



How GIS is Used in Site Selection

ESRI Southeast User Conference – 2013
Jacksonville, Florida
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Site Selection Consulting Services

- Provide site selection and incentive negotiation services to leading companies worldwide.
- Provide consulting services to benefit firms seeking locations for new facilities or relocating operations, as well as those managing location decisions for competitive expansions or selective consolidations.
- Provide value to firms faced with the complex mix of location decisions resulting from planned or executed mergers and acquisitions.
- Bring a proven process that provides a solid framework for a defensible location decision, while at the same time allowing for the flexibility necessary to adapt to changing company elements, as well as to discoveries in the field.

Site Selection Process

Planning Phase	Phase I	Phase 2	Phase 3	Phase 4
<ul style="list-style-type: none">• Conception• Feasibility• Investment Decision	<ul style="list-style-type: none">• Alignment/ Criteria• Regional Analysis• Areas of Interest• Request for Proposal• Candidate Communities	<ul style="list-style-type: none">• Community Visits• Property Evaluation• Comparative Analysis• Finalist Communities	<ul style="list-style-type: none">• Negotiations• Evaluation• Site Due Diligence	<ul style="list-style-type: none">• Prepare MOU• Public Announcement• Incentive Capture Support

Site Selection Process

- Regional Analysis Using GIS
 - Focus on attraction and aversion factors
 - Attraction
 - Desirable labor force figures
 - Desirable population statistics
 - Educational attainment targets
 - Proximity to interstates, airports, universities
 - Etc.
 - Aversion
 - Union activity - presence of union locals, union elections, union wins
 - Federal class one areas (national parks, national wilderness areas, national monuments)
 - Non-attainment areas for criteria pollutants
 - Etc.

GIS Screening

Why GIS

- GIS is primarily a quantitative tool that is useful in producing objective and defensible results
- Companies are very deadline driven
 - Time allotted for siting decisions has been compressed resulting in more use of GIS
 - Has influenced the process of site selection
 - Communities are being evaluated without anyone knowing
 - Assists with determining areas of interest
 - Prior to any consideration of site or building

Representative GIS Data Sources

- Data sources often used in screening:
 - Bureau of Labor Statistics
 - Environmental Protection Agency
 - Federal Aviation Administration
 - Integrated Postsecondary Education Data System (IPEDS)
 - National Center for Education Statistics
 - National Climatic Data Center
 - National Labor Relations Board
 - National Oceanic & Atmospheric Administration
 - National Right-to-Work Defense Foundation
 - National Transportation Atlas Database
 - U.S. Army Corp of Engineers
 - U.S. Census Bureau
 - U.S. Coast Guard
 - U.S. Department of the Interior
 - U.S. Department of Labor, Office of Labor Management Standards
 - U.S. Department of Transportation
 - U.S. Energy Information Administration
 - U.S. Geological Survey

Case Scenario - Auto Diversity, Inc.

Auto Diversity, Inc. has just developed a new widget that can be used in all makes of cars and light trucks.

- Location Requirements or “Musts”
 - Must fall within a designated search region of states
 - First plant must be within 100 miles of an existing automotive or light-truck facility that falls in the search region
- Aversions and Attractions
 - See “Want” Screening Criteria spreadsheet

GIS Screening Types

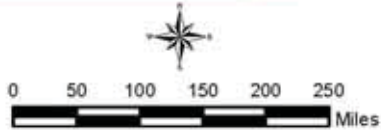
- Three types of screening are used:
 - “Must” criteria
 - “Want” criteria
 - Attraction criteria
 - Aversion criteria
 - Additional Information
 - Does not impact scoring, but provides supplemental data

Search Region



- Major Cities
- Search Region

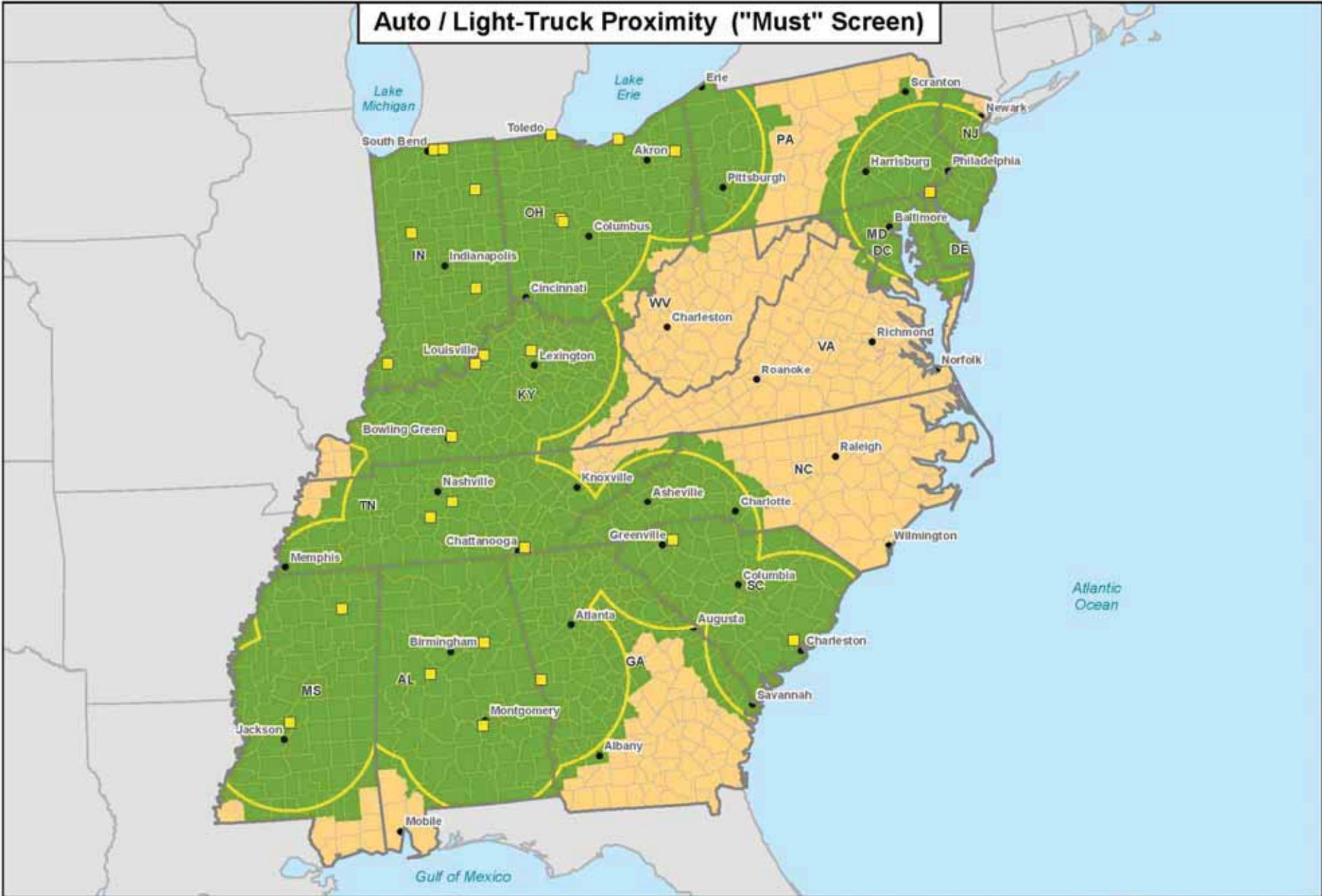
SERUG01



Projection: Albers Equal Area Conic
Geographic Data Source: ESRI, 2010
Map Composition: MSC, 2013

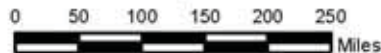


Auto / Light-Truck Proximity ("Must" Screen)



- Auto/Light Truck Facilities
- Within 100-Mile Radius (Retain)
- Outside 100-Mile Radius (Eliminate)
- 100-Mile Radius

SERUG03



Source: Automotive News /
2011 Market Data Book
Projection: Albers Equal Area Conic
Geographic Data Source: ESRI, 2010
Map Composition: MSC, 2013



