

MISSISSIPPI VALLEY



FREIGHT COALITION

MISSISSIPPI VALLEY FREIGHT COALITION



**Great Lakes Maritime
Research Institute**

*A University of Wisconsin - Superior and
University of Minnesota Duluth Consortium*



CFIRE

National Center for Freight & Infrastructure
Research & Education

Introduction to Midwest FreightView

**Peter S. Lindquist
University of Toledo**

April 27, 2010

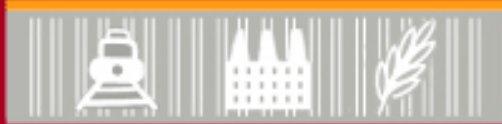
GISAG

Applied Geography



**INTERMODAL
TRANSPORTATION INSTITUTE**

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Midwest FreightView

Part I: A Vision for a Freight Data Resource in the Midwest



Midwest FreightView

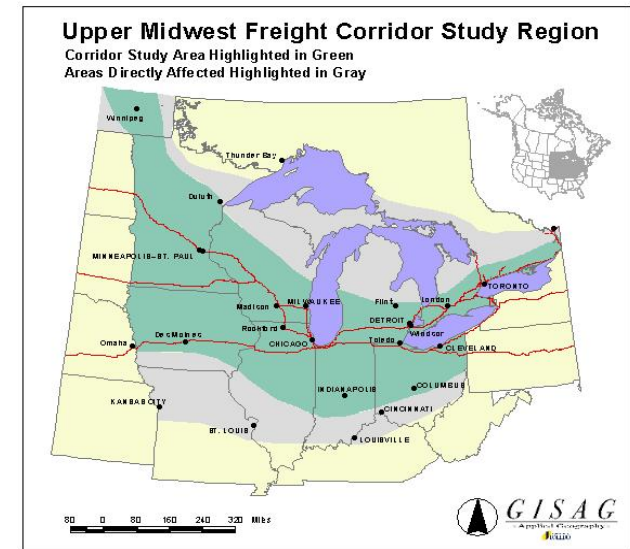
BACKGROUND

Upper Midwest Freight Corridor Study (Mississippi Valley Freight Corridor Coalition)

To establish a regional approach for improving freight transportation in the Upper Midwest

To establish multi-state, multi-jurisdictional partnership of public and private sector stakeholder interests.

To study short- and long-term issues surrounding anticipated increases in freight movement and impacts on the region's infrastructure and economic health.

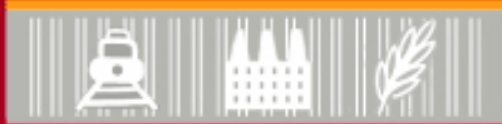




Midwest FreightView

Rationale

- Provide a Central Focus for Studying Freight Movements in the Midwest
 - A Regional Perspective in the Freight Infrastructure
 - Bring together a diversity of organizations and professionals: State Agencies, MPOs, Shippers, Carriers
 - Report on the Condition of the Regional Freight Infrastructure (Including Performance Measures)
 - Link Freight Movements with Economic Development
- Relate Data from a Wide Range of Sources:
 - Network Data: Flows / Capacity / Administration
 - Regional Data: Economic Activity / Population
- Analysis / Modeling / Simulation / Forecasting



Midwest FreightView

Objectives

Provide a single repository for regional data with convenient secure access

Manage a comprehensive database relating:

- Economic activity among all sectors
- Regional population patterns
- Import and export flows
- Intra-regional flows
- System capacity among all modes
- Intermodal connectivity

Begin to assemble a regional database that can support freight modeling efforts.



Midwest FreightView

Objectives

Comprehensive, seamless, spatially registered and current data repository in a GIS framework

Focus on data and information support functions for public public officials and policy analysts

Projected users:

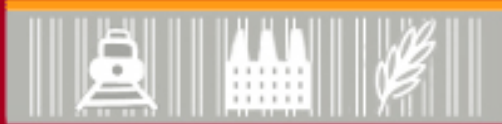
- Federal, state, and local governments
- Metropolitan planning organizations (MPOs)
- Transportation-related associations
- University research centers
- Other public stakeholders



Midwest FreightView

The Current Delivery System

- Internet-Based Delivery
- *CITRIX MetaFrame* Environment
 - Users access site using Web Browser
 - No software requirements for user
 - Limited Access
 - Users operate delivery system on Toledo Server
 - Images, not data, transferred to users
- GIS Format
 - Modified ArcView Application
 - Full range of mapping and query functions available
 - Analysis tools will be added



Midwest FreightView

Challenges

Data Sources

- Dependence on Federal Data: FAF, BTS, *etc.*
- Primary Data Acquisition
- Commercial Data (e.g., *PIERS, TranSearch, GTIS*)

Data Reconciliation and Formatting

Data Compatibility / Availability among Jurisdictions

Frequency of Reporting, “Currentness”



Midwest FreightView

Challenges

Providing functions for a wide range of users

- Basic prepared maps for viewing and download,
- Prepared tables and graphs for viewing and download
- Simple mapping functions in the data viewer,
- Query functions for more advanced users, and
- Analysis functions and specialized functions in the database for advanced users.



Midwest FreightView

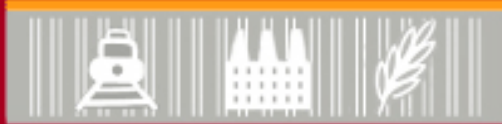
Challenges:

Training and Technology Transfer

- Workshop Sessions
- Technical Manuals / Users' Guides
- On-Line Documentation (short tutorials) for selected tasks on Toledo Site web page
- Technical Support via telephone (at specific times) or via email for more complex problems

Limitations of Working with *CITRIX/ArcView* Platform

- Replacement User Interface
- Specialized Viewing / Retrieval / Analysis Functions

