

Toward an American Spatial Development Perspective

**A policy roundtable on the federal
role in metropolitan development**

A Project of

The Lincoln Institute of Land Policy

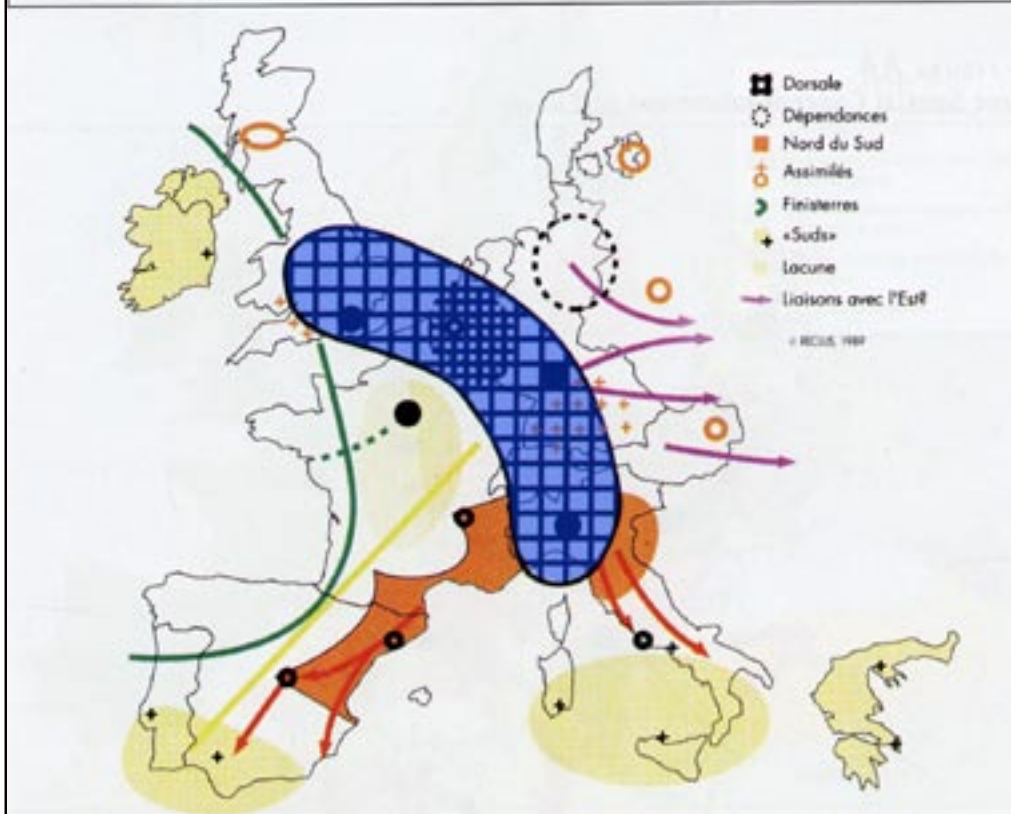
Regional Plan Association

The University of Pennsylvania School of Design

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The Blue Banana Indicating the (Core) Area with Most Cities with More than 200.000 Inhabitants



Map depicting the Economic Core of the EU: The term “Blue Banana” has been used to describe the area stretching from London to Milan, which has the continent’s strongest economy.

Overview

Background

This project has been inspired and informed by recent European efforts to develop policies and investments for the entire continent and for regions that cross national boundaries. These efforts are now being organized under the umbrella of the *European Spatial Development Perspective*, a set of policy directives and strategies adopted by the European Union in 1999.

Over the past generation, the EU has initiated a new large-scale approach to planning for metropolitan growth, mobility, environmental protection, and economic development. Europeans use the umbrella term “spatial planning” to describe this process, involving plans that span regional and national borders and encompass new “networked cities” spread out over hundreds of kilometers. The EU is also mobilizing public and private resources at the continental scale, with bold plans and investments designed to integrate the economies of, and reduce the economic disparities between, member states and regions, and to increase the competitiveness of regions and the whole continent in global markets.

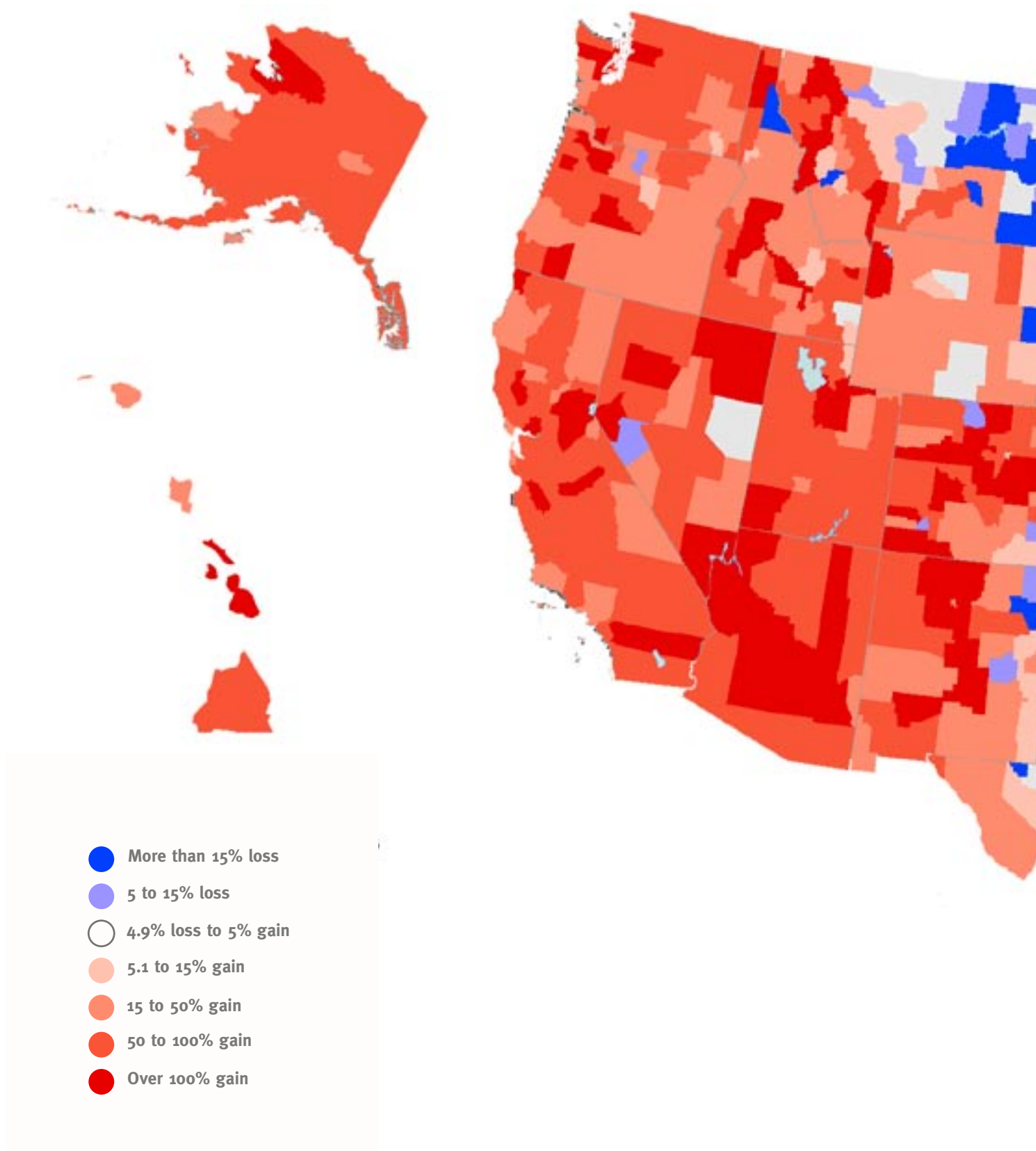
By contrast, the United States has no national plans or strategies to anticipate and manage comparable concerns. Unlike Europe, US population is expected to grow to 430 million by 2050, a 40% increase over current levels. Consequently, in less than 50 years we will need to build half-again as much housing and as much commercial development and infrastructure as we have over the past two centuries.

How can this growth be accommodated in metropolitan regions that are already choking on congestion and approaching build-out under current trends and policies? How can we improve the competitiveness and livability of our own emerging constellation of networked cities? How can the United States reduce the growing disparities in wealth and population between fast growing coastal regions and vast interior rural areas and declining industrial cities? How can the federal government promote creation of regional strategies designed to address these concerns?

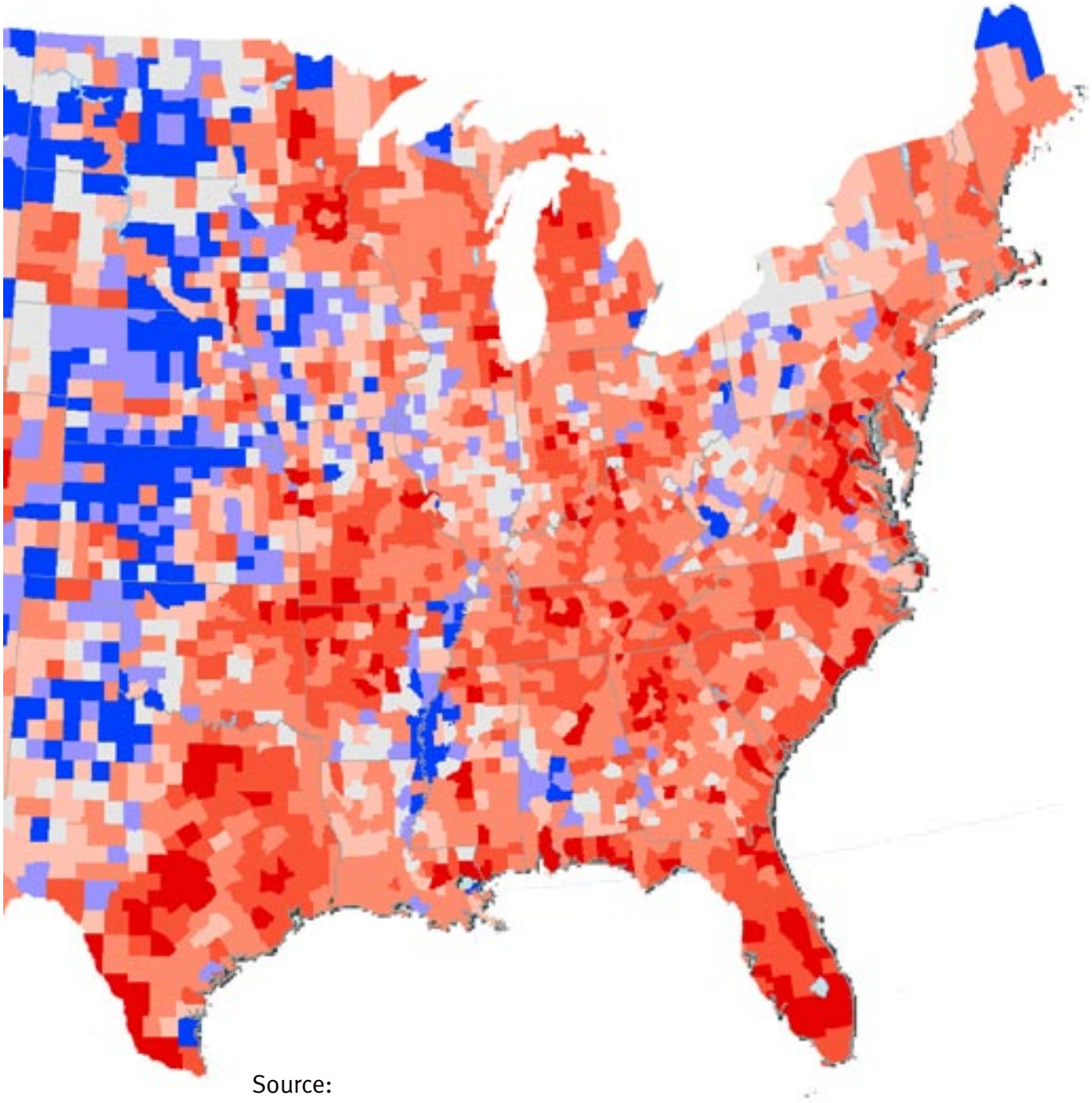
This process was initiated through a graduate planning studio at the University of Pennsylvania in the Spring of 2004. The studio’s final report provides a broad overview of both the challenges facing the country between now and 2050, and the elements that might be included in a national spatial development strategy. The Studio’s work was directed by Robert Yaro and Jonathan Barnett, both Practice Professors in City and Regional Planning at Penn, and Visiting Professor Armando Carbonell. Yaro is also President of Regional Plan Association, while Carbonell is Co-Chairman, Department of Planning and Development, at the Lincoln Institute of Land Policy. The Studio’s research findings are summarized in this report.