Attraction and Aversion Screening Criteria

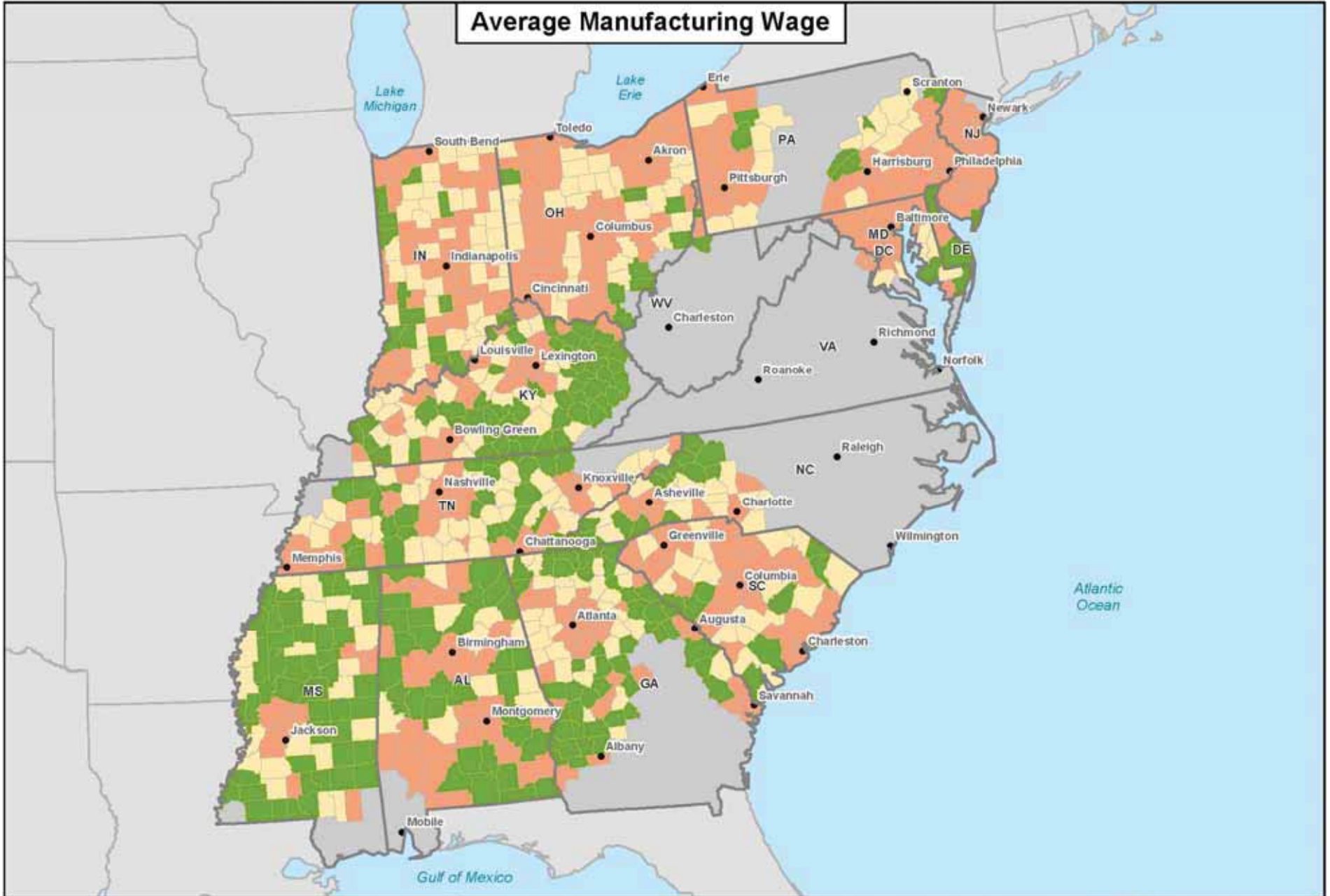
	Screen	Criteria	Points
Attraction Criteria			
1.	Average Manufacturing Wage	< \$18 \$18 to \$22 > \$22	2 1 0
2.	Manufacturing Labor Force	> 5,000 3,000 to 5,000 < 3,000	2 1 0
3.	High School Attainment %	> 83% 70% to 83% < 70%	2 1 0
4.	Bachelor Attainment %	> 19% 10% to 19% < 10%	2 1 0
5.	Interstates and Connecting Free Limited Access Highways	Within 10-Mile Radius (50% or more of county) Within 10-Mile Radius (< 50% of county) Greater Than 10 Miles	2 1 0
6.	Commercial Airport Proximity (200,000+ Enplanements)	Within 30-Mile Radius (50% or more of county) Within 30-Mile Radius (< 50% of county) Outside 30-Mile Radius	2 1 0
7.	Proximity to Container Ports (> 500,000 TEUS/Year)	Within 400-Mile Radius Within 500-Mile Radius Outside 500-Mile Radius	2 1 0
8.	Associate Degree Institutions with Electrical, Industrial, and/or Mechanical Programs	Within 45-Mile Radius (50% or more of county) Within 45-Mile Radius (< 50% of county) Outside 45-Mile Radius	2 1 0
9.	Labor Posture	Right-to-Work State Non-Right-to-Work State	2 0

Attraction and Aversion Screening Criteria (cont.)

	Screen	Criteria	Points
Aversion Criteria			
10.	Union Local with 250+ Members (IAM, IBEW, IBT, USWA, UAW)	Outside 25-Mile Radius Within 25-Mile Radius (< 50% of county) Within 25-Mile Radius (> 50% or more of county)	2 1 0
11.	Earthquakes Ground-Shaking (Hazard Level)	0 to 4 Hazard Level 5 to 9 Hazard Level 10+ Hazard Level	2 1 0
12.	Hurricane Risk	Non-Southeast Shoreline County One County Away From Shoreline Shoreline County and the State of Florida	2 1 0
13.	Tornado Property Damage	> \$2 Million \$2 Million to \$ 5Million < \$5 Million	2 1 0
14.	Federal Class I Areas (100-Kilometer Radius)	Outside 100-Kilometer Radius Within 100-Kilometer Radius (< 50% of county) Within 100-Kilometer Radius (50% or more of county)	2 1 0
15.	Air Quality – 6 Criteria	Attainment Partial Attainment Non-Attainment	2 1 0

Attraction Criteria Screening

Average Manufacturing Wage



Average Manufacturing Wage

- < \$18
- \$18 to \$22
- > \$22
- Eliminated (Must Screen)

SERUG03

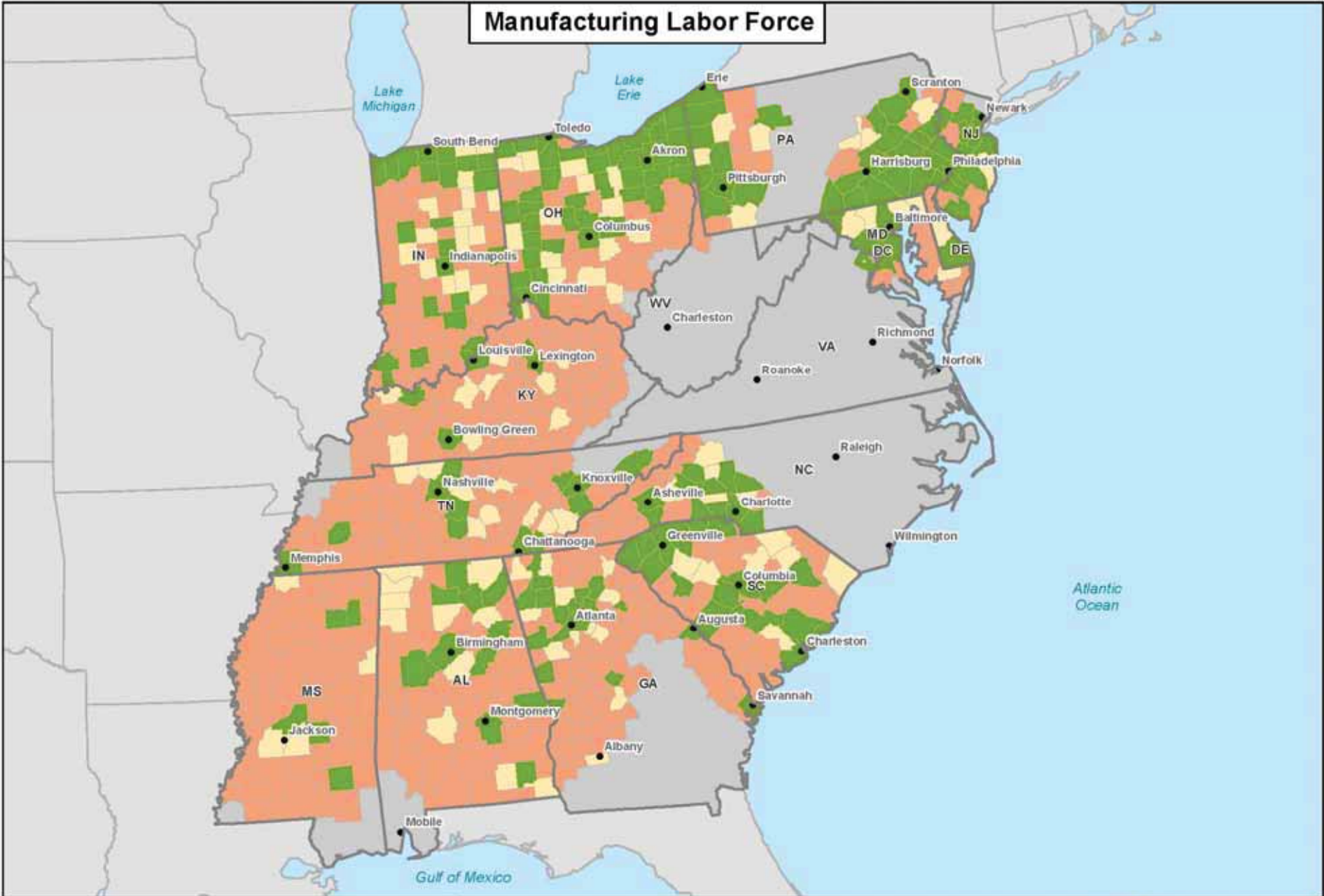


0 50 100 150 200 250 Miles

Source: Bureau of Labor Statistics (BLS) 2011
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



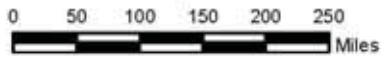
Manufacturing Labor Force



Average Manufacturing Wage

- > 5,000
- 3,000 to 5,000
- < 3,000
- Eliminated (Must Screen)

