin Park and west of Mt. Washington Drive.

Forty homes on Skyliners Road outside of the city were still on a Level III evacuation notice, which calls for residents to evacuate immediately.

Additionally, Bend-La Pine Schools canceled classes at three schools in areas under Level II notice — Miller Elementary, Cascade Middle and Summit High schools. The district may also move recess for other schools indoors depending on air quality. Teachers at those schools are on a delay schedule, communications director Julianne Repman said, and should report when and if they can.

Fire activity caused park and road closures west of the city. The Bend Park & Recreation District said any use of parks or trails in the areas on pre-evacuation notice is discouraged. The city also shut off surface water on Saturday and will exclusively use groundwater wells until the fire's impact on the Bridge Creek watershed can be assessed.

Despite the evacuation notices, foot traffic was typical along NorthWest Crossing's commercial strip, an area under Level I notice.

15 family evacuate from their homes.

2003: The B & B Complex Fire results in Camp Sherman evacuations and burns more than 90,000 acres. That same year, the Davis Lake Fire forces three campgrounds near Wickiup Reservoir to evacuate as it burns more than 3,000 acres.

2002: The Everly Fire destroys seven structures in the Three Rivers subdivision. It burns more than 13,000 acres and results in 500 homes being evacuated. Cache Mountain Fire near Sisters results in a 4,000-acre burn and 300 evacuated homes.

1996: The Skeleton Fire burns 19 homes in the Sundance subdivision in Bend and forces hundreds to evacuate as it burns nearly 18,000 acres. Also that year, the Smith Rock Fire burns more than 300 acres and destroys one home.

1995: The Pringle Fire forces evacuation from the Terra del Oro and Deschutes Rivers

Recreation subdivisions while burning more than 1,000 acres.

1990: More than 2,500 west Bend residents evacuate as the Awbrey Hall Fire burns more than 3,300 acres, destroying 22 homes and dozens of vehicles.

“It was surprisingly pretty normal around here,” said Madelyn Payne 20, an employee at Little Bite Cafe. “I was really shocked. When I got here, the smoke was low and I saw people biking up and down. One person came in on the way to her daughter’s softball game.”

The store’s owner, Melissa Albright, 47, said she lived in an area on Level II alert, but decided to stay put unless an immediately adjacent neighborhood was ordered to evacuate. At Sunny Kitchen Yoga, owner Amy Wright, 38, said food customers had been slow for the day, but her yoga class had been busier than average.

For Kay Ogden, who had just moved into the neighborhood from Grants Pass, the fire was more of the same.

“When we moved from Grants Pass in August, it was during a big fire there,” said Ogden, 62. “I guess we left in the fire and are now coming in the fire. But it was solid smoke there, it’s not so bad here.”

For those forced to evacuate, however, Sunday was less than typical.

“I had to deal with a house fire before, so this brought up old, traumatic feelings,” said Darragh Hildreth, 23, who lives in Saddleback. “I had to leave the floor at work for five minutes to calm down after I was told about it. When I got home, you could see the orange and red hue just out in the distance.”

To assist evacuees, the American Red Cross Cascades Region operated a shelter at High Desert Middle School. In the afternoon, shelter manager Emily Wegener said not many people had come by.

“It’s been fairly quiet, with some people dropping in to get snacks and drinks,” she said. “We have four people in motor homes, but no one spent the night on Saturday. The plan for right now is to stay open through the night and tomorrow. We’ll know more on (this) afternoon.”

On Saturday, Clark said the fires are believed to be human-caused, while noting two fires starting in the same area does not necessarily point to deliberate action — a few years ago, the driver of a vehicle dragging a chain on U.S. Highway 20 accidentally sparked five separate blazes between Bend and Burns.

Spotters at the Black Butte fire lookout saw two smoke plumes at around 12:48 p.m., according to Kassidy Kern, also a public information officer for the interagency dispatch center. The fires were close together and merging,

Kern said, and have been treated as a single incident since midday Saturday.

— Reporter: 541-633-2160, tleeds@bendbulletin.com (mailto:tleeds@bendbulletin.com)

Classes canceled

Bend-La Pine Schools has canceled classes at three schools in areas under Level II notice:

• Miller Elementary

• Cascade Middle School

• Summit High School.

Public meeting

When: 6 p.m. today

Where: Bend High School

Joe Kline / The Bulletin A helicopter fills up with water Sunday near the staging area of the Two Bulls Fire west of Bend.

Joe Kline / The Bulletin Firefighters Ron Huffman, left, and Ivan Harmon rake out hot spots Sunday in the scorched ground near an area that investigators were searching for the cause of the Two Bulls Fire west of Bend.

Joe Kline / The Bulletin A helicopter flies toward the Two Bulls Fire west of Bend on Sunday.

Joe Kline / The Bulletin Mount Bachelor with smoke from the Two Bulls Fire on Saturday evening. ìIf you canít see within 2 miles, youíre in pretty thick smoke and you should take precautions,î says Mark Bailey, the Oregon

DEQís eastern region air quality manager.

Joe Kline / The Bulletin A smoke plume from the Two Bulls Fire is visible from the staging area.

Courtesy Bill McDonald Smoke from the Two Bulls Fire turned the sun a deep shade of orange Saturday afternoon.

Wildfire in Shevlin Park quickly corralled

By Dylan J. Darling The Bulletin Published Jun 12, 2015 at 12:01AM / Updated Jun 12, 2015 at 05:42AM

A wildfire Thursday in Bend's Shevlin Park that was close to homes brought back memories of the Two Bulls Fire from last year for nearby residents.

Fire crews from around Central Oregon quickly jumped on the Shevlin Fire, holding it at 8 to 10 acres just hours after it was first spotted shortly before 1:30 p.m., said Dave Howe, a battalion chief for the Bend Fire Department.

The fire was expected to be declared fully contained over night Thursday, Howe said in a news release late in the day. The cause of the fire is under investigation. The Oregon Department of Forestry will lead the investigation with help from the U.S. Forest Service, Bend Fire and Deschutes County Sheriff's Office.

"We have no idea on (the cause)," Howe said Thursday afternoon, noting firefighters needed to put the fire out before worrying about how it began.

The 6,908-acre Two Bulls Fire started on June 7 last year, also west of Bend.

Like many of her neighbors in subdivisions on the city's western, wooded fringe, Tracy Pfiffner, 50, found a place to watch the firefighters Thursday take on the Shevlin blaze. She and her 21-year-old son, Alex Pfiffner, rode their bikes to an overlook above Shevlin Park. "This is a lot closer than the

Two Bulls Fire last year," she said. " (I) came out to the same place and this is terrifyingly close." That fire prompted evacuations for 254 homes on the west side of Bend.

Although no homes were evacuated Thursday, the Deschutes County Sheriff's Office issued pre-evacuation warnings for a trio of subdivisions near Shevlin Park — Three Pines, Shevlin Commons and Park Commons.

Around 7:15 p.m., Howe said the warnings for the three subdivisions were set to be lifted at midnight.

Pfiffner lives in the Shevlin Ridge subdivision, adjacent to where the warning was in effect into the evening.

The fire was first reported to 911 by a hiker at 1:27 p.m. At that time the fire was 1/10 of an acre, and it started near the intake for the Tumalo Irrigation District canal, according to Deputy Fire Marshal Jeff Bond. The fire mainly burned on land overseen by the Bend Park & Recreation District.

An air tanker circled the Shevlin Fire — making rumbling passes over Central Oregon Community College and other parts of west Bend — but did not drop any retardant, Howe said. A helicopter scooped water from a pond at Shevlin Sand & Gavel, located near the fire, and dropped it on the blaze.

Around 3:15 p.m., Howe described the fire as "spotting" — embers being blown about and starting new fires — up the east side of the Tumalo Creek canyon, above Aspen Hall. According to Bond, the fire was burning on both sides of Tumalo Creek, and Howe added that the fire was not following the creek but rather burning up the creek canyon. Less than an hour later, Howe said the Shevlin Fire had stopped growing. By 5:40 p.m. fire crews had a hose line encircling the fire.

Along with Bend Fire, firefighters from the Deschutes National Forest, the Bureau of Land Management and the Oregon Department of Forestry fought the blaze. Fire engines from fire departments in Cloverdale, Sisters, La Pine and Sunriver also responded to the fire, ready to help protect structures. The fire did not spread to any homes or other buildings.

From his vantage point over Shevlin Park, Glen Ardt, 62, of Bend, said Thursday that he saw smoke, the helicopter, the air tanker and an observation plane.

"I mean a lot of activity out there," he said, but he did not see flames. Ardt lives in the Shevlin Commons subdivision and was joined in watching the firefighting Thursday afternoon by one of his neighbors and her friend visiting from the San Francisco Bay Area.

The fire caused the closure of Shevlin Park and Johnson Ranch roads, which were reopened late Thursday . Due to the road closure, Shevlin Park was basically closed as well Thursday afternoon and evening. Howe said late Thursday the southern portion of the park, home to most of its popular trails, is open. The northern portion of Shevlin Park, north of the road, was closed until today as firefighters put out hot spots in the burn area.

At its peak the fire drew about 90 firefighters, Howe said. A large crew was set to keep watch on the fire late Thursday. “There is going to be about 40 people on the fire overnight,” Howe said Thursday night.

The Shevlin Fire burned close to land scorched by the 3,350-acre Awbrey Hall Fire 25 years ago this August. Howe, a veteran firefighter with Bend Fire, remembers the Awbrey Hall Fire well. The fast moving fire destroyed 22 homes.

While the location of the Shevlin Fire reminded him of the Awbrey Hall Fire, the conditions were different.

“It was a lot hotter back then and even drier,” he said.

— Reporter: 541-617-7812,

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Dean Guernsey / The Bulletin A helicopter flies over the Shevlin Fire in June west of Bend. The fire burned mainly in Shevlin Park.

Dean Guernsey / The Bulletin A helicopter flies over the Shevlin Fire on Thursday west of Bend. Investigators believe it was caused by humans. The early call on the fire and quick response were key to controlling it, a Deschutes County official said Friday.

UGB compromise: Decrease density toward west Bend

By Tyler Leeds The Bulletin Published Jan 21, 2016 at 12:04AM / Updated Jan 21, 2016 at 05:53AM

An appointed advisory committee agreed on a number of tweaks to the city of Bend's planned urban growth boundary expansion Wednesday morning, including a compromise to thin out density toward the city's western edge.

The boundary, often called the UGB, is a line that divides the city's urban development pattern from areas governed by Deschutes County's rural development code. In 2010, the state rejected a plan to expand the city by 8,000 acres, arguing the plan didn't place enough emphasis on density and didn't justify such a large addition.

A number of community advisers have been working with city staff and outside consultants on creating a new boundary closer in size to 2,000 acres. So far, a number of versions have bounced between the advisers and a steering committee overseeing the process that includes the City Council.

At Wednesday's meeting, the advisory committee's goal was to smooth out internal disagreements and discuss minor adjustments, objectives set forward by the steering committee. Much of the expansion plan approved Wednesday is identical to what both the advisers and the steering committee endorsed at the end of 2015.

The bulk of the meeting was spent discussing the city's western boundary, an area that has elicited the most disagreement throughout the process. A number of advisers who represent environmental interests have attempted to minimize development in the area near Shevlin Park. A number of other advisers who own land in the area have promoted various development plans.

Those intent on limiting development have stressed the risk of wildfire and impacts on wildlife.

Before the meeting began, the two sides came together to draft a compromise for the area that embraces a concept known as the transect. The transect refers to a phasing out of density, so that the distance between homes increases moving toward the city's edge.

Paul Dewey, an adviser and executive director of Central Oregon LandWatch, has long attempted to limit growth on the west side but said he backed the plan even though it brings in more west-side acres than had previously been suggested in some plans. His support, he noted, hinged on the plan including fewer homes despite the larger footprint.

"Over the past year, it's been a lot of 'yes, more land,' 'no, less,' 'no, more,' and here we have a planning tool within which we could protect our respective interests," Dewey said at the meeting.

Phasing out density toward the city's edge, Dewey said, would be more hospitable to wildlife and create less of a wildfire risk, as more distance between homes will give firefighters more opportunity to maneuver while also reducing the number of homes close to the forest.

Dewey noted this concept is possible because of a rural development proposed on county land just outside the city's western boundary. Dewey's organization has mounted a legal challenge to block that development, called the Tree Farm and led by another adviser, Charley Miller.

Dewey, Miller and two other developers with west-side interests — Kirk Schueler of Brooks Resources and Dave Swisher of Anderson Ranch Holding — signed a letter supporting the west-side transect plan.

Schueler said the agreement "was significant" because the City Council had asked the committee to reach a consensus that worked for the entire group.

A number of other advisers praised the agreement, including Ruth Williamson, who called it "inspiring."

City Councilor Sally Russell, who was in the audience, said the compromise "was so healthy and will reverberate way beyond this room."

However, Nick Lelack, an adviser and Deschutes County planner, cautioned the transect isn't something that should be repeated around the entire city, as it would make future expansions more difficult.

Not everyone supported the plan. Myles Conway, a lawyer representing land owned by Howard Day under Rio Lobo Investments, advocated during visitor comments for a more "equitable sharing of land," noting a majority of the land brought in along the western boundary was owned by Miller. Conway wanted the advisers to bring in a 40-acre section owned by Day.

Other west-side property brought in is owned by the Coats family under CCCC LLC.

Dewey and others argued the Day property could possibly be included in a subsequent expansion, but that the Coats and Miller properties are better positioned to be added at this time.

Only one adviser, Steve Hultberg, opposed the west-side plan. Hultberg supported including the Day property in the expansion.

— Reporter: 541-633-2160, tleeds@bendbulletin.com (mailto:tleeds@bendbulletin.com)

Thursday, August 18, 2016 | 3:30 pm

Land-use group, Westside land owners reach Bend UGB compromise

C.O. LandWatch: 'Ground-breaking cooperative effort' wins city panel's backing

From KTVZ.COM news sources

POSTED: 4:27 PM PST January 20, 2016
UPDATED: 4:39 PM PST January 20, 2016

Effort to expand Bend's urban growth boundary has been underway for many years

BEND, Ore. - A land-use watchdog group said Wednesday it has reached a compromise with land owners on Bend's Westside on where to draw an expanded urban growth boundary line, and a city advisory panel has endorsed the proposal.

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- Two ill hikers rescued from South Sister summit
- Withers Fire update: Paisley still under alert, others at...
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- Purchase offers complicate Portland shelter plan

"The Urban Growth Boundary process will determine what kind of city Bend will become," Central Oregon LandWatch said after Wednesday's advisory committee meeting, saying they are "at the table advocating for a limited expansion to prevent urban sprawl, protect wildlife habitat, encourage cost-effective growth, and foster affordable housing.

"The public interest group is committed to representing the community's values in developing a boundary proposal that will pass the state's requirements so that Bend can move forward with a clear plan for well-designed growth," Landwatch's statement said.

Central Oregon LandWatch said it "has been concerned about the expansion of the UGB toward the Deschutes National Forest and other natural features such as Tumalo Creek and Shevlin Park.

"Important wildlife habitat and risk of wildfire in this area call for a careful consideration of how that land is developed," the group said. "The initial proposals for the area west of Bend planned for 1400 or more homes - a level of density inappropriate for the Wildland-Urban Interface on the city's edge.

Last month, Mayor Jim Clinton called for the Boundary Technical Advisory Committee to come to a consensus on a proposal for expanding the UGB.

Paul Dewey, executive director of Central Oregon LandWatch and Kirk Schueler, incoming CEO of Brooks Resources, "took the mayor's request to heart," the watchdog group said. "They met to develop a proposal using the planning concept of the "Transect," which addresses development abutting permanent natural areas."

"Dewey and Schueler worked with other Westside landowners to come to an agreement dubbed the “Westside Transect,” which addresses wildlife, wildfire, and transportation concerns," LandWatch said.

"This plan concentrates urban-level density closer to the city's core and near community centers such as schools," LandWatch said. "It creates zones that taper density as the city boundary nears the forest in order to protect homes from wildfire and preserve wildlife habitat. It also provides a higher level of certainty around how the western edge of Bend will develop."

The watchdog group said the city's Boundary TAC overwhelmingly approved the Westside Transect proposal Wednesday, along with other refinements to the map."

"This ground-breaking cooperative effort between Central Oregon LandWatch and landowners creates a vision for the future of Bend's western edge," the statement concluded.

Rental vacancy rate hits 1.04 percent in region

Bulletin staff report Published Jun 4, 2016 at 12:01AM

The vacancy rate for rental housing across Central Oregon has fallen to 1.04 percent, and it remains below 1.5 percent for the fourth year in a row, according to survey results announced Friday.

Of the 4,996 rentals in the survey across the region — apartments, duplexes, triplexes, houses and manufactured homes — 52 were vacant, according to the Central Oregon Rental Owners Association 2016 Rental Survey. The results were announced in a news release by Compass Commercial Real Estate Services. Ron Ross, a principal broker at Compass, presented the results last month at the association's annual meeting, according to the news release.

"That is a very low rate, and it is highly unusual for it to have stayed so low for that long," Ross said in the news release.

The region's high growth rate, limited land supply and increasing fees and building costs have helped keep the vacancy rate low, according to Ross. Rents have also not kept up with the costs over the years.

For apartments of all sizes in Bend, the vacancy rate was 0.62 percent, according to the survey. Redmond came in at 4.5 percent. La Pine, Sunriver and Sisters — which all have fewer apartments than Bend — had no apartment vacancies, according to the survey.

Average rents for two-bedroom apartments in Bend varied, from $876-$995 per month, depending on the size of the apartment complex and when it was built.

Andy Tullis / The Bulletin file photo This March photo shows construction on a new apartment complex near Pilot Butte in Bend. A recent survey shows the vacancy rate for apartments of all types in Bend at 0.62 percent.

Bend hammers out UGB boundary expansion

By Tyler Leeds The Bulletin Published Apr 22, 2016 at 12:01AM
The Bend City Council finished tinkering with and gave its blessing to a planned expansion of the city's urban growth boundary at a meeting Thursday afternoon. The vote ushers the boundary toward public hearings and eventually review by the state.

The roughly 2,000-acre expansion is intended to accommodate population growth through 2028. An earlier expansion proposal was rejected in 2010 after the state ruled the request, which called for 8,000 new acres, didn't do enough to embrace density.

The state laws that govern boundary expansions are intended to protect farmland by hemming in sprawl. While the city's proposal is moving forward, squabbling over the boundary isn't necessarily over, as property owners and other interested parties can fight the plan as it makes it way through the state's review process, as happened in 2010.

Having one's property included in the city not only brings city services like water and sewer, but it also allows for urban-style development, which can be very lucrative for landowners.

Much of Thursday's meeting was taken up by public comment, as a number of property owners and attorneys made their case for including certain properties in the expansion.

The council agreed to add a number of properties, including one on the west side that had been moved in and out of various iterations of the expansion. The 40-acre property owned by Matt Day's Rio Lobo Investment is located just east of Shevlin Park.

Paul Dewey, executive director of Central Oregon LandWatch, had long advocated for limiting development on the city's west side, in part to protect wildlife rangeland and due to the risk of wildfire.

At Thursday's meeting, however, Dewey said he had worked with Rio Lobo to reconfigure the property to create an undeveloped buffer between it and Shevlin Park. Rio Lobo also has committed to including affordable housing, which Dewey called "a real need for the city."

Myles Conway, an attorney for Rio Lobo, noted Dewey and he engaged in "countless meetings and phone calls" to reach an agreement.

City Councilor Nathan Boddie praised the collaboration between what he described as “unlikely bedfellows.”

Brian Rankin, a city planner overseeing the expansion process, said the changes won’t hurt the city’s chances with state review. He also noted the additions might help deflect appeals from property owners left out, which could simplify the state’s review.

Thursday’s meeting was overseen by a steering committee comprised of the council, County Commissioner Tony DeBone and two members of the Bend Planning Commission. Forwarding the proposal to the state requires a number of additional steps including hearings, a vote by the Deschutes County Commission approving the location of the new boundary and a vote by the City Council on not only the boundary but also plans for how the new land will be developed and land within the city’s existing boundary will be redeveloped.

While the expansion is intended to accommodate about 17,000 new homes, about 70 percent of the new homes are projected to built within the city’s existing footprint as areas are rezoned to encourage greater density than exists today.

Public hearings will be scheduled for August, Rankin said, with the aim of forwarding the city’s request to the state for review before the end of the year.

— Reporter: 541-633-2160, tleeds@bendbulletin.com (mailto:tleeds@bendbulletin.com)

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August 24, 2016

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VIA EMAIL

Mr. Jim Clinton, Mayor
City of Bend City Council
710 NW Wall St.
Bend, OR 97703

Mr. Alan Unger, Chair
Deschutes County Board of Commissioners
PO Box 6005
Attn: BoCC
Bend, OR 97708-6005

Re: Urban Growth Boundary Periodic Review Work Task Hearing; Testimony on Behalf of Tammy Lamb

Dear Mayor Clinton and Chair Unger:

This office represents Tammy Lamb. Ms. Lamb owns, or has an interest in, almost fifty (50) acres in the proposed Urban Growth Boundary ("UGB") expansion area known as the "North Triangle". Ms. Lamb is part of a larger ownership group that controls over 120 acres in the North Triangle.

Ms. Lamb appreciates the recommendation that the North Triangle be included within the City's UGB expansion area (**Exhibit 1**, proposed Bend Comprehensive Plan Chapter 11, "Growth Management" Figure 11-4, "UGB Expansion Subareas and Area Planning Requirements"). Ms. Lamb also agrees with the Work Task products as of today, including Growth Management Policies 11-21 through 11-27 requiring "Area Plans" for the expansion areas and Policies 11-126 and 11-127 applying to the properties shown on Figure 6 (**Exhibit 2**, proposed Bend Comprehensive Plan Chapter 11, Growth Management Policies at page 39) and **Exhibit 3** (proposed Bend Comprehensive Plan Chapter 11, Figure 6, " Properties Subject to Policy 11-126," at page 40).

Ms. Lamb supports the requirement for an Area Plan prior to development of properties in the North Triangle. Further, Ms. Lamb agrees with proposed Bend Comprehensive Plan Chapter 5, "Housing", findings and policies regarding affordable housing.

Ms. Lamb requests that the City Council change proposed Policy 11-126's first bullet point to provide as follows:

- **"The minimum number of affordable housing units shall be 25% of all housing units approved by the City on each property, provided, however, in no event shall the total number of affordable housing units required on the properties by this Policy exceed 77 affordable housing units."** (Proposed language underlined).

This amendment to Policy 11-126 is warranted because the property owners need to know their commitment for affordable housing units if an Area Plan is not required. Ms. Lamb believes that as the North Triangle Area Plan proceeds and staff works with property owners to provide affordable housing, that some flexibility will be required in the entitlement process to provide the housing to serve the Bend's residents.

I have asked the Bend Planning Department to place this letter before you at your public hearing on August 25, 2016 and to provide me with written notice of the City Council's and Board's decision.

Very truly yours,

Michael C. Robinson

MCR:rsr
Enclosures

cc: Ms. Tammy Lamb (via email) (w/ encls.)
Ms. Ann Marie Colucci (via email) (w/ encls.)
Mr. Jerry Mitchell (via email) (w/ encls.)
Mr. Kevin Brady (via email) (w/ encls.)
Mr. Brian Rankin (via email) (w/ encls.)

Figure 11-4: UGB Expansion Subareas and Area Planning Requirements

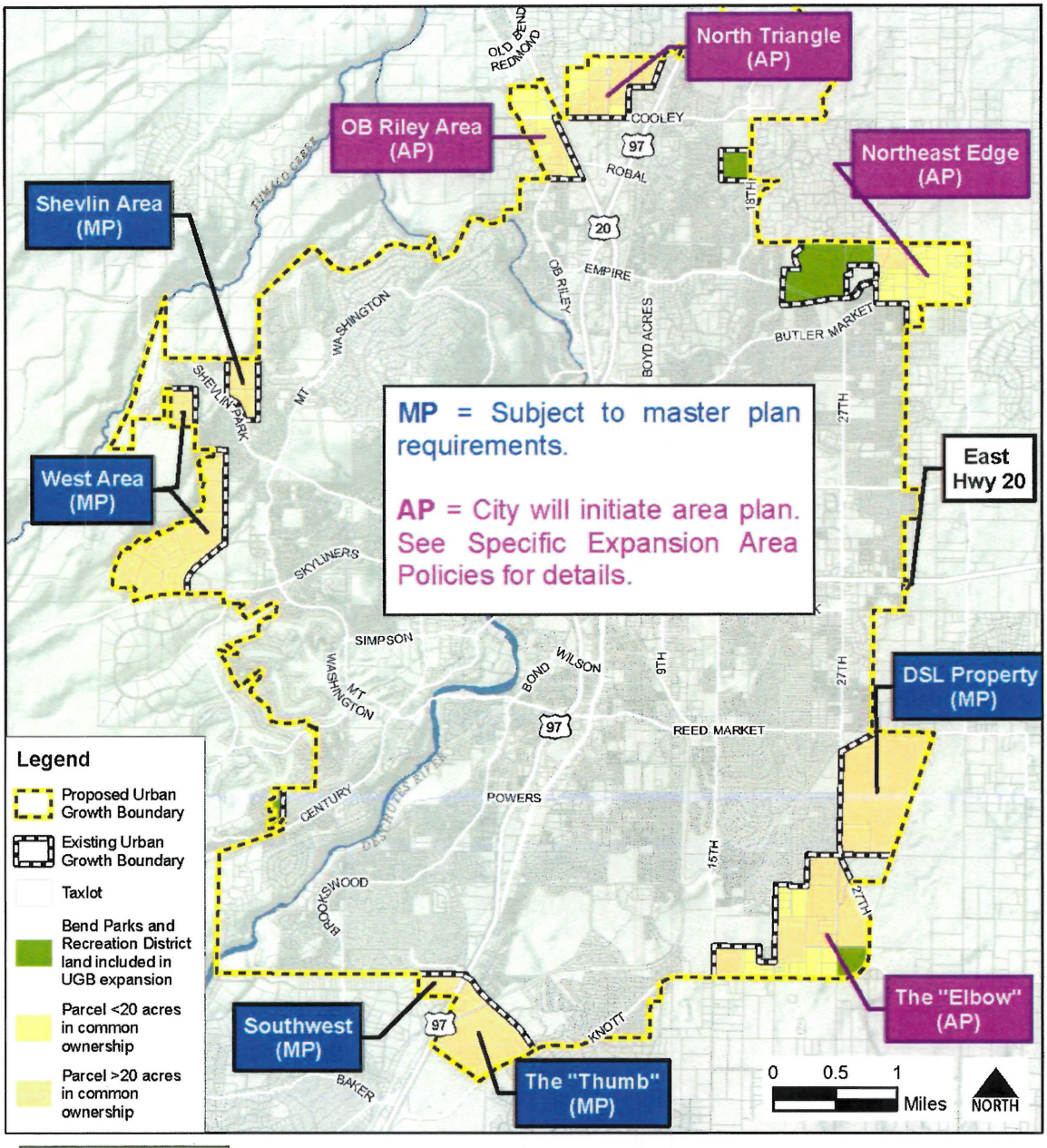

EXHIBIT 1
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employment uses in this area and provide a transition to existing rural residential areas to the north.

11-124 This area shall provide for a mix of residential and commercial uses, including 86 gross acres of residential plan designations, 40 gross acres of commercial plan designations, and 22 gross acres of industrial designations, and 26 gross acres of mixed employment plan designations (excluding existing right of way).

11-125 In order to provide sufficient housing capacity and mix, the residential plan designations shall include 60 gross acres of RS, 21 gross acres of RM, and 5 gross acres of RH. The acreage of RM includes 3 to 4 acres for a neighborhood park site, which may be designated PF if a site has been acquired by the Bend Park and Recreation District prior to completion of the Area Plan. Alternatively, the Area Plan may demonstrate that this area will provide capacity for a minimum of 510 housing units, including at least 13% single family attached housing and at least 42% multifamily and duplex/triplex housing types. The Area Plan may include and rely on plan designations, zones, special plan districts, and/or other binding development regulations to demonstrate compliance with the specified mix and capacity.

