



Megaregions

transportation planning in the U.S.

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Megaregions: transportation planning in the U.S.

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Megaregions: transportation planning in the U.S. profiles the U.S. study: Megaregions: Literature Review of Organizational Structures and Finance of Multi-jurisdictional Initiatives and the Implications for Megaregion Transportation Planning in the U.S., for the U.S. Department of Transportation with Georgia Institute of Technology, College of Architecture, and Center for Quality Growth and Regional Development.

Political Science / Reference / Research

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EXECUTIVE SUMMARY

Transportation infrastructure forms networks both within and between cities and regions and as such, is inherently a megaregion issue. Therefore, conceiving a framework for governing megaregion transportation planning in the United States, particularly across political boundaries, requires a thorough understanding of the background of current megaregion planning initiatives. At present, transportation planning is typically conducted by individual states regions, cities or towns or it may be undertaken by the Federal government where multiple states are involved.

Megaregions: Literature Review of Organizational Structures and Finance of Multi-jurisdictional Initiatives and the Implications for Megaregion Transportation Planning in the U.S. was prepared for the U.S. Department of Transportation, Federal Highway Administration. The report provides theoretical concepts of governing structures, reviews case studies of innovative international and national approaches to analyze structures under which successful transportation projects were undertaken under non-traditional, inter-regional and trans-boundary geography and discusses opportunities and challenges in megaregion transportation planning.

Shift of Institutions

Over the next several decades, transportation infrastructure within urbanized areas in the U.S. will face a wide range of challenges. Population growth and expansion of economic activities over the last several decades are already placing stress on roadways, airports, transit, and shipping infrastructures. If current trends continue as projected, transportation infrastructure will continue to deteriorate. However, focusing transportation planning at the level of megaregion may mitigate or alleviate some of these problems. Planning and implementation of transportation infrastructure improvements at the megaregion level can be more coordinated and comprehensive than the piecemeal improvements that occur at the level of an individual jurisdiction.

At present, there is no incentive for individual actors involved in local and regional planning to coordinate their efforts. Frequently, they instead compete against each other for resources, despite the presence of potential benefits of cooperation. Thus, in order for megaregion planning to be effective, a shift in how planning is conducted and perceived must occur. Several models for this shift have been proposed. Many of these models originate from Europe, where megaregion planning has progressed farther than in the United States. They include city-regionalism, functional polycentric development, reform-consolidation, market public choice, and new regionalism. None of these theories is without its drawbacks, however, and creating a framework for megaregion transportation planning in the U.S. will require further refinement. In addition to the trend of regional governance where public and private sectors and other interest groups form an alliance for regional interests rather than creating a new government, what is clear is that there remains an important role for the federal government in providing leadership for megaregion planning efforts, while local and regional actors must develop the capacity and willingness to coordinate and undertake joint transportation.

Transportation Planning and Megaregions

The federal capacity for coordinated national transportation planning is clearly demonstrated in transportation planning with the commitment to develop the national interstate highway system in the 1950s. Early transportation planning was primarily focused on highway construction, often without consideration for other needs and factors affecting transportation system performance. Later transportation planning was characterized by greater fragmentation, with emphasis on improving small areas. Over time, this emphasis has shifted to an integrated system of transportation planning, giving consideration to multiple modes and how transportation infrastructure interacts with issues of environment, public health, economic growth, and quality of life.

Since the Federal-Aid Highway Act of 1962, transportation planning within urban communities has been mandated by the United States (U.S.) government. This established a level of transportation planning above the scale of individual municipalities which encompasses the entire metropolitan area of 50,000 or more. Since 1973, metropolitan planning organizations (MPOs) have been a part of this process. MPOs serve a major function in metropolitan transportation planning, in consultation with other planning entities, transportation organizations, and officials within their jurisdictions. They produce long-range (20-year) transportation plans for their jurisdictions, 4-5 year Transportation Improvement Programs (TIPs), and annual Unified Planning Work Programs (UPWPs), and ensure public participation in the transportation planning process. Recent movement toward integrated transportation planning has also increased the focus of MPOs on other aspects of planning outside of transportation, while the emergence of megaregions suggests that it is time to consider planning beyond the scale of the metropolitan area.

As transportation planning has developed, megaregion planning has emerged. Recent literature has included case studies for several of the identified U.S. megaregions. For the Northern California region, researchers have emphasized a focus on the use of an adaptive and innovative form of governance that will take its place alongside existing governing authorities to provide structure and guidance at a grander scale than the lone municipality or metropolitan area. In Arizona, the focus is on developing the region's vision for itself as a region of global economic importance. Economic development, infrastructural investment needs and the need for cooperative and collaborative planning are being used to achieve this vision. In addition, the need to strengthen the region's identity as a single entity is recognized.

Transportation planning will play a large role in megaregion planning, as transportation networks form one of the key links between the major metropolitan centers that compose the megaregion. Key aspects of planning for megaregions include strategic planning, technical analysis, funding mechanisms, and institutional relationships. In addition, it will be important to determine the role of MPOs at the megaregion level and the conduct of transportation planning activities. As metropolitan-level organizations, the interactions between multiple MPOs will also be crucial to the success of megaregion transportation planning initiatives.

Case Studies of Multi-Jurisdictional Cooperation

In regions where growing metropolitan areas have begun to overlap, interaction between multiple MPOs is already occurring. In some areas, this includes formal cooperation and coordination between several MPOs. Where these MPOs have met with success, the beginning of a framework for future interactions between MPOs within megaregions, as well as the greater scope of all megaregion transportation planning, can be seen. Examples include transportation planning in Florida, where state legislation encourages coordination between MPOs, and the Arizona Sun Corridor, where cooperation between local governments has been formalized through joint planning agreements.

Over time, metropolitan areas begin to merge across state boundaries. In these cases, joint transportation planning becomes more difficult as hurdles of differing state priorities, incentives, and regulations cause? planning agencies on either side of the border to move in different directions. However, examples of cross-state cooperation between MPOs exist. The work of Grant (1955) serves as classic background reading regarding the difficulty and necessity of coordination for regions that span state borders. Some examples of successful multi-state MPO coordination include the Augusta-Richmond County Planning Commission, where a single MPO coordinates transportation planning for Augusta, GA and Aiken, SC; Ohio-Kentucky-Indiana Council of Governments (OKI), an eight-county MPO serving three states; and the Western High Speed Rail Alliance of MPOs serving Denver, CO, Maricopa, AZ, Las Vegas, NV, Washoe County, NV, and Salt Lake City, UT. In addition, some multi-state MPOs cross national boundaries, such as the Canada-US-Ontario-Michigan Border Transportation Partnership, which serves transportation needs in Southwest Ontario and Southeast Michigan.

In addition to cooperation between MPOs, examples of megaregion cooperation and coordination can be found in a number of domestic and international initiatives, governing transportation as well as other initiatives and government activity. These include the Northwest Power Planning Council in the northwestern U.S., the Transportation and Climate Initiative in the mid-Atlantic and northeastern U.S., the I-95 Corridor Coalition serving communities on the Eastern Seaboard of the U.S., the Randstad's Deltametropolis in the western Netherlands, and the Oresund Committee in Denmark and Sweden. With the exception of the Northwest Council, all of these initiatives govern transportation issues; however, several also encompass a broader scope. In particular, both the Randstad and the Oresund Committee involve regional planning that extends beyond transportation planning.

Opportunities and Challenges

Megaregion planning poses both opportunities for comprehensive and coordinated planning as well as challenges that must be resolved for initiatives to succeed. Where political boundaries exist, cross-border planning becomes challenging, as regions must coordinate at higher levels to ensure success. In particular, in the Midwest, Northeast, and Piedmont megaregions, the large numbers of states incorporated into megaregions make forming cooperative alliances much more difficult. Additionally, at a more granular level, areas with non-contiguous MPOs find that their transportation interests and priorities are less well-aligned than areas with more contiguity.

A major area in which the ability to coordinate megaregion transportation planning will be vitally important in the twenty-first century is in the movement of passengers and goods between and within megaregions. One aspect of this is the shift from traditional inter-city rail service to high-speed rail. High-speed rail can strengthen connectivity within and between megaregions, but the great expense and infrastructure investment necessary to achieve this connectivity will require careful coordination. Freight traffic also relies heavily on rail and roadway connectivity, which is challenged by an aging infrastructure that has expanded more slowly than freight volumes have increased. Additionally, air travel among cities is a growing sector of movement within the megaregion

In order to meet these challenges, an improved framework for megaregion governance and funding must be created. Creating this framework will make it possible to shift participants in the transportation planning process from the current, non-cooperative [less cooperative as opposed to non-cooperative?] approach to one that emphasizes coordination and cooperation between governing agencies and officials. Doing so will help ensure that effective megaregion and cross border transportation planning can be implemented.

SECTION I. INTRODUCTION

A. Research Background

The megaregion is a new approach for defining regionalism, creating a new spatial strategy for those areas hosting a significant portion of the country's population and economic activities and thus confronting intense traffic congestion and a constrained environment. The advent of the megaregion also represents a new and potentially fruitful context for American transportation planning. Megaregions are characterized as networks of urban centers and their surrounding areas, connected by existing economic, social, and infrastructure relationships (Ross et al., 2009a). The power of a megaregion framework is that it can be adapted to different scales in different places, so that it may be used to pursue different strategies to address current challenges and enhance future competitiveness.

Effective transportation infrastructure, which links together neighborhoods, towns, and cities to regions, regions to megaregions, and megaregions to nations, is essential to economic growth in a global economy. In contrast to current planning, which is either nationally directed or limited to individual metropolitan areas, megaregion planning for infrastructure to support economic functionality is critical to ensuring regional competitiveness in a global context. It is of increasing importance in the improvement of inter-state and inter-regional mobility. Within a megaregion framework, metropolitan areas linked by transportation corridors can work together to strengthen their own competitive advantage while contributing to the economic capacity of the extended region. Thus the megaregion approach may provide a more effective strategy for spatially-based development, taking into account key regional issues: transportation, natural environment, utilities, land use, and economic competitiveness.

Historically, numerous strategies have been put forward outlining the importance of the regional context in infrastructure investment planning, yet multi-jurisdictional and multi-state transportation and infrastructure planning has been difficult to accomplish within the United States. Transportation objectives, shared environmental resources, and economic development have occasionally spurred inter-state cooperation, but the most influential attempts at regional planning in the U.S. have originated at the federal level. The major challenge for future regional efforts will be to combine the effectiveness of federally-proposed initiatives with the cooperative nature of interstate compacts driven or undergirded by local support. Elsewhere in the world, in areas such as the European Union (E.U.) and China, transportation investment is being approached regionally by both federal governments and local actors, generating significant regional advantages.

Rather than have state or local governments compete against each other for funds and projects, the megaregion offers a framework for inter-jurisdictional cooperation (Ross et al., 2009b). As we have seen in the U.S., locally-originated regional associations have tended to be weaker than those sponsored at the federal level. It may be that megaregions can be the first (North) American example of regionally cooperative approaches with enough local buy-in to be able to act decisively. Presently, our planning

structures are divided into vertical (functional) classifications and horizontal (hierarchical) classifications. Hierarchical classes include the federal, state, metropolitan, county, and local levels with some auxiliary agencies. Functional classes include transportation, agriculture, land development, natural resources, housing, economy and urban affairs. However, the functions of public and private actors interact in complex ways on our citizens, resources, settlements, and infrastructure.

Over the past few years several research forums have been held by Georgia Tech's Center for Quality Growth and Regional Development (CQGRD), the Regional Plan Association (RPA), and at national conferences held by the American Planning Association (APA), the American Collegiate Schools of Planning (ACSP) and the Transportation Research Board (TRB) to address the challenges and potential associated with megaregional planning. Additionally, new organizations such as the Piedmont Alliance for Quality Growth (PAQG) are being convened to consider prevailing development challenges and opportunities in the context of megaregions, and to develop a research and policy agenda for moving forward with megaregion planning. These forums have brought together leading academics, decision and policy makers and business leaders. A common theme of discussion running through these forums and groups is the need for and current lack of a functional framework through which to pursue megaregion planning.

The purpose of this report is to identify lessons from current multi-jurisdictional approaches in the U.S. and around the world through literature review to craft approaches for addressing infrastructure needs and planning at the scale of the megaregion.

B. Report Organization

Building on the work done in FHWA's report entitled *Megaregions and Transportation Planning*, this report aims to provide a basis of knowledge of the current state of thinking on regional and statewide transportation planning structures and opportunities for megaregion planning, which will contribute to the literature and practice of megaregion planning. This report also strives to broaden the constituency and identify appropriate strategies for the pursuit of a practical and actionable approach to megaregion planning in the U.S.

Section II explores the theoretical discussions on the evolution of the institutional structure to inform the development of megaregion governance. This review presents three different concepts of governance, including "reform-consolidation", "market public choice", and "new regionalism" concepts, and examines implications for megaregion governance. Section III examines current and historic structures and function of regional and statewide transportation planning, and reviews recent literature on megaregion planning.

Section IV provides case studies of multi-jurisdictional cooperation in three categories: multiple MPOs, multi-state MPOs, and other multi-scale initiatives crossing state

boundaries. First, the MPOs' areas of responsibility have grown with the expansion of metropolitan areas and the areas have begun to overlap with neighboring metropolitan areas, resulting in collaboration of multiple MPOs. Second, another type of multi-jurisdictional collaboration is a multi-state MPO, which is charged with the increased challenge of planning for a region or metropolitan area that falls under the jurisdiction of two or more states. Thirdly, other large- and multi-scale initiatives that cross state boundaries are examined. This not only includes multi-scale transportation initiatives, but also includes a targeted exploration of megaregion initiatives in other infrastructure sectors, such as the Northwest Power Planning Council created in the four primary states of Washington, Oregon, Idaho, and Montana, and the Transportation and Climate Initiative (TCI) among the Northeastern and Mid-Atlantic states.

Section V identifies opportunities and challenges of megaregions through the results of this report and preliminary analysis. Section VI draws conclusions from the body of literature and case studies examined in this report to frame the next steps in the examination of megaregions for transportation planning and investment in the United States.

SECTION II. SHIFT OF INSTITUTIONS

A. Institutional Challenges of Emerging Megaregions

Urban sprawl or a geographical expansion of existing urban areas is not a static phenomenon, but a continuing process occurring in most U.S. metropolitan areas. With regard to population growth projections, most of which will be concentrated in urban areas over the next 30 years (UN-Habitat, 2011), it is reasonable to assume that a significant amount of population and economic activity in the U.S. will be accommodated within megaregions (Figure 1), networks of major metropolitan centers and their areas of influence (Ross and Woo, 2011).

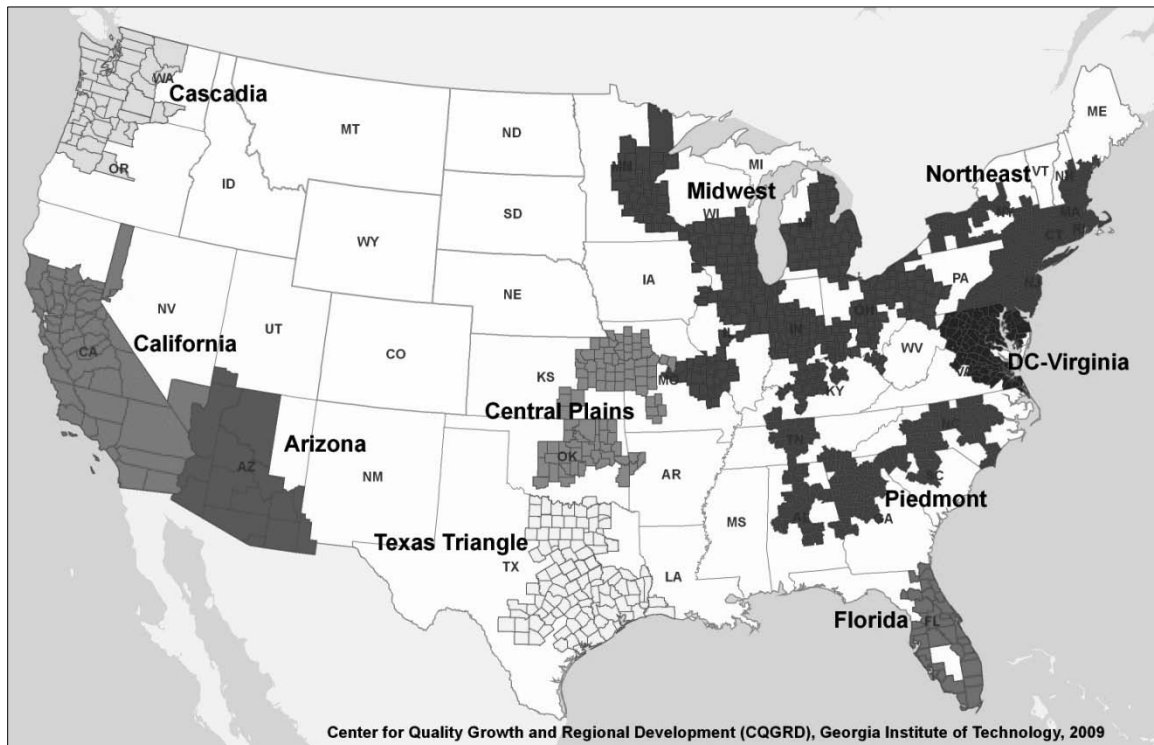


Figure 1. U.S. Megaregions (Ross et al. 2009a)

Such concentrations will certainly put more pressure on existing transportation infrastructure in megaregions. Vehicle Miles Traveled (VMT) have increased significantly in the last few decades due to increased average personal trip length, population growth, decreased vehicle occupancy, lack of sufficient transit services and non-motorized travel facilities, and longer commutes due to highly dispersed regional development patterns. Major airports in megaregions are experiencing a growth in the number of travelers and airplane operations which has resulted in an increase of flight delays and travel costs (Figure 2). Export and import commodities in megaregions are estimated to increase by 134 and 124 percent, respectively, by 2035. Most of this growth is dependent on trucking, which accounts for about 66 percent of total domestic commodity movements (by million dollars) (Ross et al., 2008).

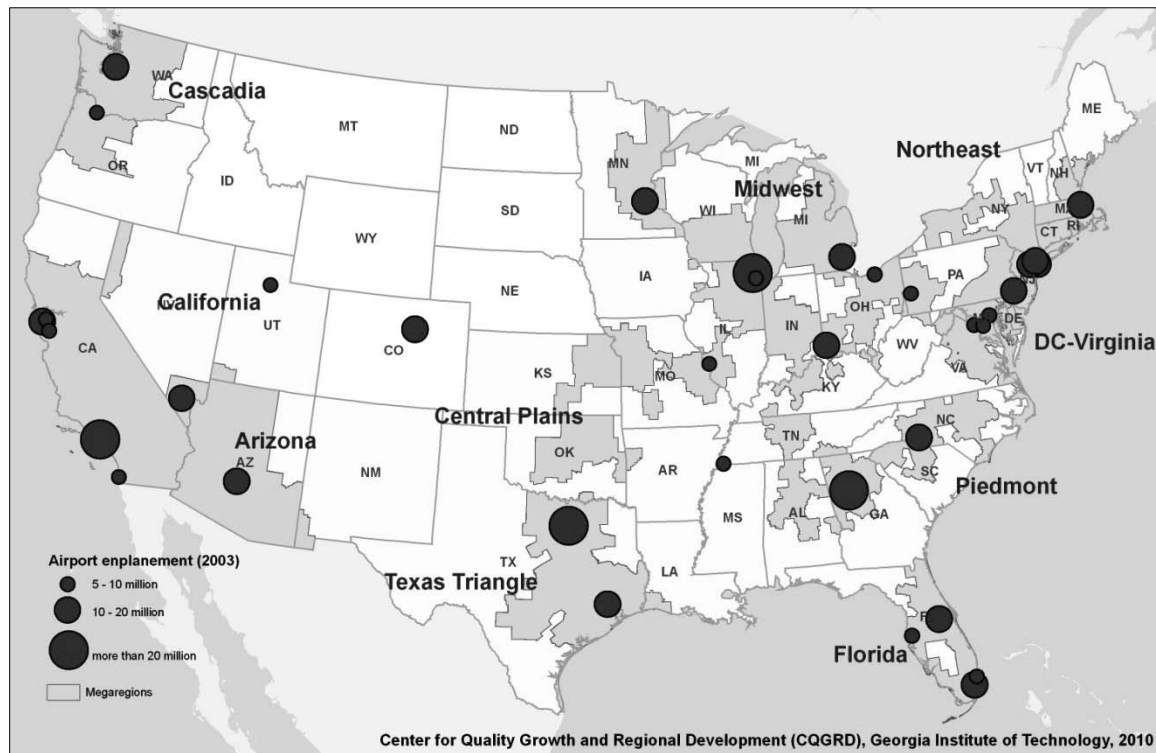


Figure 2. Major airports in the U.S. (Ross and Woo, 2011)

However, the infrastructure investments in the U.S. have been exhausted by an expansion of existing transportation networks focused solely on geographic scope. Since the trends of population and economic growth will continue in the future, a strategic approach to the transportation infrastructure for both passenger and freight movements should be considered. As shown in European and Asian countries (Xu and Yeh, 2011; Ross et al., 2008), adopting the megaregion concept for outlining future infrastructure systems would guide investments towards more sustainable and competitive infrastructure systems within regions.

As challenges and the economies of our metropolitan areas span other neighboring metropolitan areas, rural areas, and states, effective planning, coordination, and implementation are needed for new passenger and freight mobility systems that relieve congestion and enhance economic competitiveness and environmental sustainability. To attain these goals, planning and investments for national infrastructure systems should be made through a new and innovative lens. A megaregion framework enables coordination and facilitates improvements to multi-jurisdictional transportation and other infrastructure. The megaregion framework will present a viable structure providing the link between local, state and multistate jurisdictions for the national transportation system, which is considered the skeletal foundation of the nation's economy that supports and facilitates global competition. The question then becomes how the concept of megaregions can be effectively promulgated, particularly in the fragmented political and planning systems in the U.S.

Although many actors including public, private, non-profit and civic organizations affect the prosperity of regions, there is neither a popular incentive nor mandate for these players to form an alliance. In such an alliance they could work together to achieve smart growth, manage climate change mitigation and adaptation strategies, and implement economic development (Innes, Booher, and Vittorio, 2010). All of these activities are closely related to transportation infrastructure systems. Instead of cooperating, such actors often conflict and compete against each other within the same regions. Most public organizations responsible for multi-jurisdictional issues, such as regional transportation, air quality, and land use planning, lack the capacity and authority to change.

Regions in the United States continue to grow and interconnect, creating the need for more extensive integration of infrastructure impacts with regional economic growth. Geographers and planners in Europe have employed spatial planning to define and integrate economic, social, cultural, and ecological policies. Since this approach addresses these multi-disciplinary aspects spatially, and a transportation system organizes and connects such activities interacting with land uses, spatial planning can embrace administrative practice and policies, enabling guidance for organizational structure in multi-jurisdictional efforts.

B. Conceptual Approaches to Regional Governance

In terms of multi-jurisdictional efforts, the concept of 'city-regions', which go beyond local authority boundaries as "*the new and emerging subnational scalar focal point and territorial fix for the global capitalist economy*" (Harrison, 2007; Ross and Harbour, 2006), was employed in England's Sustainable Communities Plan (SCP) for the South East mega-city region to enhance the region's economic competitiveness. However, while the city-regions, called 'new city-regionalism', have growing support within economic geography, they have been criticized for a lack of foundational theory (Harrison, 2007).

Another popular concept in European spatial planning is polycentric development (Meijers, 2008). The European Spatial Development Perspective (ESDP) views polycentricism as a stimulant of economic progressiveness and improved territorial planning. At the EU scale, polycentricism is credited for creating multi-growth centers across Europe. At the regional level, polycentric regions are believed to eliminate social and environmental spatial disparities formed in monocentric cities, and are also believed to be better equipped for global competitiveness. However, Vandermotten et al. (2008) argue that Europe's view of polycentricism is biased and normative. Moreover, they contend that there is no clear distinction between morphological and functional polycentricity. A morphologically polycentric region consists of a number of self-sustaining metropolises with their own labor pools. A functional polycentric region includes sub-centers that are specialized and complimentary in terms of the global economy. Meijers (2008) also argues that regional growth theories, such as new economic geography, do not discuss much about the form of the urban system.

Hence, the current trends of spatial agglomerations beyond traditional boundaries and the multiple attempts at organizing regions in the U.S. and abroad provide us with opportunities and challenges in both academic and policy arenas.

Going back to the discussion of organizational structures of institutions, the arguments have been focused on the shift “from government to governance” (Xu and Yeh, 2011; Innes, Booher, and Vittorio, 2010; Pike, Rodriguez-Pose, and Tomaney, 2006). Xu and Yeh (2011) summarize three concepts of regional institutions based on history, philosophy, and planning objectives. For example, the “reform-consolidation” concept, which was popular around the 1950s and 1960s, favors strong state interventions to secure a regulatory framework that guides urban expansion with planned decentralization for economic growth. Under this concept, central state-led infrastructure provision at the national scale (e.g. led by federal agency) was influential, and local and regional state initiatives were considered only instruments for achieving central policies. However, the authoritarian style of operations, which is frequently found in developing countries, or centralized (top-down) forms of interventions, pursued by national authorities, have been under attack for the heavy concentration of investment on physical infrastructure. Also, such an approach often increases the inequality between regions due to the heavy provision of infrastructure in specific regions (Pike, Rodriguez-Pose, and Tomaney, 2006).

In contrast, the “market public choice” concept, based on neoliberal localism and urban entrepreneurialism during the 1980s, emphasizes individual characteristics of regions. Therefore, local entities, such as a municipality, are considered the desirable body for regulation and regional development. The failure of centralized approaches and the challenges of globalization raised an interest in bottom-up approaches with an emphasis on local and regional entities (Pike, Rodriguez-Pose, and Tomaney, 2006). In this era, the prevalence of the state-led interventions has been replaced by the encouragement of the market driven deregulation approaches. While this supports project-based urban development, mostly led by the private sector, it results in the lack of a planning system that manages a region-wide urban area and provides a framework for efficiently providing infrastructure at the regional, sub-national, and national scales (Xu and Yeh, 2011).

The third concept, “new regionalism”, proposes an institutional shift in regional emphasis from government to governance, and emphasizes public and private-sector partnerships and joint ventures. This type of governance has also shifted traditional hierarchical planning towards a horizontal and network-based planning system (Xu and Yeh, 2011), overcoming the constraints from existing political boundaries. The new institutional forms require a strong coordination of governments at different scales, and public and private actors. The emergence of multilevel governance may provide a framework for governing megaregions, where multi-layered institutions at a range of scales from federal to local, interact for local, regional, sub-national, and national development and infrastructure planning. Under this concept, the role of political entities is to guide the self-organization of alliances and networks.

The traditional power of the national state has been dispersed both upwards and downwards in a global economy. For example, globalization moves the power of the national government to supranational institutions, such as the International Monetary Fund, European Union, NAFTA, and ASEAN, by demanding more activities in such entities. At the same time, as discussed in the “market public choice” concept, its power has been dispersed to local and regional entities, and recently to trans-boundary networks (Pike, Rodriguez-Pose, and Tomaney, 2006). The territorial and functional reorganization of the power of the national government means the changes of its boundaries in terms of roles, emphasizing the coordination of the boundaries between public, private, and other actors.

However, the new governance focusing on the interactions of multiple actors sometimes generates unintended consequences, such as obscured responsibilities between actors and problems due to mutual power dependence (Pike, Rodriguez-Pose, and Tomaney, 2006). This suggests an important role for the national level government that can integrate and coordinate different actors at the different levels.

While the authority and influence of the national government moves upwards to supranational scales and downwards to local and regional ones, the megaregion scale certainly poses an institutional challenge in the U.S. because traditional planning has not been practiced at this level. However, through the theoretical discussions on the shift of institutions in this chapter, it is suggested that the megaregion scale, where more diverse actors are involved in terms of geography and sector, needs to build a new governance with public and private partnerships. Cross-sectoral alliances with federal leadership linking coordinates these fragmented actors and multi-scale decision making systems. It is an urgent task to facilitate such a development that will guide the authority of the national government to be an effective player as movement occurs toward creating megaregion transportation governance and planning in practice.

SECTION III. TRANSPORTATION PLANNING AND MEGAREGIONS

Transportation planning and investment decisions influence far more than the accessibility and mobility of individuals. Through years of observation in the great social laboratory of our communities, transportation planning and investment decisions have proven to have immense influence on the social, environmental and economic health of an area. Today the planning community is faced with a new spatial form encompassed within the concept of the megaregion. This fresh urban structure and the associated interactions and relationships between metropolitan areas within a region has called for a new approach to transportation planning that is more highly geared toward a new regionalism; and the need for increased coordination and cooperation between authorities, void of political boundaries, is imperative. This innovative approach to transportation planning will not replace other planning approaches at the local or regional level, but it would provide an additional tool for practitioners, authorities, academics and policy makers so that more effective planning and investment decisions can be made.

Ross et al. (2008) has characterized megaregions as linked networks of metropolitan centers and their surrounding areas that share or interact through environmental, economic, infrastructure and social factors. With the progressive concept of the megaregion has come a new spatial and relational form in the urban landscape for which we must plan. This research is geared toward providing a planning structure or framework that can effectively address the challenges of this new urban form. To better understand the evolution in planning and to ultimately frame this movement into planning for the megaregion, this section will provide a literature review of the current and historical structure and function of local, regional, statewide and trans-boundary transportation planning.

A. Historic Structures and Function of Regional and Statewide Transportation Planning

Transportation planning occurs in a very dynamic, diverse and ever-changing environment. However, in order for this planning to be effective it should be responsive and able to adapt to changes in factors such as population patterns, travel preferences, social needs, environmental concerns and economic activity. Through this dynamism it is possible to trace the evolution of this discipline over time. Work done by Ross, Barringer and Amekudzi (2009) has summarized the evolution of transportation planning into six eras each with its own distinct planning nature and functions (Figure 3).

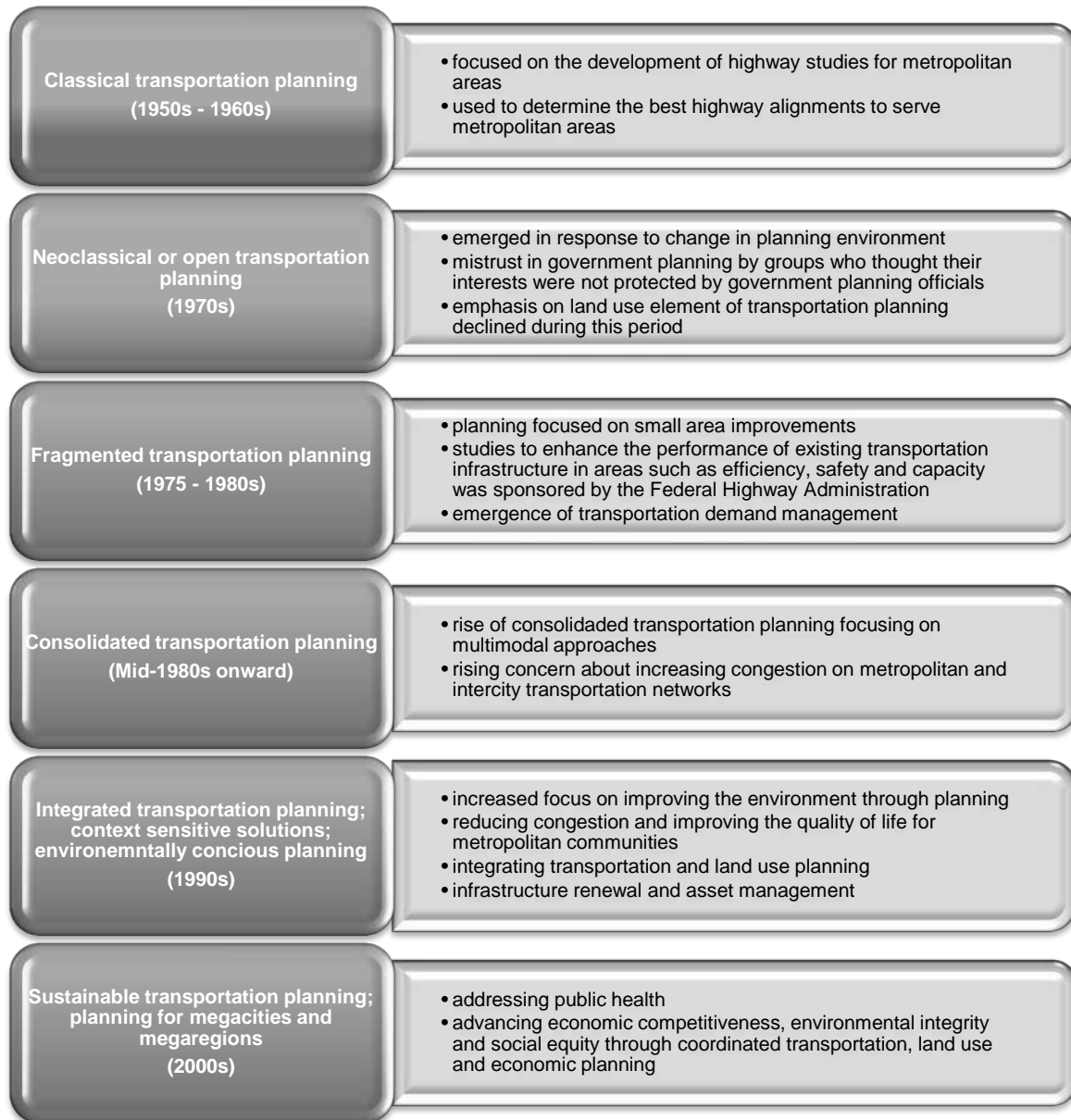


Figure 3. Evolution of the nature and function of transportation planning in the US (Ross et al., 2009b)

With the commitment to develop a national highway system in the United States, came the beginnings of early transportation planning. The nature and function of planning in this era was highly influenced by the purpose of constructing the national interstate highway system and was thus motivated by its related goals and values. As such, early transportation planning was focused on highway construction. As the needs of certain groups were not addressed by government planners the neoclassical period of transportation planning was riddled with a sense of mistrust in government planning to promote the interest of certain social groups. In response to this perception, many

planning efforts were advanced through advocacy planning groups by taking efforts into their own hands.

Through the decades, planning activities moved from being fragmented in nature, focusing on small area improvements and planning to enhance the performance of the system as it related to distinct areas such as safety or capacity, to being more consolidated and inclusive in nature. This period of consolidated transportation planning, emphasized planning in a more holistic manner and placed special focus on multimodal approaches. The current culture of transportation planning has continued to move in this general direction, addressing more and more complex issues associated with planning for large spatial areas and complex systems, such as the urban metropolitan areas with their integrated systems. Transportation planning and decisions are now highly responsive and sensitive to environmental impacts, social issues such as health and equity, integrated transportation and land use relationships, and advancing economic competitiveness, in addition to reducing congestion and promoting a better quality of life for system users.