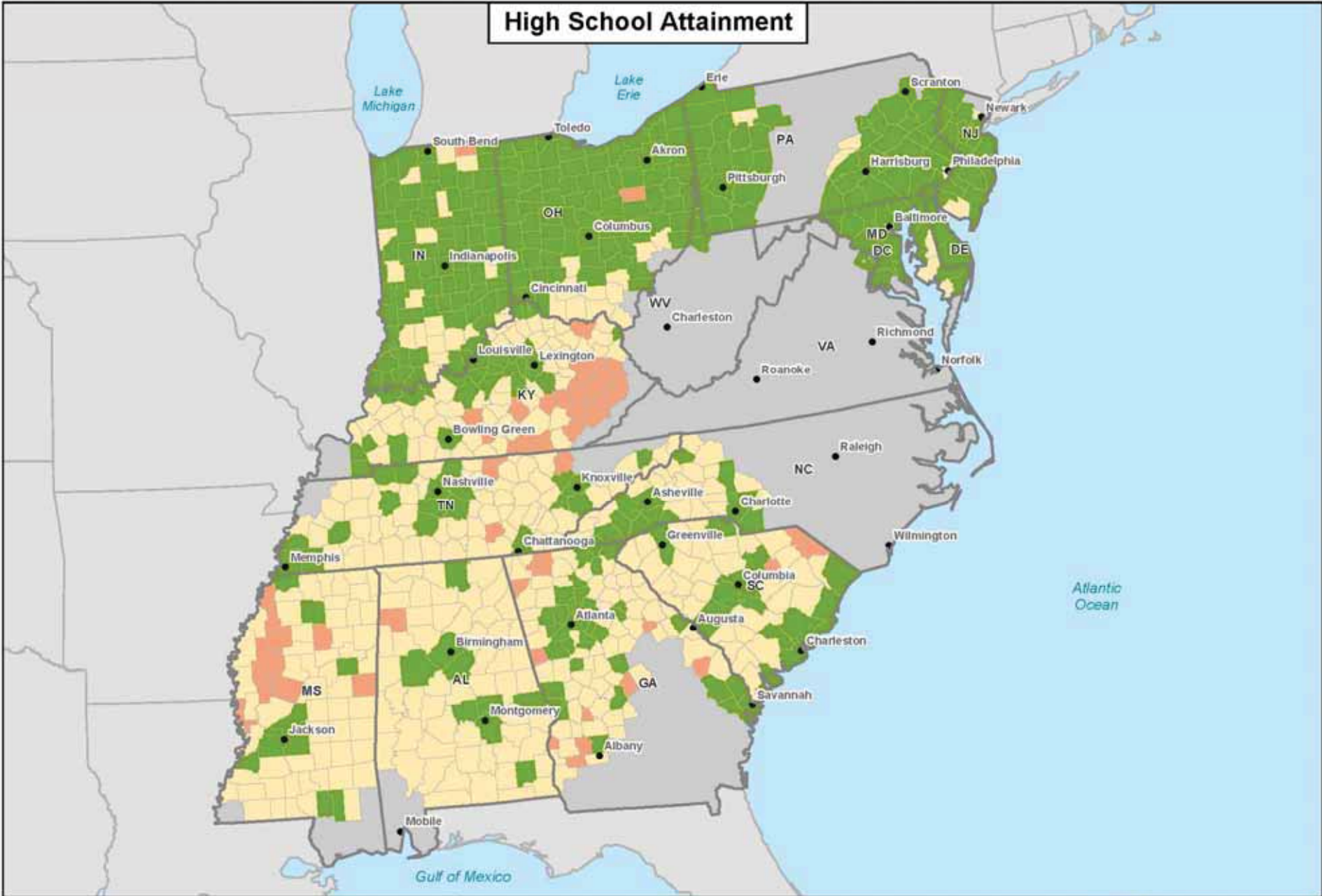
SERUG04



Source: Bureau of Labor Statistics (BLS) 2011
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013

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High School Attainment



High School Attainment

- > 83%
- 70% to 83%
- < 70%
- Eliminated (Must Screen)

SERUGOS

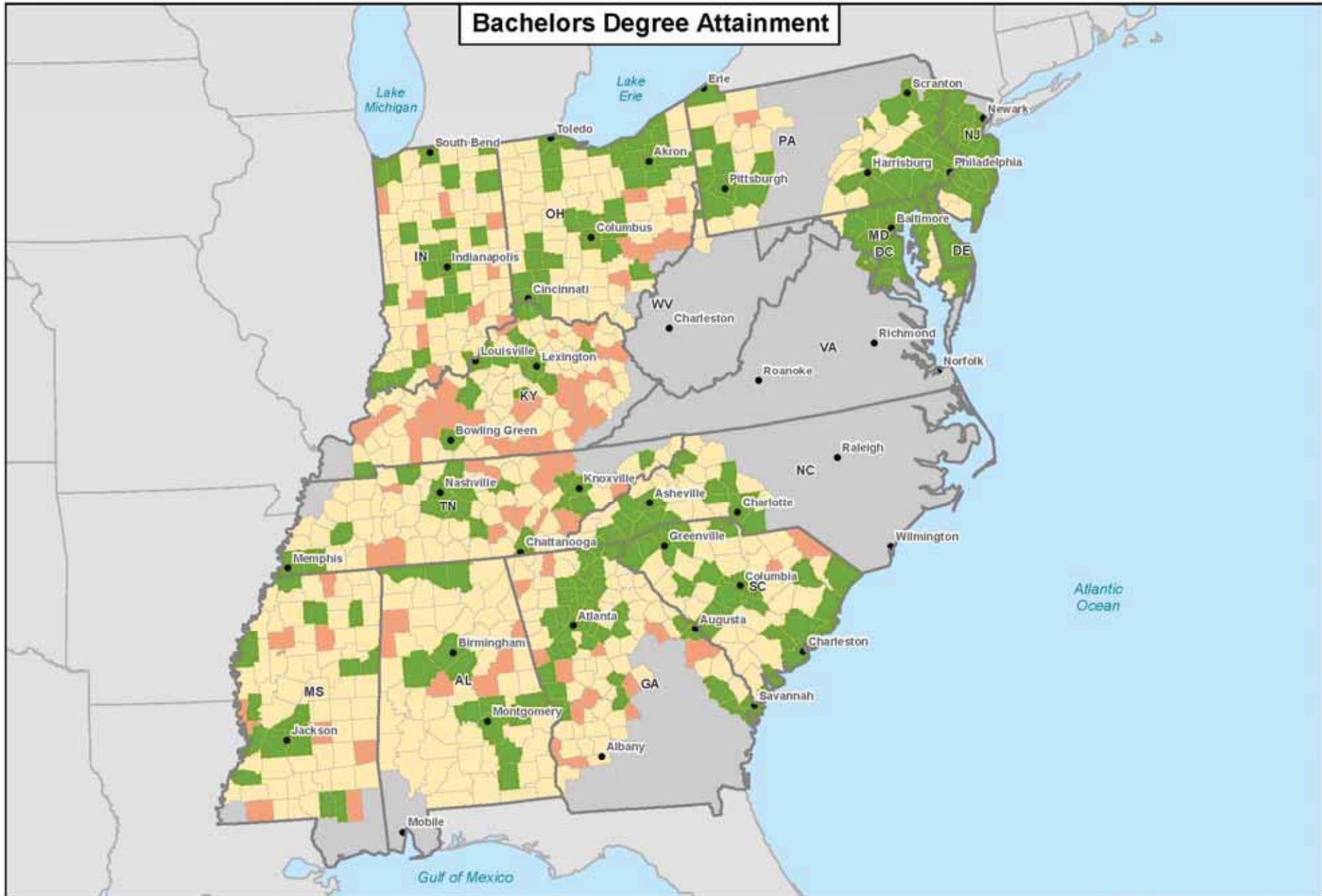


0 50 100 150 200 250 Miles

Source: American Community Survey 5-Year Estimate (2007 - 2011)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013

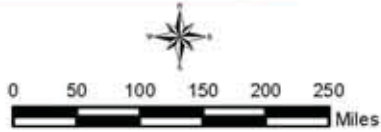


Bachelors Degree Attainment



Bachelors Degree Attainment

- > 19%
- 10% to 19%
- < 10%
- Eliminated (Must Screen)

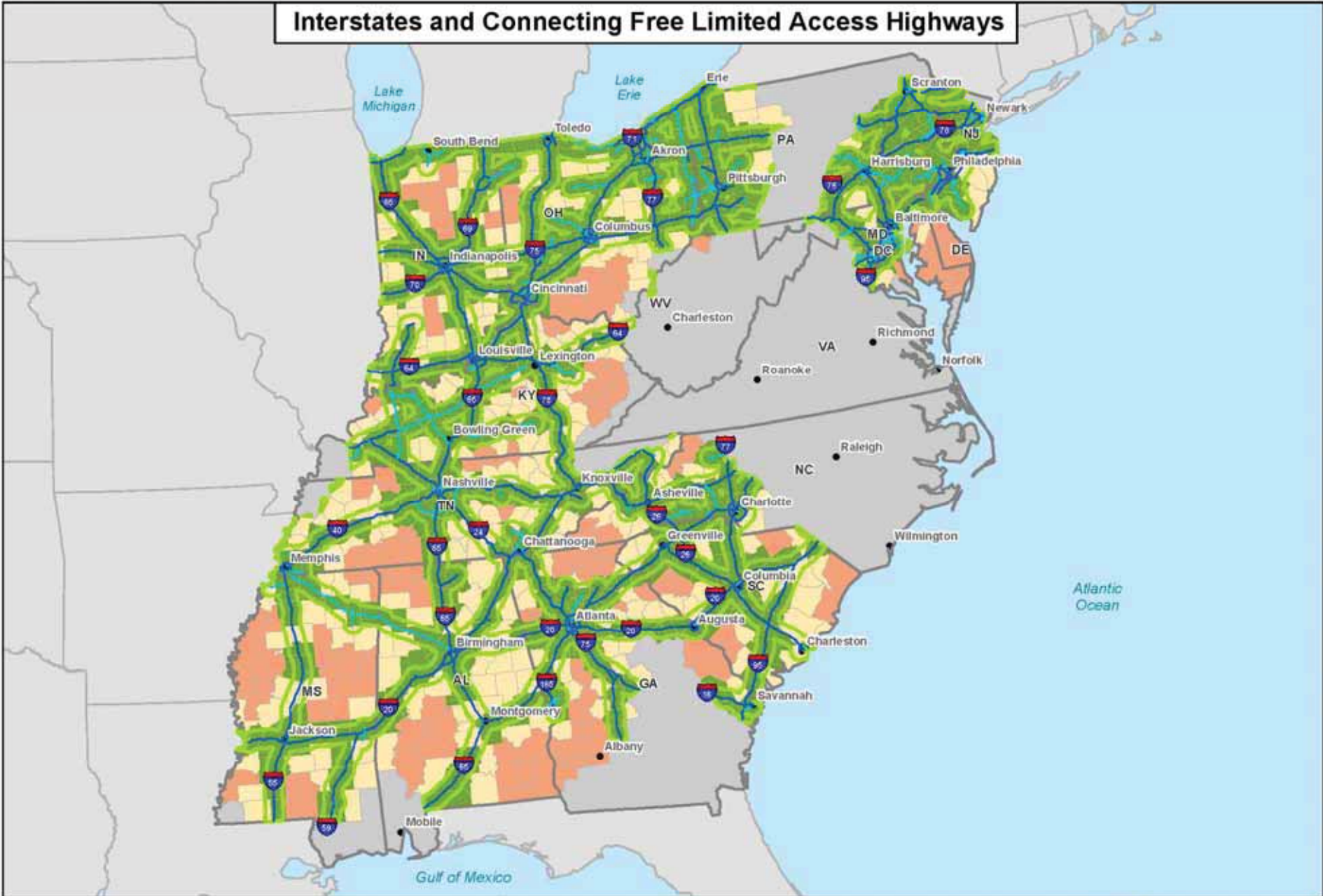


Source: American Community Survey 5-Year Estimate (2007 - 2011)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013