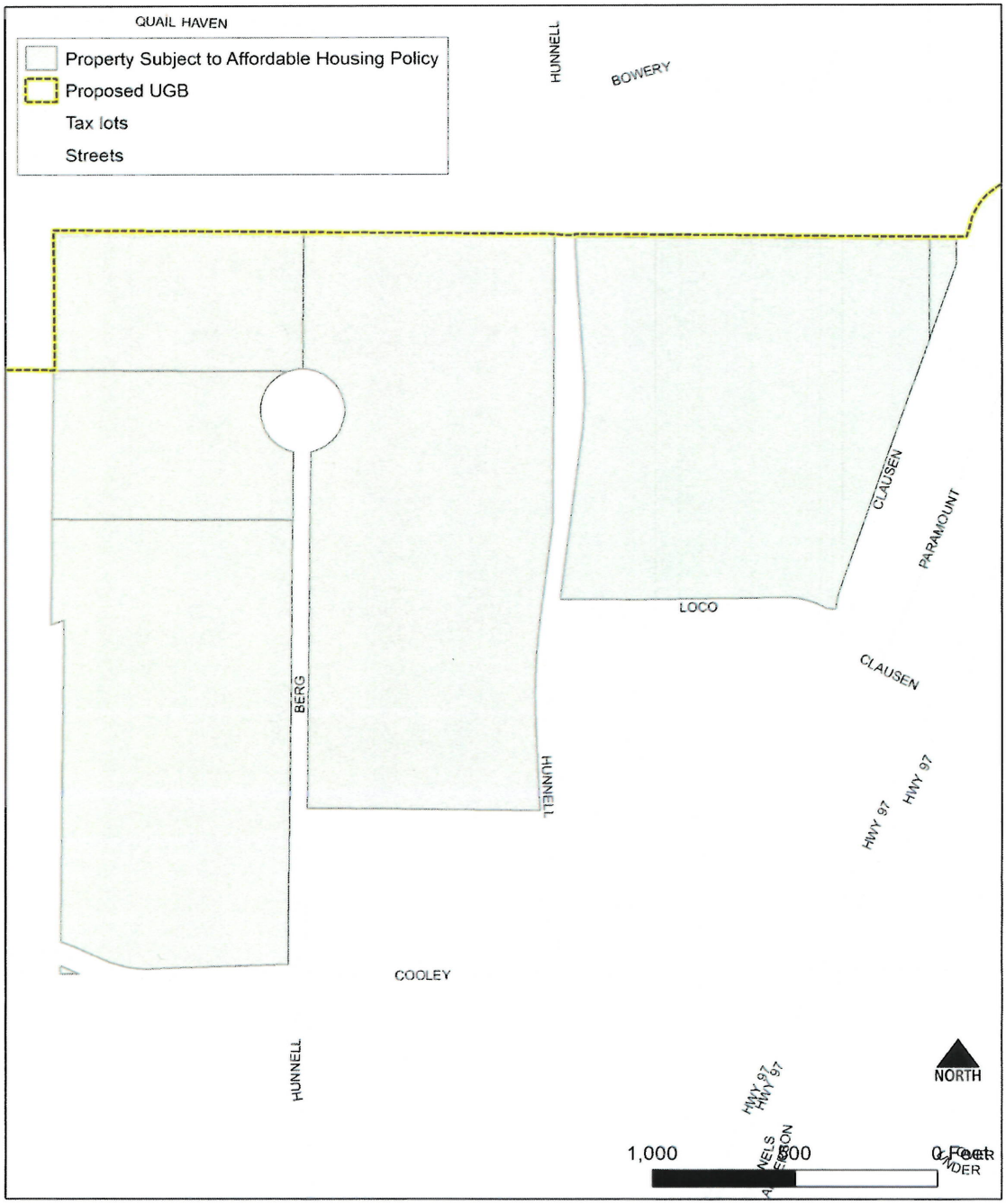
11-126 The properties identified on Figure 11-6, below, shall provide for affordable housing, consistent with policies 5-20 and 5-21 of the Housing Chapter of the Comprehensive Plan, as follows:

- The minimum number of affordable housing units shall be 25% of all housing units approved by the City on each property.
- Guarantees, in a form acceptable to the City, shall be in place to ensure that affordable housing units will meet the affordability requirements for not less than 50 years.

11-127 As an alternative to meeting the requirements of Policy 11-126, affordable housing, consistent with policies 5-20 and 5-21 of the Housing Chapter of the Comprehensive Plan and the requirements below, may be implemented within the North Triangle as a whole through an area plan, with prior written consent of affected property owners and guarantees in a form acceptable to the City.

- The minimum number of affordable housing units shall be 77.
- Guarantees, in a form acceptable to the City, shall be in place to ensure that affordable housing units will meet the affordability requirements for not less than 50 years.

Figure 11-6: Properties subject to policy 11-126



11-128 Buffering measures are required between industrial uses and abutting residential within and adjacent to this area.

11-129 The street, path and bikeway network shall provide connectivity throughout this area and connect to existing abutting local roads. Circulation plans for this area shall be coordinated with ODOT.

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CENTRAL OREGON LANDWATCH

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Phone: (541) 647-2930
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August 25, 2016

via email

Bend City Council
710 NW Wall St.
Bend, OR 97701

cc: Brian Rankin

Re: Bend 2016 UGB Proposal

Dear City Councilors,

Bend has recently entered another period of rapid growth. As we transition from a large town to a small city, it is important to have carefully considered plans in order to manage Bend's growth during that transition. The Urban Growth Boundary (UGB) planning process the city has undertaken over the past several years has created a forward-thinking set of plans to guide our city. The current UGB proposal is a great achievement by the community and LandWatch has been proud to play a role in the public process that lead to its creation.

LandWatch has been at the table advocating for a limited expansion to prevent urban sprawl, protect wildlife habitat, encourage cost-effective growth, and foster affordable housing. Though there have been a number of concessions and trade-offs to reach consensus within the Technical Advisory Committees and Steering Committee, we are supporting this UGB proposal for the following reasons:

REDUCTION OF URBAN SPRAWL

The original UGB proposal, submitted to the state in 2009, was for 8,462 gross acres. According to a report from DLCD, "the size of the expansion [was] over four square miles larger than the amount of land they determined [was] needed" (State Completes Review of City of Bend's Urban Growth Boundary, 2010). At that time, LandWatch appealed the city's boundary because that proposal would have allowed the kind of sprawl that would be expected if Oregon had no land use system.

Studies have shown that urban sprawl requires costlier infrastructure and has a negative effect on quality of life. When people are more spread out, more tax dollars are spent building roads, sewers, and other utilities. The report *Measuring Sprawl 2014* found people who live in areas with less

sprawl have a better quality of life. In fact, people living in more connected and compact metro areas have greater economic opportunity, spend less of their household income on the combined cost of housing and transportation, and tend to be safer, healthier and live longer than their peers in more sprawling metro areas (Exhibit 1). In addition to these benefits, reducing sprawl will help Bend to protect the natural beauty that makes Central Oregon such an attractive place to live and play.

By performing a comprehensive analysis of what can be accomplished within the current urban growth boundary, the city's new UGB proposal expands the city by only 2,380 acres. This represents a 70% decrease in the amount of sprawl as compared with the original proposal. Since Bend is already the least dense city of its size in Oregon, with a lower population density per square mile than even Medford, this is a reasonable reduction of sprawl. The smaller expansion will only be successful, though, if the plans for greater density identified within the current boundary come to fruition.

INCREASE OF DENSITY SENSITIVELY

An understandable concern of current citizens of Bend is that greater density within the existing boundary will affect their neighborhoods. While there are places where that will happen, for the most part, that should not be the case. And though existing problems caused by ADUs and overnight rentals may continue, the UGB plan is designed to put most added density in currently undeveloped areas and sites identified for redevelopment. These redevelopment sites are called Opportunity Areas.

Bend Central District

One of the key Opportunity Areas is the Bend Central District, located approximately between the Bend Parkway on the west and 4th Street on the east and bounded on the north by Revere Avenue and on the south by Burnside Street. It is an important Opportunity Area because it presents a perfect opportunity for infill and redevelopment within the heart of Bend with minimal impact to existing neighborhoods. The City of Bend completed a plan to create a Multi-Modal Mixed Use Area (MMA) in this district in July, 2014. The plan envisions an extension of historic downtown Bend where people can walk, bike, and use transit as easily as they can drive, and it balances a diversity of housing choices for all income levels with moderate scale employment, retail uses and low impact activities like those currently taking place in the Maker's District.

The Residential and Employment TACs recommended "using the recommended draft Special Plan District codes from the MMA project, adopt the Special Plan District as drafted, leaving the existing plan designations in place" at a March 17th, 2016 meeting. As a result of this recommendation, the plans that were shelved in 2014 were included in the current UGB proposal.

As part of the collaboration between Central Oregon LandWatch and Brooks Resources to create the Westside Transect (see below), these two groups agreed to work together to support the concept

of increased urbanization through infill and redevelopment of the Bend Central District. Together, we retained the services of Katherine (Kat) Shultz to complete a peer-review and analysis of Bend's Central District MMA Plan and Code Amendments. Ms. Schultz is a Director at GBD Architects in Portland and has more than 20 years of experience in mixed-use housing and planning.

Ms. Schultz suggested several simple changes to the development standards that could make the district more successful (Exhibit 2). She also suggested mid-term and long-term actions to enhance the plan and address strengthening transit, affordable housing, sustainability, and gentrification. LandWatch and Brooks Resources used her recommendations to propose slight code revisions as a first step toward enhancing the Central District Plan to the Bend City Council (Exhibits 3 & 4).

Central Oregon LandWatch urges the city to adopt the UGB proposal with the revised Central District plans included, as we believe it is key to the success of the entire UGB plan. In fact, one of LCDC's findings in its Remand of Bend's 2009 UGB proposal was that the city relied on density within the Central Area without specific plans in place. This time, the city's claim that the Central District will yield density is substantiated.

ADOPTION OF WESTSIDE TRANSECT

One of LandWatch's main concerns about urban growth boundary expansion has been the development of land west of the current UGB where the city abuts permanent natural areas. This area is an important connection for mule deer and elk winter range. According to *Science Findings*, "mule deer populations in Central Oregon are in decline, largely because of habitat loss," including habitat loss caused by home and road development (Exhibit 5). Residents on the western edge of Bend often experience the migration patterns of the deer and elk who do still live in the area (Exhibit 6).

Another concern is the threat of wildfire. The most dangerous and hard to fight wildfires have historically occurred in the forested areas to the south and west of Bend, according to the Deschutes County Large Fire History 1900-2014 map (Exhibit 7). The Awbrey Hall fire in 1990 destroyed 22 homes just west of the current urban growth boundary (Exhibit 8). In 2014, the Two Bulls fire caused more than 200 homes to be evacuated on the west side, and in 2015 the Shevlin Fire, which was even closer to town on the west side, was able to be subdued quickly only because of a quick response and favorable conditions (Exhibits 9 & 10). For these reasons, LandWatch believes that building at urban densities in the forest west of Bend creates a potentially life-threatening risk for residing, fire-fighting, and evacuating from that area.

At the December, 2015 Steering Committee meeting, Mayor Jim Clinton called for the Boundary Technical Advisory Committee (TAC) to come to a consensus on a proposal for expanding the UGB. Paul Dewey, Executive Director of Central Oregon LandWatch and Kirk Schueler, incoming CEO of Brooks Resources, took the Mayor's request to heart. They met to develop a proposal using the planning concept of the "Transect," which addresses development abutting permanent natural areas.

The Westside Transect concentrates urban-level density closer to the city's core and near community centers such as schools. It creates zones that taper density as the city boundary nears the forest in order to protect homes from wildfire and preserve wildlife habitat. It also provides a higher level of certainty around how the western edge of Bend will develop.

The Boundary TAC overwhelmingly approved the Westside Transect proposal at their meeting on Wednesday, January 20th, 2016. This ground-breaking cooperative effort between Central Oregon LandWatch and landowners creates a vision for the future of Bend's western edge (Exhibits 11 & 12). The premise of the Westside Transect is that the UGB will never expand across Tumalo Creek.

Another important component of the proposal is that building codes shall require use of fire-safe construction materials such as provided by the National Fire Protection Association (used in the Miller Tree Farm development). The next step after approval of the UGB Plan will be the adoption of these codes.

PROVIDING FOR HOUSING AFFORDABILITY

Central Oregon is experiencing a serious housing crisis. Many people who make our community great – the teachers, the firefighters, the nurses – are being pushed out because they can't afford to rent or buy homes.

Housing costs have increased faster than incomes, and now the average family in Bend cannot afford the average home. In addition, there are very few housing units available for rent – vacancy rates have been below 1.5% for the past four years, and as of June, 2016, the vacancy rate for apartments was just 0.62% (Exhibit 13).

As of February 2015, the median home sale prices in Bend were about $314,000, which was higher than prices in Oregon's largest cities, including Eugene, Portland and Salem (Bend Housing Needs Analysis). A family making the Area Median Income of $59,700 cannot afford to buy the average home. More than half of the households in Deschutes County are cost-burdened, meaning they pay more than 30% of their income on housing costs.

Historically, builders have mostly built single family homes in Bend, and as of 2013, the housing mix was 71% single family homes, 4% single family attached, and 25% multi-family. There was debate on the Residential TAC about how much to increase the housing mix. Citizens who were concerned about affordable housing pushed to increase the percentage of multi-family housing in order to provide more options for people who cannot afford single-family homes. The TAC settled on a housing mix for units built between 2014-2028 of 55% single-family detached, 10% single-family attached, and 35% multi-family, which is a significant improvement from historical trends.

However, increased density and increased variety of housing choices are not enough to solve the immense problem. That is why LandWatch encouraged landowners who wanted their land to be

added to the boundary expansion to include deed-restricted affordable housing in their developments (Exhibit 14). As a result of these discussions, four of the expansion areas include landowner-proposed affordable housing requirements in the Comprehensive Plan. Our support for these additions was conditional on the affordable housing component, so it is critical that this will be implemented and enforced by the city when these properties are annexed.

PLANNING FOR COMPLETE COMMUNITIES

Another central organizing principle of the UGB plan you are considering is that new communities be planned so that services and facilities are located close to residential areas so that people have the option to take shorter car trips or to walk or bike to get to where they need to go. In this way, we can use land use planning as a transportation solution to reduce future traffic congestion. This approach also adds zoning for commercial and other services close to existing residential neighborhoods lacking nearby services.

CONCLUSION

Although it is not perfect, the City of Bend's current UGB proposal is a good plan overall to guide Bend's future growth. It should be an indication of success that Central Oregon LandWatch has gone from a lead appellant of the original proposal to now a lead supporter of the current proposal. We believe it is important for preventing urban sprawl, protecting wildlife habitat, encouraging cost-effective growth, and fostering affordable housing. However, the proposal will only be successful if it is implemented within the time allotted.

Since the planning window closes in 2028, there is a great amount of urgency to not only get this UGB proposal adopted, but to also achieve everything in it. Where the plan says codes will be developed, they need to be developed. The policies contained within this proposal should be carried out according to their original intention. Our city's future hangs in the balance of this UGB's success. To that end, LandWatch will be watching this process closely and will not hesitate to take action to ensure we are truly becoming a better Bend.

Sincerely,

Moey Newbold
Advocacy Programs Manger
Central Oregon LandWatch

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Phone: (541) 647-2930
www.centraloregonlandwatch.org

EXHIBITS

Exhibit 1 –

"Measuring Sprawl 2014." Smart Growth America, April 2014.

Exhibit 2 –

Schultz, Kat. "Bend Central Area Plan Review." Sponsored by Brooks Resources Corporation and Central Oregon LandWatch, 28 April 2016.

Exhibit 3 –

Dewey, Paul, Schueler, Kirk. "Central District Cover Letter" 1 August 2016.

Exhibit 4 –

"Proposed amendments to the draft chapter Chapter 2.7.3200, Bend Central District." Brooks Resources Corporation and Central Oregon LandWatch, 1 August 2016.

Exhibit 5 –

Kline, Jeff. "Seasonal Neighbors: Residential Development Encroaches on Mule Deer Winter Range in Central Oregon." Science Findings 140 (2012): 1-5.

Exhibit 6 –

Photograph of a herd of elk near Shevlin Commons. 20 October 2015.

Exhibit 7 –

Deschutes County Large Fire History 1900-2014 Map, prepared by Deschutes County Forestry, Ed Keith.

Exhibit 8 –

Awbrey hall fire news stories video

Exhibit 9 –

Leeds, Tyler. "Two Bulls Fire Reaches 6,180 Acres." *The Bulletin*, 9 June 2014.

Exhibit 10 –

Darling, Dylan J. "Wildfire in Shevlin Park quickly corralled." *The Bulletin*, 12 June 2015.

Exhibit 11 –

Leeds, Tyler. “UGB Compromise: Decrease density toward west Bend.” *The Bulletin*, 21 January 2016.

Exhibit 12 –

“Land-use group, Westside land owners reach Bend UGB compromise.” *KTVZ*, 20 January 2016.

Exhibit 13 –

“Rental vacancy rate hits 1.04 percent in region.” *The Bulletin*, 4 June 2016.

Exhibit 14 –

Leeds, Tyler. “Bend hammers out UGB boundary expansion.” *The Bulletin*, 22 April 2016.

Measuring Sprawl 2014

April 2014

Acknowledgments

Smart Growth America is the only national organization dedicated to researching, advocating for and leading coalitions to bring smart growth practices to more communities nationwide. From providing more sidewalks to ensuring more homes are built near public transportation or that productive farms remain a part of our communities, smart growth helps make sure people across the nation can live in great neighborhoods. Learn more at www.smartgrowthamerica.org.

This report is based on original research published by the Metropolitan Research Center at the University of Utah, prepared for the National Cancer Institute at the National Institutes of Health, as well as the Ford Foundation.

The Metropolitan Research Center conducts basic and applied research on the built environment at the metropolitan scale, focusing on key forces shaping metropolitan form such as demographics, environment, technology, design, transportation, arts and culture and governance. It seeks to expand knowledge in city and metropolitan affairs to improve policy and practice and educate the general public on important issues facing communities. Learn more at www.arch.utah.edu/cgi-bin/wordpress-metroresearch/.

This report was made possible with support from the National Institutes of Health and the Ford Foundation.

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Table of Contents

Executive Summary

Some places in the United States are sprawling out and some places are building in compact, connected ways. The difference between these two strategies affects the lives of millions of Americans.

In 2002, Smart Growth America released *Measuring Sprawl and Its Impact*, a landmark study that has been widely used by researchers to examine the costs and benefits of sprawling development. In peer-reviewed research, sprawl has been linked to physical inactivity, obesity, traffic fatalities, poor air quality, residential energy use, emergency response times, teenage driving, lack of social capital and private-vehicle commute distances and times.

Measuring Sprawl 2014 updates that research and analyzes development patterns in 221 metropolitan areas and 994 counties in the United States as of 2010, looking to see which communities are more compact and connected and which are more sprawling. Researchers used four primary factors—residential and employment density; neighborhood mix of homes, jobs and services; strength of activity centers and downtowns; and accessibility of the street network—to evaluate development in these areas and assign a Sprawl Index score to each. This report includes a list of the most compact and most sprawling metro areas in the country.

This report also examines how Sprawl Index scores relate to life in that community. The researchers found that several quality of life factors improve as index scores rise. Individuals in compact, connected metro areas have greater economic mobility. Individuals in these areas spend less on the combined cost of housing and transportation, and have greater options for the type of transportation to take. In addition, individuals in compact, connected metro areas tend to live longer, safer, healthier lives than their peers in metro areas with sprawl. Obesity is less prevalent in compact counties, and fatal car crashes are less common.

Finally, this report includes specific examples of how communities are building to be more connected and walkable, and how policymakers at all levels of government can support their efforts.

Introduction

As regions grow and develop, residents and their elected leaders have many decisions to make. What kind of street network should they build, and how extensive should it be? Should neighborhoods have a mix of homes, shops and offices, or should different types of buildings be kept separate? Will people be able to walk, ride a bicycle or take public transportation through the community, or will driving be the only realistic way for people to get around?

Everyone experiences the outcomes associated with these development decisions. How much families pay for housing and transportation, how long workers spend commuting home, the economic opportunities in communities and even personal health are all connected to how neighborhoods and surrounding areas are built.

Measuring Sprawl 2014 analyzes development in 221 metropolitan areas across the United States, as well as the relationship between development and quality of life indicators in those areas. This report includes a list of the most compact and most sprawling metro areas in the country.

About the research

In 2002, Smart Growth America released *Measuring Sprawl and Its Impact*, a landmark study that has been widely used by researchers to examine the costs and benefits of sprawling development. That report was made available to researchers and has been used in peer-reviewed research in the years since. From that original analysis, sprawl has been linked to physical inactivity, obesity, traffic fatalities, poor air quality, residential energy use, emergency response times, teenage driving, lack of social capital, and commute distances and times.

Measuring Sprawl 2014 is an update and refinement of that research. This report is based on research originally published in the Metropolitan Research Center at the University of Utah in April 2014. The University of Utah's report, titled *Measuring Urban Sprawl and Validating Sprawl Measures,* represents the most comprehensive effort yet undertaken to define, measure and evaluate metropolitan sprawl and its impacts. The first peer-reviewed article based on this research was published in October 2013 in the journal *Health & Place*.

The data from 2010 used in this analysis are the most recent available. The complete analysis, methodology and databases included in the University of Utah's research are available at http://gis.cancer.gov/tools/urban-sprawl/.

Measuring "sprawl"

This study analyzed development in 193 census-defined Metropolitan Statistical Areas (MSAs)—or metro areas—as well as 28 census-defined Metropolitan Divisions, which comprise MSAs, in the largest 11 MSAs. All of the analyzed areas had at least 200,000 people in 2010. MSAs with populations less than 200,000 people were not included in the study.[1] This study also analyzed development in 994 metropolitan counties.

The four factors

Development in both MSAs and metropolitan counties was evaluated using four main factors: 1) development density; 2) land use mix; 3) activity centering; and 4) street accessibility. These factors are briefly explained below.[2]

Development density
Development density is measured by combining six major factors: 1) total density of the urban and suburban census tracts; 2) percent of the population living in low-density suburban areas; 3) percent of the population living in medium- to high-density areas; 4) urban density within total built-upon land; 5) the relative concentration of density around the center of the MSA; and 6) employment density.

Land use mix
Land use mix is also measured through a combination of factors: the balance of jobs to total population and mix of job types within one mile of census block groups, plus the WalkScore of the center of each census tract.

Activity centering
The proportion of people and businesses located near each other is also a key variable to define an area. Activity centering is measured by looking at the range of population and employment size in different block groups. MSAs with greater variation (i.e., a wider difference between blocks with a high population and a low one) have greater centering. This factor also includes a measure of how quickly population density declines from the center of the MSA, and the proportion of jobs and people within the MSA's central business district and other employment centers.

Street accessibility
Street accessibility is measured by combining a number of factors regarding the MSA's street network. The factors are average length of street block; average block size; percent of blocks that are urban in size; density of street intersections; and percent of four-way or more intersections, which serves as a measure of street connectivity.

Scoring

Researchers used these factors to evaluate development in all 221 MSAs and 994 counties. These four factors are combined in equal weight and controlled for population to calculate each area's Sprawl Index score. The average index is 100, meaning areas with scores higher than 100 tend to be more compact and connected and areas with scores lower than 100 are more sprawling.

MSA versus county scales

Census-defined MSAs and the Metropolitan Divisions within them include a wide variety of places within a given region. An MSA's boundaries may include one county (like the Detroit, MI Metropolitan Division, which includes only Wayne County) or many counties (like the Washington, DC MSA, which contains 16 counties).[3]

This difference has a significant impact on how a given region scores on the index, and it is important to note that these census-defined divisions create some counterintuitive outcomes. For example, the greater Washington, DC area ranks 91st on the index based on its MSA. Evaluated at the county level, however, Washington, DC ranks 6th. Many other communities face similar distinctions between scores at the MSA level versus the county level.

Our findings are presented at the MSA scale because much of the data, such as economic mobility, is only available at this level. Health data is available at the county level, so in those cases we provide analysis at that scale. Future versions of this analysis would benefit from economic mobility, transportation and housing costs and health databases available at more refined scales. For more information about index scores and findings at the county scale, see Appendix B. For information about the data sources available at different geographic scales, see Appendix C.

The 2014 Sprawl Index rankings

Based on the index standards described in the previous section, we evaluated development in 221 metro areas in the United States.

The most compact, connected metro area in the United States is, perhaps not surprisingly, New York, NY, with an index score of 203.4. The country's most sprawling metro area is Hickory, NC, with an index score of 24.9.

To provide a more comprehensive look at how communities compare, we also present here the most compact and most sprawling MSAs by size. Among large metro areas (defined as having a population more than one million people), New York, the national leader, is the most compact and connected. Atlanta, GA, is the most sprawling, with a score of 41.0.

Of medium metro areas (defined as having a population between 500,000 and 1 million), Madison, WI, is the most compact and connected with a score of 136.7 and Baton Rouge, LA, is the most sprawling, with a score of 55.6. Of small metro areas (defined as having a population less than 500,000), Atlantic City, NJ, is the most compact and connected, with a score of 150.4, whereas Hickory, NC, is the most sprawling.[4]

Most compact, connected metro areas

Tables 1–4 rank metro areas that are more compact and connected, with homes and jobs closer together.

TABLE 1

Most compact, connected metro areas, nationally

Rank	Metro area	Index score
1	New York/White Plains/Wayne, NY-NJ	203.4
2	San Francisco/San Mateo/Redwood City, CA	194.3
3	Atlantic City/Hammonton, NJ	150.4
4	Santa Barbara/Santa Maria/Goleta, CA	146.6
5	Champaign/Urbana, IL	145.2
6	Santa Cruz/Watsonville, CA	145.0
7	Trenton/Ewing, NJ	144.7
8	Miami/Miami Beach/Kendall, FL	144.1
9	Springfield, IL	142.2
10	Santa Ana/Anaheim/Irvine, CA	139.9

TABLE 2

Most compact, connected large metro areas

Large metro areas are defined as having a population more than one million.

Rank	Metro area	Index score
1	New York/White Plains/Wayne, NY-NJ	203.4
2	San Francisco/San Mateo-Redwood City, CA	194.3
8	Miami/Miami Beach/Kendall, FL	144.1
10	Santa Ana/Anaheim/Irvine, CA	139.9
12	Detroit/Livonia/Dearborn, MI	137.2
15	Milwaukee/Waukesha/West Allis, WI	134.2
21	Los Angeles/Long Beach/Glendale, CA	130.3
24	San Jose/Sunnyvale/Santa Clara, CA	128.8
25	Oakland/Fremont/Hayward, CA	127.2
26	Chicago/Joliet/Naperville, IL	125.9

TABLE 3

Most compact, connected medium metro areas

Medium metro areas are defined as having a population between 500,000 and 1 million.

Rank	Metro area	Index score
13	Madison, WI	136.7
28	Allentown/Bethlehem/Easton, PA-NJ	124.4
37	Bridgeport/Stamford/Norwalk, CT	121.7
41	Stockton, CA	120.3
52	New Haven/Milford, CT	116.3
54	Scranton/Wilkes-Barre, PA	115.8
64	Oxnard/Thousand Oaks/Ventura, CA	113.8
66	Modesto, CA	113.3
67	Wilmington, DE-MD-NJ	112.9
68	Lancaster, PA	112.6

TABLE 4

Most compact, connected small metro areas

Small metro areas are defined as having a population less than 500,000.

Rank	Metro area	Index score
3	Atlantic City/Hammonton, NJ	150.4
4	Santa Barbara/Santa Maria/Goleta, CA	146.6
5	Champaign/Urbana, IL	145.2
6	Santa Cruz/Watsonville, CA	145.0
7	Trenton/Ewing, NJ	144.7
9	Springfield, IL	142.2
11	Reading, PA	137.9
14	Burlington/South Burlington, VT	135.1
16	Boulder, CO	133.7
17	Appleton, WI	132.7

Most sprawling metro areas

Tables 5–8 rank communities that are the least dense, least connected and most likely to separate land uses.

TABLE 5

Most sprawling metro areas, nationally

Rank	Metro area	Index score
212	Kingsport/Bristol/Bristol, TN-VA	60.0
213	Augusta/Richmond County, GA-SC	59.2
214	Greenville/Mauldin-Easley, SC	59.0
215	Riverside-San Bernardino/Ontario, CA	56.2
216	Baton Rouge, LA	55.6
217	Nashville-Davidson/Murfreesboro/Franklin, TN	51.7
218	Prescott, AZ	49.0
219	Clarksville, TN-KY	41.5
220	Atlanta/Sandy Springs/Marietta, GA	41.0
221	Hickory/Lenoir/Morganton, NC	24.9

TABLE 6

Most sprawling large metro areas

Large metro areas are defined as having a population more than one million.

Rank	Metro area	Index score
182	Houston/Sugar Land/Baytown, TX	76.7
184	Richmond, VA	76.4
189	Rochester, NY	74.5
192	Birmingham-Hoover, AL	73.6
196	Memphis, TN-MS-AR	70.8
197	Charlotte/Gastonia-Rock Hill, NC-SC	70.5
201	Warren/Troy/Farmington Hills, MI	67.0
215	Riverside-San Bernardino/Ontario, CA	56.3
217	Nashville/Davidson/Murfreesboro/Franklin, TN	51.7
220	Atlanta-Sandy Springs/Marietta, GA	41.0

TABLE 7

Most sprawling medium metro areas

Medium metro areas are defined as having a population between 500,000 and 1 million.

