

CO₂ REDUCTION THROUGH BETTER URBAN DESIGN: PORTLAND'S STORY

Eliot Rose and Rex Burkholder

Americans are driving more than ever, and for longer distances. Total vehicle miles traveled (VMT) are growing at 2.5 times the rate of population growth. (Ewing, 2007, p. 3) If current trends continue, the United States (U.S.) will gain 114 million new citizens by the year 2030, with each person driving 16 more miles per day than today. (DOT, 2006; Ewing, 2007, p. 3) According to conventional reasoning, this growth in automobile use is a reflection of consumer choice. Americans simply prefer the independence and personal space provided by automobiles, as well as the access to suburban, large-lot housing that they provide. However, Americans' relationship with automobiles is not a love affair, but a result of signals sent to the market in the form of government subsidies. Since World War II, the federal government has subsidized highway construction, automobile production, and the oil industry. Americans have reacted logically by buying more cars and driving them more frequently.

Federal subsidies have combined with disastrous urban renewal programs, mortgage policies that favor new homes and large lots, and an emphasis on funding new infrastructure rather than maintaining what's currently in place to spur not only automobile production, but also the growth of auto-oriented cities. Land is currently being developed at almost three times the rate of population growth, (Ewing, 2007, p. 2) creating a feedback cycle where drivers must travel farther to traverse sprawling cities, and cities must further develop in a way that accommodates the resulting increase in automobile use. However, infrastructure lasts a long time, and current trends in driving and land use are now butting up against three increasingly harsh realities: climate change, cost, and consumer choice. Growing public awareness of global warming and rising gasoline costs have prompted many Americans to examine their gas consumption more carefully. Hybrid electric car sales are booming in an otherwise sluggish auto market. In between January and July of 2007 49 percent more hybrid vehicles were sold in the US than during the same period a year earlier. (Associated Press, 2007) Meanwhile, alternative fuels, particularly ethanol, are receiving federal attention. While lower-emission cars and fuels are certainly an important step in mitigating climate change, a wholesale shift to low-emission, high-efficiency vehicles will not be enough to guarantee a sustainable future. Technological improvements will be offset by overall increases in driving, and the environment will not be able to support the resulting emissions, nor will it be able to support continuing urban consumption of land. Furthermore, taxpayers will not be able to support the rising costs of infrastructure nor the increase in transportation costs as cities continue to sprawl, and society will not be able to bear the negative effects that car-oriented cities have on health, safety, and social capital.

The U.S. cannot address climate change without addressing transportation, and cannot make transportation more sustainable without changing development patterns. A trip taken in a hybrid car still emits far more GHGs than a trip not taken, and cities will have to undergo far-reaching changes to reduce driving distances and make alternative modes like bicycling, transit, and walking viable alternatives to automobile use. Though some of

these reforms will be difficult to implement, they will deliver benefits that extend far beyond a reduction in emissions. Such changes are already underway in the Portland, Oregon metropolitan region, where per capita GHG emissions have fallen by 12.5 percent since 1990 in the area's most metropolitan county. (Portland Office of Sustainable Development, 2005) This chapter examines the policies that have been successful so far in reducing GHG emissions in metropolitan Portland, as well as plans currently being developed to further those successes over the next several decades.

The Portland metro region's case illustrates the link between efficient development patterns and climate change mitigation. The region has reduced carbon dioxide (CO₂) emissions while becoming more livable and affordable for its residents. In order to understand the Portland area's successes, it is necessary to understand the relationships between reducing emissions and complementary fiscal and social goals.

CUTTING EMISSIONS AND BUDGETS WHILE INCREASING CONSUMER CHOICE

Most scientists agree that reductions in GHG emissions between 60 and 80 percent below 1990 levels by 2050 are necessary in order to stabilize climate change, but current trends suggest that GHG emissions, particularly CO₂ from the transportation sector, are only expected to rise. The transportation end-use sector is important because it produces a plurality of U.S. GHG emissions. According to the Environmental Protection Agency, (EPA, 2007) the transportation sector is responsible for 33 percent of all CO₂ emissions. Accounting for "well-to-wheel" emissions, which take into consideration energy used to produce and distribute fuel as well as fuel use, raises this figure to 43 percent. (Replogle, 2007)

Total U.S. non-freight VMT are projected to increase by 1.8 percent annually over the next 10 years, while the average fuel economy of a passenger car is projected to improve by roughly 0.75 percent per year over the same period. (EIA, 2007) Therefore, overall gasoline use will continue to rise at a rate of 1 percent per year, and the carbon content of fuel is not expected to decrease enough to offset this rise. Even the most stringent feasible standards for fuel economy and low-carbon fuel content, coupled with the most optimistic projections for improvements in automotive technology, will likely be insufficient to even lower greenhouse gas emissions to 1990 levels by 2030. (Ewing, 2007, p. 6; Greene, 2003, p. 54) A recent study by the Center for Clean Air Policy concludes, "the United States cannot achieve such large reductions in transportation-related CO₂ emissions without sharply reducing the growth in miles driven." (Ewing 2007, p. 4) One viable strategy to achieve this goal is to arrest the sprawl now occurring at the edges of cities and shorten the driving distance between urban destinations.

Policies that aim to reduce GHG emissions often have a difficult time gaining headway because citizens are reluctant to make sacrifices in the present for the sake of future benefits. However, there are also strong financial incentives for smarter urban growth, since both governments and citizens are increasingly unable to bear the costs associated with rising automobile usage. In Oregon, as in most states, the federal government funded

92 percent of all highway construction in the decade following the National Interstate and Defense Highways Act of 1956. The federal share has now dropped to well below 50 percent, but even that level of funding will not last, as many experts fear that the Federal Highway Trust Fund will go broke in the next decade. Where federal transportation funding is not enough, local governments are increasingly asking taxpayers to make up the difference.

Even without the burden of extra taxes, transportation costs account for 18 percent of average U.S. household expenditures. (U.S. Census Bureau, 2005a) Only housing takes up a larger share of household budgets. As VMT and gas prices both increase, so will transportation's share of the budget, placing particular strain on low- and middle-income households.

These increasing costs are just one reason that consumers are looking for alternatives to today's conventional, car-dominated suburbs. Concern over rising obesity rates has increased the demand for housing in pedestrian-friendly neighborhoods. More Americans are responding to the isolation fostered by conventional suburbs by placing increased value on communities that allow for more social interaction. This is particularly true for the growing demographic of homeowners that are single or married without children. Furthermore, people over 65 often prefer not to drive on a daily basis, and as the baby boomers, America's largest generation, reach retirement age, there is a rising demand for housing with easy access to goods and services by foot or by transit.

THE PORTLAND AREA REINS IN GREENHOUSE GAS EMISSIONS

The Portland, Oregon area has responded to the challenges posed by climate change, cost, and consumer choice by both shortening driving distances between common destinations and providing more efficient ways to connect points A and B. Planners and certain developers have focused on creating land-use patterns that reinforce transportation goals, so that more people live in areas easily served by transit.