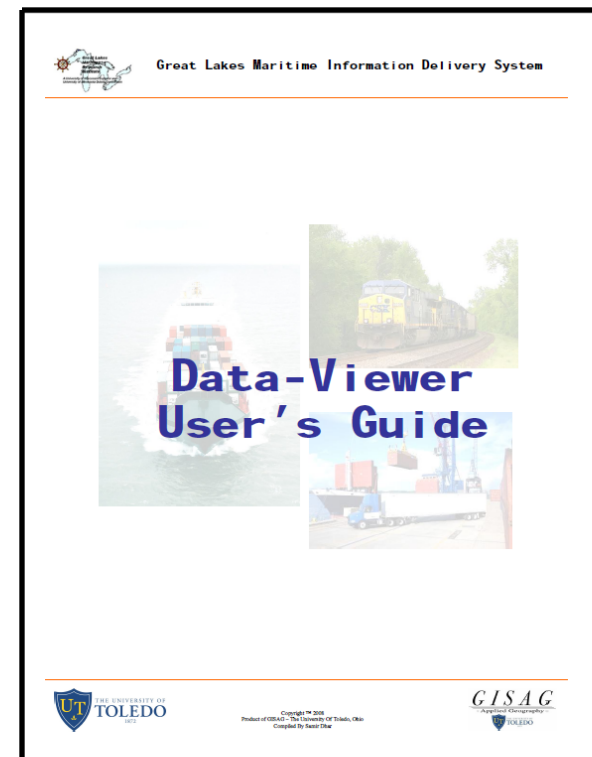


Midwest FreightView

Data Delivery System: Documentation

Improving the documentation of existing information on the Toledo project web page:

- Manuals and related documentation for use of the system.
- Formalized documentation of the contents of the database including
 - detailed inventory of the database
 - metadata
 - technical appendices
- Furnish secure direct access to the *MWV* data viewer.



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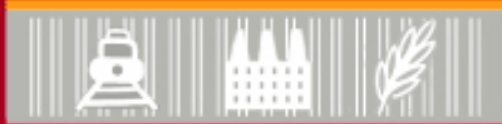
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Midwest FreightView

Part II: *Midwest FreightView* Today

- Contents of Online Database
- Contents of Data Repository
- Midwest FreightView User Interface

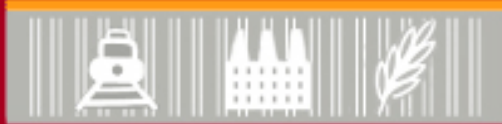


Midwest FreightView

Midwest FreightView

Current Network Data:

- ORNL CTA North American Highway Network
- NHPN (FAF) Highway Network
- Integrated Highway Network
- Updated ORNL CTA North American Rail Network
- North American Transportation Atlas Data (NORTAD)
- BTS Intermodal Terminals, Ports, Airports
- USACE Dock Data
- GTIS Import/Export Database 1999+, by State, Customs Gateway
- FAF Zones and Centroids
- FAF 2002 OD Flows (National Scale)
- FAF² 2007 Provisional OD Flows (National Scale)
- Weather station data (NOAA, to approx. 60 Miles Inland)



Midwest FreightView

Midwest FreightView

Economic/Population Data:

- US Census of Agriculture / NASS Data (County-Level)
- Demographics Plus 2003 *Business Counts*—Tract+
- US Census 2000 Long Form Database—Tract +
- Geographic Data: Counties, Census Tracts, ZIP Code Areas, Congressional Districts, MSAs, Urban Areas, ADIs, DMAs, Canadian Municipalities, Mexican States
- County-Level Employment by 3-Digit NAICS classification (Sources: BLS ES/202, County Business Patterns, supplemented with Minnesota IMPLAN Group, Inc. data)

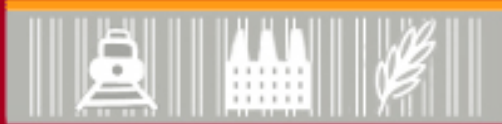


Data Repository Contents

Midwest FreightView

Data Residing in Repository outside of MWFV

- Import/Export Flows (GTIS)
- Satellite imagery / aerial photography of dock facilities
- Dock equipment, lock performance data—U.S. side only
- Establishments and employment by 2-6 Digit NAICS classification among counties, MSAs and individual Establishments in 10-State study region (Sources: Minnesota IMPLAN Group, Inc., Dun and Bradstreet/Harris InfoSearch)
- BEA gross domestic product by metropolitan area and by sector and by Year
- BEA regions in *ESRI* Shapefile format



Data Repository Contents

Midwest FreightView

Data Residing in Repository outside of MWFV

- Coal Mine Database (Keystone Directory)
- Power Plant Database (eGRID, etc.)
- Air Freight Flow Network (by market & month)
- Dock equipment, lock performance data—U.S. side only
- Air Freight Data (T-100 1997-2007)
- MARAD international vessel movements & USACE Vessel Entrances and Clearances
- USACE Waterborne Commerce Database Part III (Great Lakes)
- ESRI Traffic Volumes

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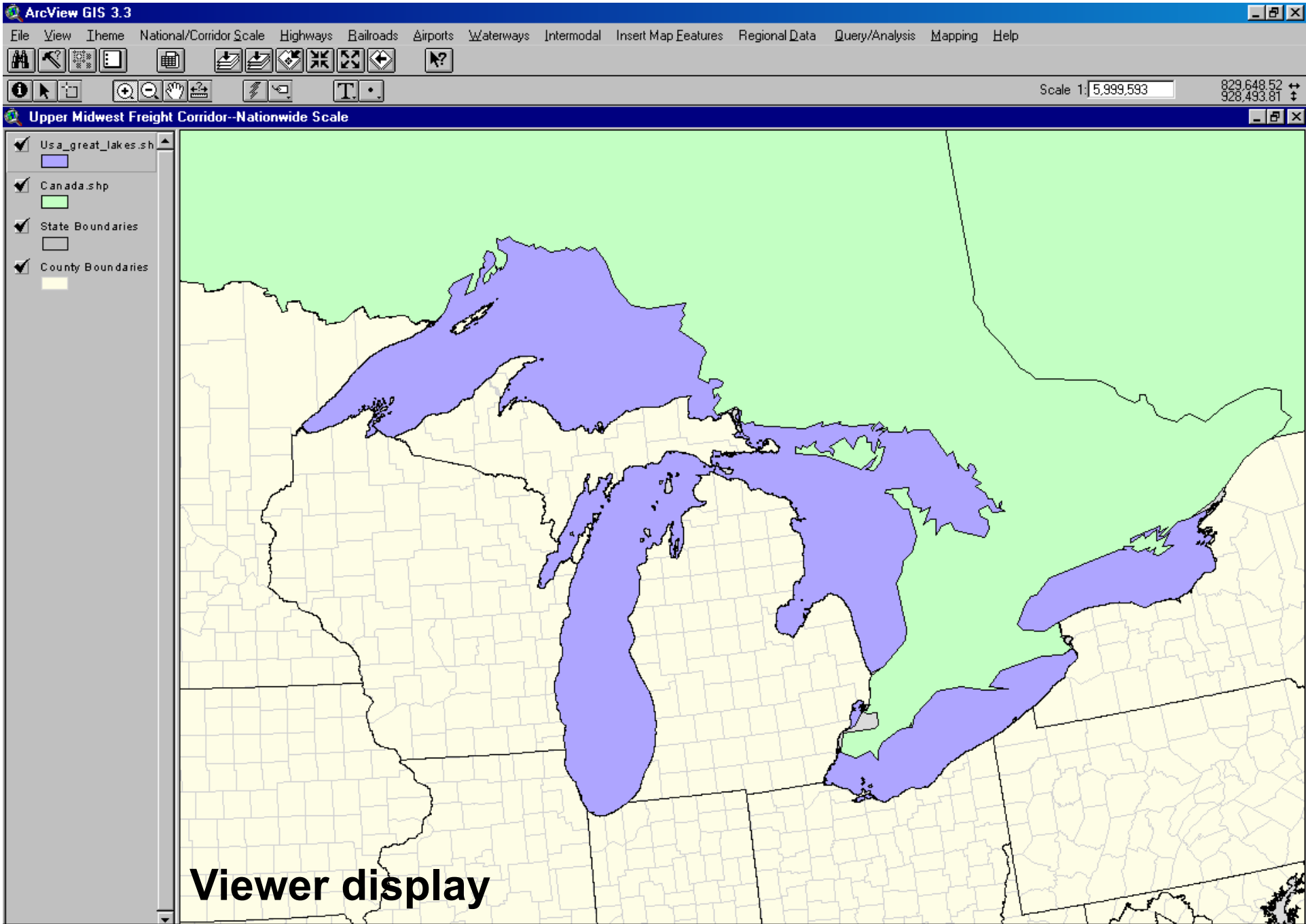
FREIGHT COALITION