Important input to the Studio was provided by a distinguished team of European and American planning experts hosted by Professor Sir Peter Hall at the Institute of Community Studies in London, England. This process was funded by the Ford Foundation’s Institute of International Education.

This initiative is also inspired by two important US precedents: national development and conservation strategies prepared by President Thomas Jefferson and President Theodore Roosevelt, completed in 1807 and 1907, respectively. These plans stimulated the major infrastructure, conservation and regional economic development strategies that powered America’s economic growth in its first two centuries. Other major strategies and investments promoted in the administrations of Presidents Lincoln, Franklin Roosevelt, and Eisenhower, ranging from the Morrill Act Land Grant University system, the Homestead Act, and creation of the national rail and Interstate Highway systems, also had a profound impact on the nation’s growth. Today, these systems are approaching their capacity limits. Consequently, a new strategy for America’s third century is urgently needed to create the foundation for the nation’s future competitiveness and quality of life. An ambitious goal would be to create an American Spatial Development Perspective by 2007, the bicentennial of Jefferson’s national plan, and the centennial of Teddy Roosevelt’s national plan.



Population Change, 2000-2050 (by county)



Source:
Woods & Poole
2002,
ESRI

Trends Facing the U.S. by 2050

An **American Spatial Development Perspective** should consider five key economic, demographic and spatial trends that will shape the nation's growth in coming decades:

Five American Spatial Trends

- **Rapid population growth**
- **The building-out of suburban America**
- **Uneven and inequitable growth patterns within and between regions**
- **Metropolitan infrastructure that is reaching the limits of its capacity**
- **Emergence of Super Cities (Emergence of urban networks on a global scale)**

1 Rapid population growth In contrast with our economic competitors in Europe, Japan and China, the US is experiencing rapid population growth. The Census Bureau forecasts that the nation's population will grow by 40% to 430 million by 2050. In contrast, most European countries are expected to lose significant numbers of residents, due to declining birth rates and limited immigration. This means we must build half again as much housing and as much commercial and retail space and the infrastructure needed to support these activities in the next half century as we have in the past two centuries.

Population trends

US Population: 2004-2050 As other industrialized countries, particularly in Europe, face projected population loss in the coming fifty years, the United States is poised for tremendous growth during this time. In the past ten years alone, the population of the United States has grown 15%, from 246 million in 1990 to 282 million in 2000. While estimates vary, most trends show the United States growing by almost 40% in population to about 430 million people by 2050.

Immigration plays an important role in this projected explosive growth. The notion of attaining the 'American Dream' is alive and well, and entices people to thrive and prosper much as it has done historically. As the United States continues to open its doors to immigrant populations from around the world, Hispanic and Asian communities are seeing second and third-generation family members born in this country.

Locations of Major Population Increases/Decreases

Looking at historical population settlement patterns sheds light on current and future population patterns. While early settlers clung primarily to the coasts and in compact urban regions, the inventions of rail transportation and the automobile forever changed settlement patterns and allowed people

to set up homes in the interior of the country and in highly decentralized metropolitan areas.

The Great Plains offered great farming potential in these times, and the abundance of fertile and free land encouraged people to move to the Plains and other areas of the interior West. The increased mechanization of agriculture, consolidation of farm holdings and growth of large agri-businesses have accelerated the decline of smaller farms that sustained families and rural communities for more than a century. Outside of a handful of growing metropolitan areas and amenity regions, very little of the nation's rapid growth expected by 2050 will occur in the Plains and other isolated rural regions. As younger residents move out of the Plains and similar rural regions, their populations will become increasingly elderly. Between 2000 and 2025, counties in the Great Plains that lost population between 1990 and 2000 are projected to show a further loss of 6%. Based on the forecasted trends between 2000 and 2025, the trends for 2025 to 2050 show a continuing population loss, amounting to a 13% projected population decline in these counties.

Fast-growing Sunbelt states, such as Texas, California and Florida, are expected to see sustained rapid population growth, with an additional 6 million people in each state projected by 2025. Assuming that the trend of immigrant populations settling in the Southeast, West and Southwest continues as people follow the work opportunities and established family ties in these areas, these numbers will continue to grow by 2050. Particularly, several counties in Georgia, Nevada, Arizona and other states in these regions may see population increases upward of 35% by 2025.

While most central cities will continue to grow only at a moderate pace, many metropolitan regions around these urban cores are expected to experience remarkable growth over the next 50 years. As the city of Philadelphia continues to lose population, for example, its adjacent suburbs and areas further outside of the city continue to grow in population. While not all cities are projected to lose population, counties adjacent to cities will see a large increase in population in the coming 50 years. In general, however, the number of people living in urbanized areas as opposed to rural areas is projected to continue rising, signaling an increase in the amount of urbanized land in the coming decades.

The Northeast Corridor, anchored by Boston, New York, and Washington, has been a dominant region within the United States since the founding of the country. Most of the counties in this area will continue to experience population growth through 2050, and the amount of urbanized land will continue to increase.

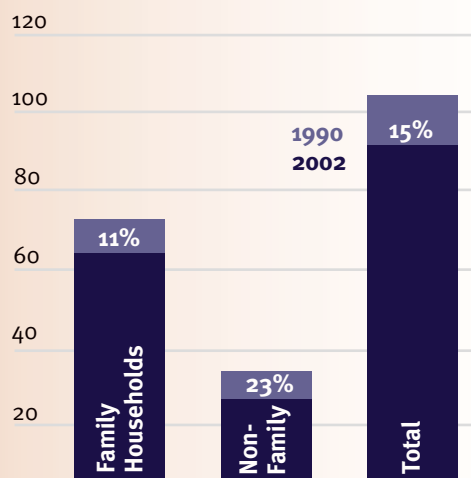
Household trends

Household trends and cultural trends in household size

Over the past fifty years, the country has witnessed significant changes in household composition and size that will continue to impact living patterns for years to come. Today, less than one-quarter of all households are composed of the traditional ‘married with children’ family structure. However, average household size appears to be leveling off at 2.6 people per household. This means that the number and type of housing units necessary to accommodate the needs of smaller average households will increase. A variety of housing types will also be required to accommodate the personal choices of various sub-groups within the population. For example, as the baby-boomers age, housing changes will have to reflect the retirement needs of this large cohort.

Even with the continuing trend towards smaller household sizes newly constructed housing has not decreased in size to reflect such trends. In fact, new houses are larger than ever. The number of homes with four or more bedrooms has increased from 1990 to 2000 by 17%, with over 37% of new houses providing more than four bedrooms, even as the average household size hovers around 2.6 people. This trend has been driven in part by local zoning measures and housing markets that promote larger single-family housing units and discourage smaller single and multi-family units. Without significant policy change, aging baby boomers will find their choice of smaller housing units limited, and growing numbers of metropolitan residents will continue to commute longer distances to larger, less expensive homes on oversized lots.

Changes in Households between 1990 and 2002



The overall trend toward smaller household and family size, however, is not reflective of the composition of immigrant households: over 70% of recent immigrant households are headed by married couples. Immigrant households are also likely to have larger families: twice as many foreign-born headed households as native-born headed households had five or more people living in them. The traditions and patterns of foreign-born populations will certainly affect the household trends through 2050.

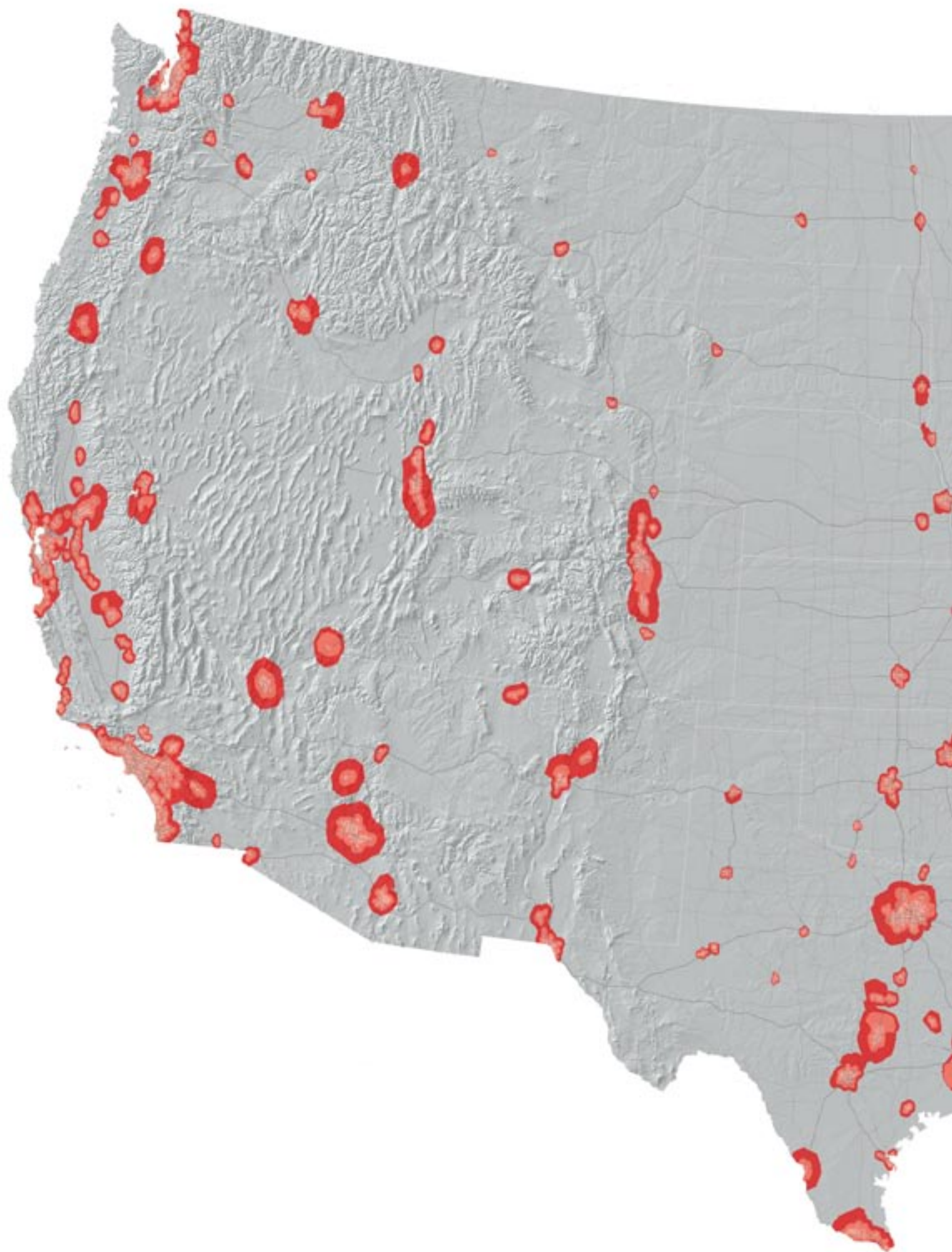
Housing Construction and Values Between 1990 and 2000, the nation’s housing inventory increased by 13%, most of that in the fast-growing West and Southwest. Housing construction through the next 50 years will continue to mirror this trend, as these two areas of the country are expected to continue growing faster than other areas of the country.