B. Regional Multi-Modal Transportation Planning

Historically, transportation planning has been voluntarily conducted by state and local agencies in the United States; however, not until the Federal-Aid Highway Act of 1962 was urban transportation planning federally mandated in the US. This mandate required transportation projects in urbanized areas with populations of 50,000 or more to be based on an urban transportation planning process (Weiner, 1997). This Act, which promoted continuing, cooperative, and comprehensive (3-C) transportation planning, was significant since it expanded the planning process beyond the scale of the city, to the larger metropolitan or regional level. It also required planning coordination and cooperation between the state and local jurisdictions. Not too far removed from the Federal-Aid Highway Act of 1956 which launched the construction of the National System of Interstate and Defense Highways work program, much of the planning climate at that time was geared toward highway and road projects in the country (Weiner, 1997; Solof, 1998). In an effort to promote a more regional and comprehensive approach to transportation planning, federal legislation passed during this period (1960s -1970s) attempted to integrate other facets such as mass transportation, environment and community development into urban transportation planning (Sanchez and Wolf, 2005; Solof, 1998; Weiner, 1997).

Metropolitan planning organizations (MPOs) [or organizations that served similar functions] in the United States have been in existence since the 1950s (Sanchez and Wolf, 2005). Following the 1962 Act, the level of planning that was needed called for more qualified planning agencies or organizational arrangements to be created that were capable of executing the required planning process (Weiner, 1997). There was however, no formal requirement for what this planning agency or organization should be. Regional organizations such as Regional Planning Commissions and Councils of Government at this juncture were mostly utilized in an advisory capacity providing technical support to

and promoting coordination between planning agencies (Solof, 1998). Decisions over project selection and funding allocation were not under their influence. It was not until the passage of the Federal-Aid Highway Act of 1973 that federal law required urbanized areas of populations of 50,000 and more to have a designated MPO to be part of and facilitate the transportation planning process (Mallett, 2010; Ross et al., 2008; Solof, 1998; Weiner, 1997). This legislation provided the federal backing and funding to establish a more formal planning organization which would meet or carryout the federal mandate.

MPOs represent local governments and work in coordination with state departments of transportation and other major transportation service providers to conduct the regional transportation planning process for urbanized areas. In order to receive federal transportation funding for projects in an urbanized area, these projects must emerge from the planning process undertaken by the relevant MPO and state department of transportation (US Government Accountability Office (GAO), 2009). Although MPOs carry out the federally mandated transportation planning process and its core membership is dictated by law, the organizational structure and staff arrangements are determined by agreement between local officials and the state. Of the 381 identified MPOs in the United States, 52% of these organizations represent populations less than 200,000; 36% represent areas with populations less than 1 million but greater than 200,000; and the remaining 11% of these MPOs represent populations over 1 million persons (GAO, 2009). The 11% of MPOs representing the largest population areas of over 1 million persons actually represents approximately 49% of the country (GAO, 2009).

All MPOs have the same basic requirements which include the production of a long-range transportation plan covering at least a 20-year horizon, production of short-range Transportation Improvement Programs (TIP) covering a 4-5 year period, an annual statement of planning priorities and activities or a Unified Planning Work Program (UPWP), and public participation plans. An area's transportation goals and visions are determined by the MPO board including representatives from member jurisdictions, transportation operators, area-wide stakeholders and the general public. MPOs must develop their plans and programs in cooperation with their respective state departments of transportation, local transit providers, land-use entities, environmental resource agencies as well as with tribal governments, airports, Amtrak, or any freight rail entities (GAO, 2009).

With the growing complexity of the urban environment, many MPOs have experienced their responsibilities and activities being extended beyond their mandated transportation activities. These extended responsibilities or activities include land-use planning, selection of projects from the TIP for development, project implementation, transit operations, and environmental planning (GAO, 2009). Due to the changing transportation planning environment which has become highly integrated with other system factors, MPOs have had to adapt to and address the needs that arise. However, MPOs have identified that their ability to plan effectively for these diverse needs, although important, is constrained by the MPO's funding and staffing limitations, the

lack of authority by MPOs to implement the plans that they develop, and the lack of technical capacity within some these organizations to address the complex issues that an area might face (GAO, 2009).

C. Recent Literature of Megaregion Planning

Recently, there has been a development in the research community that focuses on identifying and addressing the challenges that might be faced in planning for a megaregion or mega-city area both in the United States and internationally. The major issues and tasks that consistently arise out of these works include how these regions engage in the planning process (especially in developing a regional vision and goals); determine regional needs; identify regional strategies; identify, prioritize and select projects of regional significance; determine funding options and arrangements across jurisdictions to finance regional projects; develop innovative and more standardized data collection systems and knowledge transfer strategies; and the needs and benefits that emanate from adapting to an overall new governance structure for the megaregion. Exploration of the benefits and challenges that face this new spatial structure has been championed by both individual researchers as well as by international collaborative institutes or think-tanks. The following section provides a snapshot of the state of megaregion research that is currently underway. Focus is placed on any suggested new governance or planning structures that might facilitate better megaregion transportation planning.

1. Identification of Megaregions

As the concept of megaregions increasingly gets attention from academics, planners, and policy makers, the boundaries of megaregions become critical. The scale of megaregions varies by country and policy purposes. For example, existing studies of megaregions can be classified as mega-city regions, multi-metropolitan regions, and international planning.

Some authors argue that the megaregion evolved from the city-region concept, which debuted in the early 1900s. The most commonly used form of the city-region in the United States are metropolitan statistical areas (MSAs), which encompass the urban core, as well as the related surrounding areas. Mega-city regions are those who contain a global city within the city-regions. Cases of greater London and Paris regions are included in mega-city regions, where one dominant global city, such as London and Paris, forms a big geographic region and influences both surrounding regions and global markets.

The form of multi-metropolitan regions includes several metropolitan centers that are located far apart in geographic distance but are connected by network infrastructure and interact with each other. The Randstad in the Netherlands and most megaregions in the U.S. are included in this form. Asian megaregions present good examples of transportation and infrastructure projects relevant to the U.S. For example, the

megaregions and the geographical scale found in China are similar to the U.S., especially in locations where mega-city regions grow into multi-jurisdictional regions; although the population, political and planning systems are very different. Similarly, the Seoul mega-city region with more than 20 million people in South Korea has increased its interactions with the Busan metropolitan area through the opening of a high-speed rail network, forming the Seoul-Busan corridor. The EU level of infrastructure planning is also a good example of transnational or international planning at the scale of the megaregion.

The common characteristics of these megaregion forms, regardless of the scale, are that they form by interacting with nearby cities, regions, and countries via certain types of networks, such as highway and high-speed rail, for the purposes of economic competitiveness and sustainable development.

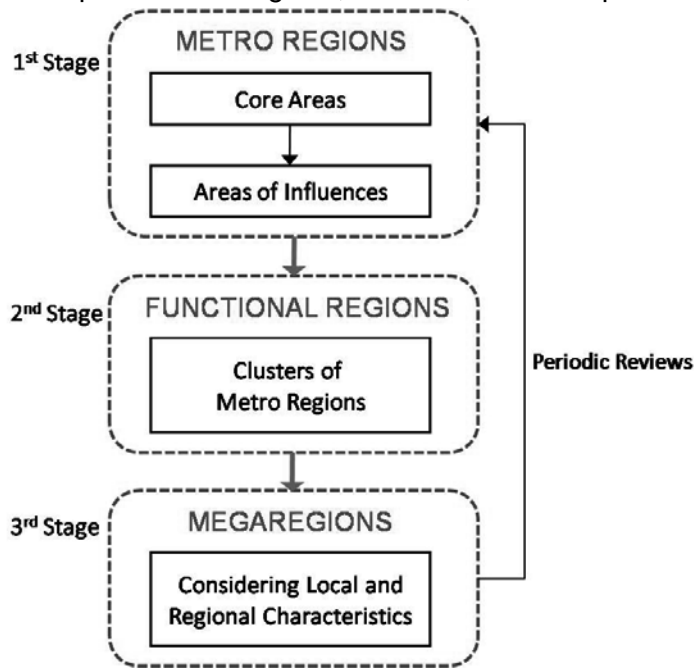
In addition, there are particular parameters that can consistently define a megaregion. The environment, demographics, immigration, culture, technology, the economy and consumption are key components that contribute to delineating the megaregion. Furthermore, specific phenomena such as globalization and advances in technology, including e-communication and high-speed rail (HSR), cause changes in the formation and boundaries of regions. These factors act as catalyst agents in facilitating and reshaping urban regions.

In the U.S., there have been a number of studies on the identification of megaregions at both the regional and national scales. The studies at the regional scale have been undertaken by several organizations, including the Northeast undertaken by the University of Pennsylvania, Piedmont Atlantic by Georgia Institute of Technology (Georgia Tech), Northern California by San Francisco Planning and Urban Research (SPUR), Great Lakes by the University of Michigan, and Texas Triangle by the University of Texas, Austin (Ross et al., 2009a).

At the national scale, the Metropolitan Institute at Virginia Tech and the Regional Plan Association (RPA) provide systematic criteria to identify megaregions and draw the boundaries using the county as the basic unit of analysis (Ross et al., 2009a). Ross and Woo (2009) propose a conceptual framework of identifying megaregions using both quantitative models and theories in spatial planning, including 'relational' and 'essentialist' approaches proposed by Healey (2004). The proposed methodologies were empirically conducted in the megaregion report (Ross et al., 2009a), *Megaregions: Delineating Existing and Emerging Megaregions throughout The United States*, prepared for the U.S. Department of Transportation, Federal Highway Administration.

Figure 4 illustrates the three stages of the identification procedure: (1) identification of metro regions with core areas and their areas of influence; (2) identification of functional regions and measurements of interactions among regions; and (3) delineation of megaregional boundaries with proximity and contiguity conditions (Ross and Woo, 2011), and the delineation results are shown in Figure 1 in Section II.

It is important to recognize, however, that the spatial boundaries of megaregions are not



Source: Ross et al. (2009a)

Figure 4. The Procedure for Delineating Megaregions

rigid blueprints, but are malleable based on growth and development. For practical purposes, megaregion boundaries can be flexible depending on the planning purposes. The delineation of transportation investment by mode, environmental planning, economic development, or other factors, may require different selection criteria by which megaregions are delineated.

2. Governance and Structure

Research conducted by Judith Innes, Sarah Di Vittorio and David Booher (2010), of the Institute of Urban and Regional Development - University of California, Berkeley, described in *Governance for the Megaregion of Northern California: A Framework for Action*, offers a framework for improving the resilience of the Northern California megaregion and addressing its challenges in a more coordinated and effective manner. Drawing from world experiences with regional governments, Innes and others consider the potential for regional governance in the Northern California megaregion in comparison to the more traditional rigid government structure currently in use that seems to be inflexible and incapable of adapting to changing conditions. Drawing from theories of complexity science, the authors offer a framework or guiding principles for the design of a governance system that is more adaptive to the changing nature of the megaregion. The cases and ideas explored in this report illustrate the benefits that can be reaped from having adaptive governance practices. The cases used include:

- The Sacramento Area Water Forum: Stakeholder Based Collaboration

- CALFED: Informality as a Governance Strategy
- Collaborative Regional Initiatives (CRIs); Civic Leaders Filling Governance Gaps
- Blueprint Planning
- National Estuary Program
- Networks in Belgian Planning

With the high degree of economic, social and ecological linkages and interdependences that exist in the Northern California megaregion it is suggested that adopting an innovative and adaptive governance structure could link “interdependent actors across jurisdictions, sectors, and organizations in fluid networks that exchange ideas and resources” (Innes et al., 2010). Adaptive governance also provides the opportunity for a region to experiment and benefit from pooling information and receiving feedback from a diverse range of sources or participants. The experiences show that “collaboration, network-building, boundary-spanning, and monitoring and feedback are all key tools” (Innes et al., 2010). This innovative governance structure is not put forth as a replacement for formal government but rather it is put forward as a model that will allow regional actors to experiment with and select strategies that appear to work and combine ideas in various manners. Through this process authorities could gradually change existing practices.

Research done by the AECOM Global Cities Institute has also looked to address the challenges and opportunities that the Arizona Sun Corridor faces as it tries to establish itself as a megaregion. The work generated has focused on presenting the vision that the region has for itself and the implications for economic development, infrastructure investment needs and the need for greater cooperation and collaborative planning in order to achieve regional goals. The AECOM Global Cities Institute is an “urban laboratory” or think-tank that has been created to critically address the evolving role of cities and to bring together a diverse group of experts to address planning for cities in a more interdisciplinary manner. Its purpose is to promote true quality city-building which includes a wide range of components from economic, social and cultural infrastructure, transportation infrastructure and open space and public realms. The Institute focuses on partnering with cities worldwide in an effort to work cooperatively in developing solutions that address the cities’ unique urban challenges and enhance their urban quality of life. Currently, the Institute is in partnership with four global cities which include:

- Phoenix, AZ – Phoenix-Tucson Megapolitan Area (Arizona Sun Corridor)
- Jeddah – Red Sea Port
- Beijing, China
- Auckland, New Zealand

The partnership between the Arizona Sun Corridor and the Global Cities Institute is focused on addressing the region’s current conditions and future considerations that must be addressed to support and promote the development of the region in a more holistic and global manner appropriate for its new spatial structure as a megaregion.

Research is focused on issues including the region's transportation system, future land use, water supply management, regional coordination and governance, and economic development required to meet the needs of the approximately 5 million people in the region and the projected 2040 population of 7 million. The Global Cities Institute has produced the *Phoenix-Tucson Ambitions Report. Sun Corridor, Future Corridor: A Global Megaregion in the 21st Century* (2010) which addresses the current conditions and needs of the region as it seeks to establish itself as one of the ten identified megaregions in the United States.

One of the major findings or recommendations arising out of this report suggests that the Arizona Sun Corridor, if it is committed to establishing itself as a megaregion, will have to undertake innovative approaches in planning for and promoting its development. It further suggests that the Sun Corridor will have to consider a different form of governance, regional cooperation and infrastructure investment that will promote its global perspective and shift the paradigm to solidify it as a new geographic entity. One such milestone that has reflected this commitment is the 2009 joint planning agreement signed by the Maricopa Association of Governments (MAG), the Pima Association of Governments (PAG) and the Central Arizona Association of Governments (CAAG) to coordinate their planning activities and to cooperatively work together to advance the Sun Corridor.

This shift in the planning paradigm is not unique to the Arizona Sun Corridor or the United States. As the region looks to redefine itself spatially, the report further provides examples of how other areas around the world are conceiving of and addressing similar issues. The following cases were identified to provide an international perspective of planning coordination and cooperation that might provide useful insight to the region:

- Yangtze River Delta (signed agreement between major cities to work together on certain issues)
- Coordinated planning between the Republic of Ireland and Northern Ireland
- Great Lakes Commission
- I-95 Coalition
- Spatial Planning in France (DIACT)
- European Spatial Development Perspective (ESDP)
- Irish National Spatial Strategy
- TENs – Trans-European Networks

3. Transportation Research for Megaregions

The USDOT's Volpe National Transportation Systems Center is currently working on a study which focuses on the evolving role that MPOs and their partners play in transportation planning for megaregions (final report forthcoming). The report uses seven cases in the United States to explore the key aspects of planning for megaregions that they have identified regarding strategic planning, technical analysis, funding mechanisms, and institutional relationships. The cases highlighted include:

- Arizona Sun Corridor
- Buffalo-Niagara-Toronto
- Central Florida
- Colorado's Front Range
- I-95 Corridor Coalition
- Piedmont Atlantic
- Southern California

Through the course of the study, researchers communicated with directors and the staff of MPOs and state DOTs, other researchers and megaregion institutions to engage in a dialogue regarding planning for megaregions. The major conclusions from the study include:

- Megaregion boundaries might need to be flexible to accommodate diverse participation and projects.
- Institutions within megaregions come together formally or informally to address specific issues (freight, ITS, etc.) and expand to serve a larger strategic, coordination, or communication function across the megaregion.
- Megaregion institutions that were more formalized and which had established communication efforts are more effective in establishing joint priorities, engaging stakeholders, and implementing initiatives at the megaregion scale.
- MPOs have limited time and staff to dedicate to megaregion planning. They might be more likely to get involved if there was some clear benefit to their planning area (partnering or access to data).

Freight issues are frequently observed in megaregion transportation studies. Texas Transportation Institute's study in 2009 (the final version forthcoming), *Mega-Region Freight Movements: A Case Study of the Texas Triangle*, focuses on a multi-state megaregion stretching from Houston, Texas to Louisiana, and a Texas Triangle megaregion. The study examines logistics networks serving megaregions (truck, rail, inland ports), the accommodation of megaregion planning by the Texas DOT that incorporates MPO needs, and a structure of megaregion governance without creating an additional layer of government.

Another study, *Megaregion Freight Issues in Texas: A Synopsis*, sponsored by Texas DOT and conducted by the Center for Transportation Research of the University of Texas at Austin in 2010 (the final version forthcoming), identifies costs and benefits associated with adopting a megaregion framework for transportation planning in Texas. The purpose of the research is to examine the feasibility of megaregion planning and its implementation in transportation, and the results were shared with Texas DOT planners, MPO staff, transportation providers, public transit agencies, and federal officials through a presentation at a workshop.

SECTION IV. CASE STUDIES: MULTI-JURISDICTIONAL COOPERATION

Transportation planning and investment decisions at the scale of the megaregion will undoubtedly present new challenges to practitioners, scholars and policy makers. Planning for such large populations in multiple metropolitan areas within a region, as well as coordinating transportation projects, programs and investments between megaregions will require increased resources, coordination, communication and possibly new planning structures or organizations to facilitate effective results. Instead of having state and local governments competing against each other for limited funds and projects that address localized transportation concerns, the megaregion offers a framework for inter-jurisdiction cooperation (Ross et al., 2009a).

In crafting a structure for megaregion planning, this research will seek to ultimately develop a framework which, at a minimum, addresses a potential system of governance for this new spatial structure, what systems need to be integrated for data collection, data sharing and knowledge exchange, and how these currently fragmented funding and financing pools of resources can be coordinated to deliver projects which transcend local boundaries. The cases presented here are a mix of organizations or projects, both in the US and internationally, that engage in multi-jurisdictional planning or coordination. Exploration of these cases focuses on identifying and understanding the structure, function, role, and responsibilities of each participant organization. In addition, they may provide insights into processes or arrangements that are unique and which have added to their success in coordinating planning efforts or aiding project delivery.

A. Multiple MPOs

The metropolitan planning organization (MPO) has been the predominant federally backed planning organization designated to address urban multi-modal transportation planning at the regional level. However, over the last fifty years the “regional” scope of urban transportation planning has changed as a result of population growth, urban area expansion and increased relationships between regions due to progressive economic, communication, and infrastructure connections. The geographic planning areas originally designated to MPOs have not remained constant or static over this time period. As the total population of the nation grows, new MPOs are created as areas formerly below the minimum required MPO population threshold now are home to populations over 50,000. Rising urban populations have also changed the scope of existing MPOs as these organizations have to plan for larger populations that are distributed over increased land areas and which are facing more diverse and interrelated issues beyond transportation including environmental, social, economic, and equity concerns.

MPOs’ areas of responsibility have also grown with the expansion of metropolitan areas and in some cases these regions have begun to overlap with neighboring metropolitan areas under the responsibility of different MPOs. This spatial change and increased

interactions between adjoining regions have resulted in blurred planning boundaries, and the once localized “regional” planning of one MPO now has to consider the growing interactions it has with other areas in a more global manner. Realizing this change in the planning environment and in response to this new challenge, MPOs in certain areas have fostered collaboration amongst multiple MPOs. In some cases this planning arrangement between planning organizations is an informal arrangement and is undertaken through a mutual agreement by MPOs to provide more effective regional planning in their areas. The following cases explore such multiple MPO collaborations.

1. Florida’s Regional Approach to Transportation Planning

There are 26 metropolitan planning organizations/transportation management areas in the state of Florida. These organizations oversee and facilitate transportation planning for all or part of 37 of the state’s total 67 counties (The Center for Urban Transportation Research (CUTR), 2010). The urbanized areas over which these MPOs conduct planning efforts have gradually changed over time and in some instances the planning areas either overlap or are highly responsive to the planning decisions made in adjacent urbanized areas. Acknowledging the need to coordinate planning efforts between affected MPOs, Florida Statutes (F.S.) have provided for the coordination of planning efforts between MPOs. Under F.S. §339.175 (2), “[m]ore than one MPO may be designated within an existing metropolitan planning area only if the Governor and the existing MPO determine that the size and complexity of the existing metropolitan planning area makes the designation of more than one MPO for the area appropriate”. In the event that more than one MPO is designated for an urbanized area, the Code of Federal Regulations (23 C.F.R. §450.314 (d)) requires that there be a written agreement between involved MPOs, the State, and any public transportation operators that outlines how the planning process will be coordinated between entities. This process will include coordination of data analysis and planning assumptions to the greatest degree possible. Regulation alternatively provides for MPOs to create a unified LRTP and TIP for the complete urbanized area (FDOT, 2007).

Further provisions under Florida Statutes § 339.175(6)(j)(1), “...finds that the state's rapid growth in recent decades has caused many urbanized areas subject to MPO jurisdiction to become contiguous to each other. As a result, various transportation projects may cross from the jurisdiction of one MPO into the jurisdiction of another MPO. To more fully accomplish the purposes for which MPO's have been mandated, MPO's shall develop coordination mechanisms with one another to expand and improve transportation within the state. The appropriate method of coordination between MPO's shall vary depending upon the project involved and given local and regional needs. Consequently, it is appropriate to set forth a flexible methodology that can be used by MPO's to coordinate with other MPO's and appropriate political subdivisions as circumstances demand”. Any MPO may join with any other MPO or individual political subdivision to “coordinate planning activities or to achieve any federal or state transportation planning or development goals or purposes consistent with federal or state law” (F.S. §339.175(6)(j)(2)). If MPOs find it appropriate to join with other MPOs

they may do this by entering into an inter-local agreement. These provisions do not require any MPOs to merge, combine, or otherwise join together as a single MPO.

Table 1. Regional Alliances of MPOs and Contiguous MPOs in Florida

Regional Alliances	Formation Date	Member MPOs	Counties Represented
Central Florida MPO Alliance	1997	<ul style="list-style-type: none"> • MetroPlan Orlando • Space Coast TPO • Lake-Sumter MPO • Ocala/Marion TPO • Polk TPO • Volusia TPO 	<ul style="list-style-type: none"> • Orange County, Osceola County, and Seminole County • Brevard County • Lake County, and Sumter County • Marion County • Polk County • Volusia County and Flagler County (2 cities)
Southeast Florida Transportation Council	2005	<ul style="list-style-type: none"> • Broward MPO • Palm Beach MPO • Miami-Dade Urbanized Area MPO 	<ul style="list-style-type: none"> • Broward County • Palm Beach County • Miami-Dade County
Treasure Coast Transportation Council	2006	<ul style="list-style-type: none"> • Indian River County MPO • St. Lucie County TPO • Martin County MPO 	<ul style="list-style-type: none"> • Indian River County • St. Lucie County • Martin County
West Central Florida MPO Chairs Coordinating Committee	1992	<ul style="list-style-type: none"> • Hernando County MPO • Hillsborough County MPO • Pasco County MPO • Pinellas County MPO • Polk County MPO • Sarasota/Manatee MPO • Citrus County TPO 	<ul style="list-style-type: none"> • Hernando County • Hillsborough County • Pasco County • Pinellas County • Polk County • Sarasota County and Manatee County • Citrus County
Contiguous MPOs	Formation Date	Member MPOs	Counties Represented
Charlotte County-Punta Gorda MPO and Lee County MPO	2010	<ul style="list-style-type: none"> • Charlotte County – Punta Gorda MPO • Lee County MPO 	<ul style="list-style-type: none"> • Charlotte County and part of DeSoto County • Lee County
Charlotte County-Punta Gorda MPO and Sarasota/Manatee MPO	2004	<ul style="list-style-type: none"> • Charlotte County – Punta Gorda MPO • Sarasota/Manatee MPO 	<ul style="list-style-type: none"> • Charlotte County and part of DeSoto County • Sarasota County and Manatee County

Collier County MPO and Lee County MPO	2004	<ul style="list-style-type: none"> • Collier County MPO • Lee County MPO 	<ul style="list-style-type: none"> • Collier County • Lee County
Martin MPO and St. Lucie County TPO	2006	<ul style="list-style-type: none"> • Martin County MPO • St. Lucie County TPO 	<ul style="list-style-type: none"> • Martin County • St. Lucie County
Northwest Florida Regional Transportation Planning Organization	2004	<ul style="list-style-type: none"> • Florida-Alabama TPO • Okaloosa-Walton TPO 	<ul style="list-style-type: none"> • Escambia County, Santa Rosa County, and part of Baldwin County (Alabama) • Okaloosa County and Walton County

Source: CUTR, 2010; CUTR, 2011

The 2010 report, *Review of MPO Long Range Transportation Plans and Regional MPO Planning Activities and Products*, produced by the Center for Urban Transportation Research at the University of South Florida, identified 22 of the 26 MPOs in the state having “entered into formal arrangements to coordinate regional transportation planning activities with one or more neighboring MPOs”. These coordinated regional arrangements involve both regional alliances of MPOs comprising three or more MPOs, as well as contiguous MPOs, which involves two MPOs working together. Table 1 provides a summary of regional alliances and contiguous MPOs in Florida, as well as the member MPOs/TPO¹s and counties represented by each.

Traditionally MPOs have been categorized as being either hosted or independent entities. However, research has shown that their organizational structure can actually be categorized, by degree, within these two basic groupings.. Table 2 below provides the broader spectrum of the organizational structures that these entities actually take in the state of Florida (CUTR, 2011).

Table 2. Florida’s MPO Organizational Structure

Organizational Structure		Description
Hosted	All-In-One Agency	The agency does not differentiate between MPO functions, non-MPO transportation functions, and all other functions of the broader agency.
	Dual Purpose MPO	The host leverages MPO planning funds to maintain transportation planning staff that performs both MPO planning and host agency transportation planning functions.
	Component MPO	The MPO’s functions are separated from most functions of the host, but remain a division of the umbrella agency.

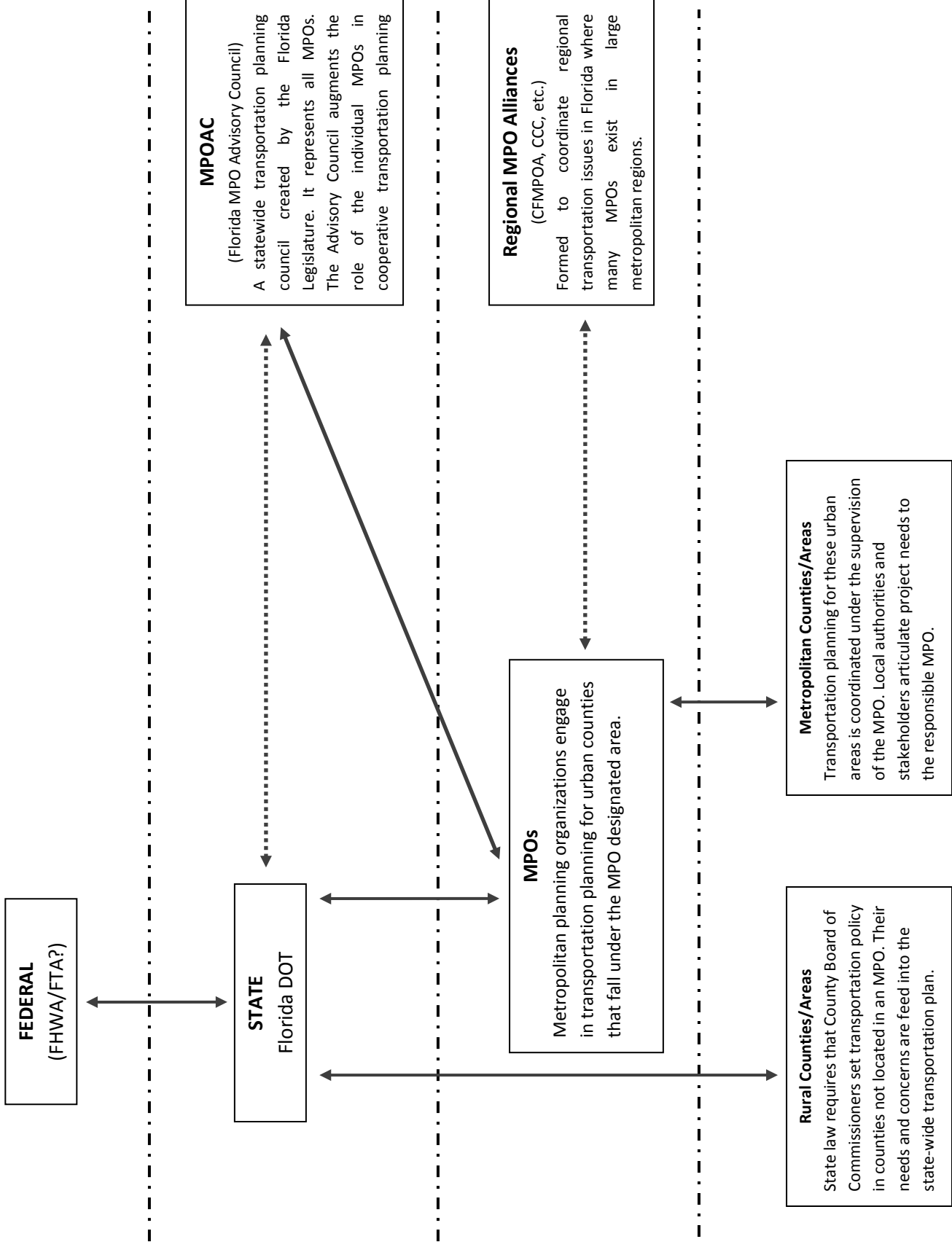
¹ Transportation Planning Organization

Independent	Leaning Independent MPO	The MPO receives some services from one of its member agencies under a severable contract.
	Freestanding Independent MPO	The MPO must meet all of its own operating needs.

Source: The Center for Urban Transportation Research (CUTR). (2011). A Snapshot of Florida MPOs. University of South Florida: Tampa

A majority of the state's MPOs (15) are categorized as hosted MPOs where the entity is hosted within another agency such as part of a regional planning commission, city or county planning department, or county community development department; and usually share the resources of these host agencies in terms of staff and other resources. In contrast, an independent MPO does not fall under the umbrella of a host agency, but rather is more free standing, meeting its own operational needs (CUTR, 2011). Florida's MPOs have recently shown a progressive trend of moving away from being hosted organizations to more independent organizations especially that of "leaning independent" agencies, where MPOs receive some services from one of its member agencies under a severable contract (CUTR, 2011).

In addition to the federal and state regulations which provide for and encourage coordinated planning efforts, the Florida Statutes created within the Florida Department of Transportation a Transportation Regional Incentive Program (TRIP). Created through Florida's 2005 Growth Management Reform Program aimed to improve regionally significant transportation facilities, this program makes state funds available to MPOs, counties or regional transportation authorities that form regional transportation areas. These funds can be utilized to help pay for "critically needed projects that benefit regional travel and commerce" (FDOT, 2011; National Cooperative Highway Research Program, 2007). Serving as an incentive program to encourage groups of MPOs and other regional and local authorities to formally work together or formalize their relationships, TRIP funds are allocated to each of the seven Florida DOT districts based on a formula. Within each district, funds are allocated to projects in each district's regional transportation area on a 50:50 local/state match (National Cooperative Highway Research Program, 2007).



a) The Central Florida Metropolitan Planning Organization Alliance (CFMPOA)

Background

The Central Florida Region is inclusive of eight counties (Brevard, Lake, Marion, Orange, Osceola, Seminole, Polk, and Volusia) and 89 composite cities. The region covers roughly 8,700 square miles, and is home to over 3.9 million people which accounts for approximately 20% of the state's total population (Central Florida MPO Alliance, 2007).

There are currently six MPOs operating within the Central Florida region. Originally called the Orlando-Volusia MPO Alliance, the Central Florida Metropolitan Planning Organization Alliance (CFMPOA) was first established in 1997 as a joint resolution between MetroPlan Orlando and the Volusia County MPO (now the Volusia TPO) as a means of coordinating transportation planning activities between the two urbanized areas. These two areas, at the time, shared transportation issues due to the high number of Volusia County residents commuting into and out of the Orlando metropolitan area for employment purposes. The goals established for this early MPO alliance focused on providing additional highway capacity between the two urban areas, establishing transit services between the two areas including bus and rail services, improving access to the region's major airports, establishing stronger links between the region's transportation and development goals, and actively identifying and pursuing funding sources to implement the transportation plan that the alliance supported (Central Florida MPO Alliance, 2007).

As a result of this early alliance, improvements along segments of the I-4 corridor connecting the two urbanized areas were achieved, including the replacement of the Saint John's River Bridge. Express bus services were established between the Orlando urban area and Volusia County, and preliminary ideas regarding the introduction of a commuter rail link to the region were discussed. The strength of the alliance was especially reflected in the major improvements achieved along I-4. The alliance brought much needed attention, support and funding from local businesses and elected officials from all levels of government. The Florida DOT, which serves as a non-voting member of the Alliance, was also very involved in the reconstruction of the Saint John's River Bridge and spearheaded the efforts to improve the structure as a design-build project which expedited the time in which the project was implemented (Central Florida Alliance, 2007). Due to the success of this alliance, other counties within the region were encouraged to coordinate their planning efforts to address regional concerns and to provide solutions to the growing transportation issues within Central Florida. In 2001 the CFMPOA was established with participating members of MetroPlan Orlando, Volusia TPO, Lake-Sumter MPO and the Space Coast TPO, with Polk County TPO and Ocala/Marion County TPO joining in 2003 and 2004 respectively (www.metroplanorlando.com). In 2005 the members of the CFMPOA, strengthened the group's standing by entering into an inter-local agreement (CUTR, 2010).

Structure and Governance

The CFMPOA includes a voting membership of the participating MPOs and non-voting membership of FDOT's District 1 and 5. It is a regional collaboration having no regulatory power. A review of the inter-local agreement of the CFMPOA revealed the following items to which the participating parties agreed to be legally bound:

- Maintain and update a regional transportation plan;
- Pursue funding opportunities to advance regionally significant facilities and services which may include the establishment of regional transportation project priorities for the TRIP;
- Serve as a forum for exchanging information between members, especially on projects of regional significance;
- Coordinate regional transportation planning and policy development with the Florida Department of Transportation;
- Identify regional transportation opportunities;
- Solve regional transportation issues; and
- Establish legislative priorities that will assist in addressing the region's transportation needs.

The Alliance's voting policy board consists of 18 members; three members each appointed from the six participating organizations. Each organization may also choose to appoint up to three alternate representatives to also serve as policy board members. Members of the CFMPOA fill the offices of chairperson, vice-chairperson, secretary, clerk and deputy clerks. All technical and administrative support for the CFMPOA is provided by the existing staff of the six member organizations. However, the Alliance's website and all meeting and other public records are maintained at the MetroPlan Orlando offices. The inter-local agreement between members may be amended or modified through a written agreement that has been signed by all member parties.

