HOUSING UNDERPRODUCTION IN WASHINGTON STATE

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

UP FOR GROWTH®

WHO WE ARE

UP FOR GROWTH®

Up for Growth is a 501(c)(3) organization that represents a vibrant, diverse, and growing coalition of stakeholders who believe that communities should grow for the benefit of every person. Our mission is to improve equitable, environmental and economic health through strategies that enable vibrant, walkable communities to build housing close to jobs, transportation and 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.

ADVISORY BOARD:

Up for Growth's Advisory Board comprises leading experts across the housing spectrum, drawn from leaders in accounting, finance, academia, planning, development, and law. The purpose of the Advisory Board is to review and offer feedback on Up for Growth's research agenda.

While the Advisory Board's contributions to the organization are invaluable, it should be noted that research released by Up for Growth and reviewed by the Advisory Board is not necessarily reflective of the views of any individual member or their organizations, and should not be characterized as such. In addition, Advisory Board members serve in their own capacities and independently of the organizations and institutions they represent.

AUTHORS:

Madeline Baron

Marley Buchman

Mike Kingsella

Randall Pozdena, Ph.D.

Michael Wilkerson, Ph.D.

Melissa Winkler

ACKNOWLEDGMENTS:

Up for Growth

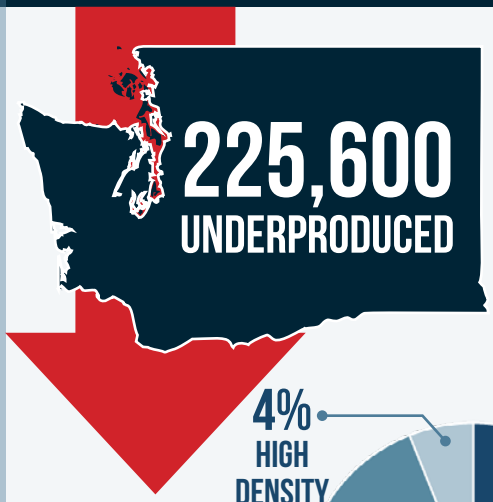
ECONorthwest

1875 K Street NW, 4th Floor, Washington, DC 20006
Phone: 202.716.2064 | Twitter: @Up4Growth
www.upforgrowth.org

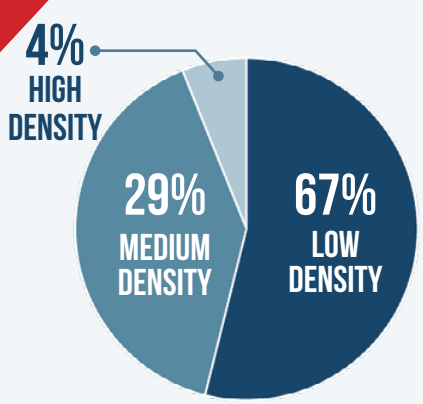
Printed January 2020

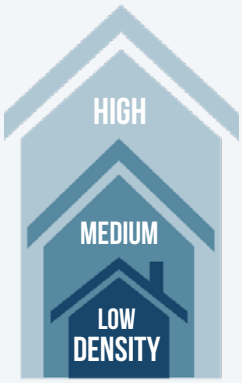
CONTENTS

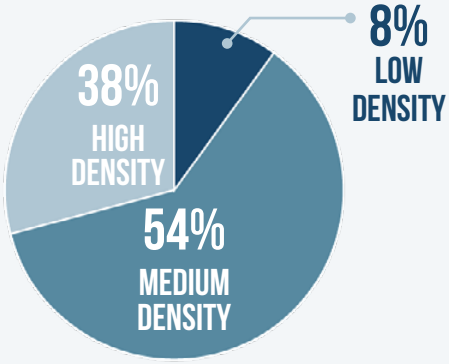
EXECUTIVE SUMMARY



From 2000 to 2015 Washington state underproduced housing by approximately 225,600 units, or roughly 7.5% 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 in communities across the state.



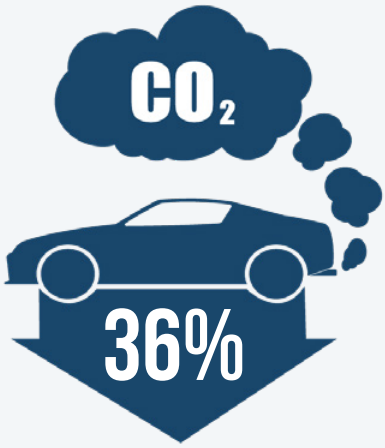




MORE OF THE SAME GROWTH PATTERN

ACCESSIBLE GROWTH PATTERN

If housing development in Washington continues its current pattern with More of the Same growth, 67% of the 225,600 new housing units would be single-family homes, while 29% would be "missing middle" (such as accessory dwelling units, duplex, triplex, and quad homes, or courtyard style apartments) and medium-density (podium apartments), and 4% would be in residential apartment towers. This report's scenario-based investigation of development growth potential found that if these 225,600 units were instead developed in an Accessible Growth pattern — building to higher-density inside transit corridors and leveraging existing infrastructure — 8% of the new units would be single-family homes, while 54% would fall under the "missing middle" and medium-density category, and 38% would be high-density residential.

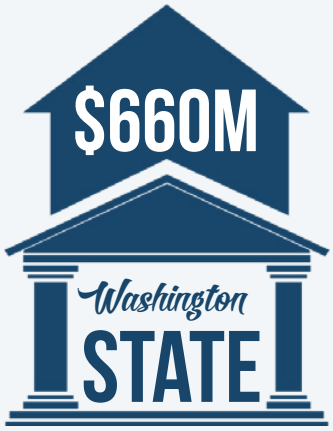


CLEAR SKIES AHEAD

Shifting from current development patterns to an Accessible Growth scenario uses just 12% of the land to deliver the same number of units. These areas would be denser, transit-adjacent, and near employment centers, which could reduce vehicle miles traveled by as much as 36%.

GSP BOOST

Using an Accessible Growth development pattern, cumulative Gross State Product (GSP) increases by $25 billion over a 20-year period compared to a More of the Same growth pattern — delivering a total of $103 billion in cumulative GSP over a baseline forecast.



TAX REVENUE BENEFITS

Building these units in an Accessible Growth development pattern would generate an additional $660 million in state revenue (via sales tax and business and occupation tax) compared to More of the Same development over the 20-year growth period.

Washington State is entering its tenth year of solid economic growth, buoyed by strong population growth with new residents seeking jobs, education, and economic opportunities. However, the housing market has not kept up with growing demand, and many communities are reeling from a housing crisis with significant quality-of-life impacts. Challenges stemming 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 Bellingham to Vancouver. In addition, rural areas and smaller towns in Washington are struggling to attract new housing development and to provide housing for households at all income levels.

After the global financial crisis and housing market crash in 2008, housing production in many places took years to recover from the historic lows and credit freeze of the recession. While the market was recovering, many Washington cities experienced strong in-migration; generational preferences and household demographics shifted toward walkable, urban housing near transit and amenities; and competition for housing intensified. The resulting imbalance in supply and demand for urban, walkable housing led to rapidly rising rents and home prices, increases in homelessness, and economic displacement of lower-income families and communities of color.

While the current supply and demand imbalance was exacerbated by the 2008-2009 recession, in the Seattle-Tacoma metropolitan area and other western portions of the state, it reflects a decades-long trend: restrictive local development and land-use policies motivated by opposition to high-density, affordable, or multi-family housing development in favor of low-density, single-family homes. Local, anti-growth 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 young households and those earning less than the median income, while home values have risen largely for older, wealthier households who already own homes in these areas.

In the Seattle-Tacoma metropolitan area, limitations on new housing construction have translated into economic pain for thousands of households in and around the region. In 2017, 48% of all Seattle metropolitan statistical area (MSA) renters paid more than 30% of their incomes on housing, and HUD's biannual count of people experiencing homelessness in King County increased 15% from the prior year. News articles have highlighted families doubled-up or living in their vehicles and those who were pushed to the outer edges of the region in search of more affordable housing. Additionally, the Washington State Department of Transportation noted that vehicle miles traveled on the five major Puget Sound highways increased almost 2% from 2015 to 2017.

Some of the barriers to increasing housing production include:

- Zoning restrictions, biased against high-density sites, that prevent adding "missing middle" units in single-family neighborhoods;
- Escalating and misaligned fee structures, such as impact and linkage fees;
- Poorly calibrated inclusionary housing requirements;
- Lengthy review processes that invite gaming and abuse by growth opponents.

Removing these artificial barriers to housing production in Washington's highest-opportunity areas will ease the economic and environmental pain felt by thousands of households across the state. Overcoming the destructive narrative that new housing overburdens schools, strains city finances, and makes traffic worse will require a public conversation that focuses on the benefits of delivering units as cost-effectively as possible in areas residents want to live in. The findings in this report emphasize the need to enact new public-private solutions that increase the supply and reduce the cost of new housing in Washington's urban centers.

Because Washington residents place a high premium on protecting forestland and farmland, the state must make the best use of the land inside each growth boundary. The Accessible Growth scenario in this report describes what is possible by reducing limitations on development and constructing dense, new housing around transit corridors: narrowing the gap between supply and demand; leveraging existing roadway and sewer infrastructure and thereby reducing infrastructure costs for local governments; and housing people near jobs, transit, and in high opportunity neighborhoods. Focusing on developing "missing middle" and medium-density housing in underutilized sites and in transit corridors can reduce transportation costs for households while creating net-positive fiscal revenue for local governments. It also adds density in single-family neighborhoods through accessory dwelling units (ADUs), quads and garden-style apartments to increase density in walkable, high-opportunity areas. ■

