The Challenge of Transportation Planning for Megaregions

Transportation Trajectories

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USDOT/Volpe Center

July 24, 2012

Introduction and Overview

- Compelling need for transportation planning to meet the emerging needs of megaregions
- Context: how transportation is planned in US
  - US framework for transportation planning
    - Roles of Metropolitan Planning Organizations (MPOs)
    - State Departments of Transportation (DOTs)
    - Partners
  - Compare to planning processes in place for Megaregions
- Findings from Volpe research on transportation planning for megaregions
  - Focus on role of MPOs
    - Insights from "best practice" case studies
  - What's happening? Innovations and adaptability.
  - What isn't happening?
  - Focus: Observations, challenges, opportunities

* Views of presenter, not necessarily FHWA or USDOT.

Definition of Megaregions

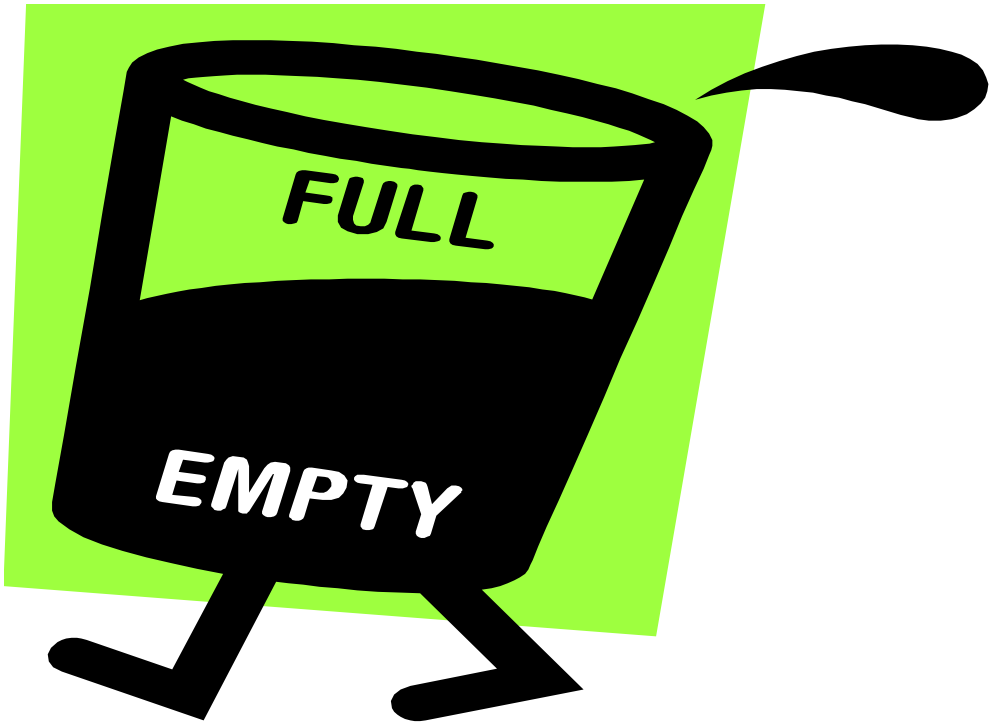
Large networks of metropolitan centers and surrounding areas connected thru cultural, environmental, economic characteristics as well as infrastructure.

Center for Quality Growth and Regional Development

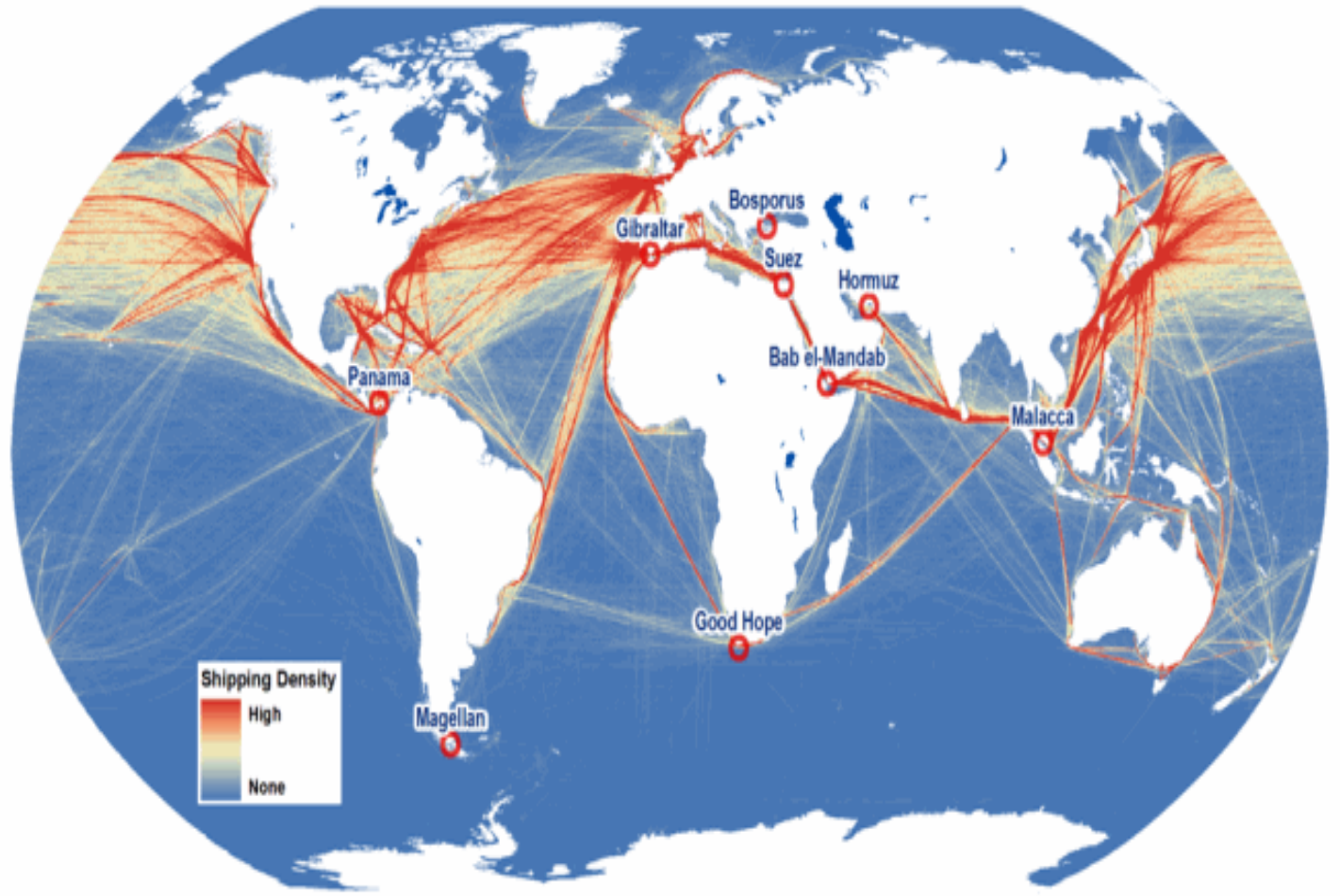
Georgia Institute of Technology

Focus on planning for Megaregions

- Challenges, issues and opportunities going forward
- *Is the glass half full or half empty?*



Worldwide Commodity Flows



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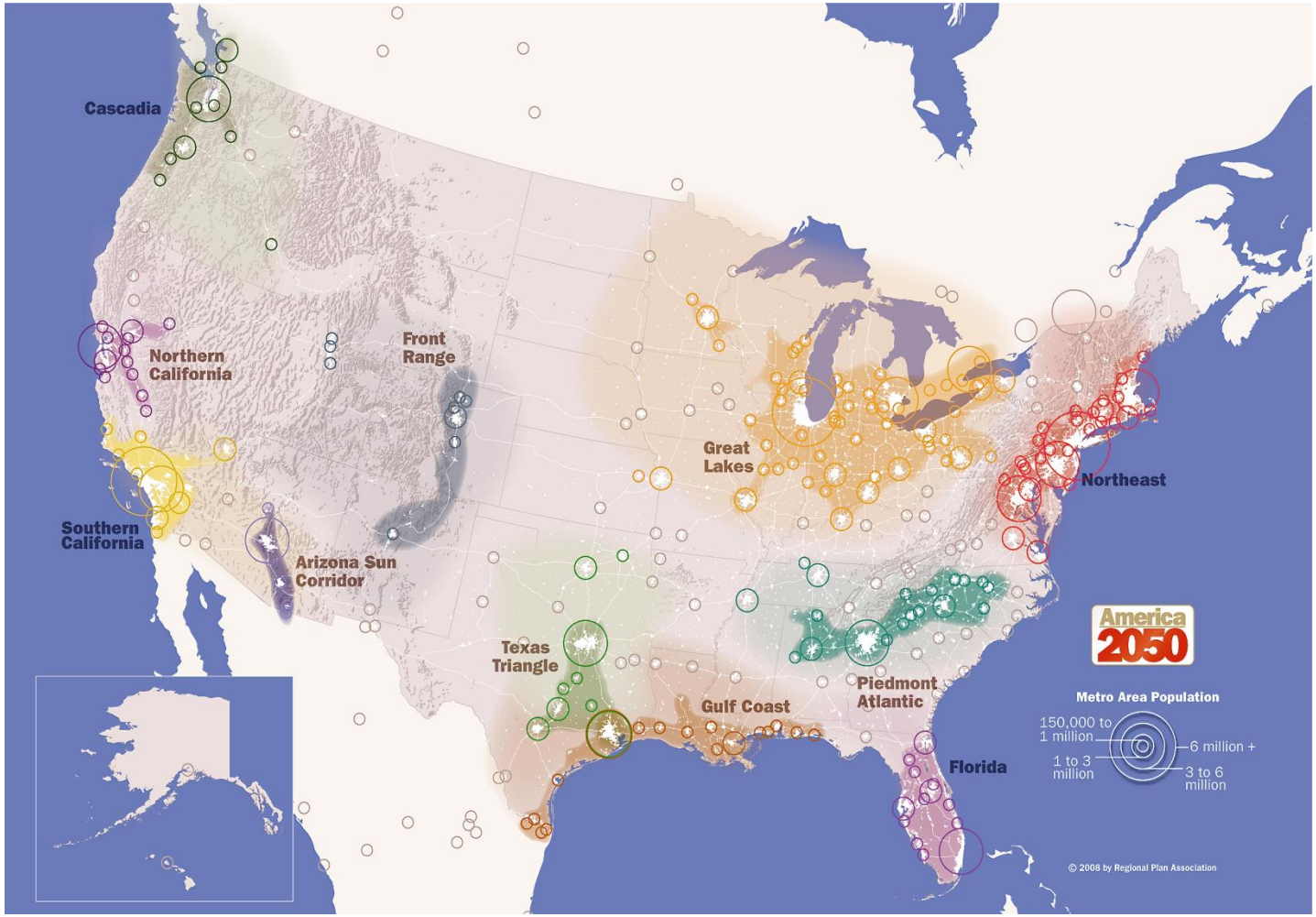
The 11 Mega-Regions of the U.S.



www.America2050.org

Why Megaregions?