Each member MPO is responsible for generating a Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP) for their area of responsibility with the appropriate prioritized project lists. The needs and projects arising from these planning documents give both a local and regional sense of area-wide transportation concerns. These plans are then consolidated into a LRTP produced by the CFMPOA for the Central Florida region. This plan places greater emphasis on the projects of regional significance and ensures that regional projects are coordinated and prioritized by the member MPOs. The CFMPOA works closely with the Florida Department of Transportation in developing project lists. The Florida DOT is decentralized, in accordance with legislative mandates, into seven districts. The majority of counties within the CFMPOA fall within FDOT District 5 with the exception of Polk County which falls in FDOT District 1. FDOT District 5 maintains the regional transportation model for the area which is used to evaluate the Central Florida Region's regional growth, identifies transportation corridors in need of improvement, and also assists in prioritizing transportation projects within the area. Although Polk County is not within FDOT District 5, the model maintained by FDOT District 5 for the Central Florida region, includes travel data for this county and other areas outside the District that influence the region's travel.

Even though it is the practice in all states for MPOs to work with their respective Departments of Transportation in approving all TIP projects, Miller (2011) has identified a more specific practice for shared decision making in the state of Florida. After the member MPOs, through the CFMPOA, and local governments provide the FDOT districts with a list of prioritized transportation projects, the districts try to incorporate the project lists into their Work Program to the “maximum extent feasible”. If the district fails to include an approved TIP project that has also appeared on their prior Work Program listing, they are required to provide in writing the rationale for not including such projects to the MPOs or local governments (Miller, 2011). There appears to be a high level of communication fostered between the state, MPOs and local governments.

Funding

The member MPO/TPO organizations of the CFMPOA each maintain control of their respective funding and programming responsibilities. However, opportunities that allow cooperative ventures are fostered such as the Transportation Regional Incentive Program (TRIP) or other discretionary programs that are established at the federal or state level. This working relationship between MPOs has also provided the opportunity for local projects to be programmed and funded in a manner that addresses both local needs but which also has implications to the regional network. Projects that cross jurisdictions or are of regional interest are placed high on the respective MPO's TIP lists that are sent to the FDOT for inclusion in their Work Program so that the chance of the composite parts of the regional projects being funded either in the same programming period or within very close programming periods are increased.

The development of the Central Florida Commuter Rail project – SunRail – further provides an example of the cooperation and collaboration climate that has been fostered in the region. SunRail is a commuter rail project set at an estimated cost of \$615 million. The project introduces 61-miles of track in the Central Florida Region running from the community of Deland in Volusia County, through Orange and Seminole County and the city of Orlando, to the community of Poinciana in Osceola County. Set to operate on a pre-existing rail line that was purchased by the state from CSX Transportation, SunRail will provide a passenger rail option for this area that would provide some relief to the highway system. As a result of this project, CSX Transportation will eventually move the majority of their freight hauls over to one of their alternative freight lines, thus reducing the freight traffic operating along this corridor and in the city of Orlando. The project funding plan provides for 50% funding from the Federal Transit Administration (FTA) “New Starts” Grant Program, 25% from the Florida DOT, and 25% provided by the local partners including the counties of Volusia, Seminole, Orange and Osceola, and the city of Orlando. The project will be done in two phases, the first of which will cover 31 miles and build twelve rail stations, and the second that will provide 5 additional stations over the remaining 30 miles of service tracks (www.sunrail.com). Under the service agreement of SunRail, the state will pay the operating and maintenance costs for the first seven years of operation after which the local governments will assume responsibility for that funding commitment. The local government officials in the four counties and the city of Orlando have already agreed to and approved inter-local funding, governance and operation agreements.

Evaluation

The MPOs under the CFMPOA have decided not to merge their operation and organizations into a single MPO because of the diverse and varied local interests that they serve in addition to their regional responsibilities. Eliminating member MPOs which are more familiar with local conditions, to form a single MPO responsible for a larger more diverse area might preclude the voice of the local communities from being heard. Other MPO groups or alliances also do not support merger or consolidation because of the issues associated with the size and complexity of the planning area. They are however, more supportive of maintaining their respective identities but committing to more regional cooperation and coordination in their planning efforts (FTC, 2003). A number of regional transportation products have been developed as a result the existence of multiple regional MPO alliances in Florida such as the CFMPOA. These products include regional long range transportation plans, regional goals and objectives, regional project priority lists, multimodal transportation network maps, congestion management systems, freight plans, public involvement programs, transit development plans, conflict resolution processes, integrated ITS coordination plans, and regional transportation models (CUTR, 2010). The MPO Alliance has also been successful in its endeavors as a result of the support and assistance it receives from the Florida DOT. These regional alliances make the work of the state DOT easier.

The cooperation and collaboration that is evident by the regional MPO alliances across the state of Florida has been directly influenced and encouraged by other collaborative efforts undertaken by various organizations. The Central Florida Region, in particular, has worked to foster a strong regional identity and build a culture and mentality of regionalism and cooperation. A major contributor to this regional effort has been achieved by the establishment of *myregion.org*. Created in 2001, *myregion.org* was formed by various public and private organizations to help Central Florida define itself as a region. This organization is specifically focused on building a new regional mentality, strengthening and creating regional coalitions, maximizing the region's opportunities, addressing area-wide challenges, and promoting a holistic approach to development, in all its aspects, in an effort to establish the region among national and global marketplaces. By getting businesses, governments, organizations, community leaders and citizens involved in this initiative *myregion.org* hopes to further its core values of inclusion, collaborative partnership building, regional thinking, exploration and discovery of new ways of thinking about the region's future, and consensus building (www.myregion.org).

This group in addition to other organizations, has spearheaded, participated in and facilitated a number of initiatives for Central Florida over its tenure. For example, Some of these collaborative efforts have resulted in the development of the Central Florida Comprehensive Economic Development Strategy (CEDS) produced by the East Central Florida Regional Planning Council, *myregion.org* and multiple other Regional Economic Development Organizations (EDOs), creation of a regional environmental coalition, development of a school board coalition which engages in strategic planning for the region's school districts, creation of the Regional Coalition on Homelessness, and in an

effort to support the success of the CFMPOA , the Central Florida Partnership formed a Transportation Corridors Task Force which is a business-led initiative to advocate current and future regional multi-modal transportation priorities (www.myregion.org).

Many of the regional reports developed such as the Regional Comprehensive Plan, *“How Shall We Grow?” A Shared Vision for Central Florida (2007)*, *Strategies for Sustainable Growth: The Transportation/Land Use Integration (2003)*, *PennDesign Central Florida: Our Region in 2050 (2005)* which developed a regional model that is used in developing and modeling alternative development scenarios, *The Ties That Bind – Central Florida Social Capital Survey(2005)* which provides important information on how the citizens of Central Florida define community and interact with one another, and the ULI Florida Initiative on Regional Cooperation *Building Florida’s Future: State Strategies for Regional Cooperation (2005)*, have all provided a roadmap for government authorities, businesses, community leaders and citizens to follow in building the area. This culture of collaboration across development areas including economic development, education, environmental issues, smart growth, and regional resource management has influenced the relationships and communication fostered in the arena of transportation and infrastructure planning for Central Florida.

b) West Central Florida MPO Chairs Coordinating Committee (CCC)

Background

Originally formed as a mandate by the Florida Governor and organized by the State Legislature in 1992, the West Florida MPO Chairs Coordinating Committee (CCC) was required to coordinate transportation demand modeling and long-range transportation planning for the three counties of Hillsborough, Pinellas and Pasco through their respective MPOs, in conjunction with the Florida DOT and the Hernando County MPO. This formal regional approach to transportation planning was prompted by the 1990 designation of Hillsborough, Pinellas and Pasco counties as a Transportation Management Area (TMA) by the USDOT. By the year 2000, the Florida Legislature expanded the coordination effort to include Polk, Manatee and Sarasota counties (Florida Transportation Commission (FTC), 2003). Today, the current CCC is established and governed by an inter-local agreement initially created in 2004 between the six member MPOs including the Hernando County MPO, Hillsborough County MPO, Pasco County MPO, Pinellas County MPO, Polk County TPO, and Sarasota/Manatee MPO, and through a 2010 amendment now includes its seventh participating member, the Citrus County TPO (CUTR, 2010; Inter-local Agreement of the CCC, 2010). Just like the other regional MPO alliances or groups found in Florida, including the CFMPOA, the CCC encourages regional cooperation among its member MPOs/TPOs and other regional organizations and state authorities in addressing and prioritizing the transportation needs of the area.

Structure and Governance

The West Central Florida MPO Chairs Coordinating Committee (CCC) is comprised of representatives from each of the seven member MPOs in the region which include the Hernando County MPO, Hillsborough County MPO, Pasco County MPO, Pinellas

County MPO, Polk County TPO, Sarasota/Manatee MPO, and the Citrus County TPO. These seven MPOs represent the interests of eight counties located on Florida's western coast (Figure 5).



Source: West Central Florida Metropolitan Planning Organization Chairs Coordinating Committee. <http://www.regionaltransportation.org/>

Figure 5: Counties included in the West Central Florida MPO Chairs Coordinating Committee

In addition to these seven participating voting members of the CCC, other non-voting participants on the CCC Board include representatives from the Florida Department of Transportation Districts 1 and 7, the Florida Turnpike Enterprise, the Tampa Bay Area Regional Transportation Authority, and the Central Florida, Southwest Florida, Withlacoochee, and Tampa Bay Regional Planning Councils (CUTR, 2010; Inter-local Agreement of the CCC, 2010). The CCC enters into separate agreements that define the roles and responsibilities of these non-voting entities to the CCC (Inter-local Agreement of the CCC, 2010). The purpose of the CCC's inter-local agreement is to "provide an opportunity for coordination and communication" among the CCC members and as such, the powers and duties of the CCC are to "coordinate transportation projects deemed to be regionally significant by the Committee, review the impact of regionally significant land use decisions on the region, review all proposed regionally significant transportation improvement programs which affect more than one of the MPOs represented on the Committee, and institute a conflict resolution process to address any conflict that may arise in the planning and programming of such regionally significant projects" (Inter-local Agreement of the CCC, 2010). The FDOT works closely with the CCC through its district offices to provide support to the region's transportation modeling and prioritization of the regional TRIP project list.

The CCC Board meets quarterly to develop regional solutions to the transportation problems faced by the member counties and to also provide a platform for open dialogue between members in an effort to facilitate cooperative learning. The administrative functions and responsibilities for carrying out the regional work program and coordinating process for the CCC is provided by the Directors and Managers of the CCC members. All costs and expenses related to the operation of the CCC are borne by the member organizations in an equitable manner based on the relative size of its members as determined by their budget and population size. The CCC is not allowed to obtain or retain funds from any source, nor is it to receive or disburse any funds (Inter-local Agreement of the CCC, 2010). The CCC facilitates a regional public involvement process which includes a hosted website (www.regionaltransportation.org), a joint citizen advisory committee (JCAC) composed of 18 eligible citizens who are also members of the Citizen Advisory Committee of the CCC's member MPOs/TPOs, and a regional public involvement plan. Coordination is also encouraged between this transportation planning group and the West Florida Air Quality Coordination Committee, and FDOT's Tampa Bay Regional Goods Movement Study.

Funding

The funding of transportation projects within the CCC area comes from a variety of sources including federal, state and local sources. Just like the MPOs in the CFMPOA, the MPOs of the also maintain control of their respective funding and programming responsibilities. Projects are however coordinated across counties to address both local and regional transportation needs. The MPOs working in conjunction with the FDOT District 1 and 7 prioritize projects of regional significance and assist in developing a prioritized list of projects that qualify for TRIP funding. A major component of the Regional Transportation Strategy for the West Central Florida region is to propose strategies that will accomplish regional mobility and growth objectives. One such core component of the implementation strategy is the development of a passenger rail transit system that would link the major economic activity centers in West Central Florida as well as link Tampa and Orlando metropolitan areas. This regional rail strategy for the area has involved coordination between federal, state and local planning and funding strategies.

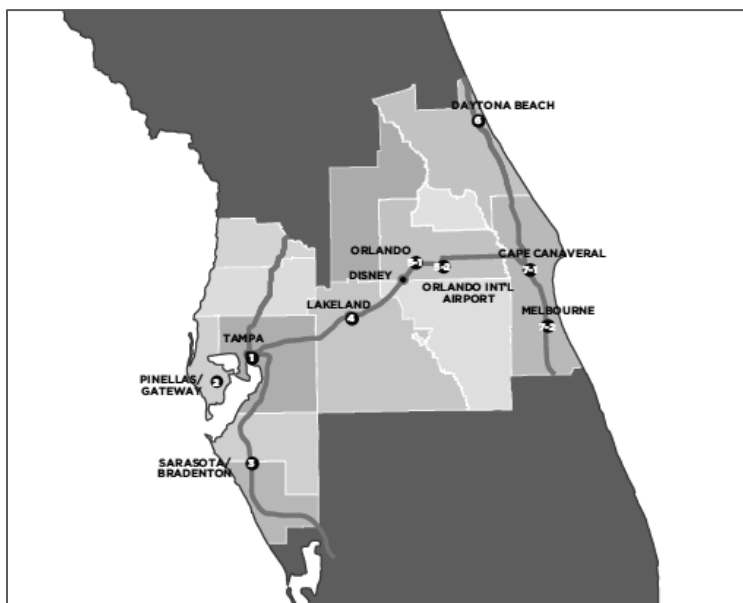
Evaluation

Planning and technical achievements of the CCC since its creation included the production and adoption of a Regional Long Range Transportation Plan (RLRTP) which addresses highway, transit and multi-use trails for West Central Florida through 2035, creation of a regional transit action plan, needs assessment and economic impact study, development and refinement of a regional travel model in collaboration with FDOT, development of a regional congestion management system, participation in a regional visioning process, production of an annual regional TRIP project priority list as well as an annual regional multi-use trail priority project list, and development of a regional system for data sharing and mapping (CUTR, 2010). The RLRTP was produced using a top-down approach where the CCC's member MPOs agreed on the regional multi-modal transportation network that the region wanted to develop, identified the needs on the

regional network, identified viable strategies for network improvement, developed regional goals, objectives and measures of effectiveness, identified the sources of available revenue that could be used in the regional network and developed a prioritized list of financially constrained projects (CUTR, 2010).

In keeping with true regionalism in Central Florida, both the CCC and the CFMPOA have participated in an annual joint coordination meeting (CUTR, 2010). These two MPO groups have acknowledged the growing relationship that the two areas have and their respective roles in defining the greater Central Florida region. As such, the CCC and the CFMPOA have coordinated transportation planning at the regional level between their two areas of responsibility. In 2010, PennDesign produced a report, *Connecting for Global Competitiveness: Florida's Super Region*, which looked at the growth potential of Central Florida or the combined area of the Central Florida Region and the West Central Florida area which linked the urbanized Tampa area to Central Florida Region (Figure 6). The proposed Super Region had approximately 7.2 million residents and 4.1 million jobs as of 2008.

Projections by the Tampa Bay Regional Planning Council estimated that these numbers would grow to approximately 14.4 and 6.2 million respectively by 2050. The report looks at how the Tampa and Orlando regions can work together to leverage their shared regional resources by linking their shared transportation infrastructure, freight routes, and job centers to create a place for Central Florida as a competitive economy both nationally and globally. The region as a whole has great transportation potential with 14 airports, including two major international commercial airports, and access to four seaports. The region also benefits from educational opportunities with more than 90 colleges and universities at its disposal and a shared regional economy with a high volume of tourism in the Tampa and Orlando areas. The envisioned future transportation network for this Super Region includes a well-connected High Speed Rail (HSR) system for the region and the state.



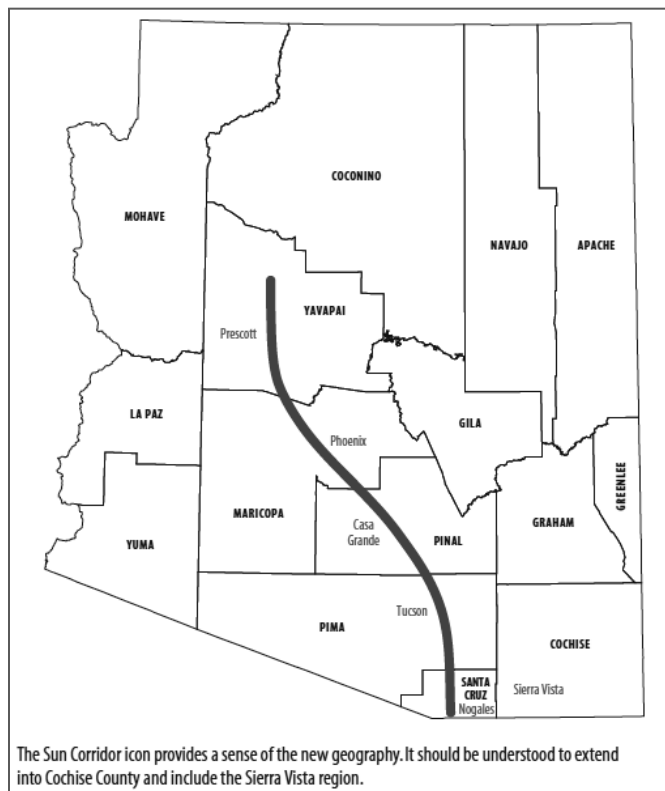
Source: PennDesign. (2010).

Figure 6: The Florida Super Region which connects the greater Central Florida area including the areas under the Central Florida MPO Alliance and West Central Florida MPO Chairs Coordination Committee

2. The Arizona Sun Corridor

Background

The Arizona Sun Corridor is one of the ten nationally defined megaregions in the United States. The region covers parts of six counties including Yavapai County, Maricopa County, Pinal County, Pima County, Santa Cruz County and Cochise County however; it is anchored by the greater Phoenix and greater Tucson metropolitan areas which encompass the three core counties of Maricopa, Pinal and Pima (Figure 7) (Morrison Institute of Public Policy, 2008; AECOM Global Cities Institute, 2010). The 2005 population level of the three core counties in the Sun Corridor stood at roughly 5 million persons and is projected to reach over 11 million by 2050, reflecting a 132% increase. (AECOM Global Cities Institute, 2010). Employment for the area is also expected to experience a 146% increase from 2005-2050 with levels rising from approximately 2 million to 5.4 million. The Sun Corridor accommodates more than 80 percent of the state's population.



Source: Morrison Institute of Public Policy. (2010)

Figure 7: The Arizona Sun Corridor Megaregion with its composite counties and major cities

Governance

In response to the projected growth within the region and the need to improve the connections of the cities within the corridor to each other, the rest of the state, and to neighboring states which includes an international border connection to Mexico, the Arizona Sun Corridor has identified the great need to coordinate regional planning

decisions to create “comprehensive and interconnected economic, social, environmental, land use, and multi-modal transportation systems” that will foster continued economic growth in the region and maintain a high quality of life for its citizens (AECOM Global Cities Institute, 2010). In 2009 a major step was taken by the Maricopa Association of Governments (MAG), Pima Association of Governments, (PAG), and the Central Arizona Association of Governments (CAAG) as they signed a joint planning agreement to coordinate their planning efforts for the region and to supportively work together to advance the region, creating a place that allows the Sun Corridor to make a mark in the global economy.

The established Joint Planning Advisory Council (JPAC) for the Sun Corridor is charged with identifying mutual goals for the area, providing guidance on technical issues and joint planning activities, and enhancing communication and cooperation among the policymakers in the three regions and beyond (AECOM Global Cities Institute, 2010). Acknowledging the interdependences that exist between the communities in the region, the MAG, PAG and CAAG have worked together or participated in joint planning studies prior to the 2009 agreement. However, the formal joint agreement solidifies the Sun Corridor as a megaregion by formally allowing all jurisdictions to work together for the advancement of the Corridor. This action also makes concrete the commitment that authorities have made to promote these efforts.

Many other organizations have also been involved in conducting studies or developing frameworks and strategies that address the needs of the Sun Corridor as it moves forward in a more integrated manner, as well as identifying the opportunities that need to be comprehensively addressed. These works have addressed a wide range of topics including strategies for the economic development of the area, the Sun Corridor’s place in the national and global economy, an inventory of what the citizens of the region envision for themselves, the major hurdles that need to be addressed in achieving this vision, and the infrastructure needs of the region to sustain growth and maintain a desirable quality of life for its citizens. In addition to the MAG, PAG, and CAAG’s commitment to advancing the megaregion vision, other organizations involved include other state and regional agencies like the Arizona Department of Transportation, the Arizona Department of Commerce, Arizona Department of Environmental Quality, and the Greater Yuma Port Authority; non-profit organizations, academic institutes and the business community (AECOM Global Cities Institute, 2010). The study undertaken by AECOM Global Cities Institution also looks to help craft an identity for the region while highlighting the challenges and opportunities that the Sun Corridor faces.

The State has been especially vocal and active in the advancement of the Sun Corridor especially in response to the transportation infrastructure needs of the region. The Arizona State Transportation Board has undertaken a statewide collaborative process called “Building a Quality Arizona” which provides the transportation needs of the state, identifies the resources or options that are available to address those needs and also provides the statewide 2050 vision for its transportation system (AECOM Global Cities Institute, 2010). This transportation planning effort is the first undertaken by the state that addresses long-term transportation needs, and all modes of transportation across

city, county and state systems. In addition, it integrates principles of Smart Growth, environmental obligations, and responsible economic growth while encouraging tribal participation. Some of the major policy implications that have resulted from this Statewide Transportation Planning Framework Program prepared by the Arizona Department of Transportation and accepted by the State Transportation Board in 2010, include an increased need for the state to plan for a more diverse transportation system, work more with local governments and regional agencies to improve location efficiency, adopt policies which reduce greenhouse gas emissions, plan for the emerging structure of the megaregion and address the needs related to transportation funding. The State through the Arizona Department of Transportation, is also pursuing a Border Master Plan which will provide a comprehensive transportation infrastructure development program on both sides of the US-Mexico border to facilitate mobility and international trade along the corridor, and have major implications on the region's economic development (AECOM Global Cities Institute, 2010).

As identified in the AECOM Global Cities Institute report *Sun Corridor, Future Corridor (2010)*, the development of plans and strategies on the scale of the megaregion is more challenging due to the large number and multiple levels of jurisdictions involved. However, it can be achieved through increased collaboration and coordination of efforts. Within the Sun Corridor, regional stakeholders have begun to form partnerships to progress common interests such as "Arizona Sun Corridor: Open for Business" – a partnership between the Greater Phoenix Economic Council (GPEC) and the Tucson Regional Economic Opportunity, Inc. (TREO) – which is focused on advancing the goal of attracting high wage jobs and investments to the region; and the Joint Planning Advisory Council formed between MAG, PAG and CAAG which is focused on coordinating planning efforts in the Sun Corridor. Other voluntary cooperation among stakeholders including businesses, governments and regional citizens could also support and shape the manner in which the Sun Corridor megaregion develops (AECOM Global Cities Institute, 2010). Communities in the United States value their independence and might not support the introduction of a new structure that adds an additional level of government or restricts their freedom to develop as they envision. Since the Arizona Sun Corridor falls completely within one state, it benefits from the fact that many of the policies and programs set or developed in the areas of water, energy and transportation come from the state authority (AECOM Global Cities Institute, 2010). Thus developing and implementing policies that will support economic growth and regional development for the Sun Corridor can be done to some degree at the state level.

In addition to addressing the possible governance of the Sun Corridor and the importance of fostering a strong sense of identity, another major factor that is necessary to support coordinated planning is the need for regular and consistent data collection and reporting to be done at the component and megaregion scale. Having consistent, reliable and readily available data is critical to facilitating good planning. Having consistent data at the component city or community level allows data to be aggregated up to the level of the megaregion more easily, allows the region to track its performance as a whole, reduces redundancies and waste of resources, and provides consistent data

as an input to regional model building. Local or smaller composite communities can also more readably assess their place, role and contributions to the region at large and regional planners can identify and address issues of inter-regional inequality (AECOM Global Cities Institute, 2010).

Transportation Issues

The Arizona Sun Corridor has identified three interrelated elements or themes that are its prime focus in advancing the region. These elements include diversifying the economic engines of the area, supporting the region's future sustainability and fostering a new and rising megaregion organization. The strength and performance of each of these elements are seen as being highly linked to each other and the success in one area will directly support the others. To enable the megaregion to capture a large portion of the opportunities that arise at the regional and global level and to advance the three elements identified, the Sun Corridor will have to promote the development and policy support of four enabling conditions which include education and training, trade and investment, innovation, and infrastructure including transportation, energy, water and wastewater infrastructure (AECOM Global Cities Institute, 2010). These factors will influence the connectivity and the capacity of the region to support new development and also serve to create an environment that is attractive to and provides the necessary conditions that are usually considered in making effective investment decisions. By approaching planning for the Sun Corridor in a holistic manner, the region is able to leverage its resources in the best manner possible to help achieve its regional goals and create an economically competitive advantage for the region, both in the national realm as well as in the global marketplace.

It is envisioned that the Sun Corridor has the potential to support an inland port making it a major transportation, warehousing and logistics hub. Its location at the crossroads of two major trade corridors – the east-west corridor that links the Midwest and Southern United States to the major ports of Los Angeles and Long Beach and by extension, access to the major Asia-Pacific economies; and the north-south CANAMEX trade corridor (Figure 8), which links the western United States to both western mainland Mexico to the south and western Canadian markets to the north, helps to fuel this vision (AECOM Global Cities Institute, 2010). Development of an inland port provides for more efficient supply chain management. The investment serves as an attraction to ancillary economic activity, and improves the attractiveness of the region when being considered for business investment decisions.



Source: Morrison Institute of Public Policy. (2010)

Figure 8: The CANAMEX Corridor and Its Relation to the Sun Corridor

Other factors which make the Sun Corridor an attractive choice to develop an inland port include the existing Class I railways that already operate in the region, the congestion experienced in the Long Beach and Los Angeles ports, the potential future growth of the Mexican economy, which will generate trade and investment opportunities for the region, and the proposed expansion of some Mexican ports that might be connected to the United States through the Sun Corridor. However, this port concept is also challenged by a number of factors that include the current underutilized inland port capacity experienced in nearby Texas, and the implications of the Panama Canal expansion which might divert some traffic away from the ports on the west coast to ports in the Gulf of Mexico or other east coast ports. These decisions will affect not only the region's firms ability to supply markets outside the Sun Corridor megaregion, but it will also enable local firms to participate in regional and global supply chains (AECOM Global Cities Institute, 2010).

As with many of the megaregions within the United States, investment decisions regarding improvements to and expansions of the regions' infrastructure, especially its transportation infrastructure, will be critical. However, the challenges that the Sun Corridor faces in promoting investment decisions is closely related to the region's ability to determine if all investment decisions are equal, and if not, the authorities must identify how projects or investments should be prioritized and implemented to generate the greatest returns and which best push the progression of the Sun Corridor as a

megaregion. Another major challenge which faces all regions including the Arizona Sun Corridor is the large funding gap that exists between the funds necessary to upgrade or construct the new infrastructure and the funds that are actually available.

It is recommended by the AECOM Global Cities Institute (2010) that the Sun Corridor governments undertake a programmatic approach to accessing the region's proposed infrastructure investments. By separating infrastructure investment into various asset classes (bridges, roads, public transit, freight infrastructure, etc.) and assessing the implications of each infrastructure investment as it relates to economic performance, environmental implications, air quality and land use impacts (as was utilized in the developing the other transportation framework studies) it might be possible to approach investment decision making in a manner that meets the overall economic and sustainability objectives of the Corridor and its communities. Such a framework approach to infrastructure investments should also consider the lifecycle operating costs of the new infrastructure to avoid building infrastructure that becomes a financial burden to the public sector or possibly becomes "stranded assets" (AECOM Global Cities Institute, 2010).

The state and local authorities should continue to work together to close the funding gap for infrastructure investments. The role of the Public/Private Partnership (PPP) in addressing the funding gap should also be explored in moving the infrastructure needs of the region forward. The state of Arizona already has in place enabling legislation for PPPs. The PPPs, as suggested by AECOM, should take a Design-Build-Finance-Maintain form instead of Design-Build-Finance. The key transportation projects that would lay the foundation for transportation in the megaregion include:

- the development of an intercity rail line connecting Phoenix to Tucson, development of the I-11 transportation corridor (envisioned to include a joint freeway/railroad corridor) linking Phoenix to Las Vegas and possible extension into Oregon, Washington State and Canada,
- development of the Hassayampa Freight Rail Connector that would take advantage of the future deep-water port improvements and other development in Mexico,
- development of the Pinal county north-south multimodal transportation corridor, and
- development of a Border Master Plan between the states of Arizona, U.S.A. and Sonora, Mexico to update the transportation infrastructure 60 miles in each direction to increase the efficiency and safety of the border ports and provide support to increased economic development and bi-national trade (Source: AECOM Global Cities Institute, 2010).

B. Multi-State MPOs

Multi-state MPOs are charged with the increased challenge of planning for a region or metropolitan area that falls under the jurisdiction of two or more states. The need to coordinate planning activities, and investment and funding decisions across political boundaries at the state level is a reality that has to be addressed if planning for a megaregion. The structure and organizational arrangement found in multi-state MPOs might present a feasible starting point for proposing an organizational structure that could be adapted to plan for the megaregion.

The challenges associated with inter-governmental coordination between jurisdictions (especially at the state level) have been a matter of interest for some time now. The work of Grant (1955), *The Government of Interstate Metropolitan Areas*, identified the problems associated with planning for metropolitan areas which cross state boundaries and also described the efforts undertaken by authorities at that time to coordinate interstate metropolitan government.

Metropolitan or urbanized areas that cross state lines can be affected by “bad neighbor policy” from suburban agents located across the state line from the central cities. In these instances the policies of those satellite cities surrounding the urbanized area may not support the central area and are emphasized by the fact that the state line provides a “higher and stronger wall of protection” in comparison to other boundaries such as city or county lines (Grant, 1955). Historically, this has been evident in programs associated with disease control, smoke abatement or the control of stream pollution. Interstate metropolitan problems may not result from deliberate policies that are in conflict with each other but might simply arise from the “absence of any area-wide authority” with adequate jurisdiction, which is highly evident in civil defense programs and in the field of public utility regulations (Grant, 1955). The lack of an area-wide authority can, in some cases, also result in the problem of waste due to the unnecessary duplication of services by local authorities from each state.

Grant (1955) further identified a number of devices or efforts that have been utilized by authorities to foster coordination between interstate metropolitan governments. These devices include the use of informal cooperation, extraterritorial jurisdiction, local contractual agreements, interstate compacts, and interstate regional planning. His writing at the time pre-dated the federal move to formalize and encourage coordinated transportation planning through the 1962 Federal-Aid Highway Act; however, it does reflect the general concern shared by Grant and other professionals for the need to deal with how diverse interstate and intrastate metropolitan areas could better address their regional problems. In summary, Grant suggests that voluntary cooperative measures that have been utilized in solving interstate metropolitan problems have not been truly effective in tackling substantial problems. In contrast he sees that federal intervention (either through direct federal involvement by assuming the responsibility for those interstate metropolitan functions for which no adequate local authority exists; or indirectly through federal stimulation of state and local governments to create new interstate

instruments of integrated government for the area) might be the most effective means of facilitating this (Grant, 1955).

More than five decades later, research is still geared toward addressing the problems associated with interstate government and the approaches and institutional arrangements associated with promoting more effective coordination between or among authorities. Turnbull (2006) in her work addresses these concerns specifically for the multi-state metropolitan planning organizations and their respective approaches to effectively deliver transportation related solutions to their constituents.

There were 381 designated metropolitan planning organizations in the United States as of 2009 (U.S. Government Accountability Office (GOA), 2009). Through a thorough identification process Turnbull (2006) identified 40 multi-state MPOs across the United States. This process as she noted, was somewhat difficult since new MPOs were designated and existing MPO areas expanded into adjoining states following each update to the national census. In addition to this, many MPO information sources do not explicitly state the multi-state nature of MPOs. This section will provide a comprehensive review of four select multi-state MPOs that are charged with planning for a metropolitan area that crosses state lines. These cases will stress the organizational structure of each multi-state MPO and their approaches to foster greater coordination and cooperation.

1. Augusta-Richmond County Planning Commission

Background

The Augusta-Richmond County Planning Commission (ARCPC) is the designated MPO for the Augusta Regional Transportation Study (ARTS) which covers the urbanized areas of Augusta, Georgia and Aiken, South Carolina. Designated in 1965, the regional MPO was created from a bi-state memorandum of understanding and works closely with both the Georgia Department of Transportation and South Carolina Department of Transportation in addressing the transportation needs of the area. The state of Georgia serves as the lead state in this bi-state MPO. The planning area under ARTS includes Richmond County and part of Columbia County, Georgia, and Fort Gordon Military Base. The South Carolina planning area includes parts of both Aiken County and Edgefield County. Due to the growth experienced in these urbanized areas, the planning boundaries for this MPO have periodically changed following the completion of the 1980, 1990 and 2000 census.

Structure and Governance

ARTS is made up of a three-committee organizational structure to ensure stakeholder involvement in the planning process. These committees include:

- A Policy Committee (PC) which sets and oversees the general policy guidance of the MPO. The members of this committee include local elected officials from each jurisdiction within the MPO area, representatives from the Georgia and South Carolina Departments of Transportation, and the Garrison Commander from Fort Gordon. There is also a South Carolina Policy Subcommittee which serves in an advisory capacity to the general policy body and ensures that the South Carolina portion of ARTS is informed.

- A Technical Coordinating Committee (TCC) which reviews the progress of the study, provides technical advice to and progress information to the Policy and Citizen Advisory Committees, and
- A Citizen Advisory Committee (CAC) which partially satisfies the public involvement component of ARTS and is designated to function as an information distribution and reaction group.