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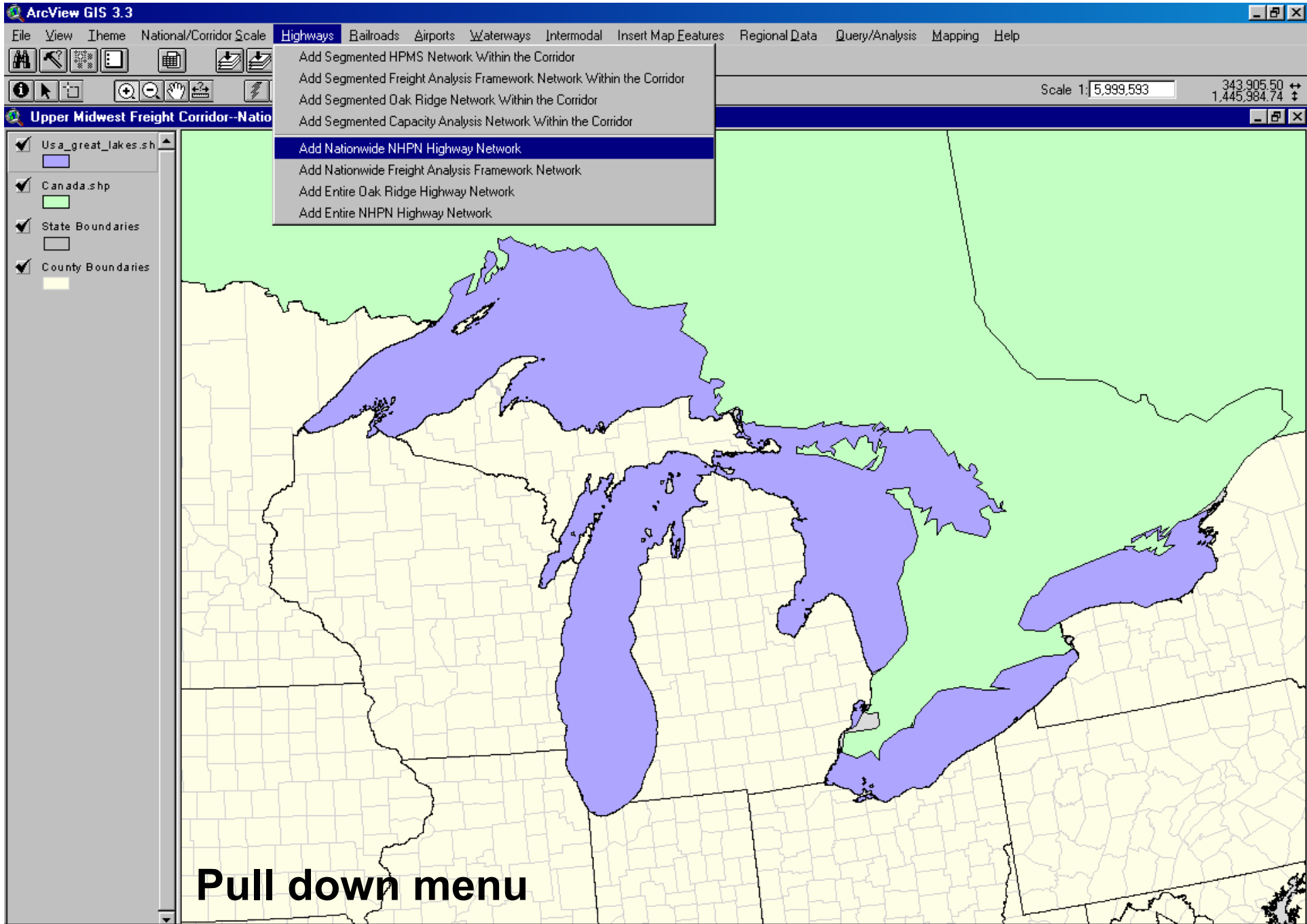
Midwest FreightView