- Responds to reality of emerging large-scale regions
- Better adapted to deal with global economic opportunities and environmental issues
- Provides strategy to act globally, while providing a local focus on livability and sustainability
- Improves health, mobility and employment opportunities across large-scale regions
- Supports transportation innovation

Emerging Importance of Megaregions

Comparison of Major Variables in Megaregions and Non-megaregions						
	Geographical Area	Population (2008)	Employment (2008)	Gross Regional Product (2008)	Fortune 500 Companies' Revenue (2008)	Patents (1999)
Megaregion	29.60%	76.54%	76.98%	81.47%	92.07%	86.77%
Non-megaregion	70.40%	23.46%	23.02%	18.53%	7.93%	13.23%
Source: Ross et al.						

Mega-regions and Freight

66%
- American-International trade concentrated in mega-regions

77%
- Moved by truck between mega-regions

134%
- Increase in **export** international trade to mega-regions by 2035

124%
- Increase in **import** international trade to mega-regions by 2035

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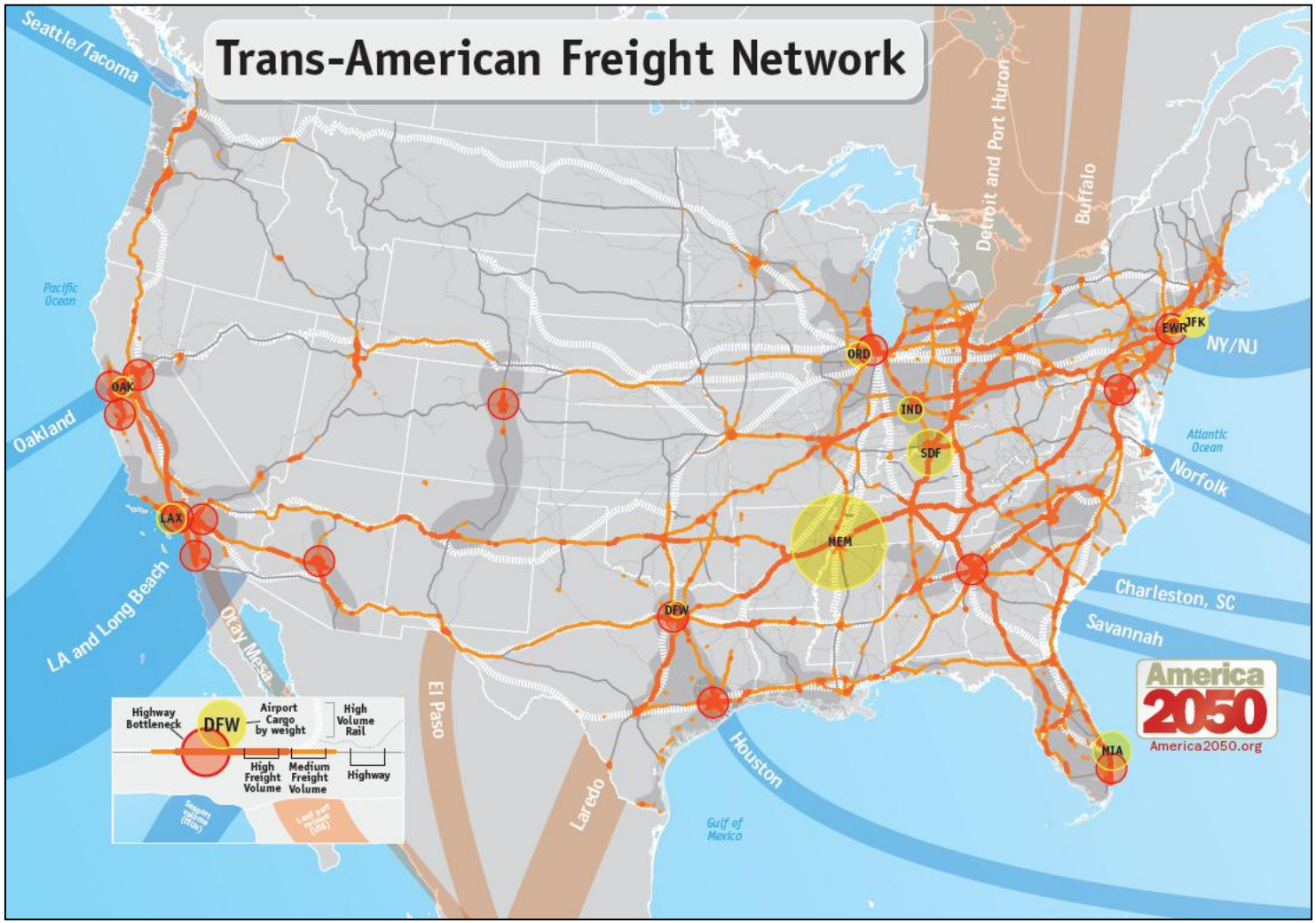
Recommendations for a Trans-American Freight Network



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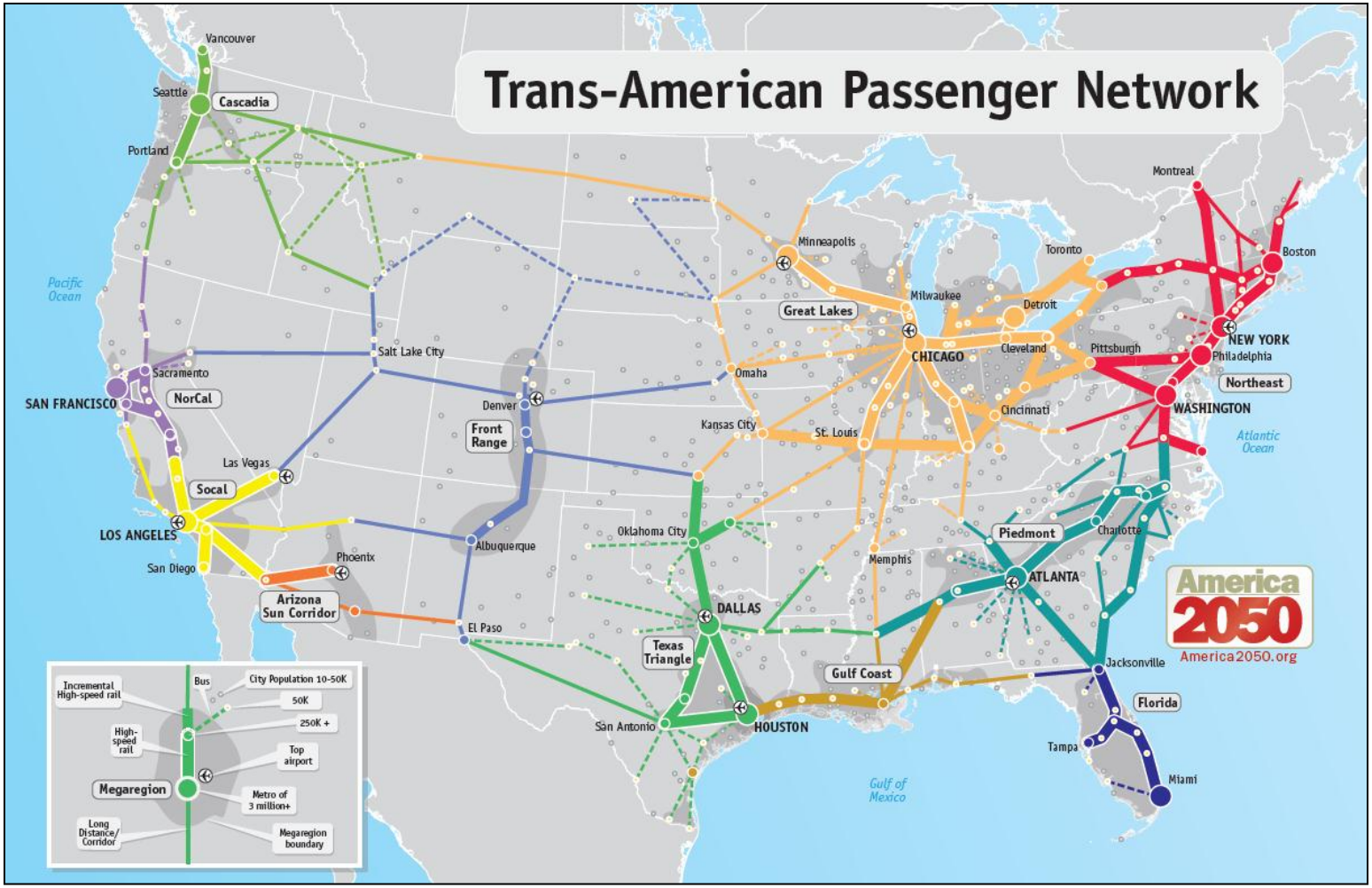
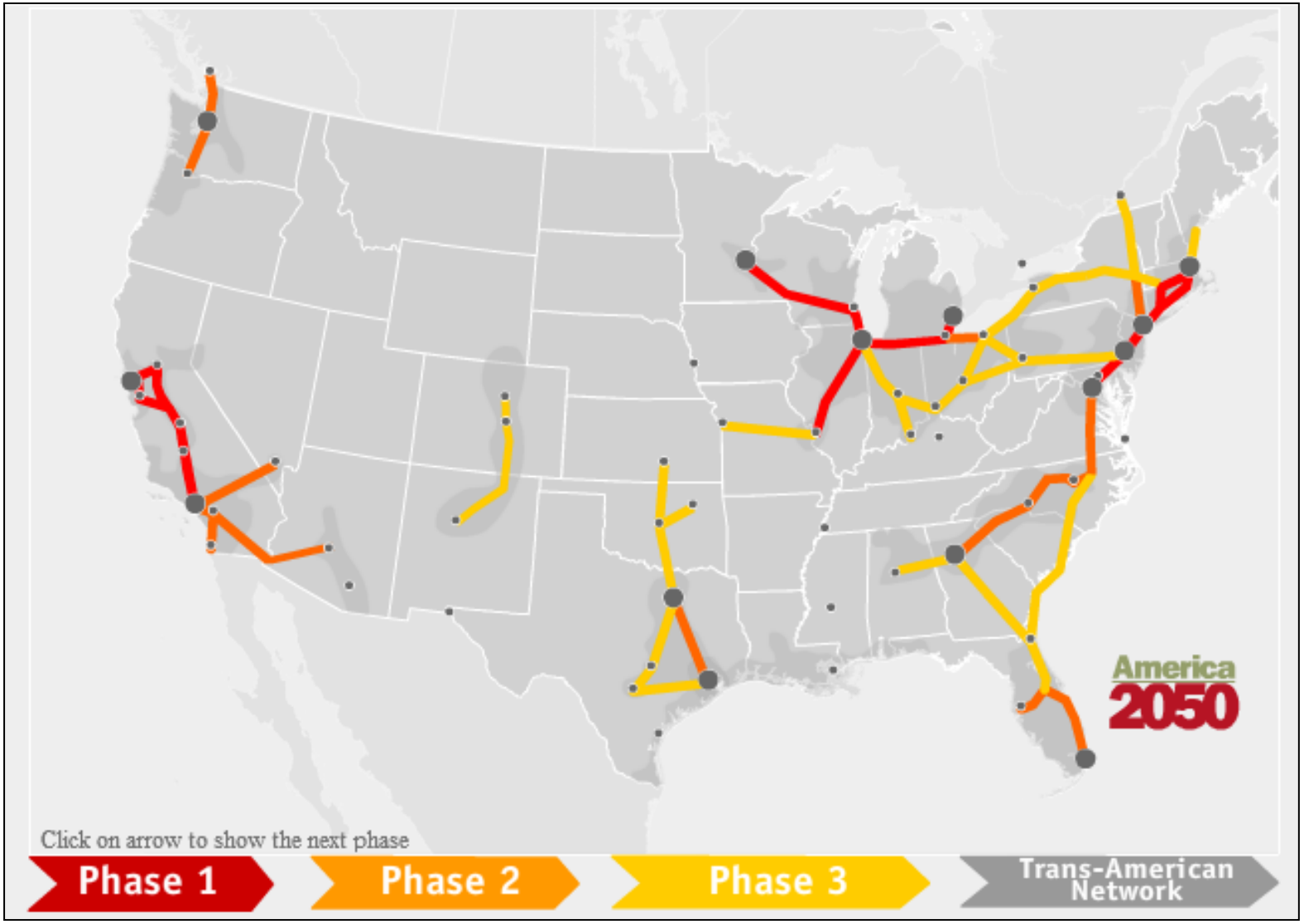
Recommendations for a Trans-American Passenger Network