Rank	Metro area	Index score
185	Little Rock/North Little Rock/Conway, AR	76.1
191	Durham/Chapel Hill, NC	73.8
195	Jackson, MS	72.3
199	Knoxville, TN	68.2
200	Columbia, SC	67.5
207	Chattanooga, TN-GA	63.6
208	Greensboro/High Point, NC	63.5
213	Augusta/Richmond County, GA-SC	59.1
214	Greenville/Mauldin-Easley, SC	59.0
216	Baton Rouge, LA	55.6

TABLE 8

Most sprawling small metro areas

Small metro areas are defined as having a population less than 500,000.

Rank	Metro area	Index score
204	Green Bay, WI	65.4
205	Fort Smith, AR-OK	64.8
206	Lynchburg, VA	64.0
209	Winston-Salem, NC	63.4
210	Florence, SC	61.1
211	Lake Havasu City-Kingman, AZ	60.1
212	Kingsport/Bristol/Bristol, TN-VA	60.0
218	Prescott, AZ	49.0
219	Clarksville, TN-KY	41.5
221	Hickory/Lenoir/Morganton, NC	24.9

What sprawl means for everyday life

The researchers found that as Sprawl Index scores improved—that is, as areas became less sprawling—several quality of life factors improved along with them.[5]

- People have greater economic opportunity in compact and connected metro areas.
- People spend less of their household income on the combined cost of housing and transportation in these areas.
- People have a greater number of transportation options available to them.
- And people in compact, connected metro areas tend to be safer, healthier and live longer than their peers in more sprawling metro areas.

The researchers controlled for socioeconomic factors. Below is more information about each of these quality of life indicators.

People in more compact, connected metro areas have greater economic mobility.
Could metro areas with homes and jobs far apart and limited connections between those areas directly affect the ability of low-income children to get ahead as adults?

The researchers compared the 2014 Sprawl Index scores to models of upward economic mobility from Harvard and the University of California at Berkeley.[6] They examined the probability of a child born to a family in the bottom quintile of the national income distribution reaching the top quintile of the national income distribution by age 30, and whether communities' index score was correlated with that probability.

Compactness has a strong direct relationship to upward economic mobility.

The researchers found that compactness has a strong direct relationship to upward economic mobility. In fact, for every 10 percent increase in an index score, there is a 4.1 percent increase in the probability that a child born to a family in the bottom quintile of the national income distribution reaches the top quintile of the national income distribution by age 30.

For example, the probability of an individual in the Baton Rouge, LA area (index score: 55.6) moving from the bottom income quintile to top quintile is 7.2 percent. In the Madison, WI area (index score: 136.7) that probability is 10.2 percent.

People in more compact, connected metro areas spend less on the combined expenses of housing and transportation.
The cost of housing is often higher in compact areas compared with sprawling ones. However, families' transportation costs are often significantly lower in these places. Shorter distances to travel and a wider range of low-cost travel options means individuals and families in these places spend a smaller portion of their household budget on transportation. How do the two expense categories relate in compact areas versus sprawling ones?

The researchers found that the average percentage of income spent on housing is indeed greater in compact communities than in sprawling areas. Each 10 percent increase in an index score was associated with a 1.1 percent increase in housing costs relative to income.[7]

The researchers also found that the average percentage of income spent on transportation is smaller in compact areas than sprawling ones. Each 10 percent increase in an index score was associated with a 3.5 percent decrease in transportation costs relative to income.[8] For instance, households in the San Francisco, CA area (index score: 194.3) spend an average of 12.4 percent of their income on transportation. Households in the Tampa, FL metro area (index score: 98.5) spend an average of 21.5 percent of their income on transportation.[9]

Perhaps the most notable finding was that the combined cost of housing and transportation declines as an index score increases. As metropolitan compactness increases, transportation costs decline faster than housing costs rise, creating a net decline in household costs.[10] An average household in the San Francisco, CA metro area (index score: 194.3) spends 46.7 percent of its budget on housing and transportation, while an average household in the Tampa, FL metro area (index score: 98.5) spends 56.1 percent of its budget on the same items.[11]

The combined cost of housing and transportation declines as an index score increases.

People in more compact, connected metro areas have more transportation options. Part of the reason transportation costs are lower in more compact areas is that these areas have a wider range of options for how to get around—nearly all of which cost less than driving or are even free.

The researchers found that people in metro areas with higher index scores walk more: For every 10 percent increase in an index score, the walk mode share (i.e., the portion of travelers who choose to walk) increases by 3.9 percent.

The researchers found that people in high-scoring metro areas take transit more: For every 10 percent increase in an index score, transit mode share (i.e., the portion of travelers who choose to use transit) increases by 11.5 percent. This means, for example, that a person in the Lincoln, NE metro area (index score: 132.0) is two and a half times more likely to choose transit for his or her transportation needs than a similar person in the Greenville, SC area (index score: 59.0).

The researchers also found that people in high-scoring metro areas own fewer cars and spend less time driving. For every 10 percent increase in an index score, vehicle ownership rates decline by 0.6 percent and drive time declines by 0.5 percent.[12]

Data about transportation options are even more compelling at the county level. See Appendix B for that information.

People in more compact, connected areas have longer, healthier and safer lives. Health data are available at the county level; for this reason, health outcomes are assessed at this scale rather than the MSA level. At the county level, an area's compactness is also related to individuals' health.[13]

First and foremost, people in compact, connected counties tend to live longer. For every doubling in an index score, life expectancy increases by about four percent.[14] For the average American with a life expectancy of 78 years, this translates into a three-year difference in life expectancy between people in a less compact versus a more compact county.

Driving rates (and their associated risk of a fatal collision), body mass index (BMI), air quality and violent crime all contribute to this difference, albeit in different ways. Counties with less sprawl have more car crashes, but fewer of those crashes are fatal. For every 10 percent increase in an index score, fatal crashes decrease by almost 15 percent. That means a person in Walker County, GA, for example, has nearly three times the chance of being in a fatal crash as compared with a similar person in Denver County, CO.

The researchers found that BMI is strongly and negatively related to index scores. As a county's index score decrease (that is, as a metro area sprawls more), the BMI of its population increases, after accounting for sociodemographic differences. For example, a 5'10" man living in Arlington County, VA is likely to weigh four pounds less than the same man living in Charles County, MD.[15] Similarly, the likelihood of obesity increases. People in less sprawling counties also have significantly lower blood pressure and rates of diabetes.

Seeking better quality of life

As this research shows, metro areas with more compact, connected neighborhoods are associated with better overall economic, health and safety outcomes—on average a better quality of life for everyone in that community. As residents and their elected leaders recognize the health, safety and economic benefits of better development strategies, many decisionmakers are re-examining their traditional zoning, economic development incentives, transportation decisions and other policies that have helped to create sprawling development patterns. Instead, they are choosing to create more connections, transportation choices and walkable neighborhoods in their communities.

The following are examples of cities in metro areas that performed well on each of the four index factors, as well as the local public policies that contributed to their success.

LAND USE MIX

Santa Barbara, CA

Santa Barbara, CA—the fourth most compact, connected metro area nationally—had the best score among small metro areas for its land use mix. Several public policies have contributed to Santa Barbara's high land use mix score.

Forward-thinking zoning codes
The City of Santa Barbara's zoning codes allow residential uses in most commercial zones.[16] This is as a result of a public planning process in the 1990s that sought to create more affordable housing. The process resulted in amendments to the General Plan and Zoning Ordinance that encouraged mixed use developments in certain areas.[17] Now, mixed use is characteristic of Santa Barbara's urban form.

Encouraging mixed use in the general plan
The City of Santa Barbara also made this strategy a development priority by including it in the city's 2011 General Plan Update. The update outlined three principles of development, one of which is to "encourage a mix of land uses to include strong retail and workplace centers, residential living in commercial centers with easy access to grocery stores and recreation, connectivity and civic engagement and public space for pedestrians."[18]

County-level support
Santa Barbara County, which encompasses the City of Santa Barbara, maintains community plans for unincorporated areas of the county. The county has established mixed use zones and encourages mixed use in many of the community plans in order to encourage a variety of uses throughout the county.[19]

ACTIVITY CENTERING

Madison, WI

The City of Madison, WI—the most compact, connected medium-sized metro area in the country—also had the highest score nationally for activity centering, meaning people and businesses are concentrated downtown and in subcenters. Several public policies have contributed to Madison's high activity centering score.

Homebuyer assistance programs
Madison has several programs that help residents purchase homes, many of which encourage residency downtown and reinvestment in existing housing stock.[20] One example is the Mansion Hill—James Madison Park Neighborhood Small Cap TIF Loan Program.[21] This program provides zero percent interest, forgivable second mortgage loans to finance a portion of the purchase price and the rehabilitation costs of a residential property located in the Mansion Hill—James Madison Park neighborhood of downtown Madison.

A comprehensive focus on downtown development
In 1994, Madison adopted a series of strategic management system goals, which outlined ways for Madison to "share in the growth that is occurring in Dane County…in such a way to balance economic, social and environmental health."[22] Directing new growth toward existing urban areas, increasing owner-occupied housing in the city and creating economic development areas were all among the strategies recommended to achieve these goals. The goals later influenced the city's 2006 comprehensive plan.[23]

Downtown Plan
In 2012, the City of Madison adopted a new Downtown Plan, which aims to strengthen Madison's downtown neighborhood. The plan includes nine strategies to guide the future growth of this core neighborhood while "sustaining the traditions, history and vitality that make Madison a model city."

STREET ACCESSIBILITY

Trenton, NJ

The street connectivity factor examines average block sizes; percent of urban blocks that are small; density of intersections; and percent of intersections that are four-way or more.

Trenton, NJ—the seventh most compact, connected metro area nationally—had the highest score for street connectivity among all small- and medium-sized metro areas. A number of public policies helped Trenton achieve its high street connectivity score.

A city designed for people
Trenton is the historic center city of the larger metro area, and a number of small town centers surround it. This interconnected network of city and town centers encouraged reinvestment within the existing city grid.

Transportation Master Plan
Trenton's Transportation Master Plan focuses on maintaining the existing transportation network, using investments to support downtown and supporting multimodal options for all the neighborhoods.[24] A walkable city, by definition, has small blocks and frequent intersections. The plan also places a high priority on key objectives to reach these goals, such as improve and maintain the city's transit infrastructure, encourage transit-supportive land uses and avoid increases in street capacity unless addressing a critical transportation problem.

Investing in transportation
Greater Trenton has a long history of investing in transportation. In 1904, the state legislature appropriated $2 million to improve roads when other states with similar programs spent less than one-third that amount. Today, the metro area predominantly uses county bonds to maintain its road network and make improvements to its rail and bus service.

DEVELOPMENT DENSITY

Los Angeles, CA

Los Angeles, CA, had the second-highest density score in the country, topped only by the New York metro area, an outlier nationally. Several public policies have contributed to Los Angeles's high development density score.

A plan for development around transit stations
In 2012, Los Angeles' Department of City Planning began an initiative to create detailed plans for development surrounding 10 light rail stations. The Los Angeles Transit Neighborhood Plans project "aims to support vibrant neighborhoods around transit stations, where people can live, work and shop or eat out, all within a safe and pleasant walk to transit stations."[25]

Allowing higher density in exchange for affordable housing
Los Angeles' Affordable Housing Incentives Ordinance gives developers the option to build up to 25 percent above the otherwise allowable residential density level if they include affordable housing in their project.[26] It also reduces parking requirements and expedites the development approval process.

A zoning code for Los Angeles today and tomorrow
In 2013, Los Angeles began a multi-year process to update its zoning code, which was first drafted in 1946. While this process is nascent, the city plans to have a new code in place by 2017. The new code will be web-based, easier to use and create a unified development code for projects downtown.

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These public policies have helped Santa Barbara, Madison, Trenton and Los Angeles achieve high index scores. These are by no means the only policies, however, that can improve how a community is built and the quality of life for the people who live there. For more ideas about local policy that can help your town grow in better ways visit www.smartgrowthamerica.org.

Conclusion

How we choose to build and develop affects everyone's day-to-day lives. How much we pay for housing and transportation, how long we spend commuting to and from work, economic opportunities in our communities and even personal health are all connected to how our neighborhoods and surrounding areas are built.

This study shows that life expectancy, economic mobility, transportation choices and personal health and safety all improve in less sprawling areas. As individuals and their elected leaders recognize these benefits, many decisionmakers choose to encourage this type of growth through changes to public regulations and incentives.

This report represents a rigorous statistical analysis of how communities have developed in the United States. It is not, however, a complete picture of every community across the country.

The analysis included in this research is an important part of understanding how communities have developed in the United States. We recognize that qualitative information—such as the design of the streets and buildings, the quality of park space and the types of businesses nearby, among many other factors—also has a significant impact on the quality of life within a neighborhood and a region.

Local elected officials, state leaders and federal lawmakers can all help communities as they seek to grow in ways that support these improved outcomes. Smart Growth America helps communities understand the long-term impact of their development decisions. We work with public and private sectors so local communities can achieve multiple outcomes such as increased economic mobility and improved personal health. By providing this type of research, alongside best practices used in many of these communities, we hope more places will closely consider development decisions as a key to long-term success.

This report is an opportunity to reflect on many communities' successes, and to highlight the places where we, as a country, can do better. Visit www.smartgrowthamerica.org to learn more about our work and how your community can grow in more compact, connected ways.

Appendix A: Full 2014 metro area Sprawl Index rankings

Table 1A below contains the Sprawl Index scores for all 221 metro areas included in the 2014 analysis, as well as the score for each metro area in the four sprawl factors, based on 2010 data. All regions are census-defined Metropolitan Statistical Areas unless marked with an asterisk (*). Those places with an asterisk are Metropolitan Divisions, which comprise MSAs. Composite scores are controlled for population.

TABLE A1

Metropolitan Statistical Areas Sprawl Index Scores, 2014

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
1	New York-White Plains-Wayne, NY-NJ*	384.29	159.34	213.49	193.80	**203.36**
2	San Francisco-San Mateo-Redwood City, CA*	185.97	167.17	230.92	162.83	**194.28**
3	Atlantic City-Hammonton, NJ	96.33	100.10	154.52	130.71	**150.36**
4	Santa Barbara-Santa Maria-Goleta, CA	112.28	148.85	109.48	122.05	**146.59**
5	Champaign-Urbana, IL	100.00	123.27	153.64	82.81	**145.16**
6	Santa Cruz-Watsonville, CA	98.88	146.15	107.90	112.18	**145.02**
7	Trenton-Ewing, NJ	115.88	128.00	97.36	139.06	**144.71**
8	Miami-Miami Beach-Kendall, FL*	160.18	136.41	117.91	166.90	**144.12**
9	Springfield, IL	90.39	100.51	160.03	96.74	**142.24**
10	Santa Ana-Anaheim-Irvine, CA*	161.91	155.02	79.64	181.81	**139.86**
11	Reading, PA	102.22	121.83	129.72	113.76	**137.90**
12	Detroit-Livonia-Dearborn, MI*	125.20	124.65	107.48	183.98	**137.17**
13	Madison, WI	101.00	115.83	168.11	94.85	**136.69**
14	Burlington-South Burlington, VT	88.32	102.21	168.79	70.68	**135.06**
15	Milwaukee-Waukesha-West Allis, WI	113.31	126.73	153.40	130.35	**134.18**
16	Boulder, CO	106.89	115.32	100.09	118.95	**133.68**
17	Appleton, WI	90.65	99.81	156.72	79.92	**132.69**
18	Lincoln, NE	111.55	132.99	96.74	96.78	**131.95**
19	Laredo, TX	104.20	117.12	99.89	106.87	**131.25**
20	Erie, PA	97.73	130.61	113.69	88.92	**130.39**
21	Los Angeles-Long Beach-Glendale, CA	187.39	160.18	115.66	154.40	**130.33**
22	Spokane, WA	98.98	115.82	108.57	128.26	**129.40**
23	Medford, OR	89.67	115.31	128.06	80.42	**128.86**
24	San Jose-Sunnyvale-Santa Clara, CA	149.50	148.76	86.80	131.45	**128.76**
25	Oakland-Fremont-Hayward, CA*	136.28	145.75	88.11	159.44	**127.24**
26	Chicago-Joliet-Naperville, IL*	145.50	140.09	143.24	160.21	**125.90**
27	Eugene-Springfield, OR	95.35	125.70	116.84	91.29	**125.63**
28	Allentown-Bethlehem-Easton, PA-NJ	98.76	128.59	101.10	135.97	**124.40**
29	Vallejo-Fairfield, CA	105.38	132.03	79.32	115.90	**124.16**
30	Salem, OR	93.11	123.48	113.50	98.10	**123.35**
31	Yakima, WA	90.95	117.91	133.08	65.81	**123.19**
32	Ann Arbor, MI	103.27	105.04	123.11	89.95	**122.76**
33	Philadelphia, PA*	141.01	142.25	115.95	140.06	**122.42**
34	Tuscaloosa, AL	85.85	68.60	154.72	92.03	**122.18**
35	Fargo, ND-MN	99.18	118.65	106.96	73.56	**121.82**
36	South Bend-Mishawaka, IN-MI	90.94	94.08	111.91	118.68	**121.71**
37	Bridgeport-Stamford-Norwalk, CT	110.63	132.86	118.02	100.81	**121.64**
38	Fort Lauderdale-Pompano Beach-Deerfield Beach, FL*	140.93	136.53	61.79	153.66	**121.41**
39	Las Vegas-Paradise, NV	142.12	105.02	136.42	114.29	**121.20**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
40	Reno-Sparks, NV	100.78	93.69	137.29	94.06	**120.85**
41	Stockton, CA	106.54	135.75	82.11	121.04	**120.28**
42	New Orleans-Metairie-Kenner, LA	104.84	117.83	96.09	149.94	**119.74**
43	Charlottesville, VA	91.16	86.08	141.81	71.77	**119.08**
44	San Luis Obispo-Paso Robles, CA	89.90	119.8	103.87	88.53	**118.90**
45	Huntington-Ashland, WV-KY-OH	84.25	67.73	142.77	108.91	**118.43**
46	Bellingham, WA	85.29	92.75	113.43	96.89	**118.01**
47	Corpus Christi, TX	98.68	118.31	90.15	110.41	**117.29**
48	Waco, TX	87.96	96.10	100.62	107.83	**117.11**
49	Nassau-Suffolk, NY*	123.33	144.75	81.01	155.85	**117.04**
50	Lexington-Fayette, KY	99.56	110.42	115.34	95.11	**116.76**
51	Saginaw-Saginaw Township North, MI	86.77	93.77	110.97	93.62	**116.62**
52	New Haven-Milford, CT	106.86	127.52	113.51	97.82	**116.29**
53	Seattle-Bellevue-Everett, WA*	121.27	123.99	121.68	131.86	**116.11**
54	Scranton--Wilkes-Barre, PA	91.28	116.46	95.07	123.01	**115.84**
55	Savannah, GA	90.08	84.94	115.36	115.03	**115.81**
56	Charleston, WV	83.81	67.01	136.8	112.05	**115.68**
57	Baltimore-Towson,*	115.97	123.21	123.12	136.35	**115.62**
58	Salinas, CA	101.65	116.00	102.94	90.70	**115.19**
59	Fort Collins-Loveland, CO	94.53	106.30	96.44	100.59	**115.15**
60	Rockford, IL	94.78	110.04	91.83	107.05	**114.98**
61	Bethesda-Rockville-Frederick, MD*	115.08	123.84	98.97	118.94	**114.66**
62	Olympia, WA	89.23	80.87	121.00	98.73	**114.63**
63	Santa Rosa-Petaluma, CA	93.70	132.31	91.91	96.82	**113.92**
64	Oxnard-Thousand Oaks-Ventura, CA	107.91	133.35	78.01	118.31	**113.87**
65	Lubbock, TX	97.23	116.70	87.56	90.44	**113.41**
66	Modesto, CA	109.91	140.69	62.32	102.89	**113.28**
67	Wilmington, DE-MD-NJ*	102.42	109.29	96.53	120.29	**112.94**
68	Lancaster, PA	95.61	110.05	124.31	84.74	**112.64**
69	Manchester-Nashua, NH	95.10	104.38	114.15	89.28	**112.19**
70	Cedar Rapids, IA	92.94	105.64	104.67	81.25	**111.81**
71	College Station-Bryan, TX	102.49	94.65	91.03	91.47	**111.72**
72	Lansing-East Lansing, MI	101.03	92.21	141.56	72.80	**111.61**
73	Beaumont-Port Arthur, TX	85.37	88.45	112.62	113.76	**111.54**
74	Lafayette, LA	90.03	87.35	115.90	92.72	**111.44**
75	Harrisburg-Carlisle, PA	93.54	102.14	99.29	119.17	**111.4**
76	Gainesville, FL	94.58	87.63	102.79	99.45	**111.36**
77	Tyler, TX	85.76	72.48	122.62	93.19	**110.66**
78	Peoria, IL	88.93	100.39	109.76	97.72	**110.49**
79	Chico, CA	91.18	114.46	88.79	79.93	**109.94**
80	Portland-Vancouver-Hillsboro, OR-WA	111.14	136.12	100.81	124.98	**109.85**
81	Newark-Union, NJ-PA*	126.86	139.67	90.43	113.76	**109.62**
82	Las Cruces, NM	89.33	84.27	108.16	89.06	**109.17**
83	Bremerton-Silverdale, WA	90.48	87.55	112.87	86.20	**108.86**
84	Norwich-New London, CT	87.22	84.71	137.44	71.04	**108.85**
85	Provo-Orem, UT	104.53	123.55	77.37	100.08	**108.45**
86	Omaha-Council Bluffs, NE-IA	102.64	120.53	99.67	103.54	**108.42**
87	Columbus, GA-AL	94.45	84.78	125.19	77.79	**108.38**
88	Portland-South Portland-Biddeford, ME	86.06	79.09	157.47	80.24	**107.72**
89	Amarillo, TX	96.16	109.27	76.98	91.56	**107.49**
90	Tacoma, WA*	103.62	105.56	92.25	119.05	**107.48**
91	Washington-Arlington-Alexandria, DC-VA-MD-WV*	122.35	117.61	133.16	125.91	**107.21**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
92	Denver-Aurora-Broomfield, CO	118.31	119.44	109.11	125.16	**107.10**
93	Canton-Massillon, OH	90.54	106.64	76.45	117.92	**106.99**
94	Salt Lake City, UT	117.77	125.49	93.32	97.63	**106.96**
95	Lafayette, IN	95.46	90.63	94.82	83.10	**106.55**
96	Flint, MI	89.57	90.58	114.82	97.49	**106.48**
97	Buffalo-Niagara Falls, NY	107.94	127.67	102.46	95.10	**106.36**
98	Colorado Springs, CO	102.94	108.37	75.94	121.76	**106.33**
99	Merced, CA	93.90	114.76	96.48	66.25	**105.86**
100	El Paso, TX	114.90	99.42	73.41	128.66	**105.64**
101	Davenport-Moline-Rock Island, IA-IL	91.78	121.21	70.03	102.95	**105.59**
102	North Port-Bradenton-Sarasota, FL	97.45	101.45	84.95	126.69	**105.49**
103	San Diego-Carlsbad-San Marcos, CA	125.08	130.37	100.90	119.95	**105.18**
104	York-Hanover, PA	90.92	95.83	113.20	90.32	**105.12**
105	Kennewick-Pasco-Richland, WA	92.84	108.63	81.96	85.86	**105.03**
106	Des Moines-West Des Moines, IA	97.68	120.63	99.46	82.83	**104.90**
107	Virginia Beach-Norfolk-Newport News, VA-NC	106.41	105.24	102.38	131.60	**104.45**
108	Providence-New Bedford-Fall River, RI-MA	105.40	83.28	112.77	141.95	**104.34**
109	Greeley, CO	87.33	99.05	94.05	85.82	**103.61**
110	Camden, NJ*	105.39	125.72	78.53	120.07	**103.22**
111	Akron, OH	94.55	113.13	90.69	106.81	**103.15**
112	Duluth, MN-WI	85.24	89.56	117.03	77.22	**103.14**
113	Lake County-Kenosha County, IL-WI*	101.65	112.39	67.78	132.08	**103.10**
114	Austin-Round Rock-San Marcos, TX	100.42	99.66	138.78	102.88	**102.44**
115	Sioux Falls, SD	97.68	104.85	95.96	60.16	**101.75**
116	Dayton, OH	93.65	114.40	95.13	105.55	**101.48**
117	Toledo, OH	95.30	120.34	85.46	95.85	**100.90**
118	Houma-Bayou Cane-Thibodaux, LA	83.73	75.47	106.77	86.11	**100.13**
119	Ogden-Clearfield, UT	100.96	120.39	62.22	103.52	**99.58**
120	Sacramento-Arden-Arcade-Roseville, CA	111.65	119.11	104.19	108.92	**99.27**
121	Cape Coral-Fort Myers, FL	91.87	81.41	91.52	126.34	**99.22**
122	Tallahassee, FL	91.64	68.25	130.77	79.80	**98.95**
123	Charleston-North Charleston-Summerville, SC	95.29	89.19	108.94	99.03	**98.53**
124	Tampa-St. Petersburg-Clearwater, FL	105.18	105.35	93.00	150.09	**98.49**
125	West Palm Beach-Boca Raton-Boynton Beach, FL*	110.73	121.02	69.66	118.46	**98.18**
126	Albuquerque, NM	103.60	102.57	99.36	97.51	**98.07**
127	Mobile, AL	92.43	88.23	78.79	112.30	**97.48**
128	Edison-New Brunswick, NJ*	109.41	125.05	69.02	137.91	**96.77**
129	Gary, IN*	94.53	107.73	82.31	106.33	**96.70**
130	Syracuse, NY	94.75	100.93	122.57	69.91	**96.65**
131	Binghamton, NY	89.70	88.92	102.07	69.84	**95.97**
132	Pittsburgh, PA	96.16	115.14	107.78	119.33	**95.45**
133	Albany-Schenectady-Troy, NY	95.40	105.96	108.19	86.04	**95.12**
134	Topeka, KS	88.98	83.12	102.18	71.38	**94.82**
135	Hagerstown-Martinsburg,*-WV	84.10	74.10	112.54	78.51	**94.13**
136	Roanoke, VA	90.65	85.88	83.67	93.21	**93.77**
137	Hartford-West Hartford-East Hartford, CT	100.12	113.10	119.54	72.59	**93.50**
138	Columbus, OH	101.58	112.24	95.56	112.19	**93.00**
139	Fresno, CA	101.75	126.18	81.45	82.42	**92.24**
140	Wichita, KS	95.63	107.27	88.57	83.65	**91.74**
141	Evansville, IN-KY	91.57	92.59	86.07	84.34	**91.67**
142	Visalia-Porterville, CA	91.94	106.37	79.64	83.98	**91.55**
143	Montgomery, AL	90.01	85.97	98.71	80.50	**91.20**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
144	Boise City-Nampa, ID	95.80	110.45	75.15	91.88	**91.06**
145	Deltona-Daytona Beach-Ormond Beach, FL	91.35	88.02	66.48	116.35	**89.68**
146	Myrtle Beach-North Myrtle Beach-Conway, SC	83.43	54.95	104.88	95.40	**88.70**
147	Minneapolis-St. Paul-Bloomington, MN-WI	105.92	110.34	111.41	108.60	**88.69**
148	Lakeland-Winter Haven, FL	87.51	54.24	95.32	128.15	**87.64**
149	Gulfport-Biloxi, MS	86.03	69.80	80.53	97.52	**87.61**
150	Fort Wayne, IN	92.42	93.70	89.90	73.85	**86.67**
151	Tulsa, OK	90.54	92.40	93.54	103.35	**86.65**
152	Dallas-Plano-Irving, TX*	111.46	105.90	94.21	129.74	**86.15**
153	Cleveland-Elyria-Mentor, OH	105.11	123.72	95.54	84.96	**85.62**
154	Utica-Rome, NY	90.87	83.53	98.35	61.91	**84.71**
155	Raleigh-Cary, NC	96.99	87.30	109.43	88.16	**84.25**
156	Orlando-Kissimmee-Sanford, FL	102.40	85.79	89.29	129.14	**83.97**
157	Springfield, MO	89.10	89.25	75.99	91.87	**83.96**
158	Indianapolis-Carmel, IN	98.11	99.65	98.42	102.31	**83.89**
159	McAllen-Edinburg-Mission, TX	94.43	76.78	90.99	104.60	**83.89**
160	Killeen-Temple-Fort Hood, TX	89.16	79.86	78.17	94.80	**83.12**
161	Louisville/Jefferson County, KY-IN	98.44	89.48	93.12	102.87	**82.92**
162	Oklahoma City, OK	94.64	96.26	89.86	100.38	**82.07**
163	St. Louis, MO-IL	97.68	108.29	93.86	113.80	**82.06**
164	Bakersfield-Delano, CA	101.29	114.13	76.82	73.14	**81.78**
165	Jacksonville, FL	96.81	82.50	90.17	111.76	**80.85**
166	Cincinnati-Middletown, OH-KY-IN	98.75	107.80	98.95	93.67	**80.75**
167	Port St. Lucie, FL	92.74	77.05	62.73	106.43	**80.75**
168	Macon, GA	84.72	71.90	86.32	74.47	**79.92**
169	Poughkeepsie-Newburgh-Middletown, NY	89.38	95.38	97.49	70.30	**79.51**
170	Grand Rapids-Wyoming, MI	91.39	91.78	99.15	74.75	**79.18**
171	Tucson, AZ	100.79	90.96	78.71	94.72	**78.92**
172	Fort Worth-Arlington, TX*	103.71	100.89	72.55	117.21	**78.56**
173	Phoenix-Mesa-Glendale, AZ	111.60	102.36	96.37	111.33	**78.32**
174	Holland-Grand Haven, MI	86.45	81.52	78.64	71.71	**78.17**
175	Youngstown-Warren-Boardman, OH-PA	87.36	100.76	74.10	81.52	**78.08**
176	Huntsville, AL	86.18	58.29	89.43	99.31	**78.02**
177	Palm Bay-Melbourne-Titusville, FL	96.94	79.64	60.02	105.42	**77.91**
178	Kansas City, MO-KS	96.84	109.49	80.45	103.52	**77.60**
179	San Antonio-New Braunfels, TX	100.67	93.56	95.15	102.43	**77.37**
180	Wilmington, NC	85.89	73.12	83.92	84.13	**77.27**
181	Pensacola-Ferry Pass-Brent, FL	88.54	81.12	75.12	88.65	**76.84**
182	Houston-Sugar Land-Baytown, TX	108.3	102.66	92.56	129.43	**76.74**
183	Asheville, NC	80.71	64.12	97.61	88.53	**76.52**
184	Richmond, VA	96.36	78.08	101.95	92.83	**76.41**
185	Little Rock-North Little Rock-Conway, AR	88.00	75.36	93.55	90.35	**76.08**
186	Naples-Marco Island, FL	91.57	81.95	55.19	90.69	**75.23**
187	Brownsville-Harlingen, TX	90.92	77.74	51.43	105.96	**74.69**
188	Ocala, FL	80.80	41.30	105.49	91.78	**74.67**
189	Rochester, NY	96.12	103.86	96.77	62.00	**74.50**
190	Spartanburg, SC	81.26	68.26	91.26	72.48	**74.00**
191	Durham-Chapel Hill, NC	91.59	74.84	80.27	84.98	**73.84**
192	Birmingham-Hoover, AL	86.67	67.88	99.52	105.21	**73.55**
193	Longview, TX	81.66	71.62	81.06	68.46	**73.06**
194	Shreveport-Bossier City, LA	87.79	76.94	72.39	84.53	**72.63**
195	Jackson, MS	87.35	64.41	105.46	73.8	**72.30**
196	Memphis, TN-MS-AR	96.6	77.76	94.23	90.62	**70.77**

