



Transportation Capacity Building Program

Planning for a Better Tomorrow

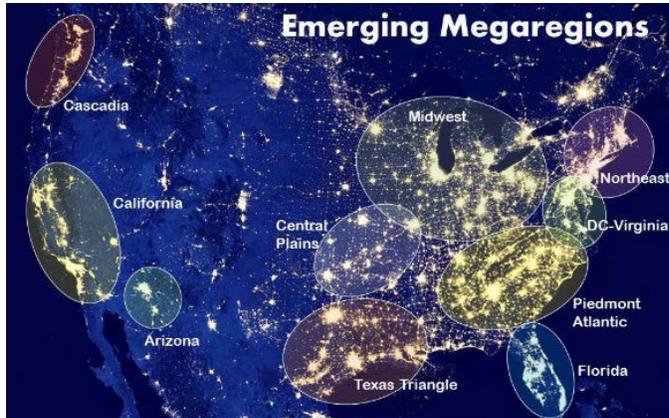
Megaregions Freight Movement Peer Exchange

Metro Atlanta Chamber, Atlanta, GA

November 6th and 7th, 2013



Megaregions Freight Movement Peer Exchange



*Metro Atlanta Chamber, Atlanta, GA
November 6th and 7th, 2013*

**Session Videos Available at
www.youtube.com/ConnectedPlaces**

Host Agency and Organizations:

Atlanta Regional Commission

Metro Atlanta Chamber

Center for Quality Growth and Regional Development at the Georgia Institute of Technology

Peer Agencies

Host Agency: Atlanta Regional Commission

Birmingham Metropolitan Planning Organization

Hampton Roads Transportation Planning Organization

Miami-Dade Metropolitan Planning Organization

Nashville Area Metropolitan Planning Organization

San Diego Association of Governments

Federal Agencies:

Federal Highway Administration

Federal Transit Administration

Volpe National Transportation Systems Center



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Introduction

The Atlanta Regional Commission (ARC), the Metro Atlanta Chamber, and the Center for Quality Growth and Regional Development (CQGRD) hosted a two-day peer exchange on megaregion freight planning including peer metropolitan planning organizations (MPO) from across the country, several private-sector logistics companies, university researchers, federal agencies, and state and local governments. The peer exchange was part of the U.S. Department of Transportation's Transportation Planning Capacity Building Peer Exchange program.

The peer exchange aimed to enhance organizational capacity for addressing freight issues at the megaregion scale within existing planning frameworks by leveraging data resources, partnerships, and peer planning experience. The following report provides background on freight planning in megaregions, describes the peer organization's freight planning experiences, and draws lessons from guest speakers and group discussion.



MPO Peers

- John Orr, Atlanta Regional Commission
- Michael Kray, Atlanta Regional Commission
- Jane Hayse, Atlanta Regional Commission
- Darrel Howard, Birmingham Metropolitan Planning Organization
- Carlos Roa, Miami-Dade Metropolitan Planning Organization
- Michael Skipper, Nashville Area Metropolitan Planning Organization
- Mary Beth Ikard, Nashville Area Metropolitan Planning Organization
- Elisa Arias, San Diego Association of Governments

Special Guest Speakers

- Page Siplon, Georgia Center of Innovation for Logistics
- Michelle Livingstone, Vice President of Transportation, The Home Depot
- Dr. Catherine Ross, Center for Quality Growth and Regional Development



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Other Speakers

Private Sector

- Mike Orr, Genuine Parts
- Dave Williams, Metro Atlanta Chamber

Public Sector

- John Eaves, Fulton County Chairman
- Tom Weyandt, Transportation Policy Advisor, City of Atlanta
- Toby Carr, Georgia Department of Transportation
- Tom McQueen, Georgia Department of Transportation
- Liza Joffrion, Tennessee Department of Transportation
- Roberto Canales, North Carolina Department of Transportation
- Dr. Arthur Wendel, Centers for Disease Control and Prevention
- Fred Bowers, Federal Highway Administration
- William Lyons, U.S. DOT/Volpe Center; Introduction and Facilitation

University

- Dr. Michael P. Hunter, Director of the National Center for Transportation Systems Productivity and Management (NCTSPM)
- Dr. David Jung-Hwi Lee, Center for Quality Growth and Regional Development
- Dr. Fred Ducca, University of Maryland

Freight Facility

- Curtis J. Foltz, Georgia Ports Authority
- Louis Miller, Hartsfield-Jackson Atlanta International Airport

Non-Governmental

- Eric Zimmerman, National Association of Regional Councils
- Rich Denbow, Association of Metropolitan Planning Organizations



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Megaregions Background

Megaregions are agglomerations of urban development linked by economic, infrastructure, environmental, and other relationships to form economic units with large degrees of interconnectedness (Ross, 2008). As such, megaregions include multiple urban cores, surrounding suburbs, and interstitial and connecting rural areas. Megaregions are polycentric polymorphous, evidenced in different shapes, sizes, and developmental stages but united by common interactions. Travel patterns, both freight and passenger commuting, are one of the characteristics that define and delineate megaregion interconnectedness.

The megaregion concept originates from the 1957 realization by geographer Jean Gottman of the unique spatial pattern of almost continuous development occurring in the American Northeast and the resulting interconnectedness of these cities (Gottmann, 1957). Since then, Researchers have identified 10 or 11 American megaregions in all parts of the contiguous United States, and the trend is evidenced abroad, particularly in Europe and Asia.

Megaregions offer advantages to local and national economies. According to Sassen (2007), megaregions incorporate high levels of economic diversity, which may allow for economic processes that have relocated elsewhere, often overseas, to return and benefit from close proximity to complementary industries. Manufacturing may be one example of an activity that has relocated but could benefit from proximity effects. Megaregions also offer the possibility of more efficient or effective infrastructure provision and management by broadening the decision making scope and reducing redundancies. Megaregions may allow local governments to address a problem with shared goals and resources that would remain intractable to a single government. Megaregion analysis also can reveal connections among locations where decisions need to be made at a larger scale to be effective. For example, bottlenecks and congestion within the urban core affects accessibility and attractiveness of the entire region, though none of the regional partners can adequately address these issues without a collaborative multi-jurisdictional effort. Regional action must focus on the geographies containing the problem or opportunity that affects the region. Policy makers can support the private sector and ultimately make their region more competitive within the international economy by taking action to increase connectivity by considering and supporting the megaregion as a cohesive unit. This will decrease costs and increase the competitiveness of the megaregion. The structure of the international economy favors global competition at the scale of the megaregion, so strengthening a megaregions' competitiveness will also therefore boost the prospects for the cities and businesses located within the megaregion.

The Federal Highway Administration has supported efforts to fully capitalize on the advantages of planning at the scale of the megaregion, including funding university research, moderating quarterly working groups among researchers and practitioners, and recently creating a website to combine information useful to researchers and practitioners at:

<http://www.fhwa.dot.gov/planning/megaregions/>.

The Federal Highway Administration also sponsored an early peer exchange on the topic called "Megaregions Planning for MPOs and Partners," hosted by the Maricopa Association of Governments on May 9th and 10th, 2012 in Phoenix, Arizona. The peer exchange included five national peer MPOs and local, state, and federal transportation officials who came together to exchange best practices, share experiences, successes, challenges, and motivations related to



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megaregion planning, and identify research, technical, or policy needs to advance megaregion-scale transportation planning. The peer exchange revealed a wide participation in megaregion-scale structures of different levels of formality, and for different purposes. Examples include Planning at the Edge, which brings together nine Northeastern MPOs including the Delaware Valley Regional Planning Commission to coordinate transportation issues that cross MPO boundaries, and the Apalachicola- Chattahoochee Flint Stakeholders Groups coordinated by the Atlanta Regional Commission. Additional information and a summary of the proceedings can be found at: http://www.planning.dot.gov/peer/Phoenix/megaregions_planning.asp.

Many key themes for megaregion planning emerged from the peer exchange, including the importance of economic competitiveness, establishing governance without new government, flexible megaregion boundaries, and alternative transportation modes. One of the major findings of this earlier peer exchange is that improving freight transportation performance is very important for megaregions and should be addressed from a megaregions perspective because of the cross-border, spatially dispersed character embedded in international supply chains. The current peer exchange builds from the recognition of freight's role in megaregion-scale transportation planning to elucidate freight practices, needs, and approaches.

Atlanta is an appropriate place to discuss planning for freight at a megaregion scale. Historically, Atlanta exists as a city in part because of its location at the end of a rail line. As such, it has subsequently grown into a passenger and freight rail hub, which ultimately was buttressed by the three highway corridors that intersect in Atlanta and the growth of the Atlanta Hartsfield-Jackson International Airport. Atlanta also functions as a major origin and destination for goods movement within the Piedmont Atlantic Megaregion, and the region's transportation links carry freight among the partners. Simultaneously, the region has struggled with issues common to most major cities such as chronic congestion, air pollution, public health issues, inequality, and loss of green space. The megaregions framework offers solutions within this context.



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MPOs Planning for Megaregions

For the peer MPO session, representatives from each participating MPO the megaregion issues that it faces and the approaches that they use regarding freight. The peers MPOs came from all parts of the country and have unique experience in megaregion issues.

- **The Atlanta Regional Commission (ARC)** is the MPO for the metro Atlanta region in the Piedmont Atlantic Megaregion. Speakers from the Atlanta Regional Commission include Jane Hayse, Director of the Center for Livable Communities; Michael Kray, Principle Planner at the ARC.
- **The Birmingham Metropolitan Planning Organization** offers the perspective of a smaller urban area also in the Piedmont Atlantic Megaregion and that is home to a growing manufacturing industry. Darrel Howard, Deputy Director of Planning at the MPO, presented economic and freight conditions in the Birmingham Area.
- **The Hampton Roads Transportation Planning Organization (HRTPO)** oversees transportation planning in a region composed of many distinct cities and rural areas that have nonetheless seen themselves as united around Virginia's eastern tidewaters. The convergence of the military, port traffic, and tourism give it a unique set of freight characteristics. Rob Case, Principle Transportation Engineer, presented the freight perspective of the Hampton Roads Transportation Planning Organization.
- **The Miami-Dade MPO** is at the southern tip of the Florida Megaregion, and it has traditionally connected the United States with the countries farther south. Carlos Roa discussed the MPO's role in the megaregion and the region's development
- **The Nashville Area MPO** is in the Piedmont Atlantic Megaregion. The region has had steady growth, leading it to benefit from new opportunities but also posing challenges to traditional quality of life. Mary Beth Ikard, the Nashville Communications Director, discussed recent developments in the Nashville area, and explained how the MPO is pursuing diverse goals in its transportation planning.
- **The San Diego Association of Governments (SANDAG)** is at the southern end of the California Megaregion. It thrives as a result of the close connection with Mexico, and the organization has been planning for new border infrastructure to support continued growth. The following section summarizes key points about each MPO. Elisa Arias, Principal Regional Planner, discussed several initiatives that SANDAG is undertaking, particularly its work to improve freight movement across the U.S.-Mexico border crossing.