COST BURDENING

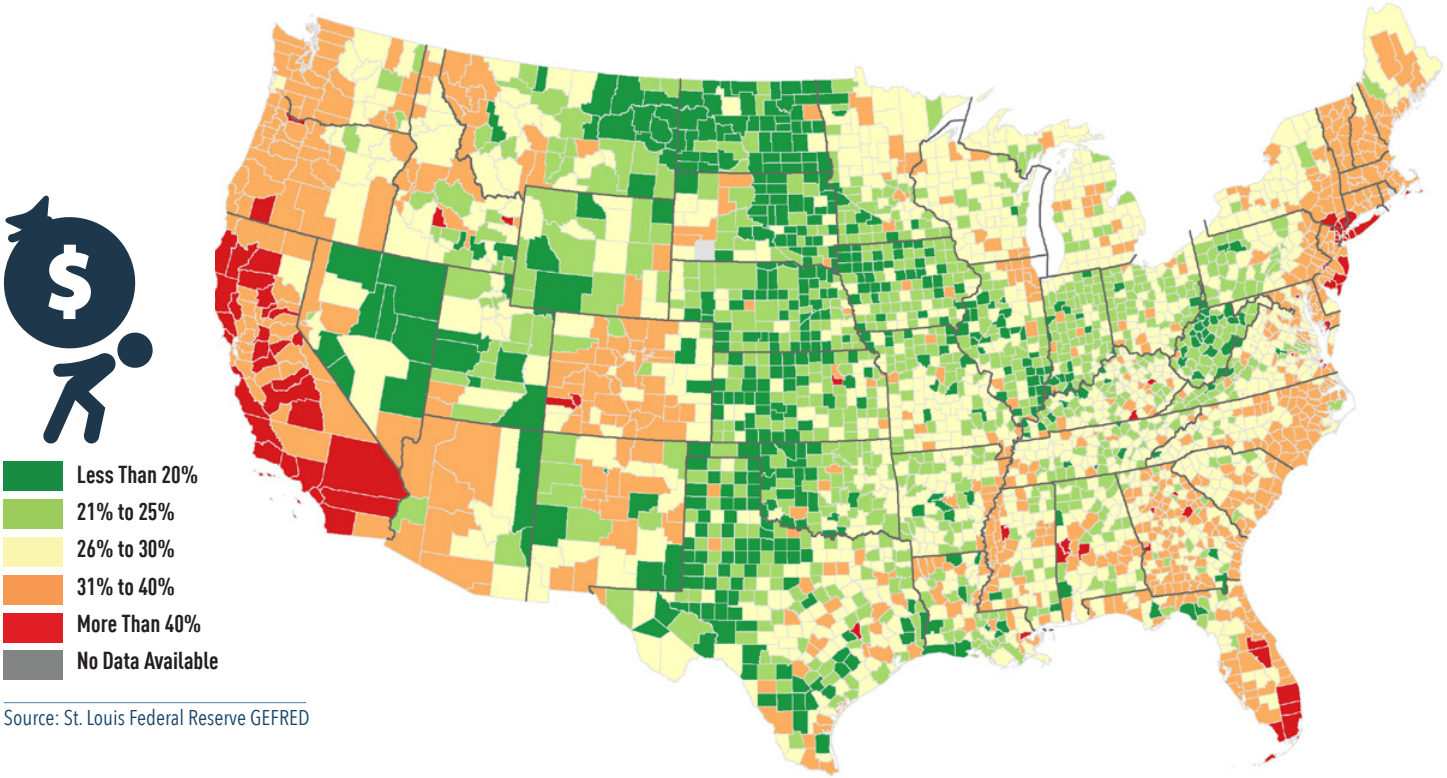
High housing cost burdens occur when incomes lag behind rapidly rising rents and housing prices due to supply shortfalls. Although incomes have begun to rise in recent years, they were stagnant for several decades — while housing costs increased at much higher rates. This divergence has led to increased cost burdening rates across the state.

In every county in Washington at least 21% of households experienced high cost burdening in 2017, and in the majority of counties, more than 30% of households were cost burdened.

High spending on housing reduces funds available for other family necessities, such as food, medical services, transportation, childcare, and emergencies. Many Washington households are just one emergency — perhaps an unexpected car repair or medical bill — away from eviction or job loss. In addition, point-in-time counts in Washington show that the number of households experiencing homelessness statewide increased almost 16% from 2017-2019, as more people become priced out of their already precarious living situations. This instability is detrimental to job stability and to children's educational outcomes. Access to safe, affordable housing sets the foundation for economic mobility.

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 complementary uses, such as office, industrial, or hospitality development, 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 growth, and is therefore not conducting a policy analysis to determine the effectiveness of individual policies to affect an increase in housing production. This is an important area for future study. ■

PERCENT OF HOUSEHOLDS THAT SPEND MORE THAN 30% OF GROSS INCOME ON HOUSING, 2017



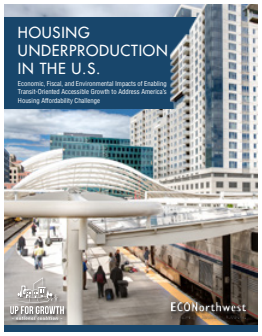
Source: St. Louis Federal Reserve GEFRED

COST BURDENING

Households are considered "cost-burdened" when they spend more than 30% of their gross income on housing expenses (not including transportation costs). While it is a commonly used 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 discretionary income after paying for housing, transportation, childcare, and medical expenses.

NATIONAL HOUSING UNDERPRODUCTION

Up for Growth's national report on housing underproduction was released in April 2018 and highlights the economic, political and social consequences of housing underproduction caused by inefficient land-use policies and overly burdensome regulations. It also demonstrates the potential economic, environmental, and fiscal benefits that could occur if housing development shifted from the status quo to an Accessible Growth pattern, similar to the one detailed in the following pages.



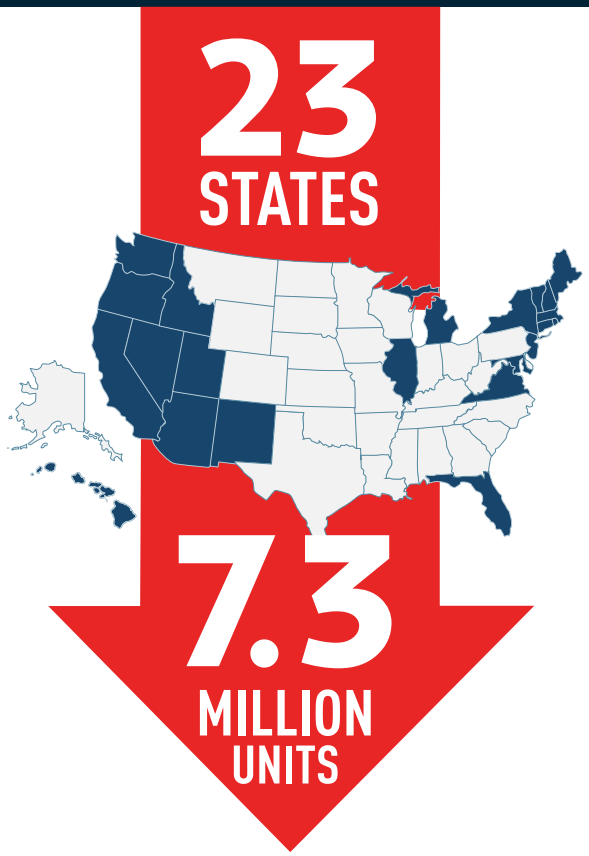
The report calculates the total number of units underproduced on a national level from 2000 to 2015 by using an econometric statistical model to estimate each state's historic relationship between the production of housing units and a host of demand-side indicators. It approximates each state's baseline housing production through 2000 and forecasts the number of units that would have been produced in 2015 if each market maintained the historical national average (supply elasticity). 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 finds 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.

DATA INPUTS TO THE MODEL INCLUDE:

- HOME PRICES
- POPULATION
- INCOME
- HOUSING STOCK

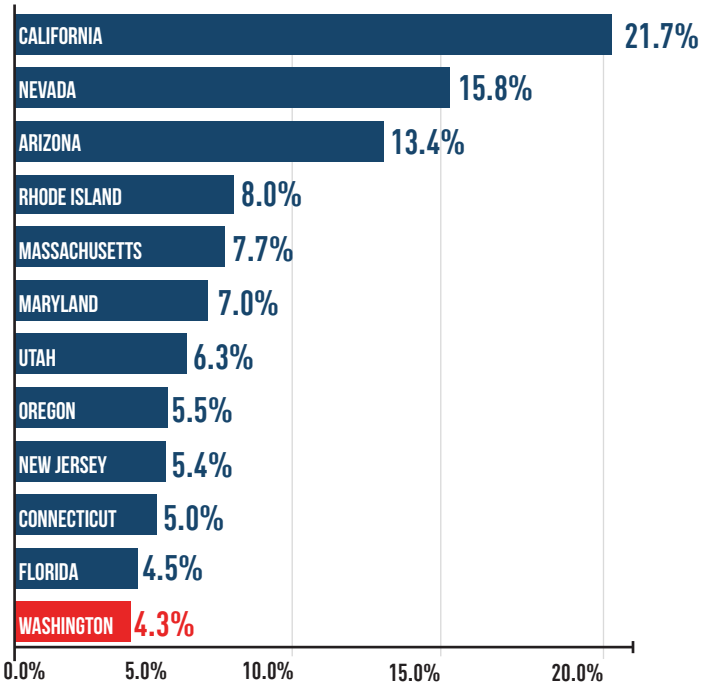
The data needed to replicate the national report's methodology for Washington are not available for smaller units of geography (such as counties). Recognizing that housing markets are regional and need to be examined locally (rather than at the state level), this report offers three different methods to evaluate the imbalance in supply and demand at the county level, which are detailed on pages 8 through 11. 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. ■



225,600 WA UNITS UNDERPRODUCED

NUMBER OF NATIONAL HOUSING UNITS UNDERPRODUCED FROM 2000-2015

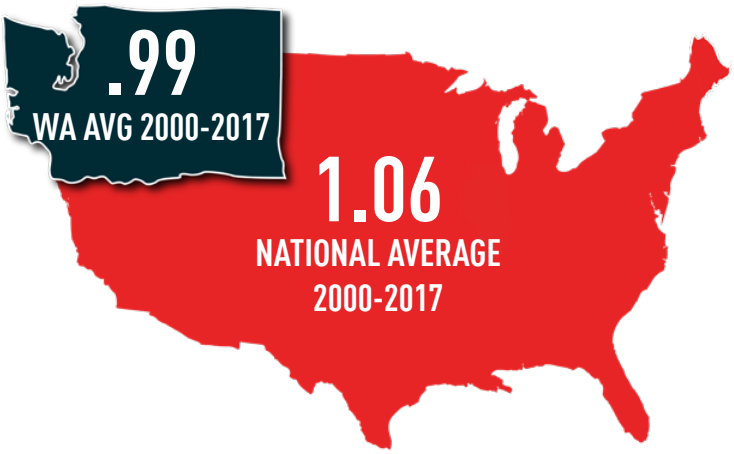
ESTIMATED REDUCTION IN STATEWIDE HOME PRICES IF ALL UNITS PRODUCED OVER 20 YEARS*



*The chart above displays the states with the largest price reductions associated with developing their underproduced housing over the 20-year growth period. For example, if 225,600 units were built in Washington over the next 20 years, prices would be 4.3% lower than they would have been absent this additional production of units. This does not mean that prices would be reduced from current levels, but that prices would be lower in the future than they would have been due to the increase in the number of housing units.