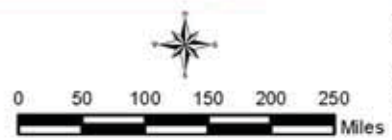


SERUG06

Interstates and Connecting Free Limited Access Highways



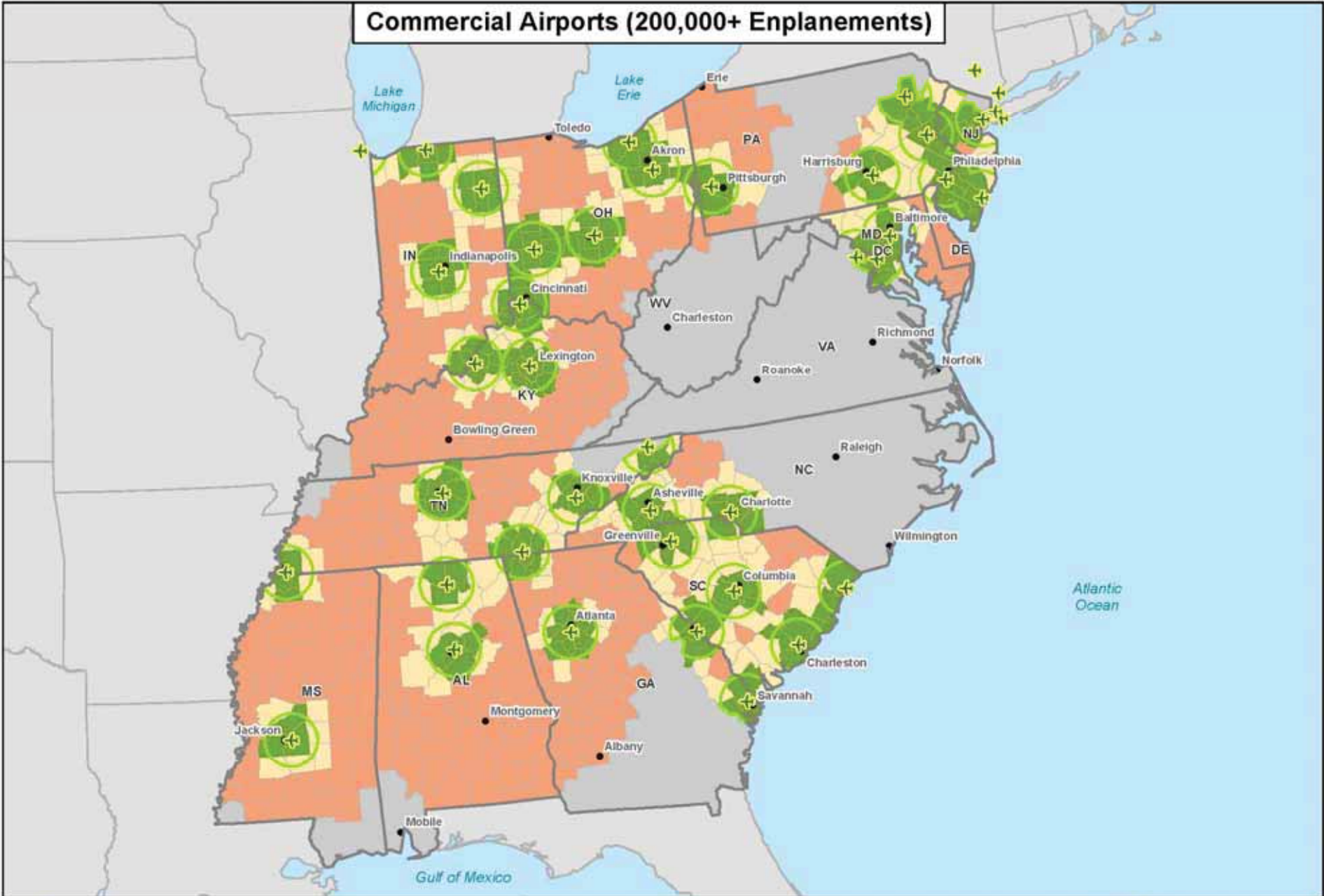
Interstate	Freeway System
Free Limited Connected	Within 10-Mile Radius (50% or more of county)
10-Mile Radius	Within 10-Mile Radius (< 50% of county)
	Greater than 10 Miles
	Eliminated (Must Screen)



Source: Rand McNally Atlas (2013)
 National Hwy. Planning Network (2012)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013

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Commercial Airports (200,000+ Enplanements)



✚ Commercial Airports
 30-Mile Radius

Commercial Airport Proximity
 Within 30-Mile Radius (50% or more of county)
 Within 30-Mile Radius (< 50% of county)
 Outside 30-Mile Radius
 Eliminated (Must Screen)



0 50 100 150 200 250
 Miles

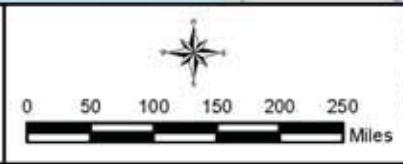
Source: FAA, 2010
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



Proximity to Container Ports



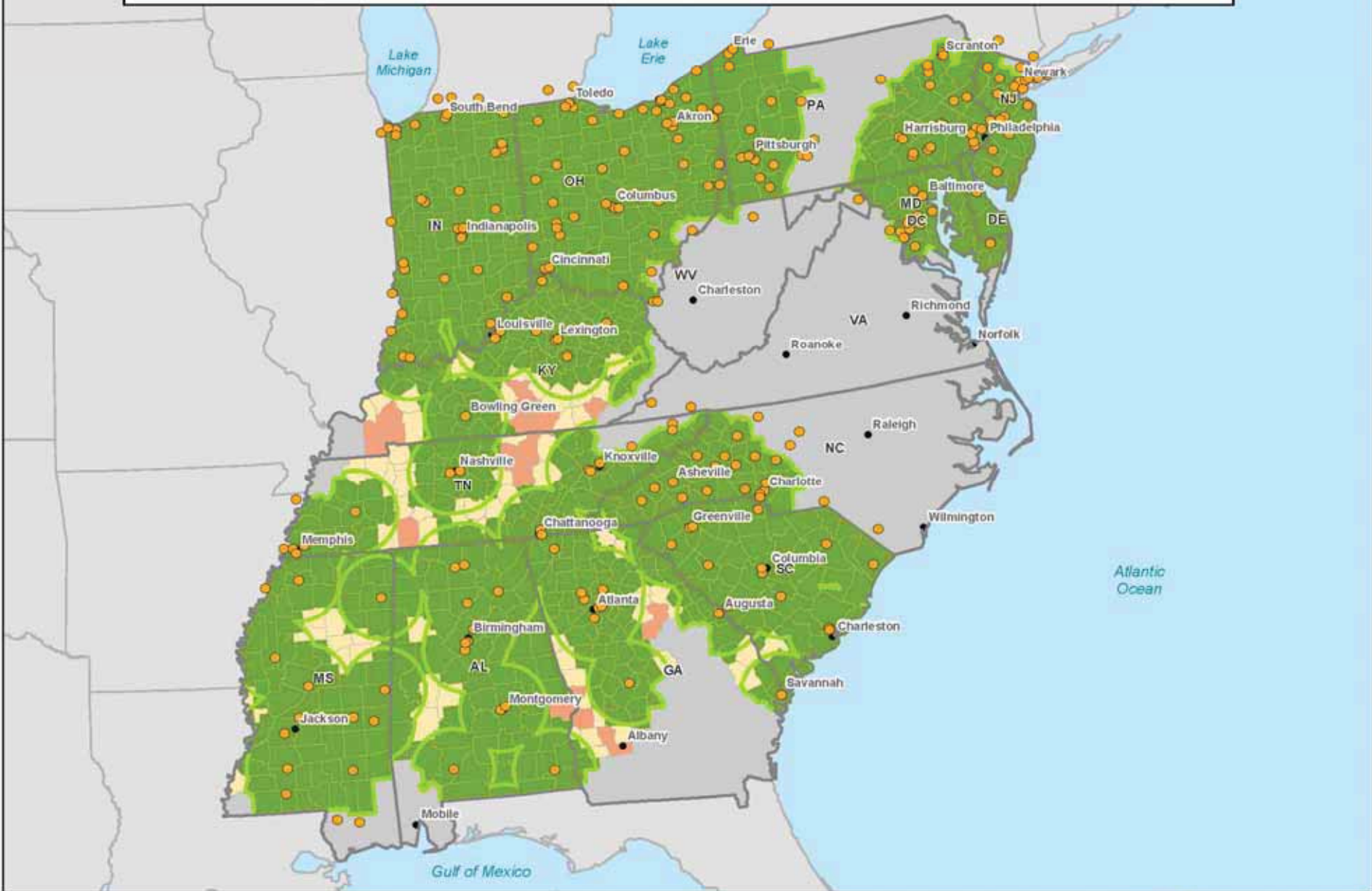
<ul style="list-style-type: none"> ■ Major Container Ports (>500,000 TEUs per Year) ■ 400-Mile Radius ■ 500-Mile Radius 	<p>Container Port Traffic</p> <ul style="list-style-type: none"> ■ Within 400-Mile Radius ■ Within 500-Mile Radius ■ Outside 500-Mile Radius ■ Eliminated (Must Screen)
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Source: U.S. Dept. of Transportation Maritime Administration (2010)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013

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Associate Degree Institutions with Electrical, Industrial, and/or Mechanical Programs



<ul style="list-style-type: none"> ● Associate Degree Institutions 45-Mile Radius 	<p>Associate Degree Program</p> <ul style="list-style-type: none"> Within 45-Mile Radius (50% or more of county) Within 45-Mile Radius (< 50% of county) Outside 45-Mile Radius Eliminated (Must Screen)
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0 50 100 150 200 250 Miles



Source: Integrated Postsecondary Education Data System (2010)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



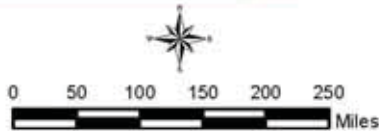
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Labor Posture



- Labor Posture**
- Right-to-Work State
 - Non-Right-to-Work State
 - Eliminated (Must Screen)