2 The Building out of Suburban America

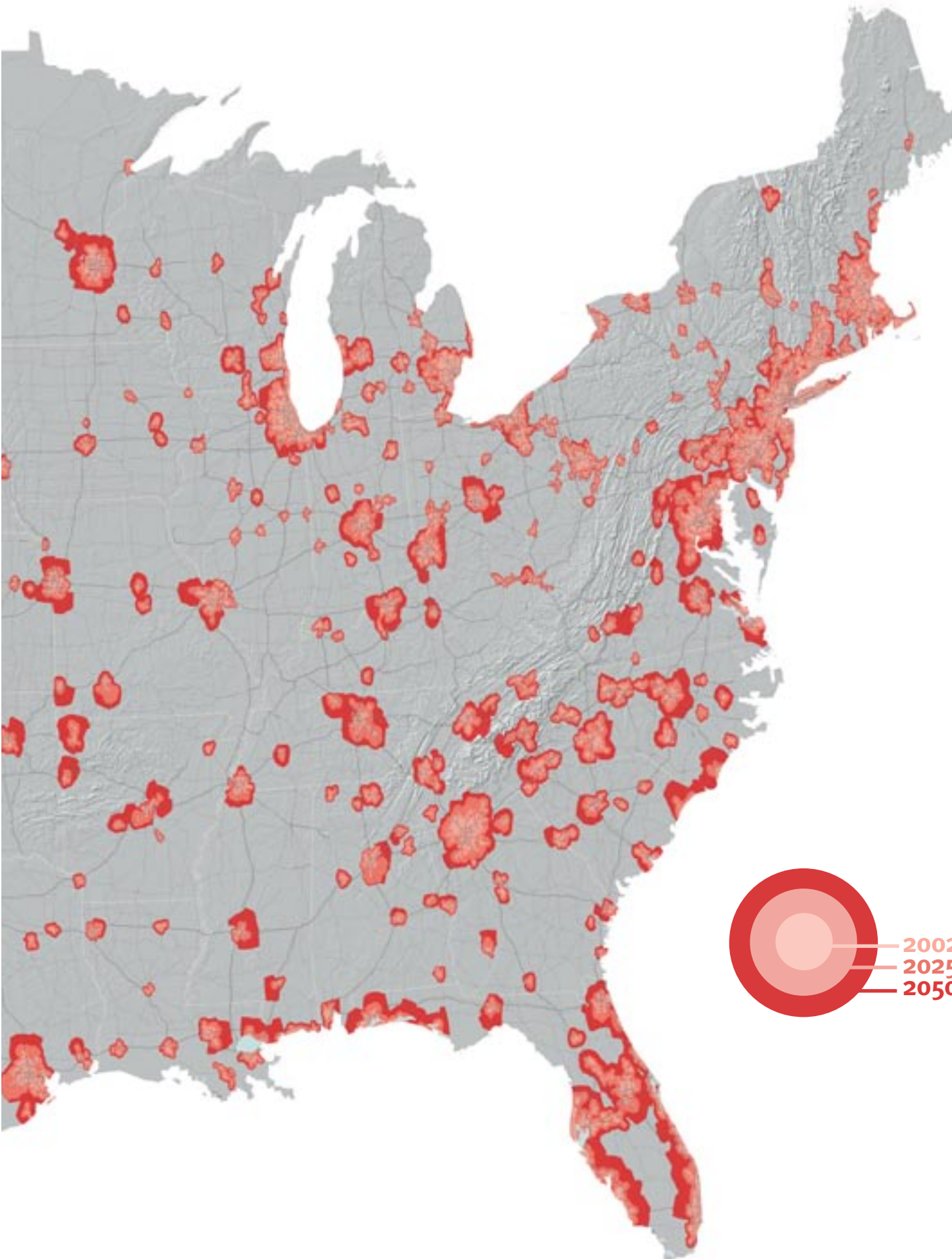
Since 1970 the vast majority of the nation’s economic and population growth has occurred in 30 large metropolitan regions, mostly in their sprawling outer rings. Many of these places are approaching “build-out,” increasing traffic congestion, limiting housing production and creating conflicts between development and “green infrastructure,” such as public water supplies and wildlife habitat.

In less than three centuries, 46 million acres of America’s virgin landscape have been converted to urban uses. In only 25 years, that number will more than double to 112 million acres. If current growth and land consumption rates continue, another 100 million acres of America will become urbanized by 2050. We will urbanize land at a rate seven times faster than our population will grow. Considering that it takes \$100,000 to urbanize one acre of land, this future growth will cost \$14 to \$17 trillion dollars.

While many cities and inner-ring suburbs are now experiencing infill development and renewed population growth, if present trends and policies continue, the vast majority of expected growth will occur in new outer rings of low-density metropolitan sprawl. The building out of America will take a toll on more than just the national treasury – it will have dramatic effects on the nation’s economy, environment and quality of life. Our sprawling pattern of growth is contributing to inescapable road congestion, which leads to increased shipping times and costs. Farmland near urban areas is constantly disappearing underneath residential subdivisions and big-box retail outlets while ozone alerts threaten almost every large metropolitan area. Every year, commuters will have to drive farther to work and children will become trapped by the need to be escorted everywhere by automobile.



Metropolitan Growth 2002-2050



3 Uneven and Inequitable Growth Patterns: Urban and Rural Decline

Since 1970 virtually all US population and economic growth has been in large metropolitan regions, and within these regions, most growth has been in the outer suburban rings. At the same time, many areas of the country have experienced decline, a trend that is expected to continue. These include:

Declining Areas

Large rural regions Where resource-based economies or ground water reserves are in permanent decline, leaving them without the means to support even basic services.

Declining major and second-tier cities Across the country, a number of large urban centers and second-tier cities have experienced decades of decline. Several of the nation's largest urban centers, including Philadelphia, Baltimore, Pittsburgh, Cleveland, Detroit, St. Louis and New Orleans, have lost a third or more of their populations since 1960, as their economic base has eroded.

Inner-cities and inner-ring suburbs Even as the outer ring suburbs of most metro regions have grown, many inner-cities and inner-ring suburbs have lost residents, tax base and economic activity, and poverty has become highly concentrated.

In many parts of the country, recent growth patterns have exacerbated inequalities that threaten the sustainability of our communities. High housing prices and limited stock of affordable housing in cities, rural areas and the suburbs in-between have created long commutes, traffic congestion and a more economically-segregated population. Recent research provides evidence that problems associated with inner cities are following growth into suburbs and rural areas. Lack of investment in schools and other community infrastructure, as well as inadequate planning to accommodate attainable housing for the nation's workforce will exacerbate local conditions. A strategy is needed to ensure that development proceeds in a more equitable way, so that the needs of all parts of the country are more fairly met as the nation grows.

Disparities In Wealth

Interpreting the Wealth Index

The per capita change in income between 1990 and 2000 clearly indicates that the nation's wealth is increasingly concentrated in urban areas, and the wealth levels in coastal areas and leisure destinations are increasing relative to the country as a whole.

Bypassed Regions and Declining Cities

While most large metropolitan areas are expected to grow and prosper, a number of both urban and rural regions and cities are expected to experience slow growth of residents and jobs, and in many cases, experience significant reductions of both. The largest of these regions is the High Plains, stretching from the Dakotas and Montana to West Texas and New Mexico, encompassing parts of 10 states. Other bypassed regions include large areas of Northern New England and Upstate New York, the Appalachians, the Mississippi Delta, the Rio Grande Valley and the high deserts of the inter-mountain West. Many of these places have high concentrations of African-Americans, Native Americans, Latinos and poor whites who will be increasingly disadvantaged as economic opportunities in these regions decline.

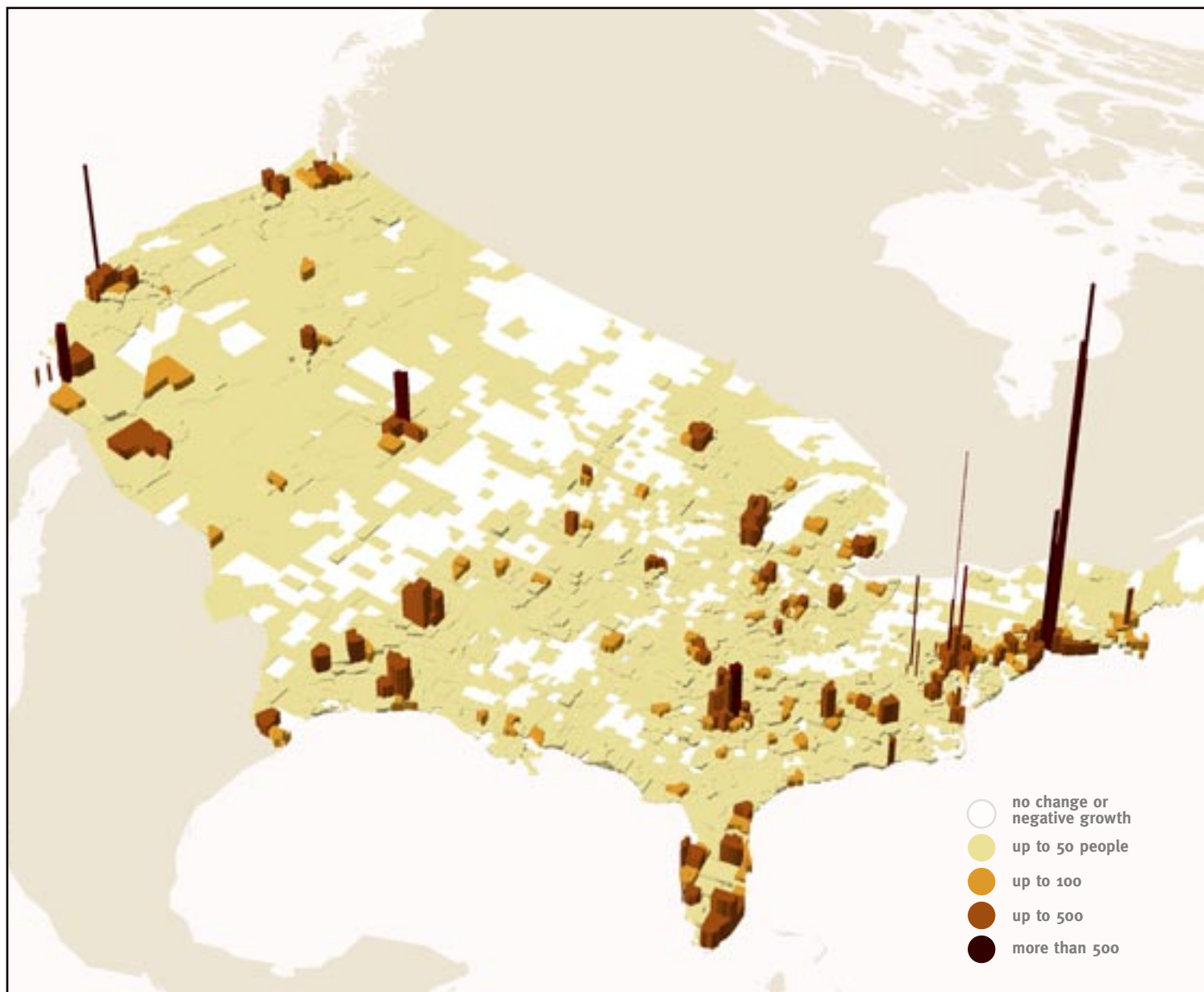
As noted above, similar trends will emerge in a number of older urban regions, in such places as Buffalo, St Louis, Cleveland, Detroit and second-tier cities across the country. Many of these central cities have lost as much as two-thirds of their population since 1970, and can anticipate further decline, even as the nation as a whole grows and prospers.