Midwest FreightView: **Geospatial Information Delivery**

The Current GIS data viewer

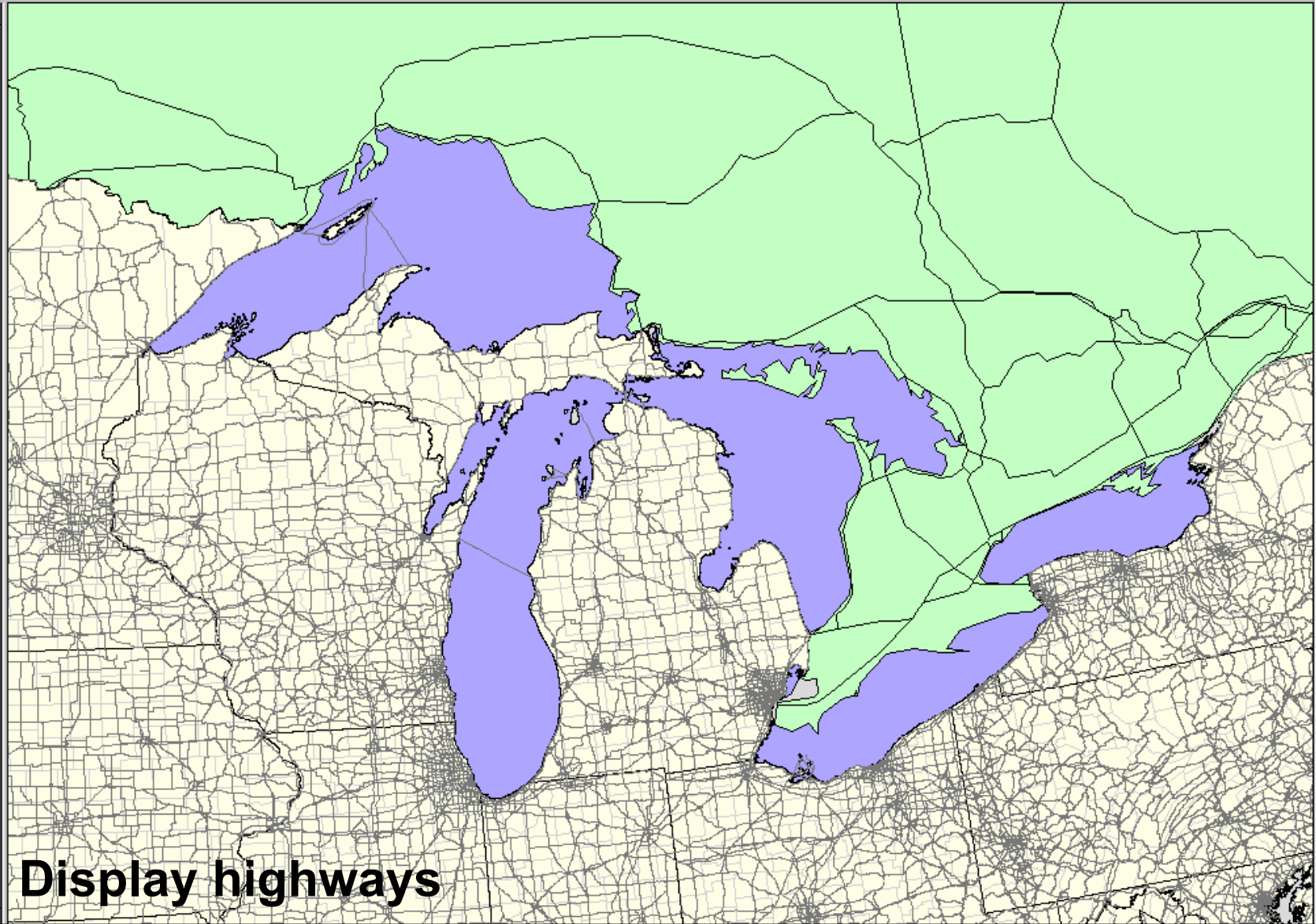


Viewer display

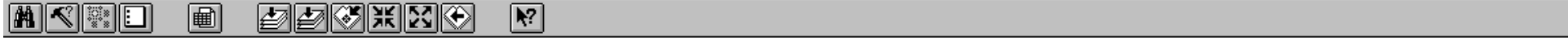




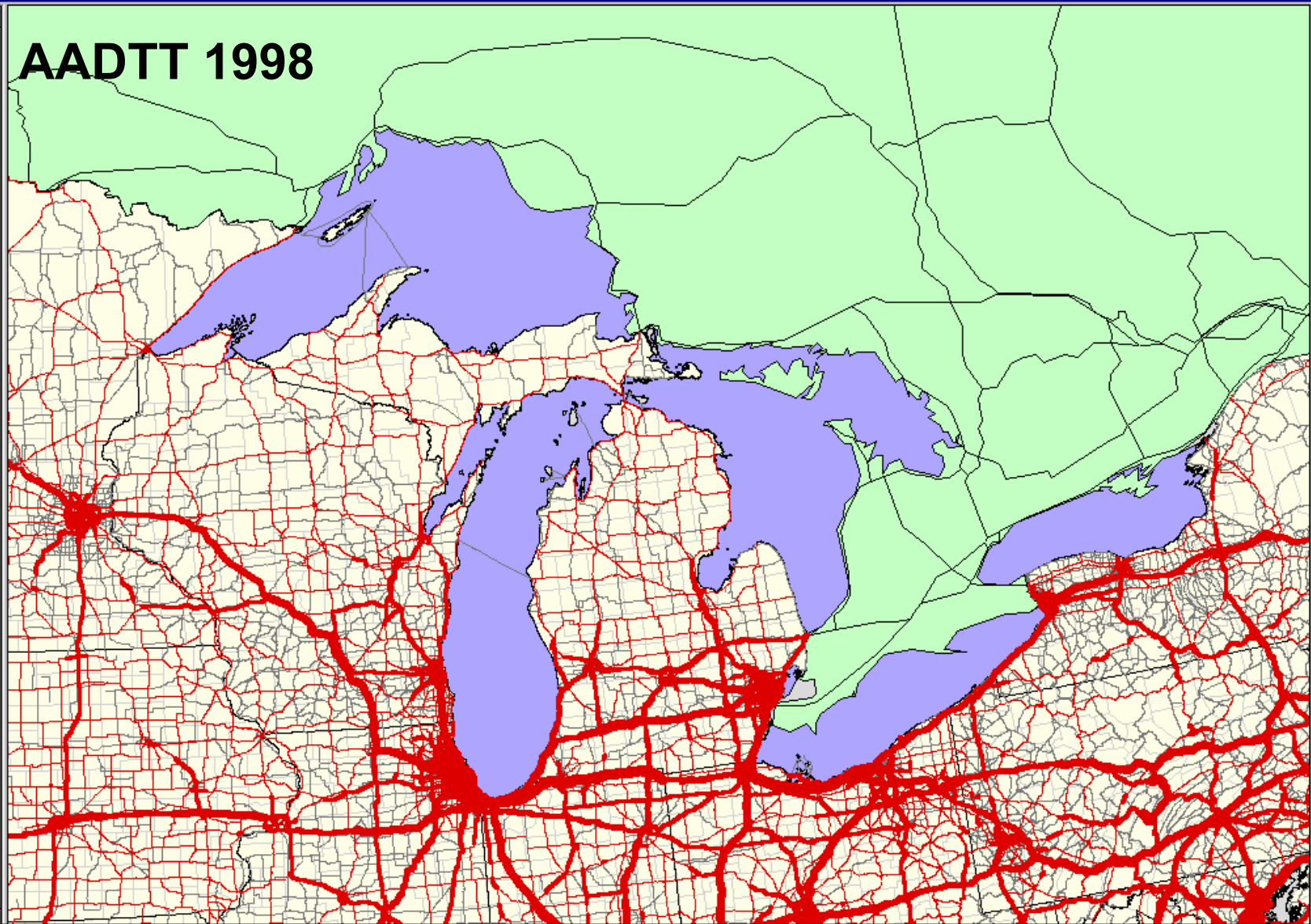
- Highway_faf_inte gra
- USA_NHPN_Link.st
- Roads.shp
- Usa_great_lakes.sh
- Canada.shp
- State Boundaries
- County Boundaries