The Portland area is more compact than many metro regions with similar populations because it is surrounded by an urban growth boundary (UGB) that is backed by a strong statewide land-use planning program. The Oregon Land Conservation and Development Commission designates valuable rural natural resource lands and prohibits urban development and services outside of UGBs throughout the state. The UGB is not static. Metro, the Portland area's regional government, is responsible for updating it every five years so that the region's urban area grows along with its population. However, the planning process ensures that expansion happens only if there is a need that cannot be accommodated within the existing UGB, and that good farmland is the last land to be added. Metro requires that newly incorporated land add value to existing regional or town centers, or that the added land becomes a center—i.e. a community within which residents do not need to rely on automobiles for transportation—in its own right.

A 2003 study comparing Portland to four similarly-sized metropolitan statistical areas (MSAs) showed the effectiveness of Portland's UGB in restricting sprawl. (Nelson and

Sanchez 2003, pp. 13-19) Charlotte, North Carolina; Columbus, Ohio; Orlando, Florida; and San Antonio, Texas all have in between 1.5 and 2 million inhabitants in their greater metropolitan areas, while Portland has 2.2 million. San Antonio and Columbus do not have UGBs, and Charlotte and Orlando have UGBs that only apply to the regions' central counties and/or are not backed by a statewide land-use planning system. Compared to the other four MSAs, the Portland region has a larger urbanized area and more rural land surrounding the city. Between 1990 and 2000, the Portland area added proportionately more densely-populated urban areas, and fewer suburbs and exurbs.

Table 1: Population Growth in Portland and MSAs with Similar Populations

	Charlotte	Columbus	Orlando	San Antonio	Portland
Urban	7%	31%	64%	63%	88%
Suburban	50%	45%	23%	8%	9%
Exurban	45%	18%	12%	12%	1%
Rural	-1%	7%	2%	17%	3%

Source: Nelson and Sanchez, 2003.

Table 1 shows the percentage of overall population growth between 1990 and 2000 that occurred in the urban, suburban, exurban, and rural areas of each MSA. During this time period, 88 percent of Portland's growth occurred in high-density, mixed-use urban areas located close to existing transit lines, jobs and services, compared to 64 percent in San Antonio, 63 percent in Orlando, 31 percent in Columbus, and only 7 percent in Charlotte, with most of the balance occurring in suburbs and exurbs. As the bottom row of the table shows, Orlando and Charlotte's less stringent UGBs were effective in reducing or restricting growth in rural areas in comparison with boundary-free San Antonio and Columbus. However a greater portion of that growth was channeled into suburbs and exurbs, and less of it into urban areas, when compared to Portland.

UGBs help create more compact, efficient cities that are easier to serve with non-automobile transportation modes. Reliable bus service, streetcar and light rail lines, combined with attention to bicycle and pedestrian planning, ensure that residents who choose not to drive can take advantage of a variety of other travel options. Between 1996 and 2006, per capita annual transit trips in the Portland area grew by almost 20 percent, from 40.8 to 48.9, and transit miles per capita increased by 34 percent, from 156.4 to 210.2 miles. (National Transit Database, 2005) Not only is ridership increasing, but residents are also getting more mileage out of the system. There are only six U.S. metropolitan areas with more per capita transit ridership than Portland, and all of them (e.g. New York City, Chicago) have substantially higher populations and a greater portion of their physical plant that dates from before the automobile era. (National Transit Database, 2005; APTA, 2007)

Portland's transit network is interlaced with a web of bicycle lanes criss-crossing the city, and in many cases transit and bike facilities also serve pedestrians. This is particularly true in downtown Portland, where four of the six non-freeway bridges over the

Willamette River have sidewalks wide enough to accommodate bicyclists and pedestrians side-by-side. Parks and esplanades line both sides of the river, creating a loop that offers easy access to anywhere in the inner central city. Good facilities combined with relatively mild weather make biking easy, and more workers commute by bike in Portland than in any other city—3.5 percent compared to a national average of 0.4 percent. (U.S. Census Bureau, 2005b) Some central neighborhoods boast bicycle commute shares between 5 and 10 percent. (Portland Office of Transportation, 2007) Transit and bike/pedways help get people out of their cars, and also have a positive feedback effect, drawing development in around regional centers and away from the fringes of the city.

Table 2: Median Home Prices and Populations in Selected Western MSAs

Metropolitan Statistical Area	Median Home Price	% Difference vs. Portland	Population
San Jose-Sunnyvale-Santa Clara, CA	\$775,000	176%	1,787,123
Honolulu, HI	\$630,000	124.4%	909,863
San Diego-Carlsbad-San Marcos, CA	\$601,800	114.3%	2,941,454
Sacramento-Arden-Arcade-Roseville, CA	\$374,800	33.5%	2,067,117
Seattle-Tacoma-Bellevue, WA	\$361,200	28.6%	3,263,497
Las Vegas-Paradise, NV	\$317,400	13.0%	1,777,539
Portland-Vancouver-Beaverton, OR-WA	\$280,800		2,137,565
Denver-Aurora, CO	\$249,500	-11.1%	2,408,750
Tucson, AZ	\$244,900	-12.8%	946,362

Source: National Association of Realtors, 2006, and U.S. Census Bureau, 2006.

One common criticism of smart-growth policies is that they drive up real estate prices, putting too high of a price tag on more sustainable living patterns. However, numerous studies have found no statistical correlation between the Portland area’s urban growth boundary and housing prices. (Nelson, 2002, p. 26) Oregon’s laws require that fast-growing cities like Portland maintain a 20-year supply of land for residential development so that housing supply inside the UGB is not restricted. The Portland area has certainly seen an increase in median home prices, which between 1990 and 2000 grew at twice the rate of median incomes, (Metro, 2003, p. 15) but as Table 2 shows, it still has lower median home prices than most other western MSAs with comparable populations. In a review of academic literature on growth management and housing affordability, Nelson (2002, p. 33) concludes, “market demand, not land constraints, is the primary determinant of housing prices.” If smart growth policies have drawn people to the Portland area and created increased demand for housing, it is a sign that the region is doing something right. The challenge falls to planners and policymakers to ensure that residents of all income levels enjoy the benefits of a livable city.

Rising housing prices in the Portland area have already been partially offset by declining transportation costs. Despite having the same expenditures as the average household in the western states, the average Portland-area household spends 7 percent less on transportation annually, (U.S. Department of Labor, 2005) leaving residents more money to spend on housing and entertainment. The average daily commute for a Portland area

resident is 20.3 miles, four miles below the national average, and one recent study by economist Joe Cortright (2007) estimated that the resulting savings in time, gasoline, and maintenance costs amount to a total of \$2.6 billion per year. This money has a value far beyond what the dollar amount would suggest. Since the Portland area does not manufacture cars nor refine petroleum, and residents purchase 10 percent less gasoline than the national average, roughly \$800 million dollars that would otherwise leave the region each year stay in the local economy, stimulating businesses.