A Phasing Plan for High-Speed Rail



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Two ways to approach planning for Megaregions

- Data driven approach
  - Criteria: population, economic, land use, mobility forecasts
- Flexible approach
  - Identify near and long term problems and opportunities
  - Initiate actions to support agency or stakeholder's goals and priorities
    - MPO => Metro area
    - DOT => State
    - Private sector => Business
  - Work toward convergence of mutual interests with partners

Planning Context: Federal Planning Requirements and Programs

- Formal institutional roles and responsibilities
  - Metropolitan Planning Organizations (MPOs)
    - Policy Board: strong role for local elected officials
  - State Departments of Transportation (DOTs)
  - Transit, other modal operators
  - Stakeholder involvement
  - Public participation
- US Department of Transportation
  - Funds for projects and planning
  - Regulatory Oversight of planning process

Planning Context: Federal Planning Requirements

- Systems approach: Integrated, multimodal, and intermodal
  - Regional and statewide networks
  - Level playing ground: flexible funding
- 3-C Planning Process
  - Continuing, Comprehensive and Cooperative planning
- Financial Realism
- Targets for air quality
- "Proactive" public involvement
- MPO Board: involvement of elected officials
- Environmental Justice
- Planning factors: emphasis areas
- Key products:
  - Strategic: 20 year plan
  - Implementation: 4 year investment program

Federal planning requirements evolve under MAP-21

- July 2012 Reauthorization
- Projects of Regional and National Significance (Sec. 1118)
  - Funding: authorized for FY13
  - For DOTs, MPOs, ports, transit, local
    - Multi-jurisdictional group
  - Capital projects or program of integrated projects
    - Includes project development including planning

Federal planning requirements evolve under MAP-21

- Metropolitan Transportation Planning (Sec. 1201)
- Supports coordination of planning for:
  - Multistate metropolitan areas
  - Along designated corridors
  - MPO coordination with Interstate Compacts
    - High-speed/inter-city rail, intermodal terminals
- Coordination by adjacent planning agencies
  - MPOs with non-urban, other types of planning
    - Economic development, housing, environment, etc.
- Establishment of performance-based approach

Timeline: Volpe Megaregions Projects

- Chicago MPO (CMAP) *Goto2040 Plan* (2009)
  - Strategy Paper: Planning Major Inter-regional Projects *
- Phoenix MPO (MAG) Federal Planning Certification (2010)
  - Megaregions Commendation (best practice)
- Volpe/Dutch Ministry Workshop (2010)
  - US/Dutch approaches to Planning Major Inter-regional Projects *
- TRB: 2010 workshop*, 2011/12 panels, Volpe 2012 paper *
- White papers for FHWA (2012) *
  - Role of MPOs
  - Role of Rural Areas
- FHWA/FTA Transportation Planning Capacity Building Peer Exchange *
    - "The Role of MPOs in Megaregions Planning" (MAG/Phoenix, 5/12)
- Support to FHWA Megaregions research group (2011-)

** Links to external products will be posted.*

Adaptation of Transportation Planning

- Emerging importance of megaregions
  - Changing demographics
  - Longer commute patterns
  - Increased interaction between urbanized areas
  - Attention to rural areas
  - New federal partnerships
    - Including livability and sustainability (DOT-HUD-EPA)
  - Emphasis on performance based planning
    - Transparency, accountability, results

White Paper: MPO Planning for Megaregions

- USDOT/Volpe Center for FHWA Office of Planning
- Focus: evolving role of MPOs, with DOTs, other partners
- Policy context: research and advocacy proposals
- Federal planning requirements: relevance and limitations
- Opportunities to encourage planning for megaregions
  - Technical assistance
  - Research
  - Other

To support successful engagement by MPOs and partners in megaregions planning

Relevance of Core Federal Planning Elements

- MPO organization and roles
  - Board
  - Agreements
- Visioning and Scenario Plans
- Funding sources: STP, Enhancements, Planning, FTA Rural
- Planning Factors
- Unified Planning Work Program
- Fiscal Constraint
- Congestion Management
- Stakeholder Collaboration (Freight, Tribes, Rural areas)
- Public Involvement

MPO Research Partners

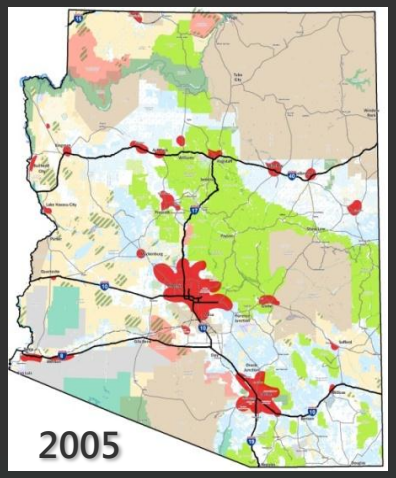
- Peer exchange and Volpe case studies and analysis
  - MPO Planning for 7 of 11 Megaregions
    - Arizona Sun Corridor in Arizona *
    - Southern California *
    - Piedmont Atlantic *
    - Colorado's Front Range *
    - Buffalo-Niagara-Toronto *
    - I-95 Corridor (Philadelphia, Northern NJ, NY City MPOs) *
    - Interregional alliances in Central Florida
- Snapshots of case studies
- Findings from white paper and peer exchange

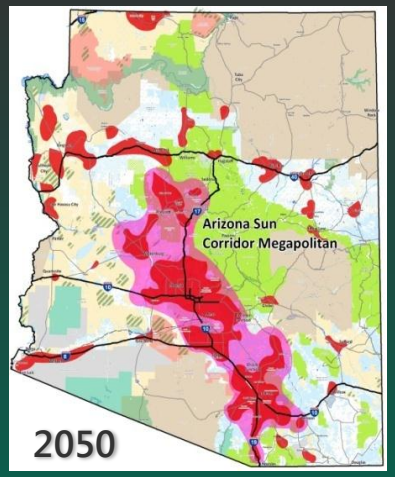
* *Peers at FHWA-FTA Capacity Building workshop, Phoenix, 5/12*

Arizona Sun Corridor

- Commendation for Phoenix MPO for Megaregion Planning: Federal Planning Certification (2010)
- Host: May 2012 FHWA/FTA Peer exchange
  - Mayors, Board members
  - 60 DOT, MPO, city/county, rural peers
  - Keynote: Dr. Catherine Ross, GA Tech
  - Learn from models of other best practices
  - Provide national “best practices”
  - Motivate partners for further progress

Arizona's Sun Corridor





Source: Maricopa Association of Governments

- Considerable growth
- Stretches from Prescott to Sonora at the Mexican border, a distance of about 275 miles
- Population and employment forecast to double by 2050, encompassing more than 85% of Arizona

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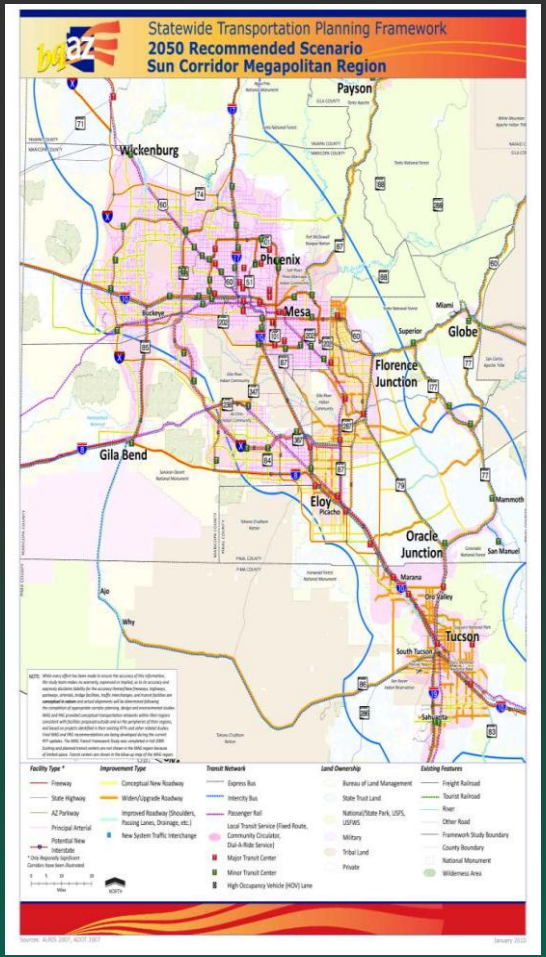
Arizona's Sun Corridor



- Maricopa Association of Governments (MAG, Maricopa County)
- Pima Association of Governments (PAG, Pima County)
- Central Arizona Association of Governments (CAAG, Gila and Pinal Counties)
- Arizona Department of Transportation (ADOT)
- Arizona State Land Department (ASLD)

