

# HOUSING UNDERPRODUCTION IN OREGON

Economic, Fiscal and Environmental Impacts  
of Enabling Transit-Oriented Smart Growth  
to Address Oregon's Housing Affordability Challenge



**UP FOR GROWTH**  
- national coalition -

**ECON**Northwest  
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# WHO WE ARE



## UP FOR GROWTH - national coalition -

Up for Growth National Coalition is a nonprofit 501(c)(3) research and education organization that works to improve the quality of life for working families and creates communities that are accessible and affordable for all by promoting more housing close to jobs, efficient transportation and desirable local amenities.

## ECONorthwest ECONOMICS • FINANCE • PLANNING

ECONorthwest specializes in economics, finance and planning. We work with public jurisdictions and developers throughout the United States on housing policy issues, including studies related to density bonuses and inclusionary zoning. Our work is used to inform city comprehensive planning, master planning and site-specific feasibility studies, as well as large-scale housing needs assessments. Our staff hold advanced degrees in economics, community and regional planning and public administration.



## UP FOR GROWTH - oregon -

Up for Growth Oregon is a strategic partnership between Up for Growth and Oregon Smart Growth. Oregon members of Up for Growth currently include BRIDGE Housing, Cairn Pacific, Holland Partner Group, 1000 Friends of Oregon and Oregon Smart Growth.

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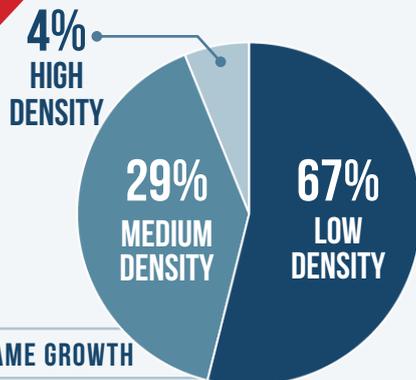
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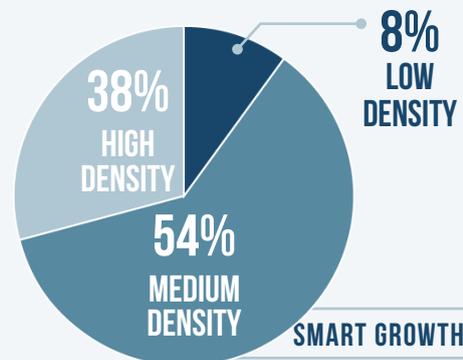
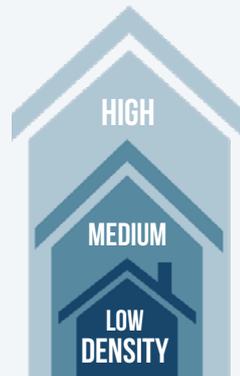
# EXECUTIVE SUMMARY

**155,000**  
UNDERPRODUCED

From 2000 to 2015, Oregon underproduced housing by approximately 155,000 housing units, or roughly 9.0% of the total 2015 housing stock. This underproduction has created a supply and demand imbalance that is reflected in the housing and homelessness crisis playing out across the state.

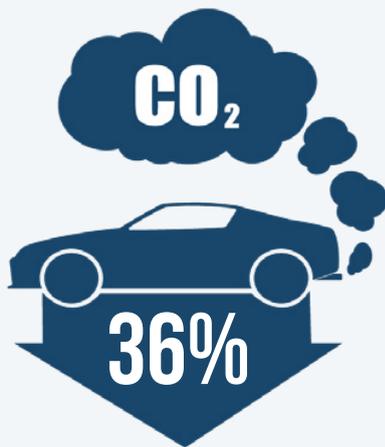


**MORE OF THE SAME GROWTH**



**SMART GROWTH PATTERN**

If housing development in Oregon continues its current pattern with More of the Same growth, 70% of the 155,000 new housing units would be single-family homes, while 28% would be missing middle and medium-density, and only 2% would be in towers. Our scenario-based investigation of development growth potential found that if these 155,000 units were developed in a Smart Growth pattern — building to higher density inside transit corridors and high-opportunity neighborhoods that leverage existing infrastructure — only 9% of the units would be single-family homes, 63% would be missing middle and medium-density housing, and 28% would be in residential towers.



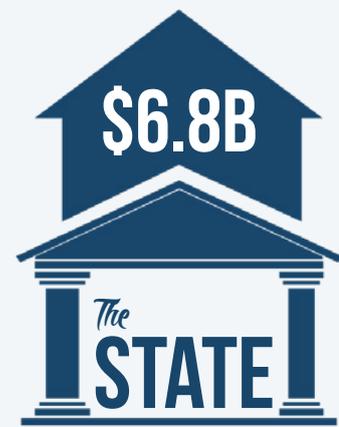
**CLEAR SKIES AHEAD**

Shifting from current development patterns to a Smart Growth scenario would use just 18% of the land to deliver the same number of units. These areas would be denser, transit-adjacent and near employment centers, reducing vehicle miles traveled by as much as 34%.



**GSP BOOST**

Using a Smart Growth development pattern, cumulative gross state product (GSP) would increase by \$1.9 billion over a 20-year period compared to More of the Same — delivering \$57.7 billion in cumulative GSP over the baseline forecast.



**TAX REVENUE BENEFITS**

Smart Growth would increase the amount of taxes generated by \$6.8 billion over the 20-year growth period. Income taxes would increase \$1.8 billion and property taxes would increase \$5 billion with Smart Growth development.

Oregon’s economy has recovered handily from the 2007-2008 recession and is now in one of the longest economic expansions in modern history. This growth has brought new, high-paying jobs, new residents from across the country, and has put Oregon on the map as one of the fastest-growing states in the U.S.

However, this growth has put a strain on many types of infrastructure across the state — from freeways to parks to schools and, of course, to housing. The construction sector was nearly crippled in the housing market crash and lagged behind housing demand for several years. Residential housing construction starts have yet to return to their pre-recession peaks statewide. The result of this strong and sustained increase in demand for housing that outpaced supply has been rapid appreciation in annual home prices and rent, with prices increasing by double digits for several years straight. This has put a strain on households at many income levels but has been particularly hard-hitting for low-income households, which have fewer choices in where to live.

As cities and communities struggle to build more housing and accommodate those in precarious housing situations, many longtime and existing residents are feeling the strain. Challenges resulting from home price escalation, a frenetic sellers’ market, strong rent growth, rising application fees and increasing rates of homelessness are particularly acute in the I-5 corridor, from Portland to Medford. Rural areas and smaller towns in Oregon have their own housing struggles, particularly with attracting development of new housing and providing housing for low-income households.

Strong in-migration has caused many Oregon cities to grow more quickly than the national average over the past 10 years. Generational preferences and household demographics have changed as baby-boomers downsize and millennials form new households and upgrade from apartments to single-family homes. Preferences for both generations have shifted toward walkable, urban housing near transit and desirable amenities in high-opportunity areas. This increase in demand for housing occurred just as housing production began to recover both from the market crash and credit freeze that made lending and financing new construction risky and costly.

Although the recent and current imbalance in supply and demand was exacerbated by the 2008-2009 recession, this imbalance continues a longer trend that many housing markets throughout the state have felt for decades — restrictive local development and land-use policies that reflect opposition to high-density, affordable or multi-family housing developments in favor of low-density, single-family homes. Localized opposition in established single-family neighborhoods has prevented the addition of new units in high-opportunity areas.

This has made housing increasingly less affordable to households earning less than the median income, while home values have risen for households who already own homes in these areas.

In many areas across the state, these limitations on new construction translate into economic pain for thousands of households: In 2016, 53% of all renter households were cost-burdened, paying more than 30% of their incomes on housing. More than 13,200 people were homeless across the state. Rapidly rising rents and home prices pushed many households to the outer edges of the Portland metro area. Traffic has worsened, with the Oregon Department of Transportation reporting that a 3% increase in population increased congestion in the Portland region by 13.6%, with daily vehicle hour of delays up 22.6% from 2013-2015.

Some of the barriers to increasing housing production include:

- Zoning restrictions, which create a shortage of zoned high-density sites and prohibit the addition of “missing middle” units in single-family neighborhoods;
- Escalating and misaligned fee structures, such as impact and linkage fees charged per unit instead of square footage;
- Poorly calibrated inclusionary housing exacerbated by rapidly changing market conditions; and
- Lengthy review processes that add cost and allow for manipulation by growth opponents.

The conclusions in this report support the need to enact innovative public-private solutions that increase the supply and reduce the cost of new housing in our urban centers. Pervasive longtime homeowner sentiments that “all new housing is bad” have become conventional wisdom, stemming from the unwarranted and factually unsupported belief that new units overburden schools, strain city finances and make traffic worse. Overcoming this unproductive narrative requires a public conversation that focuses on delivering units as cost-effectively as possible.

Because Oregon has strong land-use policies governing growth management and protecting forestland and farmland, the state must make the best use of the land inside each growth boundary. The Smart Growth scenario in this report describes what is possible by developing compact housing communities around transit corridors and in high-opportunity neighborhoods: narrowing the gap between supply and demand; reducing costs for local governments by leveraging existing roadway and sewer infrastructure; and building housing near jobs, transit and amenities. Focusing on developing missing middle and medium-density housing in underutilized sites and in transit corridors can also reduce transportation costs for households while creating net-positive fiscal revenue for local governments. This type of growth adds density in single-family neighborhoods through ADUs, quads and garden-style apartments to increase density in walkable, high-opportunity areas. ■

# COST BURDENING

Cost burdening occurs when incomes lag behind rapidly rising rents and housing prices. Although incomes have begun to rise in recent years, they were stagnant for several decades — while housing costs increased at much higher rates. This divergence has led to increased cost burdening rates across Oregon.

In every county in Oregon except for one, at least 25% of households experience cost burdening, and in the majority of counties — particularly on the western side of the state — more than 30% of households are cost-burdened.

