

# Megaregions

## and Multi-Jurisdictional Planning

- [What Are Megaregions?](#)
- [U.S. Megaregions](#)
- [Planning Frameworks](#)
- [Megaregion Economics](#)
- [Freight](#)
- [Quarterly Workgroup](#)
- [Reports](#)
- [Other Resources](#)

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[FHWA](#) → [Planning](#) → [Megaregions](#) → [Reports](#) → [Megaregions Report 2008](#)

## Megaregions: Literature Review of the Implications for U.S. Infrastructure Investment and Transportation Planning

### Section III. A Historical and Contemporary Perspective B. From Regions to Megaregions

#### *1. Impetus for Megaregions for Transportation Planning*

Why do we need planning at this larger scale? Economic and social interactions are taking place at the megaregion scale beyond the boundaries of either individual municipalities or metropolitan areas (Zhang et al., 2007). The megaregion presents a new perspective on defining regionalism that captures the economic, political and spatial level at which planning should be conducted in order to respond to the challenges of agglomerations of economic activity and population. It also recognizes the new context in which large-scale regions exist - one of global economic and environmental issues taking place on a larger scale. Megaregions provide a strategy to act globally, while addressing local quality-of-life

issues. This expanded regional footprint is a vehicle for accommodating growth and economic development through collaborative megaregional transportation planning, policy, implementation, and operations. Similar cooperative initiatives in infrastructure investment and economic development are beginning both Asia and Europe.

The megaregions will experience key challenges in the coming decades, including: rapid population growth, expansion of suburban landscapes, aging infrastructure, social equity challenges, strained ecosystems, and uneven inter- and intra-regional growth patterns. Many megaregion areas in the United States are already faced with issues stemming from sprawling development patterns, escalating land consumption, and increased traffic congestion. It is expected that these areas will continue to grow in population and the potential addition of millions of residents will only exacerbate existing problems in metropolitan and regional planning for these regions (National Surface Transportation Policy and Revenue Study Commission, 2007). These issues have several things in common: they are spatial; they are not confined by existing political boundaries; they affect future generations; and they are interrelated (Ross et al., 2007).

As United States megaregions grow, will they remain competitive in the changing global marketplace? Will they be places in which residents can enjoy stable and comfortable lives? Will there be sufficient transportation choices? Can continued growth and development occur in a sustainable manner? If these areas continue to form without planning, will this create a nation whose global competitiveness is threatened by social and environmental problems? These challenges reach across traditional jurisdictional boundaries, making the current planning strategies inadequate and demanding a new planning perspective (Contant, Ross et al., 2005).

Current economic development planning tends to ignore the spatial distribution of impacts caused by investments and programs. Local comprehensive planning is spatial in focus and concept, but is also shaped by parochial interests, ignoring the cumulative effects of many individual decisions on

the surrounding region. Transportation planning connects regions, but fails to address adequately the land use and environmental impacts of infrastructure decisions. Other single-function planning efforts, such as watershed planning or energy development planning, are also incapable of fully addressing the issues that affect the entire region. Most importantly, current planning, whether it is guided by an issue or by proximity, lacks a common vision. Although researchers, planners, politicians, and decision-makers each appreciate the interconnectedness of issues by content and by space, they currently have no guiding vision of what the future should hold, and no plan to get there. A megaregional approach, integrating an understanding of these systems, could provide a more effective strategy.

The section overviews four of the key issues driving the need for a new regional strategy: transportation, natural environment, land use, and economic competitiveness.

#### **a. Transportation**

The trend of global economic markets and increasing international trade puts new pressures on national transportation systems. The significant growth of international trade since 1980 has strained the capacities of the United States' ports and the transportation networks that serve them. Over the next 30 years, the increase of international trade via ports is expected to be much higher than before. Most major ports in the nation are located in megaregions, such as Southern California, Gulf Coast, and Northeast, identified by Lang and Dhavale (2005) and RPA (2006). In addition, many goods from international trade may be moved to other megaregions as consumption and production centers as well as those coastal megaregions, implying that the increasing movement of freight will not only affect internal transportation networks of the coastal megaregions, but also major interstate highways that connect to other megaregions.

However, recent federal transportation investments have been mostly concentrated on the maintenance of existing infrastructure in metropolitan areas. The 2005 SAFTEA-LU transportation act is targeted at local

transportation projects without appropriate coordination to enhance the connectivity at the regional level, although much of the existing infrastructure in metropolitan areas was constructed more than 50 years ago and will require increasing maintenance investment or infusions of new capital (Regional Plan Association, 2006). As mentioned earlier, more than 70 percent of the nation's population and employment growth will be accommodated within megaregions by 2050 (Amekudzi et al., 2007; Ross et al., 2007; Regional Plan Association, 2006), meaning that the future economic success of the United States is directly related to the economic activities of these regions. Therefore, the investment in transportation connectivity and other improvements within and between megaregions is important to support their economic activity and roles as gateways to other parts of the nation (Meyer, 2007).

#### **b. Environmental**

It has long been recognized that environmental issues transcend current political boundaries and governance mechanisms. Ecological integrity, energy sources, pollution, solid and hazardous wastes, water supply, air quality, habitat preservation, management of flood plains, and natural resource use do not follow politically drawn boundaries. The impacts of these problems have yet to be seriously considered in spatial planning at the megaregional level.