Display highways

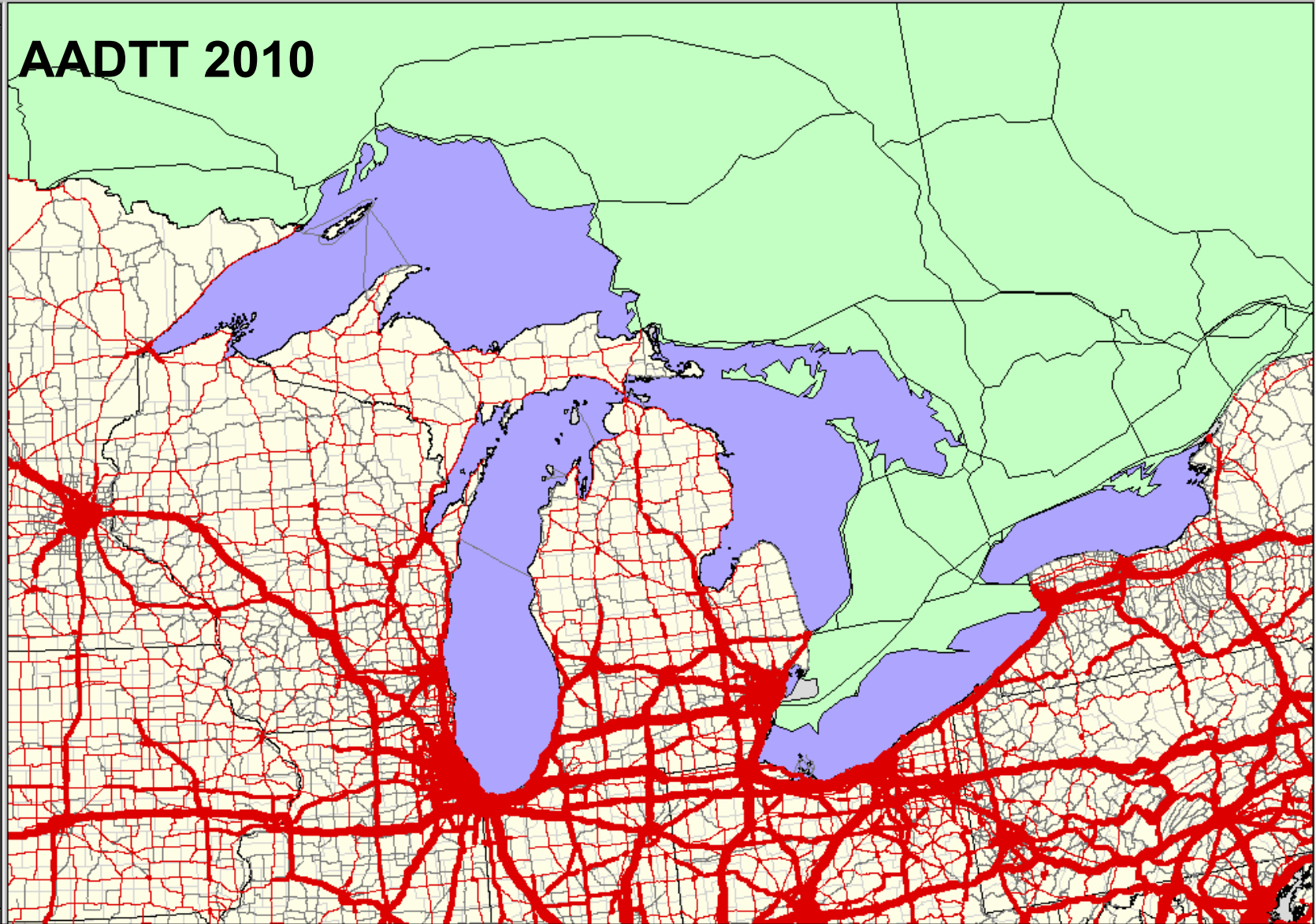


- Highway_faf_inte gra
 - 0 - 2279.486
 - 2279.486 - 4958.972
 - 4958.972 - 8526.495
 - 8526.495 - 12731.057
 - 12731.057 - 17655.122
 - 17655.122 - 24326.211
 - 24326.211 - 34835.266
 - 34835.266 - 74483.528
- USA_NHPN_Link.st
- Roads.shp
- Usa_great_lakes.sh
- Canada.shp
- State Boundaries
- County Boundaries