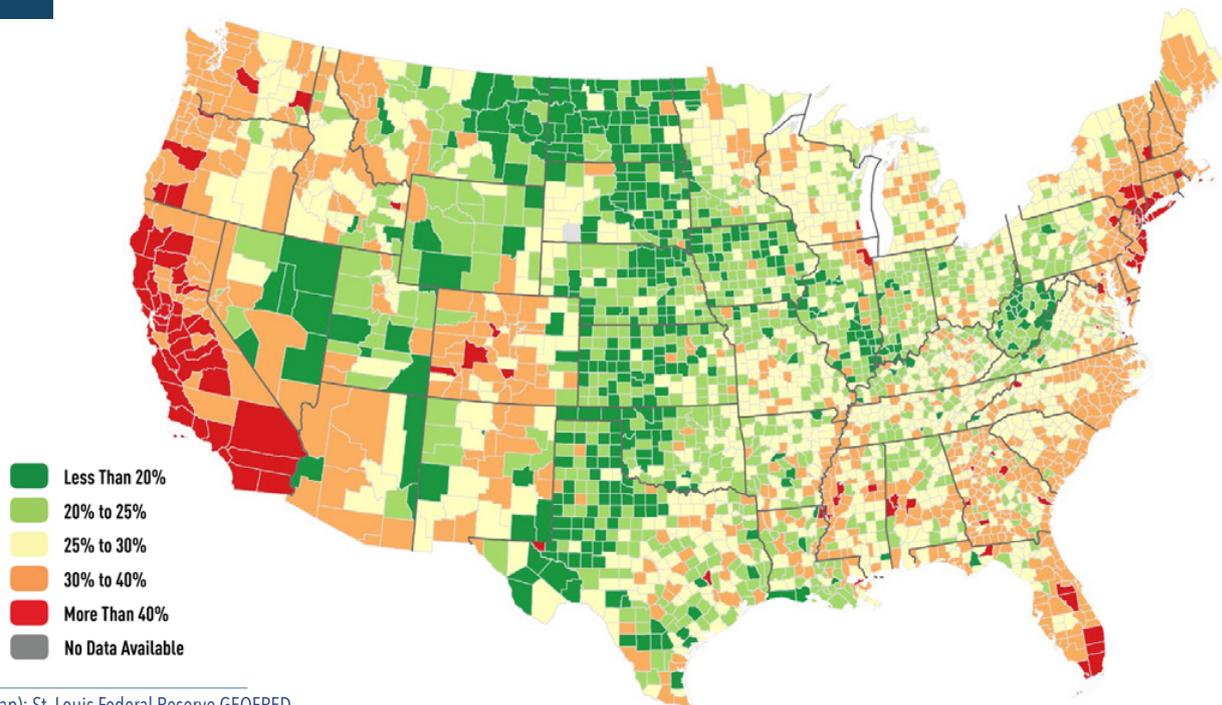
Spending too much on housing reduces funds available for other family necessities, such as food, medical services, transportation, childcare and emergencies. Many Oregon households are just one emergency — perhaps an unexpected car repair or medical bill — away from eviction or job loss. Point-in-time counts in Oregon show an uptick in episodic homelessness, where individuals and families living close to the edge are tipped into living in shelters, motels, cars or the street. This instability is detrimental to children’s educational

outcomes and to job stability. Access to safe, affordable housing sets the foundation for opportunities for success.

In addition to impacts on household affordability, this study seeks to understand the social, economic, fiscal and environmental implications of underproduction by assessing the potential for housing production in the absence of regulatory and other supply impediments. The study does not address any complementary uses, such as office, industrial or hospitality, that would accompany an increase and redistribution of housing units. There are likely significant impacts associated with those related uses, but they have been excluded from the analysis. For the purpose of this study, the focus is on understanding the incremental impact related to housing. It should be noted that this report is primarily interested in investigating the impact of different models for addressing growth and is therefore not conducting a policy analysis to determine the effectiveness of individual policies to increase housing production. This is an important area for future study.



## PERCENT OF HOUSEHOLDS THAT SPEND MORE THAN 30% OF GROSS INCOME ON HOUSING, 2016

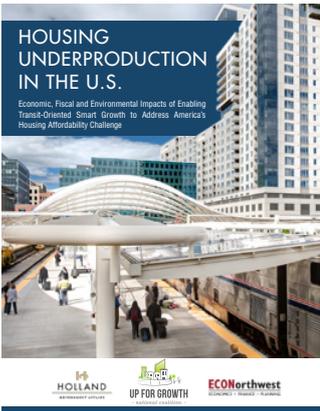


Source (map): St. Louis Federal Reserve GEOFRED

### COST BURDENING

Households are considered “cost-burdened” when they spend more than 30% of their gross income on housing expenses (not including transportation costs). This threshold does not change for different income levels. While it is a commonly accepted measure of the maximum amount that should be spent on housing, it fails to consider that cost burdening disproportionately affects low-income households, who have very little disposable income after paying for housing, transportation, childcare and medical expenses.

## HOUSING STARTS HAVE NOT KEPT PACE WITH HOUSEHOLD FORMATION



Up for Growth’s national report on housing underproduction was released in April 2018 and highlighted the economic, political and social consequences of housing underproduction caused by inefficient land-use policies and overly burdensome regulations. It also demonstrated the potential economic, environmental and fiscal benefits that could occur if housing development shifted from the status quo to a Smart Growth approach, detailed in the following pages.

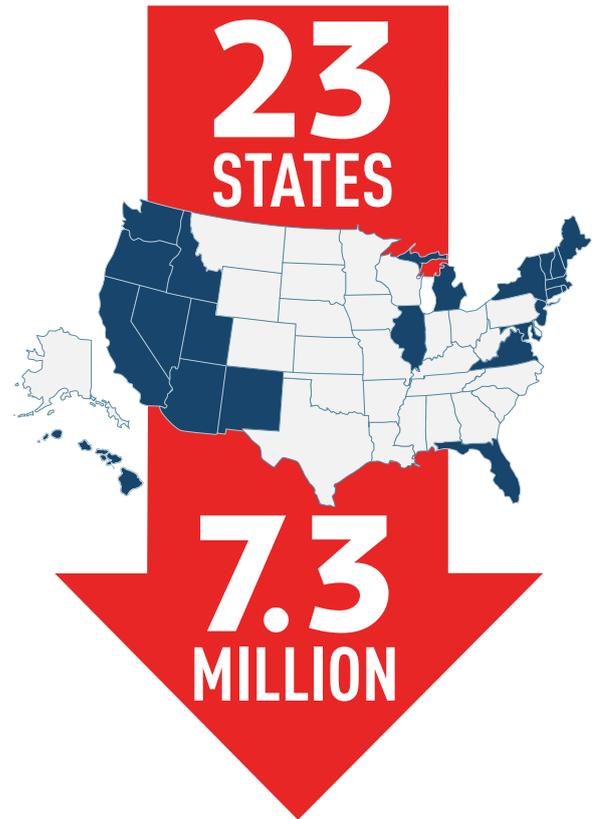
The report calculated the total number of units underproduced on a national basis from 2000 to 2015 by estimating each state’s historic relationship between the production of housing units and a host of demand-side indicators by using an econometric statistical model. It calculated each state’s baseline housing production through 2000 and forecasted the number of units that would have been produced in 2015 if each market maintained the historical national average (supply elasticity). Then using the actual number of housing units in 2015, the report calculated the total units that were under- or over-produced from 2000 to 2015 at the state level.

The study calculated that 23 states underproduced housing units from 2000 to 2015. The remaining 27 states produced enough housing at the statewide level, although there may be imbalances and underproduction in certain cities within each state. Residents facing supply shortages and price increases in populous urban locations are not helped by surplus housing elsewhere in their state.

The historic data needed to replicate the national report’s methodology are not available for smaller units of geography (such as counties). However, housing markets are regional and need to be examined locally. This report contributes a simple model to demonstrate the imbalance in supply and demand at the county level, which is detailed on the following pages (page 8 and 9). The remainder of the report focuses on the economic, fiscal and environmental benefits of producing housing at the state level, using the statewide underproduction figures from the national study. ■

### DATA INPUTS TO THE MODEL INCLUDE:

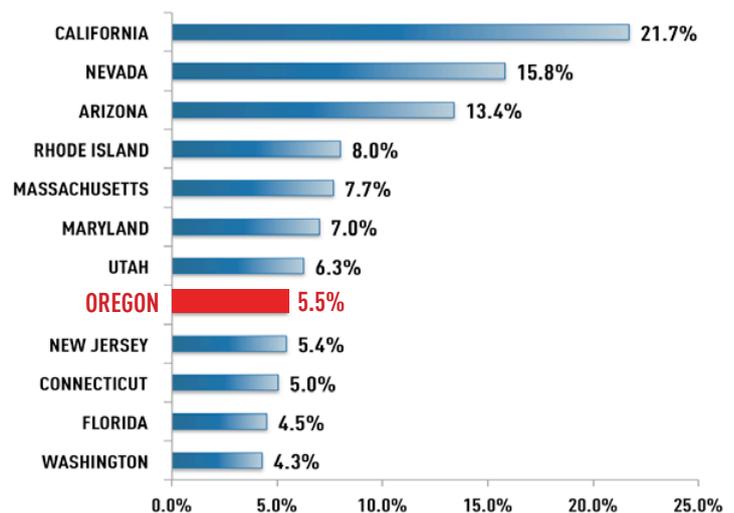
- Home Prices
- Population
- Income
- Housing Stock



## NUMBER OF NATIONAL HOUSING UNITS UNDERPRODUCED FROM 2000-2015

**155,000 OR UNITS UNDERPRODUCED**

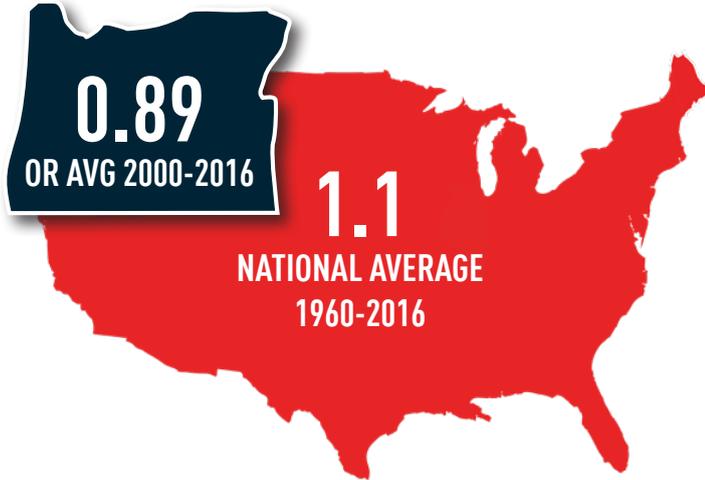
### ESTIMATED REDUCTION IN STATEWIDE HOME PRICES IF ALL UNITS PRODUCED OVER 20 YEARS



The chart above displays the states with the largest price reductions associated with the additional production of units. For example, if 155,000 units were built in Oregon over the next 20 years, prices would be 5.5% lower than they would have been without the additional production of units. Put differently, increasing the number of units produced over 20 years does not decrease the nominal prices, but does decrease the rate of growth.