Overall, what's good for the Portland area has also been good for the global climate. Bucking national trends, per capita VMT in the Portland area are declining thanks to reliable transit service, smart land-use planning, and outreach programs. In between 1996 and 2000, daily VMT per capita in Portland declined by 6 percent, from 21.3 miles a day to 20 miles a day. So far, the combination of better land-use planning and increased travel options has helped reduce GHG emissions. Metro has yet to conduct a region-wide GHG inventory, but a study in Multnomah County, which is the area's most urban county, showed that per capita GHG emissions have dropped by 12.5 percent since 1990, with almost half of those reductions coming from the transportation sector. (Portland Office of Sustainable Development, 2005)

REGIONAL GROWTH AND REDUCED DRIVING OVER THE NEXT THREE DECADES

By the year 2040, the Portland area is projected to add one million new residents, a 47 percent increase over its current population. As the long-term planning agency for the Portland area, Metro is faced with the challenge of continuing to reduce VMT as the region grows rapidly. While current trends certainly are heading in the right direction, much of the gains so far may have come from easily achieved behavioral changes on the part of commuters already living close to centers or transit lines, or younger workers who typically have more flexibility in choosing among different travel options. Continuing to reduce VMT may be difficult, particularly in the suburbs at the fringes of the Portland area.

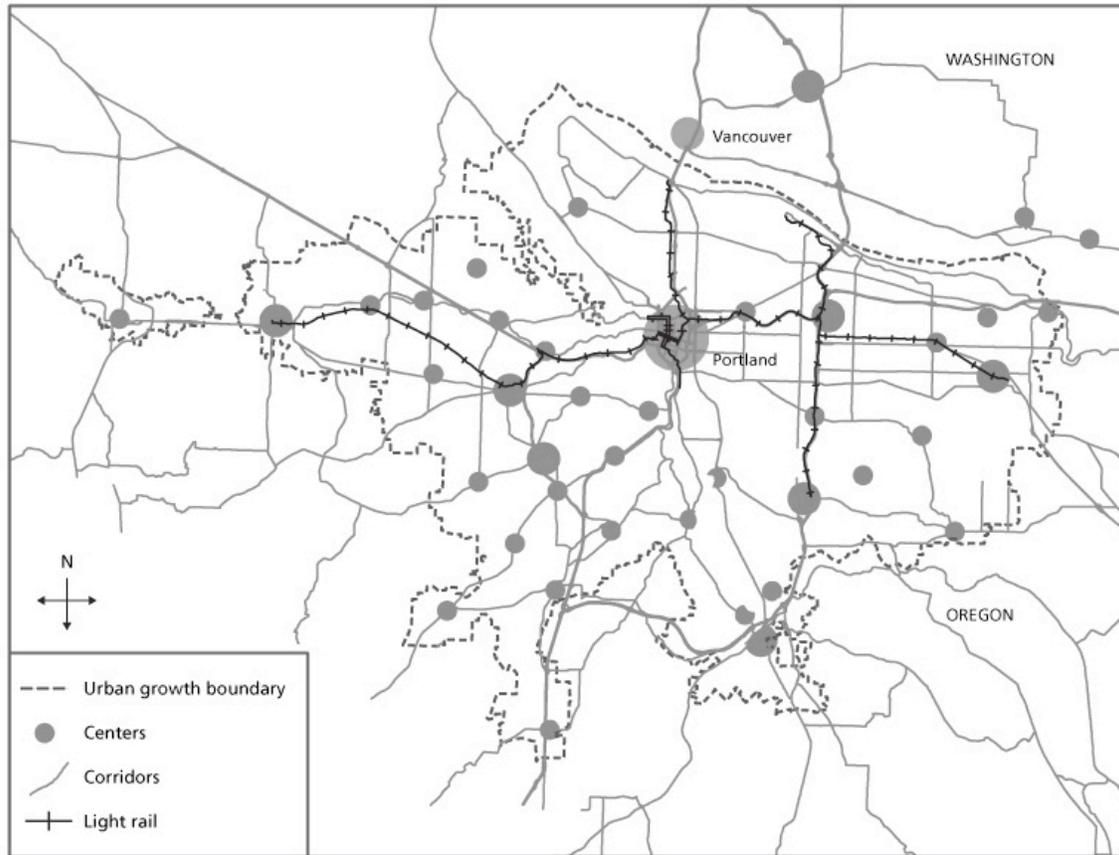


Figure 1: Under the 2040 Growth Concept, Metro designates centers, corridors, and transit lines along which to focus development over the next several decades. Source: Metro.

In 1990 Metro began work on the 2040 Growth Concept (Figure 1), identifying regional centers and transportation corridors in which to encourage high-density, mixed-use development in order to guarantee all residents convenient access to employment, retail, and other businesses. Between now and 2035, Metro will invest \$1.5 billion toward spurring development in these vital areas, while slowing the expansion of the UGB. This figure may seem large, but it is actually a small share of the overall real estate investments projected to occur in the region over the next three decades. \$1.5 billion is just 3.4 percent of \$44 billion in projected public investment, and only 0.6 percent of the \$260 billion estimate for total investments.

This is a long-term plan, but it is not a speculative one, thanks to Metro's sophisticated MetroScope modeling system, which allows the evaluation of different investment scenarios and their impacts. Analysts in Metro's Data Resource Center can use MetroScope to compare different planning scenarios across a wide variety of indicators. So far, the predictions that planners have been able to make using MetroScope have proven remarkably accurate. For example, 1996 projections for population growth were within 2.5 percent of today's actual values, and models that predict overall VMT for the Portland area are within 3 percent of the values measured by the state Department of

Transportation. One of MetroScope's strengths is its ability to isolate and compare outcomes for a single variable between two scenarios while holding other variables constant. The shading on the following maps produced by MetroScope shows the percentage difference in different variables (e.g. land consumption and housing demand) between the base-case scenario, with a larger UGB and less investment in regional centers, and the 2040 scenario, with a smaller UGB and higher investment in centers.

Metro's 2040 investments are projected to reduce average travel distances by 5 percent, reduce the average infrastructure needed to build a dwelling unit by 7 percent, and increase the region's population density by 8 percent. Overall, these changes save money while reducing vehicle emissions. However, a full evaluation requires a closer look to ensure that density is increasing in the right places, and that the region is becoming more livable and sustainable without too much cost to its residents.

Overall density is only a partial indicator of a city's efficiency and livability. Early studies of sprawl ranked Portland as more sprawling than Los Angeles because the latter has more inhabitants per square mile. (Fulton, 2001) However, land-uses in L.A. are generally spread out, with residential areas separated from commercial areas and few mixed-use centers that are good candidates for public transportation service, so residents typically need to get in their cars to go to work or to the store. In order to reduce driving distances and promote transit, density and mix of uses needs to increase in the right places, with less land consumed for development at the edge of the region, and high demand for housing around the regional centers designated in the 2040 Growth Concept.