The speakers from peer MPOs, private-sector logistics leaders, state departments of transportation, and other affiliated organizations addressed a variety of topics related to the different aspects of freight planning in megaregions. Topics include—

- Transportation, Freight, and Megaregions— The Future of the Piedmont Atlantic Megaregion



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- Private Sector Decision-Making: Supply Chain, Logistics & Distribution Centers in Megaregions
- Overview from Piedmont Atlantic Megaregion (PAM) Peer MPOs
- Real Life Challenges of transportation planning from private sector perspective
- Overview from National Peer MPOs
- Transportation Infrastructure Impacts on Megaregions related to maritime ports and airports
- State DOT Perspective on Megaregions
- Break-out Sessions
- FHWA/Volpe Center Research on the Role of MPOs in Planning for Megaregions

The following sections outline some of the presentations and major lessons. Recurring themes are also highlighted to ground the peer exchange's conceptual contribution. The videos of presentations and discussions from the Peer Exchange are available at the following location:

www.youtube.com/ConnectedPlaces



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Peer MPOs

Atlanta Regional Commission

The Atlanta Regional Commission (ARC) is a large MPO with a jurisdiction covering all or parts of 18 counties and thus grapples with a number of challenges related to freight movement. The Atlanta metro region is the third largest inland distribution center in the United States, after Chicago and Dallas, and is characterized by low density development. These factors converge to create challenges for the efficient movement of freight through the region. The ARC finds freight planning important because of its environmental, economic, and social sustainability effects. From an economic sustainability standpoint, freight supports a very large part of local jobs, which makes it imperative for the region to support freight. Congestion on the different highways in metro Atlanta increases business costs and impedes growth. The ARC believes that shifting freight to rail may ease congestion problems. The ARC is also participating in interstate corridor planning on I-75 with the Tennessee Department of Transportation and on I-85 with the South Carolina Department of Transportation to enhance movement and in some cases capacity along the corridors.

The ARC also views freight through the lenses of social equity, safety, and environmental protection. It therefore examines freight effects on air quality, safety, and vulnerable populations. It recently studied school locations in relation to freight corridors and found that 54% of metro Atlanta elementary schools were within one quarter mile of commercial or industrial areas that generate freight traffic and that over 30% are within one half mile of heavily used truck routes. It is also examining how to mitigate air quality effects and detriments to walkability and pedestrian safety due to freight.



Figure 1: Megaregion MPO partners discuss freight movement. Left to right: John Orr, Atlanta Regional Commission; Darrel Howard, Birmingham MPO; Mary Beth Ikard, Nashville Area MPO; Dr. Catherine Ross, Center for Quality Growth and Regional Development

Birmingham Metropolitan Planning Organization

The Birmingham MPO oversees a metro region experiencing divergent development trends. On the one hand, downtown Birmingham is developing under the impetus of young adults moving



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into the city, which attracts developers and other businesses. Simultaneously, employment is decentralizing along suburban corridors, and housing is growing most outside of the core counties.

The Birmingham MPO examined economic effects of spending in metro Birmingham by using epidemiological models. It found that most money spent in Birmingham generates additional economic activity in the surrounding states, and that the positive economic effects of this activity remain mostly in Alabama and adjacent states.

The Birmingham metro area is linked with other areas in the Piedmont Atlantic Megaregion through the I-20, I-59, and I-65 corridors. There is significant intra- and extra-megaregion freight movement consisting largely of natural materials, such as metals, minerals, coal, and rocks. The freight movement supports a larger number of manufacturing sites and new businesses some of which are spawned from a University of Alabama, Birmingham business incubator. Manufacturing in a 200-mile radius includes major manufacturing facilities for companies such as: Mercedes, Hyundai, Honda, BMW, Boeing, Airbus, Lockheed-Martin, and Kia. The manufacturing cluster has been one factor pushing freight volume increases.

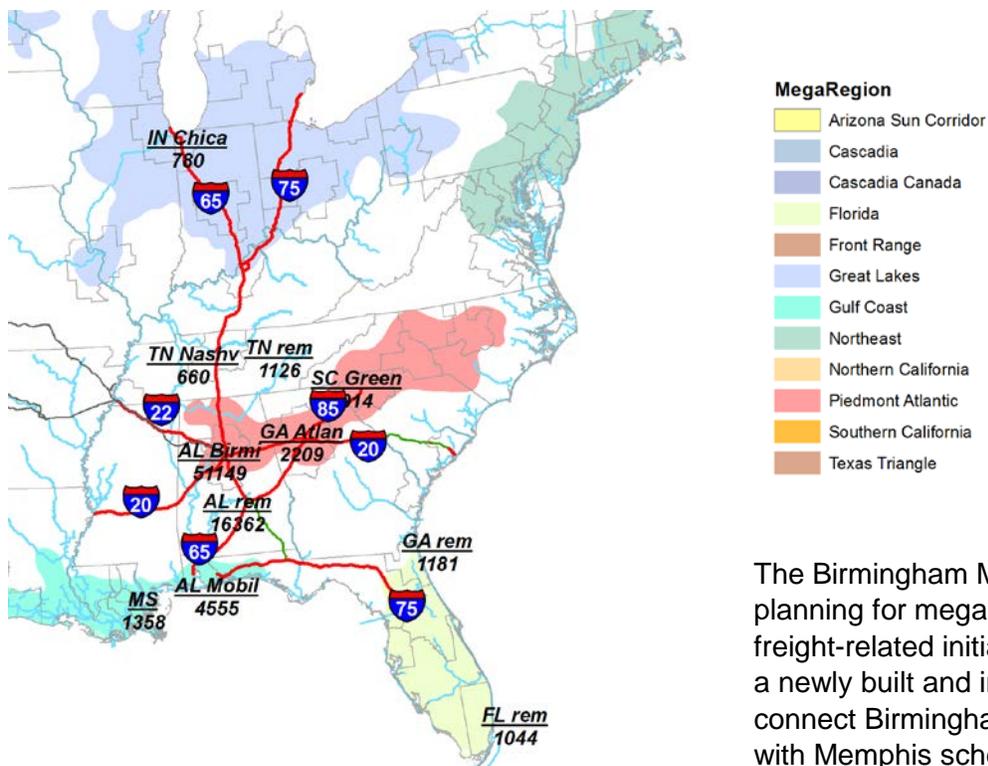


Figure 2: Freight Import Amounts and Corridors (thousands of tons)

The Birmingham MPO is proactively planning for megaregion freight. One freight-related initiative is Corridor X, a newly built and improved corridor to connect Birmingham more directly with Memphis scheduled to open next year. The Birmingham region also depends on investment in the three Class I rail companies that operate in the region with five

intermodal freight facilities providing connections to Port of Mobile, Port of New Orleans, Memphis, and Chicago. One of the Birmingham MPO's other freight initiatives is the support of a nascent biofuels corridor connecting Chicago to Mobile via Birmingham. The corridor features



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electrified truck stops and public fueling facilities that are intended to reduce the cost and increase the convenience for the driver of long-distance freight.

Hampton Roads Transportation Planning Organization (HRTPO)

The Hampton Roads Transportation Planning Organization (HRTPO) is the MPO for the part of eastern Virginia roughly from Virginia Beach to James City County (Figure 3). An executive board made up of public officials from local governments and associated transportation departments make regional transportation decisions in the HRTPO framework. The voting board members include elected officials from each of the cities and counties are voting members of HRTPO's board, in addition to the officials from Transportation District Commission of Hampton Roads, the Williamsburg Area Transit Authority, and the Virginia Department of Transportation. Other state and federal agencies are also represented as non-voting members, which facilitates close coordination among HRTPO and state and federal transportation agencies. The board meets on average monthly to make regional transportation decisions (Hampton Roads Transportation Planning Organization, 2012) HRTPO addresses freight-specific issues at the board level through partners such as the Virginia Ports Authority, as well as through its Freight Technical Advisory Committee.

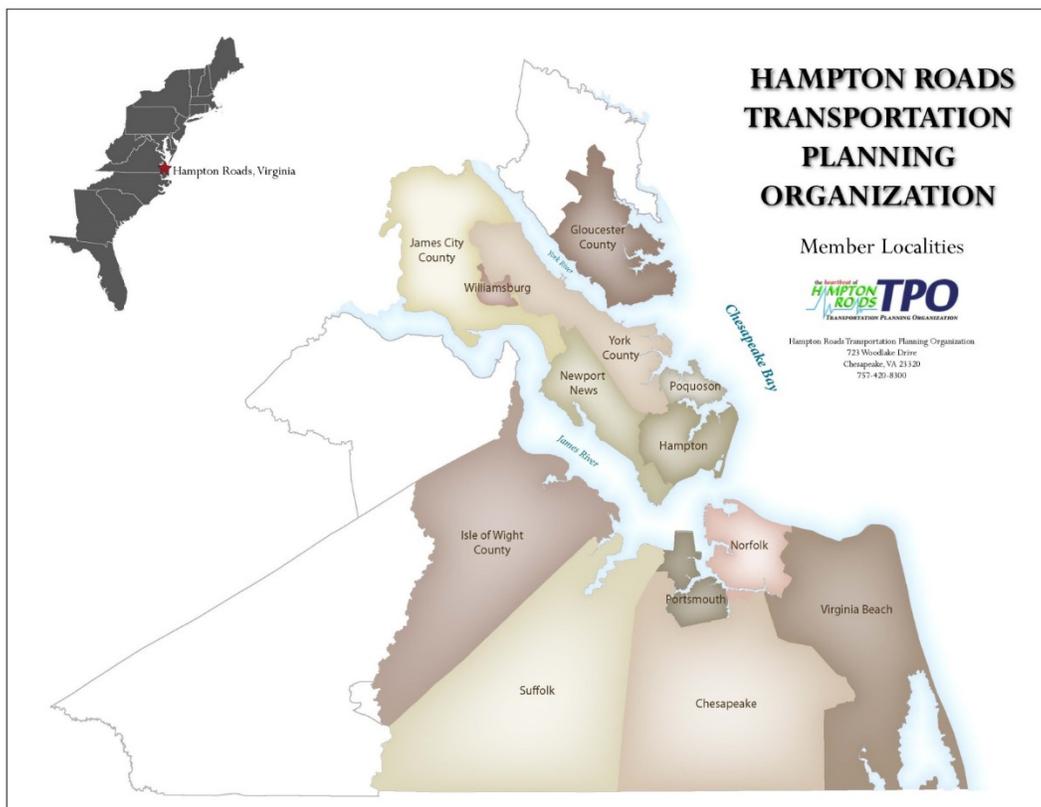


Figure 3: The Polycentric Hampton Roads Area



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The armed forces, port freight, and tourism are the region's three largest industries in eastern Virginia, and HRTPO plans explicitly for each through its project prioritization tool to ensure the competitiveness of these basic industries. HRTPO built its project prioritization tool based on extensive study of predominant factors affecting both transportation and economic opportunity (Hampton Roads Transportation Planning Organization, 2010). Each of HRTPO's identified basic industries generates freight. HRTPO works with military users to ensure alignment with the military's unique freight needs. The ports of Norfolk, Portsmouth, Newport News, and Chesapeake generate large amounts of regional truck and rail freight. HRTPO works with regional partners on its freight plans.