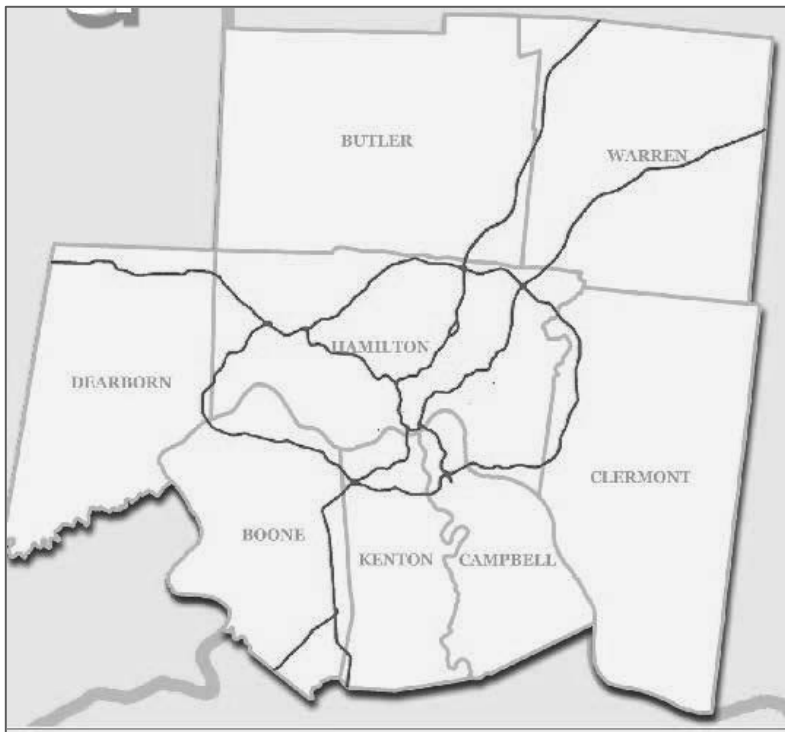
The ARTS regional MPO is responsible for producing the area's Long Range Transportation Plan (LRTP) which covers a twenty-year period, its Unified Planning Work Program (UPWP), as well as its Transportation Improvement Program (TIP). Planning for an urbanized area that is subject to different practices and requirements set by the governing state can pose various challenges to the multi-state MPO. The Augusta Regional Transportation Study MPO for example, is faced with different program periods covered for each member state in the TIP. As per the Augusta Regional Transportation Study TIP for the financial year 2012-2015, the Georgia portion of the study area covers a four-year period while the South Carolina study area covers a six-year period. Another major difference in developing the regional TIP arises from the South Carolina Act 114 of 2007. Under this Act an MPO must follow legislative guidelines in prioritizing transportation projects based on a statewide framework for evaluating road widening, intersection improvements and new facilities. This project prioritization requirement affects projects located in South Carolina. This legislative requirement does not affect the prioritization process for projects in Georgia.

2. Ohio-Kentucky-Indiana Regional Council of Governments

Background

The Ohio-Kentucky-Indiana Council of Governments (OKI) is a council of local governments, business organizations and community groups that are committed to developing collaborative strategies to improve the economic vitality and quality of life of the region (www.oki.org). The OKI serves as the designated MPO for the eight-county region which encompasses counties in southern Ohio, northern Kentucky, and southern Indiana. These counties include Butler, Clermont, Hamilton, and Warren counties in Ohio; Boone, Campbell, and Kenton counties in Kentucky; and Dearborn County in Indiana (Figure 9). Created in 1964, the OKI has fostered partnerships and alliances with federal, state, and local authorities, businesses and civic groups, as well as with the citizens of the region.

The transportation system within the region has a decent mix of modes including an extensive system of highways, state roads and local streets, three transit operators operating fixed route services and three additional providers serving demand responsive services, the major Cincinnati-North Kentucky International Airport, 10 public and two privately owned airports, a ferry service, a limited AMTRAK service and extensive pedestrian and bicycle facilities. The 2040 projected population growth estimates the region's population at 2.4 million and employment levels at 1.2 million



Source: www.oki.org

Figure 9: Counties included in the OKI Council of Governments

Governance and Structure

The OKI Council of Governments was designated the MPO for the metropolitan area in 1964 and was established through an intergovernmental agreement based on sections of the Ohio Revised Code, the Kentucky Revised Code and the Indiana Statutes. The major purposes of the OKI Regional Council of Governments is to provide coordinated planning services to the appropriate federal, state and local governments, their political subdivisions, agencies, departments, special districts and private agencies that are connected with the development of a comprehensive regional transportation and development plan for the region.

The OKI is governed by its Board of Trustees which is made up of elected officials and appointed representatives from municipal governments, townships, and counties within the region, representatives from planning commissions, chambers of commerce, public transit authorities, state DOTs and environmental organizations. This Board of Trustees also serves as the MPO's Policy Board with more than 100 members, which is the largest MPO policy board in the country (Turnbull, 2006). The offices within the Board include a President, a First Vice-President, a Second Vice President, Secretary, and Treasurer. This Board meets on a quarterly basis. The MPO's By-Laws also establish an Executive Committee which has the power to act on behalf of the full Board of Trustees. The Executive Committee includes the President, First and Second Vice President and Treasurer from the Board of Trustees, in addition to its general members. This committee meets monthly unless waived by the President or either Vice President. The

OKI also has a Budget Committee consisting of one elected public official from the governing board of each of the member counties. The Board of Trustees or executive Committee has the authority to create additional committees as they deem appropriate, necessary, and convenient.

The Executive Committee has established an Intermodal Coordinating Committee (ICC), which provides technical advice on transportation issues related to both long-range and short-range transportation planning including the TIP and the regional transportation plan (www.oki.org). The ICC is comprised of approximately 72 members representing federal, state and local transportation agencies, county planning commissions and other major planning organizations, businesses, civic, environmental and utility groups from both the public and private sectors. A Prioritization Subcommittee has also been created with representatives from the Board of Trustees and the entire ICC. This subcommittee meets on an as needed basis and deals with all aspects of the preparation, maintenance, and amendment of the Transportation Improvement Program (TIP). It also ensures that the principles of Transportation System Management are applied in the process of short range planning and especially in developing the list of projects included in the TIP. As such, emphasis is placed on projects that include more replacement elements than expansion of facilities and thus these types of projects receive higher prioritization points. Project prioritization is guided by an established OKI Prioritization Process. This document sets out the overall process and details the individual criteria used in evaluating projects. Distinct criteria have been set for evaluating highway projects, transit projects, and non-highway freight projects including rail and water port projects. There also exists an Environmental Justice (EJ) Advisory Committee which ensures all plans, programs and projects consider this element.

Funding

The annual budget for the OKI is prepared and proposed by the Budget Committee and is presented to the Executive Committee for review and adoption. Member counties are also responsible for paying annual dues to support the work of the MPO. Dues are determined on a per capita basis and are based on the population of the respective member counties, or on any other equitable basis that might be determined by the Budget Committee. The OKI may contract for the payment of local funds and other support, or accept funds, grants, gifts or services from other federal, state, or local governments, agencies, departments, special districts, and any other public, private or civic sources to provide such operational funds and support.

The OKI has great influence of project funding decisions since it develops the regional TIP. The region's TIP is partially funded by OKI sub-allocated federal funds. Ohio's Department of Transportation allocates Surface Transportation Program (STP), Congestion Management and Air Quality (CMAQ), and Transportation Enhancement funds to OKI for the fiscal year covered by the TIP. Unlike the Ohio DOT, the Kentucky Transportation Cabinet only sub-allocates SNK (STP for Northern Kentucky) federal funds. CMAQ and Transportation Enhancement funding is not passed to the MPO. The Indiana DOT sub-allocates STP, CMAQ and Highway Safety Improvement Program federal funding to the MPO's in Indiana and will begin to sub-allocate Transportation

Enhancement federal funds to MPOs in 2012. The OKI COG working with the respective state DOTs has final authority over all federal funds spent on transportation in the region and has approved approximately \$40 million in funding for projects in the region on an annual basis (www.oki.org).

Evaluation

The OKI Regional Council of Governments has been working to address the regional transportation and development issues of the tri-state region for more than four decades. Over this time strong relationships have been created and fostered by the three member states and numerous composite communities. This history of shared struggles by the region to solve its major transportation problems has created the corporative and collaborative planning that is seen today. The responsibilities of the OKI COG have also developed far beyond addressing regional transportation issues. The organization has developed a Fiscal Impact Analysis Model that is utilized by local governments in analyzing the impact of alternative land use scenarios; a Water Quality Planning Program, and a Clean Air Program. The region also maintains a regional transportation demand model which is maintained by the OKI.

3. The Western High Speed Rail Alliance

Background

The United States has a commitment to develop a national high-speed rail (HSR) network across the country. To date, the US DOT has designated 10 HSR corridors that will be developed (Figure 10) in an effort to expand the transportation options available to citizens at the national level. Development of this national level infrastructure will greatly influence the transportation connectivity within regions and between regions of the US.

Seeing that the investment in these ten initial HSR corridors is just a preliminary step in developing a national HSR network, an alliance was created advocating the development or expansion of future HSR lines in the western states of the US. The Western High Speed Rail Alliance (WHSRA) was formed in 2009 to support the creation of a high speed rail system in the Western United States in cities not yet included in the national plan. The Alliance's primary purpose is to determine the viability of developing and promoting a high speed rail (HSR) network which provides a high speed rail connection throughout the Rocky Mountain region with possible connections to the Pacific Coast and other regions within the United States (www.westernhighspeedrail.com).

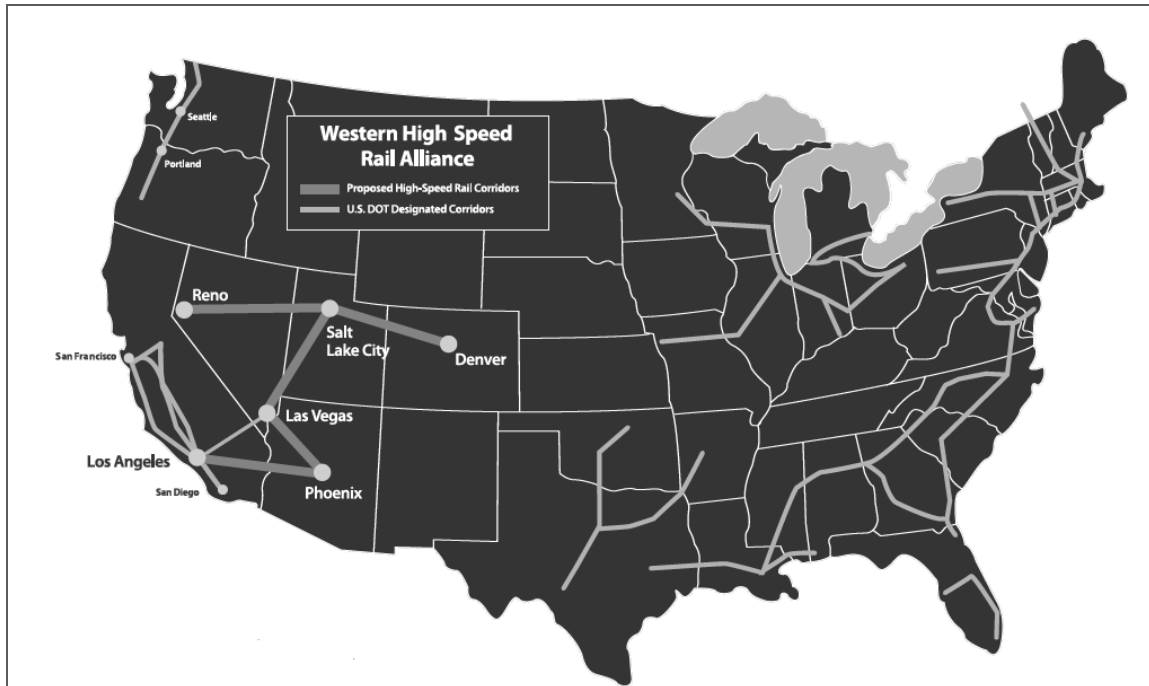


Figure 10: The future HSR connections proposed by the WHSRA

Structure and Governance

The WHSRA was founded by the Metropolitan Planning Organizations (MPOs) and transit agency, from the major transportation hubs in four states including Colorado, Arizona, Nevada and Utah. The organizations involved in the WHSRA include the Denver Regional Council of Governments, the Maricopa Association of Governments, the Regional Transportation Commission of Southern Nevada, the Regional Transportation Commission of Washoe County, Nevada and the Utah Transit Authority. These planning organizations or authorities are committed to using their expertise and resources in determining desirable high speed intercity rail routes and integrating these routes into their respective urban transit plans. The significant growth projected for this region has been a major motivating factor behind the Alliance's vision. The US Census Bureau estimates that by 2030 the state of Nevada will add 2.3 million persons; Arizona, home of the Sun Corridor will add approximately 5.6 million; and Colorado and Utah's populations will grow by 1.5 million and 1.25 million respectively.

The member organizations share a common vision of future rail infrastructure connecting the major urban areas within the alliance states as well as linking these cities to other regions. Figure 10 illustrates the proposed HSR links that the WHSRA has identified for the western states. This network will provide passenger and freight customers with an efficient and cost-effective rail operation that might enhance the region's economic growth by improving goods and labor mobility; reducing delay, and air, rail and highway congestion; and improving access to regional and global markets. The members of the Alliance have agreed to work together to acquire the necessary funding to conduct studies concerning high speed rail options, to develop plans for HSR infrastructure, and to construct HSR facilities throughout the Rocky Mountain region as they are deemed

viable. The initial studies that the Alliance is undertaking are geared to determine the capital costs and economic viability of introducing HSR to the area. These studies are proactive actions to equip the Alliance with sufficient information as they advocate for improved access to the Western states. The studies of these future corridors will lay the groundwork for additional development (www.whsra.com).

The initial studies that the Alliance plan to undertake will provide a framework for regional HSR that crosses multiple states and involves multiple jurisdictions. Ultimately, the Alliance would like to secure the funding to conduct a multi-state plan to include preliminary ridership studies, right-of-way alignments, preliminary engineering studies, corridor connectivity and the local needs of each community to prepare them for implementing HSR. This plan is estimated to cost 30-50 million over three years (www.whsra.com).

In 2010 the Alliance received \$1 million from the Federal Rail Administration to study HSR in the Intermountain West and to develop a vision for the area's rail network. The Alliance also hosted a regional conference which brought together 150 public officers, industry experts and HSR advocates. The partners plan to continue to work with state DOTs and state Governors in their efforts. The group has called for changes to be made in the grant application process to allow MPOs and other regional entities to apply directly for federal high-speed rail funds. The current application process allows only states to apply for such funds. The Alliance believes that allowing MPOs to apply for HSR funds would incentivize cooperation among regions and would provide for the construction of "last mile" corridors in local jurisdictions that connect HSR to the other modes of travel (www.whsra.com).

4. The Canada-US-Ontario-Michigan Border Transportation Partnership

Background

Megaregion transportation planning will also have to re-evaluate the manner in which transportation issues have been addressed across national boundaries. As a megaregion anchors itself as a regional economic engine with increased visibility and presence on the global platform, it will be challenged to create or improve transportation and communication links with these global or international markets. The US market is primarily connected to international markets through its air and sea ports. However, due to its location relative to countries like Canada and Mexico which share physical boundaries with the United States, megaregion planning will have to address coordinating investment decisions with these countries' authorities to improve the flow of goods and people across international boundaries while maintaining a high level of national security.

The Canada-US-Ontario-Michigan Border Transportation Partnership was formed in 2000 for the purpose of improving the movement of people, goods and services across the border between the US and Canada. The Partnership also intends to further enhance the region's economic vitality and US/Canadian trade, meet the long term needs of the US and Canadian border inspection agencies, expedite the planning and

environmental study process for cross boarder projects to ensure timely completion, address and consider all modes of travel and travel demand including road, rail and marine travel, integrate planning and environmental study processes into a single product that satisfies all members of the partnership, and ensure that the facilities provided are well supported technically or employ intelligent transportation systems to enhance border crossing efficiency and security (URS, 2004).

The participating members that make up the Partnership include the US Federal Highway Administration (FHWA), Transport Canada (TC), the Ontario Ministry of Transportation (OMT) and the Michigan Department of Transportation (MDOT). These agencies are committed to providing additional border crossing capacity in Southwest Ontario-Southeast Michigan and are subject to appropriate public oversight in both countries (www.partnershipborderstudy.com). As a preliminary step to achieve its goals, the Partnership, in 2002, awarded a \$4.5 million contract to conduct a Needs and Feasibility Planning Study to identify the current and future cross border transportation problems and opportunities that existed.

A major conclusion drawn from this preliminary report was the need to develop additional border capacity, especially in the Detroit-Windsor area. This corridor upgrade was of great importance and priority to both countries to support growth in trade between the two. The land border crossings of Detroit-Windsor and Port Huron-Sarnia of Southeast Michigan/Southwest Ontario are the busiest international crossings in North America, representing approximately 50% of the traffic volume crossing the US-Canada border (www.partnershipborderstudy.com). From 1990 to 2000, both the vehicle and truck traffic has greatly increased for both modes. During this period vehicle traffic increased by 44%, from 19.7 million to 28.4 million and truck traffic more than doubled increasing from 2.5 million to 5.1 million by 2000. If this critical trade link was not addressed this border crossing would reach capacity, causing major bottlenecks in the cross border transportation system and surrounding networks in both countries. In 2001, approximately 87 percent of the value of Canadian exports was destined for the US, with roughly 40 percent of these exports entering the US through either the Detroit-Windsor or Port Huron-Sarnia corridors (URS, 2004).

Having identified the need to upgrade the Detroit-Windsor corridor the Partnership quickly initiated a formal environmental review for the river crossing in 2005. At this point, the Partnership presented a number of alternatives for the river crossings, and the associated infrastructure needs to support the facility including a bridge structure, two customs plazas and any highway upgrades needed to connect the plazas in both countries which would alleviate any bottlenecks into and out of the new facility. The Detroit River International Crossing Study (DRIC) evaluated a number of alternative crossing options that would best address the connectivity and congestion problems associated with this cross boundary facility. The project under consideration was required to go through the environmental assessment process in both the United States EPA and the Canadian Environment Assessment Agency to ensure that it conformed to the laws of both countries. The DRIC project received all environmental approvals in 2009.

Structure/Governance

In conducting the Needs and Feasibility Planning Study, the Partnership was directed by a Steering Committee comprised of senior staff from each of the partnership agencies, the US Federal Highway Administration (FHWA), Transport Canada (TC), the Ontario Ministry of Transportation (OMT) and the Michigan Department of Transportation (MDOT). The Steering Committee provided guidance and direction to a Working Group that oversaw the day-to-day implementation of the study process and administered the activities of the Consulting Team. Collectively the Partnership Working group and the consulting team formed the Project team for the Needs and Feasibility Planning Study. The Partnership has also fostered relationships with other private and public organizations including, but not limited to the US Customs and Border Protection, US Environmental Protection Agency (EPA), Southeast Michigan Council of Governments, the Ontario Ministry of economic Development, the Canadian Food Inspection Agency, Canada Environmental Assessment Agency, and Citizen and Immigration Canada. These partnerships have been maintained as the DRIC project progressed. The process for the assessment and development of the DRIC is based on the guiding principles that:

- the government would retain ownership of the lands required for the project,
- the Government will have the oversight and contractual administration of the bridge,
- the project will minimize public sector project financing,
- the project will promote the efficient and unified operations and management of the facility, and
- the project ensures the continuous dedication of the structure to its public purpose (MDOT, 2007).

It is proposed that the DRIC will be owned by the public sector. However, the private sector will be approached to be involved in the development, financing and operation of the project. The public interest will be further protected through the terms and conditions defined in a public-private partnership contract with a private developer. During all phases of the project, the private developer will be expected to provide an avenue for public input. In addition to that, MDOT and Transport Canada will have to enter into an agreement that will specify the roles of each party (MDOT, 2007).

Funding

The preliminary cost estimates for all of the DRIC project elements were developed by an engineering consultant retained by the MDOT and TC. The total project cost was estimated at \$2.2 billion in 2009 dollars, of which the assets on the US side of the border accounted for \$1.3 billion and the Canadian side accounted for \$0.85 billion. Figure 11 below provides an overview and breakdown of the cost estimates for the completion of the DRIC project elements. These costs are further broken down between the US and Canadian costs and responsibilities.

USD 2009 \$'000	US Bridge & Approach	CA Bridge & Approach	U.S. Plaza		CA Plaza	I75 Interchange	Total
			Toll Plaza	GSA ^b			
Construction / Design	233,704	238,429	47,214	89,755	155,934 ²	123,810	888,846
ROW ^a / Utilities	32,556	-	63,020	110,500	50,595	152,220	408,891
Contingencies	79,367	83,164	13,055	17,491	72,037	35,017	300,131
Contractor Markups	62,164	68,668	5,430	14,810	59,480	22,069	232,621
Soft costs	75,047	57,223	17,540	34,811	49,567	52,779	286,967
Other ^c	18,762	-	4,385	2,600	-	34,195	59,942
Total	501,600	447,484	150,644	269,967	387,613	420,090	2,177,398
Owner's costs ^d	54,409	-	118,187	-	-	330,694	503,290

Source: MDOT (2009)

Figure 11. DRIC Project Cost Breakdown by Project Elements

The Michigan DOT and Transport Canada plan to further engage in value engineering and invite additional persons in the private sector to provide more innovative ideas that can be implemented in the project to reduce the cost of the project and to also provide additional economies (MDOT, 2009).

Table 3. Potential Funding Source of Each Project Component

Project Components	Potential Funding Source
Main Bridge	Private Financing (i.e. toll revenue)
U.S. Approach Bridge	Private Financing (i.e. toll revenue)
Canadian Approach Bridge	Private Financing (i.e. toll revenue)
U.S. Toll Plaza	Canadian Federal Funds
Canadian Toll Plaza	Canadian Federal Funds
I-75 Interchange	Canadian Federal Funds
Duty Free, Customs Broker, Other (U.S. and Canada)	Private Financing or Lease Revenue
U.S. Inspection Plaza	U.S. General Services Administration
Canadian Inspection Plaza	Canadian Federal Funds
Canadian GBSA Headquarters	Canadian Federal Funds

Source: MDOT, 2009

In addition to the major bridge element in the DRIC, the project also requires substantial support infrastructure to be constructed such as the improvements to the I-75 interchange and construction of the US and Canadian inspection plazas. While the final funding for this project has not been completely secured, the Michigan DOT has provided a preliminary funding analysis which excludes any contributions by the State of Michigan and any US federal highway formula funds.

Given the financial challenges that are being experienced in Michigan as it relates to public financing, the Canadian Government has agreed to bear the burden of Michigan's contribution to the project (\$550 million), including the portion of project funding that would normally be covered by the US federal highway formula funds (MDOT, 2010).

Evaluation

For a region that has been hard hit by the struggling economy, it is interesting to see that investment decisions to expand the border crossing capacity of the Detroit-Windsor crossing is still being pursued mainly because of the importance of this corridor for global trade between the two countries. Acknowledging the major need to improve this border crossing and its impact on the respective national economies, the US and Canadian national governments became highly involved in pushing this project along.

C. Multi-jurisdictional Organizations/Initiatives

1. Northwest Power Planning Council

Background

Beginning in the 1940s, energy demand in the northwestern United States grew rapidly, "roughly doubling every 10 years" (Lee, 1982). This demand was largely met by hydroelectric power sources, and later by coal and nuclear power. By the 1970s, officials were concerned that the region's ability to continue supplying power would be insufficient. Acting on this concern, the Washington Public Power Supply System, a venture comprised of twenty-three local public utilities, settled on a plan to construct five new nuclear power plants (Alexander, Zagorin, & Peterson, 1983). The plants were intended to provide electricity to eighty-eight utilities in six states (Washington, Oregon, Idaho, Montana, Wyoming and Nevada), which backed bonds funding the project. However, high inflation, low growth, and high energy prices across the United States dampened demand, and by 1983 four of the five plants were canceled and unable to repay their investors. This incident made clear that electricity demand and management in the Northwest region was more volatile and uncertain than had been recognized previously, and meant that planning for the provision of electricity would be a more complicated undertaking than had been expected.

The Pacific Northwest Power Planning and Conservation Act, passed by Congress in 1980, established a new regional framework for conservation and provision of electric power and environmental impact mitigation in the Columbia River Watershed in Washington, Oregon, Idaho, and portions of Montana, Wyoming, Utah, and Nevada

(Northwest Council). In particular, the Act sought to ensure a continued adequate supply of electricity to the region, while protecting wildlife and environmental resources affected by the provision of electricity. To this end, the Act mandated the cooperation and joint planning efforts of local, state, Federal, and tribal agencies involved in the management of the Columbia River System. The Act also sought to ensure public participation in planning decisions, a new process for the region. The Act established a Pacific Northwest Electric Power and Conservation Planning Council to manage planning in these areas. This Council was mandated to create a plan for electric energy conservation and included a provision that required significant public input, and to create a program for environmental impact mitigation and protection of fish and wildlife affected by energy production in the Northwest. Although the Act provided for the Council to be optionally disbanded after creating these initial programs, the Council remains in effect in 2011, and has submitted six plans for conservation and provision of electric power.

Structure & governance

The Northwest Power Planning Council was established by the Northwest Power Planning and Conservation Act of 1980 with the dual roles of creating a plan for providing power and ensuring fish and wildlife conservation in the four primary states of Washington, Oregon, Idaho, and Montana. Membership in the Council is made up of eight representatives of whom two are appointed by each of the four states' governors, and each representative serves for a term of three years. In addition to these eight representatives, the Council employs a professional staff for assistance. The Council is not a Federal agency, but a regional one, described as "an interstate compact, a form of governmental organization that partakes of both state and Federal authority" (Lee, 1991). Funding for the Council is derived from the Bonneville Power Administration, an agency of the Federal Department of the Interior. The Council's central offices are located in Portland, Oregon, while satellite offices are located in each of the four states.



Source: Northwest Power & Conservation Council via Seattle Daily Journal of Commerce.

Figure 12. The Northwest Council oversees power planning in the four primary states of the Columbia River Basin: Washington, Oregon, Montana, and Idaho

The primary duty of the Council is to formulate a plan for providing power for the four-state region. The first plan was required within two years of the Council's formation, while revisions of the plan are required every five years thereafter. The Northwest Power Act mandates that for each revision or substantial, nontechnical amendment to the plan, public hearings are held in each of the four states, as well as in other states that are affected by the revision. In formulating the plan, the Council is required to consider two main guidelines:

- Emphasize energy resources that are cost effective;
- Give priority to the following resources:
 - "first, to conservation;
 - second, to renewable resources;
 - third, to generating resources utilizing waste heat or generating resources of high fuel conversion efficiency; and
 - fourth, to all other resources" ("Pacific Northwest Electric Power Planning & Conservation Act," 1980).

The plan must also include a twenty-year outlook of regional power demand, and determine an environmental cost-benefit analysis for the plan.

The Council is directed to include model conservation standards in its energy plan, and is provided with a mechanism to enforce compliance with these standards. The Council is instructed to evaluate the extent to which states or subdivisions within states meet the conservation standards, and has the power to direct the Bonneville Power Administration to enact a surcharge on those entities that fail to meet the conservation standards in order to recoup the savings that would otherwise be generated.

Due to the impact of hydroelectric power generation on the region's river systems, the Council is also responsible for preparing a program for conservation and restoration of the fish and wildlife populations of the Columbia River and its tributaries. In particular, the program must take steps to mitigate the diminishment of the Northwest region's salmon population, which has diminished considerably due to hydroelectric generation. This program must be developed in consultation with the Federal, state, and tribal agencies responsible for management of fish and wildlife.

Funding

Funding for the Council and its programs is provided by the Bonneville Power Administration according to a millage rate set by the Northwest Power Act. This funding comes from the BPA's revenues from annual sales of firm power in the Northwest region. The millage rate established by the Act is limited to "0.02 mill multiplied by the kilowatt hours of firm power forecast to be sold by the [BPA] during the year to be funded" ("Pacific Northwest Electric Power Planning & Conservation Act," 1980). However, should this rate prove insufficient for the Council to meet its responsibilities, the limit may be increased to any rate up to 0.10 mills. As of the proposed budget for fiscal year 2013, the 0.02 millage rate was deemed insufficient, and was raised to 0.92 mills, resulting in a budget of \$10,355,000 (Northwest Council, 2011). This represents a

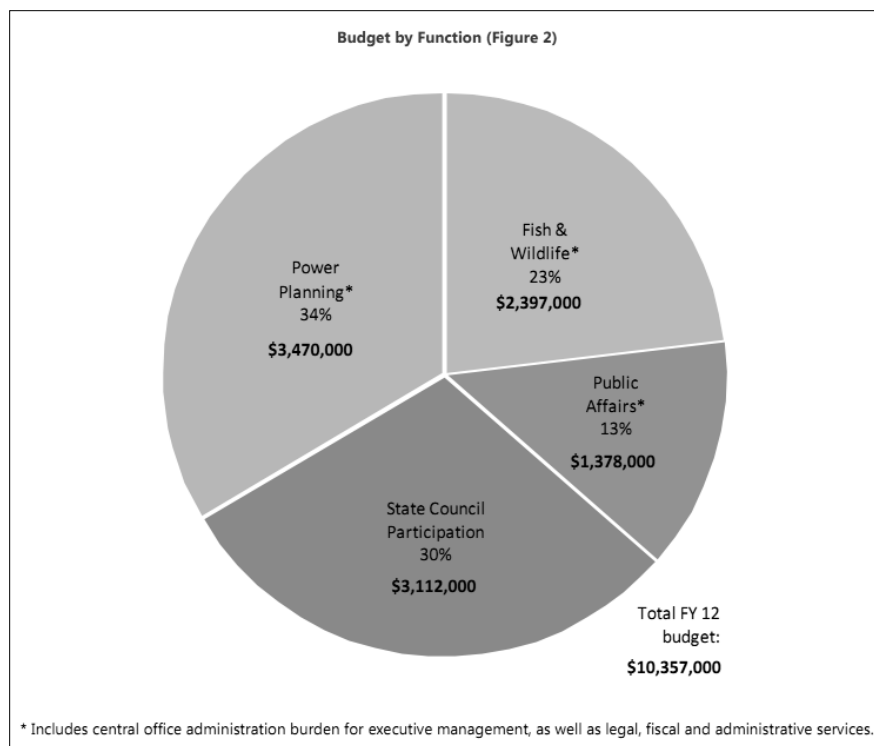
2.1% increase over the 2012 fiscal year's budget, which is in line with budgets going back to 2008. Similarly, the millage rate established for each of those years has been between 0.09 and 0.10.

Table 4. Budgets for the Northwest Council have increased at slightly over 2% per year between 2007 and 2013

Fiscal Year	Budget	% Change from Previous
2007	\$9,085,000	-
2008	\$9,276,000	2.1%
2009	\$9,467,000	2.1%
2010	\$9,683,000	2.3%
2011	\$9,891,000	2.1%
2012	\$10,142,000	2.5%
2013*	\$10,355,000	2.1%

*Projected

Source: (Northwest Council, 2011)



Source: Budget 2013

Figure 13. Distribution of funding by project area in the Northwest Council's FY 2012 budget.

The largest portion of the Council's budget, 34%, is devoted to development of the power plan. An additional 30% of the budget is set aside for the running of each state's satellite Council office. Twenty-three percent is devoted to development of the fish and wildlife conservation program. This budget does not include the cost of operating the fish and wildlife program, which is borne by the BPA both through direct funding and through lost revenues due to water released from dams for the benefit of fish and wildlife, rather than the generation of energy (Lee, 1991). The final 13% of the Council's budget is set aside for public affairs. This includes funding for the Council's public outreach and education efforts.

Evaluation

Lee (1991) cites the Council for its dual achievements of improving energy efficiency and conservation in the region and promoting fish and wildlife conservation. However, he cautions that "the Northwest Power Act, by buttressing the role of the Bonneville Power Administration, preserved existing, perhaps outmoded forms of economic organization even as it pushed these institutions into new territory." He also notes that the low-hanging fruit of energy conservation has already been plucked; it will be more difficult in the future to conserve power cost-effectively. Ultimately, he worries that this regional structure adds bureaucracy to the goals of power generation, and conservation and environmental mitigation, where solutions from outside the governmental structure would be preferable.

The National Regulatory Research Institute (1992) points to the role of the Federal government as a limitation to the Council's role as a model for regional regulation of public utilities. Due to the presence of a strong tradition of interconnectivity and Federal involvement in the region, a regional approach was logical and well-supported by the states. Furthermore, the Council is not "a true regional regulatory authority." Instead, the Council's "role is largely advisory, but its suggestions can have some impact." Similarly to Lee, the NRRI suggests that the Council adds to government bureaucracy, potentially increasing the costs it seeks to constrain both through the additional time allocated to regulatory oversight and the direct costs of running the agency. Finally, the NRRI cautions that the Council's dependence on the BPA for resources may hinder its ability to constrain the Federal agency.

2. Transportation and Climate Initiative (TCI)

Overview

During the last decade global warming and climate variability have become a major policy issue. In order to stave off the most severe impacts of global climate change, deep reductions in greenhouse gas emissions (GHG) would need to occur. Thirty percent of these gases can be attributed to the transportation sector which is expected to be the fastest growing sector due to increased demand for gasoline, jet fuel, and diesel fuel. In June 2010, to curtail this projection, twelve mid-Atlantic and northeastern

jurisdictions created the Transportation and Climate Initiative (TCI), among transportation, environment and energy agencies. The purpose of the TCI is not only to reduce greenhouse gas emissions in the transportation sector, but also to minimize the transportation system's reliance on high-carbon fuels, promote sustainable growth, address the challenges of vehicle-miles traveled, and help build the clean energy economy. The states involved will work collaboratively to explore and develop policies and programs that can result in greater energy efficiency of regional transportation systems, as well as yield reductions of regional greenhouse gas emissions in the transportation system.

In order to develop the most effective and efficient ways for the jurisdictions to meet their own goals with this initiative, those involved have developed a strategic plan. This plan will occur over a three year period and will focus on: (1) developing a common understanding of the region's transportation-related greenhouse gas emissions and energy use as well as the role the transportation sector plays in supporting other important state goals such as access to affordable housing, economic development, job creation, and improving public health; (2) assessing state climate action plan goals, legislative mandates and strategies for greenhouse gas emission reductions; and (3) identifying and implementing regional strategies and policies that will cost effectively assist the states in achieving their emissions reduction goals and regional priorities while supporting other related important public policies.

The strategic plan for the Transportation and Climate Initiative will focus on the development of state-level strategies and policies in four areas:

- (1) Alternative fuel and advanced technology vehicles,
- (2) Sustainable communities,
- (3) Freight movement, and
- (4) Information and communications technologies.

For each of these four areas, the TCI jurisdictions will work together to conduct analyses and assessments that will inform development of TCI policies and priorities. Key to these efforts will be the development of sound metrics to set baselines for emissions and energy use in transportation systems and to assess cost effectiveness of potential policies. An additional priority is for the states to work closely with other partners in the public and private sector that share common objectives.

To achieve its strategic goals a work plan has been implemented. The work plan outlines the following:

- governance structure,
- key areas to address staff needs to assess/learn,
- four major topics for policy development and project implementation,
- need for connections to federal policy,
- local community action and other state public policy,
- internal and external communication deliverables

- one year budget and timeline.