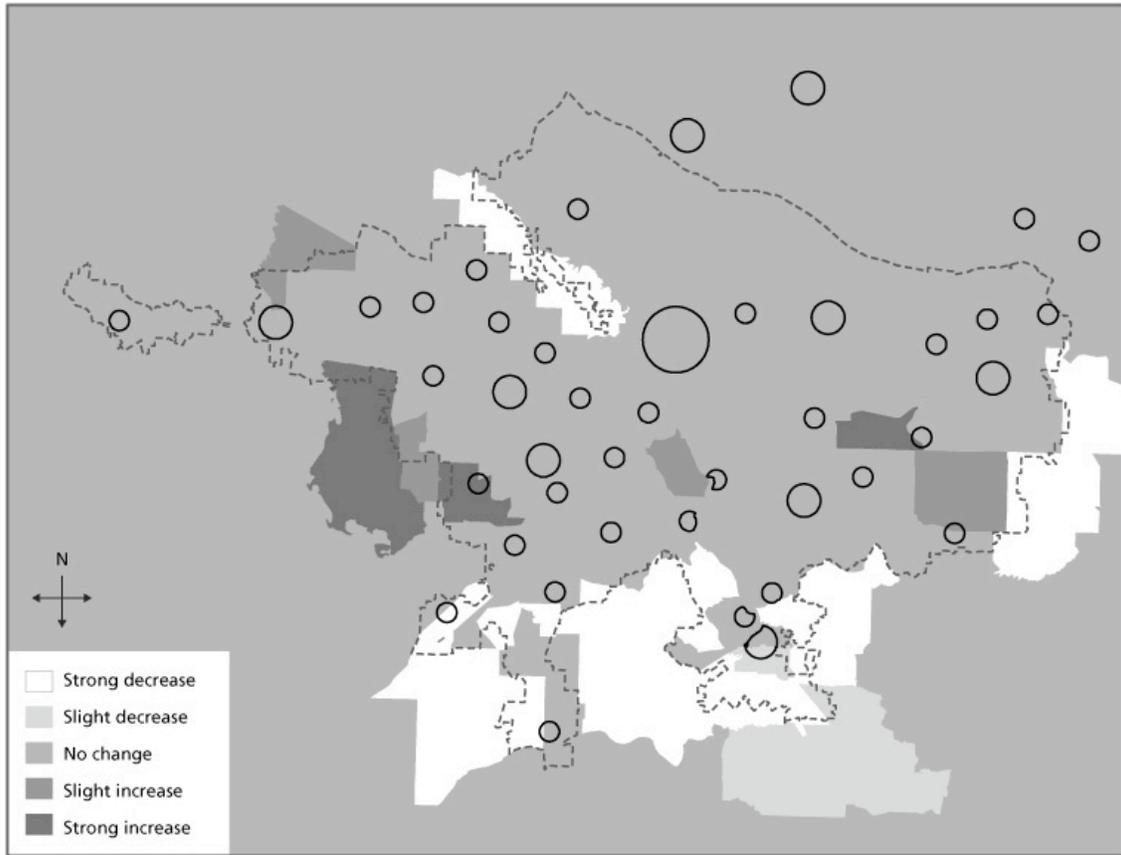


Figure 2: The difference in land developed between the 2040 Growth Concept and the base-case scenario. Generally the 2040 Growth Concept reduces development at the fringes of the UGB. Growth in development in zones at the western edge of the city reflects increases in centers within those zones that are inside the UGB, not outside of it. Source: Metro.

Figure 2 shows that the 2040 Growth Concept dramatically reduces the amount of development on new land added to the UGB at the southern and eastern edges of the region. These rural areas are farther from existing services, and developing them would consume agricultural and forest land and require that residents drive farther to reach their destinations. Meanwhile, newly added land gets developed in selected areas along corridors and near regional centers. The growth projected in land consumption in zones on the western edge of the UGB reflects the growth in the small portion of those lands that are inside the UGB, not growth outside of the UGB.

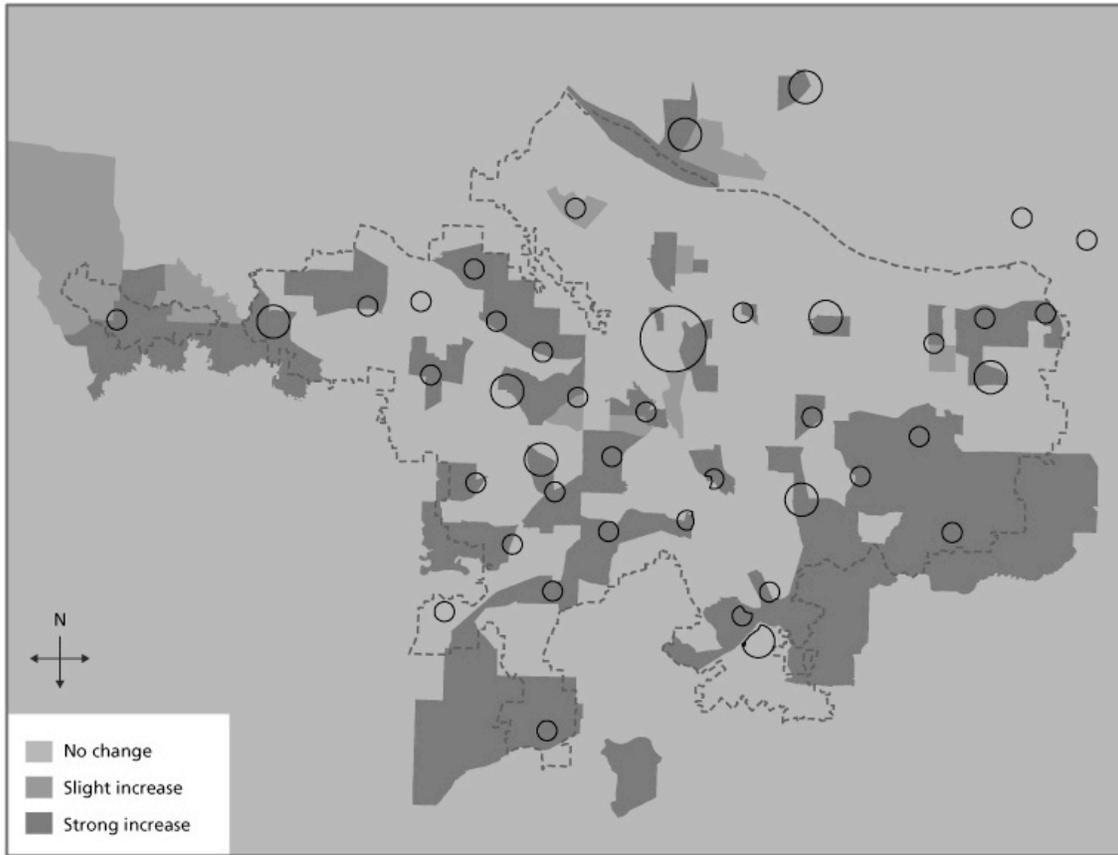


Figure 3: The difference in demand for single-family housing between the 2040 Growth Concept and the base-case scenario. Demand increases close to regional centers, reducing driving distances. Source: Metro.