HRTPO considers other highway linkages that will strengthen its connection with surrounding megaregions, particularly the Virginia-North Carolina highway to link Hampton Roads with the Raleigh area. HRTPO's megaregion efforts seek to identify these and other opportunities to improve linkages with trading partners. The Hampton Roads area trades significantly with the rest of the DC-Virginia megaregion, but also with the Piedmont Atlantic and the Northeast Megaregions. As with all freight flow globally, market areas for products extend outside of the megaregion, requiring another level of coordination. The freight requirements make it important to improve freight connections by rail and highway within the megaregion and also with other megaregions. It is also important to develop a port planning strategy that recognizes each region's strengths and emphasizes cooperation.

Miami-Dade Metropolitan Planning Organization

As the leading economy in the Florida Megaregion, Southeast Florida needs to continue to build its infrastructure connections with the rest of the state. The state government strengthened connections across Florida starting in 2003 by creating the Strategic Intermodal System that designated nine areas that were economically connected and that would be a priority for infrastructure improvements. Southeast Florida itself has strong transportation infrastructure, including several interstates, three international airports, coastal waterways, and three deep water sea ports.

The Miami-Dade MPO is working to develop connections between the Florida Megaregion and international markets through efforts including freight infrastructure development. Developing its international trade will expand on the region's role as a Pan-American gateway and help it develop into an East/West trading hub and a global city. The region aspires to increase its international role. The Port of Miami and the Miami International Airports are investing in systems to promote sophisticated trade, operations, and investments to add value to their freight services. The MPO also incorporates private-sector freight needs into its planning through a freight advisory committee with industry representatives.



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Figure 4: Core Southeast Florida Region Including Miami-Dade MPO

The Miami-Dade MPO has several ongoing initiatives to improve coordination with the surrounding counties. One is the Southeast Florida Transportation Council (SEFTC) created by inter-local agreement among Miami-Dade, Broward, and Palm Beach Counties. The Council recognizes the connections among the MPOs and seeks to enhance transportation coordination among them. In 2010, the SEFTC created a freight plan in coordination with the Florida Department of Transportation. Miami has also worked with the other three counties to coordinate passenger rail and intelligence transportation systems called "SunGuide".

The Miami-Dade MPO has a long history of engagement in freight planning, beginning with its first freight plan, completed in 1996. Later studies have addressed port access, truck parking and management, and freight corridors. Miami has had a Freight Transportation Advisory Committee since 2002 to assist in freight planning.

Nashville Area Metropolitan Planning Organization

The Nashville metropolitan area is an economically and demographically growing region that has thus far experienced the economic benefits of growth without the severe congestion and loss of green space that often follows. However, it will be increasingly difficult to maintain this 'sweet spot' as Nashville continues to grow. Nashville's planning philosophy has emphasized



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local planning with regional coordination, which is assisted by the region's strong and cohesive identity.

The Nashville Area MPO recently participated in the development of a Middle Tennessee Transportation Plan that planned for urbanized areas in a ten-county region covered by two MPOs and several non-MPO areas. The plan took a market and policy-driven forecasting approach that revealed areas that would likely experience increases in urban development and concomitant congestion. This approach and plan have been combined with the Nashville long-range transportation plan, and consequently the Nashville MPO is working towards achieving goals common to both plans. These goals include developing regional mass transit options, supporting active transportation, and enhancing strategic roadways.

The Nashville Area MPO also expects freight movement to increase significantly by 2035, with major truck volume increases on its interstate highways. However, while a significant amount of traffic is regional, 40% of Nashville truck trips are below two miles. Addressing short freight trips by shifting them to other times or modes might help the region reduce congestion and free space for passenger travel, regional freight, and inter-regional freight movement. The freight plan also made other recommendations, including linking land use and freight planning, better incorporating trucks into traffic design, and developing design standards for freight infrastructure. Future study phases will examine the overlap between regional freight flows and community goals, data needs, truck route identification, and other aspects.

High growth forecasts have contributed to a prevailing public sentiment to plan for growth in a way that sustains the current quality of life. Solutions may involve local and regional multimodal options. By sustaining quality of life and maintaining an effective freight and passenger transportation system, the Nashville Area MPO works to retain its economic vibrancy and ensure that the Nashville area remains an attractive place to work and live.

San Diego Association of Governments (SANDAG)

The San Diego Association of Governments (SANDAG) is the MPO for the San Diego metro area. The region effectively functions as part of two megaregions. To the north, it is integrated with the California Megaregion, and to the south San Diego is integrated with the "Cali Baja" Megaregion anchored by San Diego and Tijuana. The southern megaregion is unique because the U.S.-Mexico border splits it, which affects the freight and passenger connectivity between its two largest hubs. However, the connections between the two countries give San Diego some of its great and unique economic strengths, and cross-border truck and passenger traffic are projected to increase faster than population growth.

SANDAG has multiple responsibilities at the state, county, and federal levels, only one of which is its MPO role. Therefore, SANDAG's work involves many stakeholders. SANDAG's advisory board includes many of these stakeholders, including Caltrans, the U.S. Department of Defense, the San Diego Unified Port District, and the Mexican federal government. These participants help ensure that SANDAG functions as a regional body.

SANDAG's Borders Committee is engaged in multiple efforts to strengthen the freight and passenger connections across the border. One of SANDAG's major efforts is to build a new truck border crossing at Otay Mesa East. Border planning involves Mexican and American



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governmental agencies at local, regional, state and federal levels around issues such as transportation, security, and customs and borders. The project is planned to have tolls on roads leading to the border to service debt and manage demand, and the participants involved are negotiating the toll revenue distribution among countries and functions. Otay Mesa East is supposed to reduce freight border delays and increase reliability, because transit delays and variations are a significant cost to the region's economy.



Figure 5: Congestion at Existing Otay Mesa Border Crossing

SANDAG also participates in a bi-national marketing campaign called Cali Baja. The Cali Baja campaign promotes the region's strengths in manufacturing, biotechnology, aerospace, medicine, and other industries on both sides of the border. The megaregion initiative began in 2008 under a federal grant to develop a bi-national development strategy. In 2011, six economic development agencies signed a memorandum of understanding that formalized an area to be targeted in the marketing and development campaign. The targeted areas included: San Diego, the Imperial Valley, Tijuana, Ensenada, Tecate, and Mexicali.



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Business Needs

Business drives economic opportunity in megaregions as it does in the nation as a whole. Transportation plays a key role in enabling business success, and freight planning is the public-sector counterpart to supply chain management in the private sector. Therefore, it is important for freight planners at any scale to understand the supply chain community's needs in order to facilitate efficient business operations. A mutual understanding between supply chain managers and freight planners is especially important at the megaregion level because of the scalar similarity that exists between some regional distributional networks and the megaregion.

Two supply chain leaders, The Home Depot and Genuine Parts, shared aspects of their supply chain development and transportation needs with freight planners at the peer exchange. The director of the Georgia Center of Innovation for Logistics buttressed the business perspective with insights from his interactions with supply chain leaders throughout the state. Providing the right transportation infrastructure is often less costly than the economic losses and inefficiencies due to inadequate infrastructure. Planners learned several ways in which their work can contribute to a strong business environment, through the design of transportation systems that are fast, reliable, low-cost, adaptive, and able to grow to meet demand.

Michelle Livingstone, Vice President of Transportation, the Home Depot

The Home Depot is one of the largest American retailers and a major commodities shipper. The Home Depot is also the country's third largest importer. Michelle Livingstone, Vice President of Transportation for The Home Depot, explained the company's logistics transformation and how the planning profession can help keep companies like The Home Depot strong.



Figure 6: Private-Sector Perspective. Left to right: Dave Williams, Metro Atlanta Chamber; Michelle Livingstone, The Home Depot; Page Siplon, Center of Innovation for Logistics

Ms. Livingston outlined the history and evolution of The Home Depot's supply chain. She began by describing the legacy supply chain, which required most vendors to ship directly to stores rather than through company distribution centers. Stores received numerous shipments and managed inventory independently, which increased receiving costs and contributed to inventory



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fragmentation. In 2007, The Home Depot began changing its supply chain model. It created regional Rapid Deployment Centers (RDC), which route products from suppliers to stores in consolidated shipments. The Home Depot also consolidated inventory management regionally. The Rapid Deployment Centers are entirely flow-through, meaning that they do not store inventory long-term. The Home Depot's new distribution network includes Stocking Distribution Centers, which serve stores less frequently than RDCs, and Lumber and Bulk Distribution Centers are the final supply chain component.

The Home Depot uses primarily third-party shippers in a variety of modes, with a mix of truckload and less-than-truckload shipments. The Home Depot's intermodal freight combines rail and truck shipments, and its share of inbound shipments to rapid deployment centers and bulk distribution centers is increasing as it has been able to provide consistent delivery times and lower shipment costs.

One of The Home Depot's greatest transportation needs is reliability, particularly with regards to cost and travel times. Reliable travel times are very important because they allow retailers to streamline their business and eliminate waste in the supply chain. Late arrivals to stores can cause employees to sit idle waiting for the truck to arrive, just as early arrivals can mean that the store staff is not ready to unload. Reliability in store deliveries is especially important because staff must be there when the truck arrives; by contrast, trucks making deliveries to many distribution centers drop off the trailer at the distribution center. The distribution center can unload the trailer at its convenience because the truck and driver are not waiting to take it somewhere else. Instead, when the employees have finished unloading and reloading the trailer, a different truck comes to pick it up. This sort of operation, called "drop-trailer," increases flexibility. The Home Depot employs third party carriers to transport its merchandise, and it holds them to high standards of reliability for repeat business.