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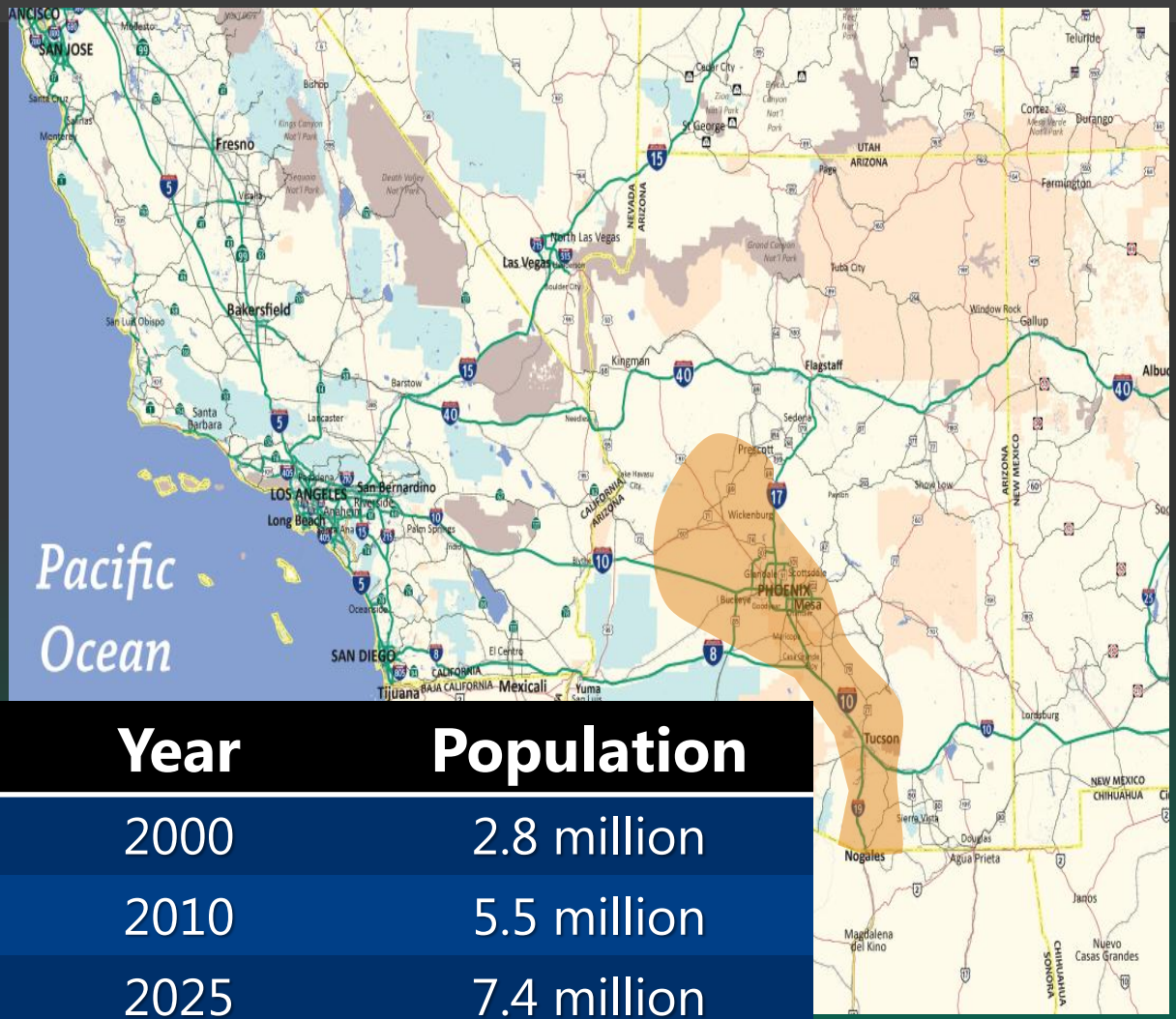
Arizona's Sun Corridor



Year	Population
2000	2.8 million
2010	5.5 million
2025	7.4 million
2050	10.0 million

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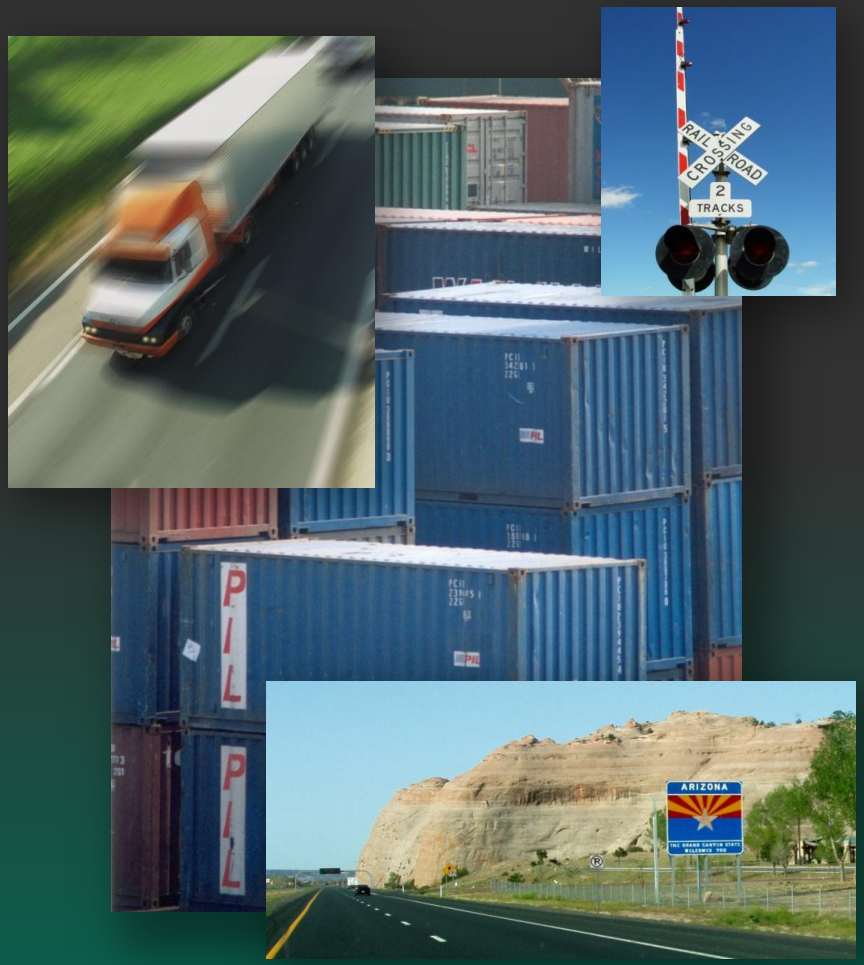
Freight Framework Study



- 12- to 18-months
- Mega-regional study
  - MAG
  - PAG
  - CAAG
  - ADOT
- Infrastructure Improvements
- Inland Port

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Southern California Mega-Region

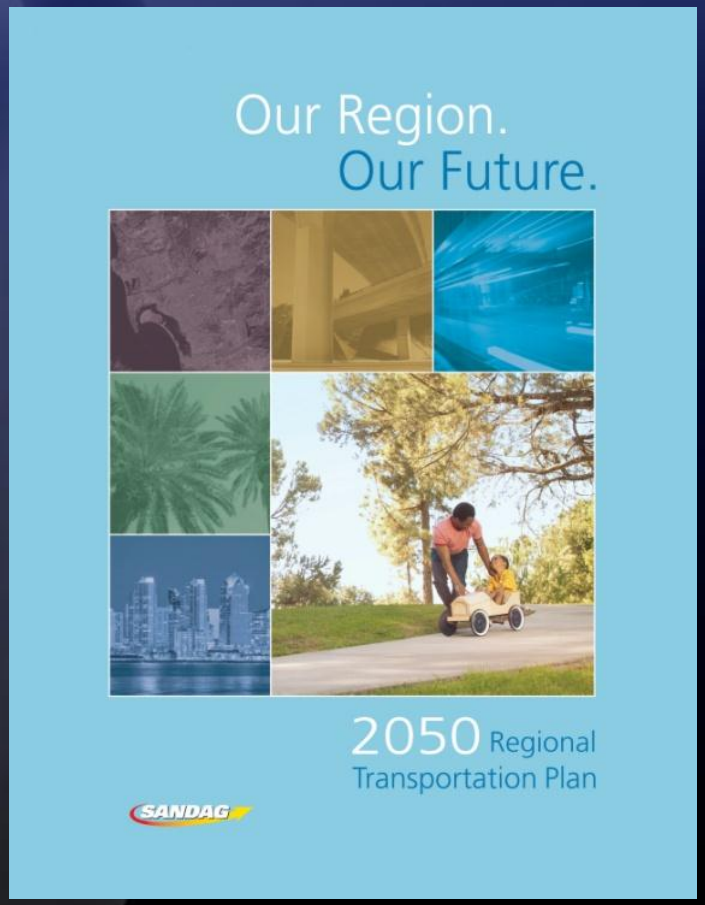
Economic Concentration

- 10th Largest Economy in the World
- Nation's Largest Trade Gateway
- GDP = $900 Billion Annually
- Nearly 58% of California Total GDP
- Over 7% of the Nation's Total GDP

CHSRA Network: 2012

- Initial Operating Segment: Central Valley
- Extend to So Cal first
- Blended operations and system
- Early Investments
- SD in Phase 2

SANDAG: Designing Sustainability



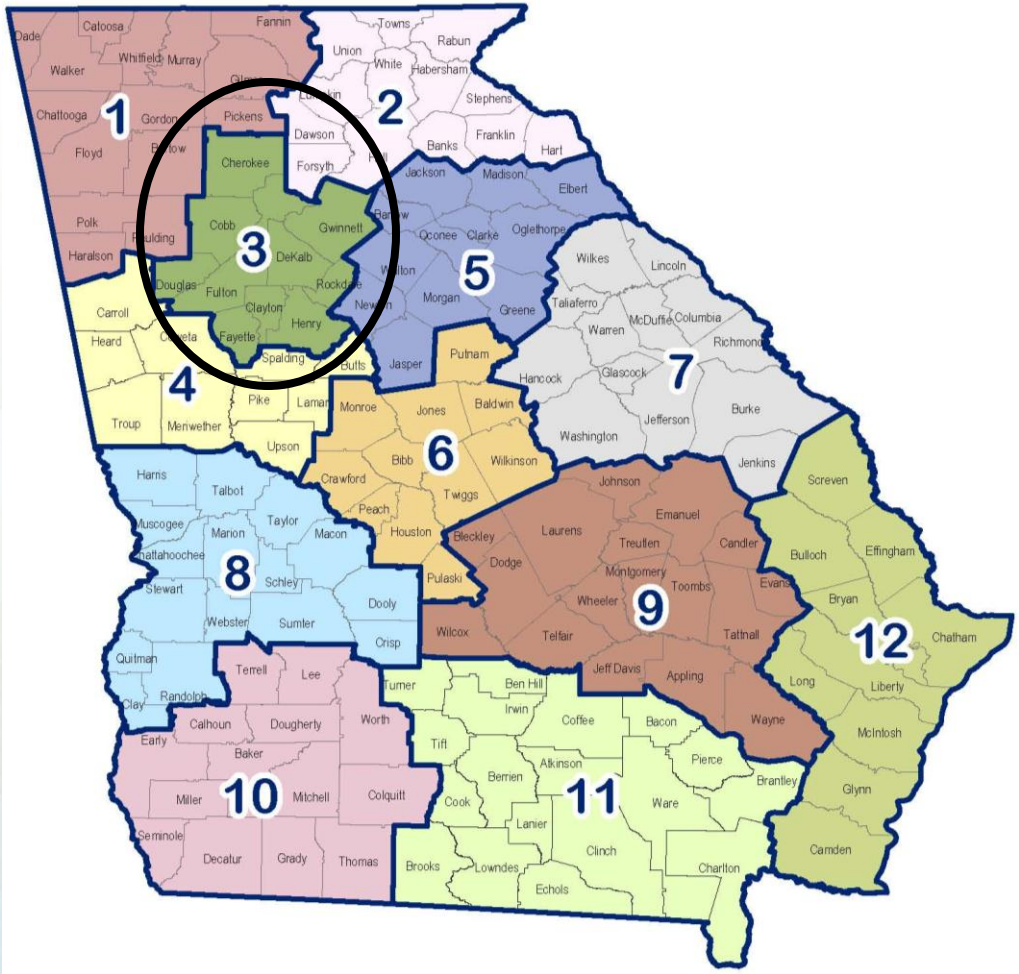
- SB 375 Implementation
  - Approved Plan in October 2011
  - Meets GHG Reduction Targets from CA Air Resources Board (CARB)