Rank	Metro area	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
197	Charlotte-Gastonia-Rock Hill, NC-SC	94.55	84.71	103.05	86.93	**70.45**
198	Kalamazoo-Portage, MI	85.55	75.00	85.58	64.97	**70.32**
199	Knoxville, TN	88.10	60.62	100.77	82.53	**68.22**
200	Columbia, SC	89.63	69.14	108.38	66.63	**67.45**
201	Warren-Troy-Farmington Hills, MI*	97.88	110.33	70.54	96.17	**67.03**
202	Fayetteville-Springdale-Rogers, AR-MO	84.55	67.95	80.67	81.81	**66.26**
203	Fayetteville, NC	91.13	71.69	72.57	71.77	**66.02**
204	Green Bay, WI	89.90	90.49	66.77	53.34	**65.35**
205	Fort Smith, AR-OK	80.74	56.78	75.30	86.02	**64.84**
206	Lynchburg, VA	81.51	57.07	76.38	77.42	**63.97**
207	Chattanooga, TN-GA	86.14	61.15	94.27	72.90	**63.63**
208	Greensboro-High Point, NC	88.22	80.57	84.94	70.70	**63.50**
209	Winston-Salem, NC	86.43	68.62	87.42	68.47	**63.44**
210	Florence, SC	81.22	51.13	87.85	61.44	**61.06**
211	Lake Havasu City-Kingman, AZ	85.24	55.15	73.04	65.97	**60.13**
212	Kingsport-Bristol-Bristol, TN-VA	78.73	40.53	89.67	82.87	**60.00**
213	Augusta-Richmond County, GA-SC	85.25	60.69	88.47	73.85	**59.18**
214	Greenville-Mauldin-Easley, SC	86.69	72.89	81.15	71.40	**58.98**
215	Riverside-San Bernardino-Ontario, CA	103.72	111.18	77.03	80.33	**56.25**
216	Baton Rouge, LA	91.27	72.03	69.74	80.40	**55.60**
217	Nashville-Davidson-Murfreesboro-Franklin, TN	91.54	63.92	96.17	77.00	**51.74**
218	Prescott, AZ	82.33	53.19	58.15	69.96	**48.96**
219	Clarksville, TN-KY	84.48	39.67	74.47	60.83	**41.49**
220	Atlanta-Sandy Springs-Marietta, GA	97.80	85.47	89.89	75.92	**40.99**
221	Hickory-Lenoir-Morganton, NC	78.64	40.46	67.00	56.95	**24.86**

Appendix B: County-level information

County-level findings

Table B1 below shows Sprawl Index scores for all metropolitan counties. As discussed on page 10 of this report, this research shows that people in high-scoring metro areas have more transportation options than people in lower-scoring metro areas. In addition to conducting this analysis at the metro-area level, the researchers also examined this question at the county level, where the findings and their implications for everyday life are even more compelling.

High-scoring counties have lower rates of car ownership. For every 10 percent increase in an index score, car ownership decreases by 3.8 percent. High-scoring counties have higher rates of walking. For every 10 percent increase in an index score, the proportion of people who choose to walk as a mode of transportation increases by 6.6 percent. More people in high-scoring counties ride public transit. For every 10 percent increase in an index score, the proportion of transit users in the county increases by 24 percent. People in high-scoring counties spend less time driving. For every 10 percent increase in an index score at the county level, people spend on average 3.5 percent less time driving.

Data were not available for a limited number of counties. Factors are provided where available.

TABLE B1

County-level Sprawl Index Scores, 2014

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Blount County	AL	90.36	37.85	74.28	60.14	56.60
Calhoun County	AL	91.58	86.70	117.70	104.38	100.11
Chilton County	AL	89.98	52.55	81.61	62.37	64.14
Colbert County	AL	95.11	104.27	76.99	124.68	100.33
Elmore County	AL	91.59	60.63	86.59	85.71	76.15
Etowah County	AL	93.78	91.28	116.86	93.10	98.43
Houston County	AL	94.83	102.37	98.64	88.97	95.20
Jefferson County	AL	99.01	110.72	122.44	126.81	118.64
Lauderdale County	AL	94.46	84.43	105.63	88.50	91.48
Lawrence County	AL	89.38	51.74	86.98	66.67	66.75
Lee County	AL	96.48	87.90	104.17	84.55	91.50
Limestone County	AL	91.62	58.45	89.78	82.64	75.51
Madison County	AL	97.61	98.59	103.31	114.82	104.53
Mobile County	AL	99.06	108.17	93.94	113.78	104.72
Montgomery County	AL	102.14	120.67	118.34	105.98	114.89
Morgan County	AL	96.47	95.35	116.51	101.04	102.96
Russell County	AL	94.83	90.91	78.65	93.54	86.71
St. Clair County	AL	91.04	55.96	81.95	84.47	72.65
Shelby County	AL	94.43	91.33	88.20	92.91	89.53
Tuscaloosa County	AL	96.71	101.44	136.82	110.56	114.39
Walker County	AL	90.60	65.74	86.66	92.50	79.62
Coconino County	AZ	95.58	105.89	159.70	80.11	113.04
Maricopa County	AZ	110.50	118.07	118.48	118.04	120.56
Mohave County	AZ	96.20	90.76	97.35	95.37	93.58
Pima County	AZ	102.91	109.55	129.25	101.54	113.66
Pinal County	AZ	96.42	74.63	93.08	100.74	88.90
Yavapai County	AZ	96.00	89.71	88.28	86.40	87.49
Yuma County	AZ	99.68	105.56	142.91	107.38	117.54
Benton County	AR	95.22	95.05	104.81	89.33	95.07
Craighead County	AR	95.83	97.46	113.68	76.68	94.83
Crawford County	AR	92.25	90.19	82.88	80.03	82.74
Crittenden County	AR	96.93	115.43	79.24	89.18	93.93
Faulkner County	AR	95.11	92.10	83.67	74.78	82.83
Garland County	AR	92.69	89.51	116.53	103.18	100.60
Grant County	AR	89.11	79.34	77.98	60.72	70.67
Jefferson County	AR	94.66	97.82	96.55	113.66	100.85
Lincoln County	AR	88.97	51.59	72.47	62.71	60.74
Lonoke County	AR	91.76	79.64	91.84	75.65	80.69
Madison County	AR	88.44	61.16	73.67	72.44	67.05
Miller County	AR	97.29	106.83	82.03	115.58	100.54
Poinsett County	AR	89.31	105.78	77.99	71.03	82.34
Pulaski County	AR	100.95	111.48	116.72	127.01	117.74

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Saline County	AR	92.78	80.99	106.43	75.80	86.10
Sebastian County	AR	97.44	103.71	93.42	108.24	100.89
Washington County	AR	98.58	104.46	109.89	91.83	101.50
Alameda County	CA	137.65	143.40	115.28	151.09	146.57
Butte County	CA	99.20	121.87	106.28	91.90	106.08
Contra Costa County	CA	112.02	128.70	100.81	121.28	119.84
El Dorado County	CA	96.18	88.17	84.58	77.80	83.17
Fresno County	CA	103.35	127.85	104.03	94.25	109.31
Imperial County	CA	99.38	132.78	99.61	82.71	104.58
Kern County	CA	102.91	121.33	99.62	92.21	105.08
Kings County	CA	100.77	115.21	108.98	90.98	105.04
Los Angeles County	CA	152.55	145.20	121.62	141.02	150.67
Madera County	CA	96.68	110.34	104.67	69.69	94.12
Marin County	CA	109.25	141.52	96.85	111.15	118.57
Merced County	CA	100.54	122.04	112.80	85.94	106.74
Monterey County	CA	109.05	122.36	110.26	101.72	113.71
Napa County	CA	102.69	135.45	131.01	110.28	125.09
Orange County	CA	134.15	142.55	95.13	144.21	136.66
Placer County	CA	101.97	116.93	90.93	98.05	102.49
Riverside County	CA	105.36	117.55	108.49	98.38	109.41
Sacramento County	CA	115.28	128.54	135.70	129.68	134.50
San Benito County	CA	103.10	115.79	78.56	105.10	100.81
San Bernardino County	CA	106.82	122.13	95.87	92.42	105.45
San Diego County	CA	118.35	129.64	121.82	116.14	127.15
San Francisco County	CA	250.84	153.79	258.47	215.72	251.27
San Joaquin County	CA	106.50	132.92	104.79	118.62	119.85
San Luis Obispo County	CA	97.52	124.79	111.43	102.74	111.53
San Mateo County	CA	130.72	144.53	93.82	131.35	131.72
Santa Barbara County	CA	116.62	139.70	112.02	116.13	126.69
Santa Clara County	CA	131.02	139.68	107.58	132.85	135.11
Santa Cruz County	CA	104.20	138.71	114.16	107.34	120.35
Shasta County	CA	96.00	110.79	114.25	88.66	103.07
Solano County	CA	106.86	130.60	103.94	114.95	117.80
Sonoma County	CA	100.37	131.12	101.87	97.67	109.81
Stanislaus County	CA	107.86	135.71	94.54	107.84	114.52
Sutter County	CA	98.92	119.22	126.45	82.89	108.68
Tulare County	CA	100.44	117.82	102.53	93.41	104.49
Ventura County	CA	110.13	131.48	99.80	114.98	117.82
Yolo County	CA	107.3	126.92	98.50	110.10	113.53
Yuba County	CA	97.57	95.43	82.17	89.37	88.80
Adams County	CO	106.63	122.25	82.26	122.37	110.59
Arapahoe County	CO	114.44	124.30	102.43	134.20	123.81
Boulder County	CO	107.71	122.00	111.33	115.52	117.87
Broomfield County	CO	105.87	113.80	83.11	129.14	110.09
Clear Creek County	CO	90.58	67.38	–	117.81	–

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Denver County	CO	129.34	137.67	174.54	181.54	170.48
Douglas County	CO	102.77	97.61	92.17	97.77	96.94
Elbert County	CO	88.27	44.14	72.69	50.26	54.30
El Paso County	CO	104.62	119.18	95.89	123.96	113.79
Jefferson County	CO	106.94	125.25	90.89	112.99	111.40
Larimer County	CO	100.68	117.76	111.95	103.05	110.57
Mesa County	CO	101.69	113.73	124.35	107.33	114.88
Pueblo County	CO	100.43	112.15	112.96	121.67	114.91
Teller County	CO	94.68	82.25	81.88	108.04	89.53
Weld County	CO	97.29	114.35	111.18	95.06	105.65
Fairfield County	CT	110.88	131.47	125.41	101.99	122.04
Hartford County	CT	107.85	126.56	138.02	92.46	120.50
Middlesex County	CT	95.74	116.02	98.90	81.98	97.68
New Haven County	CT	107.16	128.91	137.15	102.88	124.04
New London County	CT	96.76	106.51	131.52	85.24	106.33
Tolland County	CT	96.05	89.61	97.77	63.29	83.17
Kent County	DE	94.72	97.37	102.26	89.82	95.00
New Castle County	DE	108.44	126.15	111.75	121.39	121.40
District of Columbia	DC	193.52	138.05	219.97	185.15	206.37
Alachua County	FL	100.66	110.17	115.43	107.74	110.74
Baker County	FL	89.21	63.21	89.68	61.02	69.39
Bay County	FL	99.21	105.55	93.70	115.16	104.31
Brevard County	FL	102.39	103.2	86.39	110.4	100.75
Broward County	FL	120.61	133.24	95.43	148.86	131.01
Charlotte County	FL	94.98	97.96	103.74	114.83	103.64
Clay County	FL	97.16	92.55	98.14	95.40	94.71
Collier County	FL	99.42	104.70	83.67	105.06	97.74
Duval County	FL	106.31	113.10	118.71	125.06	119.96
Escambia County	FL	99.94	109.08	100.14	116.67	108.16
Flagler County	FL	96.82	82.32	79.96	99.05	86.78
Gadsden County	FL	90.27	57.12	83.72	95.13	76.69
Hernando County	FL	96.20	80.29	108.25	102.08	95.84
Hillsborough County	FL	106.16	115.63	127.60	128.18	124.51
Indian River County	FL	97.10	101.81	112.72	132.01	113.79
Lake County	FL	95.53	87.32	121.33	116.84	106.64
Lee County	FL	98.87	104.60	119.36	121.83	114.11
Leon County	FL	102.05	106.83	149.96	99.11	118.31
Manatee County	FL	102.17	114.33	112.33	129.01	118.27
Marion County	FL	93.51	83.3	140.38	98.85	105.07
Martin County	FL	98.62	110.16	106.69	113.84	109.26
Miami-Dade County	FL	137.38	132.85	131.33	156.48	149.93
Nassau County	FL	93.25	78.04	98.01	97.21	89.42
Okaloosa County	FL	100.20	113.18	109.67	105.87	109.14
Orange County	FL	108.01	110.76	118.48	124.47	119.5
Osceola County	FL	98.45	86.64	87.23	114.77	95.92

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Palm Beach County	FL	107.77	125.08	107.06	118.32	118.40
Pasco County	FL	99.18	100.48	84.02	117.84	100.48
Pinellas County	FL	114.66	132.11	93.74	163.76	132.94
Polk County	FL	96.76	90.29	115.86	120.94	107.53
St. Johns County	FL	97.43	86.85	85.06	106.86	92.48
St. Lucie County	FL	100.74	97.46	102.45	120.07	106.54
Santa Rosa County	FL	92.28	93.99	81.78	80.59	83.78
Sarasota County	FL	101.61	116.04	113.62	124.42	117.59
Seminole County	FL	105.12	116.39	81.81	121.13	107.72
Volusia County	FL	99.33	107.91	100.70	115.72	107.47
Wakulla County	FL	89.66	45.54	78.68	79.41	66.29
Barrow County	GA	92.36	70.78	85.30	72.18	74.92
Bartow County	GA	90.76	77.69	86.60	80.47	79.63
Bibb County	GA	98.07	113.15	103.59	112.70	108.69
Bryan County	GA	89.84	61.04	81.95	71.54	69.79
Butts County	GA	91.10	82.26	87.09	67.51	77.24
Carroll County	GA	92.24	80.47	108.64	59.41	81.28
Catoosa County	GA	93.34	79.45	88.25	78.55	80.91
Chatham County	GA	99.64	117.03	126.17	126.88	122.03
Chattahoochee County	GA	97.14	100.48	70.87	98.62	89.61
Cherokee County	GA	97.06	94.58	80.91	83.44	86.10
Clarke County	GA	100.91	115.76	98.31	92.89	102.49
Clayton County	GA	106.35	106.15	84.62	98.10	98.49
Cobb County	GA	106.99	116.91	91.39	107.76	107.28
Columbia County	GA	96.83	95.43	80.24	72.04	82.48
Coweta County	GA	92.69	85.33	81.74	72.61	78.64
Dade County	GA	89.57	56.36	80.64	69.91	67.30
Dawson County	GA	89.94	63.53	86.08	69.43	71.24
DeKalb County	GA	111.99	120.73	96.18	100.65	109.34
Dougherty County	GA	97.65	109.27	95.60	107.90	103.30
Douglas County	GA	95.83	89.53	103.33	70.96	87.25
Effingham County	GA	91.03	60.74	84.13	75.90	72.13
Fayette County	GA	93.23	94.36	100.88	78.34	89.51
Floyd County	GA	92.92	90.67	103.37	89.35	92.52
Forsyth County	GA	96.31	91.93	97.11	68.48	85.41
Fulton County	GA	107.63	122.60	146.48	108.57	126.94
Glynn County	GA	92.87	102.00	95.73	111.38	100.62
Gwinnett County	GA	106.36	111.94	88.70	89.68	98.95
Hall County	GA	94.45	89.10	139.3	87.59	103.3
Haralson County	GA	90.08	73.41	78.3	82.15	75.97
Harris County	GA	89.51	34.28	71.89	62.25	55.12
Henry County	GA	95.26	81.75	86.07	74.28	80.21
Houston County	GA	99.67	97.7	89.66	91.56	93.23
Jones County	GA	90.26	80.32	81.59	59.82	72.19
Lamar County	GA	90.01	68.75	79.24	69.42	70.75

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Lee County	GA	90.74	63.81	80.13	67.38	69.06
Liberty County	GA	96.95	85.66	100.72	88.85	91.21
Lowndes County	GA	95.78	102.08	106.87	91.72	98.88
McDuffie County	GA	89.94	68.85	78.49	72.18	71.40
Madison County	GA	89.81	53.09	73.41	61.79	61.49
Meriwether County	GA	89.17	52.92	79.40	65.55	64.31
Monroe County	GA	89.72	49.47	77.43	66.44	63.06
Murray County	GA	90.63	57.18	84.75	68.86	68.85
Muscogee County	GA	103.92	119.01	133.98	108.41	120.64
Newton County	GA	94.48	61.24	123.65	77.77	86.46
Oconee County	GA	90.84	85.05	74.86	69.72	74.87
Oglethorpe County	GA	88.61	22.76	70.81	45.28	45.49
Paulding County	GA	93.49	68.19	83.49	74.96	74.76
Pickens County	GA	90.19	68.61	81.67	61.08	68.89
Richmond County	GA	99.09	111.4	124.13	104.91	112.49
Rockdale County	GA	95.92	93.91	82.64	86.78	87.13
Spalding County	GA	93.04	83.74	102.12	85.73	88.83
Terrell County	GA	88.84	78.95	78.22	74.53	74.90
Walker County	GA	91.84	77.95	88.88	75.62	79.24
Walton County	GA	91.96	71.8	87.33	54.96	70.32
Whitfield County	GA	94.64	87.29	115.72	88.51	95.63
Worth County	GA	88.76	52.25	84.69	68.22	66.48
Ada County	ID	103.58	124.60	102.02	108.68	112.28
Bannock County	ID	101.28	123.06	128.18	124.04	124.18
Bonneville County	ID	98.84	118.52	99.62	109.57	108.39
Canyon County	ID	98.64	112.28	90.60	106.10	102.41
Gem County	ID	92.23	83.41	76.44	113.29	89.06
Jefferson County	ID	89.10	69.82	83.29	88.98	78.26
Kootenai County	ID	97.55	113.96	122.32	101.44	111.14
Nez Perce County	ID	99.34	116.89	92.82	113.12	107.00
Alexander County	IL	89.05	–	70.12	121.33	–
Bond County	IL	91.76	87.79	129.58	109.49	105.89
Boone County	IL	96.36	95.37	81.63	85.74	87.08
Champaign County	IL	109.28	127.58	141.54	107.66	127.19
Clinton County	IL	89.17	87.01	82.04	94.50	85.06
Cook County	IL	151.40	141.34	155.66	170.12	169.04
DeKalb County	IL	99.94	111.36	84.27	93.39	96.51
DuPage County	IL	111.41	135.96	88.41	126.48	119.67
Ford County	IL	90.00	136.48	78.31	83.16	96.19
Grundy County	IL	92.99	101.16	86.63	110.27	97.17
Henry County	IL	90.62	116.08	84.59	81.22	91.31
Jersey County	IL	89.46	78.12	85.72	85.66	80.72
Kane County	IL	108.34	120.57	90.86	109.06	109.11
Kankakee County	IL	95.65	119.77	105.98	97.47	105.96
Kendall County	IL	94.30	90.54	82.01	95.42	88.08

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Lake County	IL	103.98	121.02	97.08	118.15	112.71
McHenry County	IL	98.53	105.24	83.23	95.57	94.49
McLean County	IL	104.94	120.63	110.85	102.41	112.27
Macon County	IL	95.56	114.15	112.75	97.28	106.24
Macoupin County	IL	92.20	111.71	78.10	115.16	99.10
Madison County	IL	96.83	119.34	103.17	114.28	110.62
Marshall County	IL	89.56	95.57	68.03	113.51	89.47
Menard County	IL	88.81	90.20	83.80	84.09	83.22
Mercer County	IL	88.81	97.30	71.15	95.19	84.98
Monroe County	IL	89.84	90.63	77.62	91.70	84.14
Peoria County	IL	100.95	120.84	143.87	112.87	124.81
Piatt County	IL	88.83	107.89	81.61	83.39	87.90
Rock Island County	IL	101.09	128.28	104.97	116.10	115.93
St. Clair County	IL	96.60	114.62	90.19	113.08	104.58
Sangamon County	IL	97.54	115.25	157.52	108.44	124.88
Tazewell County	IL	96.01	107.55	85.37	110.59	99.85
Vermilion County	IL	91.84	99.84	112.75	117.88	107.05
Will County	IL	101.35	114.01	92.55	100.58	102.68
Winnebago County	IL	100.8	123.79	117.91	120.01	119.75
Woodford County	IL	89.23	111.21	85.84	94.01	93.77
Allen County	IN	100.69	113.30	110.06	100.51	107.76
Bartholomew County	IN	96.38	101.42	108.25	114.65	106.54
Boone County	IN	94.39	103.90	79.83	90.61	90.12
Brown County	IN	92.73	36.11	76.30	63.42	58.47
Carroll County	IN	89.42	86.26	86.24	85.98	83.54
Clark County	IN	97.57	113.96	86.06	107.2	101.51
Clay County	IN	91.51	101.15	76.58	109.38	93.25
Dearborn County	IN	91.96	82.67	89.51	96.29	87.50
Delaware County	IN	103.15	118.8	91.63	109.13	107.18
Elkhart County	IN	94.95	104.81	89.66	114.82	101.34
Floyd County	IN	101.1	121.02	86.15	99.15	102.35
Franklin County	IN	90.85	54.82	78.33	95.48	74.56
Gibson County	IN	92.92	109.39	77.46	124.54	101.36
Greene County	IN	90.44	93.15	82.02	88.86	85.62
Hamilton County	IN	99.85	104.30	81.69	94.95	93.93
Hancock County	IN	93.31	95.10	82.93	84.80	86.14
Harrison County	IN	91.11	56.70	85.50	61.31	66.71
Hendricks County	IN	95.72	91.32	79.42	89.16	85.98
Howard County	IN	98.37	114.28	95.94	109.61	105.75
Jasper County	IN	89.52	90.18	73.22	51.82	69.90
Johnson County	IN	98.31	116.23	81.08	102.48	99.40
Lake County	IN	102.28	124.13	124.40	126.26	124.35
LaPorte County	IN	95.04	104.81	108.11	96.11	101.29
Madison County	IN	96.40	113.83	107.92	112.32	109.63
Marion County	IN	108.62	123.19	125.02	127.04	126.50

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Monroe County	IN	104.36	112.59	163.85	98.52	125.06
Morgan County	IN	94.61	85.99	85.60	99.46	89.15
Ohio County	IN	91.06	97.13	78.90	99.39	89.41
Owen County	IN	91.06	35.65	78.62	99.32	69.87
Porter County	IN	96.95	108.40	88.88	87.95	94.37
Posey County	IN	92.19	75.20	81.37	81.92	78.10
Putnam County	IN	91.01	96.03	82.78	73.04	81.95
St. Joseph County	IN	100.67	117.65	124.80	131.20	123.48
Shelby County	IN	98.24	116.00	82.26	97.84	98.21
Sullivan County	IN	89.97	94.33	85.42	79.03	83.81
Tippecanoe County	IN	104.58	112.14	101.52	96.00	104.5
Tipton County	IN	89.55	85.73	80.10	62.84	74.17
Vanderburgh County	IN	101.79	119.70	120.43	116.35	118.41
Vermillion County	IN	103.23	90.48	79.32	155.06	108.87
Vigo County	IN	96.90	111.19	114.75	128.65	116.27
Warrick County	IN	99.66	102.11	81.65	82.32	89.18
Washington County	IN	94.15	67.81	80.30	87.16	77.70
Wells County	IN	89.98	90.10	83.04	70.18	78.93
Whitley County	IN	90.31	89.14	84.12	56.30	74.69
Benton County	IA	88.87	108.97	90.60	97.81	95.65
Black Hawk County	IA	99.10	129.91	94.20	118.50	113.18
Bremer County	IA	89.00	112.79	82.24	77.70	87.91
Dallas County	IA	95.45	106.94	79.89	91.67	91.77
Dubuque County	IA	100.57	130.56	115.08	106.99	116.81
Harrison County	IA	89.16	113.13	76.21	76.79	85.87
Johnson County	IA	103.02	124.12	157.95	85.78	122.39
Jones County	IA	89.77	115.53	71.55	95.83	91.37
Linn County	IA	100.19	118.29	121.29	103.21	113.58
Madison County	IA	90.62	124.56	70.25	103.16	96.40
Mills County	IA	89.93	84.78	77.08	92.04	82.25
Polk County	IA	102.96	129.31	116.94	112.82	119.60
Pottawattamie County	IA	97.53	120.78	95.92	99.22	104.25
Scott County	IA	100.21	128.03	85.19	130.22	113.79
Story County	IA	96.60	115.01	125.73	97.63	111.05
Warren County	IA	93.98	105.61	82.31	83.56	89.09
Washington County	IA	90.00	104.89	78.56	86.53	87.36
Woodbury County	IA	97.33	125.17	117.13	122.41	119.60
Butler County	KS	95.93	116.69	81.59	76.86	90.86
Douglas County	KS	100.21	127.37	99.68	98.22	108.05
Franklin County	KS	89.92	101.1	85.19	101.84	93.07
Geary County	KS	96.96	–	84.76	128.69	–
Harvey County	KS	90.56	115.17	75.64	73.36	85.7
Jackson County	KS	88.64	77.77	79.63	44.65	65.47
Johnson County	KS	104.45	125.43	86.47	101.88	105.76
Leavenworth County	KS	95.13	99.39	87.24	93.72	92.25