Consistency of other fixed transportation costs is also critical for The Home Depot. Ms. Livingston specifically highlighted tolls as an example of these types of costs. Reliability also matters for transportation costs, of which one is tolls. Toll increases on short notice harm retailers like The Home Depot. Many shippers budget biannually, which means that transportation budgets may not account for toll changes on a shorter timeframe.

The Home Depot's supply chain transformation has helped it achieve business success, and the state and national transportation infrastructure helped make this possible. To aid other companies similar to The Home Depot, transportation planners can focus on ensuring adequate capacity to accommodate companies' quickly-changing supply chain routes and volumes, and improving system reliability, both from a time and a cost perspective.

Mike Orr, Senior Vice President of Operations and Logistics, Genuine Parts

Genuine Parts Company is a \$13 billion per year retailer in automotive and industrial repair parts operating under several brands, including (in order of decreasing sales) NAPA Automotive Parts Group, Motion Industries Industrial Parts Groups, S.P. Richards Office Products Group, and the Electrical/Electronic Materials Group (Genuine Parts Company, 2012). Genuine Parts operates four different supply chains for each of the different product types that it offers. NAPA alone has 58 distribution centers (Genuine Parts Company, 2013).



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Figure 7: Private-Sector Decision Making. Left to right: Mike Orr, Genuine Parts; Dave Williams, Metro Atlanta Chamber

Genuine Parts has complex supply chain needs driven by the speed of industry evolution, its product diversity, product size, excess parts orders, and high operational tempo.

Industry changes: The industry itself is changing rapidly. The supply chain's half-life is just five years, which means that half of the tasks will be new every five years.

Excess parts orders: Genuine Parts operates supply chains both forward and backward. The forward supply chain moves parts from manufacturers to the point of consumption, where they are installed into automobiles or machines. The supply chain for the products also extends in a reverse direction because repair parts are frequently returned if the mechanic has misidentified the problem. The reverse supply chain takes unused parts from mechanics and repair centers back to distribution centers.

High operational tempo: Repair parts are a fast-paced business because repairs are urgent. Urgent repairs require that Genuine Parts' supply chain be unusually responsive. Therefore, NAPA makes deliveries from its stores to repair shops located within a radius of about five miles. NAPA service centers normally make deliveries to local mechanics and operate within a highly constrained window of 30 minutes from the time the order is received until it is delivered. Localized independent couriers allow Genuine Parts to respond quickly to small orders. These localized independent couriers are usually individuals who sign up to make small local deliveries for Genuine Parts on short notice. They provide Genuine Parts the reliable and affordable transportation needed to remain competitive in such a fast-paced supply chain.

Product diversity: Genuine Parts must coordinate supply chains for different product categories, each with many stock keeping units (SKU), which denote different product types. For example, NAPA must have many different automobile parts available quickly to meet client needs. Genuine Parts' product diversity requires it to take an innovative approach to manage its inventory. For example, NAPA stores tailor their inventory to the automobile ownership composition by make and model of the surrounding neighborhood.

Product size: The fact that many of Genuine Parts' deliveries consist of small items that are ordered individually has allowed it to develop uniquely specialized delivery techniques, including



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the previously described localized independent couriers. Small shipment sizes have required Genuine Parts to find new product delivery avenues.

Nighttime store deliveries are another Genuine Parts initiative to improve its supply chain. Nighttime store deliveries allow trucks to make more stops in less time because roads are less congested than during the day. Furthermore, NAPA recently replaced its own branded trucks with less-than-truckload (LTL) shipments in third-party trucks. LTL shipments can reduce costs, minimize the overall number of trucks, and allow deliveries to be more consistent. Genuine Parts has organized a portion of its overseas deliveries to bypass warehouses and go straight to stores to reduce ground freight movement, which is the largest portion of delivery cost. Finally, Genuine Parts increasingly uses intermodal shipment methods for deliveries over approximately 700 miles. Intermodal uses both truck deliveries and rail movement for different portions of a shipment. Mr. Orr explained that the rail industry has increased reliability in recent years. A high level of reliability is a requirement for Genuine Parts to be able to utilize rail in their supply chain.

Private-sector logistics change very quickly, and companies must respond equally fast to remain competitive. The sectors' rapid pace does have implications for freight transportation planners, but transportation still needs to maintain a longer perspective than industry because of the length of time that capital construction and improvements can take to plan and implement. The primary contribution that transportation planning can make to companies like Genuine Parts and The Home Depot is to ensure a transportation system that can provide inexpensive, fast, and reliable transportation.

Page Siplon, Executive Director, Georgia Center of Innovation for Logistics

Business success relies on a supportive infrastructure system. Congestion reduces productivity and makes commerce more expensive. Inadequate investment in transportation can exacerbate congestion and capacity constraints with the accompanying costs in terms of lost time, wasted resources, and lost opportunities. At the same time, the goods being transported are changing. Manufacturing is increasingly personalized and may decentralize thanks to small-scale production. Moreover, e-commerce is growing into a larger percentage of total purchases even though many e-commerce shipments are small, unbundled parcels.

Transportation planning can help businesses succeed by addressing their transportation needs. Every shipper needs goods that are delivered better, and every carrier needs a high quality, reliable and reasonably priced transportation network on which to move goods. Transportation planning and operations can and should respond to each of these business needs by projecting growth, maintaining a high level of service, and investigating new technologies, such as intelligent transportation systems. Figure 8 shows the relationship between business needs and the corresponding supportive transportation infrastructure that planners and engineers can provide.



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Business Needs		Planning Response
Bigger	↔	More Capacity
Faster	↔	Fewer Delays
Cheaper	↔	More Adaptive
More Reliable	↔	Consistent Level of Service
More Visible	↔	Intelligent Transportation Systems

Figure 8: Business Needs and Transportation Planning Responses



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Megaregion Considerations for Freight Modes

Megaregions are major drivers for freight movement, and much of that freight moves aboard trucks. In fact, trucks transport a higher percentage of freight in megaregions than they do in the country as a whole. By 2035, 80% of freight between megaregions is expected to move by truck compared with just 57% of freight outside of megaregions (Ross & Woo, 2009). America's state and interstate highways are enormously important to business success and economic competitiveness because of the connectivity and flexibility that they provide. Still, the story of megaregion freight involves roads, rails, water, and airways, in addition to niche modes such as pipelines.

Several speakers provided specific insights on two megaregion gateways in the Piedmont Atlantic Megaregion that are modal transfer points. The Port of Savannah is one of the largest and fastest growing container ports in the country, sustaining exports and imports in the eastern U.S. It is also a transfer point between containerized ocean-going vessels, Class I rail, and long-distance trucking. It is one of the main international gateways into the Piedmont Atlantic Megaregion for bulk goods.

The second is the Atlanta Hartsfield-Jackson International Airport. While better known as a passenger gateway, it also supports active freight in mixed and dedicated freight aircraft with domestic and international destinations. It also connects the megaregion's workers, consumers, and businesses with opportunities and markets elsewhere. These two gateways for the Piedmont Atlantic Megaregion are instructive for freight planning in megaregions.

The peer exchange was privileged to have in attendance the directors of each of these gateways. Curtis Foltz is the Executive Director of the Georgia Port Authority, which is the state organization that operates the Port of Savannah and Georgia's other ports. Louis Miller is the General Manager for the Atlanta Hartsfield-Jackson International Airport. Both directors explained the role that their gateways play in the economy, as detailed below

Curtis Foltz, Executive Director, Georgia Ports Authority

Ports are the regional gateway for trade. The Georgia Ports Authority (GPA) owns, operates, and manages all of Georgia's seaports. GPA is embarking on an ambitious growth plan, of which the ongoing port deepening is an important aspect to accommodate post-Panamax ships. Post-Panamax ships are those that are too large for the Panama Canal's existing locks, but which will be able to pass through the new set of locks opening in 2015. Post-Panamax ships were rare in the past; however, in recent years they have increased dramatically as a portion of the global shipping fleet. The new locks are expected to bring larger ships to U.S. East Coast ports from East Asian production sites.



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Figure 9: Transportation Infrastructure Impacts on Megaregions. Left to right: Dr. Catherine Ross, Center for Quality Growth and Regional Development; Curtis Foltz, Georgia Ports Authority; Louis Miller, Hartsfield-Jackson Atlanta International Airport

GPA's ports directly and indirectly sustain 350,000 jobs per year, and contribute \$18.5 billion in income to Georgia's economy. Economic impact does not stop at state lines, but instead is transferred throughout the entire Piedmont Atlantic Megaregion, which has helped build partnerships with other cities and states as the port authority adapts to growing freight shipments.

The port connects with other transportation modes for inland movement. Railroads move 20% of Savannah's volume, particularly to places such as the Midwest. Fast rail connections help make the port competitive against Northeastern ports for the Midwestern market. Therefore, GPA is working with Norfolk Southern and CSX railroads to encourage freight movement utilizing rail, both to foster sustainability and to improve port competitiveness. Rail is also utilized to move many state and national exports to the port. In fact, the volume of exports from the port is slightly larger overall than imports.

GPA is a statewide authority that independently operates the port; however, it receives no state funds for operations. GPA plans to spend \$1.4 billion to enhance, modernize, and improve capacity and throughput speed using primarily operational revenue and federal grants related to the port deepening. This funding will help address a nationwide shortfall for investment in port infrastructure.

As international ports continue to invest in modernization, for example by increasing capacity and improving rail connections, the United States risks falling behind if similar investments are not initiated here. Thus the deepening project is especially important to prepare for the anticipated influx of post-Panamax ships when the Panama Canal expansion is complete in 2014. Larger ships will be more efficient overall, though east coast ports must make major infrastructure investments to accommodate them.

The Port of Savannah is very important to the Piedmont Atlantic Megaregion. While there is no federal freight strategy to comprehensively consider port infrastructure and activity, transportation planners in different megaregions should view their ports from the perspective of megaregion gateways connecting their megaregions to national and international markets. This



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perspective may create possibilities for new targeted investment into critical megaregion infrastructure.

Louis Miller, General Manager, Atlanta Hartsfield-Jackson International Airport

The Atlanta Hartsfield-Jackson International Airport is important for domestic and international transportation as the busiest passenger airport in the world. However, it is also a major freight airport that leverages the airlines' underbelly cargo capacity as well as dedicated freighter service to move commodities across an extensive freight network. Eleven cargo and integrated air carriers move cargo worth \$7 billion through the airport each year. To sustain the traffic, the airport is currently investing \$40 million in its cargo facilities, which include a new 100,000 square foot cargo processing facility.