SERUG11

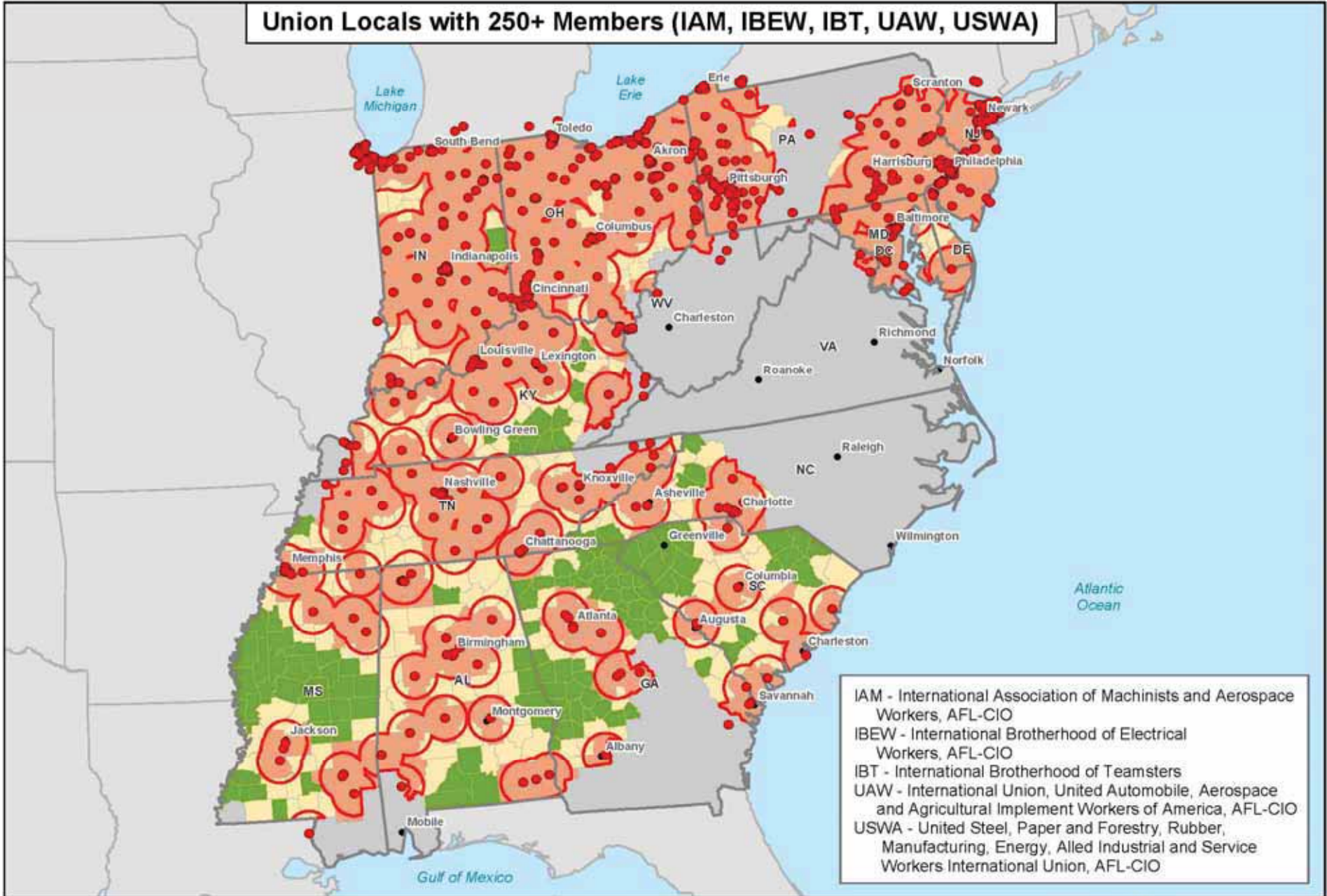


Source: National Right-to-work Legal Defense Foundation (2012)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



Aversion Criteria Screening

Union Locals with 250+ Members (IAM, IBEW, IBT, UAW, USWA)

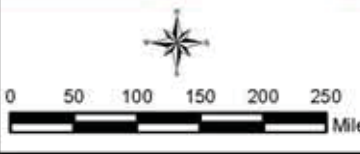


IAM - International Association of Machinists and Aerospace Workers, AFL-CIO
 IBEW - International Brotherhood of Electrical Workers, AFL-CIO
 IBT - International Brotherhood of Teamsters
 UAW - International Union, United Automobile, Aerospace and Agricultural Implement Workers of America, AFL-CIO
 USWA - United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union, AFL-CIO

● Union Locals with 250+ Members
 ◻ 25-Mile Radius

Union Local Proximity
 ■ Outside 25-Mile Radius
 ■ Within 25-Mile Radius (< 50% of county)
 ■ Within 25-Mile Radius (> 50% or more of county)
 ■ Eliminated (Must Screen)

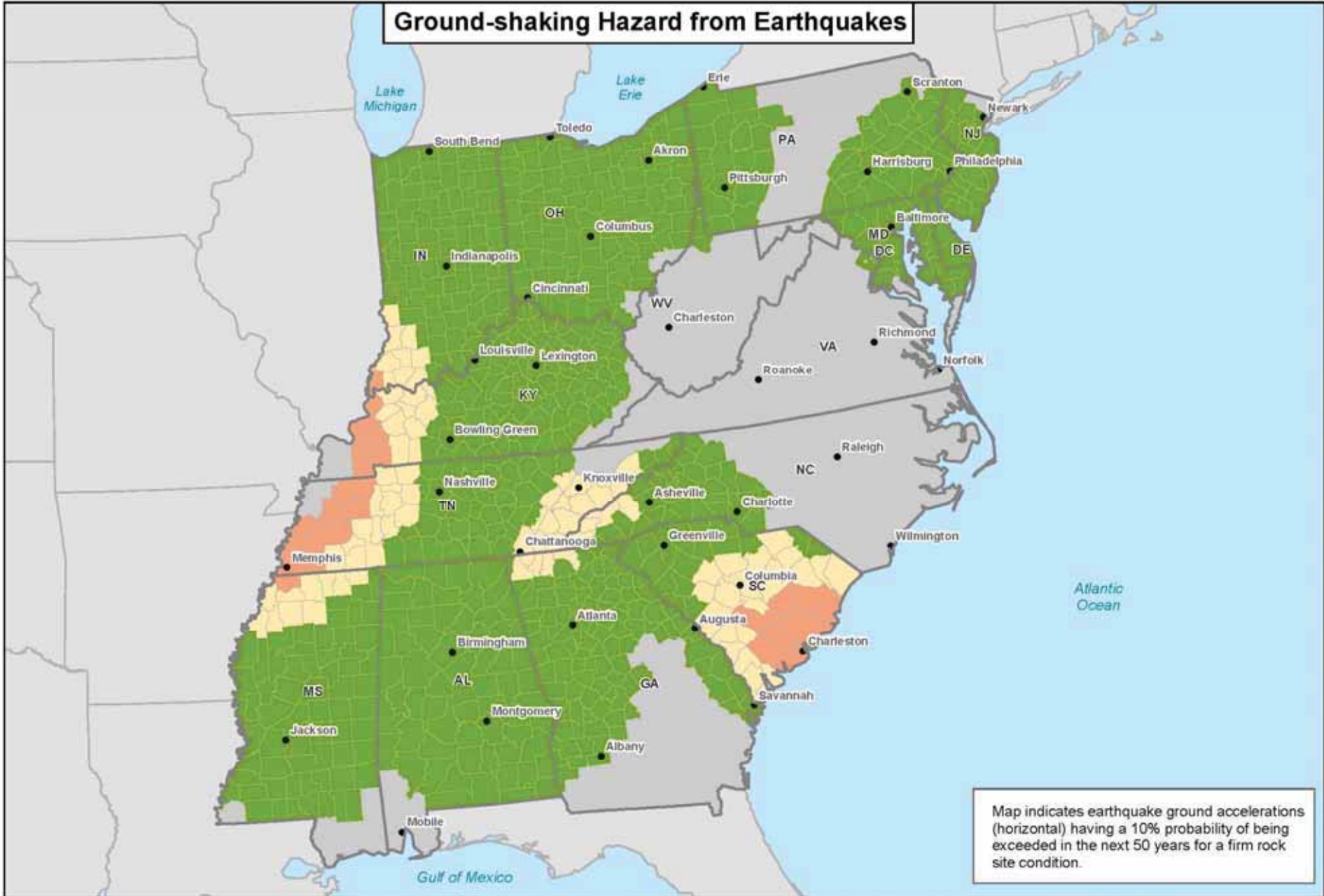
SERUG12



Source: U.S. Department of Labor (2011), Office of Labor Management Standards
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



Ground-shaking Hazard from Earthquakes

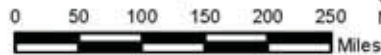


Map indicates earthquake ground accelerations (horizontal) having a 10% probability of being exceeded in the next 50 years for a firm rock site condition.