# MEASURING UNDERPRODUCTION

## RATIO OF HOUSING STARTS TO HOUSEHOLD FORMATION 2000-2016

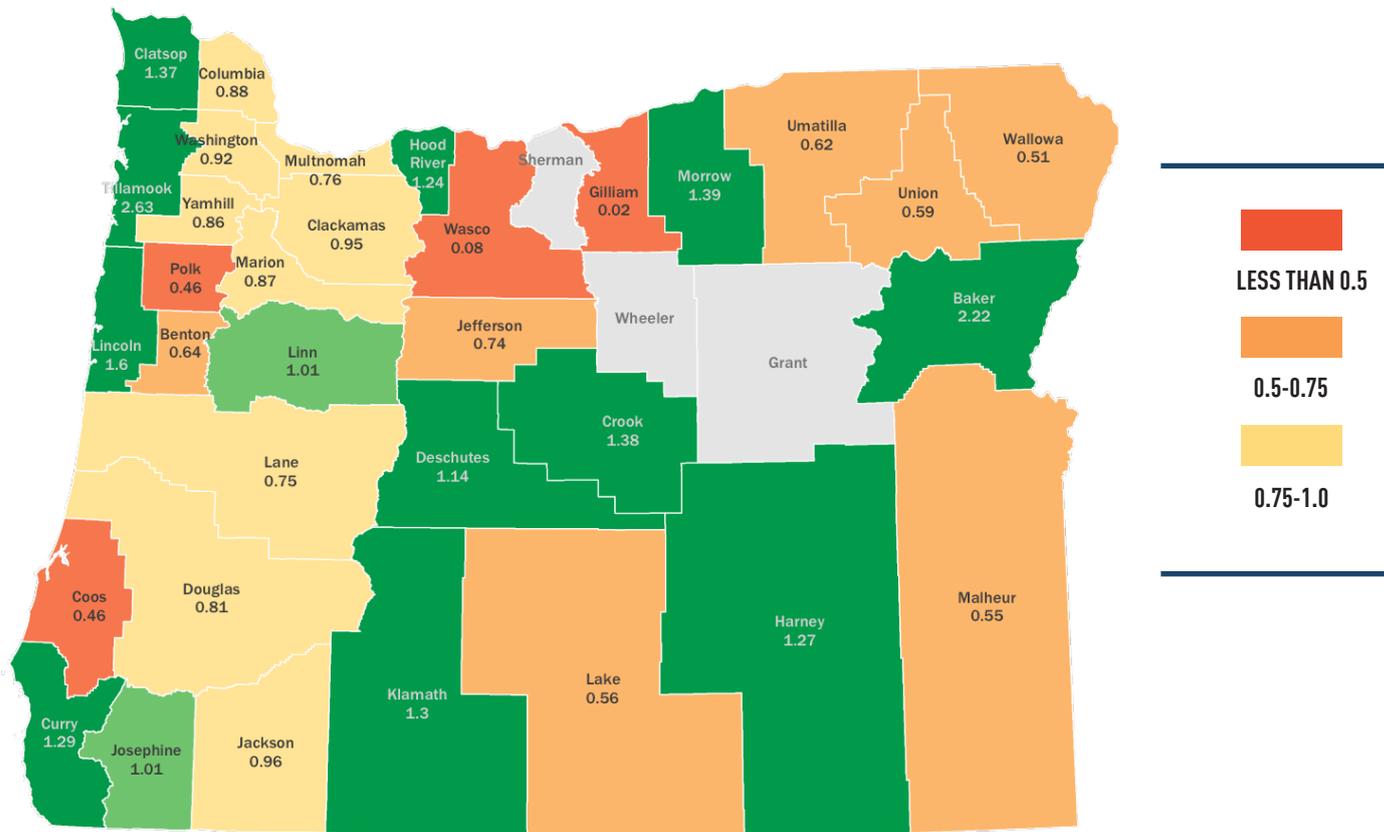


At its most basic level, a functioning housing market needs to produce at least one new housing unit for every new household formed. However, to fully account for demolition and the obsolescence of the existing housing stock, changing consumer preferences and vacancy rates, this ratio needs to be higher than 1:1. From 1960 to 2016, approximately 1.1 housing units were built nationally for every new household formed.

Producing 1.1 new units for each household formed is the minimum needed to account for vacancy, demolition and obsolescence, while still maintaining market conditions and accommodating demand for new housing. Although it is a simple approach, it allows for a baseline metric to measure housing production: When less than one unit is built for every new household formed, demand outpaces supply and puts upward pressure on prices. This has played out nationally, impacting households of all income levels in fast-growing states such as Oregon.

From 2000-2016, Oregon produced only 0.89 units for every household formed, including the building boom, subsequent bust and most recent increase in housing construction. Put differently, for every 100 households formed during this time period, only 89 units were built.

More recently, since the end of the Great Recession — 2010 to 2016 — housing production fell further behind household formation. Statewide, only 63 units were produced for every 100 households formed. Despite the number of cranes crowding skylines across the western portion of the state, 37 out of every 100 newly formed households had to compete for a limited stock of housing during the economic recovery. Diving deeper into the data, it is clear that some counties in Oregon



**Housing Units vs. Household Formation, 2000 to 2016**

Source: U.S. Census Annual Estimate of the Residential Population 2017 (population), U.S. Census 2010 (people per household), U.S. Census 2000 (household count), Moody's Analytics (housing starts)

# MEASURING UNDERPRODUCTION

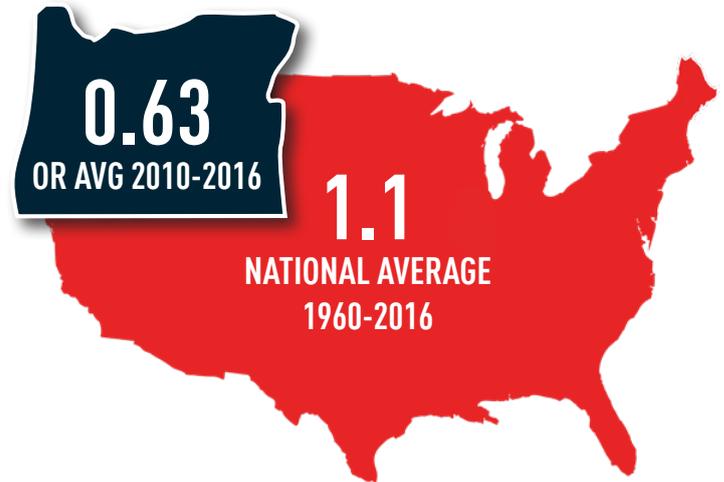
produced more than 1.1 units per household formed in the run up to the housing market crash. However, only seven counties in Oregon produced units at the minimum baseline ratio since 2010 — none of which are highly populated. In two tourism-heavy counties, Hood River and Tillamook, these ratios may be boosted by the production of vacation homes, which do not help the affordability crisis affecting year-round residents.

Across Oregon two stark themes are emerging: Highly populated areas along the I-5 corridor are struggling to keep up with demand, while rural areas have struggled to generate any new development.

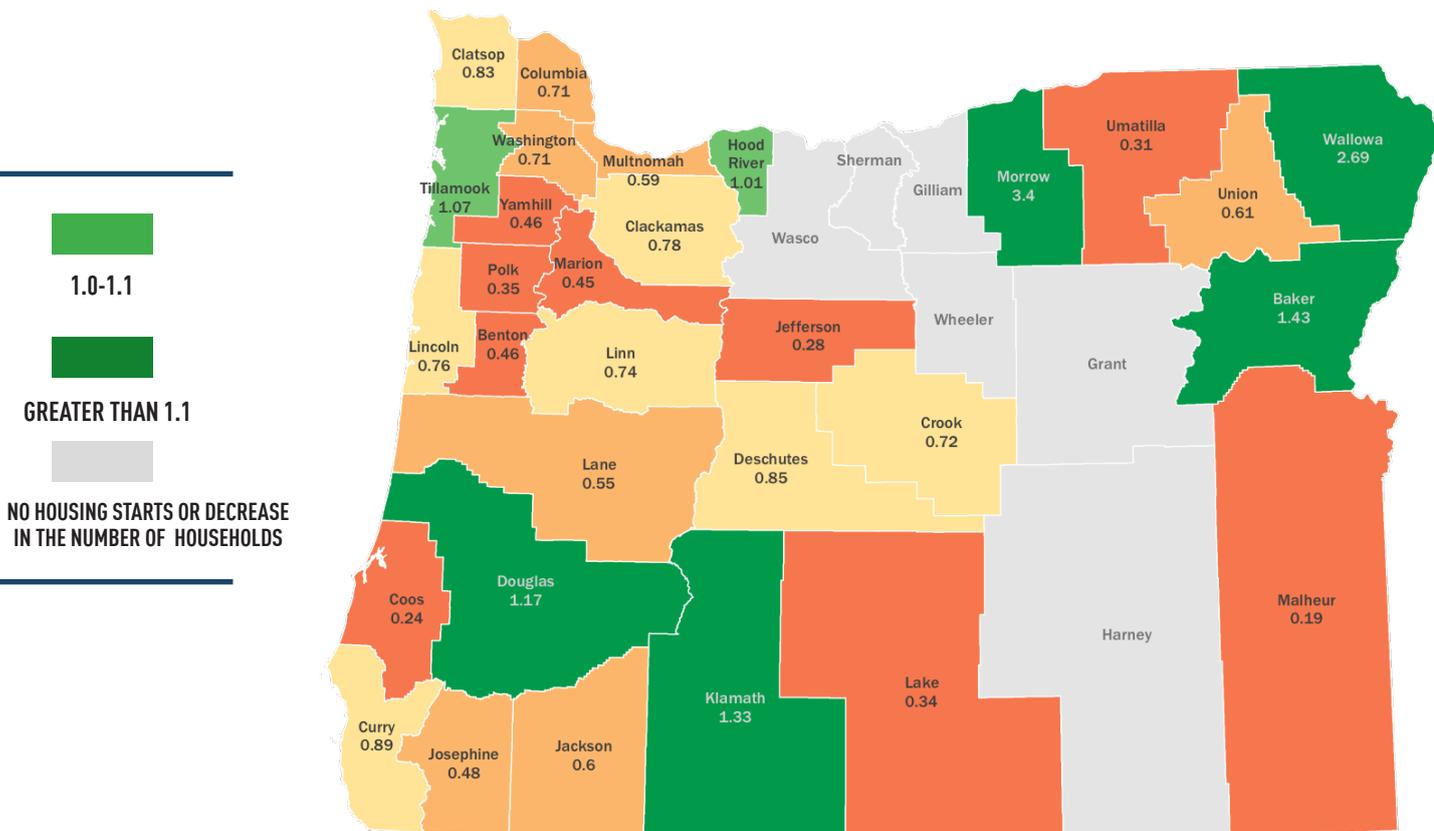
While most counties in Oregon saw production ratios decrease over time, the Portland metro region has experienced some of the steepest declines since 2010. Multnomah County fell from producing 76 homes for every 100 new households in 2000-2016, to only 59 in the 2010-2016 timeframe. Clackamas County fell from 95 to 78 and Washington County fell from 92 to 71.

As a result of these imbalances, rents and home prices have rapidly increased and have surpassed the previous housing bubble's peak prices in many areas. This is particularly troubling as the end of this housing cycle nears. The rate of new construction is decreasing while the population

## RATIO OF HOUSING STARTS TO HOUSEHOLD FORMATION 2010-2016



continues to grow at rapid rates, primarily due to the migration of residents seeking economic opportunity. Housing development cycles are generally slow moving, but it appears that the peak production rate of this cycle has passed. These ratios are likely to get worse in the short run and will require substantive policy interventions to bring the ratio of units-to-households back into equilibrium. ■



### Housing Units vs. Household Formation, 2010 to 2016

Source: U.S. Census Annual Estimate of the Residential Population 2017 (population), U.S. Census 2010 (people per household, household count), Moody's Analytics (housing starts)

# DISTRIBUTING NEW GROWTH: TWO SCENARIOS

This next section of the report investigates the economic, fiscal and environmental impacts associated with different growth patterns. The report constructs two scenarios to test the implications of policies that encourage housing production in a denser, more cost-efficient manner, compared to an approach that perpetuates the development patterns seen since World War II. As detailed in the following pages, continuing to build the same types of units in the same locations at the same densities is unlikely to deliver a range of housing units that are affordable to households along the entire income spectrum.

The two development scenarios are:

- A More of the Same approach, which distributes housing and density as they have been in the past
- A Smart Growth approach that leverages existing infrastructure by building housing at higher densities around high-capacity transit and in high-opportunity neighborhoods

It is important to note that both scenarios produce the same number of total housing units. However, the real differences

lie in the varied building prototypes — single-family homes, missing middle and medium-density housing and residential towers — and the range of construction costs that would be produced in each scenario (See pages 12-13 for details on the building prototypes).