Figure 10: Transportation Infrastructure Impacts on Megaregions. Left to right: Curtis Foltz, Georgia Ports Authority; Louis Miller, Hartsfield-Jackson Atlanta International Airport; Jane Hayse, Atlanta Regional Commission

Although the City of Atlanta owns the airport, the Atlanta Airport does not receive municipal funds. Instead, its operating revenue comes from a combination of aeronautical revenue, including landing fees and gate leases, and non-aeronautical revenues, such as public parking and commercial concessions. Sixty percent of airport revenues are non-aeronautical, which allows it to keep operational fees, and therefore ticket prices, low. The airport has an annual fiscal surplus, which it uses to invest in improving both its landside and airside infrastructure.

The airport has both an important national and international role and a major metro-area economic role. It provides 58,000 jobs onsite, and it generates 92,000 more in indirect and induced employment. The airport also serves as a catalyst for other types of adjacent business activity. For example, a major new development is under construction to the northwest of the airport which will be anchored by the new Porsche U.S. headquarters. It is anticipated that clustered development nodes such as this will continue to grow in the vicinity of the airport to capitalize on the national and international access that close proximity to the airport provides.



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Lessons Learned

The speakers and participants at the peer exchange came from very different organizations. They came from all parts of the country, from public- and private-sector organizations, with different perspectives and challenges, and with different primary objectives for the movement of freight through the megaregion. Their combined experience offered a wide and deep collective understanding of the issues, and the discussions allowed participants to draw critical insights to achieve more effective megaregion freight planning. The lessons learned from the speakers and participants relate to the current state of planning, cooperation between businesses and freight planners, supply chain needs, ways of prioritizing megaregion initiatives, defining boundaries, funding, data needs, partnerships, cross-disciplinary cooperation, inter-megaregion competition, and advancing proactive planning. The following section describes the major points in each category.

Challenge

The United States faces a challenge created by the disconnect between the scale at which the world economy operates and the scale at which we plan our cities. While the world economy is increasingly structured around megaregions, the United States plans at local or state scales that do not harness the megaregion approach's possibilities. Many in the transportation planning community recognize the disconnect; yet, planning remains largely constrained by the limitations of business as usual. While the boundaries for planning organizations and political jurisdictions are static and draw divisions among adjacent areas, transportation and economic activity instead are characterized by dynamic spatial patterns and connect areas separated by time and space in a way that planning institutions can only partially address at best.

There is also a second disconnect between transportation planning and business planning. One of the megaregion framework's great tests will be how it can support the business community, particularly with regard to meeting their freight needs as they define them. In other words, megaregion planning must support the freight community in the areas in which planning can add value to business.

Convergence

Several speakers perceived a convergence between public-sector transportation planning and private-sector needs around megaregions. Convergence means that business needs and planning for the public realm are coming together around an idea that can work for both—megaregions. The megaregion framework provides a tool to assist the public sector with identifying and supporting individual and commercial transportation needs, and industries may find innovative ways to leverage the megaregions concept to strengthen their operations. Already, many private sector entities move freight at the megaregion scale, though it is not conceptualized in this way.

Building a strong partnership between the public and private sectors offers advantages to each. By incorporating market based feedback into transportation decisions, the transportation planning community may increase the efficiency and economic return on investment and revise



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project prioritization methods for providing infrastructure investments to respond to this feedback. The private sector may see more reliable freight pickups and deliveries as well as opportunities for cost containment.

Several speakers also mentioned the importance of finding ways for public sector planning to support freight and businesses that rely on the efficient movement of freight ("freight-reliant businesses"). Moving Ahead for Progress in the 21st Century (MAP-21) continues the federal planning emphasis on freight and requires state, metropolitan planning organizations (MPOs), and localities to more efficiently plan for freight. The Georgia Statewide Freight and Logistics Plan is one such example of a plan to support freight-reliant businesses through transportation infrastructure investment. However, the plan is also noteworthy because it incorporated input from a private-sector advisory committee of freight-reliant businesses.

Page Siplon of the Georgia Center of Innovation for Logistics emphasized that the public-sector needs to establish a dialog with businesses to act in a way that supports them. Therefore, taking action that supports business at the megaregion scale requires that the public sector organizationally and intellectually partner with the private sector to understand its needs and establish feedback between public sector action, and business and community results.

Private-Sector Freight Characteristics

Freight-reliant businesses include companies that operate trucks, railroads, ships, airplanes, and other freight transportation modes; third party logistics providers; companies operating warehouses and distribution centers; organizations that send goods to clients or receive goods from suppliers; or other companies whose operations and finances are affected by the speed, cost, reliability, or availability of freight movement. A huge amount of economic activity depends on freight directly or indirectly. The peer exchange revealed critical insights regarding the freight-reliant businesses.

Freight companies are diverse. Freight movements are a key in countless business processes, but each business operates differently. Mike Orr of Genuine Parts provided an example of this diversity by explaining Genuine Parts' logistics. The companies' perspective varies from a global scale to a radius of just a few miles for some deliveries. Shipment size also varies. The company has different supply chains, including forward (suppliers to store to consumer) and reverse supply chains. Thus, private-sector freight needs vary enormously even within this one company, and the differences magnify across multiple companies.

Freight-reliant companies have three needs: shipments need to be faster, better, and cheaper. The often overlooked corollary is that most companies also need shipments to be more reliable. To be sure, a major piece of freight reliability depends on business practices and private-sector operations. However, transportation infrastructure also plays an important role in that all truck shipments, and many intermodal shipments use public roadway infrastructure for at least part of their movement. Michelle Livingstone of The Home Depot provided a perspective on the importance of reliability to the private sector. Michelle Livingstone explained how stores need reliable shipments to coincide with employee schedules to load and unload trucks. When trucks are late, employees sit idle, productivity declines, and costs to consumers rise. She also shared that, counter-intuitively, early shipments do not help stores either because employees to unload



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may not be available until the scheduled time, so the truck and driver may be idle. Thus deliveries to stores must meet a tight window.

Policy makers must carefully address infrastructure funding to support freight-reliant companies.

Discussion addressed the topics of tolls and managed lanes. The fundamental idea behind each is that they provide funding to improve road infrastructure and—in the case of managed lanes—to incentivize efficient roadway use. Ideally, the benefits of reduced congestion and greater travel time reliability will outweigh the cost to each individual truck.

Page Siplon of the Center of Innovation for Logistics highlighted that freight companies appreciate options, including the option to use or not use managed lanes such as truck only toll lanes depending on the circumstances. The private sector also needs a stable transportation environment to be able to plan and budget. Michelle Livingston of The Home Depot indicated that toll increases on short notice are difficult for shippers because they are not included in company budgets, which occur on existing set cycles. Companies need time to budget for tolls, study alternatives, and make transportation decisions accordingly. The same rule applies to regulation. Companies need time to plan for regulatory changes and to evaluate the potential consequences of proposed regulations on their business.

Private-sector logistics companies operate on a much faster timeframes than the public sector planning process. The different timeframes are often appropriate because they each have very different missions, products, and customers. Still, it is important to recognize that the private sector has traditionally changed much faster and responses to issues are much more nimble than the structure of the traditional transportation planning process will allow.

The idea of the “supply chain half-life” is compelling. It is the time that it takes for half of the supply chain processes to change which, according to Mike Orr of Genuine Parts, is roughly five years. What are the implications of this reality for long range freight transportation planning, often projected across a time horizon of 20 to 30 years, when the true time interval for existing conditions to remain constant is only five years? One such change that occurred as a reaction to changing market conditions is a shift by Genuine Parts from proprietary truckload shipments to less than full truckload shipments by combining inventory from unrelated companies. Local couriers, who are individuals who can make small local deliveries on short notice, have also changed local delivery characteristics in ways that would have been difficult to predict previously. Such changes are likely to continue, making supply chain dynamics difficult for transportation planners to predict and requiring adaptive planning that leaves room for private-sector initiative and mid-course plan changes.

Supply chain decisions have a major impact on the freight flows that public infrastructure supports. Mike Orr of Genuine Parts gave many examples of new supply chain processes that change the time, size, location, frequency, and mode choice of freight movements. They demonstrate the need for close cooperation among supply chain and transportation planning professionals because decisions made by each deeply impact each other. The public sector provides infrastructure that the private freight industry utilizes, notwithstanding railroads and other select privately held transportation infrastructure. Below are five examples of recent supply chain configuration changes and the corresponding impact on public infrastructure.

- **Localized independent couriers:** Local couriers make local, small deliveries on short notice. Individual independent couriers provide companies with reliable, flexible, and



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affordable deliveries that increase short-notice adaptability within the supply chain and facilitate small deliveries that otherwise might have been prohibitively expensive. Localized independent couriers may be difficult for traditional planning methods to account for because of their embeddedness in small-scale, localized supply chains. Moreover, they could increase the roadway space requirements per item in commercial vehicles.

- **Night deliveries:** Some companies are turning to nighttime store replenishment to realize savings from shorter travel times and greater travel time reliability due to low congestion levels at night. Nighttime deliveries may reduce daytime congestion and use infrastructure more efficiently by maximizing under-utilized capacity available at night.
- **Delivery consolidation:** Less-than-truckload (LTL) deliveries combine shipments from several different companies with different destinations into a single truck that delivers all the items in a single tour. It contrasts with truckload shipments, which might operate dedicated, branded vehicles for a single company. Less-than-truckload deliveries generally result in fewer and fuller trucks, and therefore lower costs for companies. Transportation planners should be aware of LTL's implications for the number of trucks and their tour characteristics.
- **International supply chain configuration:** International supply chains bringing goods from overseas production sites to domestic retail locations can take many configurations. The shipments could be consolidated and sent to distribution centers or other intermediate locations for processing before retail locations. However, in some cases, it is most economical to ship directly from overseas factories to stores in order to reduce ground shipment and handling, which raise costs compared with sea shipments. International supply chain configurations can have many impacts on transportation planning, not the least of which is the propensity to change as fuel costs, transportation options, and production locations change.
- **Intermodal freight:** Several private-sector speakers indicated that intermodal shipments had become more appealing in recent years, particularly the combination of truck and rail segments. Intermodal shipment combines two or more modes of goods movement in a single shipment. The impetus for the increase in intermodal shipping has been the consistent, reliable delivery times seen with rail shipments and rising fuel prices, which have made intermodal a viable option for trips as short as 700 miles.