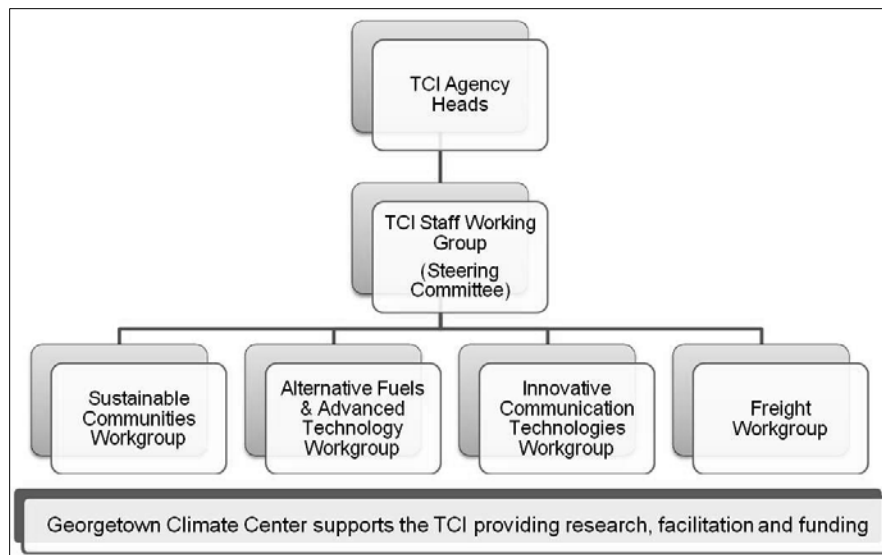
Structure & Governance

When established, the Transportation & Climate Initiative formed a Staff Working Group to begin the work of the TCI. This group has organized a Governance Structure to carry out the work of TCI. Their structure is headed by an Executive Leadership group which is composed of the Agency Heads that signed the Declaration of Intent that began the initiative. They have the responsibility to provide overall direction as well as approve decisions that involve Agency commitments or where TCI seeks funding commitments.

The Staff Working Group, which reports to the Executive Leadership, is composed of one or more representatives from each agency in each jurisdiction. They provide input on development of all projects, governance decisions, and internal as well as external materials prior to Agency Head review. A Steering Committee is also created within the Staff Working Group. The Steering Committee oversees the regular operations and policy deliberations of the TCI and determines when issues are ready for full Staff Working Group review. They will also be responsible for funding resources, linking with partners, coordinating workgroups, and identifying data gaps and information needs.

Topical Workgroups report to the Staff Working Group. Each will be formed to develop work plans, projects and activities on topics of interest to the Agency Heads. Each Workgroup will oversee the development and management of issue specific tasks, agendas and projects. The Topical Workgroups will be chaired by a state representative and facilitated by a Georgetown Climate Center (GCC) consultant. These groups may consist of representatives from any or all of the 35 member agencies. Currently, four have been formed: Alternative Fuel and Advanced Technology Vehicles; Sustainable Communities; Freight; and Innovative Communication Technologies.

A Strategic Communications Team has been formed with the responsibility to develop TCI branding that provides a clear identity, while maintaining its relationship to the successful RGGI partnership. There will also be a group to focus on funding. They will establish a one- and three- year funding plan as well as seek funding to support the operations and development of the three year work plan and anchor projects.



Source: Georgetown Climate Centermn (2011)

Figure 14. TCI organization chart

Funding

The Georgetown Climate Center (GCC) serves as convener for the Transportation & Climate Initiative and has provided financial support for the development of the initiative through resources from their core philanthropic funders (Rockefeller Bros. and the Tremaine Foundation). Initial activities have been supported by the States who provided staff resources for the Staff Working Group, the Steering Committee and the four workgroups.

In the future, for operating costs, anchor projects and policy development, in-kind support as well as overall TCI research agenda resources will be sought from private foundations, in-kind services from state agencies, and projected federal grants with associated public and private match.

Evaluation

While the initiative is only one year into the three year work plan the shared efforts of the jurisdictions are in progress in each of the four focus areas. In the alternative fuels and advanced technology vehicles area, a TIGER II grant has been completed which will connect Electric Vehicle (EV) hubs with metropolitan and local EV networks and public transportation systems. Also, EV infrastructure policies at a regional level have been coordinated which will accelerate the spread of EV sales and use.

In the area of sustainable communities, state level policies have been developed that foster sustainable communities and smart growth in order to reduce travel and promote transit oriented development. The initiative has also been able to bridge support for sustainable communities' policies at the federal level and action at the local level by leveraging state resources and authorities.

The freight movement section is in the process of seeking ways to identify and advance new regional initiatives to promote sustainable economic development using improved movement systems and technology. It is also considering ways to reduce truck vehicle miles traveled. Work completed in the area of information and communication technology includes being able to find a way to tap into the potential of information and communication technologies to make transportation more energy efficient and sustainable in the region. Although an evaluation of this initiative after only one year would be premature, a preliminary review of completed work as well as the work in progress demonstrates the collaborative efforts of this initiative to be a success.

3. The I-95 Corridor Coalition

Background

Interstate 95, which stretches along the United States' Eastern Seaboard from northern Maine to southern Florida for 1,917 miles, is one of the nation's most heavily trafficked corridors. On an average day, 72,000 vehicles travel on I-95, reaching over 300,000 vehicles on peak days; additionally, truck volumes average 10,000 vehicles per day and reach as high as 31,000 at peak. In total, this corridor accounts for 35% of the nation's annual vehicle miles traveled (I-95 Corridor Coalition, 2011a). The surrounding region

makes up 10% of the land area of the US and 37% of its population, with regional densities more than three times the US average and comparable to Western Europe (Cambridge Systematics Inc, 2008). By 2040, it is anticipated that vehicle miles traveled will increase by 70% and truck volumes will double. These volume increases will lead to increases in congestion and travel delays that will severely degrade performance of the I-95 corridor transportation system.

The I-95 Corridor Coalition came together as an informal organization of transportation professionals seeking to work together on cross-jurisdictional transportation issues. It describes itself as “an alliance of transportation agencies, toll authorities, and related organizations” with member organizations located along the entire I-95 Corridor from Maine to Florida (I-95 Corridor Coalition, 2011c). Additionally, the organization has affiliate members in Canada. The Coalition’s mission is to provide “a forum for key decision and policy makers to address transportation management and operations issues” which it has been doing since the early 1990s (I-95 Corridor Coalition, 2011c).

Structure

The I-95 Coalition was originally formed as an ad-hoc organization of transportation professionals, and its current organization retains an informal character. The coalition does not have formal by-laws; instead, it is governed by a set of operating procedures, first adopted in 1996. These guidelines are updated as necessary, most recently in December 2010, and documented in the Procedural Guidelines Manual (I-95 Corridor Coalition Steering Committee, 2010).

The Coalition is primarily directed by its Executive Board and Steering Committee. The Executive Board consists of the directors of each full member group or agency, and its mission is to determine the Coalition’s long-term goals and focus. Reporting to the Executive Board is the Coalition’s Executive Director. The Executive Director manages the Coalition’s staff, consisting of Program Coordinators and outside consultants. The Executive Director is responsible for the day-to-day management and implementation of the Coalition’s programs. The Program Coordinators “provide overall staff support to all activities of the Coalition” (I-95 Corridor Coalition Steering Committee, 2010). The Steering Committee is responsible for ensuring that the Coalition meets the goals set by the Executive Board through the management of Coalition projects and policy development. It is made up of representatives from both full member groups and affiliate members. The Steering Committee also oversees the Coalition’s program committees and the Policy and Strategic Planning Committee.

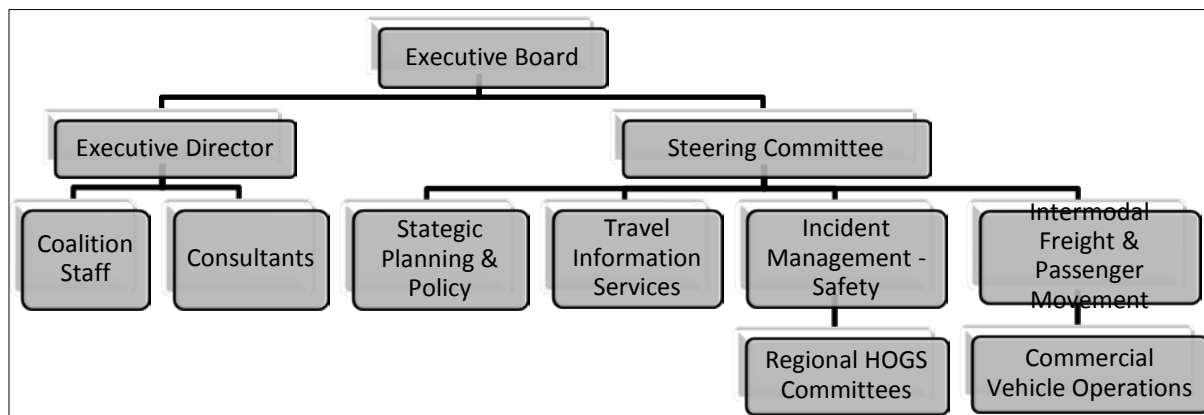
The Coalition’s three program track committees consist of Travel Information Services, Coordinated Incident Management – Safety, and Intermodal Freight & Passenger Movement. These three committees oversee the development of the Coalition’s projects within their specified program areas. Committee membership comes from member agency representatives, “but participation is open to anyone with an interest in the goals of the committee, including representatives of private or corporate entities” (I-95 Corridor Coalition Steering Committee, 2010). Each committee has a defined area of transportation policy in which they guide Coalition projects (see Table 5?? below).

Table 5. Summary of program track committee goals.

Committee	Goal
Travel Information Services	To support the development of a corridor-wide, multimodal traveler information system that provides users with accurate and timely information.
Coordinated Incident Management - Safety	To raise the visibility of safety in all Coalition activities, and facilitate, support, and enhance the coordination and implementation of interagency efforts in response to major incidents. Within this Committee are Regional HOGs groups -- an acronym from the previous committee name of "Highway Operations Group" -- which address regional geographies from Maine to Florida.
Intermodal Freight and Passenger Movement	To promote reliable, efficient, and balanced intermodal transportation throughout the Coalition states by supporting policies, information technology, and operations that improve the intermodal movement of freight and passengers.

Source: (I-95 Corridor Coalition Steering Committee, 2010)

In addition to the three program track committees, the Steering Committee oversees the Policy and Strategic Planning Committee (PSP) (I-95 Corridor Coalition Steering Committee, 2010). PSP is responsible for providing long-range strategic planning support and policy guidance to the Executive Board. In addition, PSP assists the Steering Committee with annual budget planning and work plans. Other duties of PSP include supporting the functions of the program track committees by coordinating projects that fall under several committees.



Source: (I-95 Corridor Coalition, 2011b)

Figure 15. I-95 Corridor Coalition organizational structure.

Planning Process

The Coalition operates on an annual program planning cycle (See Figure 16). This cycle begins in April with guidelines setting the Coalition's programming priorities for the next year. Ultimately, the cycle culminates with a work plan created by the Coalition's program track committees and approved by the Steering Committee and the Federal Highway Administration (FHWA). The development of the Coalition's work plan emphasizes both top-down and bottom-up planning, with input coming from both the Coalition's executive committees as well as from within member agencies (I-95 Corridor Coalition Steering Committee, 2010).

Calendar Cycle	Current Year Program Planning
April/May May October ↓	<ul style="list-style-type: none"> Executive Board/Steering Committee issue guidance, setting broad program priorities Program Track Committees review goals and objectives, adding or changing as appropriate; develop new project ideas with brief scopes, and prioritize them within objectives; assess readiness of new projects, identify project managers and secure match commitments for agency deployment projects Program Track Committees submit a comprehensive work plan request
October November December ↓	<ul style="list-style-type: none"> Program Track Committee requests are compiled and submitted to the Steering Committee for review. Steering Committee reviews all submissions and develops a recommended work plan for the Executive Board Executive Board adopts a work plan for that year and develops direction for the next work plan cycle. Final work plan letter is submitted to FHWA
January January – April April/May ↓	<ul style="list-style-type: none"> FHWA formally approves the work plan Coalition itemizes the budget by project sponsor and amounts, working with FHWA FHWA begins the partnership agreement issuance, or interagency agreements if required for a specific project Next year's program planning cycle begins

Source: (I-95 Corridor Coalition Steering Committee, 2010)

Figure 16. Summary of the I-95 Coalition's annual program planning cycle.

Finances

Program funding for the I-95 Coalition is managed by the Steering Committee. This includes both budgeting, which is handled by the PSP committee, as well as procuring funds for the Coalition's work. Funding is arranged through partnership agreements between the FHWA and the Coalition's member agencies. These agreements determine the ratio of FHWA and member agency funding dedicated to each project. The FHWA requires a match from the member agencies for any Federal funds provided by the Administration (I-95 Corridor Coalition Steering Committee, 2010).

Beginning with Fiscal Year 2007 and on, this funding match is set at 20% of the Coalition's total funding. In other words, the FHWA provides 80% of the Coalition's

funding, while the remaining 20% is provided by member agencies through the details of their partnership agreements with the FHWA. This 20% can come from public or private sources, but must be non-Federally derived. Member-supplied matching funds can be either cash or in-kind. In-kind funds can include donations of equipment or materials, as well as donations of time from member agency staff (I-95 Corridor Coalition Steering Committee, 2010).

4. The Randstad's Deltametropolis

Background

The Netherlands' Randstad, or “edge city,” is a region comprised of the nation's four largest cities, Amsterdam, Rotterdam, The Hague, and Utrecht, which form an urbanized ring on the periphery of a central rural area (Ross et al., 2008). This region is the undisputable economic powerhouse of the Netherlands: despite containing only 20 percent of the nation's land area, it contains 42 percent of the population and 45 percent of the jobs (Cowell, 2010). Despite the region's clear importance to the nation, Lambregts (2002) notes that the central Dutch government neglected investment in this region after World War II in favor of promoting growth that was more evenly distributed across the country. Only after planning officials from the four cities began taking action in 1998 to preserve the region's national economic dominance did a coherent vision for the megaregion begin to come together.



Source: (van der Burg & Vink, 2008).

Figure 17. The Randstad is comprised of four major cities of Holland – Amsterdam, Rotterdam, Utrecht, and The Hague – situated around a rural “Green Heart” of the region.

Governance

Megaregional cooperation in the Randstad is organized on primarily voluntary terms. Salet (2010) states that “there is no such thing as a Randstad administration; it is just a collection of 173 municipalities, seven urban agglomerations and the urban parts of four provinces.” Although the Randstad has been mentioned in central government planning documents since 1958, regional administration is organized at municipal and provincial levels, with no official administration at the higher level of the Randstad (Salet, 2010). However, voluntary associations promoting the interests of the Randstad do exist. For example, the Deltametropolis Association “brings businesses, public interest groups, research institutions and governments together” to support “sustainable development” of the Randstad. In addition, Regio Randstad, a Brussels-based organization, represents the Randstad’s interests to the European Union.

Although a 2006 proposal to combine the four provinces of the Randstad into one was abandoned due to the imbalance that would have been created between a dominant Randstad province and the nation’s other eight provinces, van den Berg and Vink (2008) note that small steps have been taken from within government to condense the separate urban authorities into a regional organization: from at least a dozen water management boards, the number has now been reduced to just four major boards. In addition, the national government has taken steps to improve the decision-making process for regional planning, which has previously been inhibited by a feeling of “lack of ‘ownership’” (van der Burg & Vink, 2008) among individual municipal-level authorities. This has meant assigning pairs of officials, one cabinet minister and one regional-level politician, to take control of Randstad-related projects that the central government has deemed urgent, with the intention of creating a sense of responsibility in the designated officials.

Activities

Within the Randstad, a number of planning activities have been proposed, including several transportation initiatives. The current system of public transportation in the region is considered inadequate, while the roadways are cited for their excessive congestion (Ross et al., 2008), so it is no wonder that several attempts have been made to address these issues at a regional level. In 2005, a transport link known as Rapidrandstad was proposed, which would provide a magnetic-levitation rail link between the cities of the region (AFX News Limited, 2005). However, this project has apparently been shelved since 2007.

The region’s ongoing congestion issues have arisen partly as a result of the government’s goal of pursuing compact urbanization “within existing cities and in nearby urban areas” during the period from 1995-2005, in what are known as the VINEX areas (Salet, 2010). Transportation infrastructure development lagged behind the rapid pace at which residential developments were produced in these areas, resulting in a high rate of car ownership among residents of these developments. More recently, the government has proposed that growth be encouraged in a new spatial relationship referred to as “urban networks.” These networks seek to create urbanization patterns “characterized by

organized spatial relationships between nodes of urban condensation” which would fit with the polycentric-character of the Randstad region (Salet, 2010).

Finally, an ongoing transportation-oriented project is the Deltametropolis Association’s SprintCity project. This project seeks to improve transportation opportunities in the Randstad through a combination of better utilization of the current rail network as well as the addition of new infrastructure (Deltametropolis Association, 2011). The project focuses on the goal of increasing density and development around inner-city rail stations, while increasing the frequency of inter-city and local trains. Its methods include physical surveys of sites surrounding inner-city rail stations, as well as a computer-based game that simulates development with the input of transportation stakeholders. The Randstad 2040 plan seeks “to produce a long term vision [for the region] as basis for new investment projects” (van der Burg & Vink, 2008). The post-World War II vision for the country saw the cities of the Randstad individually, with a desire to keep them separate while ensuring that opportunity and investment were spread equally across the nation. By contrast, the new plan tries to unify the region in favor of a single plan for growth that will raise its international stature. The plan positions the Randstad to take advantage of each city’s individual strengths – Rotterdam is the largest shipping port in Europe; Amsterdam is a center of commerce and tourism; The Hague is a national and international hub of justice – while strengthening the functional ties between the cities to become a cohesive region. Given the Randstad’s unique vulnerability to climate change, as much of the Netherlands lies below sea level, ecological concerns are also a major planning consideration in the region.

As part of the Randstad’s attempt to position itself internationally, the Netherlands is also considering placing a bid on the 2028 Olympic Games. Hosting the Games would bring international exposure and tourism revenues to the region, as well as spurring development initiatives for the Randstad in the interim and beyond. Currently, the bid is in its preliminary stages, including feasibility studies and initial site planning (GB Staff, 2008). Polls show that a majority of Dutch citizens are interested in pursuing an Olympic bid for the Randstad in 2028 (I amsterdam, 2011). The decision to proceed officially with the bid will be made in 2016.

5. The Oresund Committee

Background

The Oresund region is a transnational region comprised of the Capital region of Denmark (island of Zealand including Copenhagen) and the Skane region (Scania) of southern Sweden. As of July 2011, the region has a combined population of 3,770,603 and a population density of 180/km². Spatially, the region is characterized by a strong core-periphery structure. The cities of Copenhagen (Denmark) and Malmo (Sweden) constitute the urban core, accounting for approximately 68% (2.57 million) of the total regional population. The surrounding peripheral areas are less dense. Historically, cross-border relationships between the two countries across the Strait of Oresund can be traced back to seventeenth century Scandinavian wars when Scania (part of the Danish Kingdom) became a possession of the Swedish empire. In recent decades, cross-border

collaboration has been fuelled by the commercial and scientific interests of companies and universities on both sides (Collinge and Gibney, 2010; Schmidt, 2005).



Source: Oresundsbro Konsortiet (2010)

Figure 18. The Oresund Region.

Zealand and Skane have an abundance of diverse knowledge-based industries such as pharmaceuticals, biotechnology, IT/telecommunications, design and environmental technologies. The two metropolitan areas combined play host to over 20 universities and 130,000 students. This ensures the production of a highly-skilled and specialized labor force. The goal of the Oresund cross-border project is to increase business networks and co-operation between the two regions to further enhance innovation and specialization and create a powerful agglomeration economy (OECD, 2003). The 1980s and 1990s provided the initial efforts in creating a cross-border integrated region. These efforts included the development of a common vision (in 1999) for the region and the agreement between the Danish and Swedish governments to create a fixed link between the two cities in 1991. A major catalyst in this process was the lobbying efforts of several supranational organizations (European Union, Nordic Council) to establish the Oresund Region as a major metropolis in Europe. The fixed link, namely, the Oresund Bridge, opened in June 2000 and connects the cities of Copenhagen and Malmö while a ferry connection links the cities of Helsingor (Zealand) and Helsingborg (Scania) on the northern side (Mathiessen, 2004; Schmidt, 2005). The bridge has contributed functionally to increased trade and exchange between the two regions as well as served as a significant symbol in the integration process. The final phases of integration include the identification and neutralization of barriers toward integration as well as establishment of an organizational structure.

Structure & Governance

The integration of the Oresund region has been influenced by a diversity of policy instruments formulated by regional/local as well as supranational organizations. Key policy areas that have been addressed or discussed in the literature include 1) infrastructure and spatial planning; 2) labor market; 3) networking and knowledge diffusion; and 4) taxation (Schmidt, 2005; OECD, 2003). Nationally sponsored infrastructure investments were evaluated at a total of EUR 8.5 billion, 27% of which was spent on the Oresund Bridge. There have also been national efforts to integrate social and tax policies to reduce barriers to integration. At the supranational level, organizations such as the EU and Nordic Council have focused on integration in the Oresund region through the INTERREG programs, a funding initiative launched by the European Commission to facilitate cohesion within cross-border regions. The first INTERREG (INTERREG II-A) phase lasted from 1996-2001 where initiatives related to business, trade, and tourism received the greatest amount of funding. An often quoted success of this INTERREG phase is the creation of "Medicon Valley", a cross-border association of private companies and university researchers aimed at improving pharmaceutical and biomedical technologies (OECD, 2003). INTERREG III-A began in 2000 and expanded its focus to include the entire Oresund region. Projects funded by this phase are larger in size, more cross-sectoral, encourage involvement from local, volunteer and private organizations, and have a greater environmental focus.

Other cross-border initiatives include the Oresund University which is a driving force in establishing the Oresund science region. The Oresund University is a consortium of 20 Swedish and Danish universities that actively promote knowledge-sharing and cross-border networking. This has served as a nucleus for the development of a high-tech cluster of firms, aiding economic development (Garlick et al, 2006).

The Oresund Region consists of two physically different areas that are governed by different national labor market, fiscal, environmental protection, planning, and education policies. This precludes the development of a single administrative authority that possesses explicit legal and administrative authority to implement joint development strategies. Similar to other cross-border regions, cross-border integration is regulated by the "governance without government" framework. According to the OECD (2003), "Governance" encompasses the establishment and adherence to a set of rules and norms that defines practices, assigns roles and responsibilities, and guides interaction between organizations, so as to better tackle collective problems". The main aim of cross border governance is to overcome obstacles to integration.

The Oresund Committee is the leading cross-border organization that formulates policy at the regional level and serves as the primary political body for bilateral collaboration. It was established in 1993 as a platform to nurture horizontal partnerships and create formal protocols for information exchange. The committee consists of local and regional politicians from both sides, with the two national ministries serving as observers. The committee is co-chaired by the city-mayor of Copenhagen and the president of the region of Skane. Private organizations are not allowed to be part of the committee. The working committee (officials from member organizations) and the secretariat (15 full time

officials) are jointly responsible for drafting and implementing Oresund policies. A sub-group of the secretariat also makes decisions on EU projects funded through INTERREG and facilitates the required horizontal and vertical coordination required for implementation. However, it represents a fairly top-down approach to governance without a focus on public participation. The Oresund Identity Network is an apolitical organization created in 2000 to promote and market a regional identity or brand on the cultural side (Hall, 2008).

Funding

Infrastructure development is seen as the most crucial element in successful integration. A total of EUR 8.5 billion have been spent on improving transportation infrastructure. The aim is to create a comprehensive transportation network with an emphasis on public transport. The Oresund Bridge serves as the most important integration tool both from a functional as well as symbolic standpoint. Functionally, it increases mobility and removes barriers with respect to living and working in different parts of the Oresund Region.

Table 6. Examples of larger transportation investment in the region

Project	EUR millions
City tunnel in Malmö (5.5 km) – still being planned	800
Roads in Malmö (14.5 km)	220
The Öresund fixed link (coast-to-coast 16.2 km) – finished	2,320
Land work on the Danish side	840
Land work on the Swedish side	220
Rolling stock	1,350
Expansion of Copenhagen Airport	940
Metro in Copenhagen (21 km)	1,250
Expansion of the Central Station in Copenhagen	400
The Ørestad (main roads)	180
Total	8,520

Source: OECD (2003)

Symbolically, it stands as a monument to sustained efforts towards integration and creation of a regional identity. The bridge and associated shore installation were financed primarily through construction loans from the domestic and international capital markets. The construction costs for the Øresund Bridge totaled EUR 2.3 billion. The bi-national Oresund Bridge Consortium established through agreement between the

Danish and Swedish governments, manages the bridge and is responsible for lending funds to the bridge. The loans taken on by the Consortium are guaranteed jointly by the Danish and Swedish states. The loans and interest are entirely repaid through tolls collected as part of the bridge usage (Braathen, 2004). Both countries exert equal (50%) ownership of the Oresund Bridge Consortium through two national companies, A/S Öresund and SVEDAB, investing DKK 25 million in the Consortium (OECD, 2003).

Evaluation

The Oresund Bridge and other infrastructural projects have created a network of mobility within the region and promoted interactions among people, firms and institutions. It has had significant successes in bringing about integration and other economic development has followed as a consequence of increased accessibility. In terms of competitiveness, it has enhanced Copenhagen's stature on the Danish side and created a new "growth pole" around Malmo on the Swedish side. Increased global investments are also putting the region on the global map.

Differing fiscal systems remain one of the most significant barriers to integration in the region. These differences include the existence of different currencies as well as different tax structures in both nations. For example, income tax rates, including social security, tend to be lower in Denmark, and property taxation is lower in Sweden. These complexities make it challenging to calculate the actual tax burdens of those who commute across borders for employment purposes. Through tax treatises modeled on the OECD Model Convention, Denmark and Sweden continue to re-negotiate common tax structures as asymmetries arise (OECD, 2003).

SECTION V. OPPORTUNITIES AND CHALLENGES OF MEGAREGIONS

A. Fragmented Political Boundaries in Megaregions

Efforts to define and plan for megaregions as a strategy to face the challenges inherent in a global economy are taking place throughout the U.S. Many researchers are actively engaged in research and outreach efforts to examine the relationships, challenges, and opportunities in an evolving national framework for planning and public investment. However, the inherent challenges in the fragmented political and planning systems within megaregions have not been explicitly analyzed.

Metropolitan Planning Organizations (MPOs), a case of federal creation and empowerment of regional organizations, may become actors along with other private-sector players within a megaregional framework because they have been actively involved in planning activities, such as long-range transportation planning, and land use, infrastructure, and environmental planning, in core regions of megaregions. Also, MPOs can play an important role in steering county and local governments to achieve regional planning goals.

For example, to address regional transportation problems and meet increasing demand for transportation infrastructure at this scale, the Georgia General Assembly in 2010 passed legislation (The Transportation Investment Act of 2010; HB 277) that allows counties to establish 12 special tax districts throughout the state based on existing regional commission boundaries to create transportation Regional Special Purpose Local Option Sales Taxes (Regional SPLOSTs). Once voters in each district, which consists of 10 to 18 counties, approve the regional SPLOSTs in July, 2012, a 1% sales tax will be levied over the next 10 years to support regional transportation projects (Ross et al., 2011). Atlanta Regional Commission (ARC), the MPO in the Atlanta metropolitan region, plays a leading role in this process for the region by facilitating a Regional Transportation Roundtable, which is comprised of every county chair and one mayor from each county and develops the project list for the regional SPLOSTs.

A state DOT is another major actor that has a capacity to bridge between local and federal agencies and coordinate multi-regional entities within its state boundaries. In megaregion planning, some state DOTs, such as Arizona, Texas, and Florida, have been involved in their megaregion studies. The fact that most megaregion boundaries in these states are bounded by their own state lines might motivate the agencies to get involved in megaregional studies. However, it is hard to find megaregional efforts of other state DOTs for which planning boundaries are in multi-state megaregions.

Figure 19 illustrates that 42 out of 51 states (including the District of Columbia) encompass megaregions. However, not all those states are within the influence of megaregions. Among them, some states, such as Arkansas, Iowa, Louisiana, Maine, Mississippi, New Mexico, Utah, and West Virginia, are only partially included in megaregions.

According to Table 7, although Florida is the only state where megaregion boundaries are totally within one state boundary, some other states, such as Arizona, California, and Texas, also can be considered states having the majority areas of their megaregions with their own state boundaries because the areas of their megaregions stretching to neighboring states are minimal. For example, the Arizona megaregion stretches from Washington County, Utah through most counties in Arizona to Hidalgo County, New Mexico, indicating that three states are interconnected within this megaregion. However, other than these two counties, all other counties within this megaregion are Arizona counties.

The Midwest and Northeast megaregions spread throughout 11 and 10 states, respectively, and the DC-Virginia and Piedmont megaregions are stretched to 6 states. The establishment of a megaregional coalition would be more difficult in situations which include higher numbers of states.

As of 2008, there were 381 MPOs in the U.S. Among them, 257 MPOs, which is approximately 67 percent of the total, were located within megaregions. Similar to the number of states, the Midwest, Northeast, and Piedmont megaregions are host to a large number of MPOs with 73, 49, and 39, respectively (Table 6).

In addition to the absolute number of organizations, the contiguity of MPOs' planning boundaries is also one important factor that can facilitate and promote a joint planning agreement among agencies (a list of all contiguous MPOs within megaregions is provided in Appendix 2). While those megaregions where a large number of MPOs are located have more contiguous MPOs, the California, Florida, and Northeast megaregions have the higher ratios of contiguous MPOs to the total number of MPOs within the regions. For example, all 19 MPOs in the California megaregion are geographically contiguous (less than 10 miles apart), 21 out of 22 in the Florida megaregion, and 46 out of 49 in the Northeast. The results provide an interesting finding. While the Northeast megaregion is the second largest fragmented megaregion in terms of the number of states and MPOs, most MPOs within this region are geographically contiguous, possibly making it easier to identify common interests. The DC-Virginia megaregion also has a higher rate of contiguity of MPOs (82%), and all of those contiguous MPOs are clustered, which may play a positive role in the future in bringing them together to accomplish megaregion level planning. The contiguity ratio of the MPOs in the state of Texas is slightly lower at 62 percent, however, they are relatively well clustered in three groups.

The Cascadia and Central Plain megaregions have fewer contiguous MPOs with 43 and 27 percent, respectively. Only 50 percent of the MPOs in the Arizona megaregion are contiguous. However, according to Figure 20, the three largest MPOs in the region, including, Maricopa Association of Governments, Pima Association of Governments, and Yuma MPO, are geographically contiguous. This might positively affect some of these MPOs enabling them to reach the joint planning agreement as discussed in Section IV.

The Piedmont and Midwest megaregions' contiguity rates of MPOs are moderate with 77 and 70 percent, respectively. However, the clusters of contiguous MPOs are dispersed throughout the regions (Figure 20). For example, there exist 9 clusters of MPOs in the Midwest, and 8 in the Piedmont. Gathering all those clusters together within the megaregions may be a challenge in megaregion planning, since each cluster may more easily develop their own common interest. The Midwest and Piedmont megaregions also appear to be most fragmented among the 10 megaregions in terms of the numbers of counties and municipalities within their boundaries. According to Table 7, 3,359 counties and 4,353 municipalities are located within the Midwest megaregion, with 178 and 1,132, respectively, located in the Piedmont.

While megaregions are geographically large areas and differ in actual size, demographics, and competitive advantages, they are similar in that they are defined by agglomerations of related economic activity, transportation links, and cultural relationships. The power of a megaregion framework is that it can be adapted to different strategies depending on unique locational challenges to address current and future competitiveness.

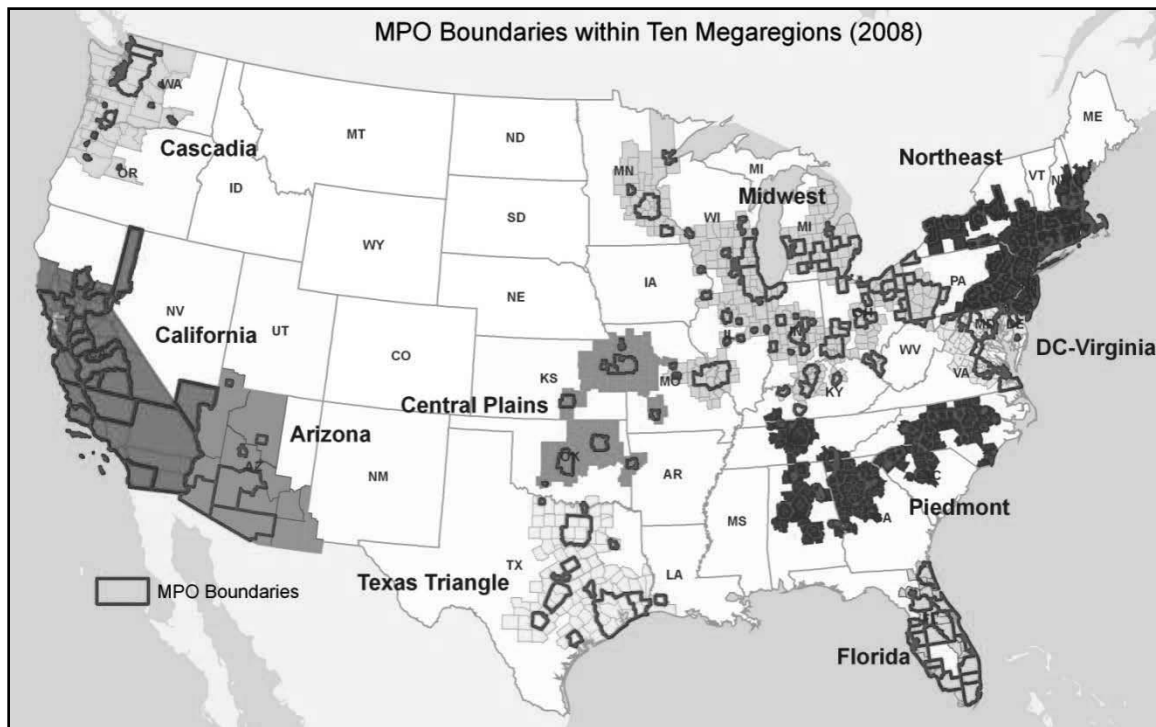


Figure 20. Metropolitan Planning Organization Boundaries within megaregions

B. Characteristics of Passenger Movement in Megaregions

1. Intercity passenger rail service by AMTRAK

During the twentieth century, the development of the highway and aviation networks in the U.S. has created the world's best transport systems. However, these advancements were also coupled with high oil dependence and consumption, intensifying greenhouse gas emissions and increasing traffic congestion. The development of the HSR rail program is linked to increased awareness of the need to increase accessibility and mobility, stimulate economic activity and development, and promote greater connectivity while reducing demand on the highway infrastructure.

This era of HSR in the United States is a resurgence of sorts following the less than successful attempt to promote a national passenger rail service with the introduction of the National Railroad Passenger Corporation (AMTRAK) in 1971. AMTRAK is a quasi-public corporation chartered by Congress in 1971 to operate intercity passenger trains throughout the United States. This move by Congress came at a time when many of the US railroads, which operated both freight and rail trains, were experiencing great financial difficulties. In an effort to remove the highly unprofitable passenger rail services from the hands of the railroads and to continue to provide a needed public service to citizens, the government selected to take ownership of the passenger rail services.

Under the Code of Federal Regulations, the creation of AMTRAK was authorized by the Rail Passenger Service Act of 1970. This Act requires that AMTRAK be operated and managed as a for-profit corporation with the purpose of providing a balanced transportation system by developing, operating, and improving intercity passenger rail services. The Act states that AMTRAK will not be an agency or establishment of the US Government. AMTRAK's major policies are established by its Board of Directors which comprises of nine members including The Secretary of Transportation who serves as an ex-officio member, the AMTRAK President serves as the Chairman of the Board, three members representing labor, State Governors and business, are appointed by the US President and confirmed by the Senate, two members represent commuter authorities and are selected by the President, and the two final members are selected by the Department of Transportation.