Specifically, as people and functions are continuously concentrated in metropolitan areas, a possible impact of the growth of megaregions on environment should be taken into account. A recent conflict between three states, Georgia, Alabama, and Florida, over water supply, reminds us that regional efforts beyond standard political boundaries will be increasingly necessary to solve and prevent environmental problems. Meanwhile, the energy use of most metropolitan areas is growing rapidly, reflecting population growth. Heavy reliance on fossil-fuel power plants will continue to cause environmental problems, including emissions of particulate matter and greenhouse gases (Center for Quality Growth and Regional Development, 2006).

In addition, environmental issues will affect investment decisions for future transportation planning: the consideration of global warming and reduction of carbon emission will be the continuing public concern (Meyer, 2007).

Thus, what is important, and is currently missing, is a sustainable model which would permit regions to continue to grow and overcome obstacles that will not be able to be solved within traditional jurisdictions.

### **c. Land Use**

Most of the United States' population and economic growth has been concentrated in large metropolitan regions since 1970 (Regional Plan Association, 2006). The boundaries of American urban areas have expanded much faster than have their population in recent decades (Cox, 2000). This geographic expansion, known as urban sprawl, has been criticized for producing increased traffic congestion, higher air pollution and energy consumption from longer commutes, excessive encroachment on agricultural land, and development on ecologically sensitive lands, such as wetlands and wildlife habitats (Woo, 2007). At the same time, inequities have emerged across the region as spatial segregation divides the haves from the have-nots. Fiscal inequities occur as local governments struggle to gain tax revenue, while their underserved populations stress the region as a whole (Orfield, 2002). Sprawling development patterns are both a cause and a result of these economic and development forces. There has been a loss of some simple and basic urban-design principles and livability has suffered (Calthorpe & Fulton, 2001). Quality of life issues threatened by contemporary urban development patterns have traditionally been addressed at the local level, but in a megaregion these issues transcend current political boundaries and governance mechanisms. Community designs, educational systems, parks, and cultural amenities are often proposed without consideration of the regional context. Megaregions must ensure a continued high quality of life if they hope to attract and retain future residents. They must address current disparities and inequities in education and economic opportunity in order to enhance the success of the entire region over the long run.

#### **d. Global Economic Competitiveness**

Glaeser (2007) argues that an economic development policy should be controlled at the local level for the diversity and competition. This argument is partly correct in that local control is efficient to make a place more attractive to business and workers and to remove governmental regulations. However, a large-scale planning approach may also be useful for addressing economic competitiveness in a context of global economy (See Jensen and Richardson, 2001; Levine, 2001; Salet *et al*, 2003a). For example, the decline of manufacturing in the Midwest region cannot be controlled or mitigated at the local level. While there are many factors playing a role in the decline of manufacturing in the region, this partly resulted from the global economy driven by transnational enterprises. In a global context, the new environment of technology and free trade made it possible to transfer financial capital quickly to anywhere in the world and to move production functions of manufacturing to foreign countries, creating an international division of labor (Sassen, 1994). Specifically, due to high labor wages in the Midwest region, many manufacturing companies have moved their factories to foreign countries and southern states of the United States (Delgado, 2006b).

Through the improvement of information technology and open trade markets, the United States is competing with approximately 3 billion educated citizens of developing countries (Bullard, 2007). Specifically, real-time interactions and distribution of electronic information realized by information technologies have changed traditional space and time constraints (U.S. Congress, 1995). Based on the principle of "comparative advantage", these conditions along with lower labor costs in foreign countries have contributed to the direct investment of U.S. companies in these countries, and such conditions facilitated U.S. employers to manage foreign branches and their employees (e.g. routine clerical work). These global competitors have already created more constructive strategies at the megaregional level than have cities and metropolitan areas in the United States. As mentioned in Section 2, in line with such international labor division, Sassen (2007) suggests that some activities (e.g. low-cost

manufacturing and back office functions), currently outsourced to foreign countries, could be accommodated in megaregions' hinterlands, because the urban cores of megaregions are not competitive to such functions due to higher land values and such labor forces are not available in rural areas far from megaregions.

Globalization is erasing traditional boundaries between economies, a process referred to as "debordering". At the same time, there is an increasing tendency for industries to cluster to gain competitive advantage in a global system that places a premium on knowledge and innovation. As these changes develop, it has been evident that a larger spatial unit of regional networks is more useable than the city (Scott et al., 2001). Some urban areas in the United States already benefit from these tightly linked and spatially concentrated clusters, but future economic development must enhance their growth and connections in order to ensure continued success.

Thus, it is critical to develop a megaregional economic development framework with the necessary infrastructure supporting the system, in the face of international competitions in the world economy.



## ***2. Profiles of Megaregions in the United States***

Throughout the country, large-scale regional efforts are underway to examine the relationships, challenges, and opportunities that unite people across jurisdictional boundaries. One of these is a new initiative which has been launched to address America's anticipated growth before the year 2050 and the challenges and opportunities associated with the emergence of megaregions. This initiative, "America 2050: Towards a National Strategy for Prosperity, Equity and Sustainability" was coordinated by the Regional Plan Association, the Lincoln Institute of Land Policy, and the Southern California Association of Governments and was comprised of ground-up megaregion research, planning, and coordination efforts taking place in ten of the emerging megaregions across the country.

Annual Roundtables for Megaregional Development since 2005 have brought together leading urban and regional planners, academics, metropolitan planning directors, and business and civic leaders to share progress reports, research methods, and strategies on megaregion coordination as well as to discuss nation-wide policies that can underpin these efforts. The Roundtables set goals for America 2050 for each year and discussed the leadership and strategic path of the initiative.