Private sector logisticians have already been using a concept akin to megaregions. While the connection has not been explicitly made, supply chain often focuses on bringing goods into a region and delivering through distribution centers or other configurations on a regional basis. The (mega)regionalism built into supply chain configurations warrants further explicit examination to identify complementarities between public- and private-sector conceptions.

Initiative Prioritization

Not all ports, highways, waterways, or airports are equally important to megaregion economies. Some locations or corridors transport more or higher value freight, are more direct intermediaries in trade routes, have fewer viable alternatives, or support more economically intensive adjacent land uses. Some breakout group discussion also recognized that corridors have different modal, commodity, and industry profiles. Megaregion planning should recognize



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the corridors that drive the economy and prioritize investment to the most critical areas. However, the impacts on less intensive corridors or locations should also still be considered as a part of comprehensive planning at the scale of the megaregion.

Decisions regarding the best use of resources to support freight movement within and between megaregions must be integrated with local, state, and federal transportation investment laws and guidelines. Some laws and guidelines may also need to be reconceptualized, when considered at the scale of the megaregion. The state of Georgia for example has recently changed transportation funding statutes to facilitate investment in high priority corridors. House Bill 202 allowed the Georgia Department of Transportation to invest more freely in high priority freight corridors rather than being forced to spread investment evenly along congressional districts. Similar changes should improve infrastructure return on investment and improve performance on the most important corridors.

The infrastructure prioritization process not only concerns corridors, but also must incorporate all transportation infrastructure that has a major economic function. For example the Hartsfield-Jackson International Airport in Atlanta facilitates the transport of large amounts of domestic and international freight. This airport has helped drive a regional multi-industry distribution cluster. It also supports tens of thousands of local jobs directly and many more indirectly in the larger region. Other infrastructure supporting different modes have similar local, regional, megaregion, and international characteristics that should be addressed in prioritizing initiatives. In this way, transportation planners can support the corridors and gateways of the future that will best support megaregion economic development.

Boundaries and Borders

Megaregions have a complex and nuanced relationship with boundaries. A core megaregion advantage is their ability to cross local and state boundaries to align with commodity movement and economic conditions. Dr. Fred Ducca of the National Center for Smart Growth emphasized how the economic issues being addressed can affect the region being analyzed, which was a belief echoed by several peer exchange participants. Dr. Michael Hunter of the National Center for Transportation Systems Productivity and Management also suggested that the interactions among issues are important to megaregions and that more research is needed to examine these issues together at the megaregion scale. This suggests that megaregions will be bounded differently in their operationalizations depending on the spatial extent of the issue to maximize local and regional dividends.

Borders also have another meaning for megaregions, which is their role as gateways to the national economy. Elisa Arias presented an example of how an MPO, the San Diego Association of Governments (SANDAG), is managing an effort to coordinate an international gateway to Mexico. This border crossing requires agencies at different levels of government in the United States and Mexico to cooperate to successfully complete the planning and construction of the Otay Mesa East crossing. Air, rail, and sea gateways are also very important, with the Port of Savannah and the Atlanta Airport serving as examples of megaregion entry points. Similarly, the Miami-Dade MPO is leveraging seaport and airport investment to prepare the region to strengthen its international trade and business connections.



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Several presentations made implicit or explicit cases about the possibility of working across state or national borders, which would reflect working at more of a megaregion scale. One such example was presented by Curtis Foltz, director of the Georgia Ports Authority. Mr. Foltz described the details of the Port of Savannah dredging and eventual expansion. He explained that in order to complete this project, Georgia and South Carolina have agreed to transfer 2,000 acres of land near their border and the existing port to a bi-state holding company for development as a joint port. This joint port facility will be utilized when the existing terminals reach capacity. Mr. Foltz emphasized that although these types of interstate agreements are complicated, a concerted effort can overcome the challenges to achieve a great mutual benefit.

The border crossing at Otay Mesa East is another example of mutually beneficial cross-border cooperation. Otay Mesa East is effectively addressing a number of difficult issues, including project funding on a bi-national scale, and establishing immigration and security protocols, and it is doing it in a way that will facilitate freight movement through the California-Baja California Megaregions.

Finally, Carlos Roa of the Miami-Dade MPO explained how the organization has cooperated for years with two other nearby MPOs through the Southeast Florida Transportation Council. The Council coordinates different efforts, including passenger rail and intelligent transportation systems.



Figure 11: Overview from National Peer MPOs. Left to right: Rob Case, Hampton Roads TPO; Elisa Arias, San Diego Association of Governments; Carlos Roa, Miami-Dade MPO; William Lyons, Volpe Center

Funding and Financing

Multiple participants reiterated that it is important to put dollars behind words to implement megaregion planning and projects. Funding sources will vary according to the infrastructure and project. For all modes and locations, it is important to capitalize on available resources to build capacity for megaregions. Available resources may involve unconventional or emerging funding streams.

Elisa Arias of SANDAG described how tolls can be used to generate revenue, even in a bi-national context. At Otay Mesa East tolls are used to fund bi-national infrastructure. In this



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case, there are added complexities because the border infrastructure involves two counties and numerous agencies at local, regional, federal, and state levels. This effort is still in the preliminary stages. Ultimately there will be a final agreement drafted to determine exactly how toll revenues will be distributed among the countries and partners to service debt and sustain operations.

The Atlanta Hartsfield-Jackson International Airport also provides an example of a type of unique revenue stream. The airport does not receive any local tax funds, but instead funds improvements and operations in a self-sustaining way through airline fees, which constitute roughly 40% of revenue), and other sources, which constitute the remainder. Most of the other sources are commercial, such as retail concessions in the passenger terminals. The airport seeks to minimize airline fees to keep ticket costs low and support demand growth. The airport is using its funding surplus to pay off debt and make infrastructure improvements, including the construction of a new cargo facility, access road improvements, terminal improvements, and master planning.

Revenue is necessary to support all kinds of transportation infrastructure. This may be revenue from fuel taxes or tolls for roads, landing fees for airports, or many other options depending on the mode. These fees are usually perceived as a hindrance to growth and a burden to shippers. However, it is often possible to structure revenue such that it supports efficient infrastructure usage. Managed lanes are a common example of using revenue collection for roads to increase level of service. Another example of revenue and operational alignment that emerged in discussion is at the Atlanta airport, which seeks revenue sources that do not increase mandatory costs for customers. Using revenue from non-aeronautical sources, such as concessions leases, allows the airport to support its operations without excess burdens on shippers and travelers.

Data

Complete, high quality data is necessary to effectively plan for megaregions. Data must also be available at the scale of the megaregion to solve multi-jurisdictional issues. Currently, planners must resort to developing and using hybrid datasets to build a megaregion picture because complete datasets often do not exist.

Many participants spoke of different data needs and sources. Private sector data meets some of the planning communities' needs. For example, private sector economic data such as IMPLAN may capture economic relationship that can be converted into freight flows for analysis. An advantage of this type of data is its ability to reveal economic connections within and among megaregions mediated by freight flows. However, several participants also indicated that small organizations in particular find private data's cost prohibitive.

The final intended use of the data should drive the data collection process, particularly when new data is to be created or government agencies purchase data from private vendors. This will ensure that resources expended to obtain the data are effectively allocated to meet planning needs. Several of the participants expressed a need for better economic data. For example, Tom McQueen of the Georgia Department of Transportation highlighted the need to incorporate project return on investment into traditional performance measures. Dr. Fred Ducca of the



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National Center for Smart Growth used private data to reveal economic relationships within the megaregion to forecast impacts of production changes, congestion, or other factors in one part of the megaregion on the rest of the system.



Figure 12: Megaregion and Freight Case Studies. Left to right: Elisa Arisa, San Diego Association of Governments; David Lee, Center for Quality Growth and Regional Development; Fred Ducca, National Center for Smart Growth

A lively discussion followed these presentations to determine who could most appropriately provide data to support megaregion analysis. Participants also discussed how the data provision might be structured. Dr. Fred Ducca of the National Center for Smart Growth underscored the need for federal leadership on this issue due to megaregions' inter-state nature. Darrell Howard of the Birmingham Metropolitan Planning Organization emphasized how useful current and previous federal data provisions have been to small and medium MPOs for planning and analysis.

Some participants suggested a federal program to fund data purchases by planning organizations, whereas others proposed federal purchase of datasets or federal collection (similar to the Freight Analysis Framework data) at finer levels of geographic detail. One of the breakout groups proposed a role for universities in data provision as partners to the federal government. A more detailed definition of data needs and uses may allow for the development of flexible datasets that can serve multiple purposes. For example, some economic datasets can support transportation modeling and economic development analysis. Planning directors should think strategically about data uses and synergies. Many participants expressed that the creation of a data warehouse for megaregion planning would be their ultimate goal. The warehouse would incorporate passenger, freight and economic data at more precise geographical levels and would be available to planning partners at low or no cost.

Partnerships across Geographic Scales

Several speakers stated the importance of recognizing that we are all either members of a megaregion or affected by occurrences in megaregions. The analysis of the spatial patterns found within and between megaregions can reveal the primary, large-scale relationships among regions. Those major cities and actors within a megaregion, as well as the areas between



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major nodes, are deeply interconnected and a better understanding of these relationships is necessary to best plan for economic development and protection of natural resources.

Megaregion planning cannot be the responsibility of a single entity because of the complexity presented by the engagement of multiple jurisdictions, organizations, and interests within each. Partnerships can also help overcome financial obstacles and move ideas from planning to implementation.

MPOs may be natural early leaders in megaregion planning because of their experience working across local, state, and even at times international boundaries. MPOs specialize in bringing relevant partners together to work for common benefit, which will be an essential skill in megaregion planning as well. Still, MPOs are not the only potential lead for this initiative. Implementing megaregion planning will require building partnerships across boundaries and at multiple scales.

Elected officials are vital to megaregion planning. Elected leaders represent the public. As such, planners should closely engage with the appropriate elected officials around the megaregion concept. Several MPO participants stated that elected officials often already have an awareness of inter-regional opportunities if economic connections and freight flow impact their jurisdiction and region. However, planners should highlight economic and freight connections in discussions with elected officials.

Megaregions need local stakeholders to bring their needs, interests, and perspectives. Local stakeholders are the people, businesses, tribes and other organizations impacted by megaregion planning. Each brings unique knowledge that is necessary to build a useful megaregion plan. Successfully engaging all stakeholders in the planning process will also result in a more successful plan.

Cities anchor and drive megaregions. City leaders and governments have an important role to play in megaregions since they are megaregions' economic centers. Central cities particularly glue their region together and host influential elected leaders whose championing can build partnerships with cities across the megaregion. Infrastructure, such as airports, seaports, or highway corridors, is also concentrated in cities with disproportionate megaregion impact.