AMTRAK is managed by its President and Management Committee consisting of four Executive Vice Presidents. Eleven Vice-Presidents representing sales, transportation marketing, planning and development, labor relations, computer services, finance and treasurer, personnel, passenger and operating services, government affairs, operations and maintenance, and engineering report to the Executive Vice Presidents. AMTRAK has developed a regional and field structure in response to the need for decentralized functions related to passenger services and transportation operations. Field offices are located in major US cities such as Baltimore, New York, Philadelphia, Albany, Chicago, Boston, Seattle and Los Angeles. These field offices are responsible for the assignment and scheduling of employees; purchases, stowage and preparation of food and dining

services;, maintenance and rehabilitation of rolling stock; and the daily operation functions such as cleaning and repairing train cars.

AMTRAK's basic route system has been established according to statutory guidelines or by specific statutory directives. The route system of AMTRAK covers approximately 23,000 route miles of which AMTRAK owns a right-of-way for 2,600 track miles. Trains are operated on the tracks of approximately twenty different privately owned railroads. AMTRAK compensates these railroads for the use of their private tracks and employee services including engineers, conductors, and maintenance personnel. Its capital improvements and almost half of its operating losses are supported principally through Federal financing, with State, regional and local financial support for some trains and stations. AMTRAK is required by Congress to earn revenues equivalent to at least fifty percent of its operating costs. The principle source of revenue for AMTRAK services comes from the sale of tickets for transportation and accommodations (49 CFR 700.2).

2. High-speed rail and megaregions

Since the AMTRAK was created by Congress in 1970, rail has remained a subsidiary form of transportation. Federal, state and local transportation funding has been biased towards road construction for the past few decades. This has impeded sufficient appropriations towards rail, and thus has rendered this travel mode an uncompetitive one.

Several potential national HSR corridors were designated under Section 1010 of ISTEA (Intermodal Sst Century). In addition, a number of cities and regions are providing leadership and embracing HSR above and beyond the direction and resources that are being put forth by the national government. For example, regional agencies in the Western half of the United States have formed an alliance to develop a corridor between Denver and Los Angeles including Las Vegas, Salt Lake City and Phoenix. Other links are anticipated, but more importantly the initiative and decision to invest in HSR is being made across multiple jurisdictions which establishes a precedent for this type of common commitment to connectivity. In Washington state money is being invested in the Portland - Seattle –Vancouver corridor and Florida is investing \$2.1 billion in the Miami-Orlando-Tampa corridor. The South Eastern High-Speed Rail (SEHSR) project corridor is now approximately 168 miles and extends from Richmond, Virginia, to Raleigh, North Carolina. The initial project corridor extended from Petersburg, Virginia to Raleigh, North Carolina. Virginia Rail Enhancement Fund grants are being used to fund the extension.

The federal government has recently signaled its commitment to the development of HSR with the announcement of new real initiatives in 2010. Since the Obama administration allocated \$8 billion in federal funds as a "down payment" on creating speedier passenger train service in 2010, the administration has proposed a six year plan dedicating \$53 billion to continue construction of HSR networks.

The six year plan, recently announced in February 2011, classifies the type of HSR corridors into core express, regional, and emerging corridors as shown in Figure 21. Compared with the first grant allocation scheme in 2010, this recent movement along with the reallocation of 2 billion that was rejected by Florida focuses more on corridor wide planning in terms of a funding allocation. For example, approximately 85 percent of federal HSR investment is concentrated on six corridors, including Los Angeles to San Francisco, Seattle to Portland, Chicago to St. Louis, Chicago to Detroit, Northeast Corridor, and Charlotte to Washington, D.C (FRA, 2011). All but the Los Angeles to San Francisco corridor cross more than two states. In addition, several multi-state segments connecting Los Angeles, Las Vegas, and Phoenix, and the Northeast Corridor have been singled out for multi-state planning.

However, several significant corridors, such as those in the Florida and Piedmont megaregions, are not included in either core express or regional corridors, partly because of the lack of efforts from corresponding states that are expected to show their long term visions for HSR networks. This implies that in order to develop and implement HSR plans at the megaregion scale, not only must the federal government take into account the trans-boundary interactions for HSR planning, but bottom up planning efforts, including local level initiatives and state-led planning, should also occur.

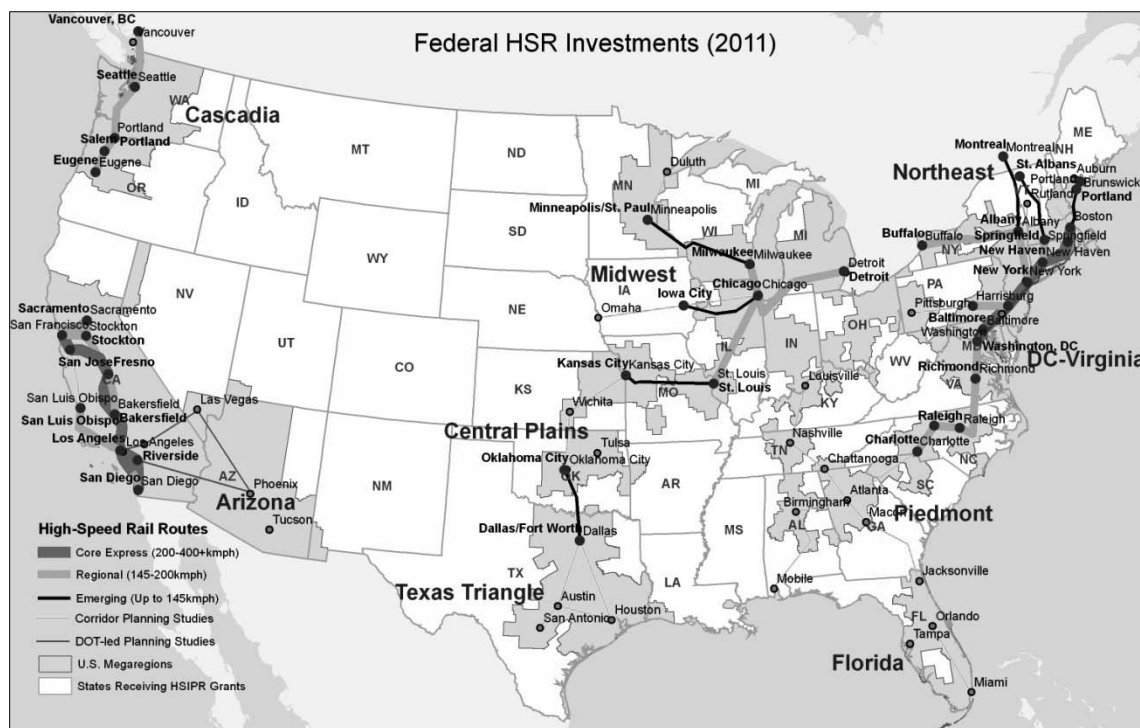


Figure 21. U.S. Megaregions and U.S. DOT HSR plan

3. Air passenger travel and megaregions

To analyze the relationships between air travel and megaregions, Ross and Woo (2010) measured higher interactions between regions in terms of the intercity air passenger

travel, which can address economic and social interactions between regions, using the 2007 airline origin and destination survey (DB1B) data, collected by the Office of Airline Information of the Bureau of Transportation Statistics. They derived about 2 million domestic travel reports by carriers with less than 500 mile city pairs, and then converted the city pair data into the 55 region by region data.

Table 7 lists the top 60 region pairs² in the air passenger travel data. These pairs clearly show that there exist hub metropolitan areas in each group of regions, and these hub regions provide the pivot of the entirety of air travel in surrounding areas. For example, among the top 60 region pairs, the New York metropolitan area connects to 9 regions within the 500 mile radius, followed by Chicago, Illinois 8 regions, Dallas-Fort Worth, Texas 6 regions, and Atlanta, Georgia and Los Angeles, California each 5 regions. However, California and surrounding regions appear to be the largest region in terms of air travel demand with region pairs. Among the top links, Los Angeles, California has the first four major links to other regions, connecting to San Jose, California, Las Vegas, Nevada, Sacramento, California, and Phoenix, Arizona in terms of the volume of air passengers. The higher number of air travelers between regions can identify significant potential corridors where the priority of investment should be given to improve passenger mobility through an alternative mode, such as high-speed rail.

² Significant region pairs in terms of the volumes of commodity flow and air passenger travel are identified using the interquartile range (IQR) criterion. The IQR measures the distance between the first and third quartiles. Specifically, the “1.5*IQR” criterion, which captures outliers falling more than 1.5 multiplied by IQR above the third quartile (MOORE et al., 2007), is used to identify region pairs that experience significantly higher traffic volumes than others.

Table 8. Top 60 region pairs by air passenger travel (2007)

Rank	Region Pair	Passenger	Rank	Region Pair	Passenger
1	Los Angeles, CA-San Jose, CA	820,762	31	Chicago, IL-Cleveland, OH	53,637
2	Los Angeles, CA-Las Vegas, NV	323,738	32	Dallas-Fort Worth, TX-Kansas City, KS	52,120
3	Los Angeles, CA-Sacramento, CA	272,308	33	New York, NY-Columbus, OH	52,067
4	Los Angeles, CA-Phoenix, AZ	255,338	34	Boston, MA-Washington, DC	52,048
5	San Diego, CA-San Jose, CA	252,522	35	Boston, MA-Baltimore, MD	51,928
6	San Jose, CA-Las Vegas, NV	226,508	36	Chicago, IL-Nashville, TN	50,917
7	New York, NY-Boston, MA	171,718	37	Chicago, IL-Pittsburgh, PA	49,647
8	Dallas-Fort Worth, TX-Houston, TX	149,243	38	Sacramento, CA-Portland, OR	47,744
9	Chicago, IL-Minneapolis-St. Paul, MN	132,317	39	Philadelphia, PA-Pittsburgh, PA	47,473
10	Phoenix, AZ-Las Vegas, NV	105,107	40	Philadelphia, PA-Raleigh-Durham, NC	45,761
11	New York, NY-Raleigh-Durham, NC	89,165	41	Baltimore, MD-Detroit, MI	42,178
12	Chicago, IL-Detroit, MI	88,512	42	Las Vegas, NV-Salt Lake City, UT	41,977
13	San Diego, CA-Sacramento, CA	87,170	43	Los Angeles, CA-Tucson, AZ	40,574
14	San Diego, CA-Las Vegas, NV	82,746	44	Dallas-Fort Worth, TX-New Orleans, LA	39,785
15	San Diego, CA-Phoenix, AZ	78,829	45	Atlanta, GA-Raleigh-Durham, NC	37,938
16	Dallas-Fort Worth, TX-San Antonio, TX	76,319	46	New York, NY-Rochester, NY	33,305
17	Chicago, IL-Kansas City, KS	75,125	47	Miami, FL-Jacksonville, FL	32,903
18	New York, NY-Buffalo, NY	73,334	48	New York, NY-Richmond, VA	30,705
19	Atlanta, GA-Orlando, FL	71,890	49	Miami, FL-Orlando, FL	30,307
20	Chicago, IL-St. Louis, MO	68,493	50	Detroit, MI-St. Louis, MO	29,210
21	Houston, TX-New Orleans, LA	67,935	51	New York, NY-Washington, DC	29,004
22	New York, NY-Pittsburgh, PA	61,221	52	Baltimore, MD-Charlotte, NC	28,981
23	Dallas-Fort Worth, TX-Austin, TX	59,458	53	Atlanta, GA-Memphis, TN	28,160
24	New York, NY-Cleveland, OH	58,648	54	Baltimore, MD-Buffalo, NY	27,792
25	Boston, MA-Philadelphia, PA	58,009	55	Detroit, MI-Philadelphia, PA	27,774
26	Chicago, IL-Columbus, OH	55,750	57	Dallas-Fort Worth, TX-Tulsa, OK	27,037
27	Denver, CO-Salt Lake City, UT	55,267	58	Atlanta, GA-Richmond, VA	26,977
28	Miami, FL-Tampa, FL	54,808	59	Orlando, FL-Charlotte, NC	26,833
29	Sacramento, CA-Las Vegas, NV	54,797	60	Las Vegas, NV-Tucson, AZ	26,724
30	Atlanta, GA-Tampa, FL	54,039			

Source: The Airline Origin and Destination Survey (DB1B) Data (The Bureau of Transportation Statistics, 2007)

C. Characteristics of Freight Movement in Megaregions³

1. Highway and Rail Capacity

Transportation investment must be driven by a compelling need given the large capital costs associated with building highways, rail infrastructure and port facilities. Domestic and global businesses rely on efficient and predictable freight movement to be successful. In order for Megaregions to be economically successful, adequate freight transportation infrastructure is imperative.

In a 2005 study, Cambridge Systematics found that since 1980, total vehicle-miles travelled has increased 95% while lane-miles has only increased 4%, indicating that much more vehicle traffic is using the same infrastructure (Cambridge Systematics, 2005). Projections indicate that vehicle miles traveled will continue to increase as a result of population growth and economic development, which will in turn create greater demand for freight capacity. The Federal Highway Administration expects that future revenues will only be able to maintain current roadways and not add significant capacity (Cambridge Systematics, 2005). Furthermore, congestion costs, especially in urban areas such as the megaregions, will continue to rise as demand increases but capacity remains relatively flat (Hillestad, Van Roo, and Yoho, 2009).

A 2007 study by Cambridge Systematics for the Association of American Railroads (AAR) estimates that as of 2007, 88% of railroads were under capacity, 9% at or near capacity and 3% over capacity. However, given projected freight rail demands, by 2035 45% of railroads will be under capacity, 25% at or near capacity, and 30% over capacity (AAR, 2008). If transportation investment in railroad capacity does not occur, the freight demand is likely to shift to truck transport, where there is no additional capacity.

2. Major Freight Corridors in Megaregions

a) The Arizona megaregion

The Arizona megaregion consists of two major metropolitan centers in three states in the southwestern United States. The core city of the region is Phoenix and the region spans from the Southwestern corner (Washington County) of Utah to the Southwestern corner (Hidalgo County) of New Mexico with the major concentration of activity occurring between Phoenix and Tucson (Figure 22).

³ The original analysis in this section was conducted by B. Kearse, J. Kimbell, D. Murray, M. Sanborn, and D. Ziemke in 2009 under the direction of Drs. Catherine L. Ross and Randall Guensler in the Urban Transportation Planning course, a joint course offered by Department of City and Regional Planning and Department of Civil Engineering of Georgia Institute of Technology.

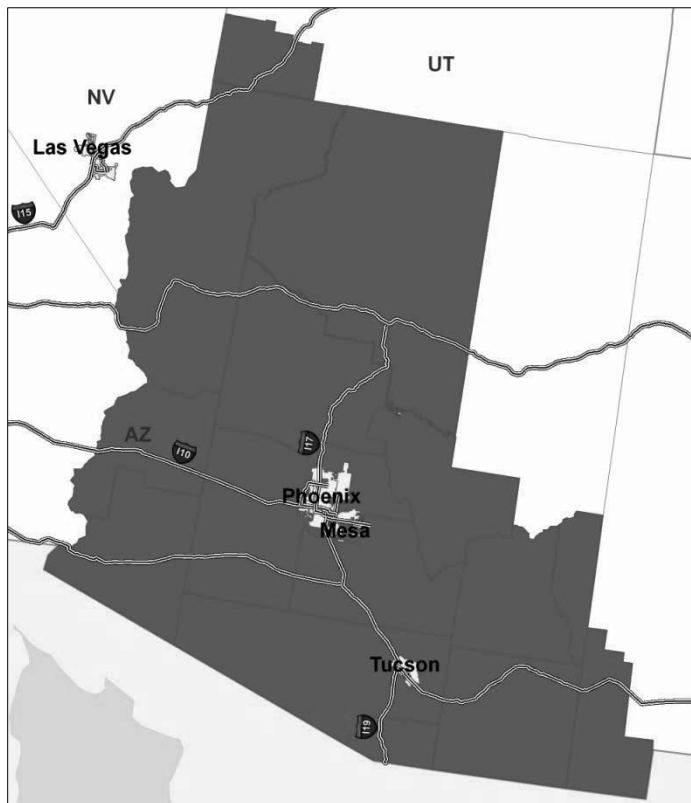
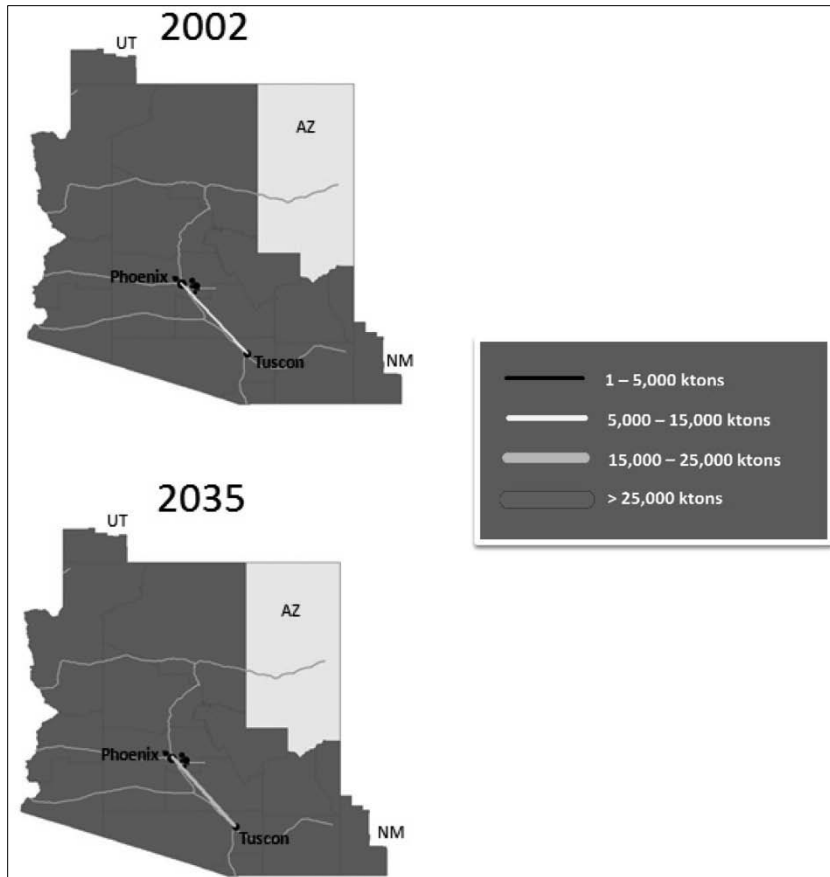


Figure 22. The Arizona megaregion

Metropolitan centers in the region are economically linked to one another because they are specialized in different functions. Because the core areas within the region are linked economically, it is important that freight be able to move efficiently between the metropolitan centers. Figure 23 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035 . The I-10 corridor is the primary transportation link between the region's two metro-centers and is projected to experience a 273% increase in demand for freight capacity by 2035 from intra-region commodity movement alone. Commodities in the region overwhelmingly move by truck rather than any other mode. For example, more than 96 percent of freight moved by truck in 2002, while the rail movement shared less than 1 percent.

The majority of freight produced in the region remains in the region ,and therefore it is necessary to have enough capacity to move freight on key corridors in the region. The I-10 corridor is critical to the economic growth and success of the Arizona megaregion, as the overwhelming majority of freight travels along the corridor. Congestion on the corridor due to freight transport will hinder the region's ability to interact economically and is likely to slow the growth of the region. Increasing freight rail capacity along the corridor is an important and sustainable investment to facilitate the movement of goods in the region.



Source: FHWA. (2006). Freight Analysis Framework (FAF).

Figure 23. Change of freight movement in key corridors of the Arizona

b) The California megaregion

The California megaregion consists of five important metropolitan areas in terms of freight movement. The four metropolitan centers of Los Angeles/Long Beach, Sacramento, San Diego, and San Francisco/San Jose (Bay Area) are located in the State of California while the metropolitan area of Las Vegas, Nevada is also included in the California megaregion. The four Californian metropolitan centers are located on or nearby the I-5 corridor (Figure 24).



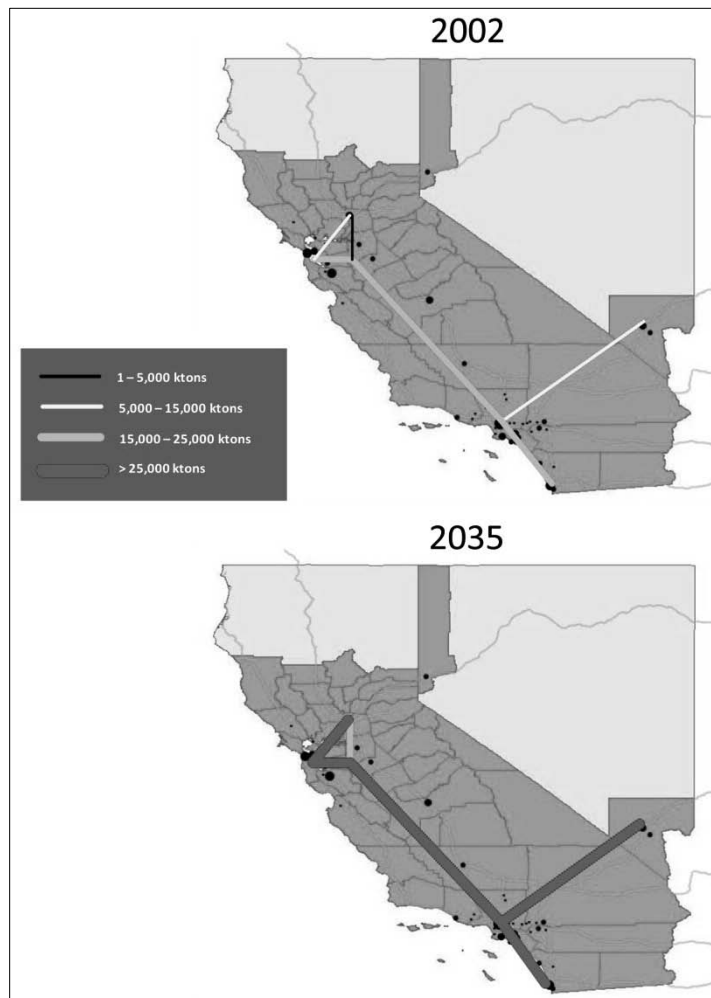
Figure 24. The California megaregion

The interaction between the metropolitan centers in the region is amplified by the distribution of commodities produced in the region. Based on the FAF data, the region is projected to produce 2.3 billion tons of commodities valued at \$4.8 trillion dollars (2002 dollars) by 2035, ranking it the third highest among the ten megaregions. The intra-regional market is the largest for commodities produced in the California megaregion. For example, 84 percent of the commodities, measured by weight (41 percent by value), are estimated to stay within the region.

Figure 25 depicts the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. The I-5 corridor is the most critical transportation link in the region and is projected to experience a 179% increase in demand for freight capacity by 2035 from intra-region commodity movement alone. The I-15 corridor connecting the metropolitan center of Los Angeles and Las Vegas is

projected to experience an increase in freight of 310% between 2002 and 2035 while some other corridors rank similarly high. Commodities in the California megaregion are also exclusively moved by truck. Less than 1 percent of freight moved by rail within the region and over 90 percent of freight moved by truck in 2002. The amount of freight moved by rail is projected to remain less than 1 percent by 2035, while freight movement by truck is expected to increase to over 87 percent.

Since the highest share of commodities produced in the region stays in the region, it is crucial to provide enough capacity to move freight on key corridors in the region, in particular the I-5 corridor. Also, because the expansion of capacity on this corridor is not unlimited, it is essential to develop alternative transportation systems which can accommodate a certain share of the additional freight projected to be moved in the California megaregion. Development of a faster, more efficient and more environmentally friendly rail network would help mitigate congestion on the I-5 corridor that will inevitably emerge otherwise.



Source: FHWA (2006). Freight Analysis Framework (FAF).

Figure 25. Change of freight movement in key corridors of the California

c) The Cascadia megaregion

The Cascadia Megaregion consists of two metropolitan centers in two states in the Northwestern United States. The core city of the region is Seattle and the region spans from Seattle in the North to Portland, OR in the South along the Interstate 5 corridor. Other minor markets in the region include Eugene, OR, Salem, OR, Spokane, WA and Tacoma, WA (Figure 26).

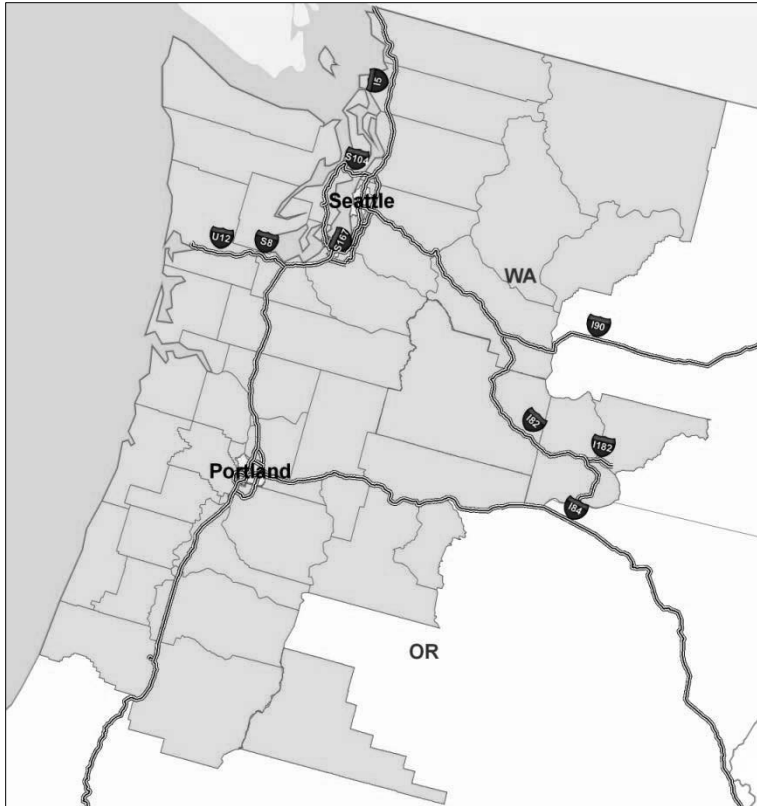
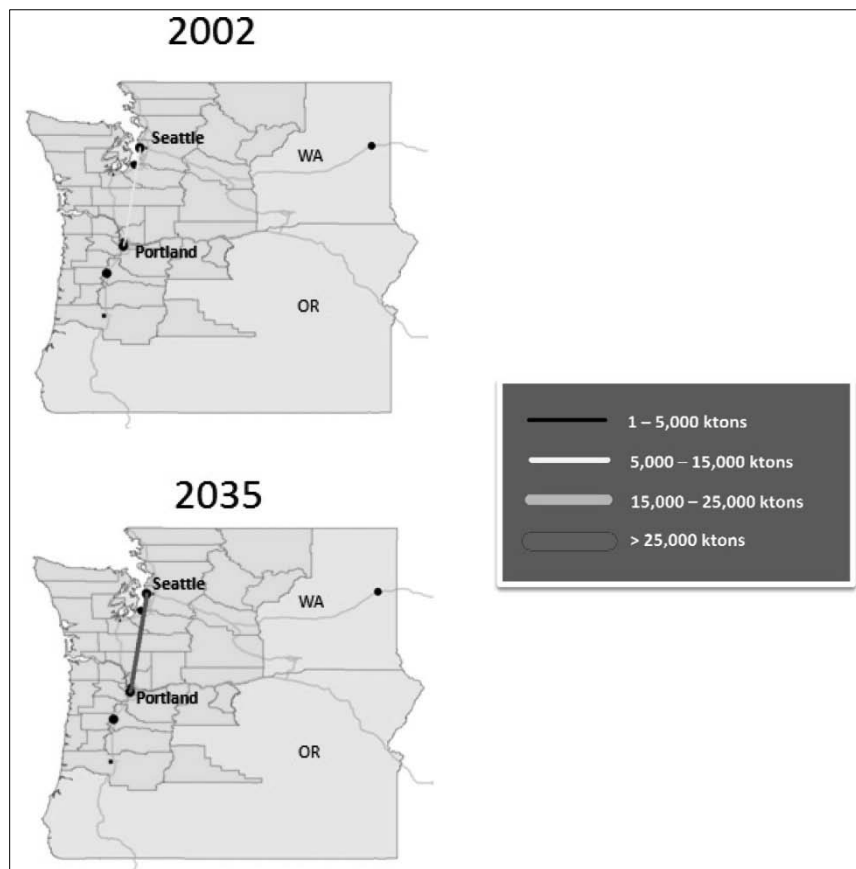


Figure 26. The Cascadia megaregion

The I-5 corridor is the most critical transportation link in the Cascadia megaregion and is projected to experience a 487% increase in demand for freight capacity by 2035 from intra-region commodity movement alone. As of 2002, approximately 95 percent of freight moved by truck within the region and less than 1 percent by rail. This trend is expected to continue with estimates of less than 2 percent of freight by rail and 94 percent by truck in 2035.

Metropolitan centers within the Cascadia megaregion rely on economic interaction with other cities in the region. The majority of freight produced in the region remains in the region, and therefore, it is necessary to have enough capacity to move freight on key corridors in the region. The I-5 corridor is critical to the economic growth and success of the Cascadia megaregion because the overwhelming majority of freight travels along the corridor. Congestion on the corridor due to freight transport will hinder the region's ability to interact economically, and is likely to slow the growth of the region.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 27. Change of freight movement in key corridors of the Cascadia megaregion

d) The Central Plains megaregion

The Central Plain Megaregion consists of three metropolitan centers in two states in the central United States. The core city of the region is Tulsa and the region spans from Oklahoma City, OK in the west to Kansas City, KS in the east along the Interstate 35 corridor. Tulsa, OK is included in the region along the Interstate 44 corridor north of Oklahoma City, OK (Figure 28).

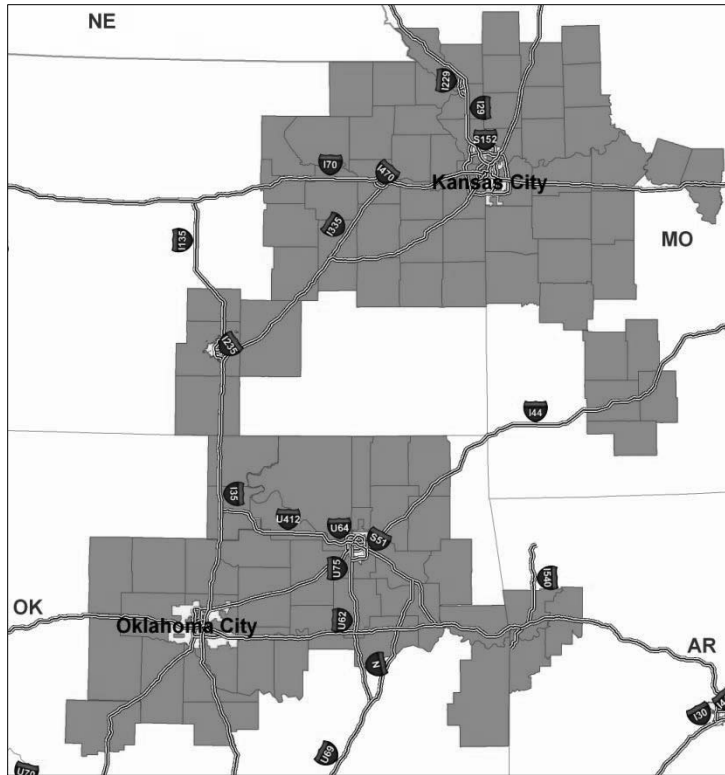
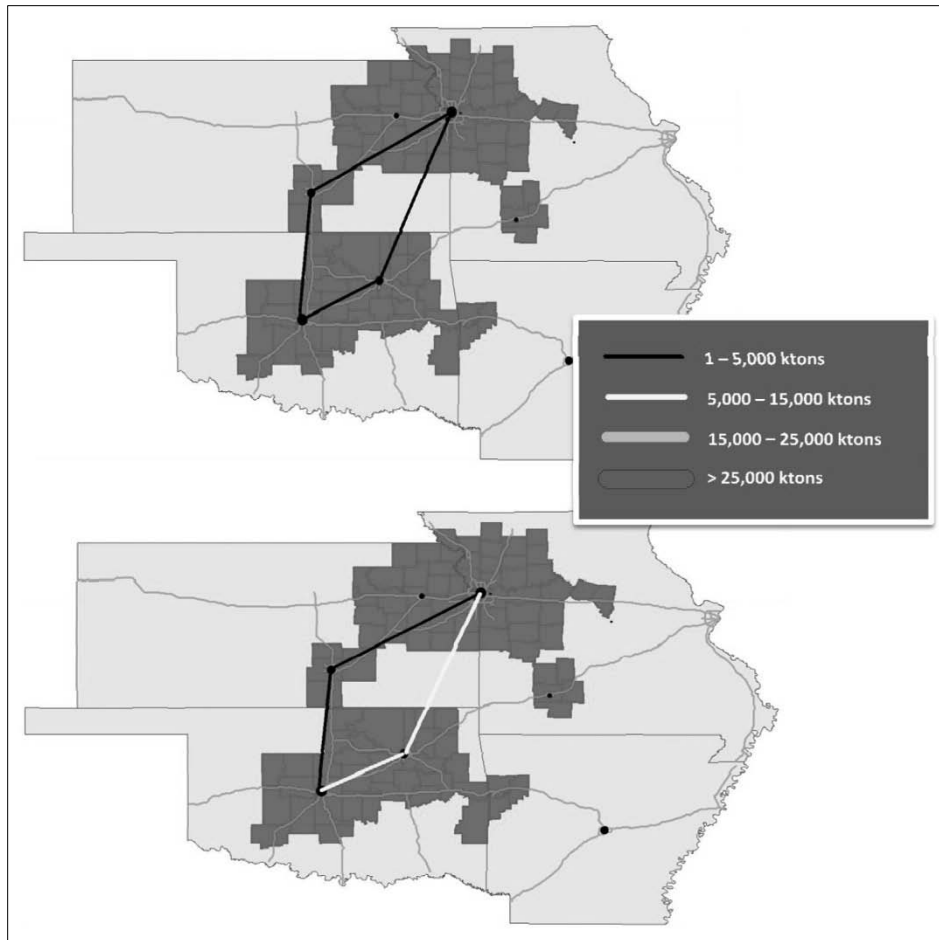


Figure 28. The Central Plains megaregion

The region is projected to produce 641 million tons of commodities valued at \$448 billion dollars (2002 dollars) by 2035, and 53 percent of the value of commodities (64 percent by weight) remains in the region. Figure 29 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. The Interstate 44 corridor is the most critical transportation link in the region and is projected to experience a 194% increase in demand for freight capacity by 2035 from intra-region commodity movement alone. To a lesser extent, the Interstate 35 corridor is also expected to require increased capacity.