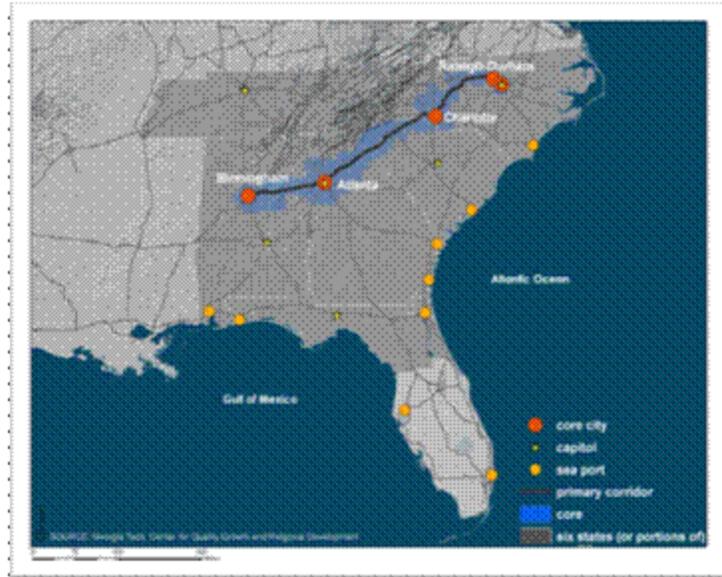
The Center for Quality Growth and Regional Development (CQGRD) at the Georgia Institute of Technology convened federal and state legislators, mayors, public- and private-sector representatives, academics, and other community leaders, hosting a symposium in 2006, in order to provide a broad initial overview of the concepts of megaregions and megaregion planning. In 2007, CQGRD hosted the second symposium, an assembly of academics, to discuss and examine the theoretical constructs surrounding megaregions.

Following are descriptions of several megaregions which are currently being defined and researched through different initiatives within the United States. They include the Piedmont Atlantic Megaregion (PAM), the Northeast Megaregions, Northern California, Southern California, the Great Lakes Megaregion, and the Texas Triangle Megaregion (CQGRD, 2006).

### **a) Piedmont Atlantic Megaregion**

#### **LOCATION**

The Piedmont Atlantic Megaregion (PAM) is anchored by the Atlanta, Georgia metropolitan region, but stretches to Raleigh, North Carolina to the east and Birmingham, Alabama to the west. See Figure 25.



**Figure 25. The Piedmont Atlantic Megaregion** (Contant, Ross et al., 2005)

### CHARACTERISTICS

The southeastern United States has built upon its rich history to become a dynamic and ethnically diverse region that is now home to Fortune 500 companies, the busiest airport in the world, critically acclaimed art galleries and museums, national banks, and media powerhouses. Charlotte, NC, began to boom with a gold rush in 1799, but most cities developed later. Atlanta, GA, named for the Western and Atlantic Railroad, which terminated in the city, incorporated in 1847. Birmingham, AL, at the junction of two rail lines, incorporated in 1871. Today, Amtrak's Crescent, one of a handful of intercity passenger routes still running in the southeast, passes through all these cities.

After World War II, the comprehensive national highway network dramatically changed mobility, economic growth, and transportation effectiveness in the southeast. It reinforced already existing transportation links and promoted even faster growth and economic development in the cities along the Piedmont plateau. Ultimately automotive transportation became the primary mode for almost all of the passenger traffic and much of the freight movement in the region.

## **CHALLENGES AND OPPORTUNITIES**

Working in cooperation with one another, the metropolitan areas along these corridors can strengthen their own competitive advantage while contributing to the economic capacity of the extended region. Atlanta ranked eighth in the United States in Gross Metropolitan Product in 2001 and houses more than four-fifths of the nation's largest business branch offices. Charlotte is also a booming city, home to the second-largest financial center in the United States. Raleigh-Durham is one of the top five biotech and life science regions in the world (Contant, Ross et al., 2005).

PAM is also experiencing tremendous population growth, driven primarily by domestic in-migration. Regarding domestic in-migration rates, all of the MSAs in PAM's urban core (with the exception of Birmingham) are in the top fifteen MSAs in the country. The low cost of living and the high quality of life in PAM are two of the reasons for a projected population growth rate of over 65 percent between 2000 and 2050, reaching more than 57 million people by 2050. However, unfortunately, PAM also boasts some of the highest increases in commuting times in 1990-2000 (U.S. Census Bureau, 2000). The rapid rate of growth and the accompanying increase in industrial and transportation activity have generated air pollution and created air quality issues for the Southeast. Most of the major metropolitan areas in the region (e.g., Atlanta, Birmingham, Charlotte) experience periods of non-attainment under Environmental Protection Agency air quality standards. Four major metropolitan areas in PAM are among the 25 worst in the country for ozone air pollution (American Lung Association, 2004; Contant, Ross et al., 2005).