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Miami County	KS	89.17	87.98	79.03	102.93	87.08
Osage County	KS	89.37	97.03	68.66	75.02	77.91
Pottawatomie County	KS	89.00	–	81.55	95.3	–
Riley County	KS	98.61	–	93.38	105.56	–
Sedgwick County	KS	102.93	118.91	117.57	112.30	116.34
Shawnee County	KS	98.59	111.59	125.79	108.80	114.14
Sumner County	KS	88.32	98.41	84.72	92.96	88.76
Wyandotte County	KS	101.91	113.88	103.10	127.92	114.79
Boone County	KY	99.70	101.93	95.37	84.83	94.26
Bourbon County	KY	97.22	93.99	80.83	92.96	88.94
Boyd County	KY	94.45	98.55	126.68	104.55	107.65
Bullitt County	KY	95.94	83.26	81.17	86.62	83.25
Campbell County	KY	102.73	124.27	85.29	109.72	106.95
Christian County	KY	97.34	94.37	87.11	104.06	94.59
Clark County	KY	93.45	102.00	79.27	98.84	91.64
Daviess County	KY	99.18	109.86	121.56	106.12	111.6
Fayette County	KY	110.05	128.66	134.26	116.37	128.22
Grant County	KY	90.59	52.57	80.01	76.95	68.44
Greenup County	KY	94.52	87.52	78.55	112.22	91.41
Hardin County	KY	95.48	90.76	131.65	93.87	103.72
Henderson County	KY	99.09	105.95	76.39	103.24	95.15
Henry County	KY	89.37	76.60	77.64	85.73	77.68
Jefferson County	KY	109.11	119.34	118.64	123.85	122.42
Jessamine County	KY	94.35	102.50	84.93	91.02	91.41
Kenton County	KY	104.06	117.51	88.49	119.32	109.28
Larue County	KY	89.43	63.30	84.72	65.93	69.47
Meade County	KY	93.39	46.63	84.90	78.41	69.46
Nelson County	KY	91.95	66.86	78.24	89.54	76.81
Oldham County	KY	94.48	74.42	80.90	81.70	78.36
Scott County	KY	95.24	97.32	80.79	97.28	90.72
Shelby County	KY	95.85	91.76	112.29	86.78	95.79
Spencer County	KY	91.13	31.97	75.02	76.42	60.36
Warren County	KY	101.86	102.72	124.59	100.77	109.46
Woodford County	KY	93.43	105.61	79.51	90.95	90.36
Ascension Parish	LA	92.32	90.20	93.22	86.92	88.20
Bossier Parish	LA	95.13	94.84	83.39	90.35	88.54
Caddo Parish	LA	98.39	108.22	98.44	110.2	104.82
Calcasieu Parish	LA	95.68	105.58	123.81	94.14	106.07
De Soto Parish	LA	89.07	61.88	140.34	77.66	90.19
East Baton Rouge Parish	LA	103.91	113.92	97.85	114.04	109.39
Grant Parish	LA	88.67	34.23	66.17	64.67	53.79
Iberville Parish	LA	93.41	93.69	84.62	92.02	88.54
Jefferson Parish	LA	113.17	132.12	84.47	148.19	124.62
Lafayette Parish	LA	99.95	114.45	110.96	106.53	110.08
Lafourche Parish	LA	95.04	99.35	143.72	98.05	111.43

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Livingston Parish	LA	93.18	62.05	84.88	75.38	73.3
Orleans Parish	LA	121.91	137.94	153.63	214.43	172.01
Ouachita Parish	LA	95.23	94.61	111.60	108.52	103.15
Plaquemines Parish	LA	90.01	91.73	81.72	104.87	90.00
Pointe Coupee Parish	LA	91.55	71.09	–	98.29	–
Rapides Parish	LA	93.23	98.11	100.74	101.17	97.87
St. Bernard Parish	LA	100.03	121.48	80.94	130.72	110.48
St. Charles Parish	LA	93.42	97.97	81.23	108.41	94.01
St. John the Baptist Parish	LA	97.39	101.63	88.78	109.44	99.13
St. Martin Parish	LA	90.60	70.42	94.32	86.13	81.51
St. Tammany Parish	LA	95.66	94.37	97.06	109.33	98.87
Terrebonne Parish	LA	96.62	103.72	99.01	107.65	102.21
Union Parish	LA	89.87	71.18	70.25	78.43	71.48
West Baton Rouge Parish	LA	92.80	93.51	81.41	106.35	91.81
Androscoggin County	ME	94.76	103.78	136.26	91.39	108.27
Cumberland County	ME	98.75	114.38	138.89	90.26	113.36
Penobscot County	ME	92.40	98.83	131.29	77.32	99.95
Sagadahoc County	ME	91.37	75.85	95.72	87.89	84.47
York County	ME	92.68	89.80	93.72	78.52	85.70
Allegany County	MD	94.56	117.81	106.32	116.79	111.21
Anne Arundel County	MD	105.04	115.29	100.72	118.53	112.50
Baltimore County	MD	109.47	130.43	100.71	118.19	118.58
Calvert County	MD	95.09	73.94	82.27	107.81	87.08
Carroll County	MD	95.33	95.07	100.64	94.25	95.35
Cecil County	MD	93.63	88.61	89.42	100.50	91.20
Charles County	MD	97.94	88.84	83.65	107.96	93.17
Frederick County	MD	97.32	108.73	104.01	100.82	103.44
Harford County	MD	100.16	109.82	96.6	99.78	102.01
Howard County	MD	104.93	128.35	97.95	107.27	112.17
Montgomery County	MD	117.80	129.94	123.29	116.70	127.72
Prince George's County	MD	112.70	124.13	90.27	125.16	116.51
Queen Anne's County	MD	91.01	67.98	77.17	76.61	72.44
Somerset County	MD	91.18	73.80	82.53	110.34	86.69
Washington County	MD	97.32	110.91	127.59	95.52	109.90
Wicomico County	MD	96.00	106.22	124.92	114.15	113.05
Baltimore city	MD	163.61	143.97	183.84	196.44	190.94
Barnstable County	MA	–	–	–	119.45	–
Berkshire County	MA	–	–	–	95.18	–
Bristol County	MA	–	33.82	–	120.97	–
Essex County	MA	–	36.98	–	122.20	–
Franklin County	MA	–	–	–	83.51	–
Hampden County	MA	–	32.99	–	112.97	–
Hampshire County	MA	–	–	–	85.50	–
Middlesex County	MA	–	38.77	–	122.51	–
Norfolk County	MA	–	34.74	–	117.59	–

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Plymouth County	MA	–	–	–	104.20	–
Suffolk County	MA	–	53.29	–	201.99	–
Worcester County	MA	–	30.90	–	98.17	–
Barry County	MI	90.18	57.23	87.88	75.47	71.80
Bay County	MI	96.11	112.33	108.40	104.10	106.61
Berrien County	MI	94.04	108.26	90.63	99.01	97.45
Calhoun County	MI	95.50	103.98	103.91	94.09	99.21
Cass County	MI	89.45	65.94	94.70	73.69	75.91
Clinton County	MI	91.92	77.85	131.40	63.62	88.88
Eaton County	MI	94.44	101.46	85.64	72.87	85.60
Genesee County	MI	97.37	109.34	123.51	103.52	110.66
Ingham County	MI	109.11	118.48	141.89	104.33	123.32
Ionia County	MI	92.27	71.44	96.34	76.97	80.10
Jackson County	MI	94.83	98.29	137.01	86.66	105.30
Kalamazoo County	MI	97.50	106.35	113.21	90.33	102.33
Kent County	MI	99.67	119.56	128.07	96.76	113.92
Lapeer County	MI	92.22	70.09	131.99	63.03	86.52
Livingston County	MI	92.30	81.87	104.20	80.88	87.13
Macomb County	MI	107.83	131.48	92.09	106.26	111.9
Monroe County	MI	92.58	95.56	109.24	75.47	91.42
Muskegon County	MI	96.94	110.29	96.74	107.62	103.66
Newaygo County	MI	89.64	63.71	82.85	79.68	73.43
Oakland County	MI	103.79	122.43	99.39	107.48	110.46
Ottawa County	MI	96.62	104.73	106.96	84.83	97.83
Saginaw County	MI	96.26	111.36	121.05	101.28	109.46
St. Clair County	MI	95.48	93.49	115.33	87.56	97.42
Van Buren County	MI	90.64	78.99	85.30	71.88	76.88
Washtenaw County	MI	105.17	117.06	155.39	87.03	120.43
Wayne County	MI	112.50	126.50	136.09	148.34	139.00
Anoka County	MN	101.07	111.72	98.03	105.23	105.07
Benton County	MN	99.34	111.80	83.26	89.21	94.82
Blue Earth County	MN	97.06	–	81.38	83.73	–
Carlton County	MN	89.72	89.44	86.19	89.97	85.88
Carver County	MN	94.80	100.10	82.70	100.41	93.05
Chisago County	MN	91.23	72.57	80.16	79.33	75.77
Clay County	MN	101.35	118.95	84.41	81.24	95.56
Dakota County	MN	104.83	115.9	86.85	107.32	104.71
Dodge County	MN	90.15	114.35	78.13	95.81	93.19
Hennepin County	MN	114.74	127.82	151.96	129.69	139.24
Houston County	MN	89.84	94.39	70.75	100.51	85.94
Isanti County	MN	91.07	89.01	80.16	86.90	83.30
Nicollet County	MN	97.81	–	77.60	107.27	–
Olmsted County	MN	98.99	108.08	166.15	100.70	123.35
Polk County	MN	89.65	106.65	85.6	58.59	81.20
Ramsey County	MN	117.31	135.35	105.13	148.75	133.66

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
St. Louis County	MN	95.96	113.02	140.27	103.63	116.70
Scott County	MN	96.04	104.74	81.51	85.26	89.75
Sherburne County	MN	92.57	80.55	85.40	79.35	80.37
Stearns County	MN	95.49	112.29	109.13	96.54	104.25
Wabasha County	MN	89.66	101.77	80.16	119.28	97.11
Washington County	MN	100.91	108.44	82.51	109.35	100.38
Wright County	MN	92.03	88.12	85.17	74.14	80.87
Copiah County	MS	90.59	89.53	72.41	81.93	79.29
DeSoto County	MS	95.25	88.58	99.48	78.18	87.83
Forrest County	MS	95.34	105.53	96.31	100.75	99.35
George County	MS	90.76	69.74	77.91	92.68	78.23
Hancock County	MS	92.04	77.68	80.99	112.70	88.44
Harrison County	MS	97.88	105.23	107.35	113.32	107.51
Hinds County	MS	100.02	107.02	141.59	102.57	116.18
Jackson County	MS	95.32	88.99	120.77	104.57	103.05
Lamar County	MS	90.94	85.24	82.62	69.99	77.50
Madison County	MS	96.21	91.29	91.18	87.79	89.40
Marshall County	MS	89.58	45.70	77.07	80.95	66.29
Rankin County	MS	94.27	82.77	81.61	77.70	79.89
Simpson County	MS	89.83	72.44	81.01	94.49	80.34
Stone County	MS	90.38	88.05	70.63	94.96	82.31
Tate County	MS	92.63	63.13	71.62	95.88	75.76
Tunica County	MS	88.41	60.42	81.24	70.41	68.56
Andrew County	MO	88.73	86.17	72.60	76.11	75.86
Bates County	MO	89.22	111.73	80.53	106.69	96.26
Boone County	MO	98.98	107.90	126.76	103.07	111.60
Buchanan County	MO	101.70	120.56	95.28	141.17	118.55
Callaway County	MO	90.40	82.96	97.28	84.65	85.87
Cape Girardeau County	MO	95.78	–	114.42	102.52	–
Cass County	MO	94.15	94.94	79.62	83.45	84.89
Christian County	MO	91.93	89.25	81.10	90.63	85.12
Clay County	MO	97.62	113.96	88.28	98.64	99.52
Clinton County	MO	90.37	103.72	78.89	114.83	96.15
Cole County	MO	94.77	101.06	122.96	85.07	101.22
Crawford County	MO *(pt.)	89.11	–	71.96	88.13	–
Franklin County	MO	91.10	94.49	82.43	93.59	87.87
Greene County	MO	100.74	119.9	88.95	115.29	107.86
Jackson County	MO	105.14	126.53	136.74	127.96	130.44
Jasper County	MO	94.90	113.72	88.44	114.86	103.76
Jefferson County	MO	96.02	87.54	85.42	99.04	89.90
Lafayette County	MO	89.16	87.92	74.98	94.53	83.13
Lincoln County	MO	90.59	52.94	85.39	93.02	75.34
Moniteau County	MO	90.40	117.93	68.41	89.59	89.37
Newton County	MO	92.11	83.25	102.74	93.49	91.02
Platte County	MO	98.15	104.96	79.77	94.12	92.73

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Ray County	MO	89.65	108.59	73.35	65.04	79.98
St. Charles County	MO	104.37	118.40	86.54	121.39	109.70
St. Louis County	MO	107.75	126.19	95.35	120.59	115.76
Warren County	MO	90.25	65.09	88.50	88.94	78.76
Washington County	MO	89.88	65.15	71.89	94.61	75.21
Webster County	MO	89.70	58.65	78.35	95.58	75.45
St. Louis city	MO	126.98	137.55	194.29	185.95	177.33
Carbon County	MT	88.78	68.92	85.23	93.01	79.76
Cascade County	MT	97.85	123.74	127.17	118.61	121.28
Missoula County	MT	98.92	119.30	111.04	110.74	112.64
Yellowstone County	MT	103.87	120.17	119.97	115.07	118.66
Cass County	NE	89.10	86.96	86.25	95.22	86.59
Dakota County	NE	98.92	114.43	75.16	122.40	103.44
Douglas County	NE	110.08	132.45	125.37	138.38	133.58
Lancaster County	NE	109.75	133.02	115.33	121.45	125.13
Sarpy County	NE	101.37	112.49	87.29	118.08	106.08
Saunders County	NE	88.71	95.50	88.74	85.06	86.74
Seward County	NE	89.14	99.79	77.47	81.06	83.40
Washington County	NE	89.99	86.51	117.82	94.88	96.59
Clark County	NV	119.01	116.44	140.45	122.06	130.94
Washoe County	NV	103.05	110.72	131.45	103.68	115.45
Carson City	NV	104.88	133.53	80.10	118.62	111.73
Hillsborough County	NH	101.22	116.91	121.07	97.04	111.45
Rockingham County	NH	94.00	101.41	97.51	82.02	92.08
Strafford County	NH	95.77	105.80	88.23	82.45	91.23
Atlantic County	NJ	103.00	114.8	142.81	120.73	125.70
Bergen County	NJ	128.56	150.29	86.86	143.25	134.43
Burlington County	NJ	100.52	120.12	99.61	99.94	106.38
Camden County	NJ	115.67	137.68	105.55	141.06	131.58
Cape May County	NJ	97.81	117.44	101.22	145.73	119.65
Cumberland County	NJ	99.51	113.21	119.51	98.78	109.80
Essex County	NJ	161.02	146.99	128.46	148.71	158.50
Gloucester County	NJ	100.59	121.22	87.46	104.71	104.41
Hudson County	NJ	223.23	156.67	92.82	176.49	178.73
Hunterdon County	NJ	93.84	90.14	95.20	74.00	85.21
Mercer County	NJ	114.81	128.87	109.53	119.34	122.92
Middlesex County	NJ	118.29	135.37	114.47	132.03	131.64
Monmouth County	NJ	105.74	133.26	84.28	121.16	114.04
Morris County	NJ	103.00	125.29	87.76	100.05	105.09
Ocean County	NJ	105.44	110.28	91.35	129.32	111.5
Passaic County	NJ	143.82	148.45	101.63	135.66	140.93
Salem County	NJ	94.41	98.00	80.11	92.91	89.08
Somerset County	NJ	101.83	120.78	86.24	103.35	103.86
Sussex County	NJ	95.74	89.17	86.54	87.85	87.14
Union County	NJ	140.17	153.96	89.87	148.90	141.99

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Warren County	NJ	95.86	119.17	85.21	97.52	99.29
Bernalillo County	NM	110.26	122.46	113.45	131.01	124.38
Dona Ana County	NM	99.20	106.04	114.72	103.66	107.46
Sandoval County	NM	97.97	91.24	110.10	85.16	95.09
San Juan County	NM	93.52	88.26	135.96	78.81	98.91
Santa Fe County	NM	99.91	106.29	116.83	88.05	103.50
Valencia County	NM	94.94	85.92	108.47	76.38	89.17
Albany County	NY	107.10	128.39	135.96	104.63	124.04
Bronx County	NY	336.70	143.95	100.25	211.61	224.01
Broome County	NY	99.92	115.80	121.53	93.89	109.84
Chemung County	NY	98.96	117.49	130.79	99.06	114.63
Dutchess County	NY	97.07	110.29	128.55	81.19	105.40
Erie County	NY	109.71	131.45	111.78	93.59	114.70
Herkimer County	NY	96.91	100.82	82.72	80.37	87.62
Kings County	NY	355.50	142.16	199.99	225.25	265.20
Livingston County	NY	93.13	102.59	78.75	53.09	77.11
Madison County	NY	94.67	96.7	85.84	57.89	79.49
Monroe County	NY	106.45	123.67	121.06	93.28	114.04
Nassau County	NY	128.98	149.38	111.6	160.85	147.65
New York County	NY	654.01	144.57	400.25	230.33	425.15
Niagara County	NY	100.04	115.62	92.59	94.32	100.81
Oneida County	NY	101.65	107.32	112.12	84.48	101.76
Onondaga County	NY	104.46	122.19	142.75	96.45	120.80
Ontario County	NY	94.36	101.34	91.19	62.58	84.03
Orange County	NY	101.31	113.59	90.33	87.33	97.65
Orleans County	NY	94.19	97.46	78.22	53.47	75.78
Oswego County	NY	96.64	90.83	108.43	70.57	89.4
Putnam County	NY	94.19	95.77	83.82	88.92	88.21
Queens County	NY	266.34	147.42	91.93	224.01	204.16
Rensselaer County	NY	99.20	109.08	97.62	92.25	99.41
Richmond County	NY	175.08	131.67	78.94	179.98	152.34
Rockland County	NY	117.77	134.18	81.37	105.52	112.27
Saratoga County	NY	95.36	98.37	102.26	80.90	92.70
Schenectady County	NY	107.32	130.66	104.18	110.94	116.78
Schoharie County	NY	90.59	78.79	84.01	56.05	71.39
Suffolk County	NY	105.86	126.74	94.53	115.53	113.48
Tioga County	NY	94.68	75.76	82.48	64.79	74.00
Tompkins County	NY	102.44	95.84	144.53	72.43	104.82
Ulster County	NY	95.12	96.80	124.18	81.42	99.22
Warren County	NY	94.99	105.93	183.56	89.94	123.51
Washington County	NY	92.47	80.23	80.51	59.21	72.33
Wayne County	NY	92.68	85.72	85.91	55.37	74.62
Westchester County	NY	129.24	146.99	93.74	123.66	129.58
Alamance County	NC	95.78	102.85	94.52	96.28	96.66
Alexander County	NC	91.03	78.52	79.96	55.54	70.00

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Anson County	NC	89.44	65.32	80.36	52.48	64.49
Brunswick County	NC	90.81	69.18	88.65	85.96	79.34
Buncombe County	NC	95.14	101.18	126.22	94.85	105.50
Burke County	NC	90.80	78.73	87.53	75.57	78.72
Cabarrus County	NC	96.20	97.46	88.76	88.00	90.65
Caldwell County	NC	92.41	74.22	123.75	80.60	90.83
Catawba County	NC	93.56	91.54	85.36	88.36	86.99
Chatham County	NC	91.14	56.42	79.76	62.63	65.23
Cumberland County	NC	100.01	104.64	91.45	90.81	95.86
Currituck County	NC	90.42	69.81	77.63	76.98	73.10
Davie County	NC	91.08	61.13	81.22	60.37	66.45
Durham County	NC	102.68	108.43	103.83	103.70	105.89
Edgecombe County	NC	91.45	83.77	99.40	93.79	90.02
Forsyth County	NC	98.47	107.56	110.15	95.01	103.53
Franklin County	NC	91.13	52.43	78.63	63.74	63.96
Gaston County	NC	95.33	103.37	110.64	94.20	101.12
Greene County	NC	90.47	47.46	83.61	40.96	56.56
Guilford County	NC	100.36	113.56	102.77	95.45	103.84
Haywood County	NC	91.09	79.15	80.84	102.68	85.39
Henderson County	NC	92.12	98.21	84.83	93.59	90.13
Hoke County	NC	91.51	57.98	83.07	70.19	69.27
Johnston County	NC	93.03	70.60	103.97	64.44	78.53
Madison County	NC	89.40	44.18	77.93	90.45	69.03
Mecklenburg County	NC	105.91	115.35	135.51	101.84	118.52
Nash County	NC	91.58	88.78	88.52	79.45	83.68
New Hanover County	NC	102.34	118.86	107.70	121.50	115.92
Onslow County	NC	94.97	82.72	104.59	82.75	88.95
Orange County	NC	99.40	106.99	120.04	75.56	100.63
Pender County	NC	91.15	64.41	81.67	60.61	67.72
Person County	NC	91.24	74.11	81.98	61.12	71.08
Pitt County	NC	98.36	104.23	117.55	87.14	102.30
Randolph County	NC	92.22	84.74	100.63	57.18	79.39
Rockingham County	NC	90.85	72.36	83.70	76.47	75.79
Stokes County	NC	90.59	52.98	81.84	64.72	65.29
Union County	NC	94.98	81.73	100.88	84.45	88.01
Wake County	NC	103.07	115.17	134.61	96.60	115.62
Wayne County	NC	93.55	78.79	130.76	84.88	96.20
Yadkin County	NC	90.06	70.68	79.45	49.29	65.08
Burleigh County	ND	96.52	118.46	128.76	90.68	110.87
Cass County	ND	99.52	125.90	113.31	97.15	111.34
Grand Forks County	ND	104.24	124.99	97.01	96.71	107.25
Morton County	ND	91.13	108.21	82.17	85.86	89.69
Allen County	OH	95.85	114.27	117.83	118.07	114.54
Belmont County	OH	92.89	98.58	83.73	112.11	95.99
Brown County	OH	90.42	54.19	85.62	78.68	71.22

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Butler County	OH	101.42	116.84	94.22	101.13	104.30
Carroll County	OH	89.77	69.05	94.41	68.25	75.19
Clark County	OH	96.98	111.55	97.15	102.52	102.60
Clermont County	OH	98.23	97.66	83.05	84.14	88.34
Cuyahoga County	OH	112.92	133.64	119.54	109.64	123.93
Delaware County	OH	97.21	109.37	84.07	87.68	93.15
Erie County	OH	96.77	121.77	104.84	102.29	108.11
Fairfield County	OH	95.20	100.29	89.76	89.15	91.91
Franklin County	OH	111.37	131.41	124.87	127.88	130.18
Fulton County	OH	90.59	113.35	82.43	93.65	93.69
Geauga County	OH	90.84	82.83	86.85	50.20	71.79
Greene County	OH	97.09	114.93	85.08	94.01	97.19
Hamilton County	OH	110.12	134.12	141.56	113.68	131.43
Jefferson County	OH	95.10	103.84	109.52	107.80	105.14
Lake County	OH	100.55	123.58	82.99	88.29	98.55
Lawrence County	OH	93.75	81.53	83.82	104.35	88.45
Licking County	OH	95.01	99.59	98.19	106.48	99.77
Lorain County	OH	98.61	117.13	93.18	95.05	101.26
Lucas County	OH	105.01	131.81	114.29	116.4	121.33
Madison County	OH	92.38	85.12	84.52	84.97	83.25
Mahoning County	OH	98.98	121.53	107.96	102.09	109.66
Medina County	OH	96.03	105.54	93.20	57.23	84.83
Miami County	OH	92.97	103.49	85.25	95.62	92.84
Montgomery County	OH	102.99	130.21	114.82	117.40	120.67
Morrow County	OH	89.85	49.60	83.41	46.82	58.82
Ottawa County	OH	93.01	98.23	86.34	94.39	91.15
Pickaway County	OH	95.16	82.72	83.74	78.20	80.99
Portage County	OH	94.89	103.80	90.32	100.22	96.60
Preble County	OH	90.05	70.46	86.69	100.99	83.63
Richland County	OH	94.98	105.89	118.65	103.59	107.30
Stark County	OH	98.73	120.66	98.80	120.61	112.26
Summit County	OH	101.67	125.68	109.41	114.42	116.17
Trumbull County	OH	95.85	111.81	91.49	95.52	98.31
Union County	OH	94.04	77.41	81.94	86.51	81.01
Warren County	OH	97.43	106.62	84.37	88.63	92.75
Washington County	OH	93.06	88.20	86.67	83.86	84.77
Wood County	OH	94.89	111.78	91.96	82.11	93.91
Canadian County	OK	97.03	97.68	82.74	92.01	90.35
Cleveland County	OK	101.04	107.98	106.44	102.24	105.59
Comanche County	OK	99.03	118.45	98.20	116.33	110.11
Creek County	OK	90.09	85.48	84.46	104.69	88.85
Grady County	OK	91.37	75.37	86.82	102.85	86.23
Le Flore County	OK	89.15	67.37	83.45	99.19	80.78
Logan County	OK	89.70	68.27	90.56	98.34	83.21
McClain County	OK	89.63	80.94	81.73	88.92	81.43

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Oklahoma County	OK	103.44	120.48	122.50	117.89	120.32
Okmulgee County	OK	89.76	90.51	83.84	122.81	95.86
Osage County	OK	93.63	66.07	86.07	96.84	81.87
Pawnee County	OK	88.73	75.14	77.53	99.62	81.37
Rogers County	OK	92.33	79.74	87.59	95.45	85.82
Sequoyah County	OK	89.78	72.88	91.90	101.22	86.03
Tulsa County	OK	102.60	121.46	117.13	113.15	117.17
Wagoner County	OK	93.20	77.70	83.08	102.13	86.14
Benton County	OR	100.72	123.18	126.52	95.34	114.46
Clackamas County	OR	101.80	126.17	90.03	96.25	104.50
Columbia County	OR	93.28	102.74	80.42	84.73	87.73
Deschutes County	OR	95.73	115.65	115.30	80.19	102.17
Jackson County	OR	97.76	122.20	122.65	91.71	110.84
Lane County	OR	101.73	127.48	138.05	98.88	120.90
Marion County	OR	101.62	130.36	123.77	101.10	117.96
Multnomah County	OR	120.53	142.82	150.58	166.68	157.06
Polk County	OR	94.97	105.79	80.13	83.85	88.86
Washington County	OR	110.39	132.91	85.02	113.10	113.09
Yamhill County	OR	99.08	122.85	81.32	93.49	98.97
Allegheny County	PA	109.54	133.89	145.40	135.70	139.34
Armstrong County	PA	92.89	85.75	101.54	84.86	88.95
Beaver County	PA	95.17	110.16	84.42	111.13	100.28
Berks County	PA	108.58	126.11	116.00	110.71	119.40
Blair County	PA	97.22	121.95	124.31	123.01	121.01
Bucks County	PA	102.39	126.03	79.87	99.58	102.49
Butler County	PA	93.68	105.26	120.02	79.27	99.44
Cambria County	PA	95.43	107.43	120.16	119.48	113.43
Carbon County	PA	93.36	98.43	90.96	97.65	93.81
Centre County	PA	110.10	115.70	149.49	91.83	121.21
Chester County	PA	98.81	117.12	91.20	89.11	98.81
Cumberland County	PA	98.59	111.24	85.52	112.72	102.55
Dauphin County	PA	104.58	124.71	129.24	125.68	126.61
Delaware County	PA	119.69	141.69	83.25	137.90	126.07
Erie County	PA	102.74	130.88	122.48	102.40	118.48
Fayette County	PA	93.03	102.25	96.86	108.42	100.17
Lackawanna County	PA	101.86	133.13	134.53	123.50	129.39
Lancaster County	PA	102.63	119.90	128.60	94.47	114.41
Lebanon County	PA	96.31	122.77	84.72	116.98	106.56
Lehigh County	PA	111.48	134.36	115.73	137.75	131.38
Luzerne County	PA	99.44	121.47	93.27	114.55	109.08
Lycoming County	PA	97.09	120.85	113.98	117.91	115.74
Mercer County	PA	95.34	106.25	83.44	87.04	91.17
Montgomery County	PA	107.67	136.32	85.84	109.26	112.35
Northampton County	PA	103.88	133.01	101.8	124.28	119.89
Perry County	PA	89.79	63.67	91.33	79.02	75.93