In 2002, 24% of freight, measured by weight, moved by rail within the region and over 66% of freight moved by truck. The share of rail in this region is relatively higher than other megaregions. However, by 2035, the amount of freight moved by rail is projected to decrease to just over 17%, while freight movement by truck is expected to increase to over 73%.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 29. Changes of freight movement in key corridors of the Central Plains

e) DC-Virginia megaregion

The DC-Virginia megaregion consists of four metropolitan areas which are located in the District of Columbia and the States of Virginia and Maryland. The main corridors of the region are the I-95 and the I-64.

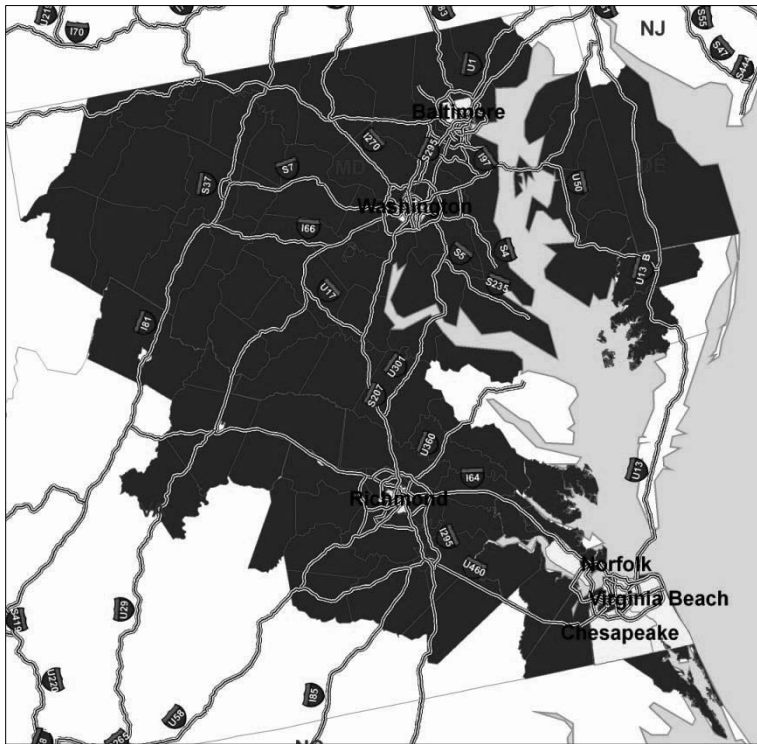
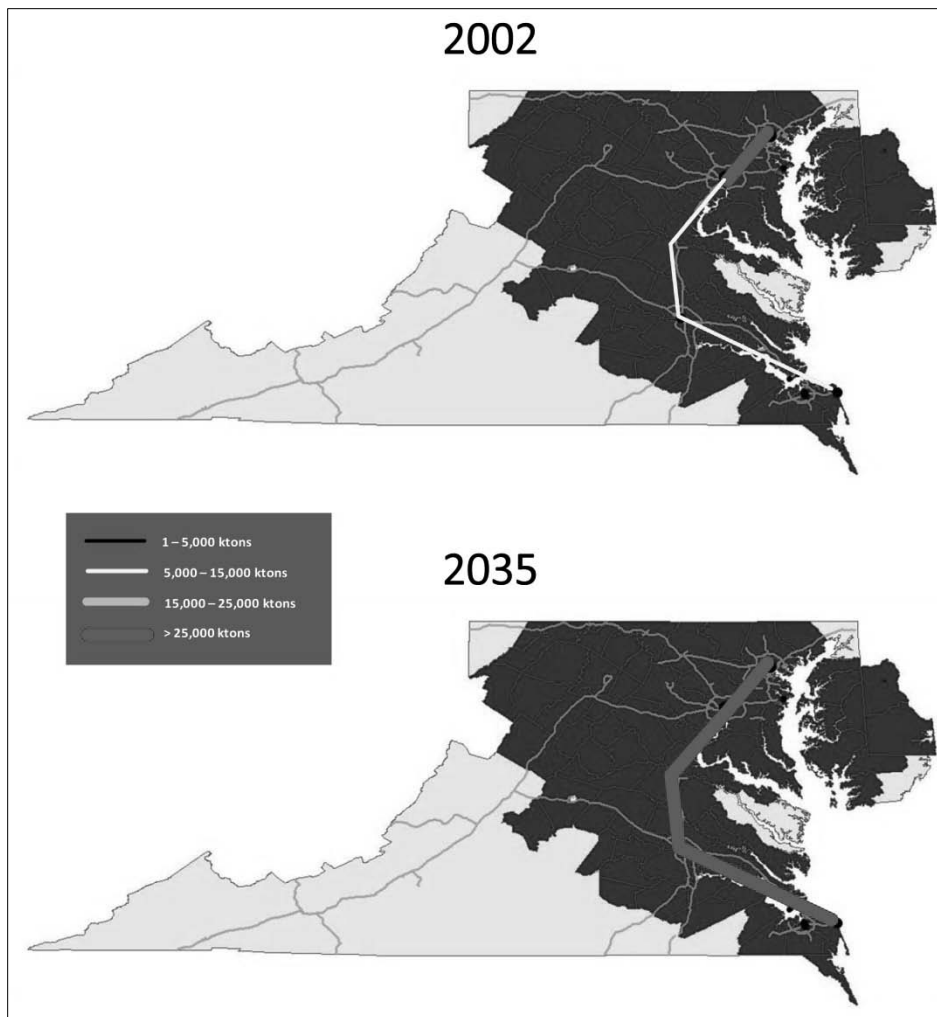


Figure 30. The DC-Virginia megaregion

The DC-Virginia megaregion is projected to produce 0.77 billion tons of commodities valued at \$0.67 trillion dollars (2002 dollars) by 2035. With respect to weight, 71% of the commodities are estimated to stay within the DC-Virginia megaregion, while this number is 61% with respect to value. This shows that the intra-regional market is clearly the most important for commodities produced in the DC-Virginia megaregion.

According to Figure 31, the I-95 and I-64 corridors are the most critical transportation links in the megaregion. The I-95 corridor is projected to experience a 208% increase in demand for freight capacity by 2035 from intra-region commodity movement alone while the corresponding figure for the I-64 corridor is 155%. by 2035, the amount of freight moved by truck is projected to decrease slightly to about 86 percent of total commodity flows? (from over 90 percent as of 2002), while the shares of freight movement by pipeline and water increase.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 31. Changes of freight movement in key corridors of the DC-Virginia

f) The Florida megaregion

The Florida megaregion consists of four metropolitan centers in Peninsular Florida. The core city of the region is Miami, and the region spans from Jacksonville, FL in the north, to Miami in the south, and Tampa and Orlando in Central Florida. The main transportation corridors in the Florida megaregion include I-95 between Jacksonville and Miami along Florida's east coast, I-75 connecting Atlanta to Tampa and Miami via Florida's west coast and across Florida, and I-95/I-4 connecting Jacksonville and Tampa to Orlando.

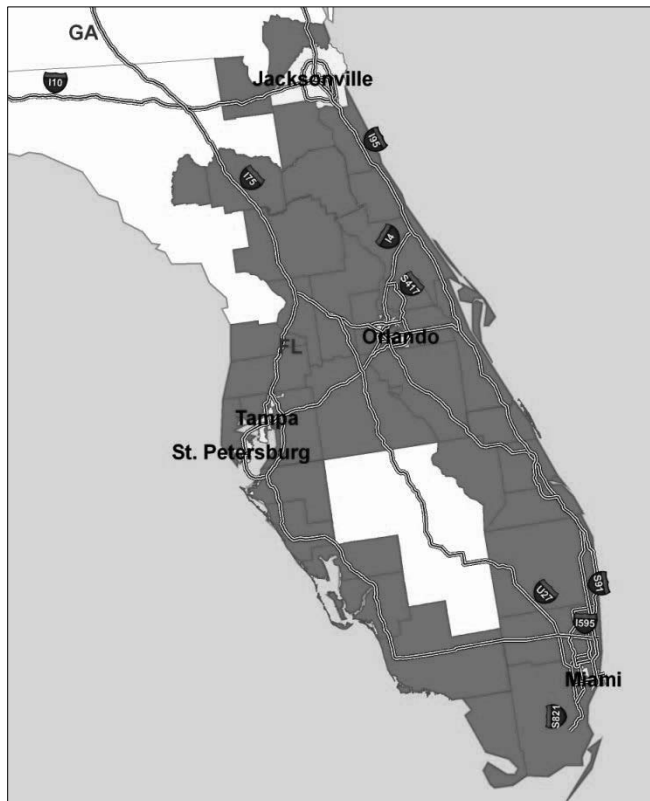
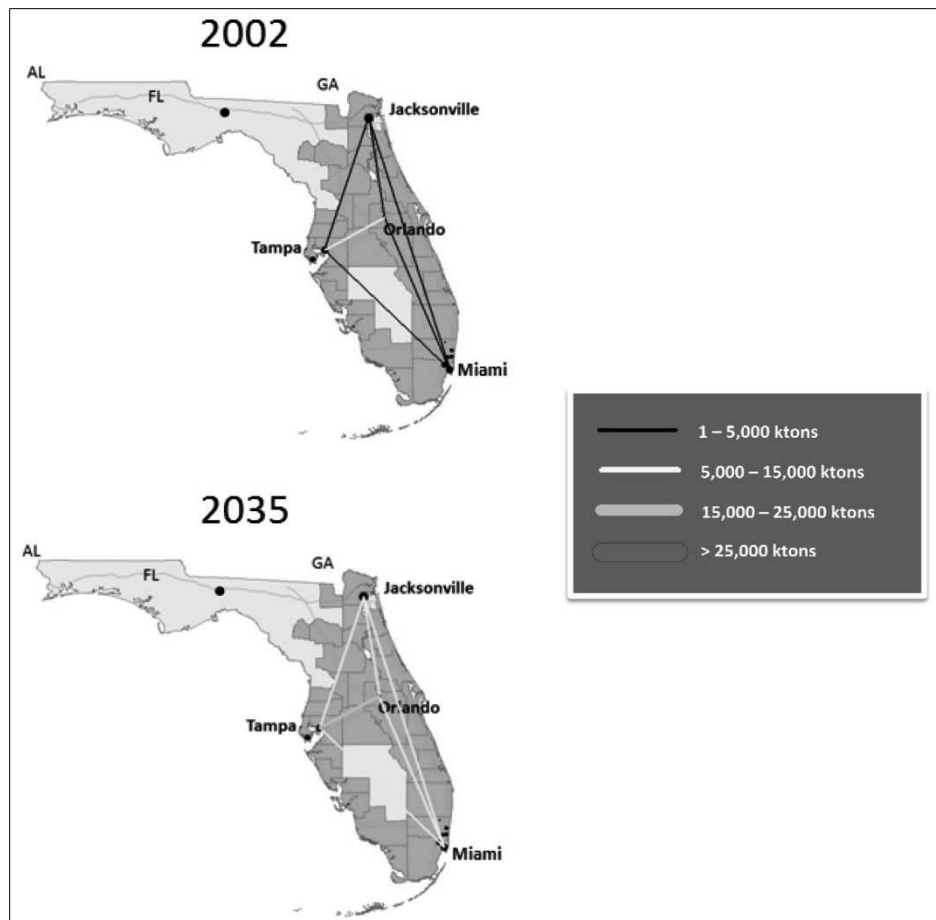


Figure 32. The Florida megaregion

The region is projected to produce 667 million tons of commodities valued at just over one trillion dollars (2002 dollars) by 2035. Eighty-two percent of commodities, measured by weight, are estimated to remain in the region, while 46 percent of the value of commodities by value is expected to stay within the region, meaning that heavier commodities will remain in the region.

Figure 33 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. The I-4 corridor is the most critical transportation link in the region and is projected to experience a 240% increase in demand for freight capacity by 2035 from intra-region commodity movement alone. The second most important corridor is I-75 between Tampa and Miami. All of Florida's corridors are expected to more than double their freight demand.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 33. Changes of freight movement in key corridors of the Arizona

g) The Midwest megaregion

The Midwest megaregion consists of thirteen metropolitan centers in nine states in the north and central United States. The core city of the region is Chicago and the region spans from Minneapolis, MN in the west to Pittsburgh, PA in the east along the Interstate 90 and 80 corridors. Saint Louis, MO is also included in the region along the Interstate 55 corridor south of Chicago. Other major metropolitan centers include Cincinnati, OH, Cleveland, OH, Columbus, OH, Dayton, OH, Detroit, MI, Grand Rapids, MI, Indianapolis, IN, Louisville, KY, and Milwaukee, WI (Figure 34).

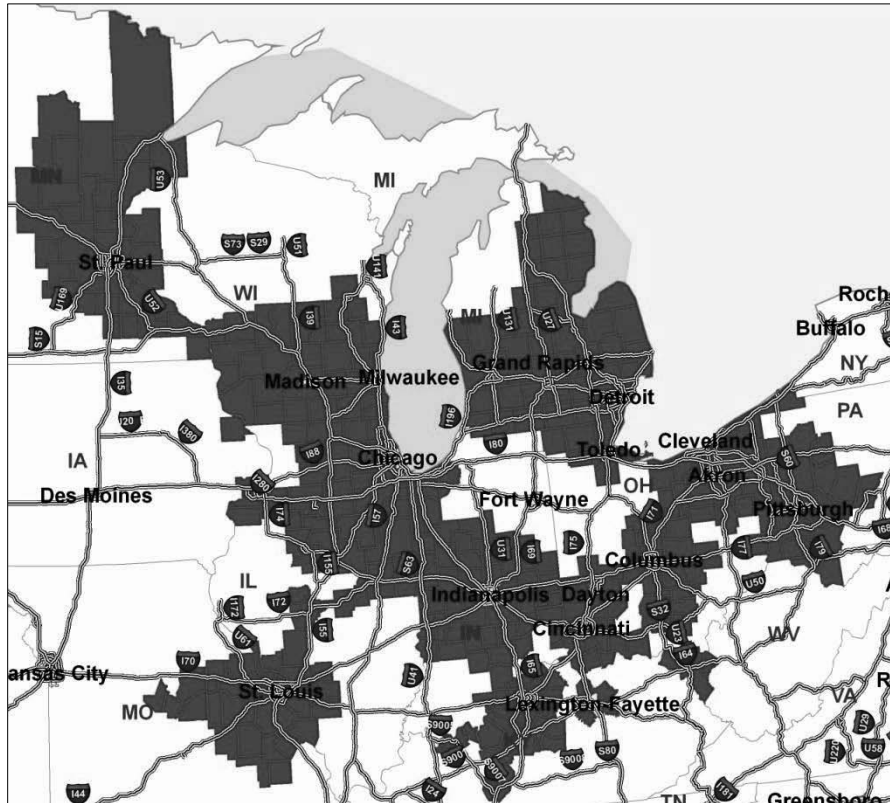


Figure 34. The Midwest megaregion

Figure 35 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. The Interstate 94 corridor is the most critical transportation link in the region and is projected to experience a 461% increase in demand for freight capacity by 2035 from intra-region commodity movement alone. To a lesser extent, the Interstate 64 corridor is also expected to require increased capacity with a projected increase of 325%. Based on the FAF data, more than 3% of freight moved by rail within the region in 2002 and over 86% of freight moved by truck. Furthermore, by 2035, the amount of freight moved by rail is projected to remain just over 3%, while freight movement by truck is expected to increase to over 87%.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 35. Changes of freight movement in key corridors of the Midwest

h) The Northeast megaregion

The Northeast Megaregion (NE) consists of six metropolitan centers in nine states in the northeastern United States. The core city of the region is New York City (NYC), and the region spans from Buffalo and Rochester, NY in the west to Boston, MA in the east along the Interstate 90 (I-90) corridor, and to Philadelphia, PA in the south along the Interstate 95 (I-95) corridor. The region is also served by the Interstate 87 (I-87) corridor between NYC and Albany, NY (Figure 36).

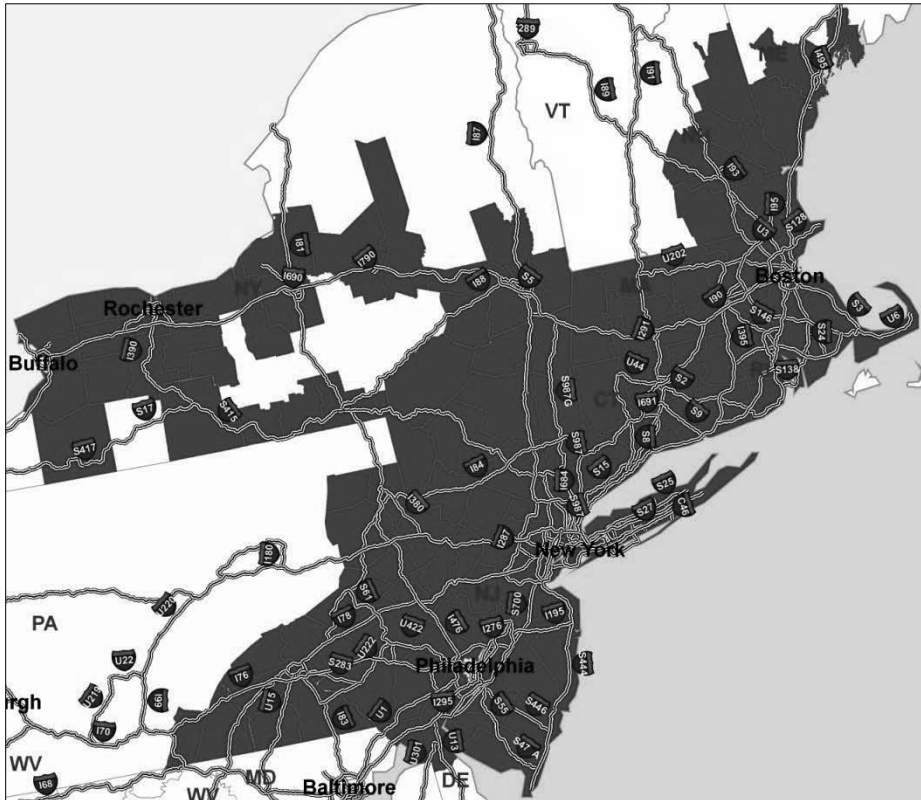


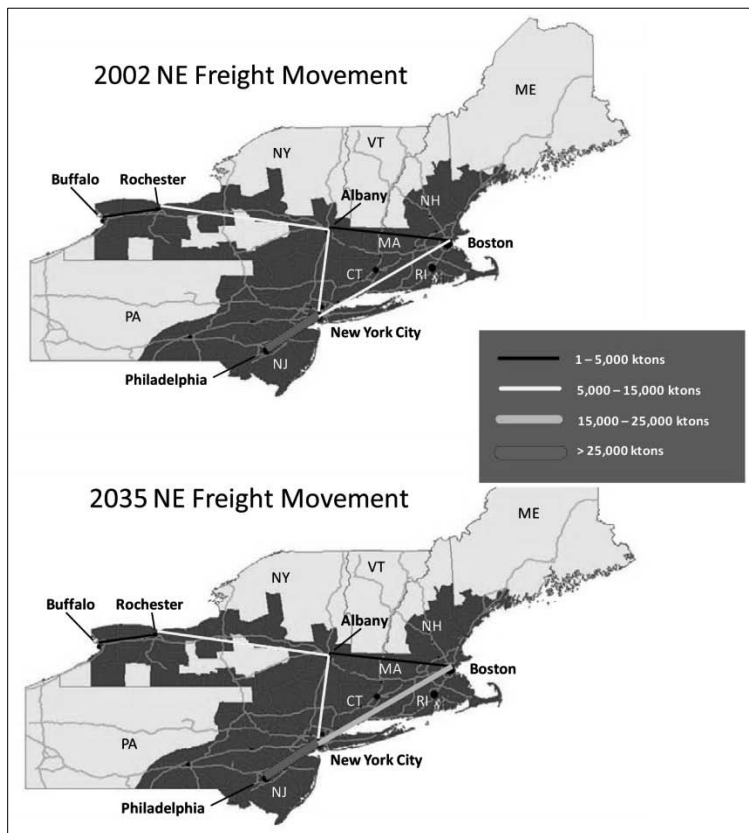
Figure 36. The Northeast megaregion

The region is projected to produce 1.26 million kilotons of commodities valued at \$2.36 trillion dollars (2002 dollars) by 2035. According to the analysis of the FAF data, 74 percent of the freight tonnage, representing only 46 percent of its monetary value, remains in the region. A surprisingly large portion of the commodity value leaves the region via air transport from New York City, indicating a production of high-value, low-weight goods, such as the aforementioned precision instruments. In either case, a plurality of commodities remains within the megaregion itself.

Figure 37 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. As can be seen, the freight movement increases only marginally in the region. The most significant increase (137 percent) occurs along I-95 from New York to Boston. Meanwhile, I-90 from Buffalo to Rochester to Albany barely increases, at less than 10 percent. Other corridors, including

I-87 and portions of I-95 and I-90, see modest increases of 20-50 percent. This may be partly due to the region's Rust Belt nature. These formerly industrial cities, particularly Buffalo and Rochester, are in decline as manufacturing leaves. Meanwhile, Boston, New York, and Philadelphia pursue commercial service economies which move less freight. Increased movement to and from Albany indicates its increasing importance as a regional center, perhaps due to geographic proximity to Boston and New York, which experience the most growth.

The most critical of these corridors is the I-95 corridor from New York City to Boston. Improved highways and new freight rail will be absolutely essential. It will also become the second busiest corridor, behind I-95 from New York City to Philadelphia, which will see a modest 20 percent increase to 37,800 ktons. The I-87 corridor from New York to Albany, while much less trafficked, will see a 41 percent increase to 13,700 ktons and thus also need enhancement.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 37. Changes of freight movement in key corridors of the Northeast

i) The Piedmont megaregion

The Piedmont megaregion consists of eight metropolitan centers in five states in the southeastern United States. The core city of the region is Atlanta and the region spans from Birmingham, AL in the west to Raleigh-Durham, NC in the east along the Interstate 85 corridor. Nashville, TN is also included in the region along the I-75 corridor north of Atlanta. Other major metropolitan centers include Charlotte, NC, Greenville, SC, Spartanburg, SC, and Greensboro, NC (Figure 38).

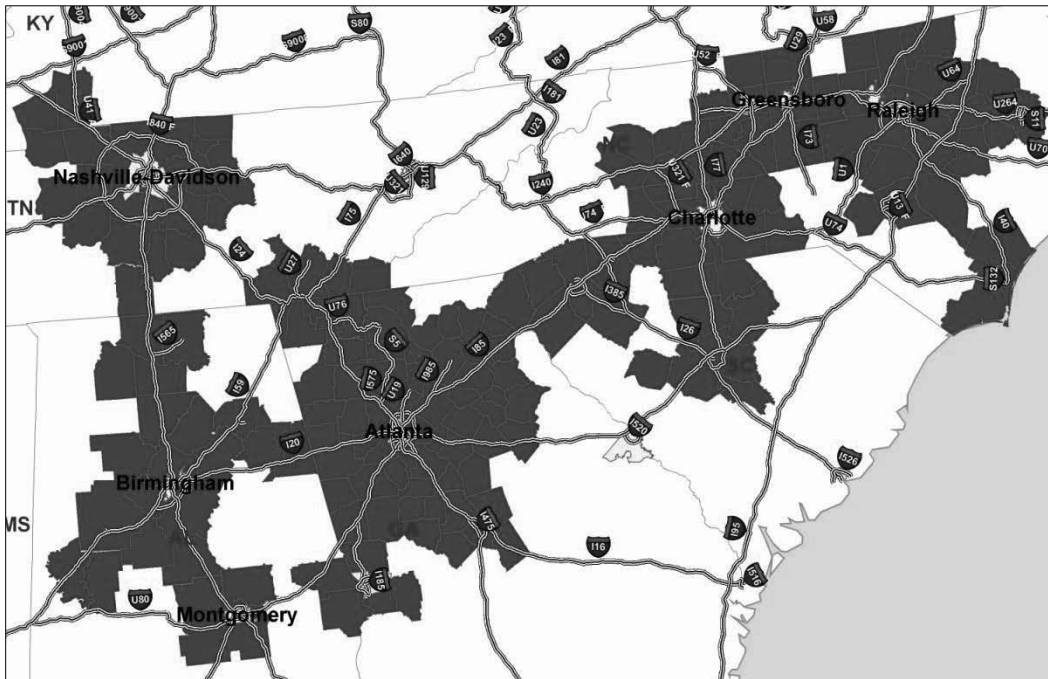
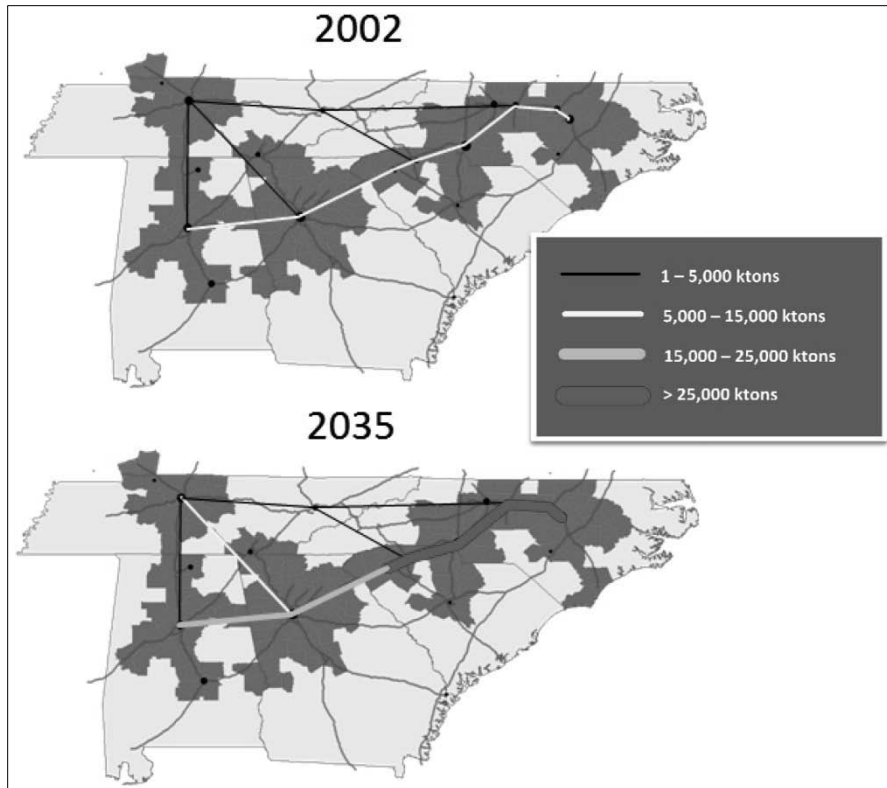


Figure 38. The Piedmont megaregion

The region is projected to produce 1.5 billion tons of commodities valued at \$1.7 trillion dollars (2002 dollars) by 2035. Similar to other megaregions, approximately 60 percent of freight, measured by weight, is expected to stay in the region. As of 2002, less than 1 percent of freight moved by rail within the region and over 89 percent of freight moved by truck. This trend is expected to continue through 2035. The amount of freight moved by rail is projected to remain less than 1 percent while freight movement by truck is expected to increase to over 92 percent.

Figure 39 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. The I-85 corridor is the most critical transportation link in the region and is projected to experience a 245 percent increase in demand for freight capacity by 2035 from intra-region commodity movement alone. To a lesser extent, the I-75 corridor is also expected to require increased capacity.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 39. Changes of freight movement in key corridors of the Piedmont

j) The Texas megaregion

The Texas megaregion consists of four metropolitan centers contained almost entirely within the state of Texas, with the exception of a few counties in Oklahoma and Louisiana. The core city of the region is Houston, TX, which together with Dallas, TX to the north along the Interstate 45 (I-45) corridor and San Antonio, TX along the Interstate 10 (I-10) corridor to the southwest, forms the Texas Triangle. Additionally, the fourth metropolitan center, Austin, TX is located along the Interstate (I-35) corridor, which connects Dallas and San Antonio to complete the Texas triangle (Figure 40).

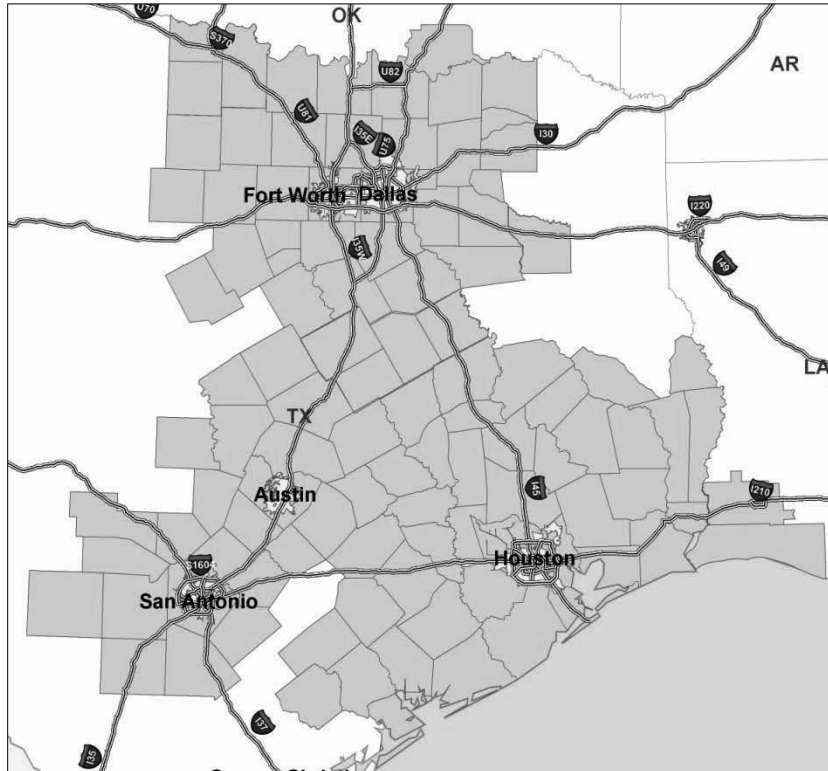


Figure 40. The Texas megaregion

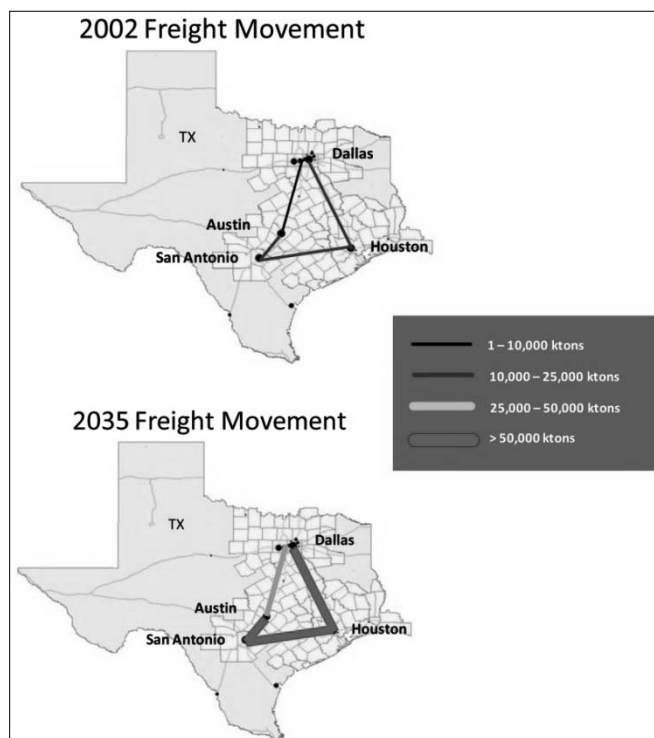
The region is projected to produce 2.03 million kilotons of commodities valued at \$2.8 trillion dollars (2002 dollars) by 2035. While the vast majority of the tonnage remains in the megaregion (67 percent), only 40 percent of the value of commodities remains in the region, indicating that bulkier goods remain within the region, while higher-value goods travel further. In either case, the megaregion itself represents a larger commodity market than any other destination.

Figure 41 shows the demand for freight capacity in terms of tonnage for the key freight corridors in the region in 2002 and as projected for 2035. In total, the region is projected to experience a tremendous 313% increase in demand for total freight capacity by 2035 from intra-region commodity movement alone, much greater growth than many other megaregions. The I-45 corridor from Dallas to Houston and the I-10 corridor between San Antonio and Houston are the most critical transportation links in the region, both

growing to over 50,000 ktons of freight, but I-35 is nearly as important, with the segment from Austin to San Antonio expected to handle 48,000 ktons of freight, predominantly by truck. Of note, though there is no direct Interstate highway connection, freight movement from Austin to Houston will reach nearly 23,000 kilotons by 2035.

Movement of freight by rail garnered a 3.4 percent share of freight movement within the region in 2002, while over 70 percent of freight moved by truck. More than 20% of freight moved by pipeline, due to the larger quantity of oil and natural gas in the region. These trends are expected to continue through 2035, with the amount of freight moved by rail rising to just over 5 percent while freight movement by truck will decrease slightly to 63 percent.

Forming a triangle, the I-10, I-35, and I-45 corridors are all expected to see a roughly three-fold increase in freight movement, primarily by truck. The Houston-Dallas I-45 corridor will see the greatest increase at 387% to nearly 53,000 ktons, while the Houston-San Antonio I-10 corridor will see the greatest total freight tonnage at over 61,000 ktons in 2035. Improving each of these interstates is crucial to prevent congestion, which would limit growth. However, tripling capacity on these highways may be nearly impossible. Thus, increasing freight rail capacity along each of these three corridors is also an important and sustainable investment to facilitate the movement of goods in the region, as it would likely help alleviate congestion on the highways. Currently, there is no Interstate linkage between Austin and Houston, yet this is set to become one of the busiest freight movements, with 23,000 ktons by 2035. Implementing rail and or improved highways along this corridor could free capacity on other corridors.



Source: FHWA. (2006). Freight Analysis Framework (FAF)

Figure 41. Changes of freight movement in key corridors of the Texas

3. Summary of freight trends in megaregions

Freight transportation investment should be focused on corridors with the greatest potential return on investment and with the greatest probability of future congestion. Because the majority of freight movement by weight occurs within the megaregions, the highest priority is placed on vital corridors connecting the various metro-centers.

Current projections from the FAF modal analysis indicate that if current trends continue, an overwhelming majority of future freight transportation in megaregions is expected to be handled by truck, while there will be small variations by megaregion. However, highway capacity is inherently limited by physical and other practical constraints. Rail provides a less expensive, more environmentally-friendly, and more fuel-efficient alternative. Complementing existing highway corridors with new or enhanced rail lines will increase total freight capacity and potentially reduce demand on congested highways. Meanwhile, improvements such as intermodal terminals and computerized traffic control will further increase rail efficiency and enable viable just-in-time solutions.

SECTION VI. CONCLUSIONS

Growth patterns and urban relationships between metropolitan areas in the United States and international metropolitan areas are shifting toward the inclusion of a new structure reflected in the concept of the megacity-regions or the megaregion. While this new spatial structure provides a wealth of possible benefits that stem from the agglomeration of activities, it is also faced with many challenges especially in effectively planning for the supporting infrastructure needs of these regions, which ultimately influences their prosperity.