HOUSING UNDERPRODUCTION

RATIO OF HOUSING STARTS TO HOUSEHOLD FORMATION



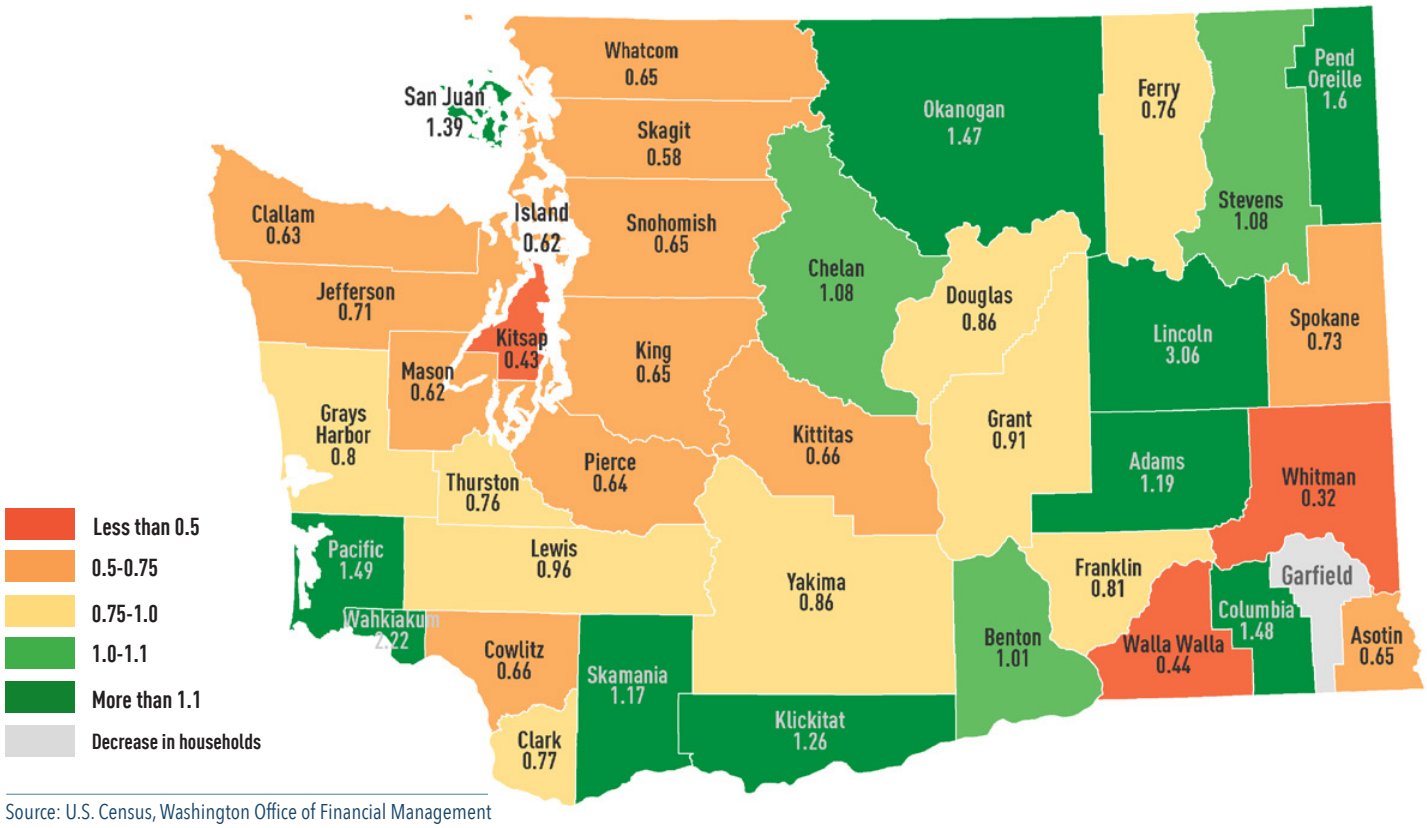
At its most basic level, a functioning housing market needs to produce at least one new housing unit for each new household formed. When factoring in demolition, second homes, changing consumer preferences, and the deterioration of the existing housing stock, this ratio actually needs to be higher than one-to-one. Nationally, the historic ratio (from about 1960 to 2017) has been closer to 1.1 housing units for every new household formed.

It is difficult to determine the appropriate ratio of housing production to household formation for a given market, because the variables are related (otherwise known in economics as "endogenous"). This means that the rate of housing production influences the rate of household formation and vice versa.

Despite the complicated relationship, this simple ratio can be a helpful guidepost for measuring underproduction. Using this measure, it is clear that Washington State has underproduced. From 2000-2017, the state produced only 0.99 units for every household formed, including the building boom, subsequent bust, and most recent increase in housing construction. Although this time period includes the building boom in the run up to the housing market crash, this rate of production falls short of the national benchmark by 11 units per 100 households.

During the recovery from the housing market crash — from 2010 to 2017 — housing production fell further behind household formation. Although it may seem like development is thriving in some areas, many counties are still not producing enough housing to meet new household growth. Over this time period, only 10 of 39 counties produced more than 1.1 units per new household. The map below lists the ratio by county from 2010 to 2017 — statewide 68 units were produced for every 100 households formed.

COUNTY-LEVEL RATIO OF HOUSING UNITS VS. HOUSEHOLD FORMATION (2010-2017)



Source: U.S. Census, Washington Office of Financial Management

Washington's robust and growing economy has been fueled by strong population growth. Simultaneously, however, an increasing number of households are leaving the state in search of more affordable housing options. Across Washington, two themes have emerged: 1) highly populated urban centers have seen home prices grow to an unsustainable level while, 2) exurban and suburban areas have grown with households seeking more affordable housing. This imbalance leads to transportation and environmental challenges as households are pushed farther away from jobs, education, and economic opportunities.

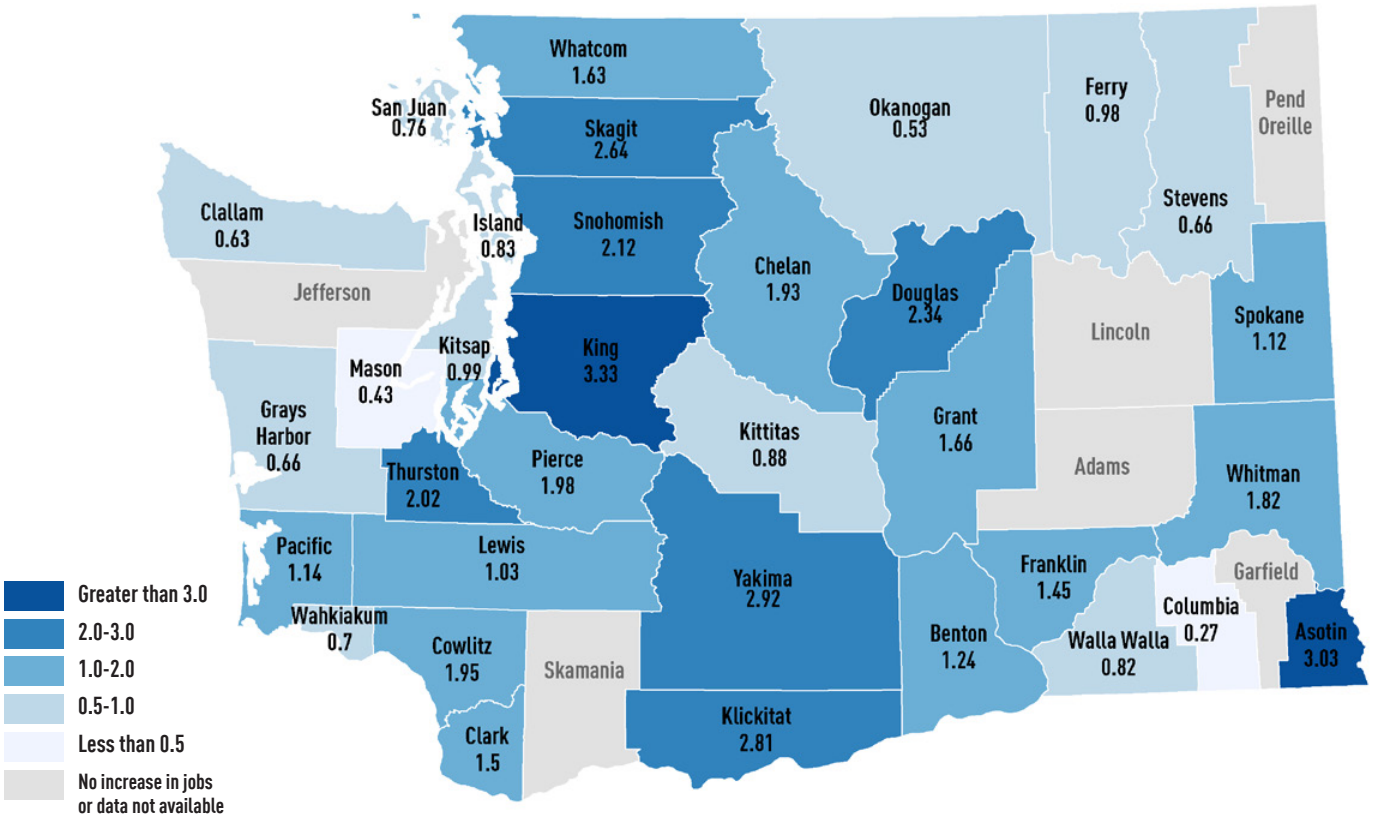
Prior to the Great Recession, the statewide ratio of primary jobs (which is different than total jobs because it does not double count secondary or multiple part-time jobs, so is a good measure of people with jobs) to housing units was about one to one. More recently, the state has been adding jobs and attracting newcomers at a greater rate: from 2010 to 2017, the state added 2.24 primary jobs for every new housing unit.

Given the complex relationships of regional economies throughout the state, it is not realistic to assume a perfect balance of jobs and housing will occur in any area. Not every person desires to live in the county where they work. This is certainly the case in the high population centers where regional economies straddle multiple counties. However, regional imbalances between job growth and housing unit production can cause problems for housing affordability as workers compete for limited housing, for traffic as commuters drive for housing, and for emissions as congestion worsens, among other issues. Workers filling new jobs need some place to live.

The map below displays the location of employment (rather than the workers' locations of residence), which is helpful in understanding the transportation and environmental impacts of an imbalance between jobs and housing. Some areas saw less job growth than housing production (ratios below 1.0) while others — like King County — saw far more new jobs than new housing (more than 3.3).

In counties with large imbalances, rents and home prices have rapidly increased and have even surpassed the previous housing bubble's peak prices. If these ratios worsen in the short run, substantive policy interventions may be necessary to bring the ratio of jobs-to-units back into longer-term equilibrium. ■

COUNTY-LEVEL RATIO OF JOBS CREATED VS. HOUSING UNITS PRODUCED (2010-2017)



Source: Washington Office of Financial Management, U.S. Census Bureau LEHD Origin-Destination Employment Statistics (LODES)

DISTRIBUTING UNDERPRODUCTION

The 225,600 units underproduced since 2000 represent the need for a mix of housing — ownership and rental — that are affordable to a range of incomes. The econometric model used to calculate this underproduction relies on statewide data and does not differentiate underproduction based on location *within the state*, nor underproduction by price or income level.