Earthquake Ground-shaking Hazards

- 0 to 4 Hazard Level
- 5 to 9 Hazard Level
- 10+ Hazard Level
- Eliminated (Must Screen)

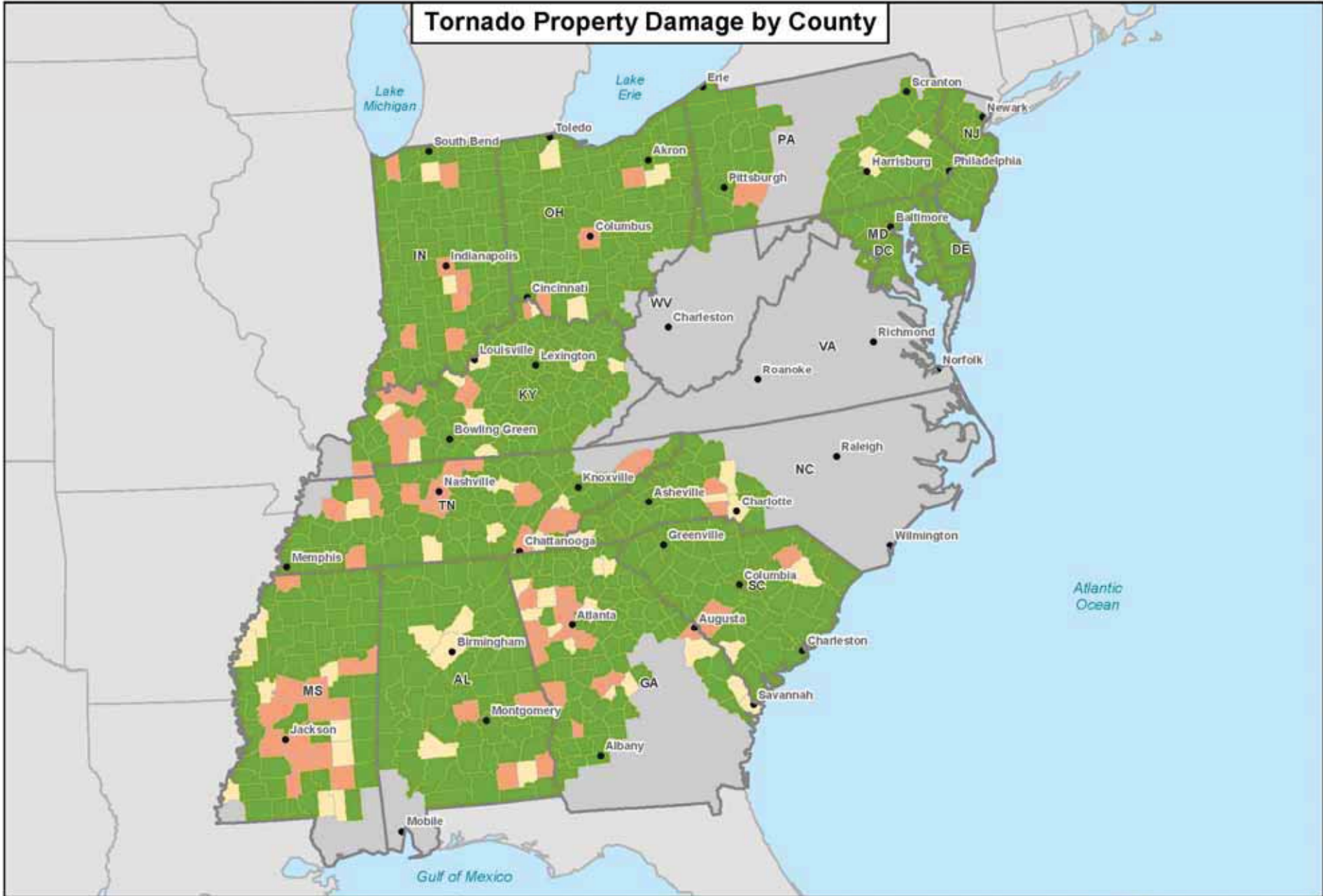
SERUG13



Source: United States Geological Survey (USGS)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



Tornado Property Damage by County



Tornado Property Damage

- > \$2 Million
- \$2 Million to \$5 Million
- < \$5 Million
- Eliminated (Must Screen)

SERUG 15

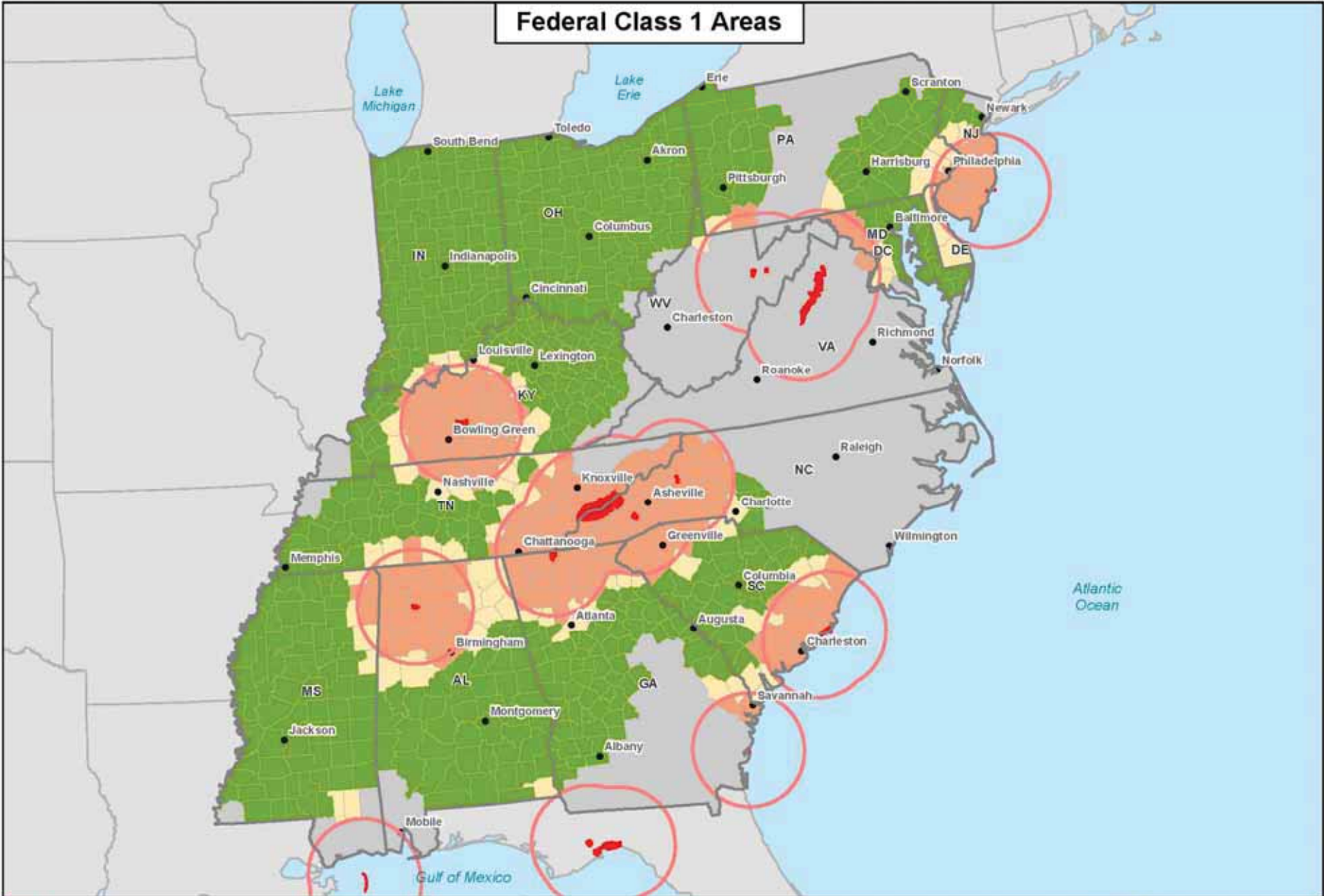


0 50 100 150 200 250 Miles

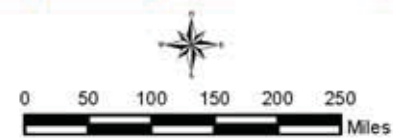
Source: National Climatic Data Center (NCDC) - 2005 - 08/2012
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



Federal Class 1 Areas



	Federal Class I Areas		Outside 100-Kilometer Radius
	100-Kilometer Radius		Within 100-Kilometer Radius (< 50% of county)
			Within 100-Kilometer Radius (50% or more of county)
			Eliminated (Must Screen)

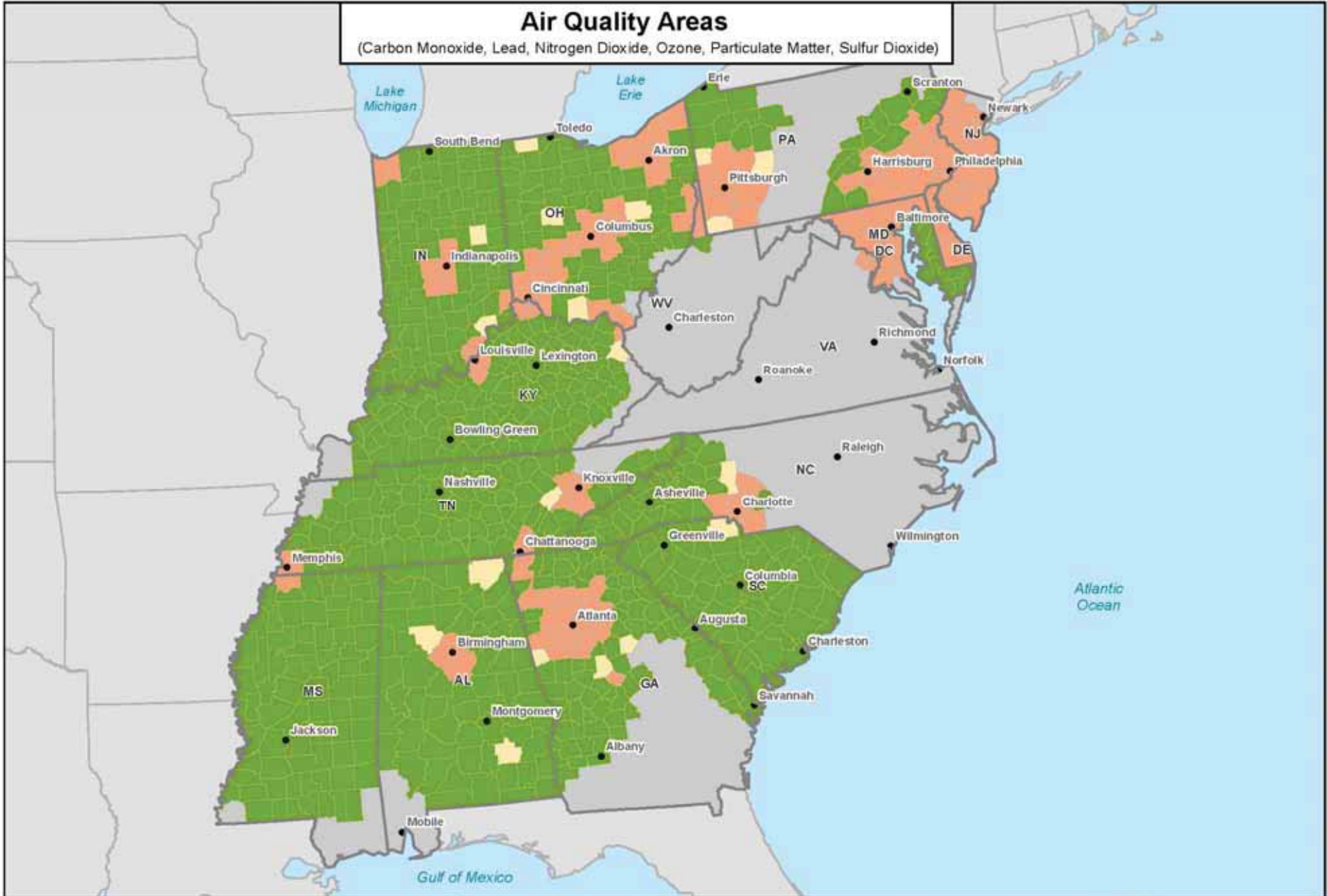


Source: Environmental Protection Agency (EPA)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013