The fragmented political structure in which transportation planning occurs in the United States was at one time feasible because the urban problem was more localized in nature. However, due to population and economic growth, urban area expansion and increased relationships between urban areas and regions which are supported by progressive economic, communication and infrastructure connections, planners are faced with addressing problems that are system-related and thus cannot be spatially constrained to the political boundaries of a city, a county, or even to a single state.

This research explored how planning and investment decisions might be approached differently to provide more regional or national infrastructure systems that are supportive of the needs of the megaregion. This new planning structure, explored at the scale of the megaregion, is not proposed to replace other approaches to planning at the local or regional level but instead it is intended to add to the tools available to practitioners, authorities and policy makers so that more effective planning and investment decisions can be made. As a preliminary step to suggesting a new planning framework or process for the megaregion, this report has identified the transportation challenges that the megaregion faces, the current approaches to transportation planning, and new or adaptive approaches to transportation planning that have occurred over time that are reflected in the organizations, projects or programs that were reviewed.

The identification of “best practices” of multi-jurisdictional or coordinated and collaborative planning efforts through assessment of the literature and case reviews, indicates that professionals have been trying to adapt to the changing planning environment for some time now. This study adds to these activities through a more comprehensive look at the issues, and at practices that are useful in establishing a more formal functional framework.

Planning that looks beyond jurisdictional boundaries has become more evident today, however,; through a review of cases it is apparent that the planning community has been slowly adapting its approach to address these problems for some time. The evolution of the metropolitan planning organization (MPO) is reflective of how transportation planning has tried to adapt to the changing planning environment. The roles and the responsibilities undertaken by MPOs in some cases go beyond addressing transportation issues to include land-use planning, project selection and implementation,

transit operations, and environmental issues, including air quality and water management.

MPOs, as reflected in the Florida case, have realized that planning areas have begun to overlap with the growth and expansion of urbanized areas. Thus, the planning decisions made in one locale are very responsive to the decisions made in adjacent urbanized areas. Acknowledging that transportation issues are more regional in nature, Florida's authorities have supported and encouraged MPOs to work together or coordinate their planning efforts to address regional problems. As a result of this, many of the MPOs in the State of Florida have partnered with adjacent MPOs or have formed regional MPO alliances. The Florida DOT also fosters strong communication with its MPOs, and as a result, has been very active in promoting such collaborations. The State has also created, within the Florida DOT, the Transportation Regional Incentive Program (TRIP) which makes state funds available to entities that formally collaborate on transportation projects that are of regional significance. This incentive program has encouraged collaboration in transportation planning. Regional MPOs in the state have also suggested that the MPO has its place in representing the local interests of residents, and as such, does not support the idea of consolidation. Through increased collaboration and coordination, they believe that both regional and local goals can be achieved.

In many of the cases reviewed, it is apparent that planning at the regional level needs to promote or establish a regional identity. The Arizona Sun Corridor, the Central Florida Region, Randstad and Oresund all reference the need for a region to establish a concrete regional identity. By creating an identity, local authorities can see themselves as part of something greater which contributes to creating a sense of ownership, and identifies their respective responsibilities in achieving a regional vision. In the Central Florida Region and the Sun Corridor, many reports, studies and community outreach efforts are focused on creating a regional brand. These activities have achieved an outcome that is two-fold. First, they have caused local citizens, businesses, organizations and government officials to "buy in" to the vision, which has promoted increased collaboration between groups. It has also made a region think critically about its regional resources and how to best present its competitive advantage to the global marketplace. This culture of collaboration will be very important in planning for regional transportation and infrastructure needs. How this paradigm shift occurs will be important moving forward.

The research completed to date suggests that merging or consolidating the operation of MPOs or similar organizations into a megaregion level organization may be neither possible nor desirable. As shown in the case of Florida, regional organizations are more supportive of regional coordination when they can maintain their respective identities. In the case of establishing Oresund Region, cross country integration is regulated with "governance without government". This framework promotes "governance" which tries to establish a set of rules and norms that defines practices, assigns roles and responsibilities, and guides interactions between organizations, in order to tackle collective problems".

Consistent with this, it is suggested that the megaregion scale needs to build the new governance with public and private partnerships and cross-sectoral alliances to pursue common vision and interests of the regions. Here, federal leadership that can link and coordinate these fragmented actors and multi-scale decision making systems is essential, and a mechanism that defines the federal role, and delineates activities and goals, can be forged into the megaregion governance and planning structure. In addition, an incentive funding system, provided at the federal level, that supports projects and initiatives that cross jurisdictions and address regional interests may encourage megaregion efforts.

The identification of common interests, and potential challenges confronting megaregions is important to the successful delineation of a proposed megaregion governance and project implementation structure. In addition to transportation, other sectors, such as energy and the environment outlined in the cases of the Northwest Power Planning Council, and the Transportation and Climate Initiative, can be well addressed at the megaregion scale. Also, these sectors are closely related to transportation planning.

Current assessment suggests that the spatial boundaries of megaregions are not necessarily rigid blueprints. In fact, different criteria may be employed to accomplish different program objectives and goals. They are not only malleable based on regional growth and prosperity, but also should include some capacity for flexibility depending on the planning purposes. Different purposes, such as environmental, economic development, and transportation planning by mode, require different criteria to delineate and operate within megaregions.

In addition, two major challenges megaregions currently face are an increasing demand on vital corridors within megaregions that are already suffering crippling congestion, and fragmented planning systems that discourage regions from working together to address common problems and opportunities. In particular, more than half of megaregions have dispersed planning boundaries of MPOs. However, an opportunity is created by the fact that megaregions are defined by agglomerations of similar economic activity, transportation links, and cultural similarities that can help regions easily identify their common goals and identities.

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APPENDIX

APPENDIX 1: List of Multi-State MPOs in the United States

MPO	Member States
Augusta Regional Transportation Study	Georgia, South Carolina
Belomar Regional Council	West Virginia, Ohio
Bi-State MPO	Arkansas, Oklahoma
Bi-State Regional Commission	Illinois, Iowa
Bristol Urban Area MPO	Tennessee, Virginia
Brooke-Hancock-Jefferson MPC	Ohio, West Virginia
Chattanooga-Hamilton County RPC	Tennessee, Georgia
Clarksville-Montgomery County MPO	Tennessee, Kentucky
Columbus-Phenix City MPO	Georgia, Alabama
Cowlitz-Wahkiakum COG	Washington, Oregon
Delaware Valley RPC	Pennsylvania, New Jersey
Dubuque Metro Area Transportation Study	Iowa, Wisconsin, Illinois
Duluth-Superior Metro Interstate Council	Minnesota, Wisconsin
East-West Gateway COG	Missouri, Wisconsin
El Paso MPO	Texas, Mexico
Evansville Urban Transportation Study	Indiana, Kentucky
Fargo-Moorhead Metropolitan COG	North Dakota, Minnesota
Florida-Alabama Urbanized Area TPO	Florida, Alabama
Grand Forks-East Grand Forks MPO	North Dakota, Minnesota
Hagerstown-Eastern Panhandle MPO	Maryland, West Virginia, Pennsylvania
Kentuckiana Regional Planning and Development Agency	Kentucky, Indiana

Kingsport MPO	Tennessee, Virginia
KYOVA Interstate Planning Commission	West Virginia, Ohio, Kentucky
La Crosse Area Planning Committee	Wisconsin, Minnesota
Lewis-Clark Valley MPO	Idaho, Washington
Memphis Urban Area MPO	Tennessee, Mississippi
Mid-America Regional Council	Missouri, Kansas
National Capital Region TPB	DC, Maryland, Virginia
Ohio-Kentucky-Indiana Regional COG	Ohio, Kentucky, Indiana
Omaha-Council Bluffs Metropolitan Area Planning Agency	Nebraska, Iowa
Salisbury/Wicomico MPO	Maryland, Delaware
Siouxland Interstate Metro Planning Council	Iowa, South Dakota, Nebraska
St. Joseph Area transportation Study Organization	Missouri, Kansas
State Line Area Transportation Study	Wisconsin, Illinois
Tahoe MPO	Nevada, California
Texarkana MPO	Texas, Arkansas
Toledo Metropolitan Area COG	Ohio, Michigan
Wilmington Area Planning Council	Delaware, Maryland
Wood-Washington-Wirt Interstate Planning Commission	West Virginia, Ohio
Yuma MPO	Arizona, California

Source: Turnbull, K.F. (2006)

APPENDIX 2: List of Contiguous MPOs within Megaregions

Megaregion	Full name	Acronym	ST	Website	Prime UA
Arizona	Pima Association of Governments	PAG	AZ	http://www.pagnet.org/TPD/	Tucson, AZ
Arizona	Yuma MPO	YMPO	AZ	http://www.ympo.org/	Yuma, AZ--CA (part)
Arizona	Maricopa Association of Governments	MAG	AZ	http://www.mag.maricopa.gov/division.cms?item=64	Phoenix-Mesa, AZ
California	San Diego Association of Governments	SANDAG	CA	http://www.sandag.org/index.asp?classid=13&useaction=home.classhome	San Diego, CA
California	Southern California Association of Governments	SCAG	CA	http://www.scag.ca.gov/	Los Angeles--Long Beach--Santa Ana, CA
California	Santa Barbara County Association of Govern	SBCAG	CA	http://www.sbcag.org/transplanning.html	Santa Barbara, CA (part)
California	Kern COG		CA	http://www.kerncog.org/transportation.php	Bakersfield, CA
California	San Luis Obispo COG	SLOCOG	CA	http://www.slocog.org/	San Luis Obispo, CA
California	Kings County Association of Governments	KCAG	CA	http://www.countyofkings.com/kcag	Hanford, CA
California	Regional Transportation Commission of S. Nevada	RTC	NV	http://www.rtcsonthernnevada.com/mpo/	Las Vegas, NV
California	Tulare County Association of Governments	TCAG	CA	http://www.tularecog.org	Visalia, CA
California	Association of Monterey Bay Area Government	AMBAG	CA	http://www.ambag.org/planning/transportation.html	Salinas, CA
California	Council of Fresno County Governments		CA	http://www.fresnocog.org/	Fresno, CA (part)
California	Merced County Association of Governments	MCAG	CA	http://www.mcag.cog.ca.us	Merced, CA
California	Madera County Transportation Commission		CA	http://www.maderactc.org	Madera, CA
California	Stanislaus COG	StanCOG	CA	http://www.stancog.org	Modesto, CA (part)
California	San Joaquin COG	SJCOG	CA	http://www.sjcog.org/	Stockton, CA
California	Bay Area MPO		CA	http://www.mtc.ca.gov/	San Francisco--Oakland, CA
California	Sacramento Area COG	SACOG	CA	http://www.sacog.org/	Sacramento, CA
California	Tahoe MPO	TMPO	NV	http://www.trpa.org/	
California	Butte County Association of Governments	BCAG	CA	http://www.bcag.org/_planning/index.html	Chico, CA
California	Regional Transportation Commission of Wash	RTC	NV	http://www.rtcwashoe.com/planning/	Reno, NV
Cascadia	Metro	METRO	OR	http://www.metro-region.org/	Portland--Vancouver, OR--WA (part)

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Cascadia	Southwest Washington Regional Transportation	RTC	WA	http://www.rtc.wa.gov/agency.htm	Portland, OR--WA (WA Part)
Cascadia	Thurston Regional Planning Council	TRPC	WA	http://www.trpc.org/programs/transportation/index.htm	Olympia--Lacey, WA
Cascadia	Puget Sound Regional Council	PSRC	WA	http://www.psrc.org/index.htm	Seattle, WA
Cascadia	Skagit MPO	SMPO	WA	http://www.scog.net/home/site/3481/default.aspx	Mount Vernon, WA
Cascadia	Whatcom COG		WA	http://www.wcog.org/DesktopDefault.aspx?tabid=87	Bellingham, WA (part)
Central	Lawrence-Douglas County Metropolitan Plann	LDCMPO	KS	http://www.lawrenceplanning.org/tr.shtml	Lawrence, KS
Central	Topeka-Shawnee County Metropolitan Planning		KS	http://www.topeka.org/planning/transportation_planning.shtml	Topeka, KS
Central	Mid-America Regional Council	MARC	MO	http://www.marc.org/transportation/	Kansas City, MO--KS
DC_VIRG	Hampton Roads MPO		VA	http://www.hrpdc.org/transport/mpo.shtml	Virginia Beach, VA
DC_VIRG	Tri Cities Area MPO		VA	http://www.craterpdc.state.va.us/MPO/mpo_main.htm	Richmond, VA (part)
DC_VIRG	Richmond Area MPO		VA	http://www.richmondregional.org/Urban%20Transp-MPO/urb_trans-mpo.htm	Richmond, VA (part)
DC_VIRG	Fredericksburg Area MPO	FAMPO	VA	http://www.famppo.gvregion.org	Fredericksburg, VA
DC_VIRG	National Capital Region Transportation Plan	TPB	DC	http://www.mwccog.org/transportation/tbp/	Washington, DC--MD--VA (part)
DC_VIRG	Winchester-Frederick County MPO		VA	http://www.winfredmpo.org	Winchester, VA
DC_VIRG	Baltimore Regional Transportation Board	BRTB	MD	http://www.baltometro.org/content.asp?id=23	Baltimore, MD (part)
DC_VIRG	Hagerstown-Eastern Panhandle MPO		MD	http://www.hepmpo.net/	Hagerstown, MD--PA--WV (part)
DC_VIRG	Cumberland MPO		MD	http://gov.allconet.org/mpo/about.html	Cumberland--Frostburg, MD--WV --PA (part)
Florida	Miami-Dade MPO		FL	http://www.metro-dade.com/mpo/	Miami, FL (part)
Florida	Collier County MPO		FL	http://www.colliercountympo.com/	Bonita Springs--Naples, FL (part)
Florida	Broward County MPO	BCMPO	FL	http://www.broward.org/mpo/	Miami, FL (part)
Florida	Lee County MPO		FL	http://www.mpo-swfl.org/	Cape Coral, FL

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Florida	Palm Beach County MPO		FL	http://www.pbcgov.com/mpo/	Miami, FL (part)
Florida	Charlotte County - Punta Gorda MPO		FL	http://www.ccmco.com/	North Port--Punta Gorda, FL (part)
Florida	Martin County MPO		FL	http://www.martincountympo.com	Port St. Lucie, FL (part)
Florida	Sarasota-Manatee MPO		FL	http://www.sarasota-manateempo.org/	Sarasota--Bradenton, FL (part)
Florida	St. Lucie MPO		FL	http://www.stluciempo.org/	Port St. Lucie, FL (part)
Florida	Indian River County MPO	IRCMPO	FL	http://www.ircgov.com/Boards/MPO/Index.htm	Vero Beach--Sebastian, FL (part)
Florida	Pinellas County MPO		FL	http://www.pinellascounty.org/MPO/default.htm	Tampa--St. Petersburg, FL (part)
Florida	Hillsborough County MPO		FL	http://www.hillsboroughmpo.org	Tampa--St. Petersburg, FL (part)
Florida	Polk County Transportation Planning Organization	TPO	FL	http://www.polk-county.net/county_offices/tpo/	Lakeland, FL (part)
Florida	Brevard MPO		FL	http://www.brevardmpo.com/	Palm Bay--Melbourne, FL
Florida	METROPLAN Orlando		FL	http://www.metroplanorlando.com/	Orlando, FL (part)
Florida	Pasco County MPO		FL	http://www.pascocountyfl.net/menu/index/mpoiindex.htm	Tampa--St. Petersburg, FL (part)
Florida	Hernando County MPO		FL	http://www.hernandocounty.us/mpo/	Brooksville, FL (part)
Florida	Lake-Sumter MPO		FL	http://www.lakesumtermpo.com	Leesburg-Eustis, FL (part)
Florida	Volusia County MPO		FL	http://www.volusiacountympo.com/	Daytona Beach--Port Orange, FL (part)
Florida	Ocala - Marion County Transportation Plan		FL	http://www.ocalamariantpo.org/	Ocala, FL
Florida	Metropolitan Transportation Planning Organ	MTPO	FL	http://www.ncfrpc.org/mtpo/	Gainesville, FL
Midwest	Radcliff-Elizabethtown MPO		KY	http://www.itadd.org/ced-mpo.shtml	Radcliff-Elizabethtown, KY
Midwest	Louisville Area MPO		KY	http://www.kipda.org/transport/	Louisville, KY--IN
Midwest	KYOVA Interstate Planning Commission	KYOVA	WV	http://www.wvs.state.wv.us/kyova/	Huntington, WV--KY--OH (WV-OH part)
Midwest	Ashland Area MPO		KY	http://www.fivco.org	Huntington, KY--OH--WV (KY part)
Midwest	Cincinnati-Northern Kentucky MPO		OH	http://www.oki.org/transportation/index.html	Cincinnati, OH--KY--IN
Midwest	Columbus Area MPO	CAMPO	IN	http://campo.in.gov/index.php	Columbus, IN

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Midwest	Morgantown-Monongalia County Transportation	MMCTPO	WV	http://www.planttogether.org/	Morgantown, WV
Midwest	Indianapolis MPO		IN	http://www.indympo.org/home.htm	Indianapolis, IN
Midwest	Miami Valley Regional Planning Commission	MVRPC	OH	http://www.mvrpc.org/tr/	Dayton, OH (part)
Midwest	Clark County-Springfield Transportation St		OH	http://www.donet.com/~clarktcc/	Springfield, OH
Midwest	Belmont-Ohio-Marshall Transportation Study	BOMTS	WV	http://www.belomar.org/trans.htm	Wheeling, WV--OH (part)
Midwest	Mid-Ohio Regional Planning Commission	MORPC	OH	http://www.morpc.org/web/transportation/transportationmain.htm	Columbus, OH (part)
Midwest	Licking County Area Transportation Study	LCATS	OH	http://www.lcats.org/main.asp	Newark, OH
Midwest	Madison County COG	MCCOG	IN	http://www.mccog.net/transportation.htm	Anderson, IN (part)
Midwest	Delaware-Muncie Metropolitan Plan Commission	DMMPC	IN	http://www.co.delaware.in.us/departments/PlanCommission2/	Muncie, IN
Midwest	Brook-Hancock-Jefferson Metropolitan Planning Commission?	BHJMPC	OH	http://www.bhjmpc.org/	Weirton--Steubenville, OH--WV--PA (OH--WV part)
Midwest	Southwestern Pennsylvania Commission	SPC	PA	http://www.spcregion.org/trans.shtml	Pittsburgh, PA
Midwest	Cambria County MPO		PA	http://www.co.cambria.pa.us/cambria/cwp/view.asp?A=3&Q=499754	Johnstown, PA (part)
Midwest	Kokomo & Howard County Governmental Coordination	KHCGCC	IN	http://www.kokomompo.com/	Kokomo, IN (part)
Midwest	Richland County Regional Planning Commission	RCRPC	OH	http://www.rcrpc.org	Mansfield, OH
Midwest	Stark County Area Transportation Study	SCATS	OH	http://www.rpc.co.stark.oh.us/	Canton, OH
Midwest	Akron Metropolitan Area Transportation Stu	AMATS	OH	http://ci.akron.oh.us/AMATS/	Akron, OH (part)
Midwest	Kankakee County Regional Planning Commission	KCRPC	IL	http://planning.k3county.net/transportation.htm	Kankakee, IL
Midwest	Eastgate Regional COG	EASTGATE	OH	http://www.eastgatecog.org/	Youngstown, OH--PA (part)
Midwest	Shenango Valley Area Transportation Study	SVATS	PA	http://www.mcrcpc.com/mpo.htm	Youngstown, OH--PA (PA part)
Midwest	Policy Committee of the Erie Regional Plan		OH	http://www.erie-county-ohio.net/planning/mpo.htm	Sandusky, OH
Midwest	Northeast Ohio Areawide Coordinating Agency	NOACA	OH	http://www.noaca.org	Cleveland, OH (part)

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Midwest	Toledo Metropolitan Area COG	TMACOG	OH	http://www.tmacog.org/tran_body.htm	Toledo OH--MI (part)
Midwest	Northwest Indiana Regional Planning Commission	NIRPC	IN	http://www.nirpc.org/	Chicago, IL--IN (IN part)
Midwest	Chicago Metropolitan Agency for Planning	CMAP	IL	http://www.cmap.illinois.gov	Chicago, IL--IN (IL part)
Midwest	DeKalb Area Transportation Study		IL	http://www.cityofdekalb.com/ComDev/DSATS.htm	DeKalb, IL
Midwest	Kalamazoo Area Transportation Study	KATS	MI	http://www.katsmpo.org/	Kalamazoo, MI
Midwest	Region 2 Planning Commission	R2PC	MI	http://www.region2planning.com/	Jackson, MI
Midwest	Rockford Area Transportation Study	RATS	IL	http://www.ci.rockford.il.us/government/works/index.cfm?section=planning&id=977	Rockford, IL
Midwest	Battle Creek Area Transportation Study	BCATS	MI		Battle Creek, MI (part)
Midwest	Southeast Michigan COG	SEMCOG	MI	http://www.semcog.org/TranPlan/	Detroit, MI
Midwest	State Line Area Transportation Study	SLATS	WI	http://www.ci.beloit.wi.us/	Beloit, WI--IL
Midwest	Janesville Area MPO		WI	http://www.ci.janesville.wi.us/citysite/DeptHome.aspx?Dept=planning	Janesville, WI
Midwest	Tri-County Regional Planning Commission	TCRPC	MI	http://www.tri-co.org/	Lansing, MI (part)
Midwest	Macatawa Area Coordinating Council	MACC	MI	http://www.the-macc.org/transportation.asp	Holland, MI
Midwest	Southeastern Wisconsin Regional Planning Commission?	SEWRPC	WI	http://www.sewrpc.org/	Milwaukee, WI (part)
Midwest	Grand Valley Metropolitan Council	GVMC	MI	http://www.gvmc.org/transportation/index.shtml	Grand Rapids, MI (part)
Midwest	Genesee County Metropolitan Planning Commission	GCMP	MI	http://www.co.genesee.mi.us/gcmpc-plan/index.htm	Flint, MI (part)
Midwest	Madison Area MPO		WI	http://www.madisonareampo.org/	Madison, WI
Midwest	Western Michigan Shoreline Regional Development	WMSRDC	MI	http://www.wmsrdc.org	Muskegon, MI
Midwest	Saginaw Metropolitan Area Transportation Study	SMATS	MI	http://www.saginawcounty.com/SCPlanning/smat.htm	Saginaw, MI
Midwest	Bay City Area Transportation Study	BCATS	MI	http://www.co.bay.mi.us/bay/home.nsf/Public/Transportation_Planning_Division.htm	Bay City, MI

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Midwest	Sheboygan MPO		WI	http://www.baylakerpc.org	Sheboygan, WI
Midwest	Fond du Lac Area MPO		WI	http://www.eastcentralrpc.org/FondduLacMPO/index.htm	Fond du Lac, WI
Midwest	Oshkosh MPO		WI	http://www.eastcentralrpc.org/OshkoshMPO/index.htm	Oshkosh, WI (part)
Midwest	Appleton/Fox Cities MPO		WI	http://www.eastcentralrpc.org/AppletonMPO/index.htm	Appleton, WI
Northeast	South Jersey Transportation Planning Organ	SJTPO	NJ	http://www.sjtpo.org	Atlantic City, NJ
Northeast	Wilmington Area Planning Council	WILMAPCO	DE	http://www.wilmapco.org/	Philadelphia, DE--NJ--MD--PA (DE part)
Northeast	York Area MPO		PA	http://www.ycpc.org/transportation.htm	York, PA
Northeast	Delaware Valley Regional Planning Commission	DVRPC	PA	http://www.dvrpc.org/transportation.htm	Philadelphia, PA--DE--MD--NJ (part)
Northeast	Lancaster County Transportation Coordinating Committee	LCTCC	PA	http://www.co.lancaster.pa.us/planning/cwp/view.w.asp?a=478&q=388181&planningNav=5884	Lancaster, PA (part)
Northeast	Harrisburg Area Transportation Study	HATS	PA	http://www.tcrpc-pa.org/hats.htm	Harrisburg, PA (part)
Northeast	Lebanon County MPO	LEBCO MPO	PA	http://dsf.pacounties.org/lebanon/cwp/view.asp?A=3&Q=477676	Lebanon, PA
Northeast	Reading Area Transportation Study	RATS	PA	http://www.co.berks.pa.us/planning/site/default.asp?planningNav=26451	Reading, PA (part)
Northeast	North Jersey Transportation Planning Authority	NJTPA	NJ	http://www.njtpa.org	New York--Newark, NY--NJ (NJ part)
Northeast	Lehigh Valley Transportation Study	LVTS	PA	http://www.lvpc.org	Allentown--Bethlehem, PA--NJ (part)
Northeast	South Western Region MPO		CT	http://www.swrpa.org/mpo	Bridgeport--Stamford, CT--NY (part)
Northeast	Greater Bridgeport / Valley MPO		CT	http://www.gbrpa.org/	Bridgeport--Stamford, CT--NY (part)
Northeast	Lackawanna-Luzerne Transportation Study		PA	http://www.lackawannacounty.org/viewDepartment.aspx?DeptID=15	Scranton, PA (part)
Northeast	Greater Bridgeport / Valley MPO		CT	http://www.valleycog.org/transportation.html	Bridgeport--Stamford, CT--NY (part)
Northeast	Connecticut River Estuary Regional Planning	CRERPA	CT	http://www.crerpa.org/transportation.php	New Haven, CT (part)
Northeast	South Central Regional COG	SCRCOG	CT	http://www.scrco.org	New Haven, CT (part)
Northeast	Orange County Transportation Council	NOCTC	NY	http://www.orangecountygov.com/orgMain.asp?orgid=144&ID=&storyID=1744	Middletown, NY (part)
Northeast	Housatonic Valley Council of Elected Officials	HVCEO	CT	http://www.hvceo.org/	Danbury, CT--NY (CT part)
Northeast	Southeastern Connecticut COG	SCCOG	CT	http://www.seccog.org	New London--Norwich, CT (part)

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Northeast	Midstate Regional Planning Agency	MRPA	CT	http://www.midstatepa.org/13.html	Hartford, CT (part)
Northeast	Council of Governments of the Central Naug	COGCNV	CT	http://www.cogcnv.org	Waterbury, CT (part)
Northeast	Central Connecticut Regional Planning Agency	CCRPA	CT	http://www.ccrpa.org/	Hartford, CT (part)
Northeast	State Planning Council	SPC	RI	http://www.planning.state.ri.us/transportation/default.htm	Providence, RI (part)
Northeast	Cape Cod MPO		MA	http://www.gocapecod.org/	Barnstable Town, MA (part)
Northeast	Poughkeepsie-Dutchess County Transportation	PDCTC	NY	http://www.dutchessny.gov/pdctc.htm	Poughkeepsie--Newburgh, NY (part)
Northeast	Southeastern Regional Planning & Economic	SRPEDD	MA	http://www.srpedd.org/	New Bedford, MA
Northeast	Capital Region COG	CRCOG	CT	http://www.crcog.org/	Hartford, CT (part)
Northeast	Ulster County Transportation Council	UCTC	NY	http://www.co.ulster.ny.us/planning/tran.html	Kingston, NY
Northeast	Old Colony MPO		MA	http://www.ocpcrpa.org/	Boston, MA--NH (part)
Northeast	Binghamton Metropolitan Transportation Stu	BMTS	NY	http://www.gobroomecounty.com/departments/BMTS.php	Binghamton, NY--PA (NY part)
Northeast	Elmira-Chemung Transportation Council	ECTC	NY	http://www.elmirampo.org/	Elmira, NY
Northeast	Pioneer Valley MPO	PVMPPO	MA	http://www.pvpc.org/web-content/html/trans/trans_index.html	Springfield, MA--CT (MA part)
Northeast	Central Massachusetts MPO		MA	http://www.cmrpc.org/	Worcester, MA--CT (part)
Northeast	Boston MPO		MA	http://www.ctps.org/bostonmop/	Boston, MA--NH (part)
Northeast	Berkshire MPO		MA	http://berkshireplanning.org/3/	Pittsfield, MA
Northeast	Montachusett MPO	MMPO	MA	http://www.mrpc.org/	Leominster--Fitchburg, MA (part)
Northeast	Northern Middlesex MPO	NMMPO	MA	http://www.nmcog.org	Boston, MA--NH (part)
Northeast	Merrimack Valley MPO	MVMPPO	MA	http://www.mvpc.org	Boston, MA--NH (part)
Northeast	Nashua Regional Planning Commission	NRPC	NH	http://www.nashuarpc.org/transportation/	Nashua, NH (part)

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Northeast	Capital District Transportation Committee	CDTC	NY	http://www.cdcmpo.org	Albany NY
Northeast	Rockingham Planning Commission	RPC	NH	http://www.rpc-nh.org/	Boston, MA--NH (part)
Northeast	Southern New Hampshire Planning Commission	SNHPC	NH	http://www.snhpc.org	Manchester, NH (part)
Northeast	Syracuse Metropolitan Transportation Council	SMTC	NY	http://www.smtcmpo.org/	Syracuse, NY
Northeast	Kittery Area Comprehensive Transportation	KACTS	ME	http://www.smrpc.org/transportation/kacts/kacts.htm	Dover--Rochester, NH--ME (ME part)
Northeast	Strafford Regional Planning Commission	SRPC	NH	http://www.straftford.org/	Dover--Rochester, NH--ME (NH part)
Northeast	Herkimer-Oneida Counties Transportation St	HOCTS	NY	http://www.ocgov.net/hoctsmmpo/transportation.htm	Utica, NY
Piedmont	Columbus-Phenix City Transportation Study	C-PCTS	GA	http://www.columbusga.com/MPO/CPCMPPO.html	Columbus, GA--AL (part)
Piedmont	Auburn - Opelika MPO		AL	http://www.alarc.org/lrcog/mpo.html	Auburn, AL
Piedmont	Tuscaloosa Area MPO		AL	http://www.warc.info/mpo.php	Tuscaloosa, AL
Piedmont	Birmingham MPO	BHAMMPO	AL	http://www.bhammpo.org/	Birmingham, AL
Piedmont	Calhoun Area Transportation Study		AL	http://www.earpdc.org/default.aspx?id=53	Anniston, AL
Piedmont	Atlanta Regional Commission	ARC	GA	http://www.atlantaregional.com	Atlanta, GA (part)
Piedmont	Madison Athens-Clarke Oconee Regional Tran	MACORTS	GA	http://www.athensclarkecounty.com/%7Eplanningdept/acorts/index.html	Athens--Clarke County, GA (part)
Piedmont	Gadsden-Etowah MPO		AL	http://www.cityofgadsden.com/Default.asp?ID=255	Gadsden, AL
Piedmont	Floyd-Rome Urban Transportation Study	FRUTS	GA	http://www.rome.ga.us/departments/planningcom.asp	Rome, GA
Piedmont	Gainesville-Hall MPO	GHMPO	GA	http://www.ghmpo.org/	Gainesville, GA (part)
Piedmont	Anderson Area Transportation Study	ANATS	SC	http://www.cityofandersonsc.com/departments/planning_and_transportation_division/transportation/anats/index.html	Anderson, SC

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Piedmont	Decatur MPO		AL	http://www.narcog.org/MPO.htm	Decatur, AL
Piedmont	Huntsville Area Transportation Study	HATS	AL	http://www.ci.huntsville.al.us/Planning/mpo.htm	Huntsville, AL
Piedmont	Dalton-Whitfield County MPO		GA	http://www.ngrdc.org/mpohome.html	Dalton, GA (part)
Piedmont	Greenville-Pickens Area Transportation Study	GPATS	SC	http://www.greenvilleplanning.com/transportation_planning/grats/index.htm	Greenville, SC
Piedmont	Rock Hill-Fort Mill Area Transportation Study	RFATS	SC	http://www.cityofrockhill.com/planning/RFATS.asp	Rock Hill, SC
Piedmont	Spartanburg Area Transportation Study	SPATS	SC	http://www.co.spartanburg.sc.us/govt/depts/pln/spats/index.htm	Spartanburg, SC
Piedmont	Fayetteville Area MPO	FAMPO	NC	http://www.fampo.org/	Fayetteville, NC
Piedmont	Chattanooga Urban Area MPO		TN	http://www.chcrpa.org/TPO.htm	Chattanooga, TN-GA (part)
Piedmont	Mecklenburg-Union MPO	MUMPO	NC	http://www.mumpo.org/	Charlotte, NC (part)
Piedmont	Cleveland Area MPO		TN	http://www.cityofclevelandtn.com/MPO/mpo.htm	Cleveland, TN
Piedmont	Gaston Urban Area MPO	GUAMPO	NC	http://www.cityofgastonia.com/dept/planning/trans/trans.cfm	Gastonia, NC (part)
Piedmont	Cabarrus-South Rowan Urban Area MPO	CSRMPPO	NC	http://www.crrmpo.org	Concord, NC
Piedmont	Capital Area MPO	CAMPO	NC	http://www.raleigh-nc.org/campo/Index.htm	Raleigh, NC (part)
Piedmont	High Point Urban Area MPO	HPMPO	NC	http://todfs2.ci.highpoint.nc.us/HPMPO/default.htm	High Point, NC
Piedmont	Rocky Mount Urban Area MPO		NC	http://www.ci.rockymount.nc.us/engineering/mpo.html	Rocky Mount, NC
Piedmont	Durham-Chapel Hill-Carrboro MPO	DCHCMP O	NC	http://www.dchcmpo.org/	Durham, NC (part)
Piedmont	Burlington-Graham MPO	BGMPO	NC	http://www.mpo.burlington.nc.us/	Burlington, NC
Piedmont	Greensboro Urban Area MPO	GUAMPO	NC	http://www.greensboronc.gov/Departments/GDOT/divisions/planning/metro/	Greensboro, NC (part)
Piedmont	Winston-Salem Urban Area MPO		NC	http://www.cityofws.org/Home/Departments/Transportation/Planning/Articles/MPO	Winston-Salem, NC
Texas	Houston-Galveston Area Council	H-GAC	TX	http://www.h-gac.com/HGAC/Departments/Transportation/default.htm	Houston, TX

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Megaregion	Full name	Acronym	ST	Website	Prime UA
Texas	Jefferson-Orange-Hardin Regional Transport	JOHRTS	TX	http://www.setrpc.org/index.php?option=com_content&task=view&id=84&Itemid=3	Beaumont, TX
Texas	Capital Area MPO	CAMPO	TX	http://www.campotexas.org/	Austin, TX
Texas	Bryan-College Station MPO	BCSMPO	TX	http://www.bcsmpo.org/	College Station--Bryan, TX
Texas	Killeen-Temple Urban Transportation Study	KTUDS	TX	http://www.ktuts.org/	Killeen, TX
Texas	Waco MPO		TX	http://www.waco-texas.com/mpo.htm	Waco, TX
Texas	North Central Texas COG	NCTCOG	TX	http://www.nctcog.org/trans/index.asp	Dallas--Fort Worth--Arlington, TX
Texas	Sherman-Denison MPO		TX	http://www.sdmpo.org/	Sherman, TX