Figure 13: Municipal Policy Background. Tom Weyandt, City of Atlanta

Different organizational structure and forms may be appropriate for individual megaregions. Each megaregion has unique characteristics, histories, and constituents. These important



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differences do not allow for a one-size-fits-all solution and instead favor indigenous approaches specific to each megaregion. Structures should also consciously address the public-private disconnect that was identified during the peer exchange to ensure incorporation of the private-sector needs and knowledge into the planning process.

Cross-Disciplinary Benefits

Speakers also addressed how a megaregions scale can be important for addressing other regional goals and priorities in combination with as well as in addition to improved freight transportation. Freight movement in megaregions can also have larger social impacts including: public health, sustainability, livable communities, and resilience to natural disasters and climatic conditions. Megaregions are connected with these issues in different ways. Michael Skipper of the Nashville Area MPO explained that public health issues can be a different lens through which to examine freight movement. The health lens reveals how freight traffic may impact pedestrian safety or air quality. Michael Kray of the Atlanta Regional Commission echoed the concern for freight traffic's local health impacts by citing the number of elementary schools near heavy freight and industrial corridors, with concomitant effects on safety and air quality. The planning process for schools does not currently address freight movement in metro Atlanta, but considering freight routes when making school siting decisions could result in safer schools.

Arthur Wendel of the Centers for Disease Control and Prevention explained how the health impact assessment (HIA) concept may be able to integrate health and healthcare into megaregion planning. Health impact assessment is a voluntary approach to examine programs' or projects' health impacts in order to maximize health benefits and protect public health. Health impact assessments can bring health considerations into many different contexts, including identifying health needs of vulnerable populations or viewing the nexus between health and other decisions, such as how freight routes may impact walking to school or pedestrian safety.

The megaregion scale provides a useful tool to address air and water quality issues. Emissions from transportation systems and facilities can have a negative impact on air quality. Curtis Foltz of the Georgia Ports Authority explained how the Port of Savannah has already taken measures to improve environmental quality on a facility level, including using electrified cranes and port equipment. While existing efforts have been site- or organization-centric, the fact that air and water quality issues cross jurisdictions gives them an important regional and megaregion component. For example, Dr. Fred Ducca of the National Center for Smart Growth indicated that protecting the water of the Chesapeake Bay mobilizes the residents to action across the DC- Virginia Megaregion borders.

Several participants also were considering resiliency and disaster planning from a megaregions perspective. According to participants, resiliency issues could include the effect of global warming on important infrastructure, such as ports, or outlining a role for MPOs or other megaregion planning partners in disaster preparedness and recovery.

Cross-functional connections between transportation and health, security, safety, and air quality among other issues are already a reality. Many MPOs are experienced in addressing air quality issues affected by transportation. Port and airport representatives discussed how their facilities



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address sustainability and environmental issues. For example, the Atlanta airport has worked with Leadership in Energy and Environmental Design (LEED) certification and sustainability in cargo growth, just as the Port of Savannah has electrified some port equipment. Border infrastructure planned under the auspices of SANDAG will bring together increased reliability of freight movement with better border protection, security, and other concerns championed by governmental partners. Each of these megaregion actors already incorporates cross-disciplinary functions implicitly in their transportation decision making.

Freight is intrinsically important. Freight also helps planners to understand the phenomena that characterize megaregions, such as the economic connections between commodity types and industrial clusters. Freight impacts are felt locally through the large number of jobs that the industry supports in freight hubs such as Atlanta (per Michael Kray of the Atlanta Regional Commission), but it impacts the nation in a way that requires a national freight strategy as well (John Eaves, the Fulton County Chairman).

Competition and Partnerships

The dichotomous themes of competition and partnership marked multiple peer exchange discussions. On the one hand, participants recognize the need to establish partnerships within and across megaregions. Partnerships build on the idea of complementarity, which may be a complementarity of size, scale, level of government, function, mode, commodity, or industry. Partners bring different abilities that when combined increase their effectiveness.

Complementarity may also occur due to market forces without any regulatory or governmental action. Dr. Fred Ducca cited the different foci of the Norfolk, Baltimore, and Wilmington ports as an example of complementarity, and it is a complementarity that comes as a result of market forces driving the decision making process to achieve the greatest economic benefit. Many speakers spoke of partnerships and the effect of one area on another within the megaregion context.

Simultaneously, participants discussed strategies to address competition. Speakers implied that competition may exist among cities or gateways within a megaregion, but that it is particularly present among megaregions. Follow-up discussion began to explore the relationships between competition and complementarity in megaregion economic functions, which will likely require additional future attention.

Robert Case of the Hampton Roads Transportation Planning Organization highlighted the need for a port planning strategy that recognizes each MPO's strengths and emphasizes cooperation. Such a strategy would address the tension between competition and cooperation by encouraging mutually beneficial cooperation that leverages complementarity.

Moving from Reactive to Proactive Planning

Breakout sessions examined planning partner needs. Below are some of the important needs identified during breakouts.



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Figure 14: Break-out Sessions

Private-sector partnerships. The breakouts recognized a strong need to integrate private-sector partners and knowledge gleaned from the private sector. Key ideas included:

- Developing shared goals among public and private partners
- Gaining a better understanding of supply chain and logistics
- Identifying alternative funding sources in conjunction with private partners with interests in megaregion planning outcomes
- Performance measures that account for private sector business needs
- Harmonize freight regulations to support planning and private-sector partnerships

Cooperative frameworks. Cooperative frameworks can advance planning among jurisdictions. Breakout groups highlighted the following items related to cooperation.

- Develop a forum for megaregion planning stakeholders
- Discuss framework goals with elected officials to support collaboration
- Cooperate among regions
- Better understand how decisions in one location affect other locations

Resources. Financial and data resources are needed to support megaregion planning in the following ways.

- Consider federal incentives to support megaregion planning partnerships
- Partner with government associations, planning associations, and universities to communicate megaregion implications
- Develop freight movement data at finer geographical scales, such as Freight Analysis Framework zonal disaggregation
- Build a data warehouse to make data resources available to all partners



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The Way Ahead

Much of the peer exchange focused on the state of practice and research regarding freight planning and supply chain management in megaregions. In addition to the lessons from current practice and research, discussions and break-out groups also identified several concrete actions that should be taken to advance the state of megaregions, and these actions are described below.

- Continue federal research on MPO and megaregion planning. Federal research supports MPO engagement at the megaregion scale with data-driven and flexible approaches that are adapted to the political and policy reality within which planning occurs. Research can provide solutions that make planning function better in new settings and scales, and some relevant topics include freight, jobs, environmental protection, and mobility, as well as details for megaregion partnerships and planning.
- Reconsider the “megaregion” name and brand. A breakout group offered that the megaregion phenomena should be approachable to practitioners, and that a new name that is less academic may be helpful.
- Look for ways to incorporate megaregion planning into existing MPO planning processes. Bill Lyons of the Volpe Center indicated that the federal transportation planning process followed by MPOs and DOTs can provide a useful foundation for beginning to consider freight and other goals at a megaregions scale. This can begin when stakeholders and participants recognize that decisions and outcomes in one metropolitan area or state are closely linked to decisions in other areas. Planning agencies and stakeholders can approach the transportation planning process as a valuable way to begin to find solutions to megaregions needs to accomplish freight, economic development, and other priority goals.
- Leverage existing government layers. Several participants spoke to the need to avoid creating a new layer of government and to instead leverage existing institutions in flexible ways to address megaregion phenomena. A first step is to bring together MPOs and other partners to address megaregion phenomena.
- “Spread the word, talk the talk, and walk the walk.” Megaregions remain a fairly new phenomenon compared with the planning environment in which transportation decision making occurs. As such, it will continue to develop in its theory and applications similar to all planning frameworks. However, one key to effective megaregions planning is to actively build partnerships, start conversations, and proactively plan for freight in the megaregion. The megaregion framework will grow in accordance with increases in the planning community’s collective experience and elected officials’ engagement, both of which already can provide a rich experiential and partnership base upon which to build.



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Conclusion

The peer exchange brought together transportation planners, government officials, researchers, and supply chain directors to examine the state of practice and research in megaregion planning. It particularly sought to bridge gaps between transportation planning and supply chain management and foster a mutual understanding that can benefit each field. Cooperation with supply chain management may also allow transportation planning to create a planning framework that increasingly aligns with the geographical scale at which the global economy functions.

The peer exchange featured a number of speakers and rich discussion to draw connections across disciplines. Several representatives from private-sector logistics companies explained the diverse supply chain characteristics that exist among and within firms, and how firms are responding to economic challenges. They also talked with planning and government officials about the connections between actions and strategies that the planning departments take and their effects on private companies. Transportation planning can particularly support private-sector success by ensuring a freight network that allows fast and reliable transportation within a sensible and predictable regulatory and financial environment.

The discussion centered on the ways in which planners and government can become increasingly proactive in responding to freight planning challenges. Doing so will require empowering the planning community through different measures. One of the most important measures to address is sufficient funding and financing organized in ways that allow organizations to partner to address megaregion-scale transportation problems. Needs for new data at the right scales and reasonable prices also featured heavily in the discussion. The public sector and the private sector might each play a role in providing the necessary data for megaregion planning. It is important to ensure its accessibility and usefulness to planning organizations of all sizes and structures.

Participants also highlighted ways that planning agencies can increase their effectiveness in megaregion initiatives. First, existing organizations should recognize the cross-jurisdiction transportation impacts and synergies that exist, and partner with other jurisdictions or other fields to address them. Megaregions inherently involve multiple jurisdictions, and existing planning organizations are a powerful resource for working at the megaregion scale together. Multi-jurisdictional megaregion groups should remain connected with private-sector freight needs, prioritize initiatives across the megaregion to maximize benefit in a fiscally constrained environment, and address barriers at borders, including international borders and freight gateways. In this way existing organizations can enhance megaregion freight movement.

Megaregion planning's benefits are not limited to the economic opportunities that better and more reliable transportation networks can enable. They also present an opportunity to address other issues that are connected with freight movement. The peer exchange discussed several cross-disciplinary benefits, including addressing the connections between freight movement and health, school siting, safety, climate resilience, and livability among others. Future research and practice-based discussions should continue to examine these interdisciplinary connections.