Furthermore, because of PAM's historical focus on the automobile when making infrastructure investment decisions, travelers within PAM are almost completely dependent on personal cars for access to work, shopping and other destinations. The region is also heavily reliant on trucking for freight transportation, further increasing both congestion and the economic costs of congestion. In addition, the economic benefits of the region will be jeopardized if energy costs, environmental concerns, or other problems make auto travel and

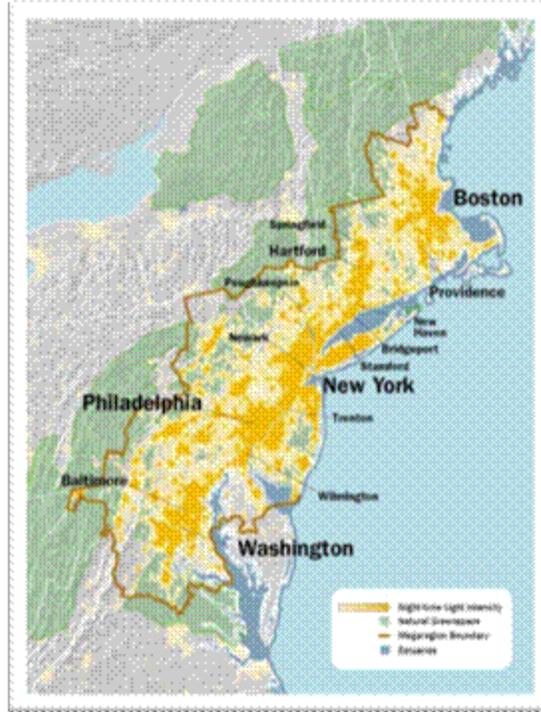
truck shipping less feasible with no ready alternative at hand. If long-distance travel and shipping continue to grow as rapidly as they have, environmental pressures from air travel and waterborne shipping will grow correspondingly.

Research is underway at the Georgia Institute of Technology's (Georgia Tech) Center for Quality Growth and Regional Development (CQGRD) to confront issues of growth, land consumption, infrastructure, and political fragmentation in order to develop sustainable solutions through a multi-state dialogue. A graduate planning studio was taught at Georgia Tech in spring 2005, which produced a preliminary study on PAM. The study was informed by a planning charrette in Madrid, Spain, where European and American planning and policy practitioners worked with students on issues of equity, economic development, transportation, and the natural environment.

## **b) Northeast Megaregion**

### **LOCATION**

The existing Northeastern megaregion is the largest agglomeration of people and economic activities in North America. As seen in Figure 26, it stretches from Maine to Virginia, and includes Boston, New York, Philadelphia, Baltimore, and Washington, D.C. (Regional Plan Association, 2007).



**Figure 26. The Northeast Megaregion** (RPA, 2007)

**CHARACTERISTICS**

The unique network of metropolitan areas that stretches from Washington, D.C. to Boston was first recognized by French geographer Jean Gottmann in his 1957 study, "Megalopolis or the Urbanization of the Northeastern Seaboard." For decades, no other area of the United States came close to matching the concentration of population, power and wealth that characterized the Northeast, which today accounts for 18 percent of the nation's population, 20 percent of the nation's Gross Domestic Product and only 2 percent of the nation's land area. Each metropolitan area has its own strength New York City is the financial, commercial, and media center, Washington, D.C. the political and administrative center, Boston the intellectual center, and Philadelphia and Baltimore act as academic, cultural, and commercial centers.

The region has many natural amenities including 500 miles of coastline and 12 million acres of protected open space and parkland. More than 50 percent of all U.S. public transit riders and 77

percent of commuter rail riders live in the Northeast region.

### **CHALLENGES AND OPPORTUNITIES**

Although the Northeast region is known as the largest agglomeration of population and economy in the world, it faces several challenges. The Northeast region is losing its economic competitiveness with declining GDP and employment share (particularly in manufacturing). At the same time, tax burdens for families in major cities of the region have increased over time. The region has abundant natural amenities. However, it suffers from the deterioration of the environment from urban sprawl and faces major water, land, and air pollution problems. Much of the infrastructure of the region is old and overcrowded, and needs to be replaced or repaired. In the next forty-five years, the Northeast Megaregion is projected to add eighteen million residents to its population. The cost from congestion in the Northeast region is estimated to \$13.8 billion in time and 1.3 billion gallons of gas per year. Although rail transit is very important to the megaregion, insufficient funds have been allocated for maintenance, leading to degradation of service in the Northeast's rail networks (University of Pennsylvania, 2005). Furthermore, the improvement of intercity transportation networks could bring synergies among the specializations of the Northeast regions (Regional Plan Association, 2007).

In spring 2006, a graduate planning studio at the University of Pennsylvania focused on the Northeast Megaregion, building on research completed by students the previous year. Recent efforts to protect the Appalachian Highlands and reduce greenhouse gas production could provide a foundation for further action on key issues facing the Northeast Megaregion, including efforts to sustain and improve Amtrak's Northeast Corridor rail service (Center for Quality Growth and Regional Development, 2006).

### **c) Northern California Megaregion**

#### **LOCATION**

Based on the three economic centers of San Francisco, Silicon Valley and Sacramento, the

region extends from Monterrey in the south up to Sonoma in the north, and to the high-growth Central Valley in the east, through Sacramento, and up into the foothills of the Sierra Nevada. The urban core includes San Francisco Bay area, Sacramento, and their commuting counties in the Central Valley, and the sphere of influence extends north to Yuba County, east to Reno, and south to Fresno (Metcalf & Terplan, 2007) (Figure 27).



**Figure 27. The Northern California Megaregion (SPUR, 2007)**

### **CHARACTERISTICS**

The Northern California megaregion is relatively wealthier and more liberal than the state as a whole. According to San Francisco Planning & Urban Research (SPUR) the average median household income in the megaregion area was \$53,800 in 1999 and \$47,500 for the state. The poverty rate is smaller in the Northern megaregion (12.1 percent) than in the state (14.2 percent). Dominant industries in the region include information technology, Software, communication equipment and services, biotechnology, electronics, and semiconductors (Bullard, 2007).