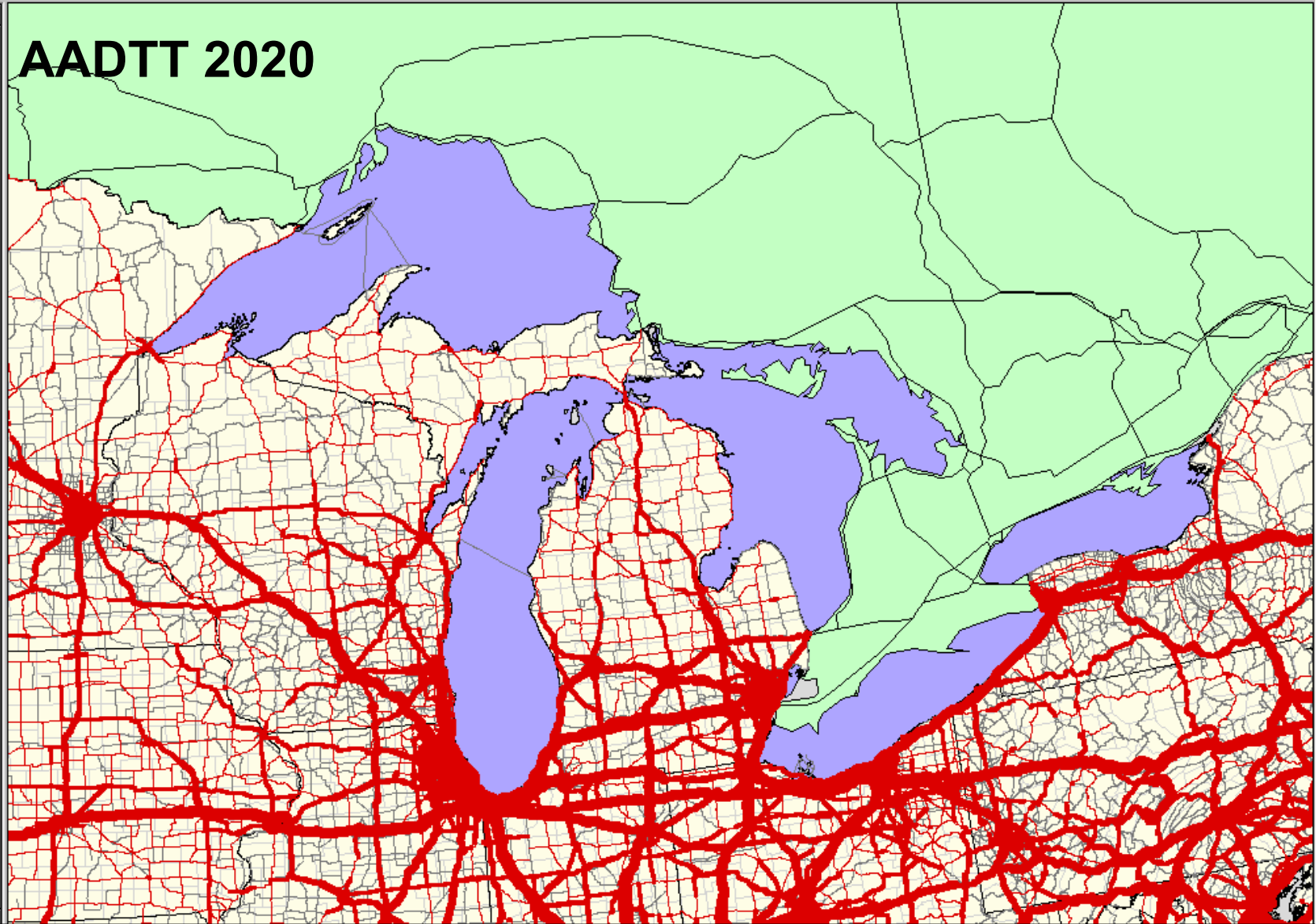


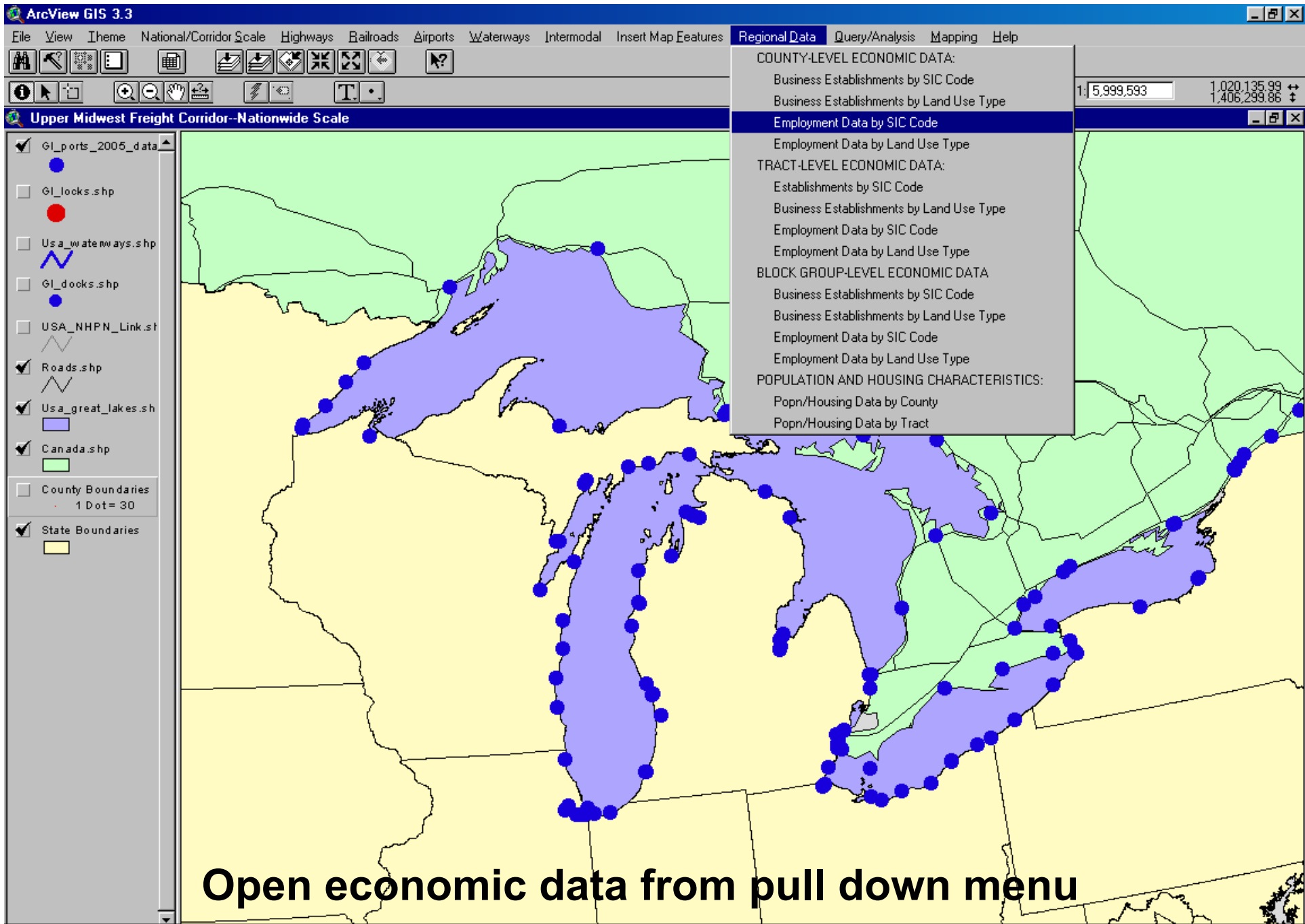
- Highway_faf_inte gra
 - 0 - 2279.486
 - 2279.486 - 490
 - 4998.931 - 852
 - 8526.495 - 127
 - 12731.057 - 176