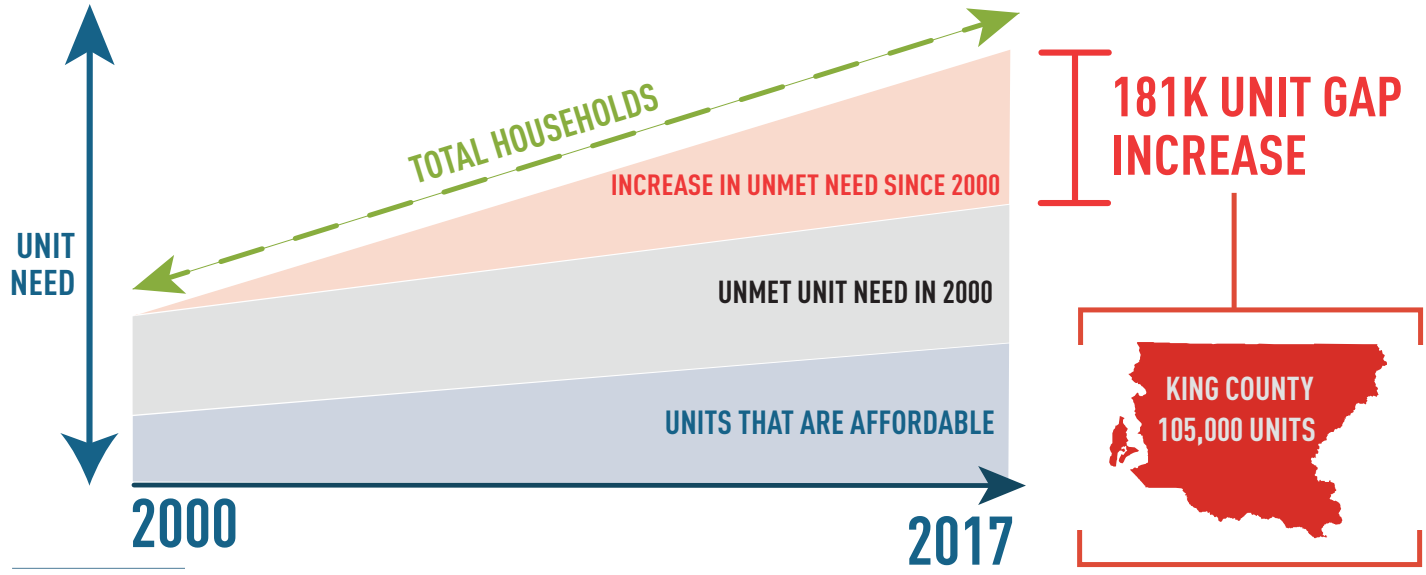
While underproduction at the state level can help inform the order of magnitude of needed housing, more geographic specificity is required to create nuanced policy solutions. The previous two county-level maps showing household formation and job creation versus housing production provide a good starting place to understand which counties experienced the most underproduction.

To evaluate housing need by income and location, the following approach measures the change over time in the number of households at different Area Median Incomes (AMI) and the change in the number of units affordable to those AMIs. If housing markets were in equilibrium, the change in the number of households should roughly correspond to a similar change in the number of units. However, due to the mechanisms of development feasibility requiring rents high enough to offset the costs of borrowing and construction, most markets do not operate in equilibrium and therefore do not provide enough housing at the lowest income levels to meet the demand.

Using American Community Survey (ACS) county-level data from the Census Bureau, this analysis evaluated the change from 2000 to 2017 in the number of households by AMI level

and the number of units that are affordable to rent at the corresponding AMI levels (assuming households pay 30% of gross income on housing costs). Because housing prices and rents in Washington State have increased faster than incomes over time, the prevalence of cost burdening has increased. This analysis focuses on low- and moderate-income (80% or less of AMI) renter households because they have been priced out of many housing markets, as demand outpaced production pushing prices upward. Quantifying the gap in housing that is affordable at other income levels would be preferred (such as renter households making 0-30% of AMI or 30-60% of AMI). Unfortunately, the data does not permit the ability to accurately distinguish need for these additional groups due to margins of error in the data for small geographies.

CHANGE IN RENTAL UNITS AND RENTER HOUSEHOLDS EARNING LESS THAN 80% AMI IN WASHINGTON STATE



Source: ECONorthwest

This approach finds that many counties throughout the state did not produce enough units affordable to renter households earning 80% or less of AMI to meet the growing number of households in these income brackets. Since 2000, the state underproduced 181,000 rental units for households earning 80% or less of AMI relative to the increase in the number of households formed in these income levels.

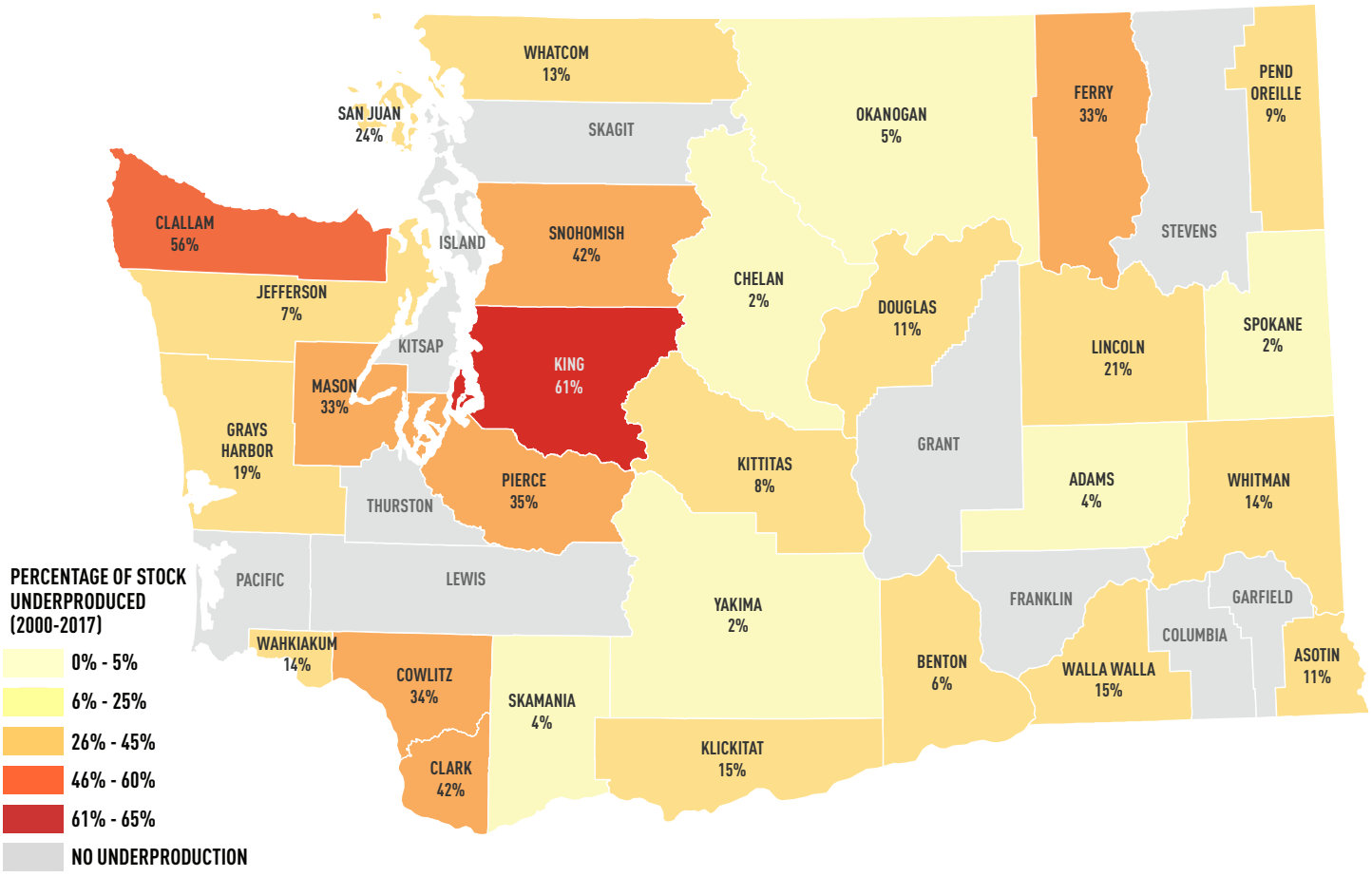
These 181,000 units are equivalent to about 80% of the 225,600 units underproduced statewide over the 2000-2015 time period. The remaining 20% are a mix of ownership product and workforce rental units affordable to households earning more than 80% of AMI.

The chart on the prior page shows the variation between the number of households formed (80% AMI and below) and the number of units that are affordable to this income group for each county. The calculated 181,000 units are not representative of total need, but rather the increase in need since 2000 for individual counties statewide.

Urban counties with the highest populations throughout the state account for the majority of the underproduced rental units for households earning less than 80% of AMI. To represent the need for units in counties with vastly different populations, the map below shows the underproduced rental housing as a share of the total renter households earning less than 80% in 2017.

For example, based on this analysis there were 105,000 units underproduced in King County. There were 223,400 renter households earning less than 80% of AMI in 2017, so the underproduced units are equivalent to about 61% of all renter households. This analysis demonstrates the need for more rental units available to households earning less than 80% of AMI in the most populous areas of the state. ■

UNITS UNDERPRODUCED FROM 2000 TO 2017 AS A PERCENT OF TOTAL RENTER HOUSEHOLDS EARNING BELOW 80% AMI



The shaded colors represent each county's shortage of housing for households earning at or below 80% of AMI as a percent of the total number of households at or below 80% of AMI.

Source: U.S. Census, Washington Office of Financial Management

DISTRIBUTING NEW GROWTH: TWO SCENARIOS

These three different methods for calculating the underproduction of housing (1. The national estimate using a statistical model; 2., The ratio of housing starts to household formation; and, 3., The rate of change in households earning at or below 80% AMI and the units affordable to them) all demonstrate the same trend: Washington State has not produced enough housing since 2000 to meet demand in different counties and at different income levels.

Given three different lenses into Washington's housing underproduction, the rest of this report analyzes two potential development scenarios that quantify how the 225,600 statewide housing units could be developed if there were fewer land use regulatory barriers in place.

The report constructs two development 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, which favors detached single-family homes. The report then compares the economic, fiscal, and environmental impacts associated with the two development patterns. The report finds that continuing to build the same types of units in the same location is unlikely to provide a feasible solution that delivers a range of housing units along the entire income spectrum of households.