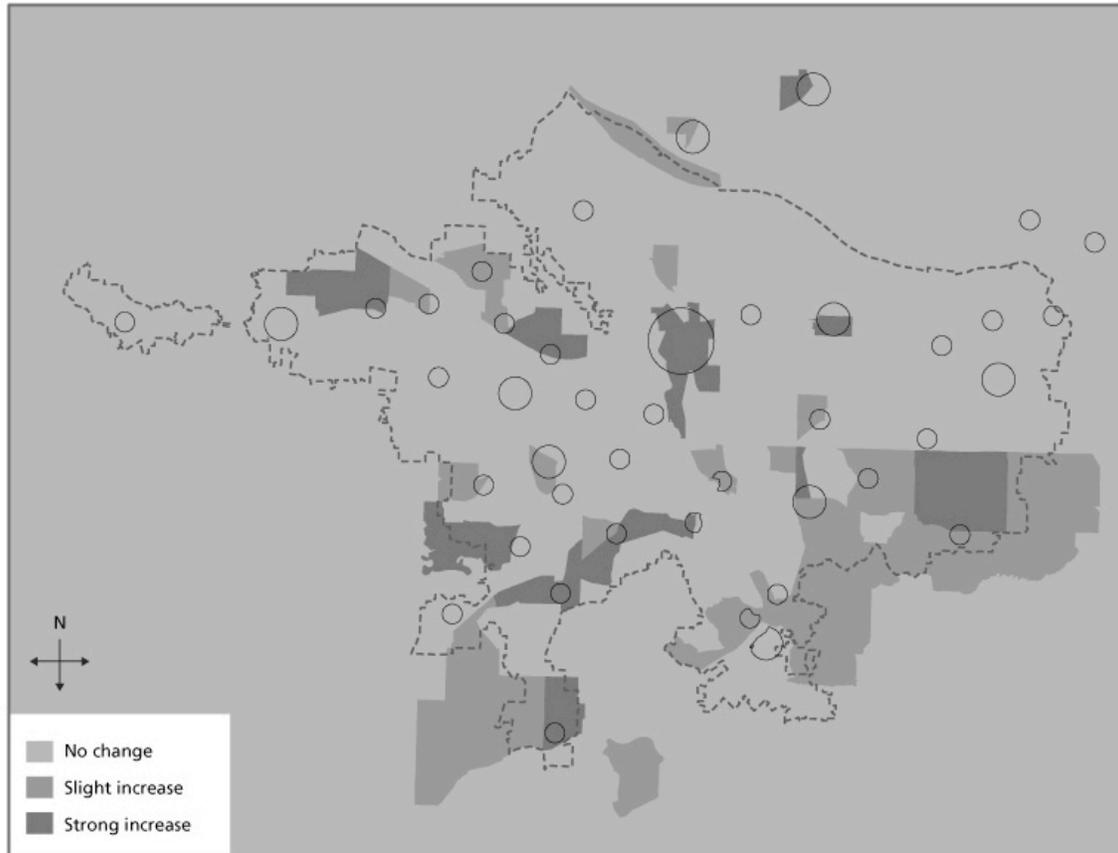


Figure 4: The difference in demand for multi-family housing between the 2040 Growth Concept and the base-case scenario. Demand increases dramatically in the central city and in larger regional centers. Source: Metro.

Figures 3 and 4 show that instead of consuming new land, demand for both single and multi-family housing shifts to already dense areas inside the UGB. Demand for multi-family housing grows particularly dramatically in the central city. Once again, projected growth in zones straddling the UGB reflects increases in centers within the UGB, not development outside of the UGB. Taken together, these maps show that not only is the total density increasing, but that it's increasing the most in the right places. Metro predicts that under the 2040 Concept, 80 percent of growth will occur within existing urbanized areas in the next 20 years. By investing in centers, Metro is spurring development in places that are close to existing jobs and services, reducing the need for residents to drive and protecting natural resources.

One of the Metro Council's goals is for housing to not only be available in mixed-use, walkable neighborhoods, but also affordable. Under the 2040 Growth Concept, the cost of single-family homes is projected to rise between 5 and 15 percent throughout the Portland area over prices under the base-case scenario. At first glance, this increase seems to bear out the common complaint that urban planning drives up housing prices. Metro plans to encourage development in central locations, which are initially more

expensive to develop than greenfield sites. However, all citizens benefit from compact development, which substantially reduces the amount that households need to spend on transportation. Furthermore, the new infrastructure needed to support new development is usually constructed by developers, but maintained by state and local governments. The 2040 Growth Concept requires 7 percent less infrastructure per dwelling unit than the base case, sparing governments and taxpayers the costs of maintenance.

Detailed analysis of the long-term impacts of different growth patterns on taxpayers is difficult. However, a study of California's Central Valley, which has four times the population of the Portland area, found that the region would shave \$40 billion off the cumulative cost of providing public services to its residents between 1995 and 2040 by pursuing compact, efficient growth patterns instead of low-density sprawl, cutting the annual cost of services by 19 percent and saving roughly \$136 per capita per year.¹ (American Farmland Trust 1995, p. 12)