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Philadelphia County	PA	206.38	144.48	178.43	209.98	207.19
Pike County	PA	91.08	56.19	144.75	90.61	94.51
Washington County	PA	95.07	106.69	93.55	102.25	99.23
Westmoreland County	PA	95.84	111.77	104.88	108.50	106.63
Wyoming County	PA	90.40	51.38	86.24	74.76	69.28
York County	PA	99.69	112.24	115.21	96.33	107.42
Bristol County	RI	109.79	144.16	83.56	135.16	122.96
Kent County	RI	103.82	122.09	81.70	122.57	109.54
Newport County	RI	99.45	121.07	99.03	118.74	112.10
Providence County	RI	121.10	142.01	141.75	134.74	144.11
Washington County	RI	94.03	102.13	88.56	97.10	94.26
Aiken County	SC	93.29	79.37	103.25	96.65	91.33
Anderson County	SC	92.29	82.54	110.42	81.70	89.56
Berkeley County	SC	98.30	88.34	80.72	78.85	83.00
Charleston County	SC	103.20	119.32	138.48	116.56	124.50
Darlington County	SC	91.78	86.08	84.55	73.08	79.62
Dorchester County	SC	103.61	98.38	81.02	84.79	89.83
Edgefield County	SC	89.95	55.96	76.27	60.96	63.08
Fairfield County	SC	89.55	49.53	76.12	74.02	65.00
Florence County	SC	96.07	90.47	109.63	83.71	93.64
Greenville County	SC	98.68	106.59	100.39	91.07	98.97
Horry County	SC	94.78	90.85	112.78	101.88	100.09
Kershaw County	SC	90.43	61.70	129.24	61.49	81.95
Laurens County	SC	89.91	59.53	87.21	79.89	73.63
Lexington County	SC	94.92	94.04	88.00	80.44	86.54
Pickens County	SC	92.45	92.02	97.27	82.26	88.63
Richland County	SC	101.53	109.51	144.33	110.91	120.94
Spartanburg County	SC	93.37	97.98	112.28	90.54	98.16
Sumter County	SC	93.59	86.69	119.72	90.32	96.94
York County	SC	95.01	95.83	94.28	80.22	89.05
Lincoln County	SD	92.75	107.03	82.73	77.53	87.38
Meade County	SD	89.23	75.07	81.40	103.16	83.84
Minnehaha County	SD	102.86	120.06	105.90	107.25	111.40
Pennington County	SD	96.18	101.49	117.26	95.04	103.15
Anderson County	TN	92.32	81.10	121.37	89.51	95.04
Blount County	TN	94.52	79.63	87.08	89.16	84.33
Bradley County	TN	94.75	85.38	114.48	87.22	94.26
Carter County	TN	93.30	77.41	129.08	96.48	98.82
Cheatham County	TN	93.65	56.61	86.41	61.81	67.92
Chester County	TN	91.73	79.08	69.11	55.42	66.93
Davidson County	TN	104.68	111.86	121.78	111.57	115.76
Dickson County	TN	91.19	65.43	90.57	73.70	75.01
Fayette County	TN	89.34	50.43	89.51	51.46	62.32
Grainger County	TN	89.49	45.66	74.08	70.51	62.01
Hamblen County	TN	95.73	85.00	142.29	95.50	105.85

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Hamilton County	TN	98.48	101.33	119.36	103.40	107.13
Hawkins County	TN	90.78	69.01	90.10	81.51	78.33
Jefferson County	TN	91.49	63.63	91.38	79.72	76.69
Knox County	TN	99.46	102.38	136.24	96.83	111.03
Loudon County	TN	90.60	74.46	83.62	96.59	82.71
Macon County	TN	90.08	45.11	73.25	47.03	54.34
Madison County	TN	95.08	104.99	108.51	91.26	99.95
Marion County	TN	89.77	69.94	73.16	87.72	74.91
Montgomery County	TN	97.02	80.87	113.11	75.99	89.57
Robertson County	TN	91.68	72.06	85.62	63.10	72.35
Rutherford County	TN	97.98	90.60	108.29	83.25	93.72
Sequatchie County	TN	90.25	76.45	78.98	57.33	69.36
Shelby County	TN	105.33	109.94	122.61	114.90	116.68
Smith County	TN	90.53	70.87	66.08	83.13	71.76
Sullivan County	TN	93.76	86.37	119.66	101.34	100.36
Sumner County	TN	97.36	86.46	115.60	76.15	92.28
Tipton County	TN	92.75	59.76	87.84	64.39	69.90
Trousdale County	TN	90.52	71.81	67.37	64.82	66.68
Unicoi County	TN	94.94	90.30	80.78	113.03	93.38
Union County	TN	89.52	50.58	82.78	73.69	67.32
Washington County	TN	94.93	91.12	94.03	93.77	91.74
Williamson County	TN	97.00	85.43	133.03	87.19	100.84
Wilson County	TN	93.71	71.92	85.24	70.33	75.10
Aransas County	TX	91.90	104.27	84.03	122.27	100.78
Atascosa County	TX	89.05	79.50	85.77	94.63	83.87
Austin County	TX	88.89	64.78	86.07	82.34	75.38
Bandera County	TX	89.19	38.15	69.25	101.83	67.91
Bastrop County	TX	89.76	76.25	87.26	96.10	84.01
Bell County	TX	99.90	110.30	106.90	110.75	108.80
Bexar County	TX	107.69	116.02	115.57	118.94	118.40
Bowie County	TX	93.73	106.36	80.75	99.24	93.71
Brazoria County	TX	96.54	96.26	92.15	97.38	94.42
Brazos County	TX	105.72	112.86	101.13	110.13	109.43
Burleson County	TX	89.32	100.91	77.93	109.68	93.00
Caldwell County	TX	89.63	89.32	84.60	100.93	88.78
Calhoun County	TX	97.89	104.62	74.17	145.39	106.98
Cameron County	TX	100.34	102.76	87.93	110.32	100.42
Chambers County	TX	88.91	43.66	75.63	77.45	63.87
Clay County	TX	88.03	67.28	76.56	111.02	81.95
Collin County	TX	106.24	114.06	85.45	118.59	107.69
Comal County	TX	93.66	86.53	108.62	88.26	92.76
Coryell County	TX	97.23	77.14	87.93	86.13	83.70
Dallas County	TX	116.03	123.21	125.52	139.21	132.85
Delta County	TX	88.85	80.30	68.73	127.14	88.95
Denton County	TX	104.96	107.37	91.25	114.16	105.61

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Ector County	TX	101.41	123.37	112.23	111.89	115.45
Ellis County	TX	92.65	86.97	84.65	100.12	88.75
El Paso County	TX	109.16	113.33	102.45	125.22	115.85
Fort Bend County	TX	104.19	96.20	101.96	111.59	104.41
Galveston County	TX	100.94	113.67	106.27	130.51	116.24
Grayson County	TX	93.05	103.96	92.14	102.59	97.39
Gregg County	TX	96.10	114.14	103.02	99.15	103.92
Guadalupe County	TX	96.53	93.38	84.13	94.73	90.14
Hardin County	TX	89.38	75.62	84.66	83.17	78.78
Harris County	TX	112.9	122.96	115.12	138.63	128.31
Hays County	TX	95.58	87.83	131.77	84.13	99.78
Hidalgo County	TX	100.21	101.69	104.76	109.10	104.98
Hunt County	TX	91.85	76.80	100.17	94.77	88.50
Jefferson County	TX	99.99	118.66	127.39	137.42	126.37
Johnson County	TX	94.62	85.00	88.74	91.72	87.39
Kaufman County	TX	91.56	77.63	83.06	108.05	87.46
Kendall County	TX	94.46	97.53	79.63	72.72	82.42
Lampasas County	TX	89.18	74.92	86.25	95.76	82.98
Liberty County	TX	89.41	54.79	90.70	83.18	74.12
Lubbock County	TX	101.82	123.12	97.75	110.77	110.57
McLennan County	TX	96.64	112.13	100.28	109.99	106.02
Medina County	TX	88.53	55.51	85.30	81.66	71.88
Midland County	TX	103.45	123.85	110.90	119.62	118.27
Montgomery County	TX	95.68	87.52	111.61	84.05	93.32
Nueces County	TX	104.85	127.12	106.59	121.30	118.91
Orange County	TX	90.28	87.97	84.52	104.13	89.54
Parker County	TX	90.72	77.89	87.88	79.00	79.62
Potter County	TX	101.40	118.20	99.33	132.71	116.32
Randall County	TX	101.51	122.09	78.97	110.72	104.20
Rockwall County	TX	97.13	97.42	79.27	94.18	89.89
Rusk County	TX	89.28	80.54	82.05	67.69	74.59
San Patricio County	TX	93.48	114.78	84.07	111.29	101.14
Smith County	TX	95.50	100.31	119.02	100.60	104.88
Tarrant County	TX	108.94	119.35	100.17	128.90	118.12
Tom Green County	TX	97.73	119.81	103.96	106.90	108.97
Travis County	TX	108.45	120.81	148.98	110.66	128.09
Upshur County	TX	90.15	67.18	79.57	86.71	75.86
Victoria County	TX	103.10	120.55	119.38	119.70	119.82
Waller County	TX	95.59	60.29	82.16	92.14	77.94
Webb County	TX	101.78	122.77	102.69	121.89	115.53
Wichita County	TX	98.04	121.94	121.17	110.29	116.25
Williamson County	TX	101.28	106.24	98.74	101.69	102.51
Wilson County	TX	89.22	46.70	88.44	72.24	67.33
Wise County	TX	89.07	68.46	80.23	80.04	74.03
Cache County	UT	100.03	120.88	128.98	82.21	110.14

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Davis County	UT	103.45	125.21	80.47	105.19	104.52
Juab County	UT	88.62	93.30	78.14	83.59	82.20
Salt Lake County	UT	112.04	129.10	106.26	116.30	120.12
Summit County	UT	90.70	90.55	91.28	75.60	83.61
Tooele County	UT	97.75	102.75	79.12	75.88	85.94
Utah County	UT	108.21	127.19	89.82	106.36	109.98
Washington County	UT	95.06	98.96	84.85	91.60	90.67
Weber County	UT	105.74	124.44	97.16	108.01	111.17
Chittenden County	VT	101.56	121.65	152.59	89.97	120.78
Franklin County	VT	92.87	95.99	82.45	75.67	83.25
Grand Isle County	VT	89.13	86.07	69.37	90.87	79.60
Albemarle County	VA	95.30	102.67	87.34	78.58	88.59
Amherst County	VA	89.69	70.62	84.60	75.08	74.72
Appomattox County	VA	89.68	39.87	90.05	58.37	61.45
Arlington County	VA	174.41	153.20	95.54	177.13	163.28
Bedford County	VA	89.97	55.41	91.02	73.51	71.54
Botetourt County	VA	89.85	72.00	83.63	88.06	79.00
Campbell County	VA	91.88	77.31	83.38	109.02	87.87
Caroline County	VA	89.04	40.80	74.87	77.09	62.65
Chesterfield County	VA	100.63	98.15	114.36	102.77	105.03
Clarke County	VA	89.87	79.72	79.01	86.65	79.55
Dinwiddie County	VA	90.02	49.10	78.23	71.08	64.75
Fairfax County	VA	117.83	123.70	113.17	114.82	121.96
Fauquier County	VA	90.61	73.98	90.24	80.50	79.57
Fluvanna County	VA	92.01	71.24	75.82	69.22	71.02
Franklin County	VA	91.30	47.21	88.85	77.48	69.94
Frederick County	VA	93.79	81.33	87.14	85.85	83.61
Gloucester County	VA	92.66	69.24	89.69	99.14	84.43
Goochland County	VA	90.23	55.11	75.26	78.66	68.17
Greene County	VA	90.55	59.72	70.10	78.44	68.03
Hanover County	VA	94.37	84.41	82.56	88.35	84.10
Henrico County	VA	105.97	114.27	86.41	123.03	109.38
Isle of Wight County	VA	90.76	75.64	77.65	79.82	75.95
James City County	VA	93.70	97.02	79.60	106.28	92.61
King William County	VA	90.95	56.69	79.27	102.10	77.57
Loudoun County	VA	102.68	116.85	81.49	113.55	104.60
Mathews County	VA	92.20	52.08	72.32	78.22	66.77
Montgomery County	VA	95.29	95.57	85.40	102.18	93.19
New Kent County	VA	89.75	43.95	80.36	72.40	64.13
Pittsylvania County	VA	89.61	42.72	80.80	66.85	62.08
Powhatan County	VA	94.07	44.51	74.52	65.38	61.61
Prince George County	VA	90.96	66.68	75.53	81.97	73.19
Prince William County	VA	106.28	106.57	94.52	115.14	107.11
Pulaski County	VA	91.55	84.58	83.02	103.9	88.33
Roanoke County	VA	96.03	110.04	80.69	98.89	95.46

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Rockingham County	VA	90.09	73.51	86.01	88.97	80.60
Scott County	VA	89.25	50.38	78.01	92.28	71.54
Spotsylvania County	VA	97.94	84.86	88.47	92.55	88.57
Stafford County	VA	98.78	84.11	81.07	88.85	85.09
Sussex County	VA	102.08	63.80	–	–	–
Warren County	VA	93.50	92.21	88.78	94.07	90.07
Washington County	VA	90.49	77.47	81.92	90.19	81.06
York County	VA	97.29	99.00	86.14	108.50	97.13
Alexandria city	VA	176.94	154.32	115.16	173.76	169.56
Bedford city	VA	94.78	123.63	72.04	113.62	101.29
Bristol city	VA	105.00	130.60	82.35	145.26	119.97
Charlottesville city	VA	128.80	148.33	210.83	152.37	175.93
Chesapeake city	VA	103.40	108.24	88.28	109.52	102.98
Colonial Heights city	VA	108.95	135.66	77.65	153.60	123.97
Danville city	VA	99.84	126.20	121.82	120.33	121.54
Fairfax city	VA	116.97	152.84	73.00	131.05	123.34
Falls Church city	VA	127.12	177.53	72.72	164.07	144.69
Fredericksburg city	VA	120.16	145.13	97.72	154.28	137.06
Hampton city	VA	110.55	123.19	114.92	150.96	131.48
Harrisonburg city	VA	122.83	143.99	144.42	131.80	145.19
Hopewell city	VA	112.29	124.58	79.39	185.81	132.25
Lynchburg city	VA	104.80	130.42	104.85	132.31	122.87
Manassas city	VA	115.54	140.36	76.57	150.36	126.17
Manassas Park city	VA	129.66	128.88	82.19	133.50	123.45
Newport News city	VA	112.21	121.94	86.53	137.18	118.28
Norfolk city	VA	129.98	131.46	210.96	179.44	179.57
Petersburg city	VA	101.48	127.00	104.35	144.23	124.34
Poquoson city	VA	97.09	105.92	77.55	104.32	95.22
Portsmouth city	VA	111.16	129.35	88.86	163.76	129.42
Radford city	VA	105.79	135.40	81.24	156.21	124.84
Richmond city	VA	120.46	133.06	160.69	172.23	158.90
Roanoke city	VA	109.84	129.71	120.97	155.62	136.69
Salem city	VA	107.30	128.88	76.93	140.41	116.91
Suffolk city	VA	95.77	99.14	103.14	98.02	98.76
Virginia Beach city	VA	111.75	123.10	86.61	137.93	118.77
Williamsburg city	VA	108.92	118.37	158.90	136.03	138.61
Winchester city	VA	114.03	135.13	133.91	150.19	142.10
Asotin County	WA	106.62	134.33	77.00	134.97	116.72
Benton County	WA	98.56	118.73	109.61	97.28	107.64
Chelan County	WA	97.97	126.31	120.30	99.04	113.78
Clark County	WA	102.63	123.40	89.55	105.28	106.59
Cowlitz County	WA	96.07	103.40	128.01	99.00	108.37
Douglas County	WA	103.94	116.98	82.17	91.30	98.23
Franklin County	WA	101.59	119.22	82.23	111.14	104.48
King County	WA	114.85	128.93	159.34	131.70	142.60

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Kitsap County	WA	98.92	107.82	115.62	96.04	105.81
Pierce County	WA	103.02	117.02	126.32	119.43	120.78
Skagit County	WA	96.68	112.71	101.76	99.87	103.48
Snohomish County	WA	103.47	116.86	122.73	100.03	113.62
Spokane County	WA	101.37	122.39	122.32	127.12	123.13
Thurston County	WA	97.83	103.71	132.90	95.16	109.35
Whatcom County	WA	95.83	110.62	115.26	99.00	106.54
Yakima County	WA	98.64	124.46	128.18	89.38	112.84
Berkeley County	WV	94.85	90.23	97.70	94.03	92.67
Boone County	WV	90.83	61.03	–	123.52	–
Brooke County	WV	91.02	93.32	87.28	116.81	96.34
Cabell County	WV	98.52	112.81	183.48	119.12	135.99
Hancock County	WV	94.13	110.72	86.79	118.07	103.07
Jefferson County	WV	91.79	75.67	87.64	98.81	85.44
Kanawha County	WV	96.10	108.14	147.64	125.60	124.48
Marshall County	WV	92.36	89.16	137.78	120.37	112.53
Mineral County	WV	90.81	75.55	159.67	111.67	111.91
Monongalia County	WV	98.42	117.16	120.10	115.01	116.02
Morgan County	WV	89.50	67.70	90.00	74.66	75.31
Ohio County	WV	95.76	115.77	150.91	129.79	129.14
Preston County	WV	88.93	44.98	90.63	80.67	70.06
Putnam County	WV	93.37	87.87	78.21	99.34	86.98
Wayne County	WV	93.73	81.82	84.99	106.16	89.48
Wood County	WV	96.66	116.84	107.75	121.08	113.37
Brown County	WI	99.46	115.40	101.30	91.01	102.26
Calumet County	WI	94.95	80.84	87.75	80.59	82.35
Chippewa County	WI	92.19	85.15	89.40	88.50	85.86
Columbia County	WI	90.01	92.46	87.63	90.90	87.68
Dane County	WI	106.96	126.20	153.67	106.96	129.63
Douglas County	WI	95.01	99.68	81.91	108.53	95.30
Eau Claire County	WI	98.55	115.50	116.85	96.62	108.70
Fond du Lac County	WI	95.54	109.78	153.06	94.09	116.57
Iowa County	WI	89.19	78.00	83.48	83.09	79.07
Kenosha County	WI	100.80	119.03	123.52	118.90	119.67
Kewaunee County	WI	92.15	103.67	77.23	79.49	85.01
La Crosse County	WI	98.49	119.38	88.95	117.4	107.65
Marathon County	WI	94.14	102.58	121.29	83.21	100.38
Milwaukee County	WI	128.75	139.35	178.96	155.69	164.06
Oconto County	WI	88.82	49.35	77.77	66.91	62.99
Outagamie County	WI	99.06	120.79	164.21	97.96	125.91
Ozaukee County	WI	95.11	116.53	106.77	87.76	101.95
Pierce County	WI	94.38	92.07	143.31	81.67	103.61
Racine County	WI	100.48	122.63	111.62	107.68	113.40
Rock County	WI	97.51	113.90	108.04	98.59	105.70
St. Croix County	WI	92.02	87.72	93.45	67.27	81.19

County	State	Density score	Land use mix score	Activity centering score	Street connectivity score	Composite (total) score
Sheboygan County	WI	97.60	115.59	94.01	98.77	101.88
Washington County	WI	94.74	96.05	128.67	75.35	98.36
Waukesha County	WI	96.89	112.13	147.79	101.06	118.28
Winnebago County	WI	100.65	118.29	97.48	113.49	109.45
Laramie County	WY	100.71	112.98	132.64	114.68	119.28
Natrona County	WY	100.14	116.47	136.24	117.49	122.22

Appendix C: Quality of life analysis

In addition to analyzing development at the Metropolitan Statistical Area (MSA) and county levels, the researchers also generated index scores for the census-defined urbanized areas (UZAs) within MSAs. For more information about the methodology of the research and for UZA scores, see the full report at http://gis.cancer.gov/tools/urban-sprawl/.

To provide a better understanding of what data sources informed analyses at the MSA, county and UZA levels, an overview is below in Table C1.

TABLE C1

Data sources used to evaluate quality of life outcomes, by geographic scale

Outcome	Data Source	Geography	Relationship to sprawl
Housing affordability	Location Affordability Index[27]	MSA	positive and significant
Transportation affordability	Location Affordability Index	MSA	negative and significant
Combined housing and transportation affordability	Location Affordability Index	MSA	negative and significant
Upward mobility	Equality of Opportunity databases[28]	MSA	negative and significant
Average household vehicle ownership	American Community Survey[29]	MSA, county, UZA	positive and significant
Percentage of commuters walking to work	American Community Survey	MSA, county, UZA	negative and significant
Percentage of commuters using public transportation (excluding taxi)	American Community Survey	MSA, county, UZA	negative and significant
Average journey-to-work drive time in minutes	American Community Survey	MSA, county, UZA	positive and significant
Traffic crash rate per 100,000 population	States[30]	County	negative and significant
Injury crash rate per 100,000 population	States	County	negative and significant
Fatal crash rate per 100,000 population	States	County	positive and significant
Body mass index	Behavioral Risk Factor Surveillance System (BRFSS)[31]	County	positive and significant
Obesity	BRFSS	County	positive and significant
Any physical activity	BRFSS	County	not significant

Outcome	Data Source	Geography	Relationship to sprawl
Diagnosed high blood pressure	BRFSS	County	positive and significant
Diagnosed heart disease	BRFSS	County	not significant
Diagnosed diabetes	BRFSS	County	positive and significant
Average life expectancy	Institute for Health Metrics and Evaluation[32]	County	negative and significant

Endnotes

1 This study excludes Metropolitan Statistical Areas (MSAs) with populations less than 200,000 people due to data availability and because impacts are more difficult to measure at smaller scales.

2 For a more detailed explanation of how Sprawl Index scores are calculated, see Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

3 The Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area includes District of Columbia, DC; Calvert County, MD; Charles County, MD; Prince George's County, MD; Arlington County, VA; Clarke County, VA; Culpeper County, VA; Fairfax County, VA; Fauquier County, VA; Loudoun County, VA; Prince William County, VA; Rappahannock County, VA; Spotsylvania County, VA; Stafford County, VA; Warren County, VA; Alexandria City, VA; Fairfax City, VA; Falls Church City, VA; Fredericksburg City, VA; Manassas City, VA; Manassas Park City, VA; Jefferson County, WV. From: http://www.whitehouse.gov/sites/default/files/omb/bulletins/2013/b-13-01.pdf.

4 Metropolitan areas with populations less than 200,000 were not included in this analysis.

5 See the full analytical report for more information on these assessments: Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures.* Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

6 The Equality of Opportunity Project. Retrieved March 27, 2014, from www.equality-of-opportunity.org/.

7 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. (Page 89) Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

8 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. (Page 90). Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

9 U.S. Department of Housing and Urban Development (HUD). *Location Affordability Index*. Available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/location_affordability.

10 See note 10.

11 These calculations represent a weighted average of census block group values based on transportation and housing cost data from the HUD's Location Affordability Index. Available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/location_affordability.

12 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures*. (Pages 73–74). Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

13 Data for health outcomes is not available at the metropolitan level. The researchers use information available at the county level to inform these conclusions.

14 Ewing, R. and Hamidi, S. (2014). *Measuring Urban Sprawl and Validating Sprawl Measures.* (Page 83). Metropolitan Research Center, University of Utah. Available at http://gis.cancer.gov/tools/urban-sprawl/.

15 This calculation is based on the researchers' models. According to the Center for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS), the actual difference in weight is greater due to income and racial differences. Centers for Disease Control and Prevention. *Behavioral Risk Factor Surveillance System*. Available at www.cdc.gov/brfss/.

16 City of Santa Barbara. Uses permitted in various zones. Available at www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=17638.

17 City of Santa Barbara. (2011). *General Plan Update.* (Page 105). Available at www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=16916.

18 City of Santa Barbara. (2011). Land Use Element. (p. 2). Available at https://www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=16898.

19 Learn more about the County of Santa Barbara's Long Range Planning Division at http://longrange.sbcountyplanning.org/landuse_element.php.

20 Learn about Madison, WI's homebuyer assistance programs at www.cityofmadison.com/dpced/economicdevelopment/home-loans/228/.

21 Learn more about the Mansion Hill—James Madison Park Neighborhood Small Cap TIF Loan Program from the City of Madison's Economic Development Department at http://www.cityofmadison.com/dpced/economicdevelopment/mansion-hill-james-madison-park-neighborhood-small-cap-tif-loan-program/229/.

22 City of Madison, WI. (2006, January). Appendix 4: City of Madison Strategic Management System Goals and Strategies re: Growth Management. *City of Madison Comprehensive Plan, Volume I.* Available at http://www.cityofmadison.com/planning/ComprehensivePlan/dplan/v1/chapter5/v1c5.pdf.

23 For more information about Madison, WI's comprehensive plan see www.cityofmadison.com/planning/ComprehensivePlan/.

24 City of Trenton, NJ. (2004, January). Trenton Transportation Master Plan: Phase One Summary Report. Available at: http://www.trentonnj.org/documents/housing-economic/city_master_plan/phase%20one%20summary%20report.pdf.
25 Learn more about the Los Angeles Transit Neighborhood Plans project at www.latnp.org/.
26 City of Los Angeles. (2008, February). Ordinance No. 179681. Available at cityplanning.lacity.org/Code_Studies/Housing/DensityBonus.pdf.
27 U.S. Department of Housing and Urban Development. *Location Affordability Index*. Available at http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/location_affordability.
28 The Equality of Opportunity Project. *Mobility in All Commuting Zones*. Available at www.equality-of-opportunity.org/index.php/city-rankings/city-rankings-all.
29 U.S. Census Bureau. *American Community Survey*. Available at www.census.gov/acs/www/.
30 Crash data were obtained from all states via online databases or email/phone request. Survey years ranged from 2008 to 2011, with the majority between 2010 and 2011. The individual state crash data were compiled into a national database that includes nearly 6.1 million crashes, 1.8 million injury crashes and 30,000 fatal crashes.
31 See note 15.
32 Institute for Health Metrics and Evaluation. Available at www.healthmetricsandevaluation.org/.

Smart Growth America is the only national organization dedicated to researching, advocating for and leading coalitions to bring better development to more communities nationwide. From providing more sidewalks to ensuring more homes are built near public transportation or that productive farms remain a part of our communities, smart growth helps make sure people across the nation can live in great neighborhoods. For more information visit www.smartgrowthamerica.org.

GBD

April 28, 2016

Kirk Schueler
Brooks Resources Corporation
409 NW Franklin Avenue
Bend. OR 97702

To: Brooks Resources Corporation and Central Oregon LandWatch

RE: Bend Central Area Plan Review Report

BEND CENTRAL AREA PLAN REVIEW

Since 2004, the City of Bend has been developing a master concept plan for the Central Area of Bend to prepare for and guide the area's anticipated growth. As a part of that process the City of Bend prepared the Central Area Plan (CAP) (Bend Central Area Plan), which summarizes the community's vision for the Plan area. That effort was followed by the Bend Central District Multi-Modal Mixed Use Area (MMA) plan (Bend Multimodal Mixed-Use Area Plan), which focused on guiding the design of the area's transportation and land use concepts, General Plan Amendments, Transportation System Plan (TSP) Amendments and Development Code Amendments.

BACKGROUND

Recognizing that the City of Bend is at a critical point in implementing the plan for the Central Area, Brooks Resources and Central Oregon LandWatch requested that GBD Architects provide peer review of the CAP, MMA and the proposed General Plan and Development Code amendments. The goal of the peer review was twofold: 1) to identify opportunities to make the district more successful and 2) to identify items that could potentially be detrimental to the design and efficiency of future development in the area.

GBD Architects has more than 44 years of experience in sustainable urban planning and design. We focus our experience on solving problems and creating better places for humans to be more human. Our mixed-use project experience includes large redevelopment projects in local urban centers including Portland's Brewery Blocks, Lake Oswego's Foothills District, Bozeman's Story Mill District as well as international urban centers in Kunming and Beijing China. It should be noted that we are an architecture firm first - which means that our experience and expertise is derived from designing sustainable mixed-use buildings that form the fabric of complete communities.

REVIEW PROCESS

To gain an understanding of the overall vision for the CAP area (which is bounded on the west by the Deschutes River, on the north by Butler Market Road, on the east by fourth street and on the south by Colorado Avenue), we began by viewing existing conditions via Google maps we also looked up the Cascades East Transit Bend Service Map and reviewed the final 2007 CAP final report and all accompanying appendices and graphics. This effort provided the basis for an analysis that was informed by the community's goals of urban design, access, mobility and development opportunities.

With the foundation of the CAP, we reviewed the 2014 Draft Bend Central District MMA Plan (which is bounded on the west by the Bend Freeway and railroad tracks, on the north by NE Revere Ave, on the east by 4th street and on the south by railroad tracks south of NE Burnside Ave) and associated project documents as well as the 2014 Draft MMA Plan and Code Amendments.

This memorandum serves to document our review findings with an eye towards strengthening the success of the Plan area and identifying elements that may be a barrier or burden on potential development

PLAN ELEMENTS THAT COULD MAKE THE DISTRICT MORE SUCCESSFUL

Bend's vision for the Central Area Plan District is bold and exciting. It has the potential to guide the creation of a well-designed complete neighborhood that benefits Bend through improved walkability and safety, expanded housing choices, strengthening of commercial opportunities and leveraging of existing transit investment. With much to be accomplished to make the goals and vision of the district a reality, this is an opportunity to think beyond classic urban planning by tackling larger community issues. The proposed plan lays the groundwork for enhanced transit, eco-district solutions and incentives for affordable housing options. The Plan also sets up the potential for higher rents and gentrification if not addressed now. The District will only truly be successful if its evolution leads to positive change for the entire Bend community. To that end we suggest incorporating: an enhanced transit system, tools to encourage the development of affordable housing, additional sustainability measures and a local action plan to tackle the potential displacement of the District's current lower income households and businesses.