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Air Quality Areas

(Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone, Particulate Matter, Sulfur Dioxide)



- Air Quality Areas**
- Attainment
 - Partial Attainment
 - Non-Attainment
 - Eliminated (Must Screen)

SERUG 17



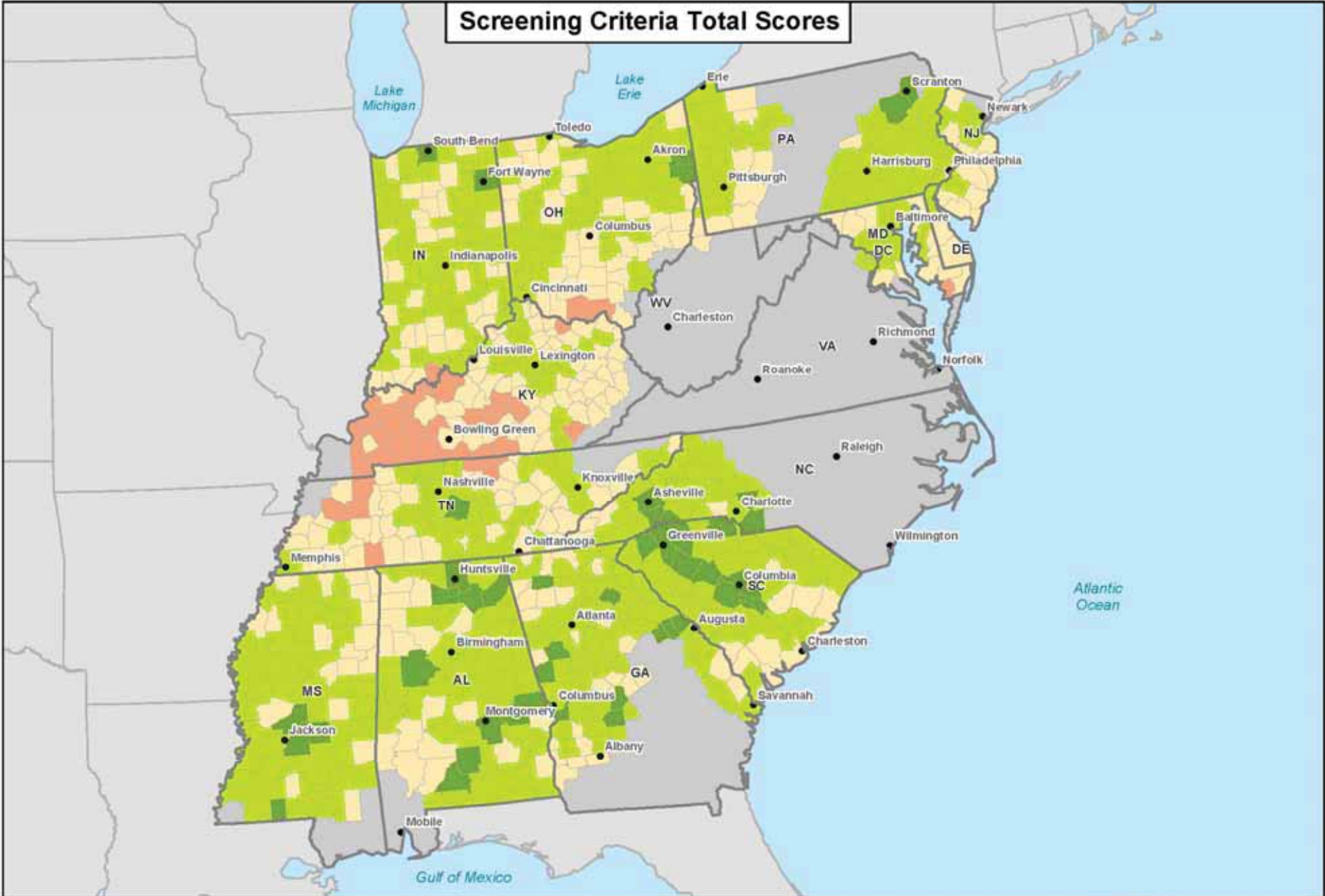
0 50 100 150 200 250 Miles

Source: Environmental Protection Agency (EPA) Greenbook 12/14/2012
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



Screening Criteria Results

Screening Criteria Total Scores

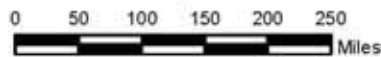


Screening Criteria Scores

- 12 to 15
- 16 to 19
- 20 to 23
- 24 to 27

Eliminated (Must Screen)

SERUG 18



Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2013



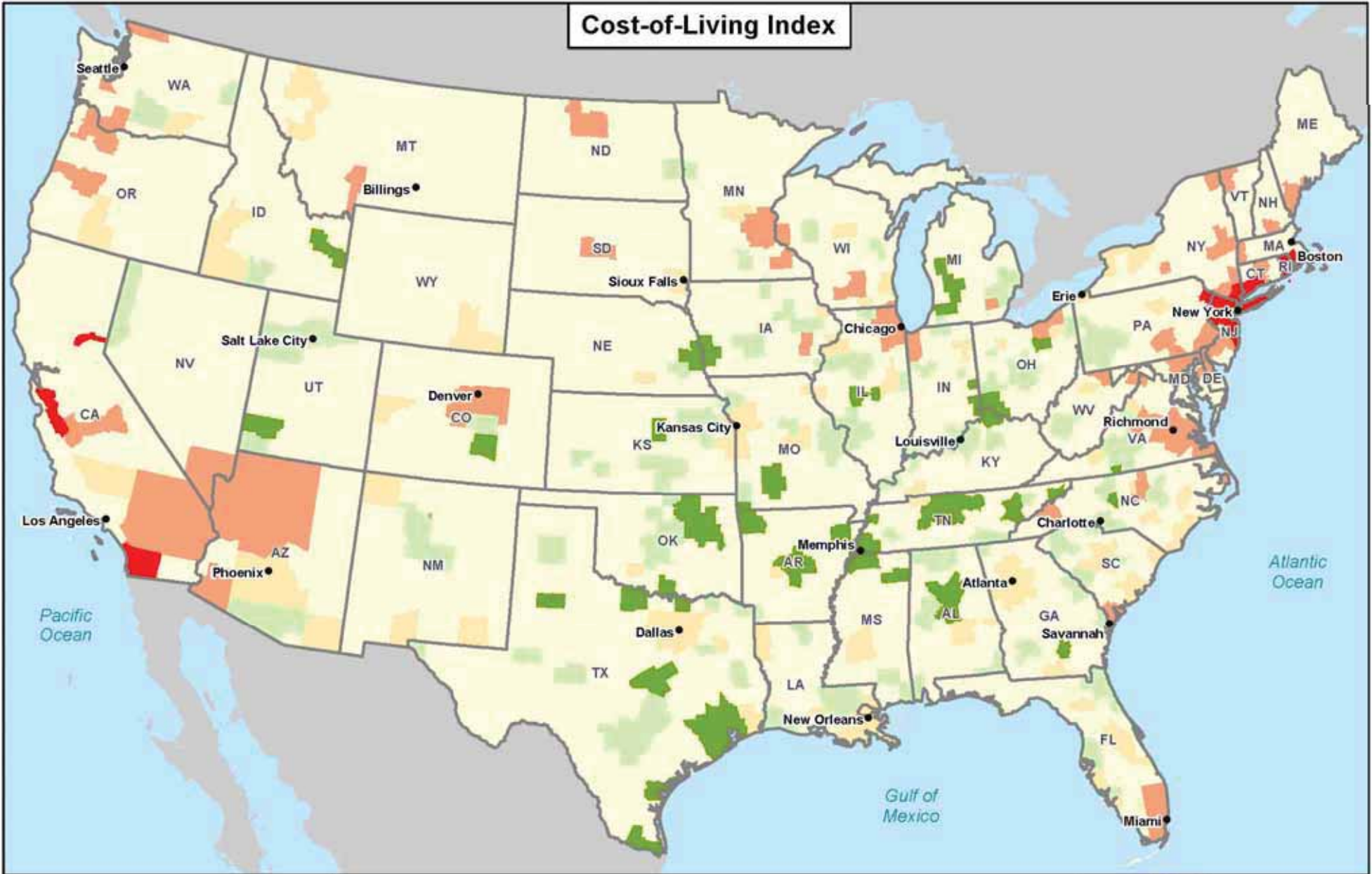
Comments

- GIS screening process assists with identifying areas warranting further review (Areas of Interest)
- GIS is a tool used in the process and not a decision-making instrument

Supplemental Maps

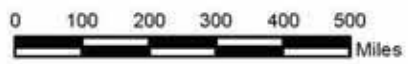
- Supplemental maps are created to provide additional information about the locations under consideration:
 - Cost of living
 - Union election wins concentration
 - Foreign trade zones and subzones
 - Congressional districts