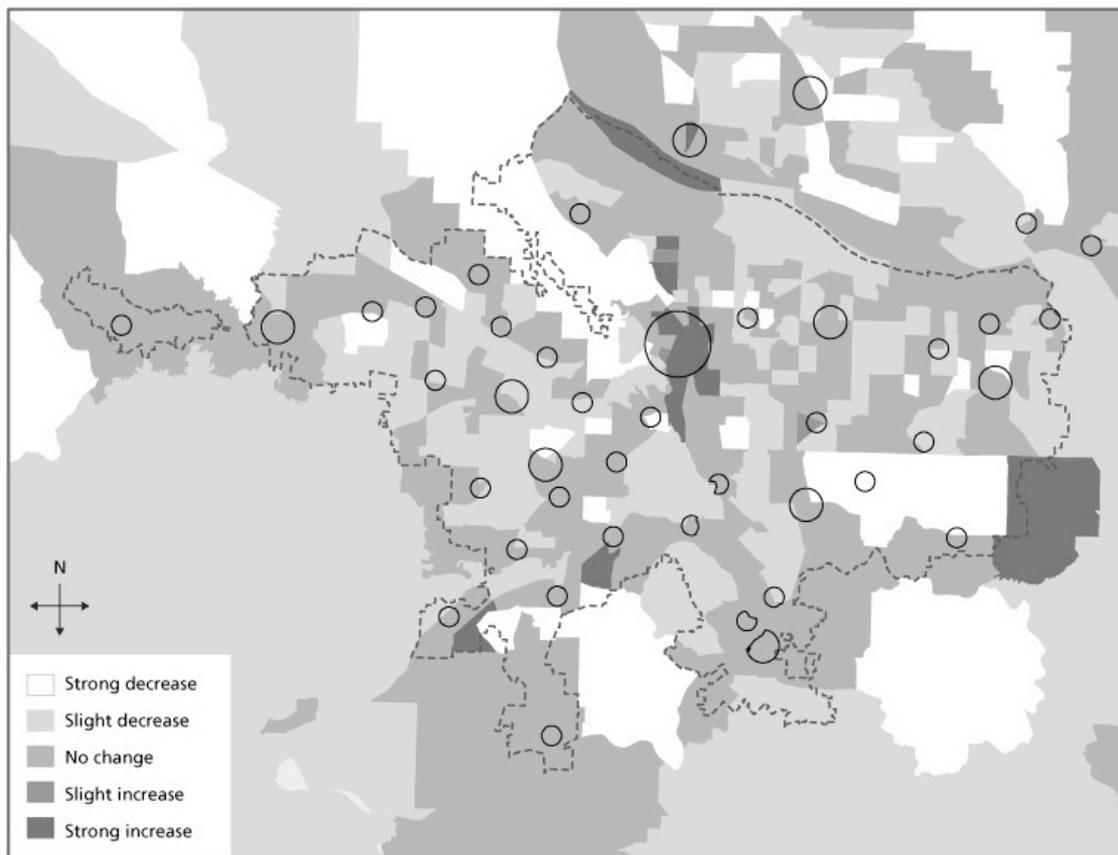


Figure 5: The difference in demand for housing among low-income between the 2040 Growth Concept and the base-case scenario. Demand increases dramatically in the central city and in larger regional centers. Source: Metro.

¹ The report uses 1993 dollars, which have been adjusted for inflation to 2006 dollars.

In order to fully assess the 2040 Growth Concept's impact on social equity, attention must be paid to the groups most likely to rely on public transportation: low-income, elderly, and single-occupant households. Figure 5 shows the difference in housing demand among these demographics between the 2040 Growth Concept and the base-case scenario. With increased investment in the region's centers, demand for low-income, elderly, and single-occupant housing increases substantially in pedestrian-friendly locations with excellent access to transit and retail, particularly in the central city and North Portland. Granting this access is particularly crucial to reducing overall VMT since Portland-area low-income households that are located in mixed-use, transit-oriented developments are 44 percent less likely to take trips by car than low-income households in the suburbs. In contrast, relocating high-income households in smart growth developments only reduces auto mode share by 17 percent. (Metro, 1994) Even though tightening the UGB does lead to a small increase in housing prices, it provides many of the region's less affluent residents with the opportunity to save money on transportation, and saves all taxpayers money that would otherwise be spent on maintaining infrastructure.

By redirecting a small share of the overall public investment toward regional centers and maintaining a tight urban growth boundary, Metro should be able to spur smarter growth, reducing average travel distances in the region by 5 percent and lowering GHG emissions accordingly. Furthermore, increasing numbers of people are drawn to the Portland area precisely because of the "second paycheck" effect of a high quality of life, including increased social equity, reduced infrastructure maintenance costs, and dynamic neighborhoods and urban centers. Although the rise in housing prices appears inevitable, investing in energy- and location-efficient housing to reduce GHG emissions now seems more prudent than absorbing the high projected costs of adapting to climate change in the future.

IMPLEMENTING THE 2040 GROWTH CONCEPT

Long-term plans like the 2040 Growth Concept do not stand alone: other agency projects need to support Metro's 2040 goals; developers need to be able to create smart growth projects without confronting financial barriers; and residents need to understand the transportation options that are available so that they can choose the one that serves them best at the lowest cost. Metro has several programs aimed at realizing the 2040 Growth Concept. In particular, the 2007 update of the regional transportation plan (RTP) represents an across-the-board effort to coordinate transportation and land-use planning and ensure that transportation investments are made in centers designated for increased density and mix of uses. Both the 2040 Growth Concept and the RTP are long-term plans, though, and are implemented through a variety of shorter-term projects.

The Transit-Oriented Development (TOD) investment program provides an example of one way to create new homes and workplaces with easy access to transit. Under this program, Metro purchases land located near bus and light-rail stations and then sells the land back to developers at a reduced cost, provided that they agree to create high-density, mixed-use developments. Metro also assists TOD developers by funding cost premiums

associated with higher densities, such as increased fire and seismic protection, and provides easements in cases where the proposed development is denser than zoning codes allow. Funding for TOD projects comes from federal sources, and the amount that development receives is proportional to the projected increases in transit ridership created by each project. The result has been efficient development that enables residents to make the most of their travel options.

To date, the TOD program has funded 21 projects, with another 12 currently in the design and development phases. The 21 existing TOD projects take up a total of 80 acres of land, whereas conventional development patterns would have needed almost 600 acres to accommodate the same uses. In a survey of residents of the Merrick, a recently completed TOD development, 68 percent of residents said they have been driving less since they moved in, while 70 percent said that they now take more transit and 47 percent reported walking more. (Dill 2005)

While the TOD investment program is explicitly geared toward developers, Metro also has programs to help businesses, neighborhood leaders, planners and policy makers create vibrant, mixed-use regional centers. *Get Centered!* is an outreach program that explains the economic and social benefits of town centers over conventional strip-mall developments and helps interested parties assemble the political, financial, and planning tools to create centers. Metro also publishes the *Main Streets Handbook*, a technical guide for politicians and planners who want to create downtown streets that are attractive to businesses and customers alike. The handbook outlines the pedestrian improvements and zoning codes that support walkable, mixed-use development. Finally, Metro has organized two official visits to Vancouver, British Columbia, Canada, so that Portland area planners, developers and policy makers can learn what accounted for that city's success in reducing sprawl. These programs help local jurisdictions make investments that enhance community, attract businesses, and draw residents toward amenities that are closer to home and easily served by transit, while the region benefits from reduced congestion and the planet benefits from lower driving-related greenhouse gas emissions.

Metro has also established public outreach programs that promote more efficient transportation options. For example, the *Bike There!* Map helps cyclists find the quickest, safest, and most pleasant routes around the city, whether they're commuting to work or enjoying a recreational ride. CarpoolMatchNW.org is a free online service that facilitates carpooling by matching commuters up with others in the community who share the same routes. Another website, www.driveless.savemore.com, provides transit and travel options information, promotes efficient driving practices, and helps users calculate the real cost of driving. Drive Less, Save More staff make regular appearances at public events in order to connect directly with residents. Metro also arranges vanpools for groups of 10-15 commuters, covering 50 percent of monthly costs. Finally, Transportation Management Associations (TMAs), partially funded by Metro, promote travel options locally in regional centers. One TMA in the Lloyd District decreased SOV trips by 29 percent between 1997 and 2005 by implementing paid on-street parking, improved transit service, and outreach programs promoting biking and walking. (Lloyd TMA, 2005) None of these programs call for eliminating automobile use completely, but instead give

residents resources and information needed to make intelligent choices about how to spend transportation dollars.