Target Year	CARB Target	2050 RTP/SCS
2020	7%	14%
2035	13%	13%

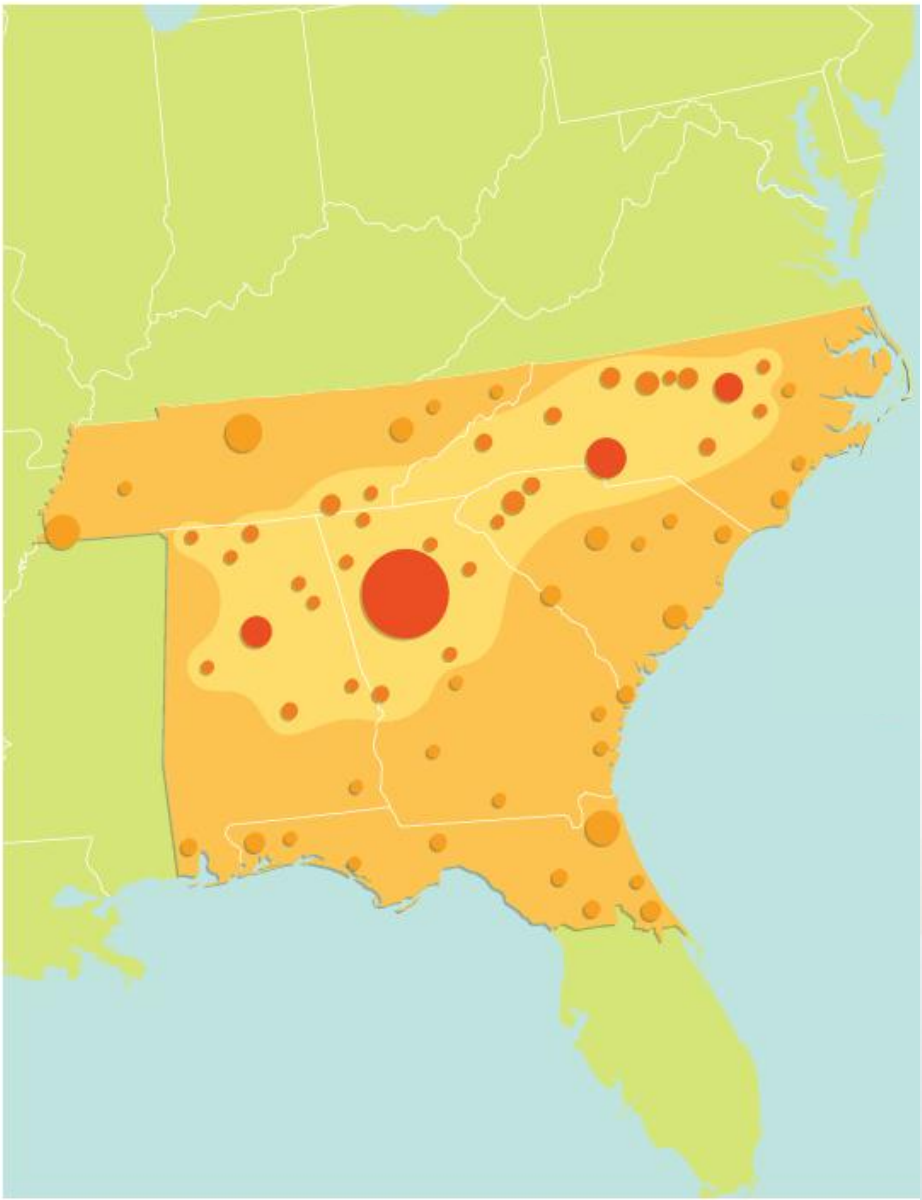
Atlanta Regional Commission

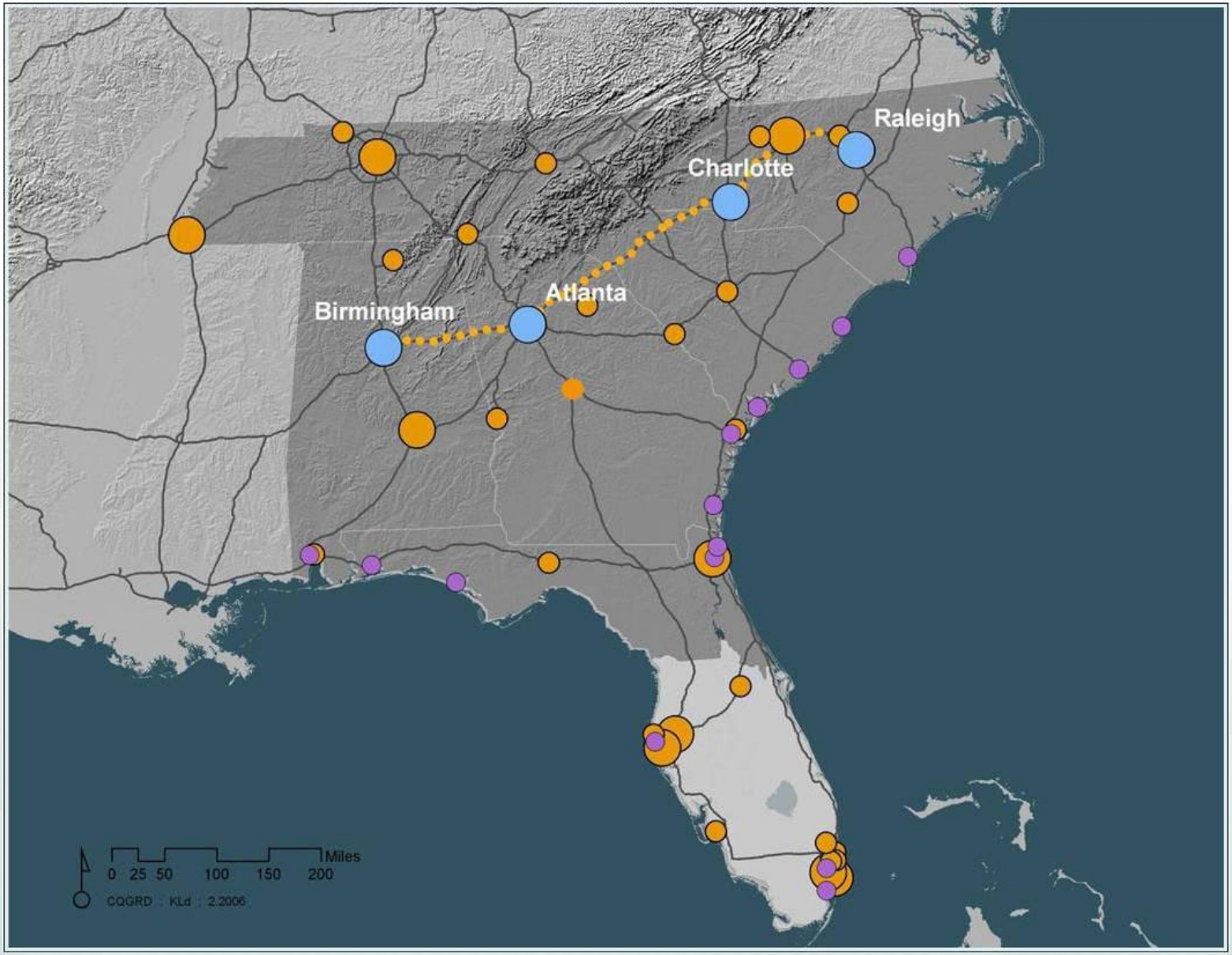
ARC has been at the forefront of regional planning in the U.S. since it's creation in 1947

- Local Government Services
- Aging Services
- Workforce Development
- Research - Data
- Environmental Planning
- Transportation Planning
- Land Use Planning



Have you met P.A.M.?




Raleigh
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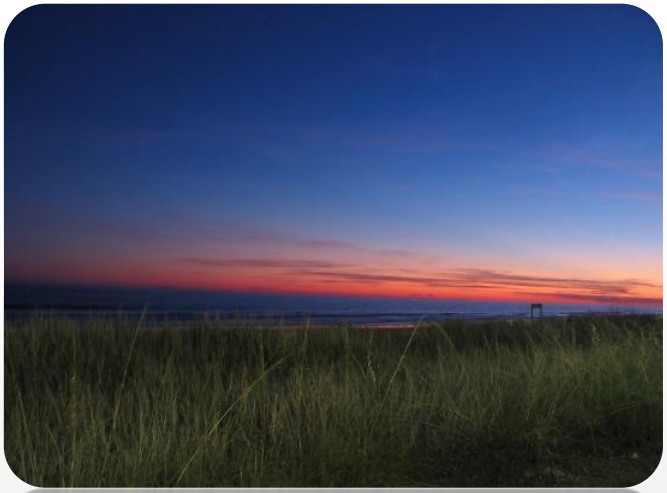
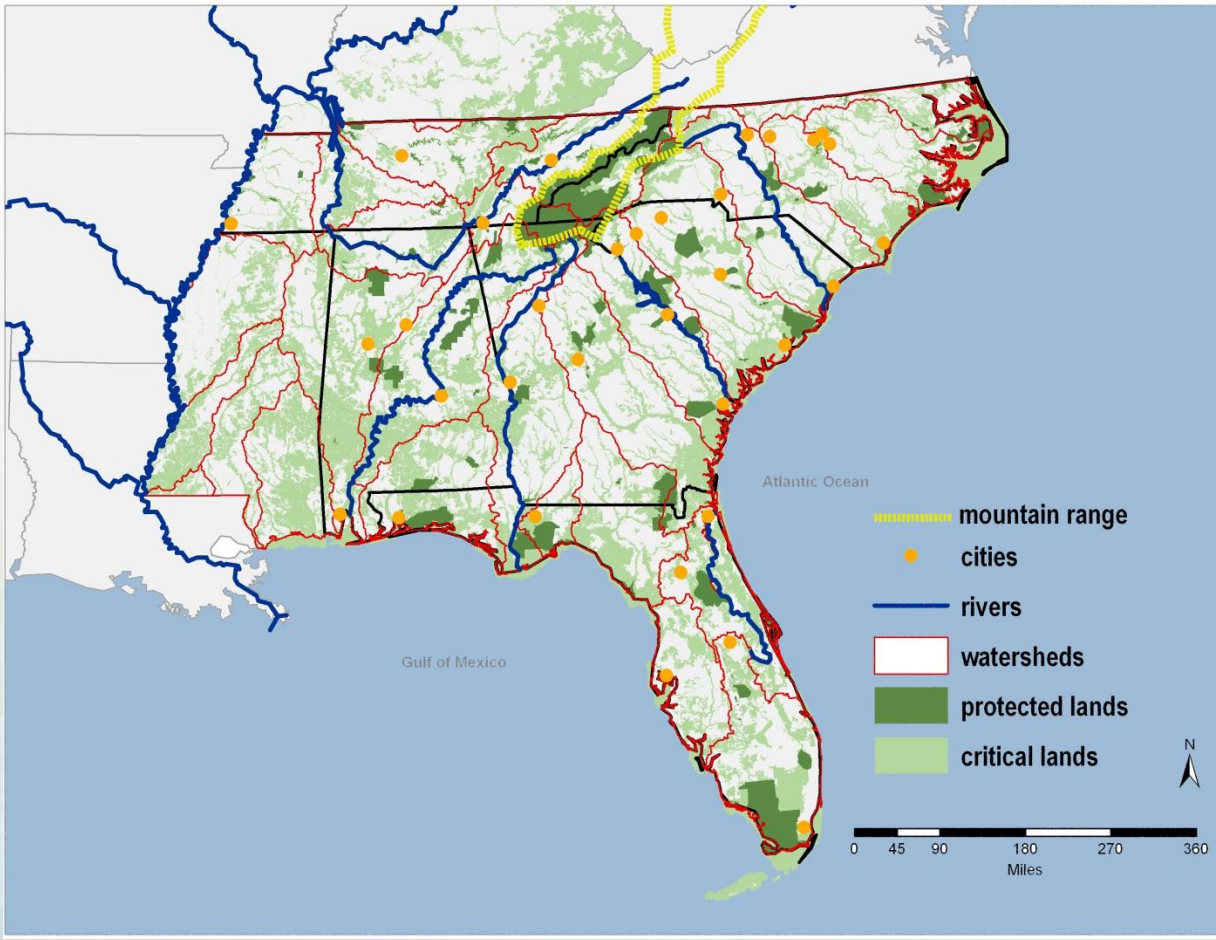
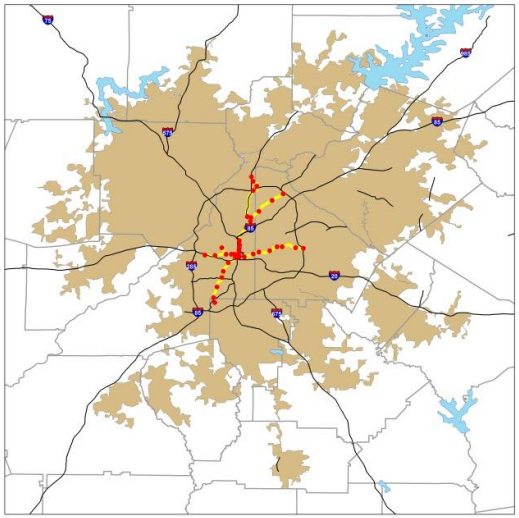
Natural Resources