The growth of the traditional nine-county Bay Area, including Sonoma, Marin, San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Solano, and Napa, has expanded to north, south, and east (Sacramento and its suburbs), resulting in the addition of surrounding counties to the megaregion. The biotech and biomedical industries in the Bay Area and other technology industries in Silicon Valley have moved or expanded to Sacramento and its suburbs (Metcalf & Terplan, 2007).

### **CHALLENGES AND OPPORTUNITIES**

The Bay Area, with nine counties will grow to 8.7 million by 2030. In the surrounding 12 counties, 3.6 million will be added during the same period. The rate of population growth is exceeding the rate of housing growth, resulting in high housing prices in this region, and contributes to increasing congestion in the main transportation corridors. During the past two decades, commuters from the surrounding 12 counties to the Bay Area increased from 30,000 to more than 117,000 daily. Also, it is estimated that 1 million acres of natural land will be converted to urban uses in the San Joaquin Valley by 2040 (Metcalf & Terplan, 2007). Urban sprawl, fueled by economic growth in the Bay Area, will take place beyond the Central Valley.

Residents in the region are highly educated; its economic base is diverse, and it has numerous natural amenities. However, the region has experienced income disparities, generating very high-wage and very low-wage jobs without opportunities for middle-class stability. As the studio project of University of Pennsylvania School of Design suggested, a possible strategy may be derived from the enhancement of transportation network between those areas (Metcalf & Terplan, 2007).

Given the current problems, such as urban sprawl and long commutes, there have been many discussions with regard to high-speed rail system in California. Although the planned high-speed rail system runs between San Francisco and Los Angeles, it may have big impacts on travel patterns within the Northern California Megaregion.

### **d) Southern California Megaregion**

## LOCATION

The Southern California megaregion encompasses Los Angeles, Kern, Orange, Riverside, and San Diego counties in California, as well as the northern portion of Baja California, including Mexicali, Tijuana, and Ensenada (Center for Quality Growth and Regional Development, 2006). The Pacific Ocean is the region's western boundary; the region has 250 miles of coastline (Figure 28).



**Figure 28. The Southern California Megaregion** (SCAG, 2006)

## CHARACTERISTICS

The Southern California megaregion contains 1.5 percent of the land area of the United States, more than 7 percent of the U.S. population, and more than 7 percent of the nation's total Gross Domestic Product (GDP). The region is ranked as the world's 10th largest economy (Kern County Council of Governments et al., 2005). In addition, the region is well known as a tourist destination and entertainment capital. Major industries in the region include aerospace and defense, communication equipment, electronics, and mass media (Bullard, 2007).

## CHALLENGES AND OPPORTUNITIES

The California Department of Finance projects the region's population to be 27.7 million by 2030 (a 35 percent increase between 2000 and 2030).

Specifically, international immigration is expected to contribute significantly to the increase in population: Hispanics will be the majority by 2030, contributing 55 percent of the region's total population (Kern County Council of Governments et al., 2005).

Traffic congestion, continuing growth away from transportation hubs and urban centers, rising housing and land prices, and poor air quality have threatened the region's competitiveness in the global markets. The California Department of Transportation indicates that growth in truck travel is much faster than population growth (Kern County Council of Governments et al., 2005). The high density contributes to the viability of the transit system in the region, which has one of the nation's largest bus riderships.

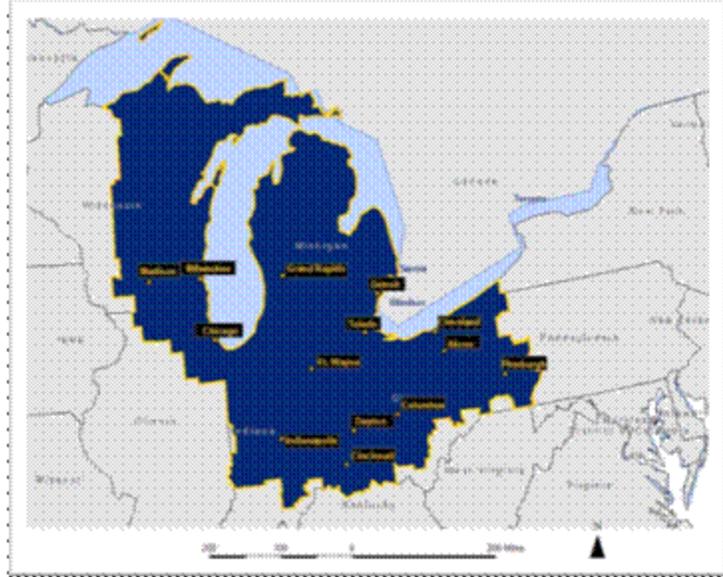
The Southern California places a heavy emphasis on goods movement and logistics because this region has the second largest port in the nation and the fifth busiest port complex in the world, and these industries are very important to its economy (Regional Plan Association, 2006). As a result, building infrastructure to enhance a role as a global gateway is a critical issue for the Southern California region.

The Southern California Association of Governments (SCAG), the San Diego Association of Governments (SANDAG), and the Kern County Council of Governments have begun collaborating on a planned growth strategy for the region, outlined in a 2005 report.

## **e) Great Lakes Megaregion**

### **LOCATION**

The Great Lakes megaregion is anchored by Chicago, Illinois, stretching north to Milwaukee, Wisconsin; south to Cincinnati, Ohio; and east to Pittsburgh, Pennsylvania (Delgado et al., 2006a) (Figure 29).