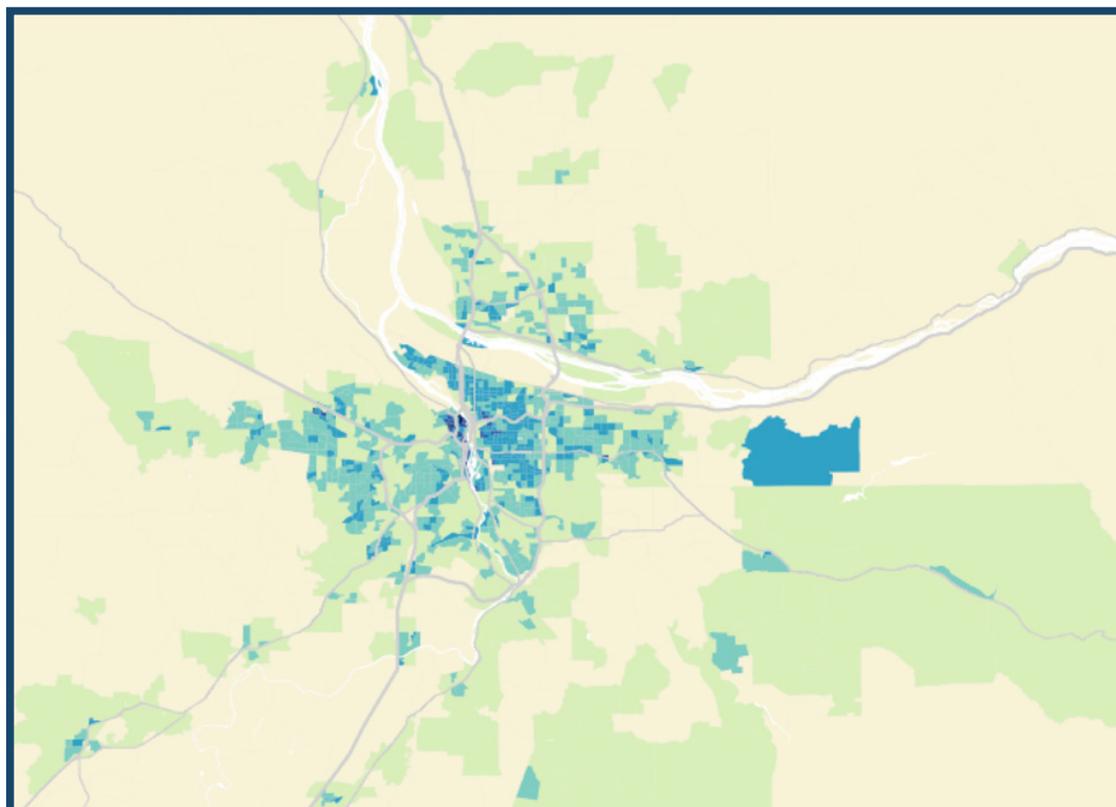
To distribute this new housing development, the 2015 housing density is calculated in units per acre (UPA) at the census “block group” level — an area with 600 to 3,000 people that varies in size based on population density. To account for areas that cannot easily accommodate additional development (i.e. water, wetlands) and with a goal of preserving natural areas (forests and farmland), the housing density is adjusted using the 2011 National Land Coverage Database’s satellite imagery data to include only those areas considered to be ‘developed.’

New development is not added in areas with density below one UPA to take advantage of existing infrastructure and to avoid increasing the footprint of land required to accommodate additional units. The map below shows the existing adjusted housing density for the Portland Metro Area.

## ADJUSTED HOUSING DENSITY, PORTLAND METRO AREA



### ADJUSTED DENSITY:



Source: NLCD 2011, U.S. Census

## MORE OF THE SAME

The More of the Same scenario looks at the current share of single-family homes, missing middle and medium-density units and high-rise towers across the state, assigning new growth proportionally above the threshold of one UPA. If 5% of Oregon housing units were in high-rise towers, 5% of new growth would also occur in high-rise towers. The goal of this scenario is to approximate current development patterns.

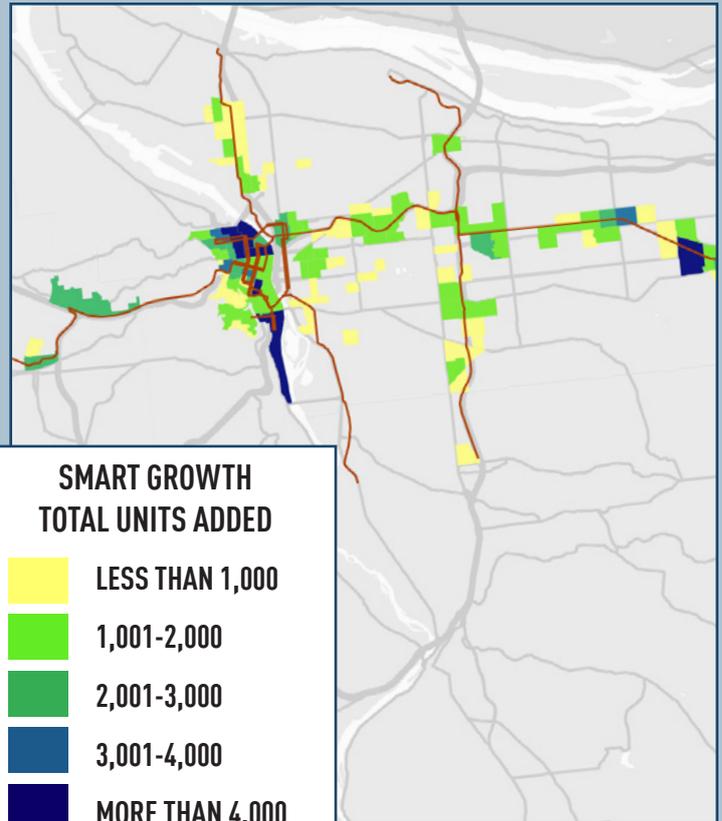
## SMART GROWTH

The Smart Growth scenario assigns new housing units based on a formula of existing density, distance to transit stops and the share of commuters in the census block group who drive their own vehicles to work. Building prototypes are estimated using the matrix on page 13, which uses examples from the existing built environment and block group densities from 2010 to determine the estimated mix (See page 13 for more details on prototype selection). The goal of the Smart Growth scenario is to increase density in a way that conforms with the existing urban form, focusing on delivering lower-cost mid-rise units, and most importantly, locating units in transit corridors to reduce vehicle miles travelled (VMT) and the number of cars on the road. In order to achieve these goals, unit distribution was prioritized in:

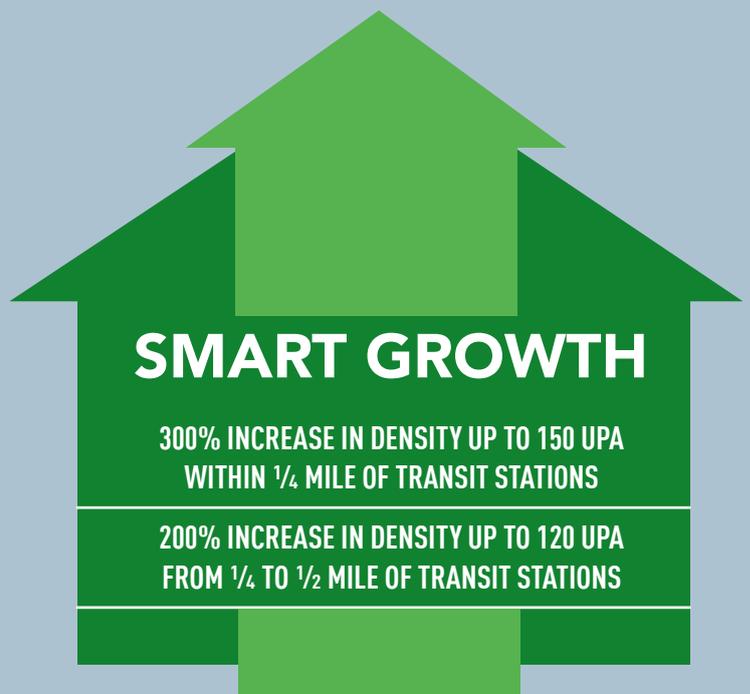
- Locations within a quarter mile of existing transit stations;
- Locations within a half mile of a high-capacity transit station;
- Non-transit corridor locations with a low share of people using private transportation to commute to work (A proxy for low VMT, described on pages 14 and 15)

Due to the availability of low-density land available in transit corridors, 100% of the new units were located within a half-mile of stations, and 77% of units were within a quarter mile of transit stations. In order to achieve higher densities in priority areas, the addition of new units could triple existing density within the first quarter mile (subject to a cap of 150 UPA) and could double existing density from a quarter mile to half mile (subject to a cap of 120 UPA).

## PORTLAND SMART GROWTH



This map demonstrates where new units would be built in the Portland region under a Smart Growth density distribution. As the map demonstrates, new housing units are distributed near high-capacity transit areas and in areas that already have apartment towers to align with the current built form.



# COST ESTIMATES AND PROTOTYPE ASSUMPTIONS



**SINGLE-FAMILY HOME (UP TO 3 STORIES): MAX 5 UNITS PER ACRE**



**MISSING MIDDLE & MEDIUM-DENSITY (UP TO 5 STORIES): MAX 120 UNITS PER ACRE**



**TOWER HIGH-RISE (6+ STORIES): MAX 240 UNITS PER ACRE**

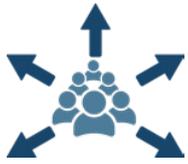
From an urban planning and design perspective, the additional units built in each block group match the existing housing prototypes observed in that block group. The goal is to avoid inevitable neighborhood opposition, where adding new high-density housing units in block groups with mostly single-family homes drastically changes the neighborhood composition. Each block group is assigned a prototype distribution based on the existing density of that block group, which can be seen on the table on page 13. The cutoffs for the prototypes were determined by looking at satellite imagery of block groups and attempting to find breakpoints that matched the existing distribution of prototypes.

The images on page 13 demonstrate examples of existing neighborhoods with different levels of housing density. The image on the left is the upper limit of density — showing a block group with 150 units per adjusted acre. Adjusted densities measure gross land and include right of ways and other non-residential uses. The achievable density on a residential parcel is higher than the average density for the block group. The picture on the right shows a block group with 30 units per adjusted acre. In the Smart Growth scenario, block groups with more than 30 units per acre will receive additional housing units until they look more like the picture on the left. Similarly, block groups with density between 12.5 and 30 units per acre (less dense than the photo on the right), would receive a variety of missing middle housing to achieve higher densities. The table on page 13 details this density distribution.

Each growth scenario builds the same number of total units but differs on the types of prototypes built (single-family homes, medium-density units and towers). Each development prototype has different construction costs and different infrastructure investment requirements. The two different growth scenarios allow for comparison of the same number of units produced with different development patterns. For example:

- Infill projects located in urban cores do not require new roads and require minor infrastructure investment compared to greenfield development.
- Building near transit infrastructure reduces VMT and emissions (See VMT discussion on page 14).
- Missing middle housing can be built in high-opportunity single-family neighborhoods and can be built at a lower cost per unit than the existing stock of housing.
- Obtaining better locational balance between jobs and housing improves agglomeration benefits and reduces the traffic congestion in a region.