Cost-of-Living Index



Composite Cost-of-Living Index

 No Data	 95.1 to 100
 90 or Less	 100.1 to 125
 90.1 to 95	

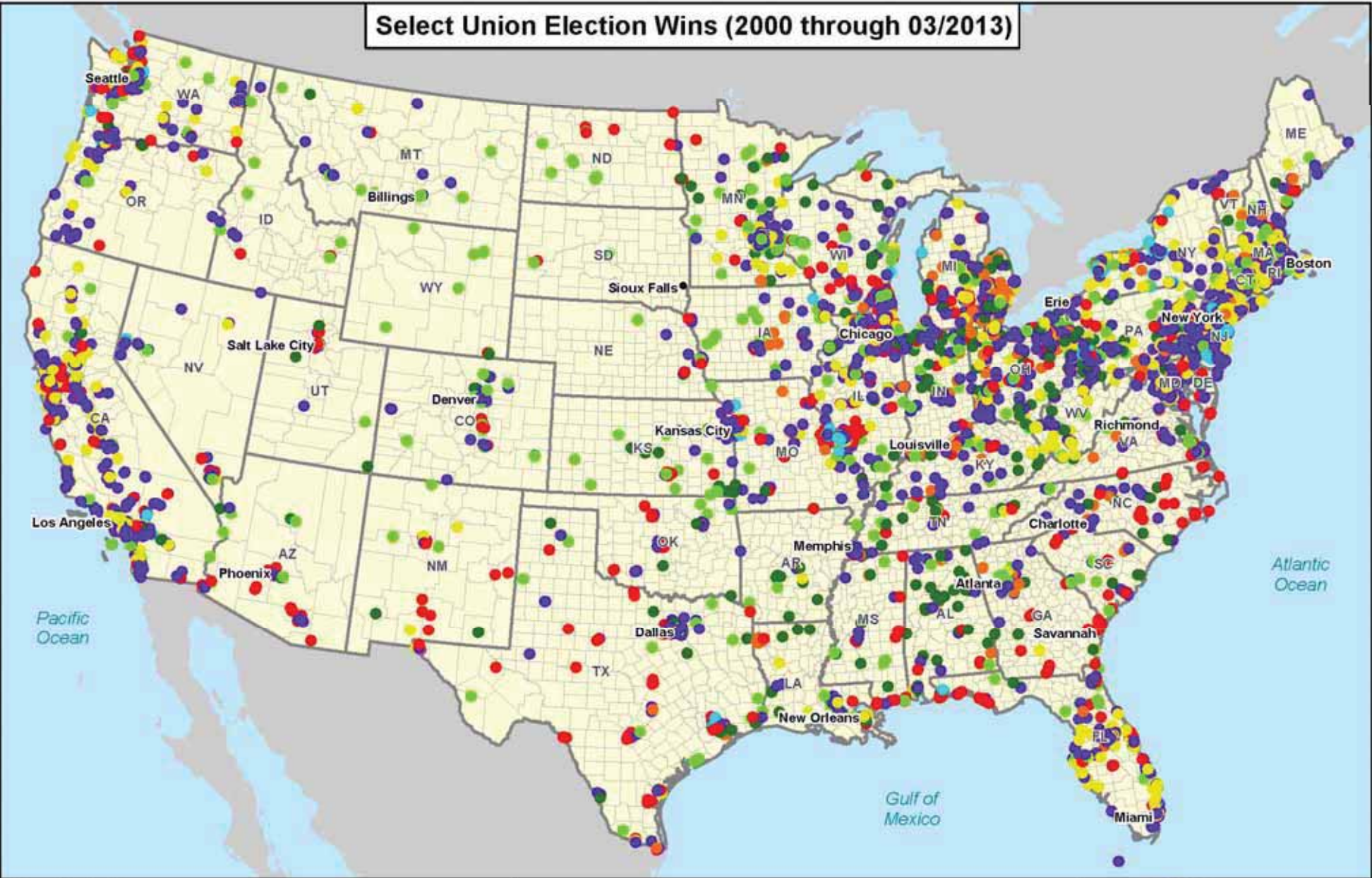


Source: c2er.org (2011)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2012

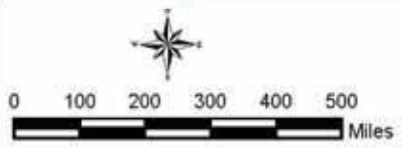


GIS61

Select Union Election Wins (2000 through 03/2013)



- Union Election Wins**
- IAM - Machinists
 - IBEW - Electrical Workers
 - IBT - Teamsters
 - IUPAT - Painters & Allied Trades
 - SEIU - Service Employees Int'l Union
 - UAW - Autoworkers
 - USWA - Steelworkers



Source: National Labor Relations Board (NLRB)
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2011
 Map Composition: MSC, 2013



U.S. Foreign-Trade Zones and Subzones



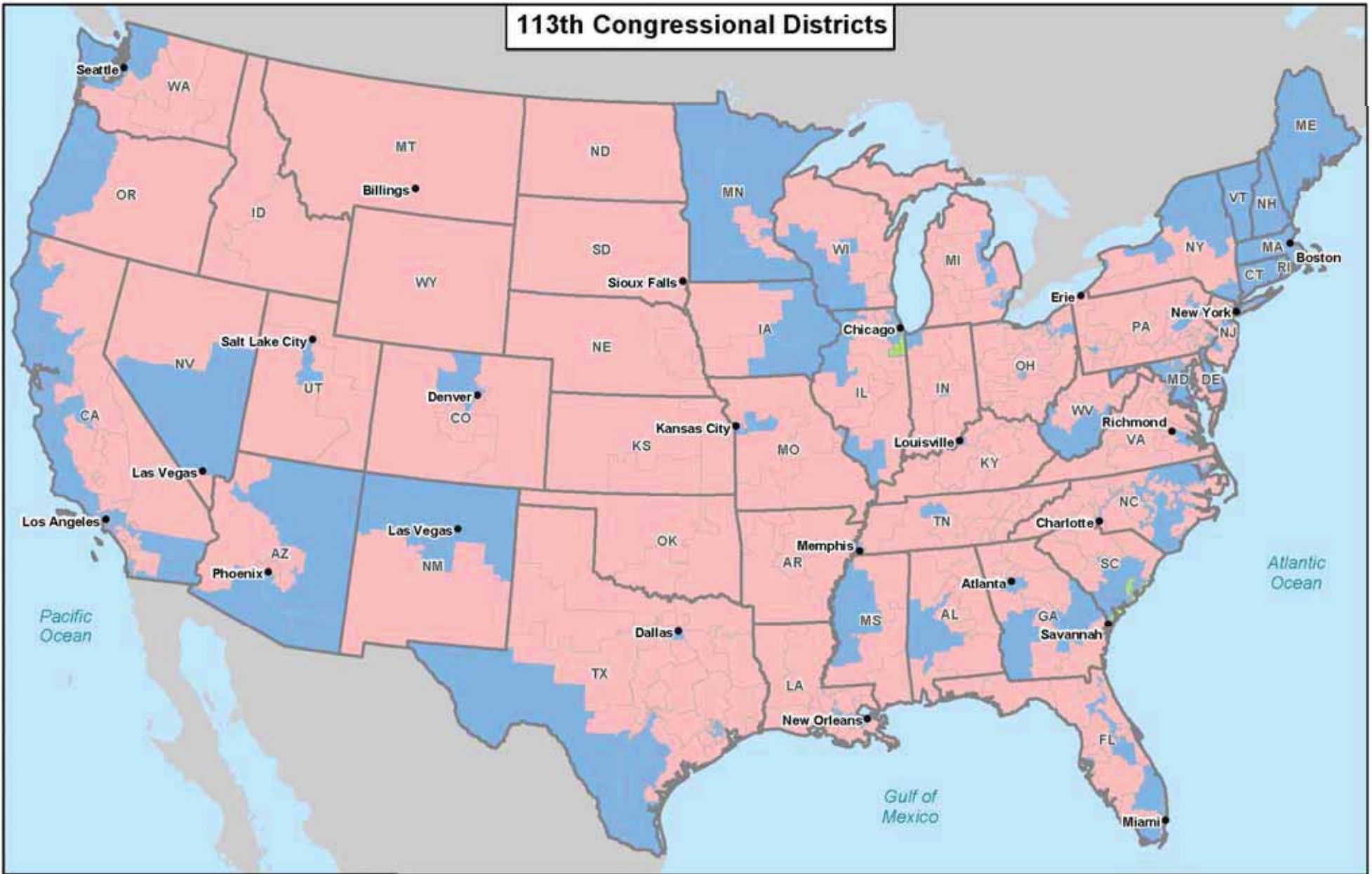
- Foreign Trade Zones
- Foreign-Trade Subzones**
- ▲ Activated
- ▲ Deactivated



Source: U.S. Foreign-Trade Zones Board, 01/2013
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2010
 Map Composition: MSC, 2012



113th Congressional Districts



113th Congressional Districts

- Democrat (200)
- Republican (233)
- Vacant (2)



Source: www.contactingthecongress.org
 Projection: Albers Equal Area Conic
 Geographic Data Source: ESRI, 2012
 Map Composition: MSC, 2013



So What is Next?

RFP Process

- RFP sent to States and Communities
 - Call RFP recipients first to discuss project in general terms and confirm contact information
 - E-mail full RFP to contact
- Conduct follow-up conference calls to review RFP details and answer questions

RFP Contents

- Cover Letter
 - General project description
- RFP Document
 - Project overview
 - Investment, employment, transportation, utilities
 - Minimum criteria
 - Project schedule
 - Submission instructions
 - List of required attachments

RFP Contents

- Questionnaire
 - Site Information
 - Zoning
 - Transportation Infrastructure
 - Utilities
 - Emergency Protective Services
 - Environmental / Permitting
 - Workforce
 - Training / Education
 - Community / Quality of Life

List of Required Attachments that need GIS Support

All map attachments must show site boundaries.

- General location map (include all commercial airports within 30 miles of the site)
- Transportation infrastructure map for truck and passenger vehicles
- Site boundary map
- Aerial photograph(s) of the proposed site with boundaries identified
- Topographic map
- Ownership map / tax map
- Easements and right-of-way map(s)
- Zoning map and description of allowable uses (for site and surrounding area)
- Map of adjoining and nearby businesses (include a legend that lists facility operations)

List of Required Attachments that need GIS Support (Continued)

- FEMA floodplain map
- Soil-type map
- Wetlands delineation map and report
- Utility infrastructure map(s) identifying the following:
 - Power lines
 - Gas lines
 - Water lines
 - Sewer lines
 - Telecommunications infrastructure

Contact Information

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