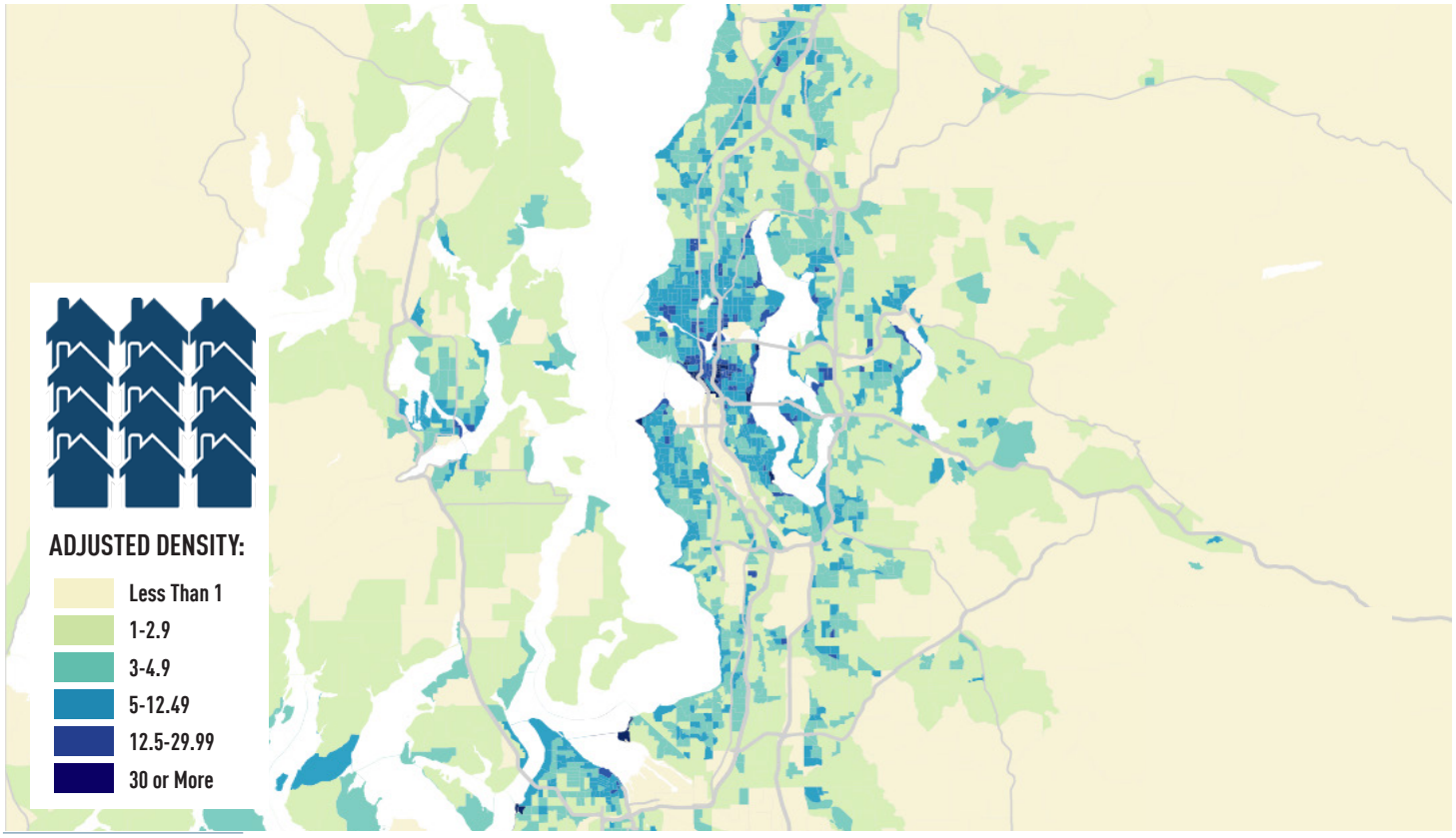
The two development scenarios are:

- A **More of the Same** approach distributes housing and density as they have been in the past, compared to
- An **Accessible 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. The differences lie in the varied building prototypes — single-family homes, "missing middle" and medium-density housing, and residential towers — that would be produced in each scenario (See pages 14-15 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."

HOUSING UNITS PER ACRE (ADJUSTED FOR BUILDABLE LAND), SEATTLE METRO AREA



Source: NLCD 2011, U.S. Census

DISTRIBUTING NEW GROWTH: TWO SCENARIOS

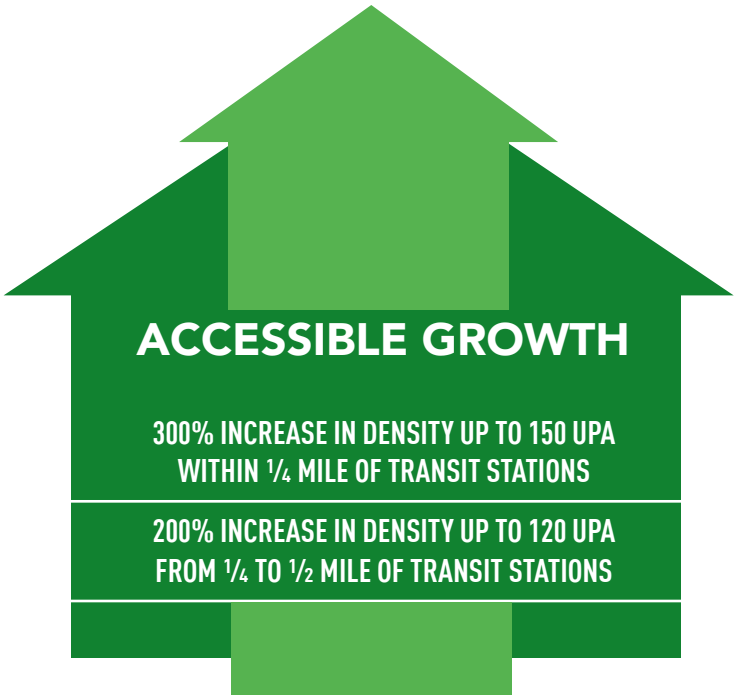
To take advantage of existing infrastructure and to avoid increasing the footprint of land required to accommodate additional units, new development is not added in areas with density below one UPA. The map on the prior page shows the existing adjusted housing density for the Seattle Metro Area.

MORE OF THE SAME GROWTH The More of the Same Growth scenario looks at the current share of single-family homes, "missing middle" and medium-density units, and high-rise towers across the state, and assigns new growth proportionally above the threshold of one UPA. For example, if the state has only 5% of dwelling units in high-rise towers, it will get 5% of new growth as high-rise towers. Building prototype proportions are estimated using the matrix on page 15, which uses examples from the existing built environment and block group densities from 2010 to determine the estimated mix (See page 15 for more details on prototype selection).

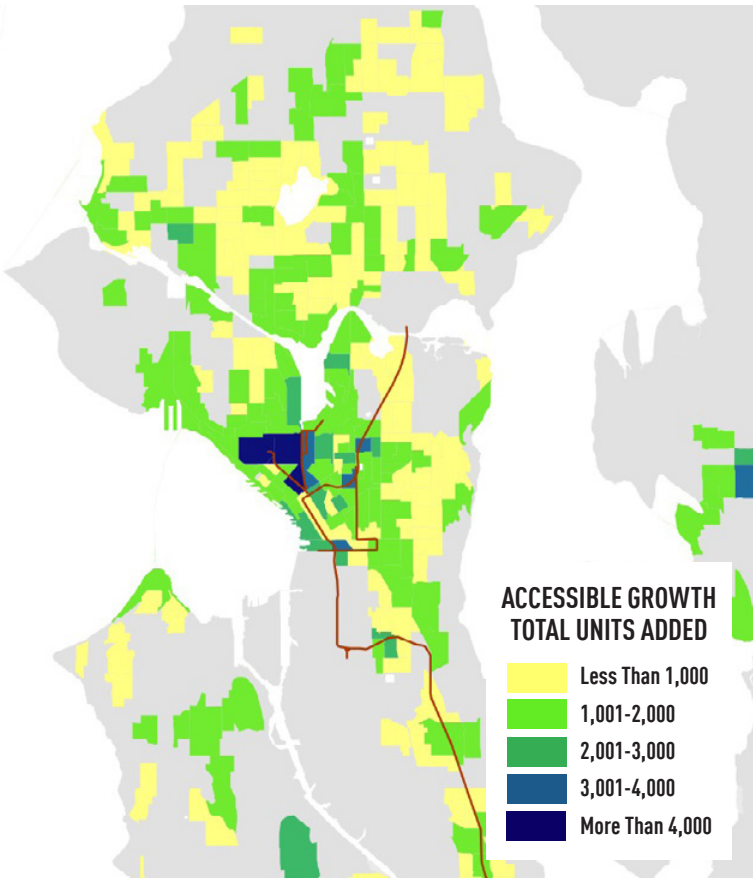
ACCESSIBLE GROWTH The Accessible Growth scenario assigns new housing units based on a formula of existing density, distance to transit stops, and the share of commuters in the census block group who drive their own vehicles to work. The goal of the Accessible Growth scenario is to increase density in 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 Traveled (VMT) and the number of cars on the road. In order to achieve these goals, unit distribution was prioritized in:

1. Locations within a quarter mile of existing transit stations;
2. Locations within a half mile of a high-capacity transit station;
3. 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 16 and 17).

The majority of units (77%) were assigned within one mile of transit stations due to the low share of private vehicle commuters. Throughout Washington state, 57% of units were located within a half mile of stations, and 39% of units were within a quarter mile of transit stations. To achieve higher densities in priority areas, the addition of new units could triple existing density within the first quarter mile of transit stations (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). ■



SEATTLE ACCESSIBLE GROWTH SCENARIO



This map displays where new units would be built in Seattle under an Accessible Growth scenario. As the map demonstrates, new housing units are distributed near high-capacity transit areas and in areas that already have high-density 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 minimize neighborhood opposition, where adding new high-density housing units in block groups with mostly single-family homes would drastically change 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 matrix on page 15). 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 15 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 in this area 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 Accessible 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 15 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 only minor infrastructure investment compared to fringe and greenfield developments.
- Building near transit infrastructure reduces vehicle miles traveled (VMT) and emissions (See discussion on page 16).
- "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. These units can also be well-integrated into existing neighborhoods.
- Obtaining better balance between jobs and housing improves agglomeration benefits and reduces the traffic congestion in a region.