The future of megaregion problem-solving lies in partnership, and partnership starts by building connections and reaching mutual understandings. There is a role for planners, supply chain



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managers, researchers, and other government institutions to continue the dialog. While there is great potential for future policies and structures to address obstacles, it is not necessary to wait until conditions are ideal to start realizing the megaregion scale's potential. The peer exchange provides insight on ways in which each partner can leverage the scale to address existing problems and emerging opportunities.



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Transportation Planning Capacity Building (TPCB) Program

The Transportation Planning Capacity Building (TPCB) Program is a joint venture of the FHWA and the FTA that delivers products and services to provide information, training, and technical assistance to the transportation professionals responsible for planning for the capital, operating, and maintenance needs of our nation's surface transportation system. The TPCB Program website (www.planning.dot.gov) serves as a one-stop clearinghouse for state-of-the-practice transportation planning information and resources. This includes more than 100 peer exchange reports covering a wide range of transportation planning topics.

The TPCB Peer Program advances the state of the practice in multi-modal transportation planning nationwide by organizing, facilitating, and documenting peer events to share noteworthy practices among state departments of transportation (DOTs), MPOs, transit agencies, and local and Tribal transportation planning agencies. During peer events, transportation planning staff interact with one another to share information, accomplishments, and lessons learned from the field and help one another overcome shared transportation planning challenges.



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Appendix A: Agenda

Wednesday, November 6th

Breakfast and networking: 8:00-8:30 a.m.

Time	Topic	Lead Presenter*
8:30 a.m.	I. Welcome, Introductions, and Message from Host MPO <i>Issues and opportunities related to megaregions and introduction of key topics</i>	Dr. Catherine Ross , Director, CQGRD Jane Hayse , Director of Center for Livable Communities, ARC Toby Carr , Georgia Department of Transportation (GDOT) John Eaves , Fulton County Chairman Dave Williams , Metro Atlanta Chamber Andrew Edwards , FHWA-HQ, Division Office Jennifer Hibbert , FTA Region 4, Tom Weyandt , Transportation Policy Advisor, City of Atlanta
9:15 a.m.	II. Keynote: Transportation, Freight, and Megaregions– The Future of the Piedmont Atlantic Megaregion	Dr. Catherine Ross , Director, CQGRD
9:45 a.m.	III. Private Sector Decision-Making: Supply Chain, Logistics & Distribution Centers in Megaregions	Dave Williams , Metro Atlanta Chamber, Introduction Mike Orr , Genuine Parts
10:30 a.m.	IV. Discussion about Blocks 1 & 2	Dave Williams , Moderator Dr. Catherine Ross , Mike Orr
10:45 a.m.	V. Break	
11:00 a.m.	VI. Overview from Piedmont Atlantic Megaregion (PAM) Peer MPOs <i>Presentation by PAM peers (10-15 minutes each)</i> <i>Facilitated discussion to identify commonalities and themes as context for peer exchange</i>	Dr. Catherine Ross , Introduction and Facilitation Panel: PAM MPO Peers (Darrel Howard , Birmingham MPO, Mary Beth Ikard , Nashville Area MPO, John Orr , Atlanta Regional Commission (ARC))
12:10 p.m.	VII. Lunch Served	
12:30 p.m.	VIII. Luncheon Keynote: Real Life Challenges of transportation planning	Dave Williams , Introduction Page Siplon , Georgia Center



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Time	Topic	Lead Presenter*
	from private sector perspective	of Innovation for Logistics Michelle Livingstone, Presenter , Vice President of Transportation, The Home Depot
1:30 p.m.	IX. Overview from National Peer MPOs: <i>Presentation by national MPO peers (10-15 minutes each)</i> <i>Facilitated discussion to identify commonalities and themes as context for peer exchange</i>	William Lyons , U.S. DOT/Volpe Center; Introduction and Facilitation Panel: National MPO Peers (Rob Case , Hampton Roads/Norfolk Transportation Planning Organization, Carlos Roa , Miami-Dade MPO, Elisa Arias , San Diego Association of Governments (SANDAG), Eric Zimmerman , National Association of Regional Councils (NARC))
2:45 p.m.	X. Break	
3:00 p.m.	XI. Transportation Infrastructure Impacts on Megaregions: <ul style="list-style-type: none"> • Panama Canal Improvements – Impact on Megaregion Maritime Ports • Importance of Air Logistics, Passengers & Freight to the Megaregion 	Dr. Catherine Ross , Introduction Curtis J. Foltz , Executive Director, Georgia Ports Authority Jane Hayse , Introduction Louis Miller , Hartsfield-Jackson Atlanta International Airport
4:00 p.m.	XII. State DOT Perspective on Megaregions <i>Topics may include multimodal, freight, non-metropolitan interests, other</i>	Dr. Catherine Ross , Facilitator Panel: Tom McQueen , Georgia DOT, Liza Joffrion , Tennessee DOT, Roberto Canales , North Carolina DOT
4:50 p.m.	XIII. Wrap up: Themes for Day 1	William Lyons
5:00 p.m.	XIV. Announcements – End Day 1	William Lyons

Reception to Follow at 5 p.m.



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Thursday, November 7th

Breakfast and networking: 7:45-8:15 a.m.

Time	Topic	Lead Presenter*
8:15 a.m.	XV. Welcome, Announcements	Dr. Catherine Ross
8:30 a.m.	XVI. Megaregion and Freight Case Studies: Evidence from Research and Practice <i>What have we learned from doing projects at the megaregions level?</i> <i>What are the next steps?</i> <ol style="list-style-type: none"> 1. Freight Movement, Port Facilities, and Economic Competitiveness 2. Bringing Freight movement in the Chesapeake Megaregion: Transcending Boundaries 3. Border Crossing, Freight, and Megaregions 	Speakers: Dr. Michael P. Hunter , Director of the National Center for Transportation Systems Productivity and Management (NCTSPM) Dr. David Jung-Hwi Lee , CQGRD Dr. Fred Ducca , University of Maryland Elisa Arias (SANDAG)
10:00 a.m.	XVII. Break-out sessions: all participants “Connected Places: Megaregions and Freight” <i>Brief report back from groups</i>	Facilitators: Catherine Ross, William Lyons, Haley Peckett, Fred Bowers, Sarah Smith, Tiffany Julien
11:00 a.m.	XVIII. Break	
11:15 a.m.	XIX. Introduction: FHWA/Volpe Center Research on the Role of MPOs in Planning for Megaregions Panel: Opportunities to Pursue Diverse Goals on a Megaregions Scale <i>Discussion of challenges of combining freight with other priority non-freight goals (for example: health, climate resilience, livability, other); input from stakeholders</i>	Introduction and Facilitator: William Lyons Panel: MPO Peers (Michael Skipper , Nashville Area MPO, Michael Kray , Atlanta Regional Commission, Arthur Wendel , Centers for Disease Control and Prevention, Rich Denbow , Association of Metropolitan Planning Organizations)
12:00 p.m.	XX. Wrap Up and Next Steps <i>Include response from peer exchange hosts, next steps, and action items</i>	Catherine Ross , Facilitator; Response: Jane Hayse , ARC, Dave Williams , Metro Atlanta Chamber, all participants Closing: Fred Bowers, FHWA
1:00 pm	Adjourn	



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Appendix C: Agency Website and Resource Links

Host Agency and Organizations:

Atlanta Regional Commission (ARC)

<http://www.atlantaregional.com/>

Metro Atlanta Chamber

<http://www.metroatlantachamber.com/>

Center for Quality Growth and Regional Development (CQGRD) at the Georgia Institute of Technology

<http://www.cggrd.gatech.edu/>

Private-Sector Partners

The Home Depot

<https://corporate.homedepot.com/Pages/default.aspx>

Genuine Parts

<http://www.genpt.com/portal/page/portal/GENPT.COM>

Peer Agencies

Atlanta Regional Commission (host)

<http://www.atlantaregional.com/>

Birmingham Metropolitan Planning Organization

<http://www.rpcgb.org/transportation/mpo/>

Hampton Roads Transportation Planning Organization (HRTPO)

<http://www.hrtpo.org/>

Miami-Dade Metropolitan Planning Organization

<http://www.miamidade.gov/mpo/>

Nashville Area Metropolitan Planning Organization

<http://www.nashvillempo.org/>

San Diego Association of Governments (SANDAG)

<http://www.sandag.org/>



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State Agencies

Georgia Departments of Transportation

<http://www.dot.ga.gov/Pages/default.aspx>

Georgia Center of Innovation for Logistics

<http://logistics.georgiainnovation.org/>

North Carolina Departments of Transportation

<http://www.ncdot.gov/>

Tennessee Departments of Transportation

<http://www.tdot.state.tn.us/projectplanning/adt.asp>

Local Governments

City of Atlanta

<http://www.atlantaga.gov/index.aspx?page=191>

Fulton Board of Commissioners

<http://www.fultoncountyga.gov/commissioners>

Federal Agencies

Transportation Planning Capacity Building (TPCB) Program

<http://planning.dot.gov/>

Centers for Disease Control and Prevention

<http://www.cdc.gov/>

Federal Highway Administration (FHWA)

<http://www.fhwa.dot.gov/>

Federal Transit Administration (FTA)

<http://www.fta.dot.gov/>

U.S. DOT Volpe National Transportation Systems Center (Volpe Center)

<http://www.volpe.dot.gov/>

Infrastructure

Hartsfield Jackson Atlanta International Airport



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<http://www.atlanta-airport.com/>

Georgia Ports Authority

<http://www.gaports.com/>

Government Associations

Association of Metropolitan Transportation Organizations

<http://www.ampo.org/>

National Association of Regional Councils

<http://narc.org/>

Research Partners

Center for Quality Growth and Regional Development

<http://www.cqgrd.gatech.edu/>

National Center for Smart Growth

<http://www.smartgrowth.umd.edu/>

National Center for Transportation Systems Productivity and Management

<http://nctspm.gatech.edu/>



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Appendix D: Acronyms

ARC: Atlanta Regional Commission

CQGRD: Center for Quality Growth and Regional Development

DOT: Department of Transportation

FHWA: Federal Highway Administration

FTA: Federal Transit Administration

GDOT: Georgia Department of Transportation

GPA: Georgia Ports Authority

HIA: Health impact assessment

HRTPO: Hampton Roads Transportation Planning Organization

IMPLAN: Impact analysis for PLANning

LEED: Leadership in Energy & Environmental Design

LTL: Less-than-truckload (shipment)

MAP-21: Moving Ahead for Progress in the 21st Century

MPO: Metropolitan Planning Organization

NCTSPM: National Center for Transportation Systems Productivity and Management

SANDAG: San Diego Association of Governments

SEFTC: Southeast Florida Transportation Council

SKU: Stock keeping unit



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