# COST ESTIMATES AND PROTOTYPE ASSUMPTIONS



## DENSITY DISTRIBUTION & PROTOTYPE MATRIX

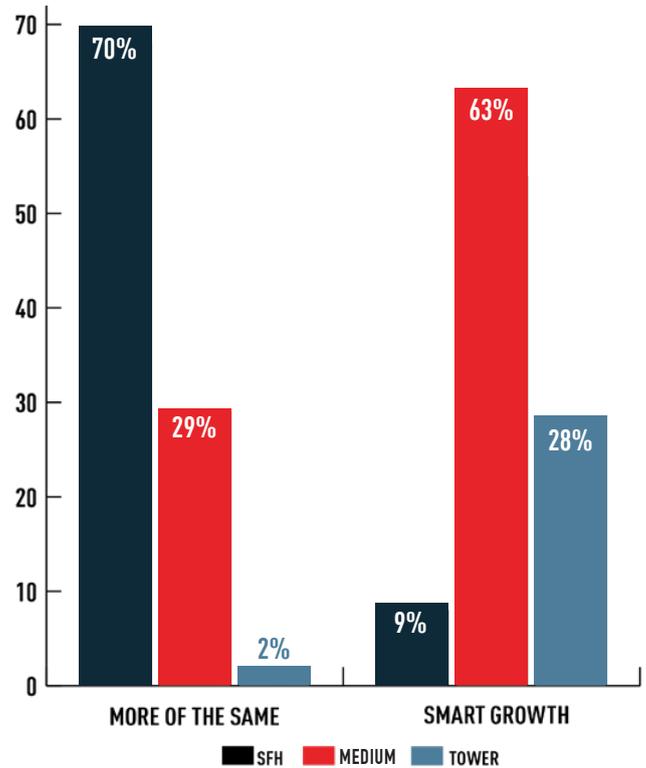
### SMART GROWTH

CURRENT DENSITY	% TOWER	% MEDIUM	% SFH
30.0+ Units per acre	100%		
12.5-30 Units per acre	50%	50%	
5.0-12.5 Units per acre		100%	
3.0-5.0 Units per acre		25%	75%
1.0-3.0 Units per acre			100%
Less Than 1.0 UPA	Development Threshold — No Density Added		

The table above shows the prototype distribution for the Smart Growth scenario. Block groups with more than 30 UPA see 100% of new units added in towers, until they reach the density threshold for that scenario based on the location of the block group. The scenario distribution then moves to the next-densest block group and adds units in a 50% tower/50% medium-density mix. This continues further, adding additional medium-density units and, finally, single-family units until the total number of units underproduced has been allocated. The net result of the prototype allocation is to achieve higher densities than are currently observed by including a mix of units to better utilize the existing infrastructure.

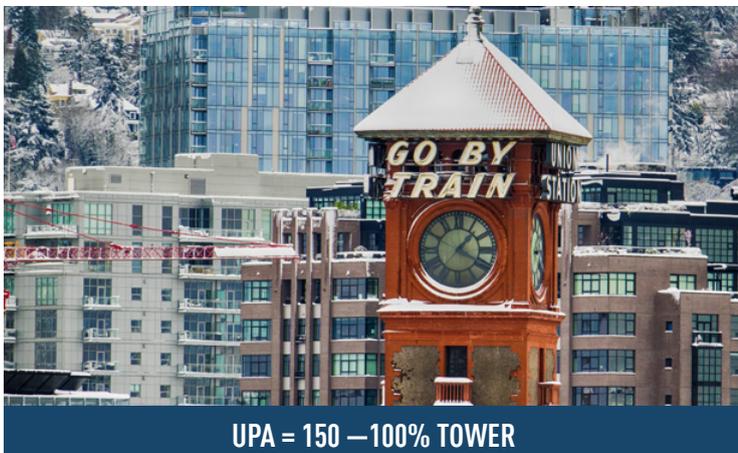
The More of the Same scenario does not use a distribution mechanism because it assigns new growth proportionally based on the currently observed distribution of prototypes. For example,

## OREGON PROTOTYPE DISTRIBUTION BY GROWTH SCENARIO

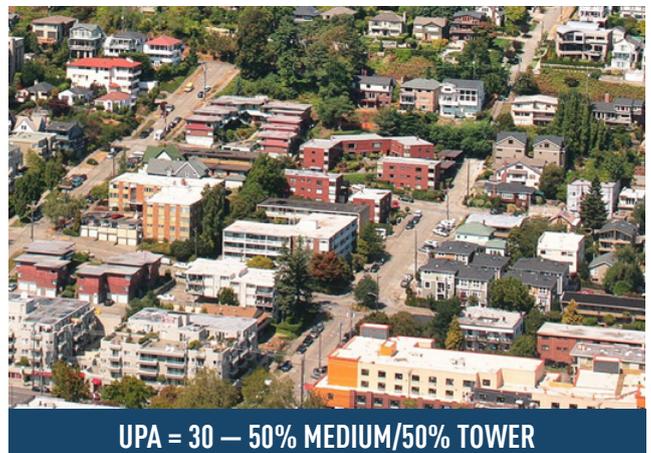


an area with only 5% of units in high-rise towers will see that same share of new units built as high-rise towers.

The chart demonstrates this distribution pattern, showing how many towers, medium-density units and single-family homes are allocated in each growth scenario. Continuing a More of the Same approach throughout Oregon would deliver 70% of new units as single-family homes. Under the Smart Growth scenario, this would be reduced to just 9% of units. Smart Growth focuses on delivering more missing middle units, increasing these units to 63%, as opposed to just 29% in a More of the Same approach. ■



UPA = 150 — 100% TOWER



UPA = 30 — 50% MEDIUM/50% TOWER

# ENVIRONMENTAL BENEFITS OF SMART GROWTH

The Smart Growth scenario targets areas of existing high density combined with low VMT in transit corridors as the priority for assigning unit growth. The goal of the Smart Growth scenario is to achieve improved economic and fiscal impacts while also delivering additional positive environmental impacts compared to the More of the Same scenario. At its most basic level, Smart Growth achieves higher density than current housing development patterns and therefore requires less land to accommodate the same number of units. In Oregon, Smart Growth requires just 18% of the land area required for the More of the Same scenario. Utilizing less land means higher economic efficiency for local jurisdiction service delivery, as well as environmental benefits such as storm water remediation and undisturbed room for forestry and farming.

In addition to land-use benefits, locating housing near public transportation reduces the burden of cars on the road. This important relationship is a focus for the Smart Growth scenario, which prioritizes housing in transit corridors with low VMT.

To quantify the benefits of having housing units in transportation corridors, a first-of-its-kind model was developed to estimate the VMT of a neighborhood based on the characteristics of



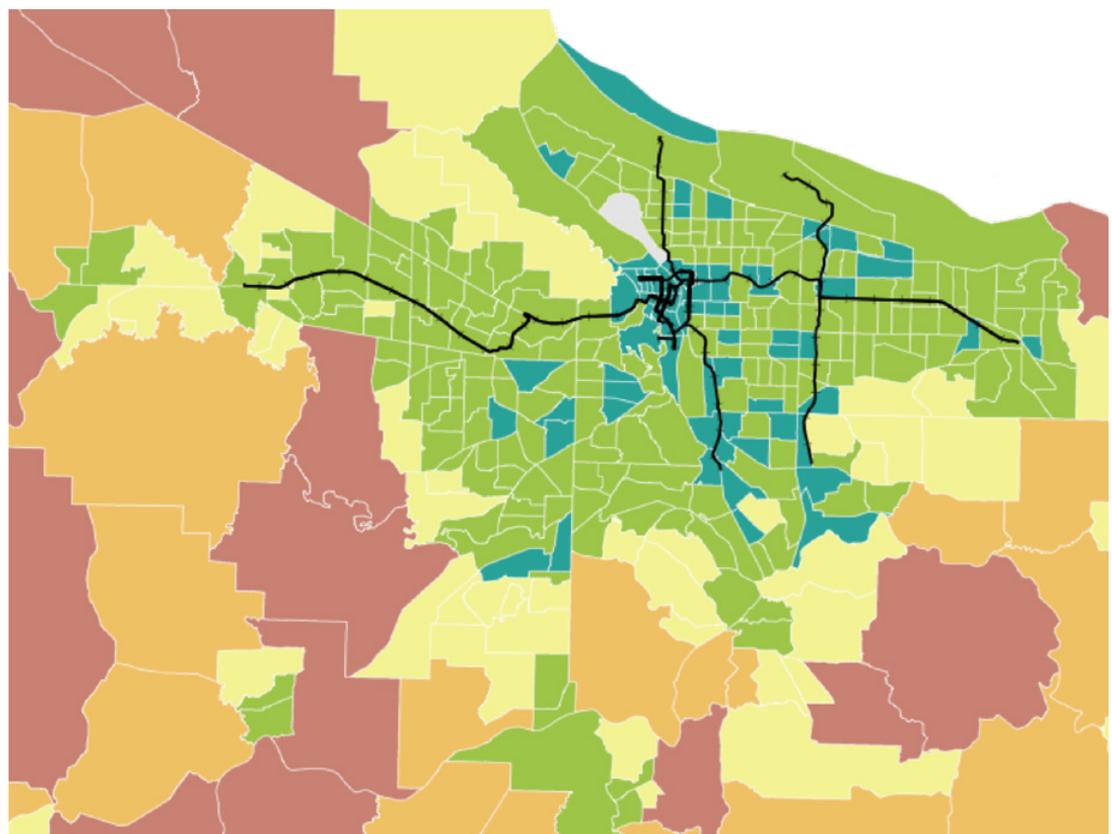
the built environment at the census tract level nationally. The study found a very strong relationship between VMT and the proportion of households who commute by car and truck (also known as “commute mode split”) as demonstrated by the scatterplots on page 15.

The map below shows commuting VMT for the Portland Area, with transit stations overlaid. The range of VMT is as low as 10-20 in some areas and more than 50 in others. By locating housing in areas with low VMT, the Smart Growth scenario results in 1.5 million fewer miles travelled daily for commuters compared to the More of the Same scenario, a difference that is equivalent to approximately 46,700 fewer cars on the road annually.

## ENVIRONMENTAL IMPACT OF SMARTER GROWTH: LOWER VEHICLE MILES TRAVELED



### HOME-BASED VMT PER HOUSING UNIT



Source: ECONorthwest calculations

# ENVIRONMENTAL BENEFITS OF SMART GROWTH

The Smart Growth approach has the largest increase in transit corridor density. With the relationship between VMT and commute mode split clearly demonstrated, increasing housing density in transit corridors would be a valuable way to reduce VMT and leverage public infrastructure investments.

The scatterplots below compare housing density and daily commuting VMT for transit corridors (dark blue dots) and non-transit corridors (light blue dots) in Oregon at the block group level. These scatterplots demonstrate that commuting VMTs are lower in transit corridors than in non-transit corridors, with a median of 19 VMT and 28 VMT, respectively. They also show that the median transit corridor block group has a higher housing density than the median non-transit corridor block group, with 28 units per acre compared to eight units per acre, respectively. In addition:

- The majority of transit corridor block groups have VMT below 20 miles.
- Almost all the transit corridor block groups have low commute mode splits (under 50%).
- Almost all the highest-density block groups are in transit corridors.
- There are few outliers in either scatterplot, indicating strong relationships between VMT and housing density, and between VMT and commute mode split.