DENSITY DISTRIBUTION & PROTOTYPE MATRIX

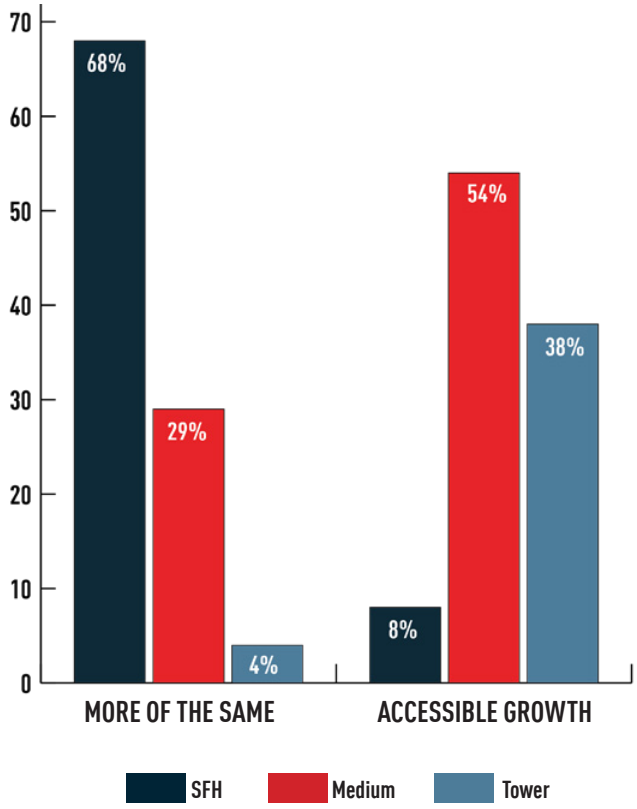
CURRENT DENSITY	% TOWER	% MEDIUM	% SFH
30.0+ Units per acre	100%		
12.5-30 Units per acre	50%	50%	
5.0-12.5 Units per acre		100%	
3.0-5.0 Units per acre		25%	75%
1.0-3.0 Units per acre			100%
Less Than 1.0 UPA	Development Threshold - No Density Added		

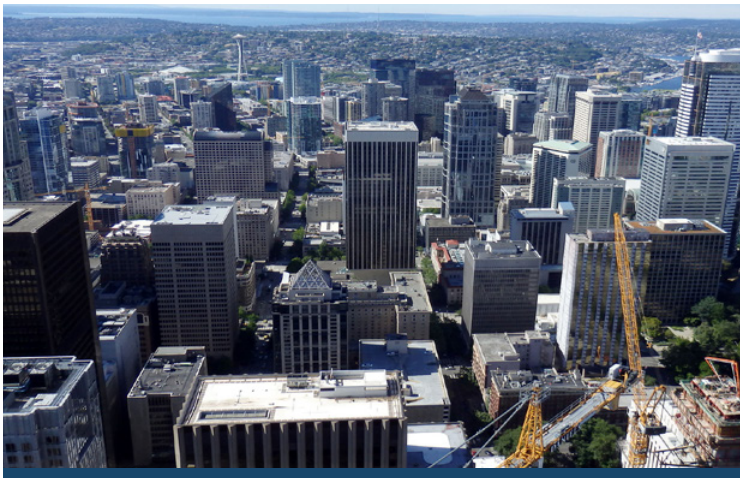
The table above shows the prototype distribution for the Accessible Growth scenario. Block groups with more than 30 UPA see 100% of new units added in towers, until they reach the density threshold for that scenario based on the location of the block group. The scenario distribution then moves to the next-densest block group and adds units in a 50% tower and 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 what is 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, 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 Washington state would deliver 68% of new units as single-family homes. Under the Accessible Growth scenario, single-family homes would be reduced to just 8% of newly produced units. Accessible Growth focuses on delivering more "missing middle" units, increasing these units to 54%, as opposed to just 29% in a More of the Same approach. ■

WASHINGTON PROTOTYPE DISTRIBUTION BY GROWTH SCENARIO





UPA = 150 —100% TOWER

UPA = 30 — 50% MEDIUM/50% TOWER

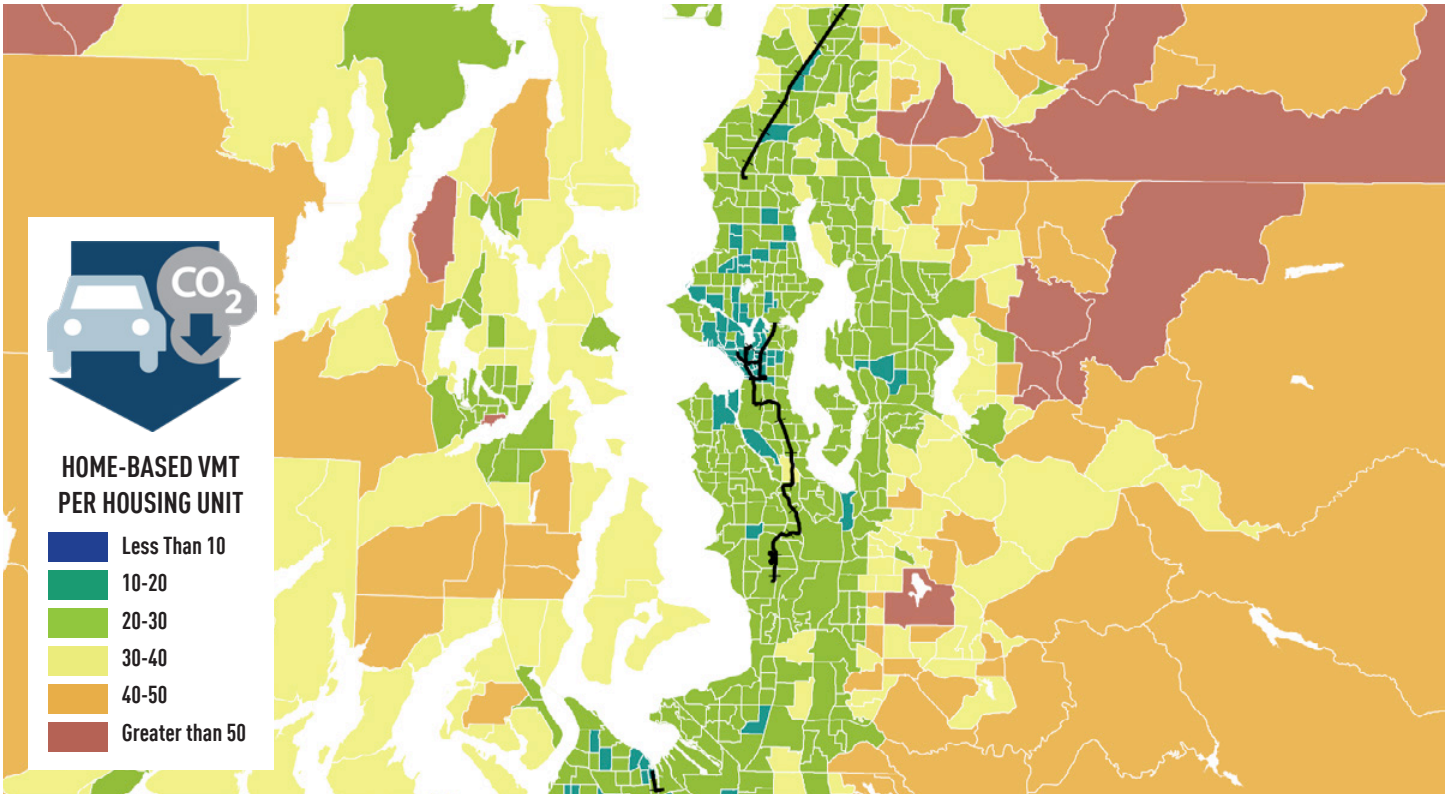
ENVIRONMENTAL IMPACTS

The goal of the Accessible Growth scenario is to generate more high-density, transit-oriented housing while improving economic, fiscal, and environmental impacts compared to the More of the Same scenario. The Accessible Growth scenario, therefore, prioritizes assigning unit growth in existing high-density areas in transit corridors. At its most basic level, Accessible Growth achieves higher density than current housing development patterns, and therefore requires less land to accommodate the same number of units. In Washington, Accessible Growth requires just 12% of the land area needed in 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 land for forestry and farming.

In addition to land-use benefits, locating housing near public transportation reduces the burden of cars on the road. To quantify the benefits of locating 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. The study finds 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 17.

The map below shows commuting VMT for the Seattle Area, with transit stations overlaid. The green and blue areas near transit demonstrate where Accessible Growth units would be prioritized for distribution. These areas have very low VMTs of about 10 miles. By prioritizing housing in areas with transit and low VMTs, the Accessible Growth scenario would result in 2.3 million fewer miles traveled daily for commuters compared to the More of the Same scenario. This difference is equivalent to 74,000 fewer cars on the road annually.

ENVIRONMENTAL IMPACT OF ACCESSIBLE GROWTH: LOWER VEHICLE MILES TRAVELED



The Accessible Growth approach has the largest increase in transit corridor density. With the relationship between VMT and commute mode split clearly demonstrated, increasing density in transit corridors would be an important 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 Washington 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 16 VMT and 29 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 eight units per acre compared to two 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 Accessible Growth strategy has numerous benefits beyond increasing Gross State Product, jobs, tax revenues and housing density. The Accessible Growth strategy also delivers meaningful environmental benefits compared to the More of the Same housing development pattern. ■

ACCESSIBLE GROWTH BENEFITS

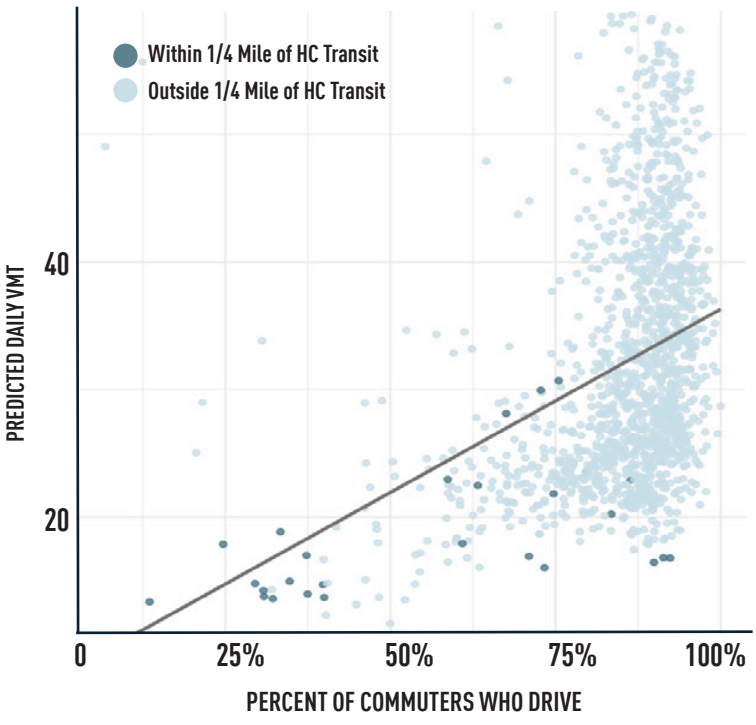
225,600 UNITS PRODUCED IN WASHINGTON

	VMT PER DAY	CARS PER YEAR
DIFFERENCE	2.3 MILLION (36% REDUCTION)	74,195

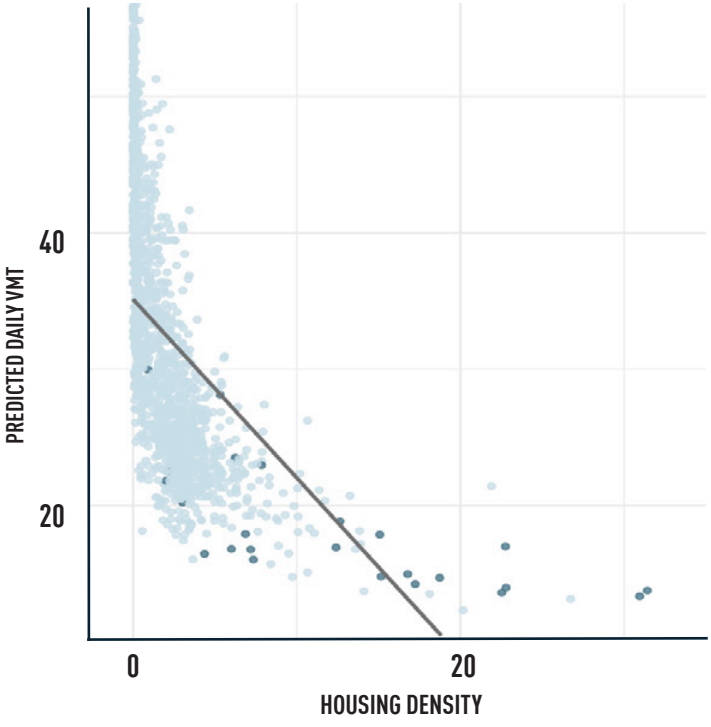
IN THE PUGET-SOUND AREA

	MEDIAN HOUSING DENSITY	99TH % HOUSING DENSITY
OUTSIDE 1/4 MILE	1.5	11.3
WITHIN 1/4 MILE	7.9	52.2
	MEDIAN VMT	**99TH % VMT**
OUTSIDE 1/4 MILE	29.7	58.9
WITHIN 1/4 MILE	16.9	30.5