In contrast with the United States, for decades the European Union has invested vast sums to promote development and redevelopment of comparable bypassed areas of Europe. These investments have produced dramatic results in revitalizing the economies of Ireland, Spain, Portugal and Greece, and formerly depressed cities and regions in Europe's periphery. Similar strategic investments in America's bypassed cities and regions could produce comparable results in these places.

Areas Eligible for EU Cohesion Funds: The EU is directing funds for economic development to underperforming regions, in many cases transforming weak economies.

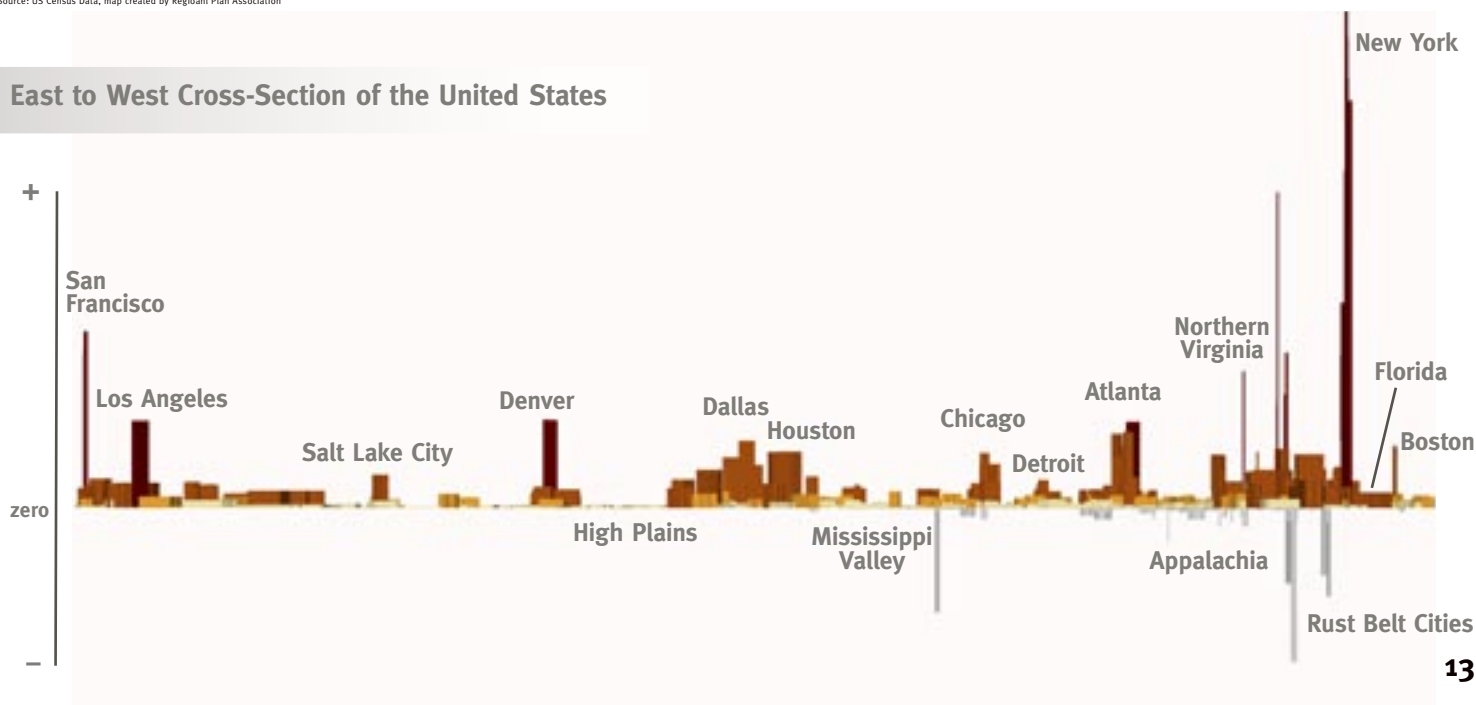


Population Change per square mile, 1990-2000 (by county)



Source: US Census Data, map created by Regionl Plan Association

East to West Cross-Section of the United States

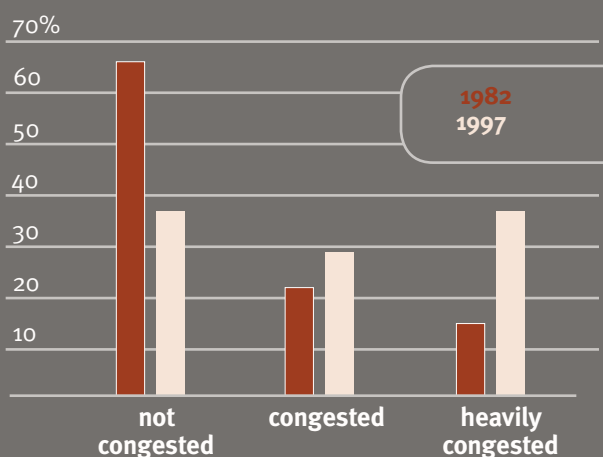


Congestion is a Nationwide Problem

Congestion has become a major national problem. In 1999 the Texas Transportation Institute (TTI) did a nationwide study on congestion. They looked at the nation's 68 largest urban areas and found that:

- Traffic congestion costs motorists **\$78 billion** annually — the average motorist lost **\$625 a year** in wasted time and fuel sitting in traffic.
- From 1982 to 1999, the amount of time wasted in these areas due to traffic congestion **rose from 1.9 to 4.5 billion hours**.
- Even with increasingly fuel-efficient engines, **6.8 billion gallons** of fuel were wasted in these cities **in 1999 alone** due to traffic congestion.
- **94%** of Americans believe it is important to have uncongested roads.

Road congestion trends 1982-1997



Along with the realization that America does not have enough capacity to support increasing car usage, the Department of Transportation reported that a 93% increase in investment by all levels of government would be needed to meet the \$94 billion a year estimated cost to maintain and improve highways and bridges. This is a frightening realization when 97% of surface transportation in America is on highways and over bridges.

Another segment of our transportation infrastructure that is becoming congested is air travel. Airline flight delays cost Americans 142 million hours in lost productivity and \$9.4 billion in annual costs in 2000 alone. Given current investment plans airline flight delays are projected to rise to 231 million lost hours and \$15.2 billion in annual costs in 2012.1

2001 saw a decrease in congestion levels due to the 9/11 terrorist attacks, but the FAA (Federal Aviation Administration) expects air congestion to return to pre 9/11 levels by 2005.

- 4 Metropolitan Infrastructure is Reaching its Carrying Capacity Limits.** All over the US, metropolitan infrastructure of all kinds, most of it built in the last half of the 20th century, will reach its capacity limits in the first decades of the 21st century. Unless new capacity is created in roads, rails, air- and seaports and other systems, the nation's economic potential will be artificially limited. Federal transportation investments over the past decade have been largely focused on maintaining the current stock of highway, rail, sea and airport infrastructure, not on expanding the capacity of these systems.

Infrastructure Constraints

Transportation is the Backbone of a Strong Economy

America's economic might after World War II was in no small part due to the efficiency and capacity provided by the Interstate Highway System, which brought unparalleled access and mobility to almost every corner of the country. The capacity of that system in and around metropolitan areas is now largely used up.

President Eisenhower envisioned a national highway system that would facilitate free-flowing, inter-city and national mobility for passengers, goods and essential military needs, with metropolitan beltways that would permit long distance travel around congested urban areas. What Ike didn't anticipate was that within half a century the nation's metropolitan regions would build-out around their interstate links, and that most Americans would use the interstate highways as part of their daily commutes in order to avoid traveling long distances on local roads. In addition, the national rail freight system was allowed to wither in the last half of the 20th century, with the result that most goods are now moved by truck. Despite the proliferation of new outer beltways and radial highways and the constant expansion of its capacity, much of the Interstate system is now highly congested and consequently inter- and intra-regional passengers and freight face growing delays and unreliability. American transportation officials are finally reaching consensus on the simple fact that the U.S. cannot build its way out of congestion with new roads.

The Trend: Increasing Mobility

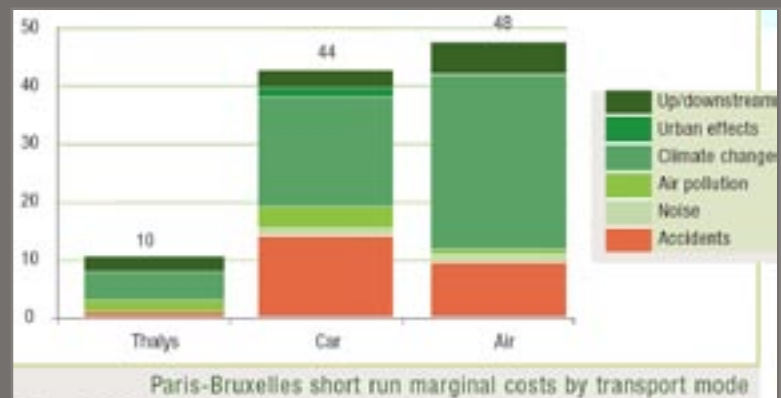
Over the last 50 years, Americans have become increasingly mobile. The increase in miles traveled per person has been most pronounced in car and aircraft travel. This increase in mobility has led to growing challenges in keeping transportation corridors congestion-free. Vehicle miles traveled (VMT) has increased from 8,685 per person in 1969 to 13,476 in 1999, the equivalent of driving from New York to Kuwait and back. While population, drivers and vehicles have increased dramatically, new miles of road have increased by only 6%.

Improving Capacity and Congestion in Globally Competitive Regions

While American railroads made individual attempts to introduce high speed service throughout the 1960's, the Japanese were experimenting with their bullet train, or **Shinkansen**. Japan Railways introduced the world to true high speed rail in 1964 when it opened the first stretch between Tokyo and Osaka. Many more Shinkansen lines have been built across the Japanese archipelago and today, trains on busy routes depart every six minutes at speeds of over 175 mph.

In the fall of 1981, France introduced the **Train à Grande Vitesse**, or **TGV**, bringing High Speed Rail (HSR) service to Europe. The TGV quickly took market share from the airlines on the important Paris to Lyon route. In recent years, Air France was forced to cancel air service between Paris and Brussels altogether, as the short travel time offered by the TGV made a trip to the airport excessive.

Since France began TGV service over two decades ago, Germany, Belgium, the Netherlands and Spain have built their own extensive HSR networks. Spain's first AVE line was opened between Madrid and Seville in time



for the 1992 World Exposition and reduced the travel time between the two cities from six hours to just over two hours. In late 2004, a new AVE line will open between Barcelona and Madrid, reducing the rail travel time between the country's most important cities from eight hours to three. Germany recently opened a HSR connection between Frankfurt and Cologne, cutting trip time from over two hours to one hour and 15 minutes. In addition to linking the centers of these two important cities, the new HSR line connects Frankfurt/Main airport with Cologne/Bonn airport. Lufthansa has reduced its offer on this route from 15 flights per day to just two, proving that rail can provide a viable alternative to air travel over this distance.

Nearly every country in Western Europe has undertaken efforts to accelerate rail service in busy corridors. The EU has recognized the value of fast rail links by funding HSR projects in both the core and periphery of the continent. Out of 14 priority projects in the current Trans European Networks (TEN) plan, 10 are passenger rail initiatives. Only one is a road building project and one calls for the expansion of Milan's Malpensa airport as a central European hub. Even considering the increase in air travel within Europe, it is clear that Europeans believe HSR can bring the continent closer together while limiting environmental damage and improving the flow of goods and people.