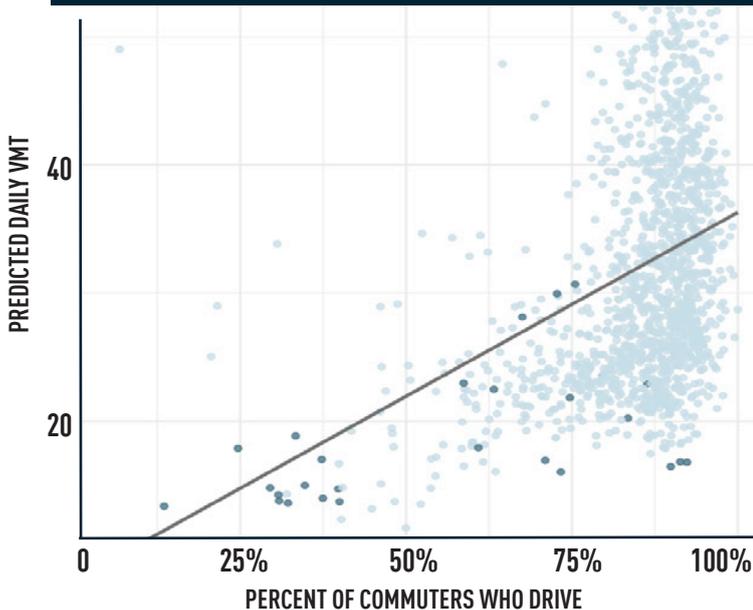
The Smart Growth strategy has numerous benefits beyond increasing GDP, jobs, tax revenues and housing density — all of which are explored in the next pages. The Smart Growth approach also delivers meaningful environmental benefits compared to other housing development patterns. ■

## SMART GROWTH BENEFITS

### 155,000 UNITS PRODUCED IN OREGON

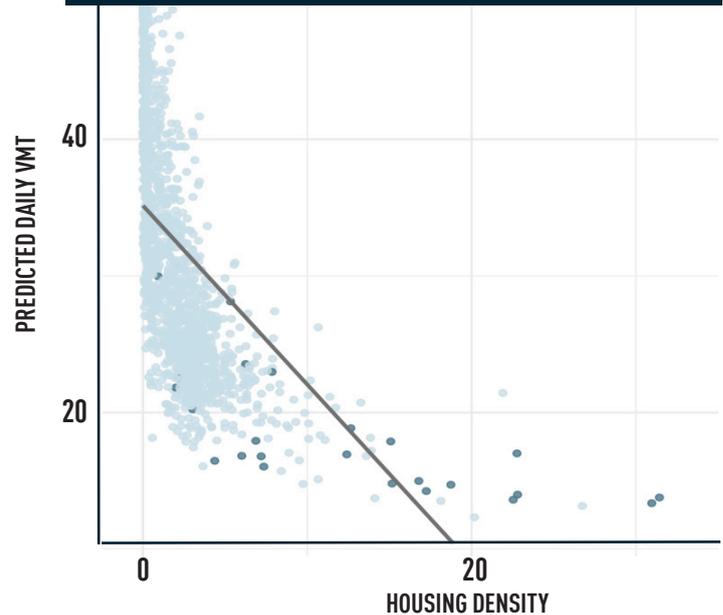
	VMT PER DAY	CARS PER YEAR
<b>DIFFERENCE</b>	<b>1.46 MILLION (34% REDUCTION)</b>	<b>46,697</b>
IN OREGON		
	MEDIAN HOUSING DENSITY	99TH % HOUSING DENSITY
<b>OUTSIDE 1/4 MILE</b>	<b>1.30</b>	<b>8.16</b>
<b>WITHIN 1/4 MILE</b>	<b>5.18</b>	<b>27.94</b>
	MEDIAN VMT	99TH % VMT
<b>OUTSIDE 1/4 MILE</b>	<b>28.24</b>	<b>56.08</b>
<b>WITHIN 1/4 MILE</b>	<b>19.06</b>	<b>25.96</b>

RELATIONSHIP BETWEEN COMMUTERS WHO DRIVE AND PREDICTED VMT IN OREGON



● WITHIN 1/4 MILE OF HC TRANSIT

RELATIONSHIP BETWEEN HOUSING DENSITY AND PREDICTED VMT IN OREGON



● OUTSIDE 1/4 MILE OF HC TRANSIT

Source: ECONorthwest calculations, U.S. Census 2010, U.S. Census 5-year 2011-2015 ACS

# INFRASTRUCTURE SPENDING

As cities grew in the post-World War II era, high rates of new housing unit growth paid for costly infrastructure projects that were generally funded by local governments with federal- and state-level subsidies. More recently, as rates of growth have decreased, cities have struggled with funding new infrastructure to support growth. This forms a classic “Catch-22.”

	MORE OF THE SAME	SMART GROWTH	% OF TOTAL DIFFERENCE
TOTAL ACRES	16K	3K	-81%
TOTAL INFRA SPEND	\$15.7B	\$1.7B	-89%
TOTAL O&M	\$373M	\$70M	-81%

Infrastructure is needed to make greenfield development possible, but the cost of infrastructure limits the ability to develop in said “green fields.” In most cities and metro areas around the country, the prime developable areas have already been consumed. The remaining areas available for development either require costly infrastructure upgrades or are far away from existing infrastructure. As a result, the cost-per-unit of infrastructure has increased over time as homes are built further and further away from urban cores.

Cities and local governments have reacted to these higher infrastructure costs in rational ways by raising fees to cover the higher costs of installing new infrastructure. However, this response ignores difficult questions: Do the revenues generated by new units support the up-front costs? More importantly, do these recurring incremental revenues cover the continued public operations and maintenance costs of this new infrastructure?

The short answer is no, particularly for low-density housing in greenfield locations requiring new infrastructure. Because infrastructure costs for a single-family home typically exceed the local government revenues collected off such a home, municipal debt is used to finance the required infrastructure. However, adding new debt service limits the ability to properly maintain existing facilities, which leads to increased costs for deferred maintenance. In the long run, an existing property tax base consisting of primarily single-family homes cannot support the installation of new infrastructure as well as the deferred maintenance costs of all the roads, sewers and other infrastructure necessary for this type of housing.

Continuing to build new housing units in this manner — away from the existing infrastructure in urban cores — not only fails to remedy the problem but also exacerbates it. One consequence has been that the development costs and prices of new single-family homes have increased faster than inflation over the past decade. Nationally, 60% of new single-family homes are priced at more than \$300,000, 20% higher than at the peak of the previous housing bubble.

Remedying the problem requires cities and municipalities to compare the cost of new development infrastructure to the associated fee revenues that development produces: What are the infrastructure costs and tax revenues from a single-family home in a greenfield, and how does that compare to the costs and revenues associated with medium- or high-density development in the urban core?

In the early stages of sprawl, new growth fueled the expansion while long-term maintenance obligations had not yet been incurred, so net-negative infrastructure costs were still a minor issue. However, this dynamic is changing.

Cities now face unfunded operating liabilities that will require new units to bring in more revenues than the associated costs of installing and operating the infrastructure to service each unit. This profitability is necessary if there is hope to “right-size” municipal budget problems, and there are several ways to do this:

- Growth policies can target areas that already have existing infrastructure, thereby reducing the demand for increased infrastructure investment.
- Policies can also set impact and development fees on a per-acre, gross land, or square-foot basis, rather than a per-unit basis to reflect the true infrastructure costs.

This report demonstrates that changing development patterns for the 155,000 units that were underproduced in Oregon can have positive effects for local government infrastructure funding. If these units were built in a Smart Growth approach, 81% less land would be needed compared to building in a More of the Same approach—2,900 acres compared with 15,800 acres. Furthermore, the cost of infrastructure is nine times smaller in the Smart Growth—\$1.7 billion compared with \$15.7 billion. ■

This study is the first to use the Regional Economic Model (REMI) to simulate large-scale housing development. REMI is a structural representation of a regional economy and uses publicly available data to build an economic forecast. Variables can be altered to reflect changes in public policy (e.g. lower taxes, new regulation or new consumer preferences). The model then simulates the economic impacts of such policy changes and produces a new forecast capturing these effects. By comparing the simulated forecast to the baseline forecast, the economic impacts of the policies modeled can be quantified.

The model has feedback loops to capture the cumulative impacts of development spending, as well as any time-based changes to the structure of the economy, such as migration, induced demand, lower costs, supply chain spending and tax effects, among others. Any change to one sector of the economy will ripple through the others. This is beneficial, as the model is able to capture the relationships between different economic and demographic changes, such as migration, government spending, personal income, etc.

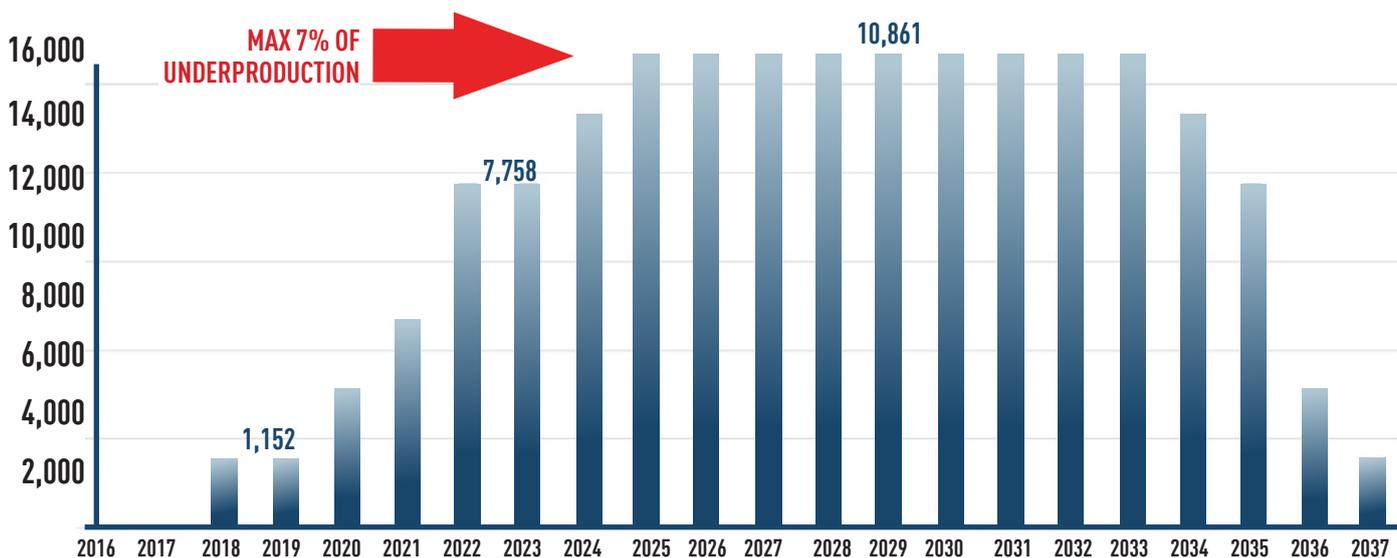
The Smart Growth scenario produces robust economic growth: A housing expansion under this scenario would produce a \$58 billion cumulative increase in Oregon GSP through 2037 compared to the baseline economic forecast.

## ASSUMPTIONS

- **HARD CONSTRUCTION COSTS:** Calculated based on industry standards for the three different housing prototypes and adjusted for Oregon costs.
- **SOFT CONSTRUCTION COSTS:** Primarily architecture, engineering and legal costs (excluding financial costs), assumed as a percentage of hard costs.
- **INFRASTRUCTURE COSTS:** Includes installation costs and ongoing operations and maintenance costs. Paid for by system development charges (SDCs) estimated in the state. Assumes government sector pays for infrastructure not covered by SDCs through bond issuance. (Provided by Arup Engineering based on real data from developments in California, adjusted regionally.)