CHALLENGES FROM BOTH BEYOND AND WITHIN THE UGB

The progress that the Portland area has made so far in reducing greenhouse gas emissions is admirable, but only a small step toward meeting Oregon’s statewide goals of bringing total emissions down to 75 percent below 1990 levels by 2050. Even Multnomah County’s impressive 12.5 percent per capita CO₂ reductions are not enough to offset the county’s population growth, and its overall emissions in have grown slightly since 2004. Several obstacles need to be overcome in order to stabilize the changing climate.

Sprawl in Neighboring Cities

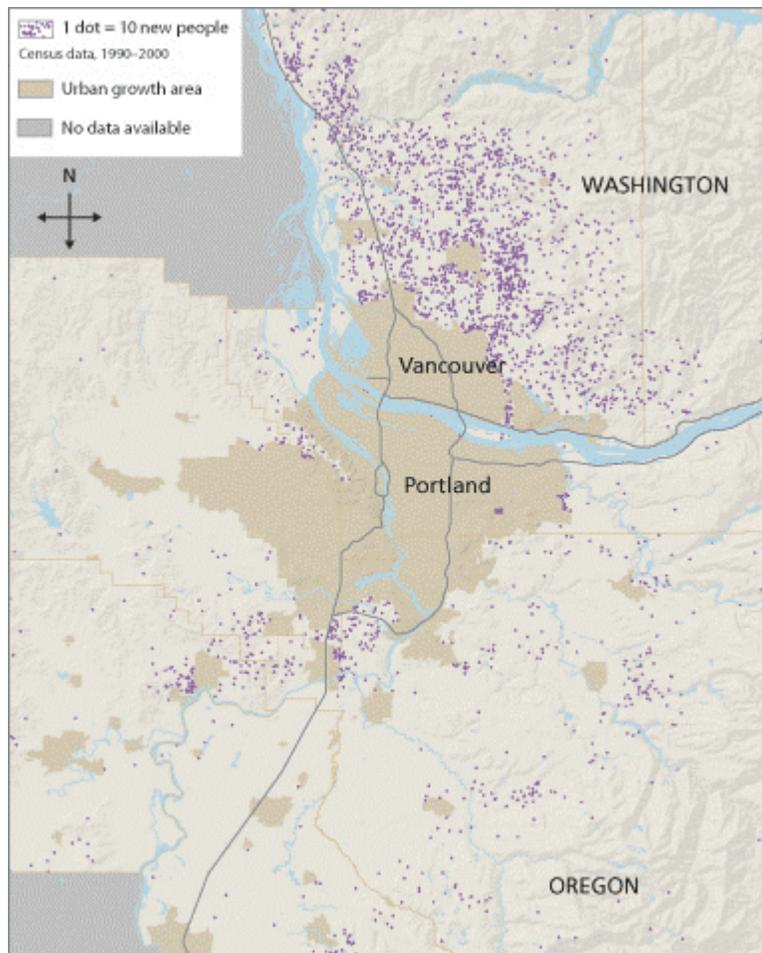


Figure 6: Suburbs, exurbs, and small towns beyond Metro’s jurisdiction continue to add residents, mostly in low-density developments. Source: Sightline Institute, *2007 Cascadia Scorecard*.

As is the case with even the most well-planned American cities, the Portland area faces challenges from beyond its urban growth boundary. The ease of long-distance travel afforded by automobiles gives even small towns a footprint that extends far beyond their city limits. As Figure 6 shows, areas beyond Metro's jurisdiction, such as Newberg, Oregon, to the southwest, and Clark County, Washington, to the north, continue to spread out onto rural land. This is particularly a concern in mostly suburban Clark County, which has grown at twice the rate of the three Oregon counties in the Portland metro area. Residents of new developments in rural areas are drawn to the Portland area to work and play, commuting long distances to participate in its economy and creating congestion while shirking policies that boost the economy and combat sprawl. In the absence of strong statewide and federal policies to combat sprawl, development patterns like the one shown in Figure 6 are likely to continue, both in the Portland area and across the nation.

Measures 37 and 49

Though many Oregonians appreciate what land-use planning has done for the state, many also bristle at the inflexibility of regulations that protect farm and forest lands. Under intense pressure from groups funded largely by lumber companies that stand to benefit from a relaxation of land-use laws, (MIPRAP, 2007; Mortenson and Hogan, 2007) land-use policy in Oregon has been moving backwards, encouraging sprawl rather than combating it. In 2004, Oregon voters passed Measure 37, which entitled property owners to compensation if land use regulations restricted the use of their property and reduced its value. The government responsible for the regulation could also choose to “modify, remove, or not apply” (State of Oregon, 2004) the regulation. 7,562 claims were filed, affecting 750,000 acres of land and requesting a total of \$20 billion in compensation.

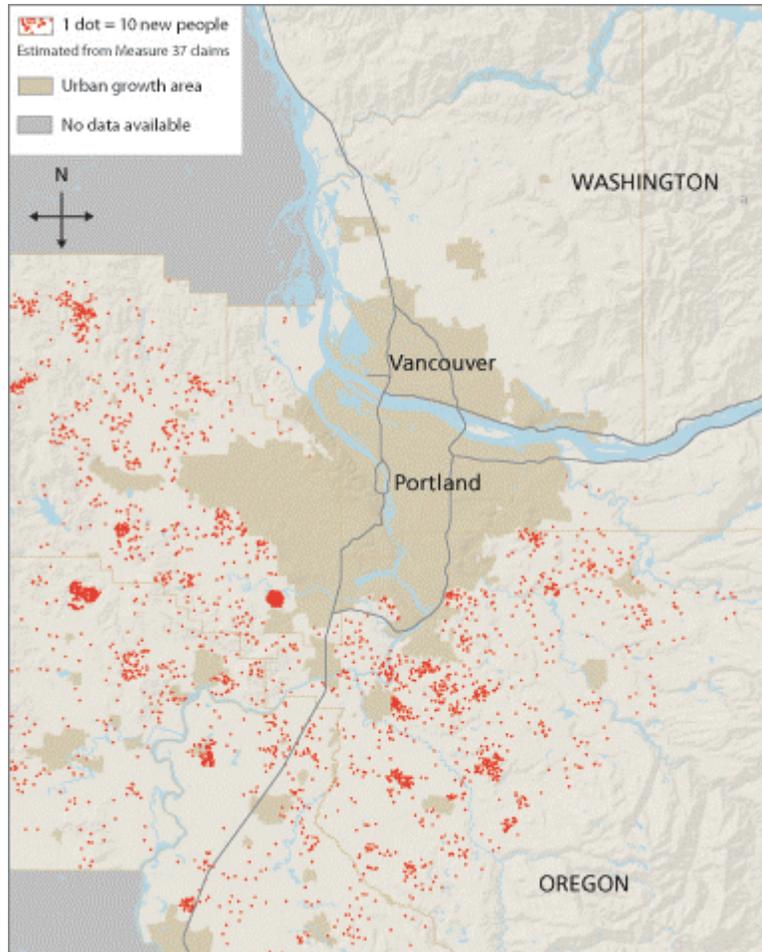


Figure 7: Measure 37, which was overturned by voters in 2007, threatened to create new residential developments on forests and farmlands well outside the UGB. Source: Sightline Institute, *2007 Cascadia Scorecard*.