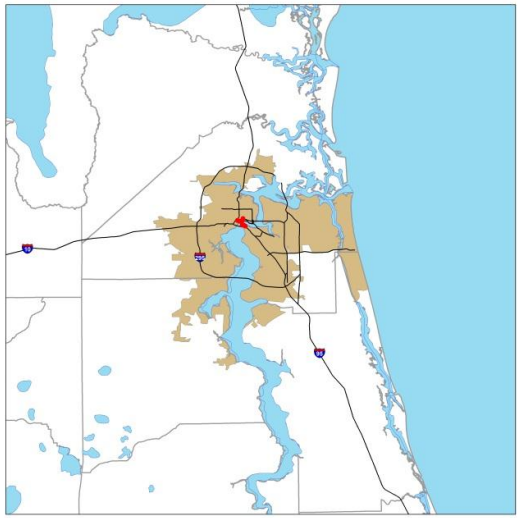




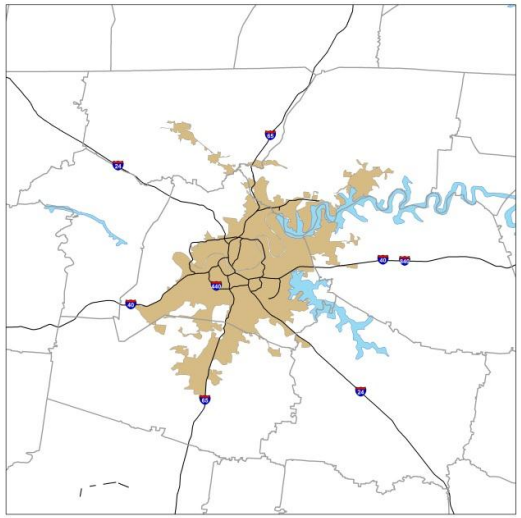
3 Million More People - Where?



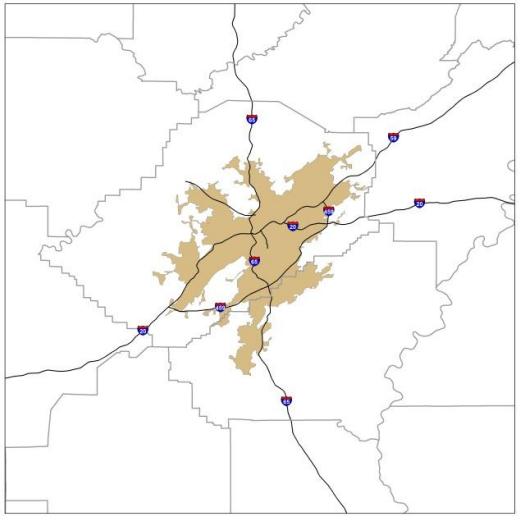
Atlanta
Population 3,493,117
1978.2 Square Miles



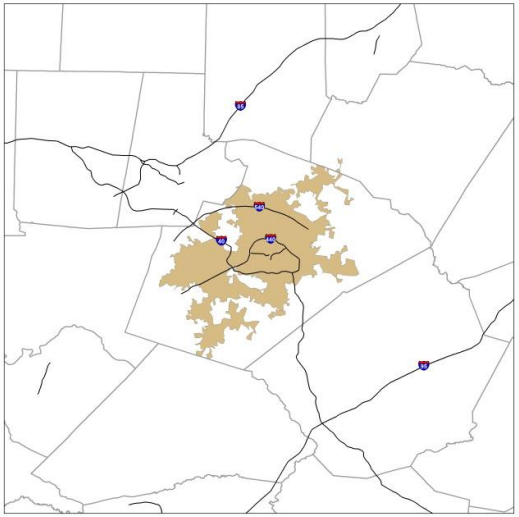
Jacksonville
Population 880,960
412.9 Square Miles



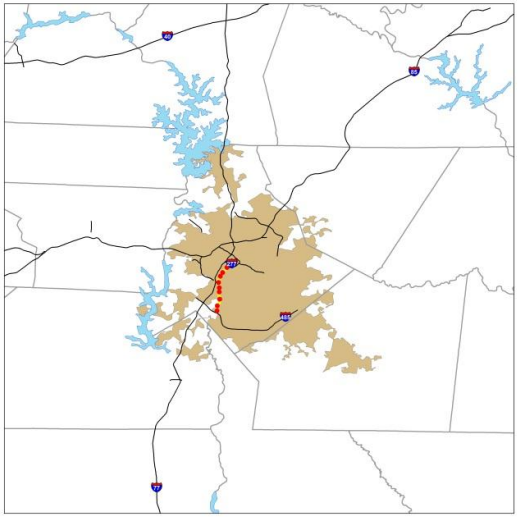
Nashville
Population 747,512
432.1 Square Miles



Birmingham
Population 661,177
393.5 Square Miles



Raleigh
Population 539,799
322 Square Miles



Charlotte
Population 753,867
437.1 Square Miles

Atlanta Regional Commission

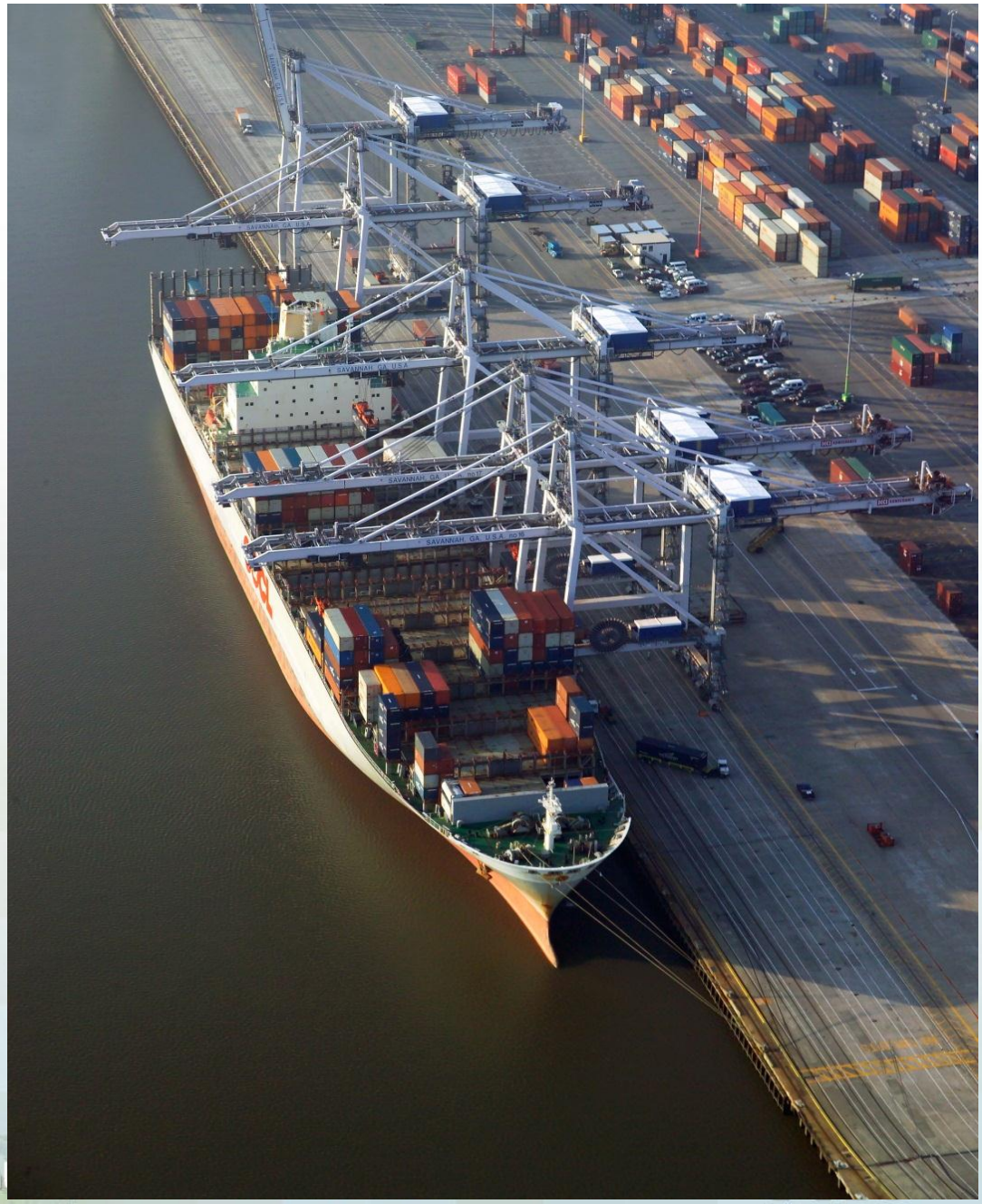
0 15 30 60 Miles

Sources: 2000 Census Urbanized Area, 2004 US BTS Fixed Guideway Database & National Highway Planning Network