**Figure 29. The Great Lakes Megaregion** (Delgado et al., 2006b)

### **CHARACTERISTICS**

The region is home to more than 20 percent of Fortune 500 companies' headquarters. The region still has a concentration of manufacturing (over 1.3 of LQ), with employment accounting for more than 17 percent of total jobs in the region (Delgado et al., 2006b). The region consists of several industrial metropolitan areas that have similar histories of industrial activities.

An extensive transportation system of highways, airports, ports, and railways in the region plays an important role for both domestic and international trade. For example, \$102 billion in trade (18 percent of the value of imports and exports over land in the US) passed through the bridge and tunnel of Detroit in 2003. Also, in the same year, 85 million tons of domestic goods moved over the Great Lakes and O'Hare international airport in Chicago, the second busiest airport in the country (Delgado et al., 2006b).

### **CHALLENGES AND OPPORTUNITIES**

The Great Lakes megaregion shares 4.9 percent of the land area of the United States, 15.3 percent of the U.S. population, and 15.7 percent of the nation's total Gross Domestic Product (GDP). While the population of the United States is projected to

grow by 40 percent by 2050, the region's population will grow to 53.5 million, a 25 percent increase during the same period (Delgado et al., 2006b).

The landscape of the Midwest has changed dramatically. Many industries in this region have migrated to the Sun Belt and countries such as India and China. Dayton, OH has lost 40 percent of its population from its peak; Cleveland, OH 48 percent; Detroit, MI 49 percent; St. Louis, MO 60 percent; and Chicago 24 percent (Longworth, 2008).

With the decline of manufacturing, industries such as transportation and warehousing and professional, scientific, and technical services are growing in the region. In particular, about 20 percent of top 40 largest warehousing and storage companies in the United States have their home in the region, implying that freight demand will continue to increase in the region (Smith, 2002).

Due to future freight demand, controlling peak hour congestion is another important challenge. The loss due to congestion delays in the largest Great Lakes megaregion cities was estimated equal to 304 million gallons of gas in 2003. Another statistic shows that the congestion cost was estimated at \$8.5 billion, 75 percent of which is attributed to congestion in metropolitan Chicago and Detroit (Delgado et al., 2006b).

One of advantages of this megaregion compared with other megaregions is the abundance of water resources, including the Great Lakes, inland lakes, and watersheds. This natural resource provides not only drinking water and industrial water, but also the opportunities of recreation and tourism that contribute to economic growth. Agricultural land occupies 25 percent (48,175 mi<sup>2</sup>) of the region, providing the nation with a significant amount of its domestic food supply (Delgado et al., 2006b).

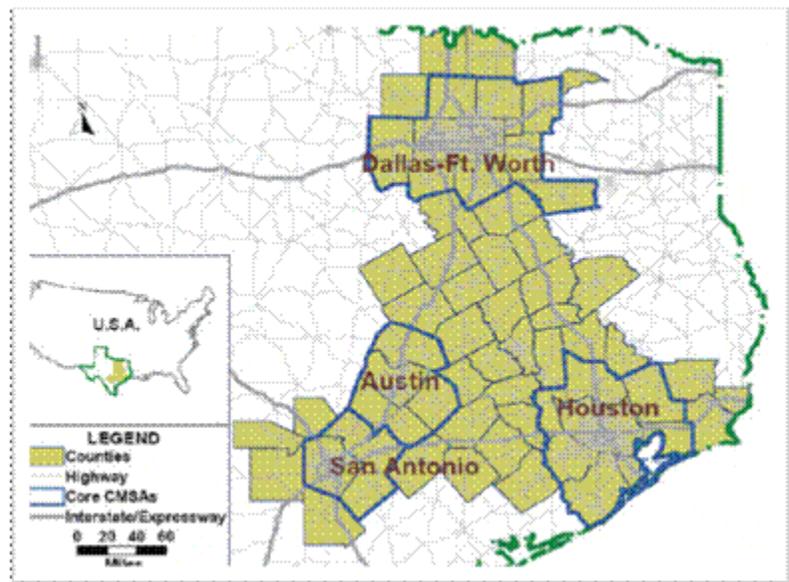
The region has, on average, higher educational attainment than the U.S. average and some of the largest research universities in the world, such as The Ohio State University, the University of Michigan, and the University of Wisconsin (Regional

Plan Association, 2006; Delgado et al., 2006b). Collaboration has emerged between the University of Michigan, Youngstown State University of Ohio, the Northeastern Illinois Planning Commission, and the Great Cities Institute in Chicago on a joint project to define the megaregion, share data methods, and identify strategies to strengthen the Midwest's position in the national and global economy (Center for Quality Growth and Regional Development, 2006).

## f) Texas Triangle

### LOCATION

The Texas Triangle Megaregion includes the Dallas/Fort Worth, Houston, San Antonio and Austin metropolitan areas (Regional Plan Association, 2006; Zhang et al., 2007) (Figure 30).



**Figure 30. The Texas Triangle Megaregion** (Zhang et al., 2007)

### CHARACTERISTICS

The Texas Triangle Megaregion includes 66 counties (57,430 square miles) with a total population of 15 million in 2000 (Zhang et al., 2007).

Four metropolitan areas in the region are closely tied to each other economically. For example, Zhang et al. (2007) examine county to county

goods movements, showing that Houston has the central distributional role for chemicals/petroleum products and Dallas-Fort Worth has the same role for machinery products. The movement of miscellaneous products, including mixed freight, waste, and scrap, clearly shows the interconnectedness among the four metropolitan areas. Also, a strong flow of information in business has been identified from high-capacity internet connections between Houston and Dallas-Fort Worth. Major industries in the Texas Triangle Megaregion include energy and natural Resources, construction, semiconductors, and software and information technology.