Figure 7 shows the claims filed under Measure 37 in areas adjacent to the Portland metro region. The majority of these claims were landowners seeking to subdivide private property into a small number of lots, but a few large landowners, many of them timber companies, sought to create large-scale subdivisions or commercial and industrial developments. In almost every case, governments chose to waive regulations rather than compensate claimants. The majority of Measure 37 claims in the Portland area were far outside the urban growth boundary, creating the potential for longer commute times and higher resulting levels of GHG emissions, as well as new infrastructure on what was once agricultural or forest land.

In November 2007, Oregonians approved Measure 49, an amendment to Measure 37 allowing landowners to build up to three extra homes on their property, but prohibiting commercial development and large subdivisions. Though Measure 49 still facilitates new construction outside of the UGB, Metro estimates that it will produce less than one-sixth the amount of new dwellings that would have been constructed under Measure 37,

making it a clearly preferable alternative as far as reducing driving is concerned. Nonetheless, the debate over land-use in Oregon is still far from settled.

Mortgage Policies

Even within cities, current mortgage policies tilt the balance in favor of suburban homebuyers. Loans for homeowners are currently based upon net income, and they do not take into account cost-of-living expenses. Yet a suburban family typically spends more on transportation than an urban family. The exact size of the difference varies from city to city, but a recent study by the Centers for Transit Oriented Development and Neighborhood Technology showed that transportation costs for suburban households are double those of urban households in the Minneapolis-St. Paul, Minnesota area. (CTOD and CNT, 2007) Home prices tend to be lower in the suburbs, and since the extra money that suburbanites spend on gas and vehicle maintenance does not affect their mortgage rates, they have greater home-buying power than their urban counterparts.

In between 2000 and 2006, mortgage brokers in select markets offered location-efficient mortgages, which counted the money that residents of walkable neighborhoods with good access to transit saved on transportation toward their incomes, qualifying them for larger home loans. The Federal National Mortgage Association, which guarantees most home loans in the U.S., withdrew support for the program in 2006, largely because of the difficulty of compiling data for different markets. Now the Center for Neighborhood Technology is creating a new, easier-to-use affordability index with data for the 50 largest U.S. metropolitan areas, which will hopefully spur new location-efficient mortgage products.

Barriers to Transit Service

As in the rest of the U.S., many of the Portland area's residential neighborhoods are laid out in a way that makes it difficult to provide good transit service. Portland's inner city grew up and out along streetcar lines, so serving this area with transit in the modern day is easy; today's bus lines simply follow old streetcar routes. In contrast, the suburbs and small towns of the Portland area grew up in the age of the automobile, with large arterials and separation of land uses, and even with good transit coverage across the region it is more difficult to connect these areas to the transit network in a way that serves everyone and all destinations.

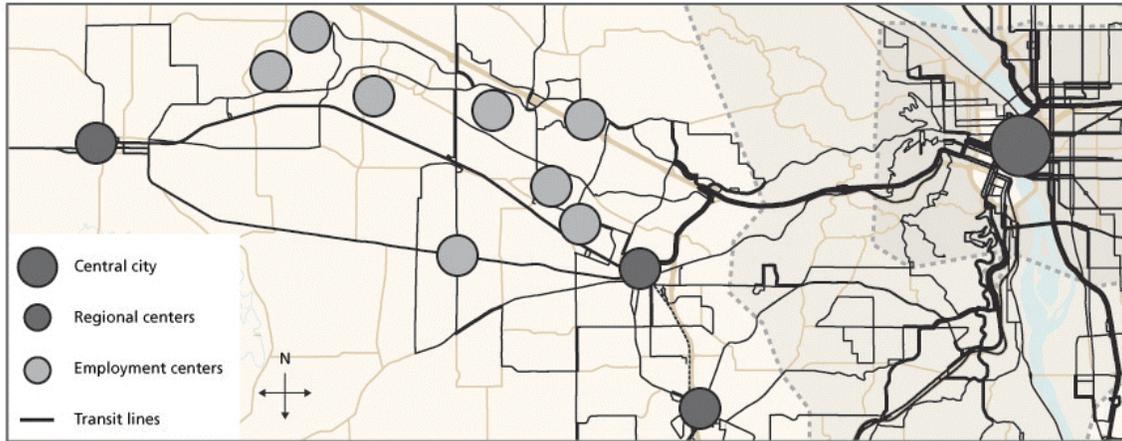


Figure 8: Most transit lines in Washington County connect regional centers with the central city, but few connect centers and residential areas with employment centers. Source: TriMet, 2007

For example, Figure 8 shows the transit lines in Washington County, the fastest-growing Oregon county in the Portland metro region. Most bus routes are radial, connecting regional centers with the central city. Fewer lines connect regional centers with each other, and even fewer serve major employers, such as Intel and Nike, which have built large campuses in areas where land is more readily available but also more difficult to access by bus, generating more automobile trips. Many residents who live within five miles of their jobs would still face two or three transfers were they to commute by transit, compared to a brief auto commute. Because the infrastructure and zoning in these areas favors automobiles, TriMet, the local transit agency, is reluctant to provide more service because it expects ridership to be low. Better transit service alone cannot solve this problem, nor can better land-use planning. Only a combined effort to create development in centers and serve these centers with increased transit service will work.

CONCLUSION

Projects like the 2040 Growth Concept provide a picture of the type of comprehensive planning that is necessary to reduce transportation's share of greenhouse gas emissions over the long term. It is a picture that is at once optimistic and daunting. It is optimistic because, based on the best information available, redirecting investment and tightening the UGB will reduce driving distances by 5 percent. However, it is daunting because of the host of challenges that stand in the way, and because this 5 percent still represents a small portion of the overall change needed to achieve climate stabilization. However, land-use planning has a positive feedback effect that will facilitate future efforts at climate change mitigation. Metro's future long-term plans will build upon the already-efficient development fostered by the 2040 Growth Concept, and as residents come to see firsthand the fiscal, social, and health benefits of smart growth there will be increased support in the region for even bolder efforts.

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