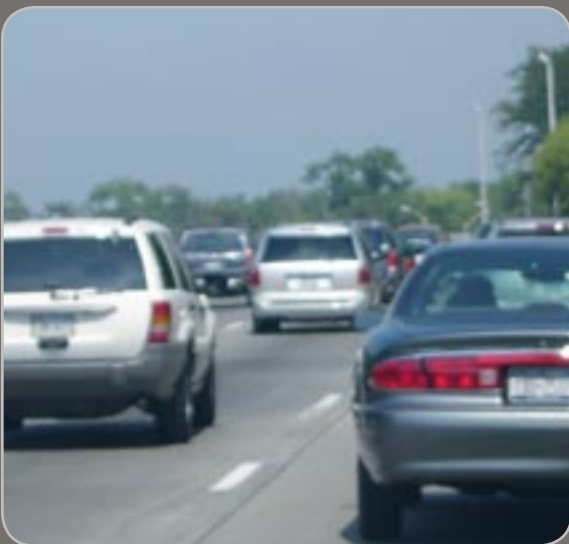
Looking at the Effects of Congestion on the U.S. Economy

Along with affecting travel time and overall quality of life, congestion poses a serious threat to manufacturing and freight sectors of the US economy. In 1999, transportation-related goods and services generated 11% of our total Gross Domestic Product. With the exception of the World War II period, growth in the Gross Domestic Product and vehicle miles of travel have grown in direct proportion to one another – evidence of the strong link between transportation and the economy.

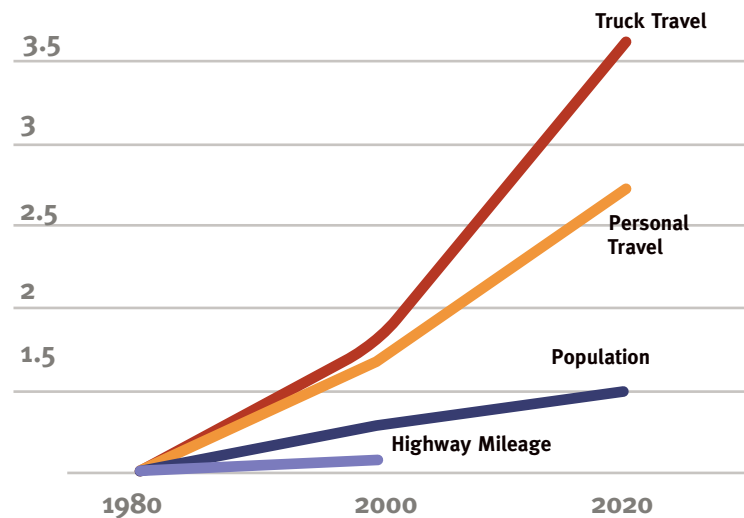
The US Department of Transportation has found:

- In the last 30 years, vehicle miles of truck travel have increased by **225%**.
- By 2020, experts believe that there will be nearly a **doubling** of trucks on the road over current numbers.

The effects of doing little to combat highway congestion have tremendous impacts on freight delivery and its role on the nation's productivity and performance in the global economy. These effects include slower shipments, higher costs and less reliability.



Travel Projections, 1980-2020



Source: US Department of Transportation

This graph shows that though personal travel and truck travel will double by 2020, highway mileage is not expected to increase, using 1980 as the base figure.

The U.S. Department of Transportation has estimated that since 1970:

Population has increased by 30%

The number of **licensed drivers** increased by 64%

Registered vehicles have increased by 87%

Vehicle miles traveled have increased by 125%

If the significant increase in road congestion experienced throughout the country in the last decade continues, it will eventually lead the system to a breakdown. The trends are unmistakable and are predicted to continue if significant policy measures that channel more resources into high capacity transportation systems are not implemented.

Highways are not the only mode experiencing congestion related delays. If flights are delayed at any of several key airports, delays are felt throughout the nationwide system. The Federal Aviation Administration recently forced airlines at Chicago O'Hare airport to reduce the number of flights they offer or face stiff penalties. In the face of highway congestion, UPS and FedEx have begun shifting their transcontinental traffic onto trains. While the railroads appreciate this influx of new business, they are often unable to meet the stringent timetables demanded by global logistics providers. Decades of underinvestment have left the national railroad network congested and in a poor state of repair.

- 5 Emergence of SuperCities** In 1961, French geographer Jean Gottman described the emergence of the Boston-Washington Megalopolis. Between now and 2050, more than half of the nation's population growth, and perhaps as much as two-thirds of its economic growth, will occur in this and seven other emerging megalopolitan regions, or "SuperCities," located in every region of the country. SuperCities are extended networks of metropolitan centers linked by interstate highway and rail corridors. In Europe and Asia, similar networks of cities are now seen as the new competitive units in the global economy, and major public and private investments are being made in high speed rail, broadband communications and other infrastructure to strengthen transportation and economic synergies between their component centers.

Great Lakes SuperCity



Polycentrism, Megalopolis and World City Networks

Polycentric urban structures have emerged over the past fifty years as changing development and work patterns have transformed American cities. American cities were traditionally monocentric with housing and businesses tightly concentrated near the center. The development of new transportation

technologies starting with the electric streetcar in the late nineteenth century allowed middle class workers to live farther from their places of work. Meanwhile, America's downtowns became congested and experienced diminishing economies of scale. Eventually, it no longer made sense to travel downtown for everyday goods, and commercial centers emerged outside of the traditional core. This was the first evidence of a polycentric city.

After World War II, suburbs began to flourish and real estate developers found a new market in catering to suburbanites with the creation of shopping malls. Over the next decades, jobs and offices followed retail and housing out to the periphery, reinforcing the importance of sub-centers within polycentric cities. In 1992, journalist Joel Garreau coined the phrase "Edge

City" for the concentrations of development around suburban highway interchanges that continue to play an important role in the modern urban structure.

Gottman's 'Megalopolis'

In 1961, French geographer Jean Gottmann determined that the Northeast Corridor of the United States represented a new form of urban geography known as a megalopolis. (Gottmann also identified the Chicago to Pittsburgh region and San Diego to San Francisco as emerging examples of megalopolis). The single metropolis with a dominant center, its suburbs, and a surrounding countryside was giving way to a more polycentric organization. Many of these suburbs were becoming satellites of communities that had neither the size nor the function traditionally associated with central places. Megalopolis provided a framework of centers for these suburban satellite developments.

Other important characteristics that Gottmann used to define the megalopolis included an increase in the intensity of functional interactions that are the basis of urban life and are more important than geographic proximity. The extent to which ideas were exchanged through media, newspapers, travel and business helped to determine the size of megalopolis. Efficient communications and transportation were vital to the megalopolis, and commuters often traveled to several centers in the course of a day. Megalopolis also exhibited an increase of employment in the services sector, which improved its position as an economic hinge and transaction space for the region where ideas were exchanged in addition to goods.

Today, almost 40 years after Gottmann first identified the Northeast megalopolis, highways crisscross our metropolitan areas and phrases like "reverse commute" and "cross-county connector" are the buzzwords of transportation planners. Only a few rail transit systems have adapted themselves to this quintessential new polycentric urban form. While agencies are quickly adding bus routes to link regional subcenters to central cities, the vast majority of these urban networks are served only by the automobile.

Sassen's 'Global Cities'

In the 1990's, Saskia Sassen identified "Global Cities" as an emerging type of urban network. Although Sassen prefers to identify Global Cities as distinct places (i.e., New York Global City is the five boroughs and, specifically, Manhattan), they share characteristics with the definition of megalopolis. Specifically, Global Cities are those which play a role as an economic hinge for a very large region and, sometimes, an entire nation. The global exchange of ideas, commerce, culture and fashion tends to occur primarily between these cities. As trade becomes more global, economic activity will

Air-rail examples

Frankfurt • Frankfurt/Main Airport has long had a regional rail station directly beneath the main terminal. However, it was not until the introduction of HSR service that the airport was able to position itself as a business center. In 1999, the stunning Frankfurt AirRail HSR terminal was opened to public acclaim. Eventually, a 2 million square foot office building will be constructed atop the 2,000-foot long station structure. The AirRail Center will offer optimal connections to the world at its doorstep: Offices are only 10 minutes from international departure gates and 510 trains serve destinations across Europe every day.



Schiphol • Amsterdam's Schiphol airport has long been an innovator in the field of airport development. What started as a simple shopping mall has blossomed into a large business district. Surface parking lots have been converted into 2 million square feet of prime office space and more is on the way. With a new rail link in development, Schiphol Airport is poised to become the office hub of the region.



1960s

likely continue to gravitate toward these centers. The integration of air and rail service is critical to an intermodal transportation system. Currently, airports are the hubs of our intercity transportation network, yet the vast majority of them can only be reached by private car or shuttle bus. Many of the nation's busiest airports are located within a few miles of existing passenger rail service. There are two reasons why this is important: Rail can act as a very important, high capacity travel mode to get passengers to airports quickly while avoiding highway congestion. Secondly, high quality HSR service can replace air service between cities that are less than 500 miles apart. This reduction in air trips will free up landing spots at airports, allowing airlines to serve more long haul routes where larger planes make air service more profitable.

Many of the advantages that made rail travel the preferred method in the 19th century are still an advantage today. Rail has the highest potential passenger capacity of all travel modes. It consumes less energy and produces less pollution per passenger mile than either air or private automobile. Train stations are generally found in the heart of the city, which means that they are within a short walk, bus or taxi ride of a region's employment center. Finally, a rail passenger can arrive at the station 10 minutes before departure, purchase a ticket and be on his way.

When comparing travel times from city center to city center, trains enjoy a significant advantage over planes for trips of up to 500 miles. At these distances HSR is more cost effective than air for passengers and transport operators, and door to door travel times are shorter. Further enhancing that advantage, average travel distance to airports is 21 miles, but only 12 miles to rail stations. Additionally, 56% of long-distance trips made in America are less than 500 miles, indicating that an efficient HSR network could become a key component of the American passenger transportation system.

Currently, almost one half of all commercial flights in the US are less than 500 miles. Airports across the country are struggling to increase capacity with costly terminal expansions and environmentally unacceptable new runways, which can take 10-15 years to construct.



2000s

opposition to a third runway forced airport operators to pursue improved rail connections. The result has been new relationships between air and rail operators, shifting domestic flights to rail and freeing up much needed airport capacity. More and more European airports are finding air capacity solutions by looking to the ground: by creating HSR stations at the airport, some of the continent's most congested hubs are transferring passengers to rail for the completion of their voyage. These Air-Rail interchanges also function as regional office centers in polycentric urban regions, providing desirable location advantages with outstanding transportation connections. Worldwide, there are 70 Air-Rail connections in operation and 230 planned.

Through agreements with railroads enabled by new HSR connections, Air France and Lufthansa have been able to discontinue flights on the Paris-Brussels, Frankfurt-Cologne and Frankfurt-Stuttgart routes by "code sharing" with railroads. As airports across Europe link up with HSR networks, the continent will enjoy the economic benefits of higher capacity. Currently there are three US Air-Rail connections in operation including Baltimore, Newark and San Francisco.

There are Air-Rail connections under construction in Providence, Milwaukee and Harrisburg – this does not even include rail public transit connections to airports. The potential for air-rail connections to relieve airport congestion is enormous. For example, in Northern California, over 281 intrastate flights to Oakland and San Francisco International Airport could be transferred to HSR. This new airport capacity would allow for more long-distance flights that bring business from outside the region, further enhancing Northern California's economic ties around the globe.