### **CHALLENGES AND OPPORTUNITIES**

By 2050 about 35 million people or 70 percent of the population of Texas will live in these four metropolitan areas that comprise the Texas Triangle (Zhang et al., 2007). If the rates of land consumption continue unchanged, the metropolitan areas have the potential to merge into a relatively continuous stretch of urbanization. Such a scenario increases the potential for economic collaboration between the metropolitan areas, but also raises serious environmental concerns. This convergence allows for strategic coordination for competing and complementary industrial sectors to enhance economic competitiveness in the region.

The total travel for bus and auto will almost double by 2050. The region already has frequent flights between metropolitan areas, and therefore the expansion of airline services may be restricted due to the current congestion of airport and airspace (Zhang et al., 2007). As an alternative mode of travel, a research team of the University of Texas, Austin emphasizes constructing a high-speed rail system to accommodate future travel demand. In this context, the Texas Triangle has been broadly recognized by business leaders and policy makers in the state, as high-speed rail connections have been proposed to supplement the thriving air travel between the major cities.

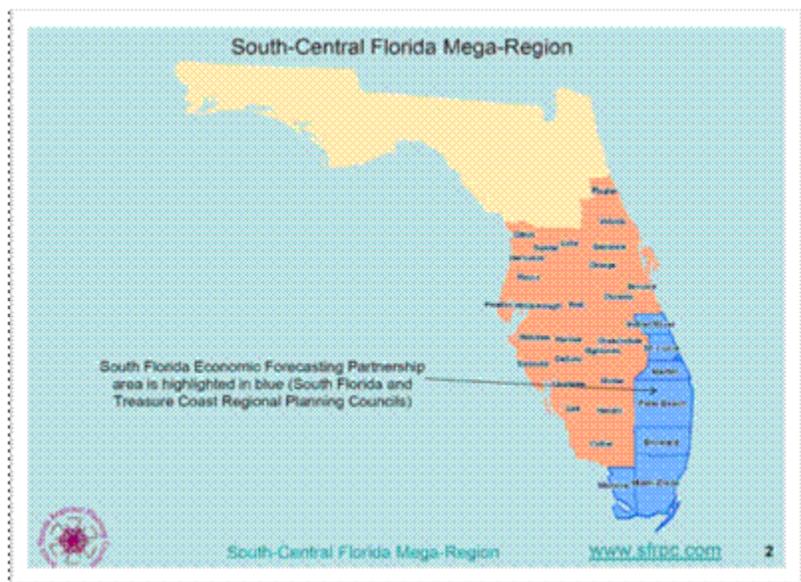
The Trans-Texas Corridor (TTC) has been developed by Texas to meet future transportation demand. The key features of the plan include toll lanes, freight railways, high-speed commute railways, and infrastructure for utilities. While the

plan faces political resistance due to the costs of construction, its success will be able to provide multimodal transportation services in the region (Zhang et al., 2007).

### **g) Southern Florida Megaregion**

#### **LOCATION**

The Southern Florida Megaregion includes the southern portion of the Florida peninsula, including the metro regions of Orlando, Tampa, West Palm Beach, Fort Lauderdale, and Miami, and potential connections to neighboring island nations (Center for Quality Growth and Regional Development, 2006) (Figure 31).



**Figure 31. The Southern Florida Megaregion** (SFRPC, 2006)

#### **CHALLENGES AND OPPORTUNITIES**

The Florida megaregion is one of the fastest growing and most diverse areas in the United States; about 60 percent of new residents in the last decade came from foreign countries (Regional Plan Association, 2006). Specifically, the Hispanic population is projected to grow to over 6 million, a 25 percent of the total population in the region, by 2030. The total population of the region is projected to increase to 21.3 million by 2030, a 66 percent increase from 2000 to 2030. Most counties are included in metropolitan areas with the

exception of Glades County (South Florida Regional Planning Council, 2006).

Dominant industrial sectors in the region include hotels and entertainment, financial services, professional services, and logistics and distribution (Bullard, 2007).

The South Florida Regional Planning Council (SFRPC) and the Center for Urban and Environmental Solutions (CUES) at Florida Atlantic University are initiating discussions with other regional organizations in the megaregion. Outreach efforts include contacting leaders in Puerto Rico, the Bahamas, and the Dominican Republic, and other island nations with cultural and economic ties to South Florida (Center for Quality Growth and Regional Development, 2006).

## **h) Gulf Coast Megaregion**

### **LOCATION**

The Gulf Coast Megaregion encompasses parts of Florida, Alabama, Mississippi, Louisiana, and Texas (Figure 32).



**Figure 32. The Gulf Coast Megaregion** (RPA, 2006)

### **CHALLENGES AND OPPORTUNITIES**

Despite its strong cultural traditions, the Gulf Coast

as a continuous megaregion lacks the political cohesion of the nearby Texas Triangle. However, the 2005 devastation from Hurricanes Katrina and Rita and the resulting displacement of hurricane victims along the I-10 corridor highlighted the environmental, transportation and economic links of the Gulf Coast (Regional Plan Association, 2006). The environmental vulnerability of this region underscored the need for a region-wide environmental assessment to guide redevelopment and protect the coast from future disasters. This assessment was completed by a consortium of planners and landscape architects led by EDAW, Inc, in partnership with the University of Texas and the Regional Plan Association.