Strengthening Transit

The Central District appears to be well-served by transit with the Hawthorne Transit Station near the center of the District. This is an excellent foundation for the District to build on. The Plan recommends transit improvements that include transit demand management (TDM), bus bulb-outs, shelters and better pedestrian access to transit stops – all of which should serve to increase ridership.

With Bend facing unprecedented growth and traffic congestion even further encouragement of transit should be considered. The re-development of the Central District should include studies into a transit loop that connects the Central District to the Historic Downtown Core and potentially the Old Mill District. While a streetcar may not be the appropriate solution for Bend, the concept can still be applied. Infrequent transit users can be intimidated by a bus system that can take them miles out of the way if they get on the wrong bus. A dedicated loop with a clearly identifiable vehicle - whether it be a trolley, streetcar, electric bus, or bus of a unique size and shape or color – can help to alleviate the fears of new riders and visitors while providing greater connectivity and transit options for all.

Affordable Housing

Since Bend, like much of the region, is facing an influx of new residents who require housing, it is critical that Bend utilizes all available options to encourage the creation of affordable housing. Rezoning and redevelopment offer great opportunities to put more tools into play. Seattle recently struck what has been called "The Grand Bargain" with their development community that will allow larger and taller developments as long as developers set aside a percentage of their units as affordable. Their Housing Affordability and Livability Agenda (see: Seattle Mayor Murray's summary of HALA and appendix A) outlines an action plan with a multi-pronged approach to developing and preserving affordable housing. There are numerous elements in the plan that Bend should consider, but specific elements related to the

Central Area Plan include: 1) land banking, 2) incentive zoning for the development and preservation of low-income housing and 3) inclusionary housing.

As the Central Area district evolves land values will increase, which can make it challenging to build affordable homes. The City should consider setting aside public-owned land to be used strategically for the creation of affordable homes near transit and job centers. Providing housing for low-income workers and families near transit, jobs, schools, and services leaves more money in their pockets and reduces congestion and pollution.

Consideration should be given to providing zoning incentives that promote the creation of affordable housing. This can be accomplished by providing additional development potential in the form of floor area and height that can be earned when the project meets certain thresholds. Examples include dedicating a certain percentage of units as affordable at a designated median family income level. To make this incentive work, economic analysis needs to be performed to ensure that the additional density remains a bonus not a burden. In February of this year, the Oregon Legislature lifted the state ban on affordable housing mandates (State of Oregon HB 2564A - Inclusionary Zoning Bill). Bend should consider enacting inclusionary zoning to ensure that new development either includes affordable units or pays into an affordable housing fund and implements a construction excise tax to bolster the City's capacity to build housing with services for at-risk families. If the City decides to implement either of these tools to create more affordable housing, up-zoning (additional density) in proportion to these requirements should be provided to new developments. If either density bonus provisions or density offsets to mandates are being considered for implementation, base density standards and building heights should be re-evaluated.

Resilience and Sustainability

The MMA lays a strong foundation for a sustainable community by connecting neighborhoods, promoting transit/walking and bicycling, supporting compact complete community development, and planning for natural storm water facilities. But, the redevelopment of the Central District provides the opportunity to consider greater district strategies that serve to reduce infrastructure development, promote natural resource protection, and support a healthier community. Consideration should be given to integrating LEED for Neighborhood Development (See: Citizen's Guide to LEED ND or Appendix B) and/or forming an EcoDistrict (EcoDistricts.org) to encourage development of district wide solutions to energy reduction & creation, water treatment and re-use, heat island effect, carbon reduction and habitat creation with open space, eco-roofs and street trees and waste reduction. Additionally, consideration should be given to making sure the district is resilient which means understanding the capacity of the district to absorb and transform with change in both the built environment and natural environment whether it be a sudden disturbance such as a major earthquake or one that takes place over a period of time such as a drought.

Gentrification

Development can benefit existing residents through better access to shopping and services, improved walkability, and better transit. This will also enhance a neighborhood's attractiveness to new residents and will increase property values. For many, neighborhood revitalization is a positive change. For others, it provokes concern. Negative consequences can include involuntary displacement of lower income households and a change in the ethnic and racial make-up of a neighborhood's residents and businesses.

For example, the City of Portland spent millions of dollars investing in revitalizing North Portland, which some now argue caused more harm than good to Portland's traditional African American communities. Census tracks that were 31% African American in the 1990's are now 15%. Therefore, when the City of

Portland and Metro began studying a transit and development project along SE Powell and Division (Powell Division Transit Action Plan), they integrated the revitalization plans with a local action plan to build a community development strategy that supports residential and commercial stability and economic development. (See Appendix C for table of action Plan elements)

The economic analysis, appendix D of the CAP, states that the Central Area is lightly populated with just 122 residents. The household incomes of those residents are significantly lower, the households are smaller, and the median age is lower than that of the City as a whole. They are twice as likely as Bend residents as a whole to be renters rather than owners. The demographics support the development of urban housing, but if that housing is not affordable, then the current residents will be displaced.

Today the Central Area also has a unique employment profile with fewer industrial based jobs and more leisure, hospitality, and government based jobs. Bend is expecting a higher level of job growth in higher paying office and service jobs. If these jobs locate in the Central Area, they will provide opportunities for advancement, but they may also displace lower paying employment opportunities for those with less education.

With planning for the Central Area in the early stages, Bend has the opportunity to implement a local action plan that addresses issues related to redevelopment of the district. This action plan will support residential and community stability so that current residents and business are able to benefit from the revitalization of the District.

DEVELOPMENT STANDARDS THAT COULD MAKE THE DISTRICT MORE SUCCESSFUL

In addition to reviewing the CAP and the MMA, we reviewed the draft special planned district (named the BC-MMA) code language, which is intended to be included within the existing planned district code language in Chapter 2.7 of the Bend Development Code (BDC). We also reviewed the existing design guidelines in BDC Chapter 2.2.800 (BDC Chapter 2.2) and the existing site plan review regulations of BDC Chapter 4.2 (BDC Chapter 4.2). This memorandum highlights some of the broader topics that we recommend be re-considered or modified. A redlined version of the BC-MMA is attached to this memo (Appendix D) and includes detailed comments on specific language.

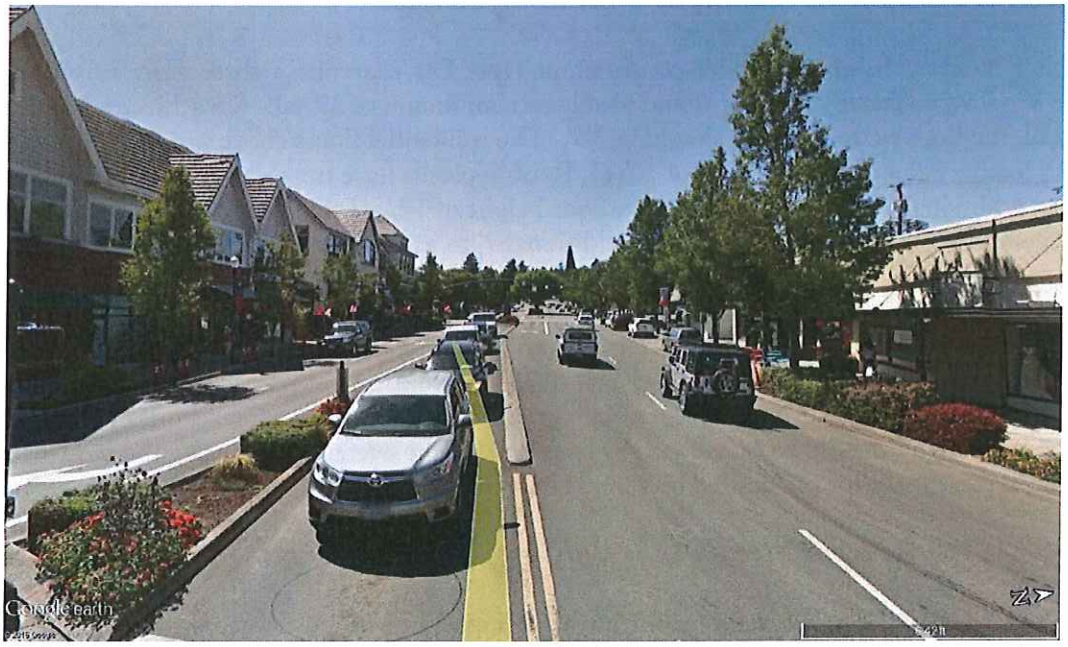
Third Street

Third (3rd) Street runs north/south the entire length of the Central Area and is a regional connector. As stated in the MMA, on-street parking serves as a buffer for pedestrians. Parked cars narrow the field of vision for motorists and encourages them to maintain a slow speed and provide the means for adding curb extensions that narrow the street crossing distance. On-street parking also encourages retailers, businesses, and multi-family residential lobbies to front the street since visitors are able to park in front of the entry. Interestingly enough, no street parking is being proposed for 3rd Street. We would recommend removing the bike lanes from 3rd street to accommodate on-street parking. As stated in the CAP – "all streets are not equal." Not all streets need to accommodate bikeways. Bikeways are proposed for both 2nd and 4th, which are local streets with less traffic moving at slower speed. These streets can provide the necessary connections to the bike network.

The Development Standards propose requiring buildings to setback 10' from the street with landscaping along the face of the building. Landscaping will block views, create barriers to retail and will limit the

potential of having restaurants and cafes spill out to the sidewalk. We recommend removing the BDC landscaping requirement and instead require street trees north of Greenwood along the curb.

Example of no street parking: Macadam Avenue, Portland OR– While the buildings are required to have active uses and doors on the street, retailers locate their main front door off the parking area on the back. Pedestrians rarely walk along the street. Note the landscaping along the storefront blocking views into the retail.



Example of street parking: A Avenue, Lake Oswego, OR – The buildings are required to have active uses and doors on the street – which they do. Pedestrian often walk along the street. Note that landscaping is along the curb and leaving a clear view into the storefronts.

The street section along the length of 3rd street appears to vary from 80'-100.' This is the widest street in the District yet building height is restricted to 65' and requires setbacks for portions of the building that are higher than 45'. The CAP states, "Building heights adjacent to a street edge should be at least as tall as half the width of the right of way." Allowing taller facades along 3rd Street will serve to create a more intimate room for pedestrians and slow vehicular traffic. Sections 2.2.700 Pedestrian Amenities and Section 2.2.800- Human Scale of the BDC provides the necessary requirements to create environments that are comfortable for pedestrians. If the desire is to break down the scale of taller buildings, we would recommend requiring vertical breaks such as bays or a change in materials.

Section 2.7.3050 Parking

Many cities have removed minimum parking requirements (Strongtowns.org). As a means to promote alternative transportation, consider maximum parking requirements and let the marketplace determine minimum parking requirements. In today's market, lenders require higher minimums than those that are being proposed. If there is concern about parking spilling out into the surrounding neighborhood, residential parking permit programs can be implemented to prioritize on-street parking for residents and their guests.
If removing all parking minimums is too big a step, consider eliminating parking minimums for all retailers and metering on-street parking for short term use. This lowers the barrier to entry and prioritizes on-street parking for retail customers and visitors to the district. Large retailers that need more parking to support their operations will still have the option to build parking they feel is required.

Section 2.7.3030 Development Standards – Building Height

When establishing building heights consider construction type. For example: a three story mixed-use residential Type V (all wood frame) building would ideally be a minimum of 37' tall. To achieve a 12' clear space for the retail, the floor to floor height should be 15'. The residential floors above would ideally have 9' ceilings, which require a floor to floor height of 10'-6". Roofs typically have trusses that can increase floor to floor height an additional 18", requiring a floor to floor height of 12.' If the building was a mixed-use office building the overall height would increase an additional 7' to accommodate 12' clear ceilings in the office area.

In Oregon, wood frame construction typically maxes out at 6 stories (Type III construction – also known as 5 over 1) with the floor of the uppermost level below 75' to avoid triggering high-rise construction requirements. It is anticipated that in 2018 Oregon will update the code to allow for 7 stories (5 over 2). Zoning code building heights should be established by backing into the overall height using the number of desired stories, ideal clear space for the desired uses, and construction type.

Section 2.7.3030 Development Standards – Building Height Setbacks

Requiring buildings to stepback at a certain height introduces steel into wood frame construction at the floor level of the steback to support the gravity loads of the building above. This is expensive and can create complex fire proofing details to resolve. Instead of requiring height stepbacks, consider alternative methods

to break down the scale of the building such as vertical breaks in materials, bay windows and balconies. If building height stepbacks are to be maintained, make sure the established heights correlate to floor to floor heights that are derived from construction type (see paragraph one under Section 2.7.3030 Development Standards – Building Height above).

CONCLUSION

Many of the key elements that make neighborhoods more inviting and vibrant are included in the proposed plan and development standards. There is a strong foundation in the work accomplished to date, but additional consideration should be given to some elements in the proposed policies and development standards. This is a unique opportunity to transform the Central Area into a neighborhood where people walk to the grocery store or bike to dinner, and where they take transit to get to work -thereby reducing both traffic congestion and carbon emissions. Strategically thinking now about tackling the challenges of affordable housing and displacement and implementing tools into the plan will be key in turning the additional development potential into a public benefit for all. Finally, the development standards should incorporate a deeper understanding of construction practices and building types as well as more progressive thinking on parking standards and should go further in transforming 3rd street into a more urban and pedestrian friendly environment.

Sincerely,

GBD Architects Incorporated

Katherine Schultz, AIA, LEED AP
Director

LINKS AND APPENDICES

Links

1. Bend Central Area Plan
   http://bendoregon.gov/index.aspx?page=783

2. Bend Multimodal Mixed-Use Area Plan
   http://bendoregon.gov/index.aspx?page=783

3. Seattle Mayor Murray's summary of HALA
   http://murray.seattle.gov/housing/#sthash.3jB6apXE.T0oPcSyy.dpbs

4. State of Oregon HB 2564A - Inclusionary Zoning Bill
   https://olis.leg.state.or.us/liz/2015R1/Measures/Overview/HB2564

5. Citizen's Guide to LEED ND
   https://www.nrdc.org/sites/default/files/citizens_guide_LEED-ND.pdf

6. EcoDistricts.org
   http://ecodistricts.org/about/vision-mission-values

7. Powell-Division Transit Action Plan
   http://www.oregonmetro.gov/sites/default/files/TransitActionPlanMay2015.pdf

8. BDC Chapter 2.2
   http://www.codepublishing.com/OR/Bend/html/BendDC02/BendDC0202.html

9. BDC Chapter 4.2
   http://www.codepublishing.com/OR/Bend/html/BendDC04/BendDC0402.html

10. Strongtowns.org
    http://www.strongtowns.org/journal/2015/11/18/a-map-of-cities-that-got-rid-of-parking-_minimums

Appendices

A. HALA Report 2015

B. Citizens Guide LEED-ND

C. Action Plan Chart

D. GBD Review Comments of Bend MMA Code and Plan Amendments

Brooks Resources Corporation

CENTRAL OREGON LANDWATCH

August 1, 2016

Dear City Council:

Brooks Resources and Central Oregon LandWatch are pleased to present the attached jointly sponsored peer-review and analysis of Bend's Central District MMA Plan and Code Amendments.

Brooks and LandWatch retained the services of Katherine (Kat) Schultz to complete this review. Kat is a Director at GBD Architects in Portland and has more than 20 years of experience in mixed-use housing and planning. She is passionate about uncovering opportunities and challenges inherent in planning for smart growth and works to gain a broad perspective on the issues facing her community through her work not only as an architect but also as a Chair of Portland's Planning and Sustainability Commission.

Brooks and LandWatch share a common interest in the ultimate success of the Central District as we believe it is key to Bend's transition to a more urban city with a variety of housing and transportation options. To that end, we tasked Kat with reviewing the plan and code amendments with her experienced eyes to find ways to encourage the District's transformation. Kat's review and analysis recommends some highly specific amendments to the draft MMA Code language as well as additional thoughts on elements of the MMA Plan that should be considered for long term implementation.

The planning effort and documents for the Central District represent a great planning effort and a solid final product. However, there are a few simple code changes that could be adopted with the UGB amendments as a first step toward making certain the Central District Opportunity Area is successful. In summary, Kat's proposed code amendments would accomplish the following:

- Parking Standards – reduce minimum requirements to 0 and let the market determine what is needed. In alternative, at least consider eliminating or at least further reducing

parking for retail uses. The Central District could then be utilized as a special case study area for the larger Bend Parking Study.

- Building Height – 75' allows for economical 5-over-1 wood construction and stays below high-rise construction building codes, which alone can greatly increase building costs. This may be increased to 5 over 2 in 2018 in state code. Heights should be established by backing into overall desired height using the number of desired stories.
- Eliminate requirements for step-backs as building height increases, with possible exception of along 4th Street adjacent to residential zones. Step backs greatly increase the cost of construction with questionable benefit. Consider alternative means of height mitigation such as bays, stories in gable roofs or balconies to achieve similar visual effect without as significant impacts on building costs.
- Eliminate requirements for additional setbacks from the street for taller buildings, especially along the already very wide 3rd Street corridor. Additional setbacks would be counter-productive in nearly every way imaginable.

Utilizing Kat's report and recommendations, we have made suggested edits to the current draft of the MMA Code for your consideration. See Attached "Track Changes" version of draft MMA Code that identifies these specific proposed amendments.

However, simply amending the code, either as currently proposed or with the changes we are suggesting, is only a starting point to ensure the City gets the desired outcomes for redevelopment in the Central District. There are follow up steps that need to be considered and implemented to make the most of the opportunity. These include:

Mid-term actions: follow up actions that should be considered for near term study and implementation.

- Analyze current and projected parking demands in the downtown and Central District; consider adopting parking demand management measures like parking permits and meters.
- Implement inclusionary zoning regulations as allowed by state law and consider other means of encouraging workforce housing in this area.
- Study feasibility and consider implementing an Urban Renewal district to fund public investment in the Central District.
- Consider investing in street section improvements in the Central District to trigger private development; ie, Colorado/Arizona couplet.
- Consider developer incentives to invest in Central District (see attached "Downtown Boise Housing Incentives" brochure.)

Longer term strategies: Issues and ideas to consider now and that could be put into play as the Central District develops.

- Update/Revise Transit Plan, consider a special loop system between the Central District, downtown, and Old Mill with a distinctive vehicle.
- Sustainability should be an ongoing theme in the Central District. Consider incentivizing the creation of an "Eco District" within the Central District.
- Gentrification – as the district attracts residents and becomes a success, values will rise and existing residents and businesses could be displaced. Strategies to mitigate these impacts have been employed in other cities that can be implemented to help alleviate these concerns.

Thanks for your time and attention on this topic. Attached is additional information including:

1. Kat Schultz' Bend Central Area Plan Review
2. Brooks/COLW proposed amendments to the draft Chapter 2.7.3200, Bend Central District
3. Boise, Idaho "Redefine Downtown" summary documents as an example of what that city has done to encourage redevelopment and housing within and adjoining their downtown.

Sincerely,

Kirk Schueler, Brooks Resources

Paul Dewey, Central Oregon LandWatch

Chapter 2.7

SPECIAL PLANNED DISTRICTS

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The Bend Central District (BCD) code proposal is the final product of a 2012/13 TGM Grant developed through an 18-month public process that included interested citizens, property and business owners and staff. In October 2014 the City Council received a presentation on the project. The Bend Central District is one of the Opportunity Areas identified through the UGB process.

Article XIV. Bend Central District

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2.7.3200 Bend Central District (BCD)

The Bend Central District is intended to implement the goals and objectives for the creative redevelopment of the central Third Street Corridor and surrounding areas west to the Parkway and east to and including 4th Street as indicated below:

- Provide for a wide range of mixed residential, commercial and office uses throughout the area and, depending on the parcel and its surroundings, vertical mixed use (i.e., a mix of uses within the same building), with an emphasis on retail and entertainment uses at the street level.
- Provide a variety of residential development types and greater density of development, with a transition area adjacent to the existing residential neighborhood east of 4th Street.
- Provide for development that is supportive of transit by encouraging a pedestrian-friendly environment.
- Provide development and design standards that support the goals of the Plan
- Limit development of low-intensity uses while allowing continuation of existing industrial and manufacturing uses.
- Provide reduced parking standards and encourage alternative parking arrangements.

The Bend Central District has distinctly different characteristics within the Bend Central District boundary. Subdistricts that recognize and support these characteristics are established as follows:

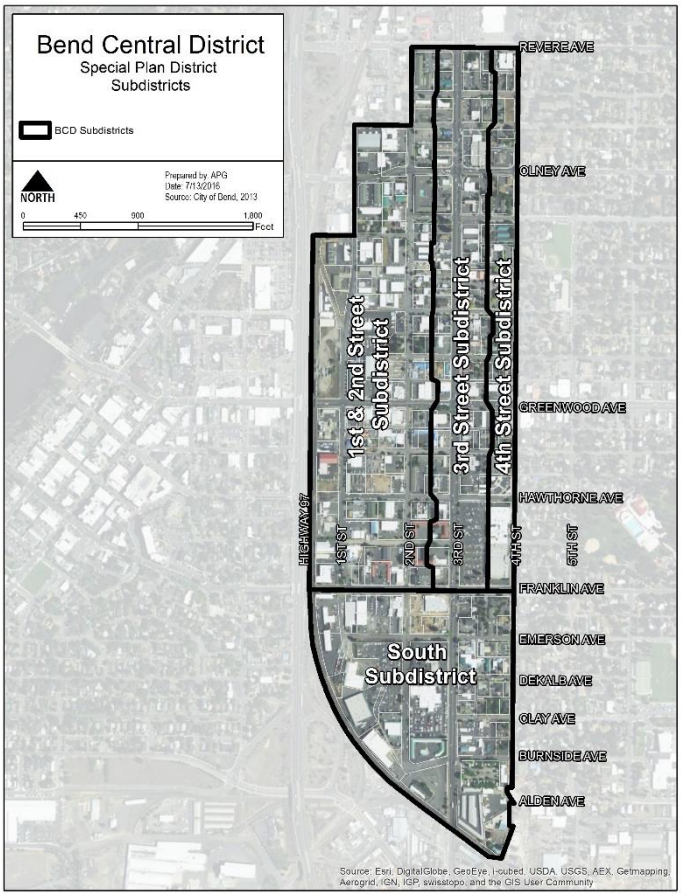
1. 1st/2nd Street Subdistrict. Applies to properties in the vicinity of 1st and 2nd Streets within the BCD and is intended to provide for a mix of office, higher density residential, live/work and small-scale retail uses while also allowing for continuation of existing light industrial/manufacturing uses in the area.

2. 3rd Street Subdistrict. Applies to properties in the vicinity of 3rd Street between Revere and Franklin Streets and is intended to provide a range of mixed uses including large-scale commercial, retail and limited residential uses.

3. 4th Street Subdistrict. Applies to properties in the vicinity of 4th Street within the BCD and is intended to provide a transition between the more intense central area and existing residential neighborhoods to the east.

4. South Subdistrict. Applies to properties south of Franklin Avenue along and between 2nd and 3rd Streets and is intended to provide a range of mixed uses including high density multifamily and office space above ground floor retail/service uses.

Figure 2.7.3210 Sub-district Map



2.7.3210 Applicability.

A. Applicability. In addition to the provisions of the underlying zone, the standards and requirements of this section apply to lands within the BCD boundary as depicted on Figure 2.7.3210. These provisions modify existing standards of the Bend Development Code by applying requirements, limiting allowable uses, or allowing exceptions to general regulations. Where there is a conflict between the provisions of the Bend Central District and those of the underlying zone or other portions of the Development Code, the provisions of this refinement plan shall control.

2.7.3220 Land Uses.

A. Permitted and Conditional Uses. The land uses listed in Table 2.7.3220 are allowed in BCD sub-districts, subject to the provisions of this chapter. Only land uses that are listed in Table 2.7.3220 and land uses that are approved as "similar" to those in Table 2.7.3220 may be permitted or conditionally allowed. The land uses identified with a "C" in Table 2.7.3220 require Conditional Use Permit approval prior to development, in accordance with BDC Chapter 4.4. Land uses identified with an "L" in Table 2.7.3220 are allowed with limitations in accordance with Subsection (D).

B. Existing Uses. Uses and structures that are not in conformance with the provisions in this section but that were lawfully established within the BCD prior to the adoption of this code are considered a permitted use. Expansion or enlargement 25 percent or less of the above referenced uses or structures that are nonresidential will be subject to the provisions of BDC Chapter 4.2, Minimum Development Standards Review, Site Plan Review and Design Review. For expansion or enlargement greater than 25

percent, the conditional use criteria, standards and conditions within BDC Chapter 4.4, Conditional Use Permits, will also apply. Conditions of prior approvals will continue to apply unless modified in conformance with BDC 4.1.1325, Modification of Approval.

C. Determination of Similar Land Use. Similar land use determinations shall be made in conformance with the procedures in BDC 4.1.1400, Declaratory Ruling.

Table 2.7.3220
Permitted Uses in the Bend Central District by Subdistrict

Land Use	1st/2nd Street	3rd Street	4th Street	South
Residential				
Single-Family Detached Dwelling	N	N	N	N
Attached Single Family Townhomes	N	L (see Subsection D1 below)	P	P
Multifamily Residential	L (see Subsection D1 below)	L (see Subsection D1 below)	P	P
Residential as part of mixed use development	P	P	P	P
Commercial				
Retail Sales and Service	L (see Subsection D2 below)	P	L (see Subsection D2 below)	P
Retail Sales and Service (auto dependent*)	N	N	N	N
Retail Sales and Service (auto oriented*)	N	C	N	N
*Medical Marijuana Dispensary and Marijuana Retailer	L (see Subsection D2 below)	P	L (see Subsection D2 below)	P
*Marijuana Wholesale (more than 75% of sales are wholesale)	P	P	C	C
*Marijuana Testing, Research and Development Facilities	P	P	L (see Subsection D3 below)	P
Restaurants/Food Services				
– with drive-through*	N	C	N	N
– without drive-through	P	P	P	P
Offices and Clinics	P	P	L (see Subsection D3 below)	P
Conference Centers/Meeting facility associated with a hotel/motel	C	P	N	C
Lodging (bed and breakfast inns, vacation rentals, boarding houses, timeshare)	P	P	P	P

Land Use	1st/2nd Street	3rd Street	4th Street	South
Hotel/Motels	P~~C~~	P	C	C
Commercial and Public Parking, structure	P~~C~~	P~~C~~	C	P~~C~~
Commercial and Public Parking, surface lot	P~~N~~	P~~N~~	P~~N~~	P~~N~~
Commercial Storage				
– enclosed in building and on an upper story	C~~P~~	C	P	N
– not enclosed in building	N	N	N	N
– enclosed in building on ground floor (i.e., mini-storage)	N	N	N	N
Entertainment and Recreation				
– enclosed in building (e.g., theater)	L/C (See subsection D6 below)	~~P~~L/C(See subsection D6 below)	N	L/C (See subsection D6 below)
– not enclosed (e.g., amusement)	C	C	N	C
Wholesale Sales (more than 75% of sales are wholesale)	P	P	C	C
Hospital	C	C	C	C
Public and Institutional				
Government – point of service intended to serve the entire City (e.g., City Hall, main library, main post office, main Department of Motor Vehicles service center)	P	P	P	P
Government – branch service intended to serve a portion of the City	P	P	P	P
Government – limited point of service (e.g., public works yards, vehicle storage, etc.)	N	N	N	N
Parks and Open Space	P	P	P	P
Schools	P	P	P	P
Institutions of Higher Education	P	P	P	P
Child Care Facility	P	P	P	P
Clubs and Places of Worship	P	P	P	P
*Utilities (above ground)	P	P	P	P
Industrial				
Manufacturing and Production	L (see Subsection E3 below)	N	N	N
Warehouse	L (see Subsection E4 below)	N	N	N

Land Use	1st/2nd Street	3rd Street	4th Street	South
Transportation, Freight and Distribution	C	N	N	N
Production businesses (e.g., IT support centers, biotechnology, software/hardware development, broadcast and production studios)	P	~~C~~P	~~C~~P	~~C~~P
Industrial Service (e.g., cleaning, repair)	L (see Subsection D3 below)	N	N	N
Marijuana Grow Sites and Marijuana Producing when designated as Mixed-Employment, Industrial General or Industrial Light on the Bend Area General Plan on the Bend Area General Plan	L(see Subsection D4 below)	L (see Subsection D4 below)	N	L (see Subsection D4 below)
*Marijuana Processing of Cannabinoid Concentrates and Cannabinoid Products when designated as Mixed-Employment, Industrial General or Industrial Light on the Bend Area General Plan on the Bend Area General Plan	L (see Subsection D4 below)	L (see Subsection D4 below)	N	L (see Subsection D4 below)
*Marijuana Processing of Cannabinoid Extracts when designated as Mixed-Employment, Industrial General or Industrial Light on the Bend Area General Plan on the Bend Area General Plan	L (see Subsection D4 below)	L (see Subsection D4 below)	N	L (see Subsection D4 below)
Miscellaneous				
Small scale alternative energy systems (i.e., rooftop wind turbine or solar panels)	P	P	P	P

Key to Permitted Uses

P = Permitted
N = Not Permitted
C = Conditional Use
L = Permitted with limitations, subject to Subsection (D) below

D. Limitations. The following limitations apply to those uses identified as "L" in Table 2.7.3220.

1. New residential uses. In order to ensure that the subdistricts retain their established employment focused character, new residential uses in the 1st/2nd St and 3rd St subdistricts are limited as follows:

a. Residential uses that are part of a mixed use development in which non-residential uses occupy at least the floor area equivalent to the entire ground floor area of the development area permitted.

b. Residential uses that are part of a mixed use development in which non-residential uses occupy less than the floor area equivalent to the entire ground floor area of the development area are conditional.

c. Residential uses that are not part of a mixed use development are prohibited.