 - 17655.122 - 243
 - 24326.211 - 34
 - 35526.69 - 74
- USA_NHPN_Link.st
- Roads.shp
- Usa_great_lakes.sh
- Canada.shp
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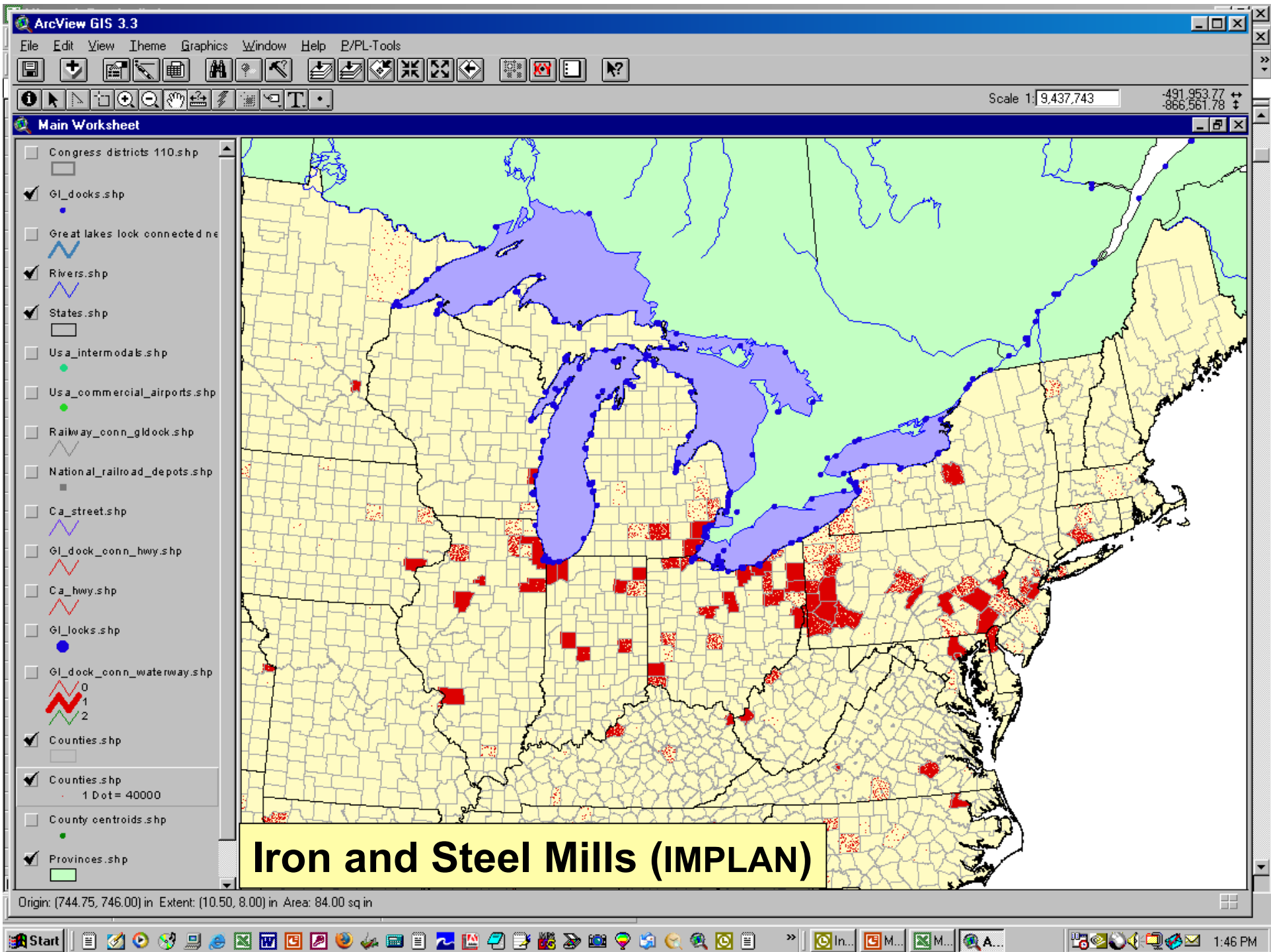