Additionally, the severe racial and economic inequities that were laid bare by the disaster called for a region-wide economic strategy to address long-standing challenges and decline. Despite the hurricanes and their devastation, the region is expected to continue to grow due to the continued in-migration of retirees from the Midwest (Regional Plan Association, 2006).

## **i) Cascadia**

### **LOCATION**

The Cascadia Megaregion contains the metro regions of Seattle, Washington and Portland, Oregon, and stretches north to Vancouver, British Columbia in Canada (Seltzer et al., 2005; Center for Quality Growth and Regional Development, 2006) (Figure 33).



**Figure 33. The Cascadia Megaregion** (Northwest Environment Watch Sight Line, 2004)

### CHALLENGES AND OPPORTUNITIES

Dominant industrial sectors in the region include information technology; communication services; higher Education and research; and computer equipment (Bullard, 2007). The Portland State University research team (Seltzer et al., 2005) has proposed strategies to strengthen ties between these cities using high-speed rail and highlighting their shared hi-tech competencies, commitment to environmental sustainability, and presence of creative clusters in film and music (Center for Quality Growth and Regional Development, 2006). Research indicates that there are strong travel demands between major cities within the Cascadia region. For example, in 2004 the second most frequent destination of flights from Seattle-Tacoma

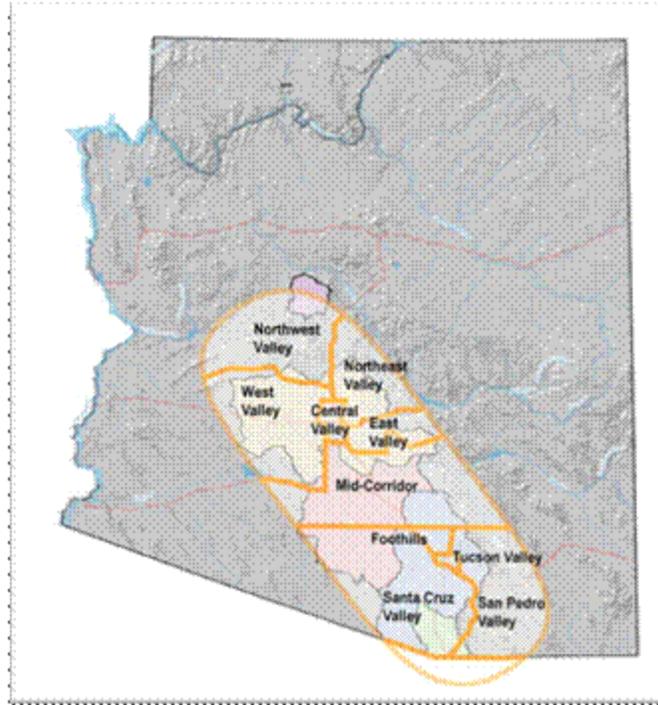
International Airport (Sea-Tac) was Portland, OR. In addition, Seattle was the third most popular destination of recreation trips from Canada in 2000.

Cascadia differs from other megaregions in that it is known as a Bioregion<sup>17</sup>. The Cascadia Bioregion consists of several smaller bioregions, including the Georgia Basin Bioregion, the Puget Sound Bioregion, the Columbia River/Columbian Bioregion, and the Poulouse Bioregion. These areas provide abundant tourism resources that can contribute to economic growth. There was an effort to unite Cascadia for tourism in 1996. However, this was not successful partly because each state has its own marketing plans and budgets. Instead, the initiative of Cultural Cascades<sup>18</sup> coordinates cultural activities of the region and provides information for the Amtrak routes that connect the cities of Vancouver, B.C., Seattle, Tacoma, Portland, and Eugene (Seltzer et al., 2005; [www.culturalcascades.com](http://www.culturalcascades.com)).

#### **j) Arizona Sun Corridor**

##### **LOCATION**

The Arizona Sun Corridor megaregion encompasses parts of six counties, including the three metro areas of Phoenix, Tucson, and Prescott, Arizona, and the Sierra Vista micropolitan area (Regional Plan Association, 2006) (Figure 34).



**Figure 34. The Arizona Sun Corridor Megaregion** (Arizona State University, 2006)

### **CHALLENGES AND OPPORTUNITIES**

The Arizona Sun Corridor megaregion is estimated to double in population size by 2040 (Regional Plan Association, 2006). The Bureau of the U.S. Census indicates that the average annualized rate of domestic net migration of the region would be approximately 10 to 20 percent over that time period. Other demographic characteristics include a high proportion of college-educated people (the share of those over 25 with a bachelor's degree is above the national average) and a large Hispanic population (Spanish is the primary home language of 20 percent of K-12 students in the region; the national average is 10 percent) (Arizona State University, 2006).

Given current water conservation requirements, the region's biggest metropolitan areas, Phoenix and Tucson, have enough water for approximately up to twenty million people, preparing the Sun Corridor for current and future growth (Regional Plan Association, 2006).

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17 A bioregion can be defined as "*a geographic area having common characteristics of soil, watershed, climate, native plants and animals that exist within the whole planetary biosphere as unique and contributive parts*", containing 20 out of 40 North America's largest rivers (Seltzer et al., 2005).

18 The Cultural Cascades is a cooperative partnership of five cities, including Vancouver BC, Seattle, Tacoma, Portland and Eugene, formed to coordinate cultural activities in those cities for residents and visitors.