RELATIONSHIP BETWEEN COMMUTERS WHO DRIVE AND PREDICTED VMT IN WASHINGTON



RELATIONSHIP BETWEEN HOUSING DENSITY AND PREDICTED VMT IN WASHINGTON



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."

COMPARING GROWTH SCENARIO IMPACTS

	MORE OF THE SAME	ACCESSIBLE GROWTH	% OF TOTAL DIFFERENCE
TOTAL ACRES	22K	3K	-88%
TOTAL INFRA SPEND	22.5B	1.50B	-93%
TOTAL OPERATIONS & MAINTENANCE	528M	64M	-88%

Infrastructure is needed to make greenfield development possible, but the cost of infrastructure limits the ability to develop in these "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 even farther from urban cores.

Cities and local governments have reacted to 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 recurring incremental revenues cover the continued public operations and maintenance costs of this new infrastructure?

The short answer to both questions is 'no,' particularly for low-density housing in greenfield locations that requires new infrastructure. Because infrastructure costs for a single-family home typically exceed the local government revenues collected from 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 existing roads, sewers, and other infrastructure.

Continuing to build new housing units away from the existing infrastructure in urban cores not only fails to remedy the problem, it exacerbates it. Consequently, 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 developing new infrastructure to the associated fee revenues from that development. 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, and infrastructure costs must rise to cover the costs of ongoing operations and maintenance.

Cities now face unfunded operating liabilities that will require new units to bring in more revenues to cover the associated costs of installing and operating the infrastructure that services 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 and support density.

This report demonstrates that changing development patterns for the 225,600 units that were underproduced in Washington state can have positive effects for local government infrastructure funding. If these units are built in an Accessible Growth pattern, 88% less land would be needed compared to building in a More of the Same approach (2,700 acres compared with 22,300 acres). Furthermore, the cost of infrastructure is 15 times smaller in the Accessible Growth approach — $1.5 billion compared with $22.5 billion in the More of the Same approach. ■

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 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 contains 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, and more.

The Accessible Growth scenario produces a substantial boost to economic growth: A housing expansion under this scenario would produce a $102 billion cumulative increase in Washington GSP through 2037 compared to the baseline economic forecast.

ASSUMPTIONS

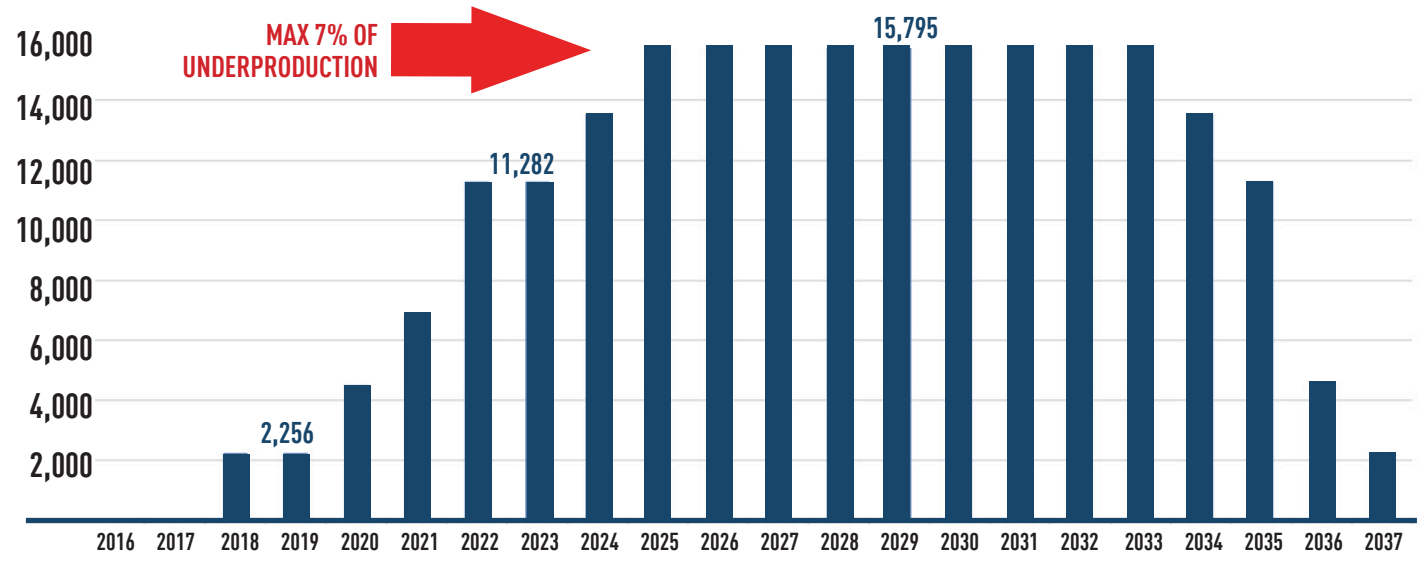
HARD CONSTRUCTION COSTS Calculated based on industry standards for the three different housing prototypes and varied across each state.

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 impact fees estimated by state. Assumes government sector pays for infrastructure not covered by impact fees, through bond issuance.

SOURCE: Arup Engineering based on real data from developments in California, adjusted regionally.

ADDITIONAL HOUSING PRODUCTION PER YEAR



The model phases in new housing development over a 20-year period beginning in 2018 since underproduction was calculated through 2015. It is not reasonable 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.

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 225,600 units in Washington State via either the Accessible Growth or the More of the Same approach.

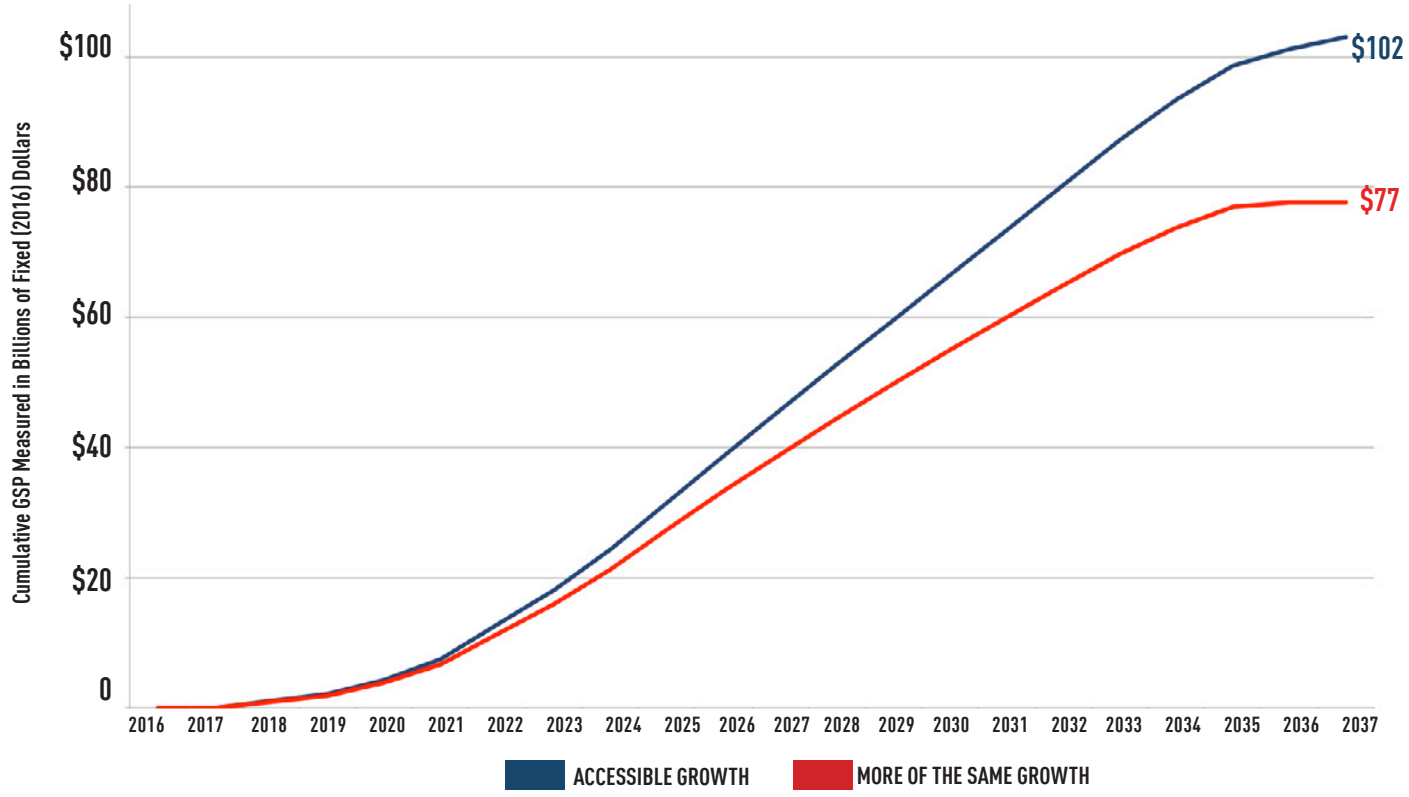
The Accessible Growth scenario generates greater economic benefits compared to the More of the Same scenario. Rather than generating debt to finance infrastructure costs, leveraging existing infrastructure is a far more efficient use of scarce resources. By doing this, the Accessible Growth pattern focuses on generating consumer spending to benefit the regional economy.

Additionally, the Accessible Growth development approach provides more tax revenue-generating units while requiring less infrastructure. Because the Accessible 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 Accessible 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.