2. Retail sales and service. Retail sales and service uses must not exceed 30,000 square feet per business. Total area of retail sales and service uses combined must not exceed 50,000 square feet per building.

3. Offices and clinics. Offices and clinics must not exceed 15,000 square feet per business.

4. Manufacturing, production and industrial services. Uses must not exceed 20,000 square feet per business and must minimize potential external effects as follows:

a. All operations must be conducted entirely within an enclosed building.

b. Potential nuisances such as noise, odor, electrical disturbances and other public health nuisances are subject to Chapter 13.45

c. Roof-mounted mechanical equipment, such as ventilators and ducts, must be contained within a completely enclosed structure that may include louvers, latticework, or other similar features. This screening requirement does not apply to roof-mounted solar energy systems or wind energy systems.

5. Warehousing. Warehousing must be accessory/secondary to a primary permitted use (it may not be a single use) and must not exceed 15,000 square feet per building.

6. Entertainment and Recreation. Entertainment and Recreation uses where permitted in ~~all~~ subzones of the BCD that are enclosed in a building shall not exceed 50,000 square feet without a conditional use permit.

2.7.3230 Development Standards.

A. The following table provides numerical development standards within the BCD.

Building setback standards apply to any new buildings and any building expansion, including primary structures and accessory structures. Setbacks provide opportunity for pedestrian amenities; building separation for fire protection and building maintenance; sunlight and air circulation; noise buffering; and visual separation. Building setbacks are measured from the building foundation to the respective property line.

Table 2.7.3230
Development Standards in the Bend Central District by Sub-District

Standards	1st /2nd Street	3rd Street	4th Street	South
Minimum Lot area	No minimum	No minimum	No minimum	No minimum
Lot width	30 feet	30 feet	30 feet	30 feet
Minimum front yard setback	5 feet[1]	10 feet[1~~2~~]	5 feet[1]	5 feet[1]
Maximum front yard setback	10 feet	15 feet	10 feet	10 feet
Rear and side yard setback	None or 10 feet (see Section C below)~~10 feet~~	None or 10 feet (see Section C below)	None or 10 feet (see Section C below)	None or 10 feet (see Section C below)
Maximum building height[2~~3~~]	65 feet or~~to~~ 85 feet (see Sections B and E below)	65 feet or 85 feet (see Section E below)	45 feet	65 feet ~~to~~ or 85 feet (see Sections B and E below)

Notes:

1. In ~~the 1st/2nd Street, 4th Street and South~~all Subdistricts, the first 5 feet of the required ~~5-foot~~ front setback will be a dedicated pedestrian easement and will be developed according to the applicable cross section for the fronting street.

~~2. In the 3rd Street Subdistrict, the first 5 feet of setback (measured from the street) will be a dedicated pedestrian easement and will be developed according to the applicable cross section for the fronting street. The remaining 5 feet of setback shall be landscaped according to Chapter 3.2.300.~~

2~~3~~. Equipment used for small scale alternative energy production does not count towards maximum building heights.

B. In the 1st/2nd Street, 3rd Street and South Subdistricts, buildings may be a maximum of 85 feet in height that:

1. Provide at least 10% of any residential units at affordable rates in conformance with BDC 3.6.200(C), or

2.~~.~~For buildings that do not have a residential component, provide at least 75% percent of required parking within the building footprint of structures.~~, such as in rooftop parking or under-structure parking may be a maximum of 85 feet in height.~~ Parking on the ground floor shall have a pedestrian-oriented ~~retail~~ active façade facing the primary street (see paragraph E.2 below for examples).~~.~~

C. Rear and side yard setback.

1. There is no rear or side yard setback required, except when abutting a Residential Zone. In such cases, the rear or side yard setback is 10 feet for all portions of the building 35 feet in height or less. Step-backs or other architectural features such as vertical breaks, balconies, bays or stories within gable roofs are required for portions of a building that exceeds 35 feet in height or the height limit of the abutting residentially designated district, whichever is greater.

2. When a public alley abuts a side or rear yard of property, the width of the alley can be included in the additional setback calculation as described in subsections (1) and (2) of this section for the purpose of offsetting the impacts of the building height over 35 feet. The alley does not eliminate the required 10-foot building setback.

D. Multiple Frontage Lots. For buildings on sites with more than one frontage or through lots, the minimum front yard setback standards in Table 2.7.3230 shall be applied as follows.

1. For corner lots with two frontages, the maximum setback standards indicated in Table 2.7.3230 shall be applied to all street frontages.

2. For through lots with two frontages, the maximum setback standards indicated in Table 2.7.3230 shall be applied to only one of the frontages; provided that where the abutting streets are of different street classification, the maximum setback standard shall be applied to the street with the higher classification.

3. For properties with three or more frontages, the maximum setback must be met on two abutting frontages.

E. Buildings exceeding 65 feet in height are allowed subject to the following provisions:~~Building height step-backs in the 1st/2nd Street, 3rd Street and South Subdistricts. Where portions of a building are higher than 45 feet, 60 percent of the street-facing facades higher than 45 feet must be set back one foot from the street-facing property line for every one foot that the building exceeds 45 feet in height, with a minimum step-back of 10 feet and a maximum step-back of 15 feet. The required step-back may be reduced by one foot for each foot below the 45-foot height level that the step-back begins, e.g., for a~~

~~building that begins its step-back at the 35-foot height level (10 feet below what is required) the required step-back can be reduced by 10 feet.~~

~~1. Affordable housing developments in conformance with BDC 3.6.200(C) are exempt from the street-facing facade step-back standards of subsection E provided:~~

~~a~~1. Buildings ~~with exterior walls greater than 50 feet in horizontal length~~ shall be constructed using ~~the installation of~~ a combination of architectural features and a variety of building materials. Landscaping should be planted adjacent to the curb line to create a streetscape as illustrated in Figures 2.7.3230 and 2.7.3260. ~~walls.~~ Ground story walls that can be viewed from public streets shall be designed with non-reflective windows totaling a minimum of 25 percent of the wall area and using architectural features (see 2, below). For new buildings, the front building façade must be at the minimum setback for at least 50% of the lot frontage; outdoor public gathering spaces such as plazas are encouraged and count toward the setback requirement; off-street parking is not allowed between the front building façade and the street.~~Walls that can be viewed from public streets shall be designed with windows totaling a minimum of 10 percent of the wall area and using architectural features and landscaping (abutting the building) for at least 50 percent of the wall length.~~

~~b~~2. Architectural features include, but are not limited to, the following: recesses, projections, wall insets, arcades, window display areas, awnings, balconies, window projections, landscape structures or other features that complement the design intent of the structure and are acceptable to the Review Authority.

Figure 2.2.3230
Illustration of ~~Step-Backs and~~ Use of Architectural Features

F. Buffering. A 10-foot-wide landscape buffer is required along the side and rear property lines between nonresidential uses and any adjacent Residential ~~Districts~~Zones. The buffer is not in addition to (may

overlap with) the side and rear setbacks required in subsection (B) of this section. The buffer shall provide landscaping to screen parking, service and delivery areas and walls without windows or entries. The buffer may contain passive outdoor seating and bicycle parking but must not contain trash receptacles or storage of equipment, materials, vehicles, etc. The landscaping standards in BDC Chapter 3.2, Landscaping, Street Trees, Fences and Walls, provide other buffering requirements where applicable.

2.7.3240 Design Standards

A. All development. Development in the BCD is subject to the design guidelines in BDC Chapter 2.2.800, Subsection (I) except as established below. The standards of this section are in addition to the regulations of BDC Chapter 4.2, Minimum Development Standards Review, Site Plan Review and Design Review Standards. The standards of this section are in lieu of the BDC 2.2.600, Commercial Design Review Standards.

1. Section 2.2.800(I)(3) - Physical, Visual and Experiential Connections. The intent and general approach of this section apply. However, the language referring to traditional business zones and traditional storefront buildings does not apply here.

2. Section 2.2.800(I)(5) - Integrate Building Parapets and Rooftops. The intent and general approach of this section apply. However, the language referring to ornamentation on traditional CB Zone buildings does not apply here. In addition, rooftop solar panels and wind turbines are exempt from the screening requirement.

3. Section 2.2.800(I)(10) - Urban Materials. Does not apply.

B. Single use residential buildings. Single use residential buildings including duplexes, triplexes and multifamily are also subject to the provisions in Sections 2.1.900 and 2.1.1000, with the following exception:

1. The common open space requirement in 2.1.1000(B)(1) does not apply to any property with a residential building located within one-quarter mile of a public park.

2.7.3250 Parking

A. In the BCD, the following parking requirements supersede parking requirements in BDC Table 3.3.300, Required Off-Street Vehicle Parking Spaces. Unless otherwise noted here, other sections of BDC Chapter 3.3, Vehicle Parking, Loading and Bicycle Parking apply.

1. The minimum number of required off-street vehicle parking spaces is established below. Off-street parking spaces may include spaces in garages, carports, parking lots, and/or driveways if vehicles are not parked in a vehicle travel lane (including emergency or fire access lanes).

a. Residential uses: 1 space per unit

b. Commercial uses:

i. ~~Commercial~~ Retail or restaurant uses totaling ~~smaller~~ less than ~~5~~1,000 square feet of floor area: none

ii. ~~Commercial~~ Retail or restaurant uses in excess of ~~5~~1,000 square feet or more of floor area: 1 space per 1,000 square feet of gross floor area in excess of 5,000 square feet.

c. Entertainment uses: Determined by conditional use

d. Hotel/motel: 1 space per room

e. Office uses: 1.5 spaces per 1,000 square feet of floor area

f. Light industrial/manufacturing uses: 0.7 spaces per 1,000 square feet of floor area

g. Public and institutional uses, government uses: 1.5 spaces per 1,000 square feet of floor area

~~2. Credit for On-Street Parking. If retail or other active commercial use is provided on the street-facing ground floor, the amount of off-street parking required may be reduced by one off-street parking space for every on-street parking space abutting the development, consistent with BDC 3.3.300(B)(2).~~

2~~3~~. Mixed-Use Developments. If more than one type of land use occupies a single structure or parcel of land with no single use occupying more than 80% of the total square feet of the building, the total requirements for off-street automobile parking shall be 75 percent of the sum of the requirements for all uses.

34. The total number of required vehicle parking spaces for an industrial, commercial, or office use may be reduced by up to 10 percent in exchange for providing on-site public open space/green space at the following ratio: one vehicle parking space per 500 square feet of public open space/green space. This reduction is in addition to any reductions taken under Chapter 3.3.300.D.

2.7.3260 Special Street Standards

A. The BCD considered special street standards for streets inside the refinement plan area. The intent of the special street standards is to develop complete streets that enable safe travel for all modes of travel including transit, motorists, pedestrians, cyclists and freight users. On street parking, bicycle lanes and wider sidewalks were identified as elements necessary for safe travel. Below is a typical concept cross section.

Figure 2.7.3260

Street Design Concept for 2nd/4th Streets

These special street standards will be developed as part of the City's Transportation System Plan (TSP). Until the special standards are available, the Transportation Improvement Standards of Chapter 3.4 must apply in the BCD.

B. To accomplish new streets, additional street widths and street improvements envisioned for the BCD the following requirements shall apply.

1. The required 5-foot front yard setback along all street frontages must be dedicated as a public easement with site plan approval. This is in addition to any additional right of way that may be required by Chapter 3.4.

2.7.3270 Low Impact Stormwater Management

A. The use of low impact development (LID) techniques to manage stormwater on site is encouraged consistent with the City's Central Oregon Stormwater Manual. Techniques can include, but are not limited to, the following:

1. Use of on-site pervious paving materials to minimize impervious surfaces allowed within off-street and on-street parking areas and other areas within a development site.

2. Provision of an eco-roof or rooftop garden

3. Use of drought tolerant species in landscaping

4. Provision of parking integrated into building footprint (above or below grade)

5. Provision of rain gardens and bioretention areas on site to filter stormwater runoff

6. Shared stormwater facilities between adjacent properties

2.7.3280 Landscaping

A. The landscaping standards of Chapter 3.2 apply to the BCD except as noted in this section.

B. The minimum required landscaping shall equal 10 percent of the gross lot area for the following uses:

1. Residential – duplex and triplex units and multiple-family developments

2. Commercial and office developments

3. Industrial developments. Seventy-five percent of the required 10 percent site landscaping shall be located within the front yard setbacks and parking areas or other areas visible to the public, unless otherwise required as a condition of approval

4. Mixed-use developments

C. Green roofs and rooftop gardens may be counted toward meeting up to ~~50~~ 100 percent of the landscaping requirement.

D. Landscaping in the public right-of-way (for example, street trees and bioswales) may be counted toward meeting the landscaping requirement.

PNW
Pacific Northwest
Research Station

Science
FINDINGS

INSIDE

issue one hundred forty / march 2012

"Science affects the way we think together."
Lewis Thomas

Seasonal Neighbors: Residential Development Encroaches on Mule Deer Winter Range in Central Oregon

"The question is not whether your part of the world is going to change. The question is how."
—Edward T. McMahon

Nick Myatt/ODFW

In the winter, mule deer migrate to lower elevations in central Oregon. Roads and residential development are disrupting this migration.

Situated in the high desert east of the Cascade Range, Deschutes County in central Oregon boasts a pleasant climate and a unique combination of geological features, making it a mecca for year-round outdoor recreationists. Hunters, fishermen, campers, hikers, mountain bikers, rock climbers, water sport enthusiasts, off-road vehicle riders, skiers, golfers, and wildlife viewers have helped make it the fastest growing county in Oregon.

A booming outdoor recreation industry, coupled with traditional activities related to timber sales, ranching and agriculture, have boosted Deschutes County's population nearly sevenfold since 1960. Most of that growth occurred in the past 20 years—the population almost doubled between 1990 and 2010, concentrated around the county seat of Bend and four major destination resorts. A report released by the county in 2004 anticipates about 70 percent more population by 2025.

The area's civic leaders, land use planners, and public land managers are charged with a delicate balancing act: fostering a vibrant economy while working to ensure that the area's attractions remain healthy and sustainable for future generations. So when two large areas of private forest in central Oregon were being considered for high-density housing and

IN SUMMARY

Mule deer populations in central Oregon are in decline, largely because of habitat loss. Several factors are likely contributors. Encroaching juniper and invasive cheatgrass are replacing deer forage with high nutritional value, such as bitterbrush and sagebrush. Fire suppression and reduced timber harvests mean fewer acres of early successional forest, which also offer forage opportunities. Human development, including homes and roads, is another factor. It is this one that scientists with the Pacific Northwest Research Station and their collaborators investigated in a recent study.

As part of an interagency assessment of the ecological effects of resort development near Bend, Oregon, researchers examined recent and potential development rates and patterns and evaluated their impact on mule deer winter range.

They found that residential development in central Oregon is upsetting traditional migratory patterns, reducing available habitat, and possibly increasing stress for mule deer. Many herds of mule deer spend the summer in the Cascade Range and move to lower elevations during the winter. An increasing number of buildings, vehicle traffic, fencing, and other obstacles that accompany human land use are making it difficult for mule deer to access and use their winter habitat. The study provides valuable information for civic leaders, land use planners, and land managers to use in weighing the ecological impact of various land use decisions in central Oregon.

recreation, the Pacific Northwest Research Station was asked to evaluate the potential ecological impacts.

Jeff Kline, a research forester and economist with the station, created a set of fine-scale land use projections to support the resulting interagency assessment of the possible ecological effects of the proposed resort on a parcel known as Skyline Forest. Because a primary interest was the impact on mule deer winter range, Kline also used his land use projections to separately evaluate where future development is likely to affect the deer's traditional migratory patterns in the greater Bend area.

KEY FINDINGS

- In the central Oregon study area, mule deer that summer in the mountains migrate to lower elevations for wintering. Increasing residential development in their traditional winter range is causing direct and indirect habitat loss that could contribute to a decline in mule deer population.
- By 2000, development in traditional mule deer crossing areas was sufficient to disrupt migratory patterns.
- Projections suggest greater development in the future, especially in key wintering areas and along migration corridors.
- Even at low building densities, development could adversely affect mule deer migration and winter use through fencing, collisions with motor vehicles, and human activities on private and public property.

LAND USE PROJECTIONS IN CENTRAL OREGON

As a foundation for his land use projections, Kline used historical data that was originally created by counting buildings in aerial photos taken during the 1970s, '80s, '90s, and 2000s. The data are used to construct a statistical model that correlates new buildings with population trends and certain socioeconomic variables, such as the buildings' location relative to cities and transportation corridors. The model forecasts where buildings will be built in the future if trends follow the rates and patterns of the past.

"My projections are what you might call 'naïve projections,'" says Kline. "They just say 'here's what happened in the past, and if we follow the same pattern and the same correlation in the future, this is what would happen.'"

When Kline overlaid maps of mule deer habitat with maps showing his land use projections, a major problem was revealed: land development is increasingly infringing on mule deer habitat and blocking passage between the deer's summer and winter ranges. By 2000, development was already present in many locations within mule deer winter range, "some of it at sufficiently high densities to influence winter use and migratory patterns," says Kline.

The problem is not so much that development is spreading out across the wide area of the deer's winter range, he notes, but that it tends to locate in "key choke points." It affects the deer's ability to move freely among the lower elevation areas where they are accustomed to wintering. "In some locations, development coincides with narrow sections of winter range with the potential to disrupt movement of individuals throughout the range," says Kline.

Jeff Kline

The population of Deschutes County, Oregon, nearly doubled between 1990 and 2010, with most of the growth concentrated around the city of Bend.

In addition, as residential development increases, land managers with responsibility for protecting adjacent public lands are removing brush and trees within defined limits to protect property against fire. These preventive measures reduce forage and cover needed by wintering mule deer. "Residential developments have a footprint that extends way beyond the development," says Glen Ardt, a wildlife habitat biologist with the Oregon Department of Fish and Wildlife (ODFW) who collaborated with Kline on the study. "There is also indirect loss of habitat due to disturbance from the people and pets that radiates out from these residences."

STRESSED OUT IN CENTRAL OREGON

Along with Rocky Mountain elk and bald eagles, mule deer are often used as iconic representations of the Old West. They provided essential life support for Native Americans and early pioneers, and they continue to be a valuable economic, aesthetic, and ecological resource for central Oregon. In fact, deer hunting and wildlife viewing are major sources of revenue for the state. According to ODFW, residents and nonresidents spent $517.9 million on activities related to hunting and $1.02 billion on activities related to wildlife viewing in 2008.

Despite long-term management by ODFW, average spring mule deer population in the Upper Deschutes management area has shrunk by nearly 55 percent since 1960. Several factors are likely at play, including fewer quality foraging opportunities brought about by various changes on the landscape. Invasive cheatgrass and encroaching juniper are crowding out more nutritious plants such as bitterbrush and sagebrush. Wildfire suppression and less timber harvesting has led to fewer acres of early successional forest, which provide foraging opportunities for the deer. Human development in the deer's traditional winter habitat is another factor.

Laurie Houston

Recreational opportunities in Deschutes County have attracted visitors and new residents but may negatively affect the deer's browsing habits.

Like many Oregonians and visitors from around the world, mule deer enjoy spending time in the high Cascades in the summer. They browse on the forest undergrowth and accumulate fat reserves for the coming winter. However, as forest composition in the mountains has changed in recent decades due to fire suppression, it is becoming harder for mule deer to find nutrient-dense forage, says Ardt.

"A lot of white fir has come in underneath the ponderosa pine and has reduced the amount of forage that's out there. Forage for deer, like bitterbrush and buckbrush, gets shaded out when the forest canopy overtops it and it doesn't get the sunlight it needs to live," he says. In addition, more traffic on forest roads and an intensification of recreational activities—off-road vehicle use and mountain biking in particular—disturbs wildlife and affects browsing habits. Consequently, many deer enter the cold season without a sufficient layer of fat to sustain them through the winter.

Deer are not equipped to handle deep snow, so by the time a foot or so has accumulated in the higher elevations, they migrate down the mountain, attempting to spread out on the desert west and east of Bend. Dodging motor vehicles and finding quality forage in the flatlands are only two of the challenges they face as winter approaches. With each passing season, they encounter more and more obstacles along the paths they have traditionally used to access their winter range.

"Not only do you have loss of habitat (owing to development and recreation), but you have development breaking up the habitat and inhibiting movement," says Kline. "In the mountainous West, the most likely place people are going to develop is the lower elevation flats, so you have development locating right where the grazing animals want to congregate in the wintertime."

Ardt believes that a main contributor to the decrease in the mule deer population in central Oregon is stress. Insecurity in their environment causes deer to react much as humans do when faced with the unexpected. "When disturbance occurs, wildlife either freeze, flee, or fight. And just because they don't flee, it doesn't mean they aren't being disturbed," he says. "Studies have shown that when an animal is disturbed, its cortisol level goes up—that's a stress hormone."

Even if forage is available, the deer may not browse if they are disturbed, and undernourished or stressed-out deer can die prematurely. Stress also can cause a doe in poor condition to abort or reabsorb a fetus, says Ardt, which further reduces the herd. "If they are disturbed, they are using energy they wouldn't otherwise, which can be critical in mid to late winter when their body condition is at its poorest or during the post-fawning and rearing periods when energy demands are higher," he says.

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TRACKING MIGRATORY PATTERNS

In the 1960s, the ODFW conducted its first study to try to determine exactly how mule deer move from their winter range to their summer range in central Oregon. At that time, deer were trapped, tagged, and collared, which provided a way for biologists, foresters, loggers, hunters, and others to observe deer movements and report sightings to the ODFW. "These methods allowed us to better identify summer and winter ranges, project movement between the two, and determine animal distribution between wildlife management units," says Ardt.

In 2005, the agency embarked on a new study to update and refine its understanding of deer behavior and movement. The Oregon Department of Transportation (ODOT) provided funding to the ODFW to purchase global positioning system (GPS) collars that are helping to determine mule deer crossing behavior on Highway 97, the main highway that runs north and south through the Bend metropolitan area and separates the deer's summer and winter ranges.

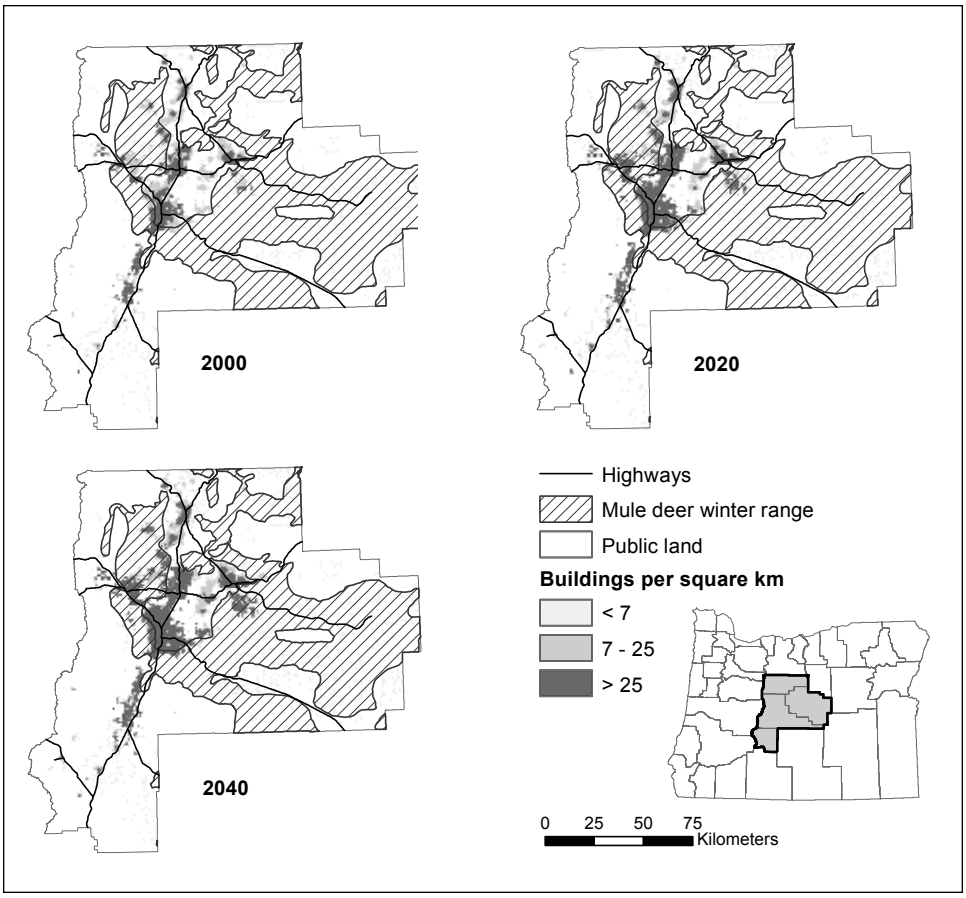
A total of 457 mule deer in central and south-central Oregon have been fitted with GPS collars and 250 of these collars have been recovered. The remaining collars are expected to be recovered within the next year. Although observations from the 1960s revealed that deer were moving across Highway 97 to the flatlands east of Bend to winter, data collected from the GPS collars indicate that deer are choosing to go north instead of east. "A lot of that is probably due to the amount of traffic that's on Highway 97 now between Bend and Sunriver [a popular resort]," says Ardt. As it turns out, more deer are killed on secondary and residential access roads than on the main highway.

One might wonder why, if people and cars stress them so much, deer can be found munching on the landscaping in people's backyards in the winter. Ardt speculates that it's because it is where they have always wintered, and data from GPS tracking supports that theory. "Telemetry data show deer moving through another deer's summer or winter area to get to their own, thereby showing their strong fidelity for a particular area," he says. It's the homing instinct in action.

Jeff Kline

Jeff Kline

Mule deer outfitted with GPS collars revealed strong fidelity to a particular area, even if it meant crossing major roads to get there.



By 2040, development in and around Bend, Oregon, is projected to further constrain mule deer access to winter habitat.

WANTING OUR DEER AND DEVELOPMENT, TOO

Kline's projections indicated that the Skyline Forest property could be developed as early as 2020. He says this finding originally was met with some skepticism because the property is currently zoned as forest land, but he points out that zoning laws can change and land developers can work around existing codes.

"Just because land is zoned the way it is doesn't mean that things won't happen—things do happen—people get exceptions," he says. "And the history in our land use data suggests that it is so—we can see development in areas that were previously forest and farmland. The land use planning system gives some level of protection, but it's not infallible. Some people tend to think of it as a permanent protection, but it really isn't."

It would seem that Skyline Forest is an example of how things can change. The property's owner wanted to build a resort, but the Deschutes Land Trust has been working to conserve as much of the land as possible. In June 2009, the Oregon legislature passed a bill that permitted the property's current owner to develop a small portion of the land if they sell the remainder to the trust for preservation. The owner was given a five-year time limit on the deal, but the downturn in the housing market has stalled the plans, so the future of Skyline Forest is still unknown.

Kline says his projections give landscape planners and managers data to inform their decisionmaking about what conservation measures may be necessary for certain plots of land, given population trends and past development patterns. "They could use information like this to figure out where development is likely to be," he says. "We're not trying to make any judgments about whether development is good or bad. We're just saying, 'here's how buildings are growing on this landscape.'"

Jeff Kline

Conservation easements and land use zoning are tools that could be used to maintain existing mule deer migration corridors.

Several options are available that could meet a variety of land use goals in the area, says Kline. "Land use planning might do the job, but there might be other things to consider that would augment planning," he says, such as establishing conservation easements or an outright purchase of land that is set aside for habitat conservation. He also suggests that policymakers might consider providing consistent or increased funding to existing state programs that protect and enhance critical winter habitat.

"The fate of animals is...indissolubly connected with the fate of men."
—Émile Zola

LAND MANAGEMENT IMPLICATIONS

- Resource managers may want to initiate or expand efforts to work with landowners, local land use planning officials, and nonprofit conservation organizations to consider how to address anticipated development within mule deer winter range.
- Modified land use zoning, conservation easements, and land purchases might be considered to help maintain existing migration corridors and minimize disturbances associated with new development.
- Policymakers might consider providing more consistent or increased funding to existing state programs that protect and enhance habitat.

FOR FURTHER READING

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