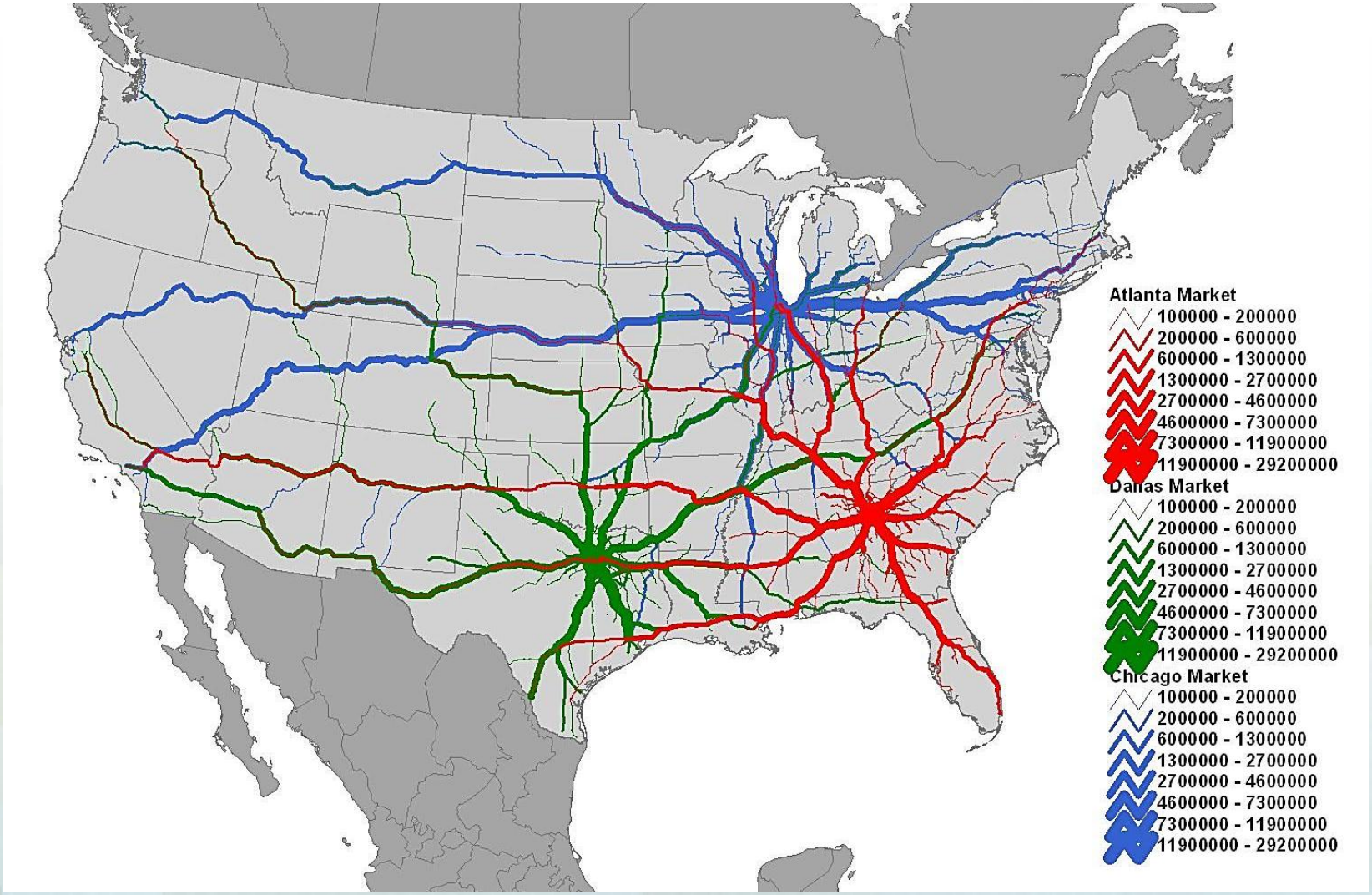
ATLANTA REGION PLAN 2040

Global Connections

- Savannah and Charleston form the center of containerized trade in the South Atlantic
- Atlanta and Charlotte enplaned over 60 million passengers in 2010.
- Memphis is the busiest cargo airport in the US



National Connections

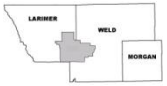


Challenges: Piedmont Alliance

- Lack of a Champion
- Panama Canal
- Tri-State Water Litigation
- Growth and Infrastructure
- Economy

An Emerging Mega-Region Front Range Colorado

Working Together for a Shared Future



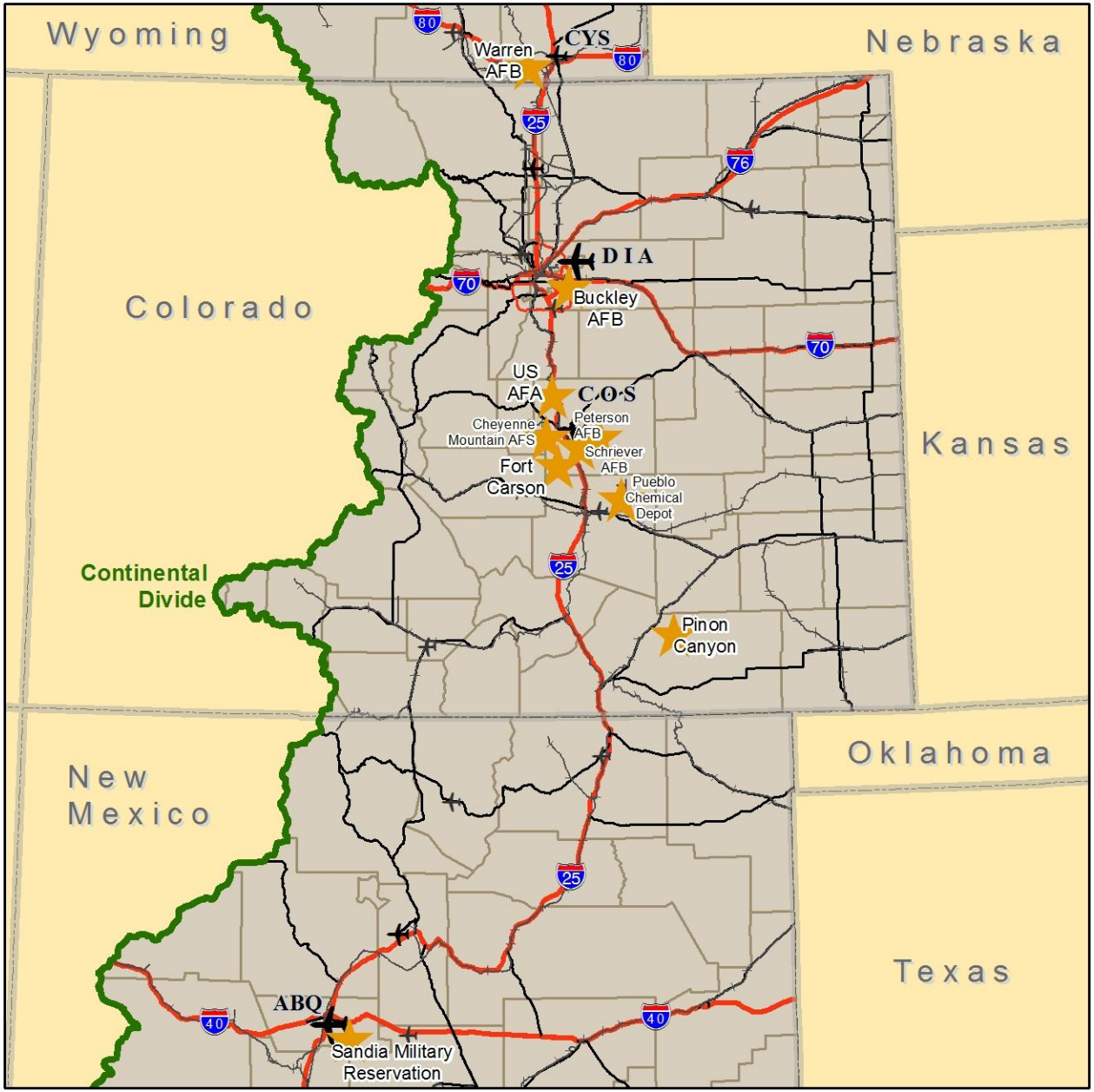
NORTH FRONT RANGE MPO
METROPOLITAN PLANNING ORGANIZATION

PACOG
Pueblo Area Council of Governments

DRCOG
DENVER REGIONAL COUNCIL OF GOVERNMENTS

Pikes Peak Area Council of Governments
Communities Working Together

Robert MacDonald, PE
Executive Director, PPACG
FHWA Peer Exchange at MAG
May 10,2012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Nebraska
Colorado
Kansas
Oklahoma
New Mexico
Texas
Warren AFB
CYS
DIA
Buckley AFB
US AFA
COS
Peterson AFB
Cheyenne Mountain AFS
Schriever AFB
Fort Carson
Pueblo Chemical Depot
Pinon Canyon
Continental Divide
ABQ
Sandia Military Reservation
80
25
76
70
40

Emerging Mega-Region of the Continental Divide

We are becoming a SINGLE Front Range Mega-region

- Our decisions should consider the impact on neighboring regions and states
- What ties our mega-region together
  - Geographical Features
  - Markets
  - Transportation Infrastructure
  - Military

Travel Patterns

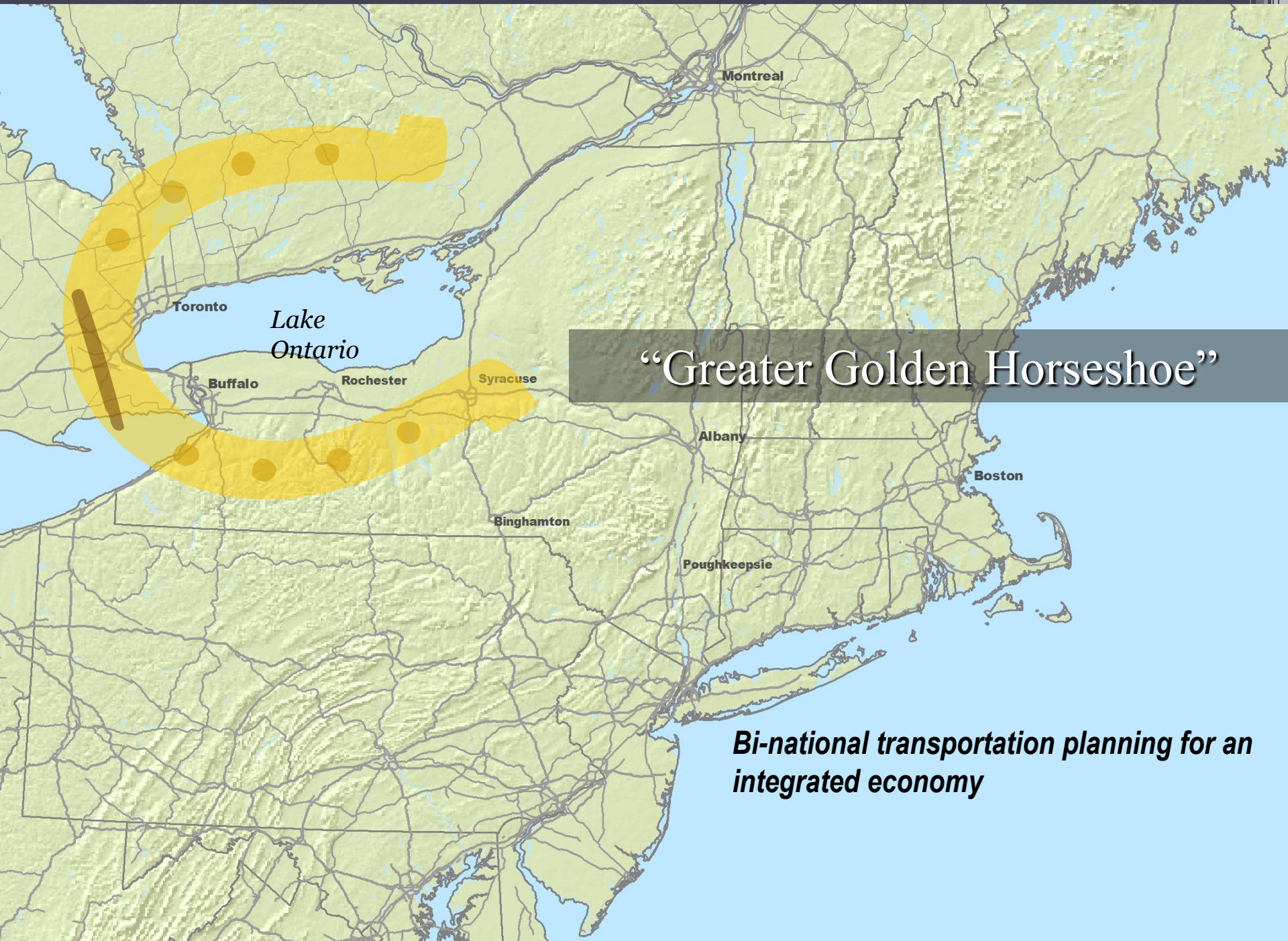
- Healthy economies are linked to efficient travel between Front Range areas

- Daily inter-regional travel for freight, work, shopping, and other attractions is growing.