## ADDITIONAL HOUSING PRODUCTION PER YEAR



Our model phases in new housing development over a 20-year period. It is not feasible to assume the housing construction industry could immediately start producing new units on this scale. The industry — including producers up the supply chain — needs time to recruit and train new employees and to increase supplies of raw materials.

# REMI MODEL: ECONOMIC IMPACTS

The report describes the environmental and local government financing impacts of these two development patterns. This section describes the economic impacts of developing 155,000 units in Oregon via a Smart Growth or a More of the Same approach.

The Smart Growth scenario generates greater economic benefits compared to the More of the Same scenario. Leveraging existing infrastructure is a more efficient use of

scarce resources, and rather than generating debt to finance the infrastructure costs, Smart Growth focuses on generating consumer spending to benefit the regional economy.

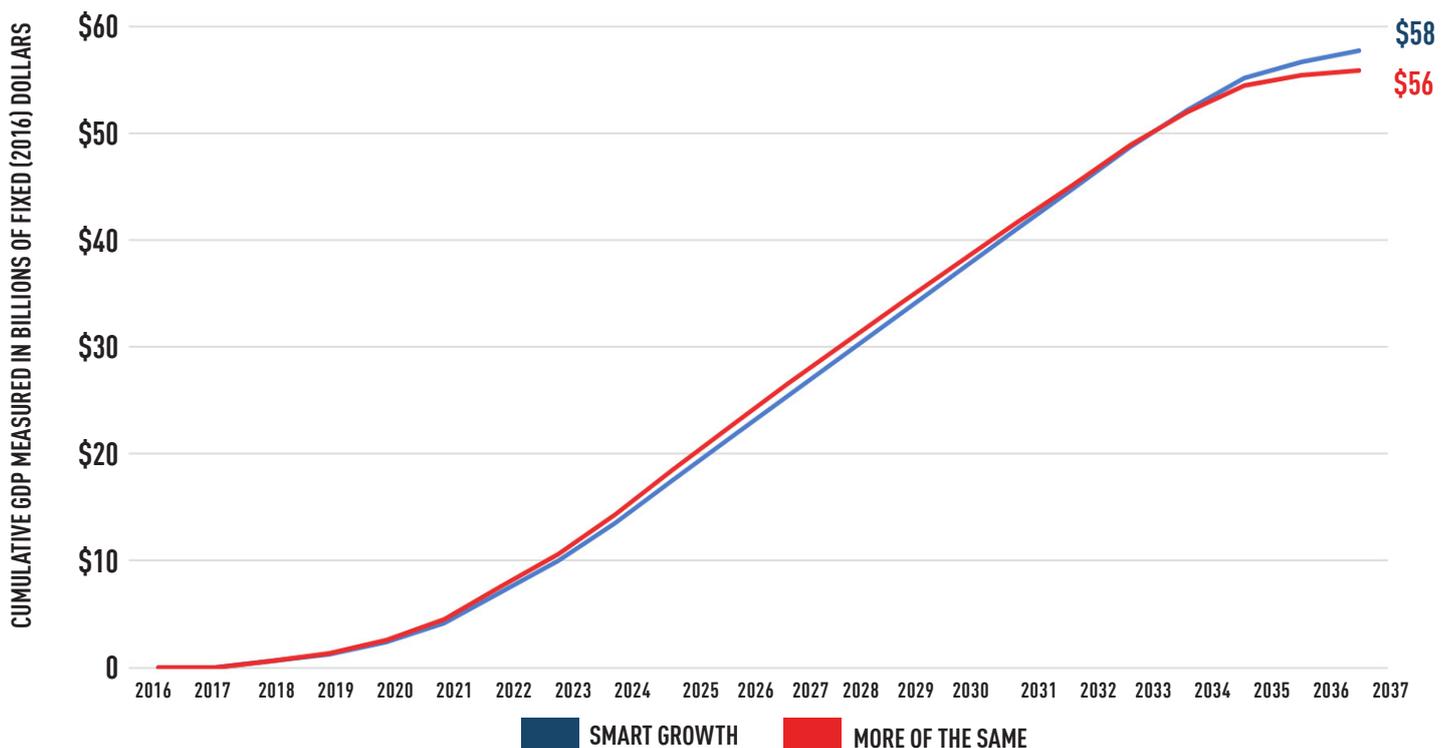
Additionally, the Smart Growth development approach provides more tax revenue-generating units while requiring less infrastructure. Because the Smart Growth scenario adds additional housing to the densest areas in transit corridors, it leverages existing infrastructure while providing more tax revenue per acre. Thus, development in the Smart Growth scenario requires fewer borrowing costs and places a smaller burden on local governments and property developers on a per-unit basis. With much of this infrastructure already in place, building density of this type in cities around the state would not require a radical restructuring of existing land-use and zoning policies.

Over the simulated 20-year period of housing production, the Smart Growth scenario generates \$58 billion in cumulative GSP, an increase of \$2 billion compared to the More of the Same scenario. With lower up-front infrastructure costs and reduced operating and maintenance costs associated with development, this scenario deploys capital more efficiently and produces higher economic output.

**Increased housing production reduces housing prices, which increases personal income and spending, which increases GDP, which creates more jobs.**



## OREGON CUMULATIVE GDP BY SCENARIO 20-YEAR PRODUCTION PERIOD COMPARED TO BASELINE



This chart demonstrates the cumulative GDP achieved in each of the growth scenarios. The growth in GDP is measured against the REMI model's baseline growth projections.

# REMI MODEL: ECONOMIC IMPACTS

The Smart Growth scenario produces greater economic benefits than the More of the Same approach. This scenario targets development in transit corridors: areas with existing transportation infrastructure and a large number of households commuting by public transit. Jobs are added to the economy in each year compared to the baseline over the

20-year production period for both scenarios. Jobs should not be thought of as cumulative impacts. It's not uncommon for one individual to be employed by the same company for several years, so it's difficult to trace the number of individuals employed year by year. Looking at employment impacts, however, we can see in a given year how many more jobs are supported compared to the baseline scenario. For example, at the peak job year, Smart Growth creates 47,200 more jobs than the REMI baseline projection.

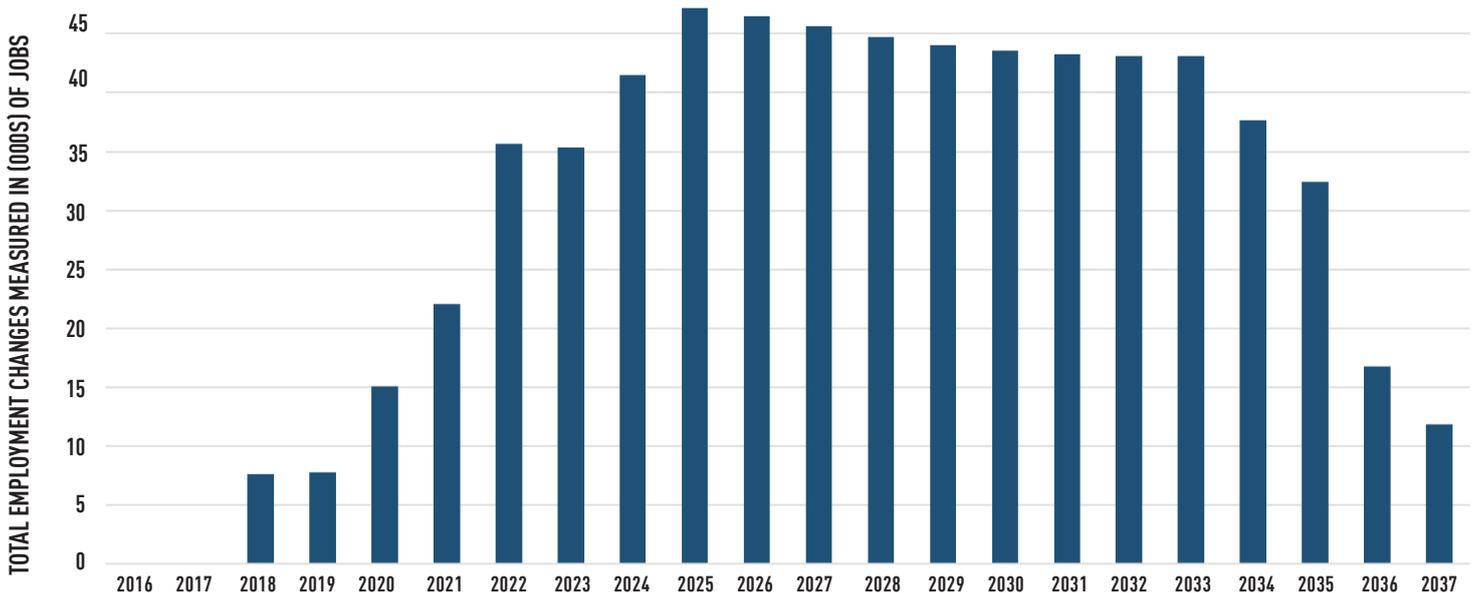


To summarize, both growth scenarios lead to large economic benefits for the state economy. Producing 155,000 housing units (in addition to expected development over the next 20 years) provides a boost to the state and local economies and fiscal revenues. However, there is opportunity for greater economic growth, fiscal health and positive environmental impacts by implementing a Smart Growth scenario that concentrates growth in areas of existing density and transportation infrastructure.

In short, increased housing production reduces housing prices, which increases personal income and spending, which increases GDP, which creates more jobs.



## ANNUAL OREGON JOBS IN SMART GROWTH 20-YEAR PRODUCTION PERIOD COMPARED TO BASELINE



This chart demonstrates the increase in “job years” above the REMI model baseline projections resulting from the Smart Growth scenarios. Job years are an economic measure representing one year’s worth of full-time work. One job year could be one person working full time for one year, or two people working half time for one year. The increases in jobs correlate with the 20-year development time frame and span every sector.

# FISCAL IMPACTS

The higher proportion of development occurring in towers and medium-density housing means that the Smart Growth scenario produces higher-value units compared to More of the Same, contributing to greater local and state revenues through higher property taxes.

As the graphic to the right demonstrates, over the 20 years of additional housing production the Smart Growth scenario generates \$5.03 billion in cumulative property tax revenue, compared to \$4.91 billion in the More of the Same scenario. This is an important finding because the ongoing operations and maintenance costs associated with infrastructure improvements are far greater for the More of the Same growth scenario, while producing lower property tax revenues compared to the Smart Growth strategy.

Oregon's tax code limits the value of new construction by applying a changed property ratio to newly constructed properties. For multifamily construction, this is often less than 50% of the Real Market Value calculated by a county assessor. Growth in property tax collection on an individual property is limited to 3% per year.