For example, the state of Illinois is trying to fund a \$6.1 billion renovation of Chicago O'Hare airport in order to increase its capacity. In Frankfurt, Germany,



Taylor's Globalization and World Cities (GaWC) Project

Using the Global Cities context as a model, geographers affiliated with the Globalization and World Cities (GaWC) project, lead by Peter Taylor, have created a taxonomy of world cities. The group has analyzed data such as the number of firms in specific industries and international airline connections to measure economic relationships between cities and to assign a ranking in the GaWC hierarchy. Out of 10 Alpha World Cities, three are located in the US (New York, Chicago and Los Angeles). The US is also home to one Beta World City (San Francisco) and seven Gamma World Cities (Atlanta, Boston, Dallas, Houston, Miami, Minneapolis and Washington). Importantly, the GaWC project also identified several cities in the US that show some characteristics of World City formation, including Baltimore, Cleveland, Columbus, Detroit, Kansas City, Philadelphia, Richmond and Seattle. The foundations of solid growth and global importance already exist within these cities and should be fostered.



Strengthening Urban Networks

Unlocking Capacity and Creating Redundancy

Trends indicate that the capacity of the United States' current transportation infrastructure is insufficient to meet the projected demand over the next fifty years. Even with increased investment in highway and airport expansion, congestion levels will continue to rise.

A significant problem with passenger transportation in the United States is that planes, trains and automobiles have always been viewed as separate, unrelated systems that compete against each other. Each of these modes has unique characteristics that make it the best choice for trips of certain distances. Rather than competing for travelers in the same corridors, trains and planes should be used to complement each other in a larger, integrated transportation system. This multi-modal transportation system must be replaced by a truly inter-modal system that capitalizes on the specific advantages of each mode. The key to unlocking America's latent transportation capacity is the seamless integration of air, road and rail. The vision for American transportation in the next century is one where every mode of travel is used interchangeably to move people and goods from one point to another in the least

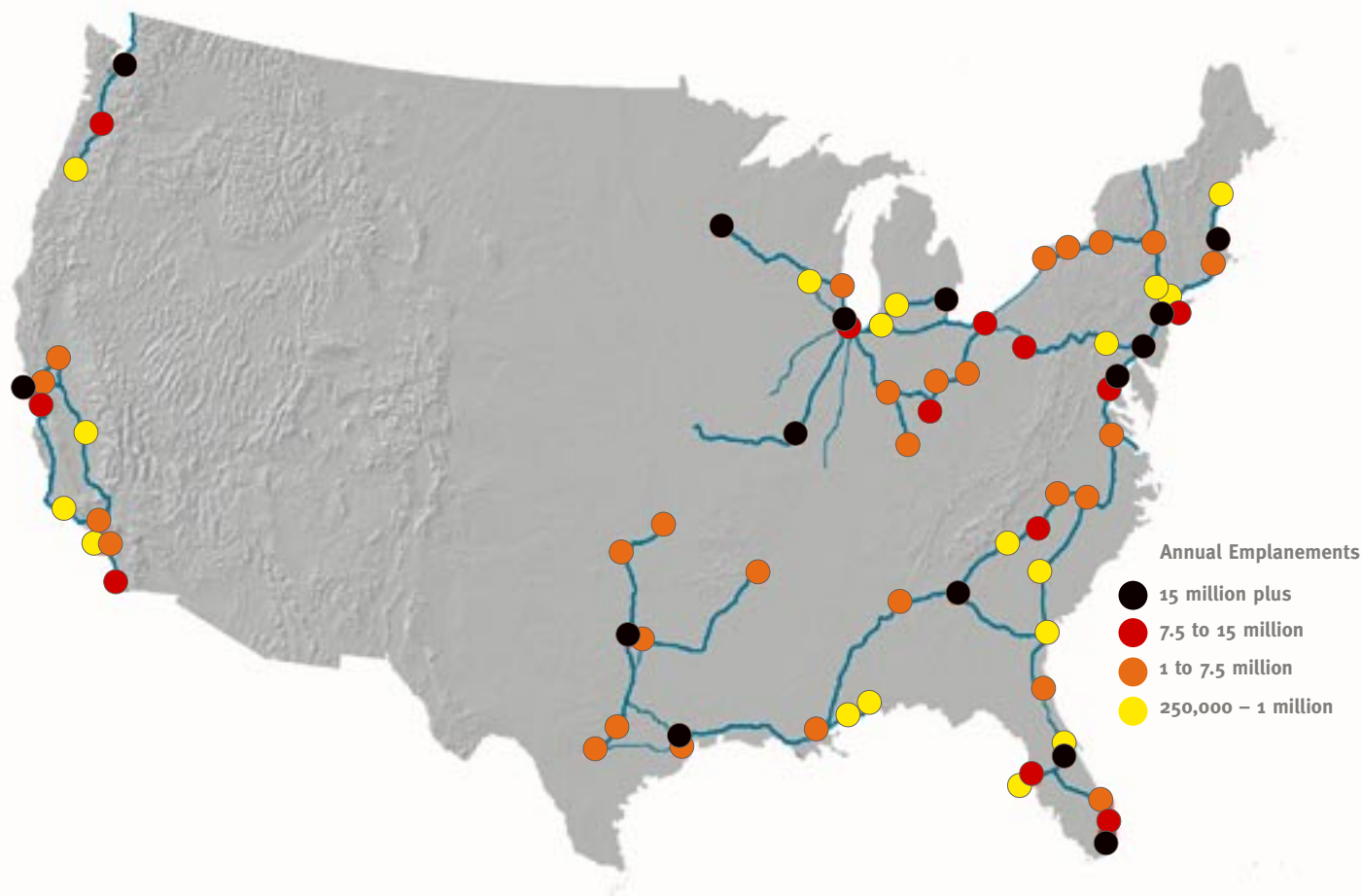
amount of time with the least amount of congestion.

The resulting interconnected, intermodal transportation system will also create the redundancy necessary to make the United States less vulnerable to natural disasters or the effects of a terrorist attack that could threaten transportation infrastructure. By having different options for intercity and intracity transportation, an attack on transportation infrastructure would only temporarily cripple one leg of the infrastructure "tripod" of road, rail and air.

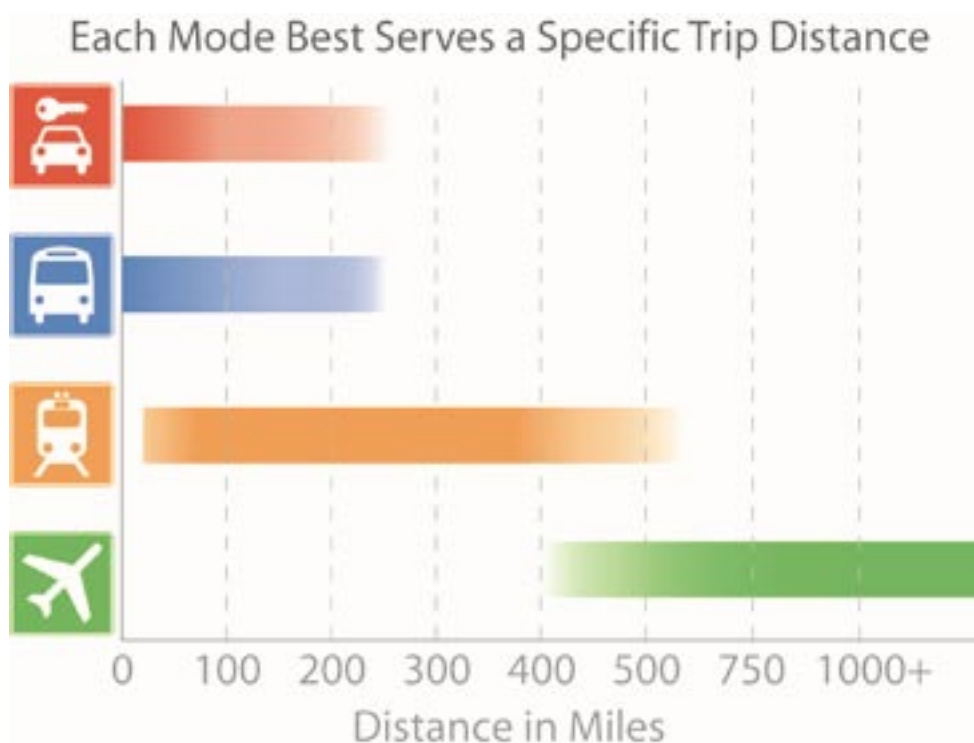
Finally, development focused around rail stations will shape and redirect urban growth in more efficient, less sprawling patterns. This will result in strong urban networks supported by world-class infrastructure that will ensure the competitiveness of America's cities in a global economy.