- We are becoming a Front Range Region

Greater Buffalo Niagara Transportation Council: The MPO

- Partnership of Governments and Agencies with forty year history in Buffalo Niagara
- Performance and Project Delivery Focus
- Substantial engagement of business community, developmental agencies, interest groups
- History of BiNational planning at the border and the greater Megaregion



"Greater Golden Horseshoe"

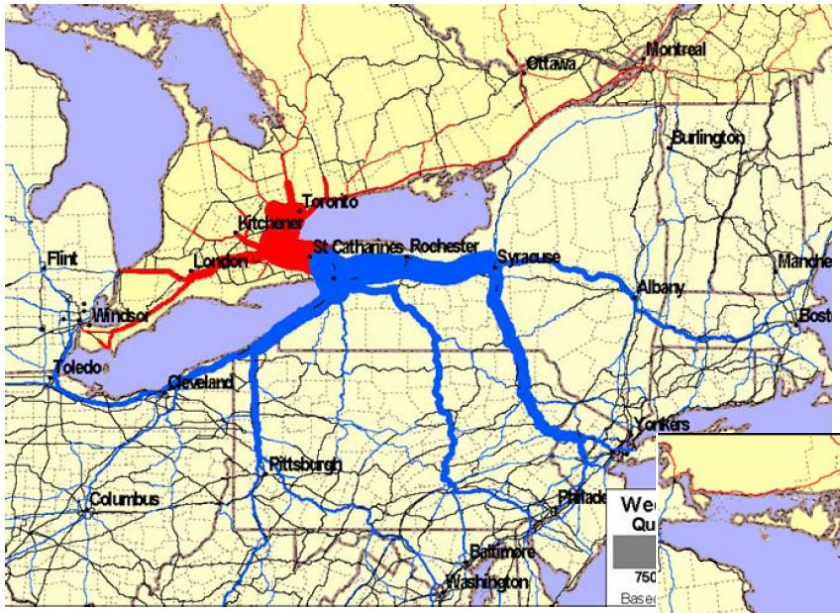
Bi-national transportation planning for an integrated economy

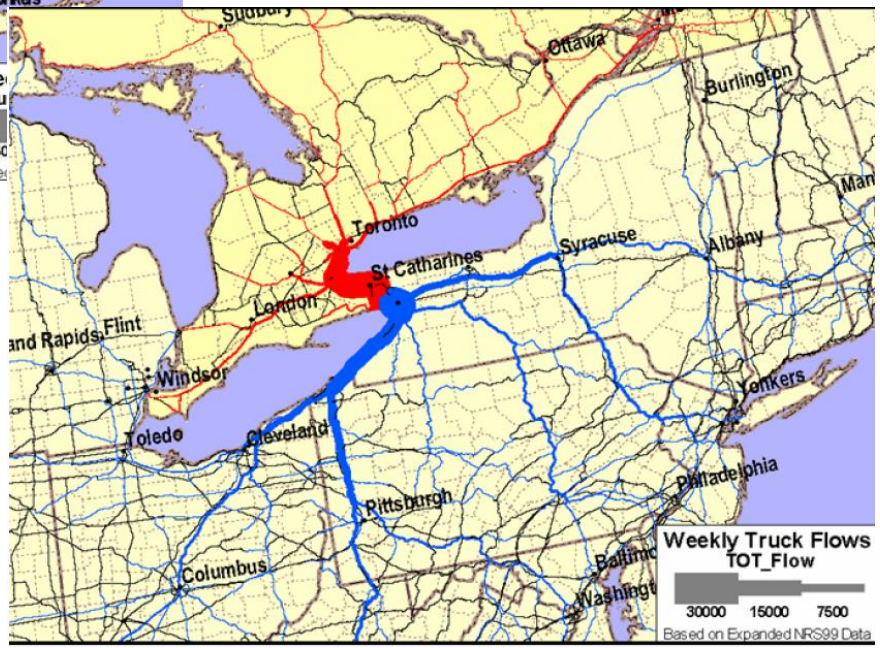
Some Representative Urbanized Concentrations In North America

20.4 Million	• New York-New Jersey-Long Island
16.2 Million	• Los Angeles-Riverside-Orange County
9.0 Million	• Toronto-Hamilton- Niagara Falls-Buffalo-Rochester-Syracuse
8.9 Million	• Chicago-Gary-Kenosha
7.4 Million	• Washington-Baltimore

GBNRTC

Multistate Reach of Cross Border Freight Flow





Transportation Infrastructure at the International Border in Megaregion

Four (4) International Motor Vehicle Bridges

QEW and Interstate I-90 (Major Connectors)

Two (2) Railway Bridges

Four (4) Major Railways

Rail Passenger Service VIA and AMTRAK

Commuter Rail – GO Train

Inter-City Bus Services

Four (4) Major Airports

Welland Canal (St. Lawrence Seaway), Several Ports

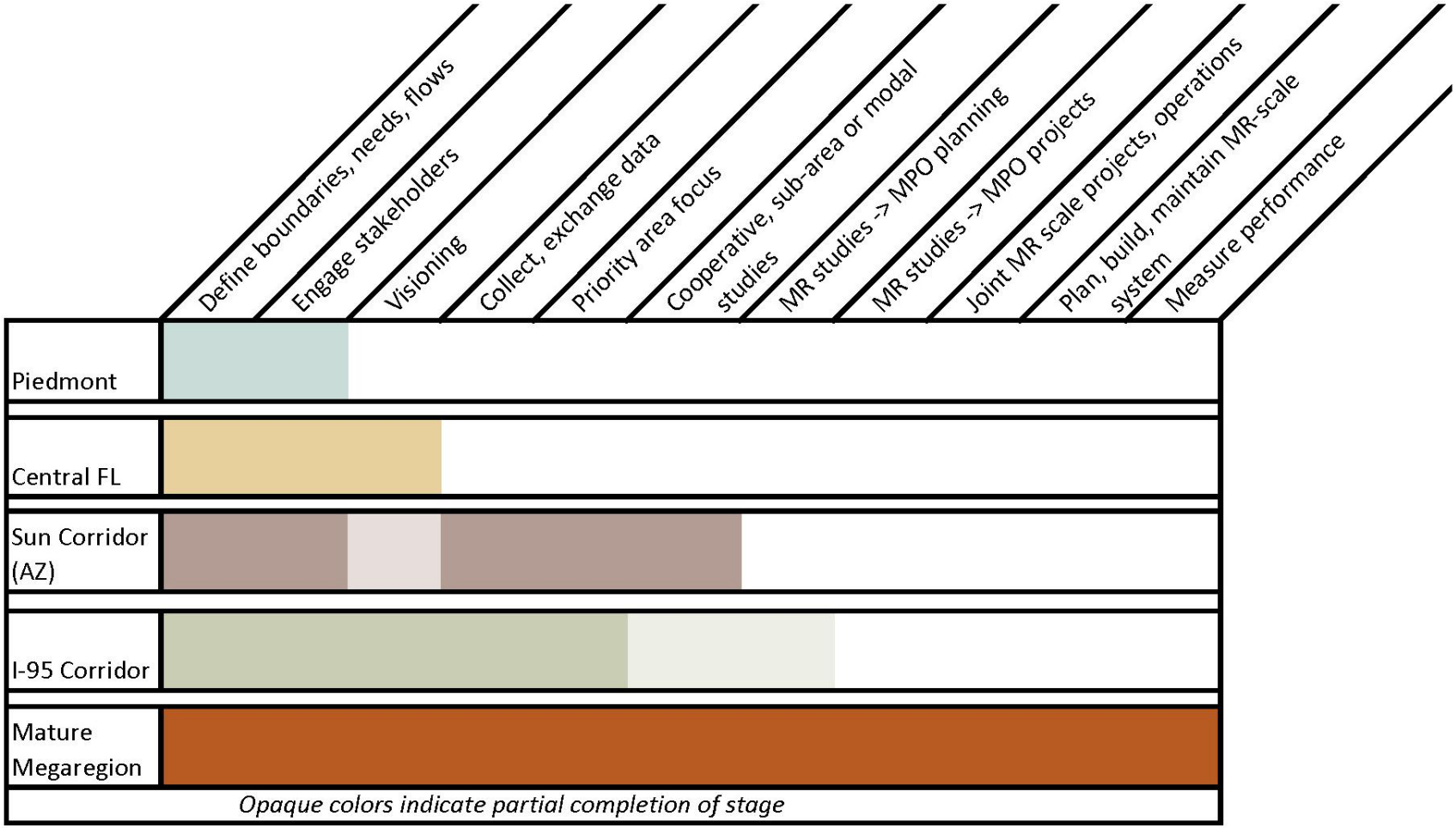
BiNational Transportation Strategy Considerations

- Existing and future transportation – related to border crossing problems and needed improvements
- Connectivity to population, economic and recreational centers in both counties
- Availability of transportation mode choice
- Sufficient network redundancy or capacity to accommodate periods of stress on specific links
- An implementation strategy that includes clear roles, responsibilities and timing

Stages of Evolution for Megaregions Planning: Volpe Framework for a Complete Planning Approach

- Define boundaries, identify needs and flows
- Engage stakeholders
- Vision: priorities, challenges, strategies
- Collect and exchange data
- Priority area focus
- Cooperative sub-area or modal studies
- Mega-region studies influence MPO planning
- Megaregion studies influence MPO project selection
- Joint megaregion scale projects, operations
- Plan, build, maintain mega-region scale system
- Focus on performance at all stages

Evolution of Case Study Regions



Key themes: white paper and peer exchange

- Value of planning framework for Megaregions
  - What a complete planning approach would look like
- Enhancing regional competitiveness is a key goal
- Freight, port access, border crossings, are key concerns
- Establish new governance without creating new government
- Partnerships develop out of necessity and opportunity
  - Underlying importance of data defining megaregions
  - Megaregion Boundaries are Flexible
  - MPOs participate in multiple Megaregions
- Important role for MPOs, but may not be most logical long-term leaders

Key themes: white paper and peer exchange

- Megaregions need a champion
- Connect metro area or state looking in to Megaregion looking outside
  - Alternative Transportation Modes Play an Important Role
  - Link Megaregion Planning to Land Use and Transit – growth issues
- Megaregion partnerships can address more than transportation

Potential Opportunities

- Find common goals among diverse partners
- Develop forums for sharing information and best practices
- Study disaster response, climate change planning and European examples
- Power in numbers

Potential Opportunities

- Encourage Megaregion collaboration between Federal modal agencies
- Engage Federal Land Management Agencies and US Military Installations
- Enhanced technical tools, data and models, including for freight, are needed to advance
- Megaregion-scale Vision and Scenario Planning: possible pilot?

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Links will be provided for reports referenced.