## CUMULATIVE OREGON STATE AND LOCAL REVENUE (BILLIONS FIXED, 2016)

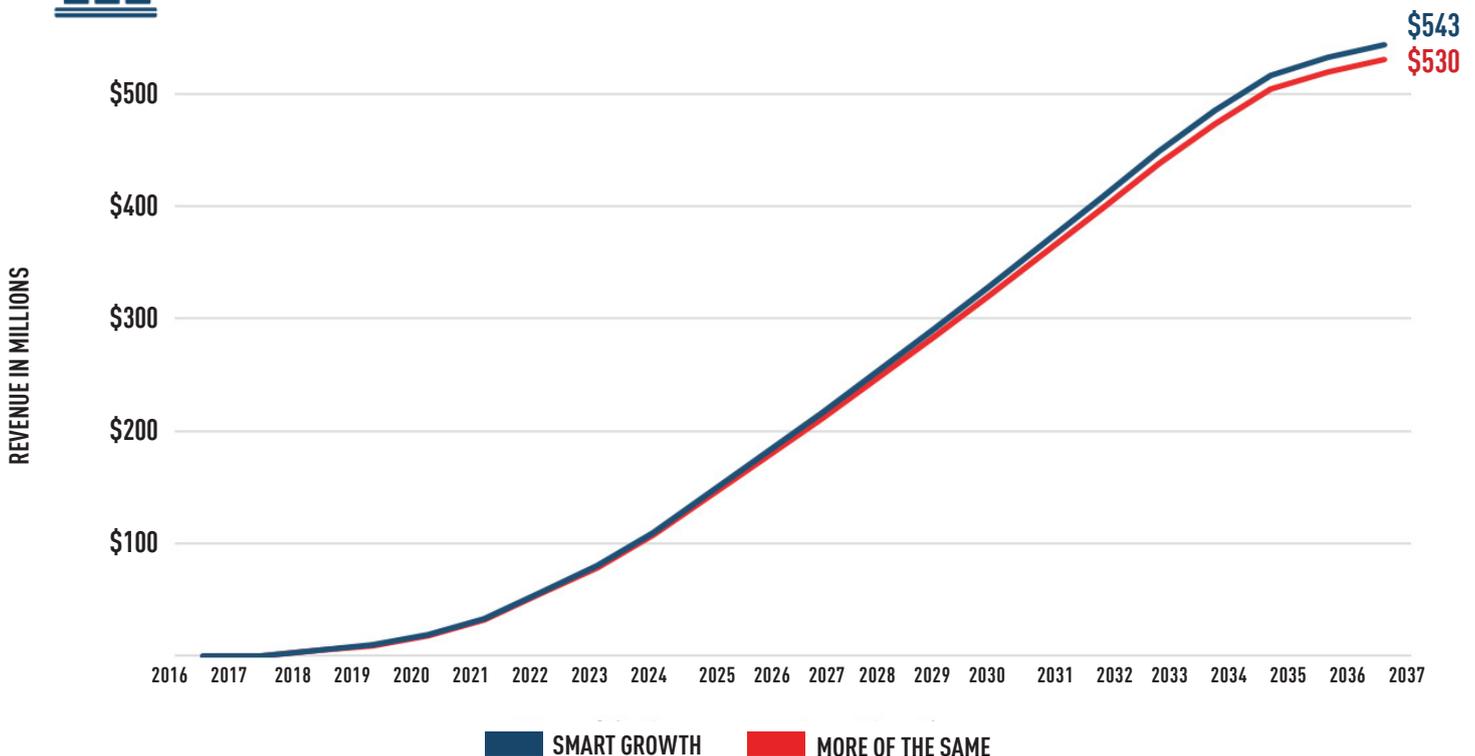


The red area represents cumulative property taxes, and the blue area represents personal income taxes. Corporate taxes and other federal revenue sources are not shown in these calculations.

The combination of these two limiting factors reduces the potential revenue. New construction generates new property tax revenue, but after investigating the net revenue impacts for local jurisdictions it is clear that the More of the Same scenario's revenues do not cover the cost of infrastructure installation, ongoing operations and maintenance.



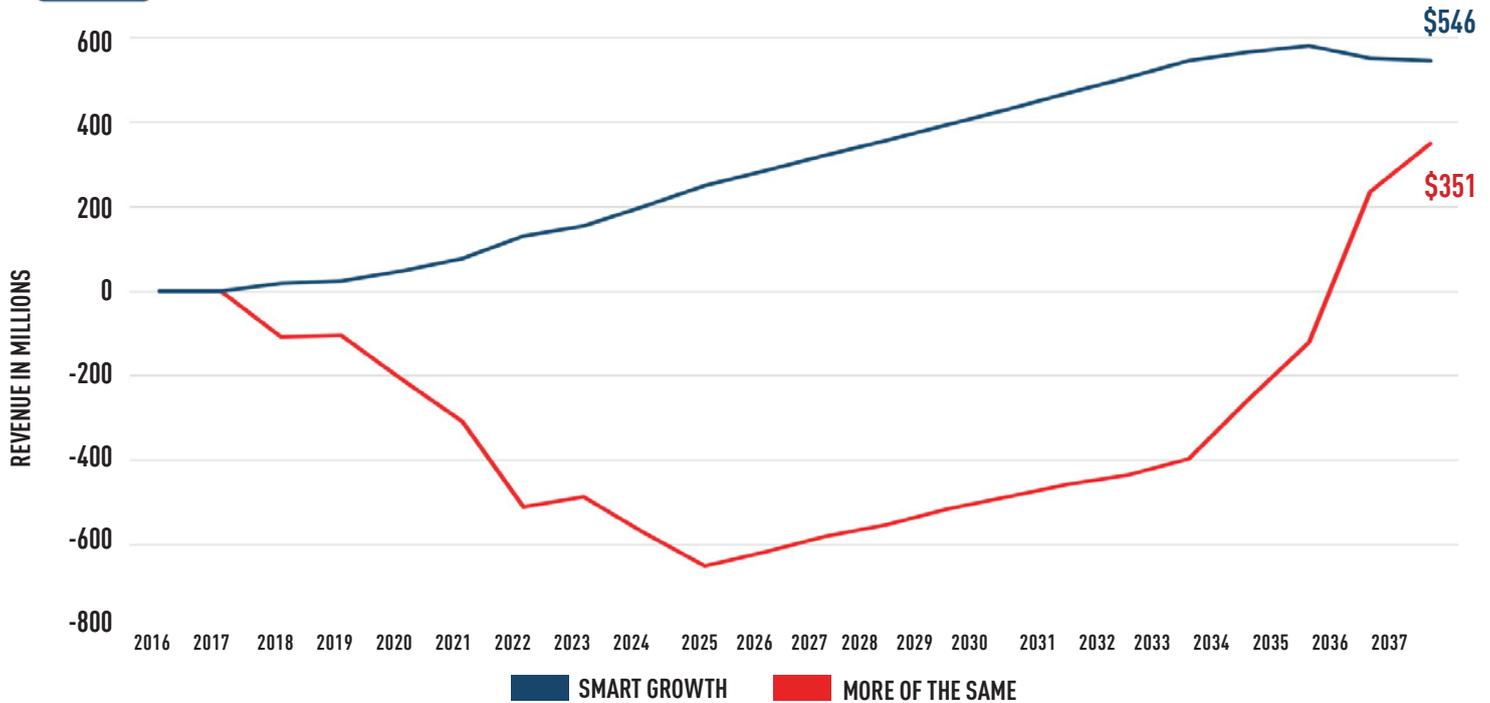
## ANNUAL OREGON PROPERTY TAX REVENUE



Property tax revenues are calculated in Oregon in constant 2017 dollars. The chart above displays the total property taxes generated annually through the 20-year production period. Revenue increases annually as more units are built and as the assessed value of the existing units increases.



## OREGON LOCAL NET FISCAL REVENUE



Net fiscal revenues are reported in constant 2017 dollars, where the total property taxes generated from the new units represents the total revenue. The cost of constructing the required infrastructure and the ongoing operations and maintenance is subtracted from the total revenue to equal the net revenue. As units are built in the More of the Same scenario, revenue is negative in every year through almost the entirety of the production period.

The Smart Growth and More of the Same scenarios generate similar amounts of fiscal revenue through property taxes. The net impact of the construction varies considerably — with Smart Growth delivering net positive income from the first unit built. Conversely, the More of the Same scenario yields net negative revenue through almost the entirety of the 20-year production period. While the fiscal revenues are positive in the last few years of production for the More of the Same scenario, the cumulative effect is still negative over the 20-year period.

Throughout the report, the benefits of Smart Growth are evaluated against the More of the Same approach. The economic impacts of both scenarios are similar, but stark differences emerge when looking at the environmental and fiscal impacts of each scenario. VMT in a Smart Growth approach would decline by up to 36%. In addition, while property tax revenues are similar for both approaches, this changes when the costs of infrastructure are considered. When including the cost of installing and maintaining infrastructure over time, it becomes clear that the More of the Same scenario is not financially sustainable.

Building all the underproduced housing units in a Smart Growth approach would require only 19% of the land area required by a More of the Same approach. Development via a More of the

Same approach cannot support the required infrastructure costs and would need to rely on debt to finance the growth. As a result, for almost the entire 20-year production period, resources must be diverted from other productive uses to fund development in a More of the Same approach. The cumulative fiscal impact of Smart Growth supports \$13.3 billion in additional net local revenue compared to More of the Same through 20 years of production.

	MORE OF THE SAME	SMART GROWTH	% OF TOTAL DIFFERENCE
TOTAL ACRES	16K	3K	-81%
TOTAL INFRA SPEND	\$15.7B	\$1.7B	-89%
TOTAL O&M	\$373M	\$70M	-81%
TOTAL SDC FEES	\$4.4B	\$3.2B	-27%
PROP TAX REVENUE	\$4.9B	\$5.0B	2%
NET REVENUE	-\$6.8B	\$6.4B	\$13.3B

# POLICY DISCUSSIONS AND CONCLUSIONS

Oregon is a wonderful place to live, and it has become a magnet for entrepreneurs, high-skilled workers and adventure-seekers alike. However, despite Oregon's increase in jobs, economic activity and new residents, housing production has clearly not kept up. As Governor Kate Brown noted in her recent Housing Agenda, Oregon must prioritize accelerating the growth of its housing supply. By focusing on increasing housing production today, Oregon can ensure it continues to provide an exceptional quality of life for the next generation.

As Up for Growth's Oregon analysis shows, we can achieve outsized economic, fiscal and environmental benefits through incentivizing the production of more housing near transportation and in high-opportunity, employment-rich locations. However, bold policy and political actions are needed to make this happen.

At a time when many local governments find themselves paralyzed from making meaningful reforms by a loud but vocal minority motivated to protect and preserve an unsustainable status quo, a leadership opportunity is created for state officials to speak directly and substantively about the need to adopt pragmatic solutions to a growing crisis.

Policies that reduce the cost of delivery for new units increase the overall production of housing, which will help Oregon build out of its current 155,000-unit housing shortage and increase affordability across the income spectrum. In addition, it is clear that a Smart Growth development approach will yield outsized economic, fiscal and environmental benefits.



1



## PROMOTE MISSING MIDDLE HOUSING

Missing middle housing, such as duplexes, triplexes, quads and cottage clusters, can be built in high-opportunity single-family neighborhoods and have the benefit of being delivered at a lower cost per unit than the existing stock of housing. Require that Oregon cities allow, as a right, the construction of missing middle housing.

2



## RECALIBRATE IMPACT FEES

Enable local governments to set impact and development fees on a per-acre, gross land or square-foot basis, rather than a per-unit basis, to more accurately reflect true infrastructure costs for residential projects. This will enable higher-density projects to be financially feasible.

3



## INCREASE CERTAINTY IN RESIDENTIAL DEVELOPMENT

Empower the Oregon Department of Land Conservation and Development to audit Oregon cities for adherence to statewide laws requiring clear and objective standards in approving needed housing and meeting existing permitting timelines.

4



## UPZONE TO ALLOWED HEIGHTS NEAR TRANSIT

Establish zoning that allows high-density residential development in a half-mile radius around high-capacity transit station areas to build up to the allowed height without additional review or approvals, and within a quarter-mile of frequent-service/rapid-service transit lines.



**UP FOR GROWTH**  
*- national coalition -*