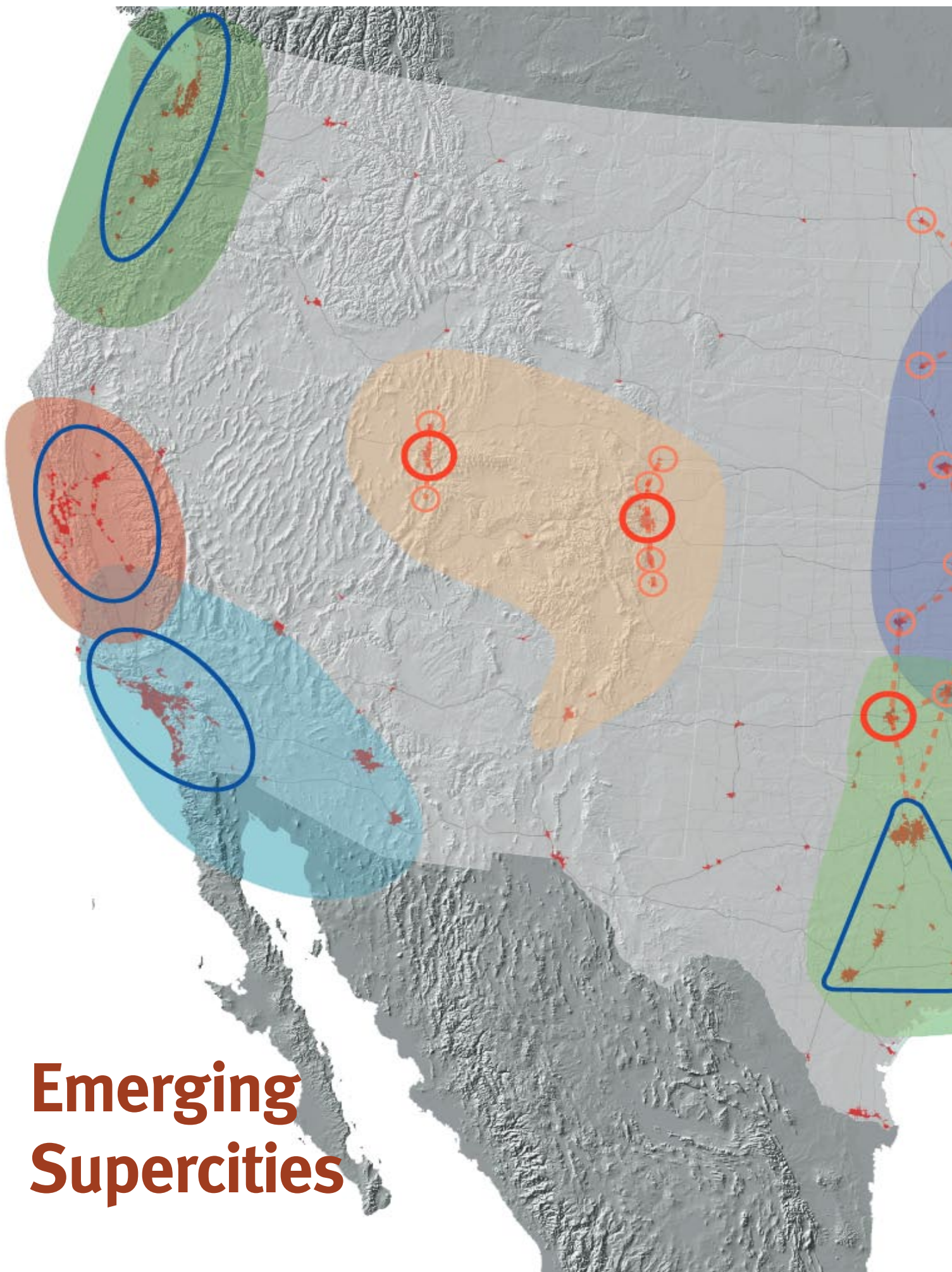


Airports Within 10 Miles of planned or potential HSR

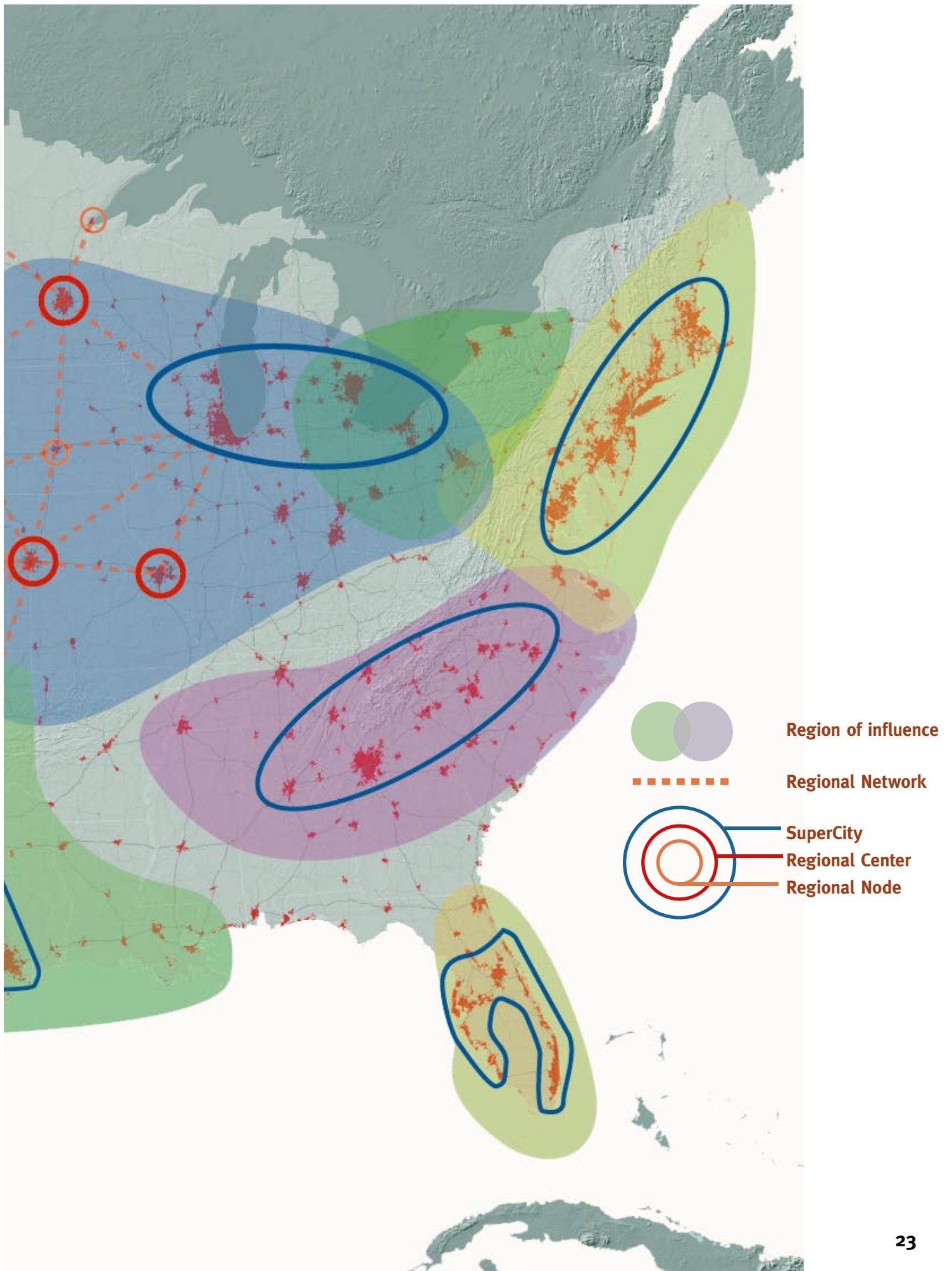


Through sharing of infrastructure, Supercities can integrate all modes of transportation, rail, air, highways, and intercity freight links.





Emerging Supercities



The Randstad, Holland

Today, in the new global economy, the Randstad is becoming the natural growth pole between other European urban regions. Made up of the four major cities of **Amsterdam, Rotterdam, The Hague** and **Utrecht**, the Randstad is characterized as a poly-nuclear city region, a ring of cities and towns interlinked with rail and road infrastructure and grouped around a central open space called the Green Heart. Each of the four main cities has its own economic function and specialization.

Amsterdam is the financial and air transport center flanked by a harbor complex and steel mills. The national stock exchange is located here, as are most Dutch banks and many multinational companies. Schiphol Airport, the central hub for Royal Dutch Airlines (KLM), is one of Europe's busiest airports, and home to a new emerging logistics base for banking.

Rotterdam is the largest seaport in the world, playing a significant role in the shipment of goods around the world. The economic structure of the city is based on these flows of goods. The city is also developing its cultural and university facilities,

The Hague is the governmental center of the Randstad and the country. It has experienced rapid growth in the civil services sector, as well as in diplomatic establishments, non-governmental organizations, and international institutions.

Utrecht is the hub of the national rail network, therefore becoming an important center for service related companies. It is home to headquarters of major insurance and software companies. The University of Utrecht has become one of the largest in the country.

While the cities themselves are growing together, they still maintain their unique identities, not only with regard to urban form, function and character, but also to the attitude of residents to their own towns. The Randstad is different from other large city regions in Europe because the traditional functions of a metropolis (e.g. administration, industry and provision of services) are distributed among many cities rather than being concentrated in one central city. The cities and towns of the Randstad are thinking and acting as one unit, making it a stronger competitor in the new global economy.

The Supercity Concept

A New Model for America

The SuperCity presents a new model for cooperation between cities and regions within the United States. As metropolitan regions in the United States grow together, many diseconomies have emerged, such as congestion in transportation networks, which affect the economic vitality and quality of life of these regions. The SuperCity model is based upon the idea that if the cities in these colliding regions work

together they can create a new urban form, which will increase economic opportunity and global competitiveness for each individual city and for the nation as a whole.

In order to create these SuperCities, component metropolitan areas will cooperate in the formation of a structure that takes advantage of the complementary roles of each metropolitan area while fostering the integration of core issues.

These objectives will be achieved through combined efforts addressing common concerns in the areas of transportation, economic development, environmental protection, and equity. The SuperCity model will contribute to improving social and economic cohesion, a better territorial balance, and will support more sustainable development by emphasizing collaboration on important policy issues and infrastructure

The Objective of the SuperCity

Promote relationships between existing metropolitan areas;

Support **sustainability** and long-term vitality

Streamline transportation and land use patterns;

Foster better **economies**

Encourage **cost-saving measures** through cooperation



Source: Jean Gottmann, Megalopolis

investments. In addition, SuperCities will be important instruments for facilitating economic growth and job creation in the broader region surrounding the SuperCity, including underperforming areas.

Super Infrastructure for SuperCities

In order to facilitate the development of SuperCities, the United States should focus on the creation of a truly intermodal network linking rail, highway and air transportation. Intermodal connections will relieve congested airports, and the resulting transportation redundancy will provide increased options to make mobility less vulnerable to terrorist attacks and disaster. Such a network will also provide greater options for freight movement. Finally, development focused around rail stations will shape and redirect urban growth in more efficient, less sprawling patterns. This will result in strong SuperCities supported by world-class infrastructure that will ensure the competitiveness of America's cities in a global economy.

Framework for Cooperation

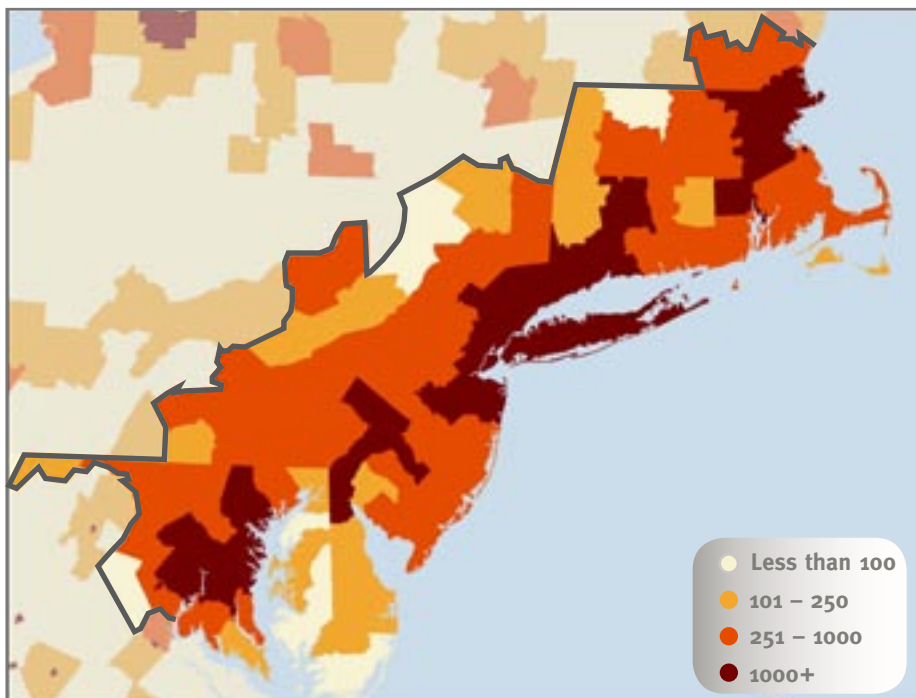
The emergence of the SuperCity requires a new and improved framework for governance and cooperation. There are three models this can follow. The first is a bottom-up approach, with the initiative coming from the local level. The second is a top-down approach, with the federal government mandating to metropolitan

regions that they work together. The third is a middle ground approach with the metropolitan areas taking the initiative to form partnerships, financed with federal funding.

Conclusion

The United States will face a number of decisions over the next fifty years. Americans will have to decide whether they want America by Design or American by Default. Our current direction is heading towards a country whose competitiveness is threatened by inefficient urban forms and declining rural communities. The SuperCity points us in a different direction, one in which urban areas and their surrounding regions work together to address common concerns and share their complementary strengths. This new model will produce an America that is environmentally sustainable, socially equitable, and competitive in an increasingly global economy.

Northeast Corridor, as designated by Gottmann's original county boundaries and density scale, updated with 2000 population square mile.