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

Over the simulated 20-year period of housing production, the Accessible Growth scenario generates $25 billion more in cumulative GSP ($102 billion) compared to a More of the Same scenario ($77 billion). 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.

WASHINGTON CUMULATIVE GROSS STATE PRODUCT BY SCENARIO
20-YEAR PRODUCTION PERIOD COMPARED TO REMI BASELINE FORECAST



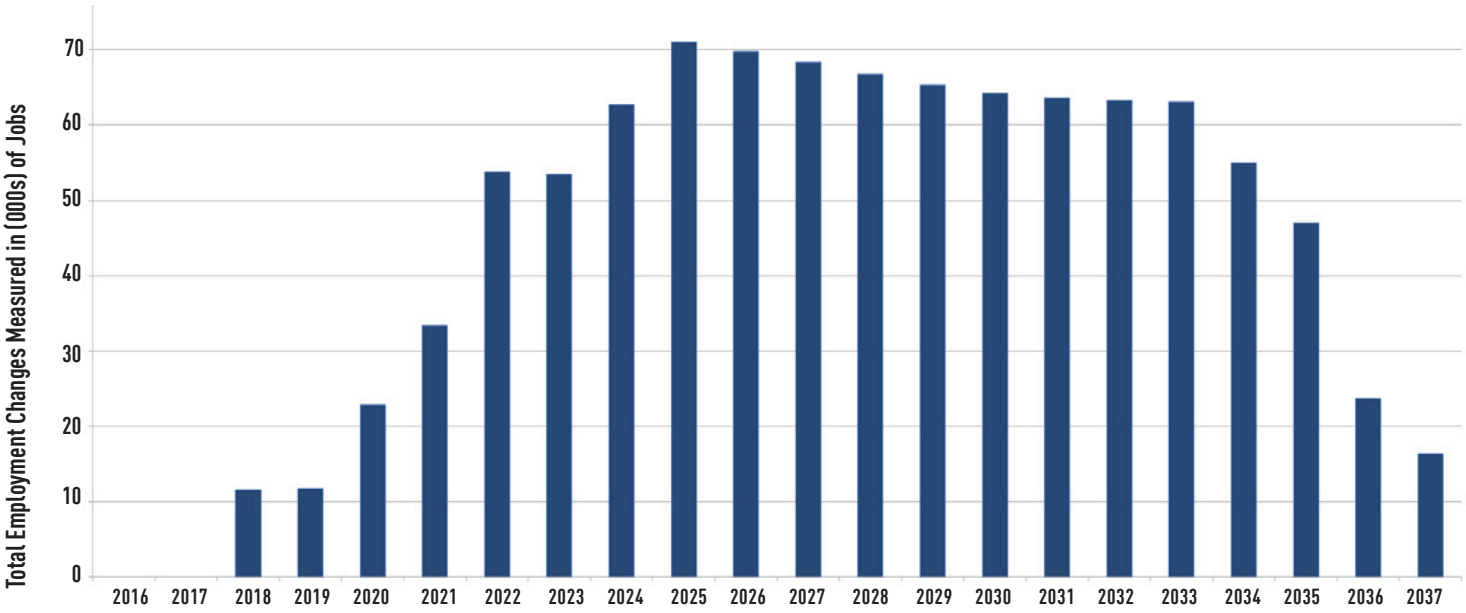
This chart demonstrates the cumulative GSP achieved in each of the growth scenarios. The growth in GSP is measured against the REMI model's baseline forecast.

The Accessible 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).

As the 225,600 underproduced housing units are built over the 20-year growth period in each scenario, more jobs are added to the economy above the REMI model's baseline forecast. 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, one can see how many additional jobs are supported in the Accessible Growth development scenario compared to the model's baseline forecast in each year of the production period. For example, at the peak job year (2025), Accessible Growth creates 71,000 more jobs than the REMI baseline forecast, while the More of the Same scenario only generates 65,000.

To summarize, both growth scenarios lead to large economic benefits for the state economy compared to the REMI baseline forecast. Producing 225,600 housing units (in addition to expected development over the next 20 years) provides a boost to state and local economies and fiscal revenues. However, there is opportunity for greater economic growth, fiscal health, and environmental benefits by implementing an Accessible Growth development scenario that distributes the new growth in areas with existing density and transportation infrastructure. ■

ACCESSIBLE GROWTH ANNUAL INCREASE IN JOBS STATEWIDE
20-YEAR PRODUCTION PERIOD COMPARED TO REMI BASELINE FORECAST



This chart demonstrates the increase in "job years" above the REMI model baseline projections resulting from the Accessible Growth scenario. 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.

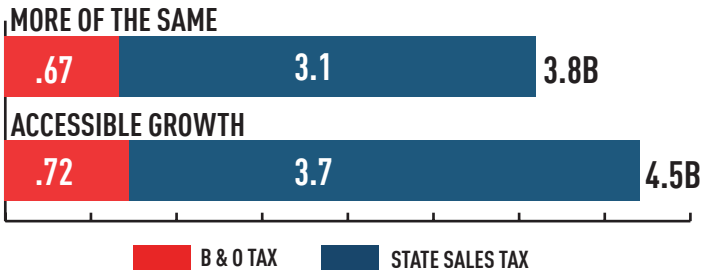
FISCAL IMPACTS

Throughout this report, the benefits of the Accessible Growth alternative 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 fiscal impacts of each scenario.

The location and type of construction of the Accessible Growth scenario contribute to greater local and state revenues via higher property tax, Business and Occupancy (B & O) tax, and sales tax. Over the 20 year production period, this means an additional $1 billion in cumulative property tax revenues in the Accessible Growth scenario compared to the More of the Same scenario. Accessible Growth also generates more B & O tax and sales tax revenues through the 20-year production period, generating nearly $700 million of additional state revenue compared to the More of the Same approach.

WASHINGTON STATE REVENUE

CUMULATIVE 20-YEAR PRODUCTION BILLIONS FIXED, 2016



The red represents cumulative business and occupation (B & O) tax, and the blue area represents total sales taxes. Corporate taxes and other federal revenue sources are not shown in these calculations.

The Infrastructure Spending section on page 18 describes the costs and revenues associated with installing the infrastructure required in each growth scenario. The chart below evaluates the net *fiscal impacts* of each scenario — combining property tax revenues with impact fee revenues and subtracting infrastructure spending and the ongoing operations and maintenance costs.

While the two growth scenarios generate roughly the same in local government revenues, the Accessible Growth scenario requires 93% less local government spending over the 20 year development period, due to less upfront infrastructure installation costs and less ongoing Operations and Maintenance (O & M) costs. With such high upfront and ongoing infrastructure costs, revenues generated from the More of the Same approach are insufficient, and local governments would need to continue to rely on debt to finance this type of growth.

In order to determine the incremental impact of new development, the cost of constructing the required infrastructure and the ongoing operations and maintenance costs are subtracted from the total revenue generated by the new development. Although the More of the Same approach generates more impact fees, these increased fees do not nearly cover the required infrastructure investments to support this type of low-density growth. Accessible Growth is able to leverage existing infrastructure to limit installation costs and O & M costs while adding additional revenue. The result is a net-positive fiscal impact for Accessible Growth, providing local governments with the revenue needed to continue investing in services to attract and support growth. ■

COMPARING SCENARIO IMPACTS

		MORE OF THE SAME	ACCESSIBLE GROWTH	% OF TOTAL DIFFERENCE
LOCAL GOVERNMENT REVENUES	Total Impact Fees	$3.1B	$2.1B	-31%
	Property Tax Revenue (20 Yrs.)	$6.3B	$7.3B	15%
	TOTAL	$9.4B	$9.4B	-0.2%
LOCAL GOVERNMENT EXPENDITURES	Total Infrastructure Spend	$22.5B	$1.5B	-93%
	Total O & M Spend	$528M	$64M	-88%
	TOTAL	$23.0B	$1.6B	-93%
NET REVENUE (REVENUES – EXPENDITURES)		($13.7B)	$7.7B	N/A

POLICY DISCUSSIONS AND CONCLUSIONS

Washington has seen robust job and population growth as entrepreneurs, high-skilled workers, and businesses flock to the state. With the increase in jobs, economic activity, and new residents, innovative policies are needed inside urban areas to maximize access to affordable homes so that Washington maintains its high quality of life for the next generation.

Beyond conversations about subsidized housing, housing policy and land-use decisions have largely been left to local governments. 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 unfair and unsustainable status quo, a leadership opportunity has emerged for state officials to speak directly and substantively about the need for novel solutions to a growing crisis.

In the end, solving the housing crisis will require a reimagining of how state and local investments can help make population- and job-centers more accessible to people and families across the income spectrum. This reimagining relies on local jurisdictions having access to new resources that will allow them to meet their housing needs in new ways.

Partnerships between the public and private sectors can bolster local jurisdictions' motivation to make the needed changes in their land-use regulations and turbocharge private-sector production of more housing where it is needed most.

Achieving the right balance of incentives to bring down artificially inflated development costs of new housing in urban centers can help ensure more units are built affordably. Cities can incentivize housing production to meet demand, and the state can incentivize cities to utilize a set of tools that allow them to do so without forfeiting their ability to meet their environmental and fiscal obligations.

Policy concepts include:

- Creating incentives for localities to produce more private sector housing in under-developed, high-opportunity areas;
- Implementing clear and objective state development standards in high-opportunity areas — especially those near transit centers;
- Providing for planned-action, area-wide environmental review in the permitting process;
- Impact fee reform that allows municipalities flexibility when charging fees on denser development while at the same time continuing to realize revenue to fund ongoing maintenance liabilities and environmental mitigation;
- Providing support to local jurisdictions to broaden permissiveness of building and operating additional dwelling units in single-family-zoned neighborhoods.

The table below is a four-pronged policy prescription for achieving higher densities and more housing units, through smarter growth in transit corridors and urban infill development. ■

1. INCREASE AND EXPAND FUNDING FOR AFFORDABLE HOUSING

Appropriate more dollars to existing resources like the statewide housing trust fund, expand proven tools like the Multifamily Tax Exemption (MFTE) to enable more mixed-income housing production, and develop new revenue sources and programs to significantly expand resources for affordable housing.

2. ZONING REFORM

Advance statewide policy that advances sensible zoning and land use policy reform and that aligns, supports, and encourages local efforts to reduce or eliminate artificial barriers that unnecessarily raise the costs of housing production.

3.REGIONAL PLANNING AND ACCOUNTABILITY

Support local governments in regional planning to accommodate growth and forecasted housing needs for everyone in the community. Establish a methodology for regional housing targets and create accountability and enforcement mechanisms.

4. PUBLIC-PRIVATE PARTNERSHIPS

Develop new tools, programs, and partnerships that enable denser and more affordable housing production. Establish mechanisms such as value capture, land banking, and community land trusts to ensure equitable community growth.

UP FOR GROWTH®