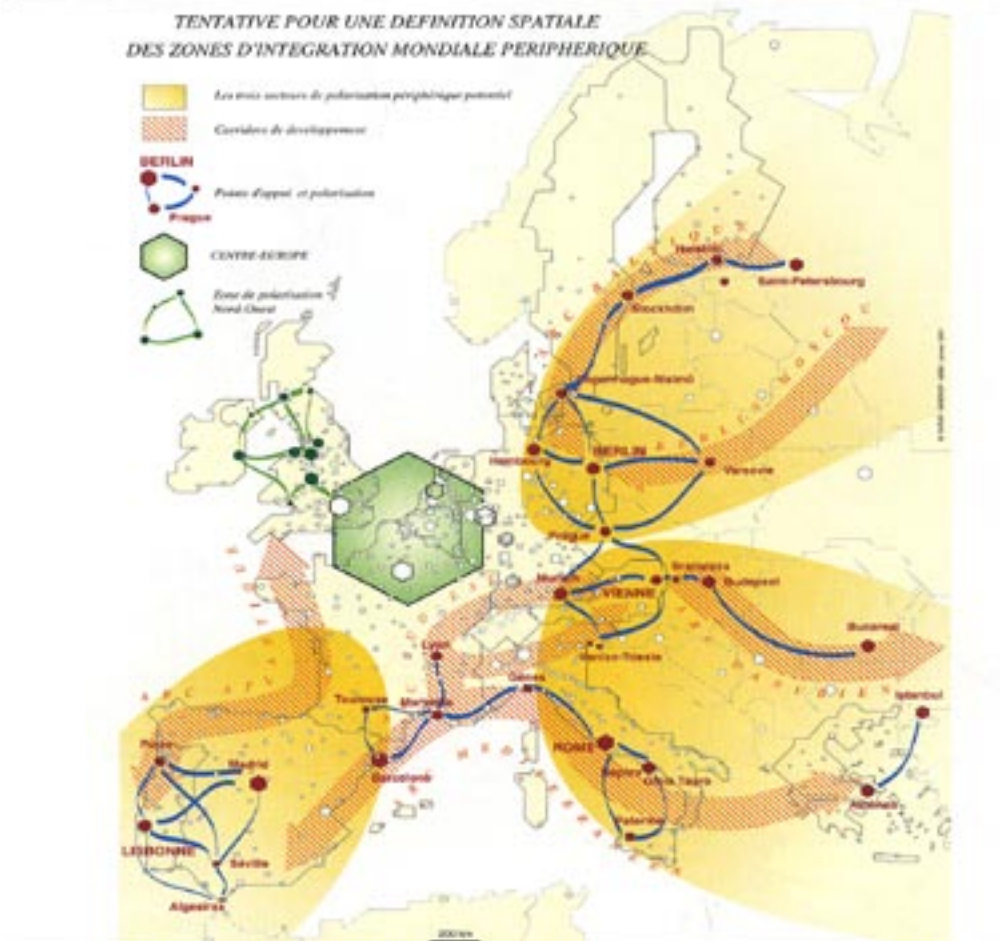


SuperCities and Global Competitiveness

SuperCities may have a particular role to play in creating economic competitiveness in the United States industrial sector. US industries often find themselves at a disadvantage in head-to-head competition with lower cost regions in Asia and South and Central America, where wages and permissive regulatory environments reduce the costs of production. However, as economist Michael Porter has pointed out, inner cities and metropolitan regions can also take advantage of competitive advantages in knowledge and technology to be more efficient in production. In addition, older urban areas may have spatial and development patterns that foster competitive economic clusters. SuperCities may provide an opportunity to translate these advantages to a larger scale while controlling costs of housing, infrastructure and environmental control.

In addition to advancing technology, coupling and chaining industrial activity to take advantage of "just in time" production and delivery can also be an essential element of a cost reducing strategy. The capacity to move goods quickly and "on demand" is becoming a serious obstacle that our individual firms are facing. Efficiently providing these services from airport or port to firm, and from unit to unit within a firm, or from firm to firm on a transportation system that is not adding capacity and is experiencing increasing congestion is among the greatest challenges of a global economy competitive strategy. This challenge can only be met with SuperCity development patterns and infrastructure development.

Possible Development of New Global Economic Integration Zones



European Spatial planning is focusing on large networked metro areas which cut across national boundaries. In the US, similar plans need to be developed for emerging US supercities.

Changing How We Plan?

As the number of economically competitive regions grows around the world, America's cities need to band together in order to strengthen their role in a global economy. It no longer makes sense for one city to lure companies from within the region when they could just as easily relocate across the country or across an ocean. By combining the unique advantages of these individual cities and investing in a more efficient regional infrastructure, the United States can create SuperCities that are globally competitive. As metropolitan regions in the United States collide, many diseconomies, which affect the economic vitality and quality of life in these regions, have emerged.

Declining Areas

Interregional competition and border wars to lure companies from one area within a region to another: Done using tax incentives, and carried out without regard to the quality of the jobs they create.

Inefficient land use patterns

High levels of **highway and air congestion**

Increasing levels of **environmental pollution**

Decreasing funds from state and local government budgets as funds are used for inefficient purposes

New, innovative methods are needed to boost the economic future of both the currently vital places as well as the underperforming areas. Only by linking these areas can the country continue to be successful. There have been some instances of regional cooperation within these metropolitan areas, where the central city and the suburbs are beginning to work together to further environmental, economic development and transportation goals. However, with the exception of alleviating environmental pollution, there has traditionally been little collaboration between metropolitan regions. Larger scale linkages are the key to long-term global competitiveness.

Emergence of the SuperCity

The United States is divided into six distinctive regions: the Northeast, Mid-Atlantic, South, Midwest, Southwest and West. These regional divisions are based on common history, geographic location, and topography. As Europe is approaching planning through the macro level, the Polycentric City concept, a similar approach is being proposed for the United States to create similar cooperating urban networks that cross these traditional geographic boundaries: the SuperCity.

Most of the nation's rapid population growth, and an even larger share of its economic expansion, is expected to occur in eight emerging

SuperCities – large inter-connected or “networked” metropolitan areas, each of them spread over thousands of square miles, and located in every region of the country. These SuperCities are becoming America's economic engines: centers of technological and cultural innovation where the vast majority of immigrants who are driving population and economic growth will assimilate into America's economic and social mainstream.

In Europe and Asia similar networked cities are already being seen as the new competitive units in the global economy. The European Union and national governments in Europe, China and Japan are investing hundreds of billions of dollars in new intermodal transportation and communication links and other infrastructure to underpin the capacity, efficiency and livability of these regions. In all of these places, new high speed rail networks are integrating the economies of formerly isolated regions, and in the process creating new highly competitive economic units.

America's emerging SuperCities are already hampered by congested networks of highways, railroads and airports, with little capacity for growth. Freight congestion is also occurring at the gateways to the global economy, such as the Ports of New York and Los Angeles/Long Beach, as well as at major choke points in the national rail freight system, such as Chicago. Freight volumes are expected to double over the coming decade, while the metropolitan links of the national Interstate highway and rail freight systems are already fully utilized. A major goal of an American Spatial Development Perspective must be to promote creation of regional high speed inter-modal transportation links and other infrastructure organized around the anticipated needs of the nation's growing SuperCities, and the nation's gateways to global markets.

ASDP Goals

Goals of the ADSP

The American Spatial Development Perspective (ASDP) could encompass long-range strategies to achieve five broad national goals:

Facilitate the emergence of eight new SuperCities that can compete with similar emerging networks of cities in Europe and Asia.

Create capacity for growth and improved global competitiveness in the nation's transportation and other infrastructure systems.

Provide resiliency, redundancy and capacity in the nation's infrastructure needed to respond to national security needs.

Revitalize bypassed urban and rural regions.

Protect and reclaim important nationally-significant natural resource systems and **promote less land-consuming** patterns of growth.

Toward an American Spatial Development Perspective

In 2007 America will celebrate the bicentennial of Jefferson's national plan, and the centennial of Roosevelt's second national plan. An ambitious goal would be to initiate preparation of a 21st Century American Spatial Development Perspective in 2005, with the goal of completing this effort by 2007, the centennial and bicentennial of Roosevelt's and Jefferson's national plans. The federal government could play a crucial role in this process, through collaborations with existing and emerging regional bodies involving:

A "bottom-up" process: The ASDP could emerge from a "bottom-up" network of inter-connected regional strategies, encompassing each of the emerging SuperCities and both growing and declining urban and suburban regions across the country.

Federal coordination and incentives: Ideally, the federal government would help coordinate and "incentivize" these planning efforts, and provide "bully pulpit" leadership from the White House, but rely on local and regional initiative to drive the development of each region's own strategies. It should be noted, however, that in the event that the federal government chooses not to lead this effort, local plans and strategies coordinated through a voluntary leadership council could achieve many of these outcomes.

Strategic investments in infrastructure: The federal government could also lead in coordinating plans for national and regional inter-modal, high-speed transportation networks, as it did in promoting creation of the national rail and interstate highway systems. It

is anticipated that the heart of these networks would be several regional high speed rail systems, organized around emerging Super-cities. These systems would be integrated with networks of airports, rapid transit systems and dedicated goods movement systems.

Public-private partnerships: These investments should be made through partnerships between federal, state and regional government and private investors. Wherever possible, user fees, tolls and fares should cover a substantial portion of the cost of developing and managing these systems. Plans for these infrastructure systems should be closely coordinated with strategies for urban and regional development, to ensure that future development patterns support, and are supported by, infrastructure investments.

Education and research: Regional strategies could also promote investments in major higher education and research institutions needed to maintain the nation's competitive advantages in technology and create a life-long learning system to help skilled workers adapt to economic change.

Environment, smart growth and quality of life: Regional strategies could also identify the important natural resource systems that sustain public water supplies, biological resources, sense of place and recreational opportunities. Future growth could also be designed to reuse formerly used sites and to reclaim and restore impaired landscapes and natural resource systems.

Demonstration projects: Federal and state governments could invest in demonstration projects that can test innovative transportation, land use, environmental and other strategies.

Building and Financing the ASDP

The proposed new infrastructure systems and urban development outlined in this paper could cost trillions of dollars. Much of the cost of these systems could be financed through user fees and public private partnerships. It should also be possible to employ modest payroll or other taxes to finance some of these investments, which would generate trillions of dollars of new economic capacity for the whole nation. The expected doubling of the national economy by 2050 would expand the gross domestic product by more than \$14 trillion (in constant dollars). Redirecting even a small share of the growth of tax revenues in these strategic investments could secure the nation's economic future.

Next Steps

The ASDP could be advanced in a number of different and complementary ways. Ideally, the President inaugurated in January 2005 would make this effort a priority goal for the nation, and would use his “bully pulpit” to advance federal, state, regional and civic efforts to complete the regional plans and strategies that will be building blocks of the ASDP. At the same time, governors, members of Congress, mayors and regional officials across the country could promote their own strategies with coordination from either new or existing coordinating groups, such as American Planning Association, the National Governors Conference or the National League of Cities.

The process could also be kick-started by either existing or new regional agencies or civic groups organized around emerging SuperCities or urban and rural regions that could create their own regional plans and strategies. This would mirror the voluntary process that led to the creation of the European Union’s ESDP, which is shaping similar policies and investments there. A new ad hoc coordinating council could be established to coordinate these voluntary efforts.

Financing SuperCities

For over a hundred years, the United States has financed major infrastructure projects through a “top-down” system, with major funding from the federal government complemented by state resources. Based on general public agreement of national priorities, this model financed several generations of growth and paid for one of the world’s great infrastructure systems. However, it is now coming to an end, as the needs of maintaining our aging infrastructure systems outpaces federal and state funding, to say nothing of new capacity expansion. Today, we witness a debate between “donor” and “donee” states over the fairness of federal transportation funds, even as the total amount of federal dollars falls far short of estimated needs. As a result, we find ourselves increasingly starved for capital for infrastructure systems.

To provide more funding for system maintenance and expansion, metropolitan regions are increasingly looking to new and innovative financing systems to raise new funds. Public authorities use their tax-free status to attract private dollars through bond issuances, sales and lease-back arrangements. New user fees, such as congestion pricing or HOT lanes on toll roads, link charges to those who benefit the most from new investments, creating new revenue streams. And value recapture models, such as tax increment financing, allow increases in land values to finance infrastructure investments.

The Federal government is advancing instruments such as TIFIA, the Transportation Infrastructure Innovation Act, to stimulate the development of these projects. However, SuperCities have a critical role to play in this emerging system. They provide a vital link between state and federal government and local jurisdictions, which in many cases have the last say over land use decisions. They transcend political boundaries and capture the true economic and social geography of emerging communities. And they have the size, capacity, and expertise to undertake complex planning strategies.

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