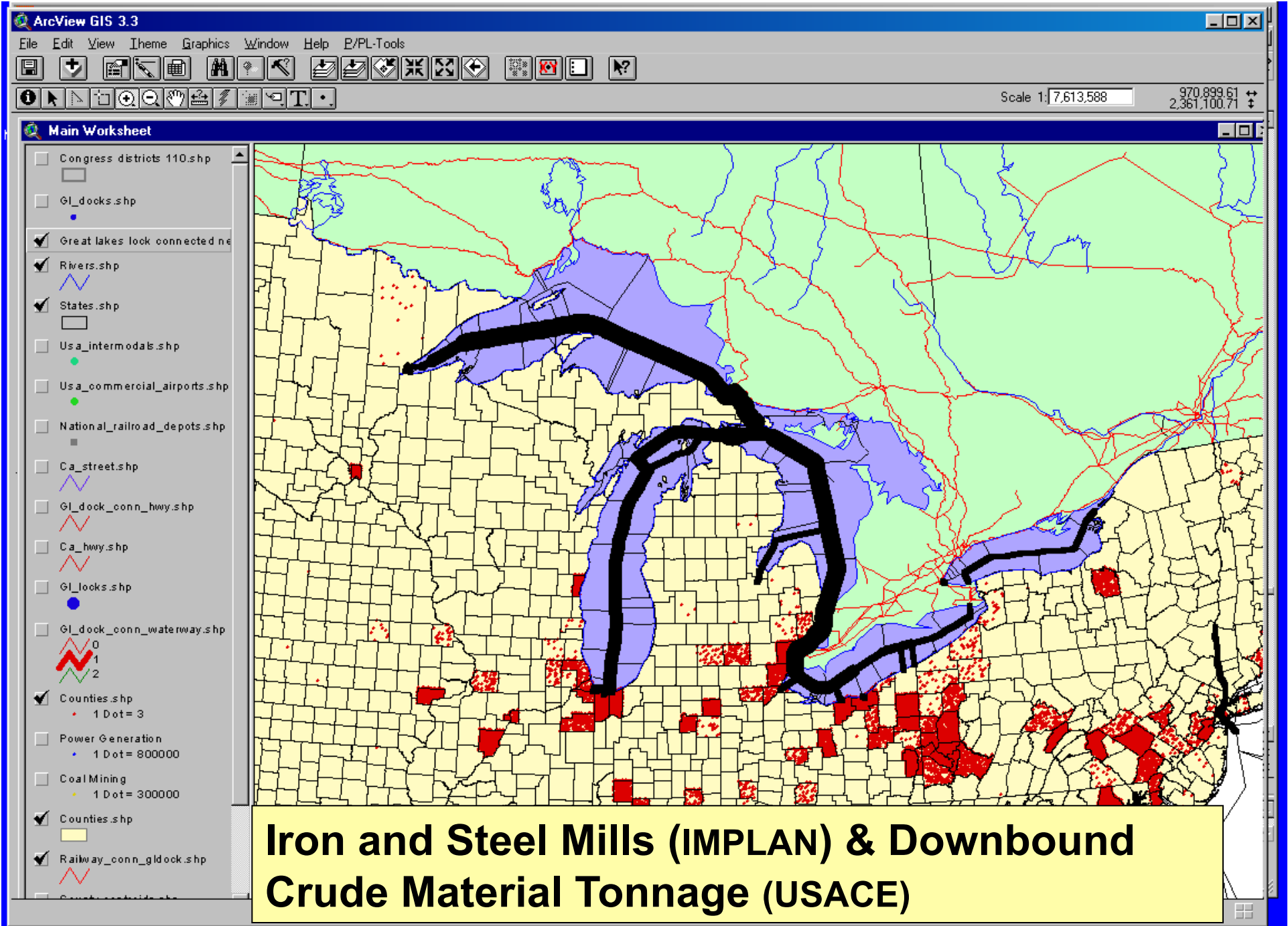


- Highway_faf_inte gra
 - 0 - 2279.486
 - 2279.486 - 4958.972
 - 4958.972 - 8526.495
 - 8526.495 - 12731.057
 - 12731.057 - 17655.122
 - 17655.122 - 24326.211
 - 24326.211 - 34855.266
 - 34855.266 - 74488.532
- USA_NHPN_Link.st
- Roads.shp
- Usa_great_lakes.sh
- Canada.shp
- State Boundaries
- County Boundaries

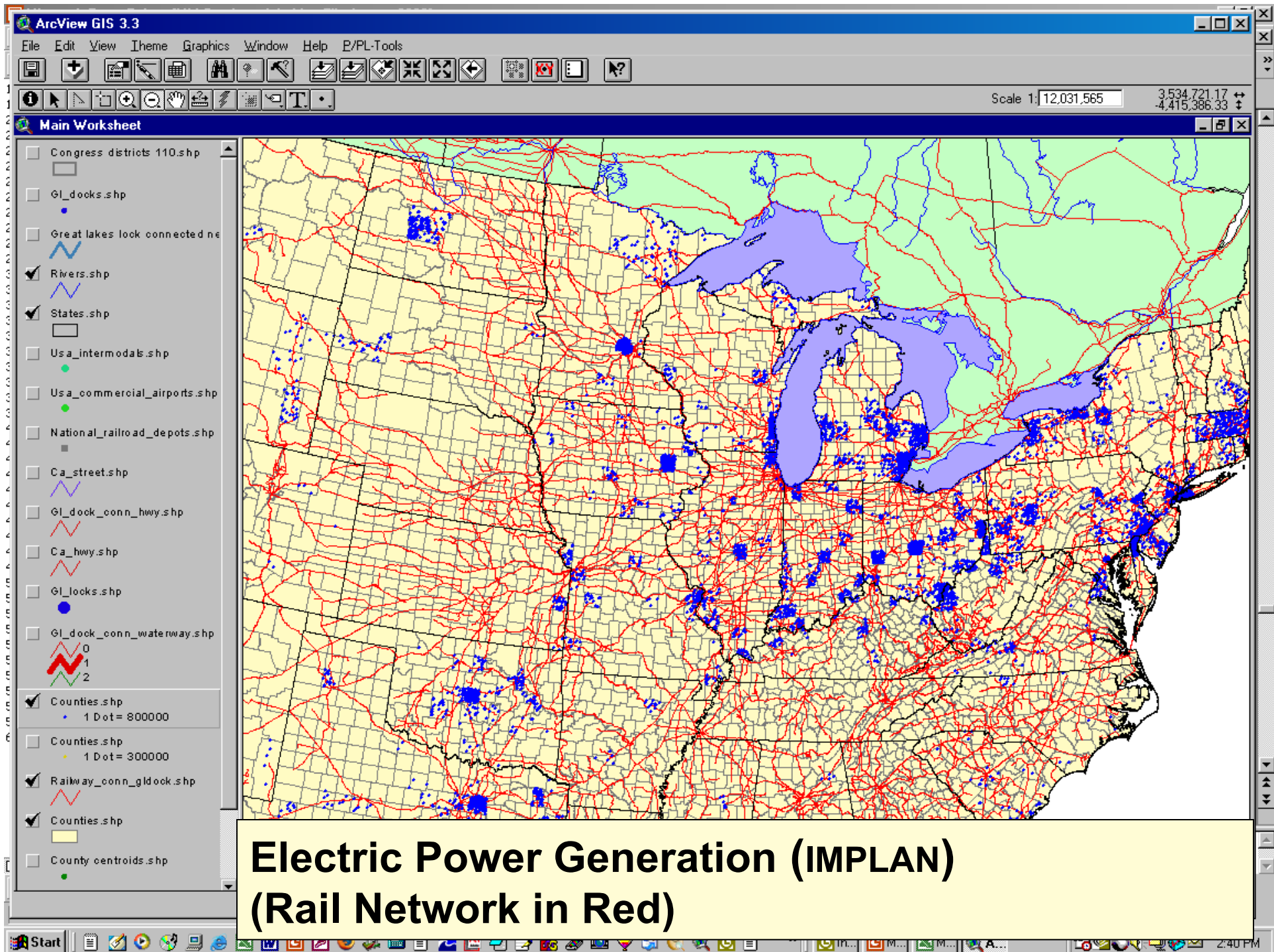


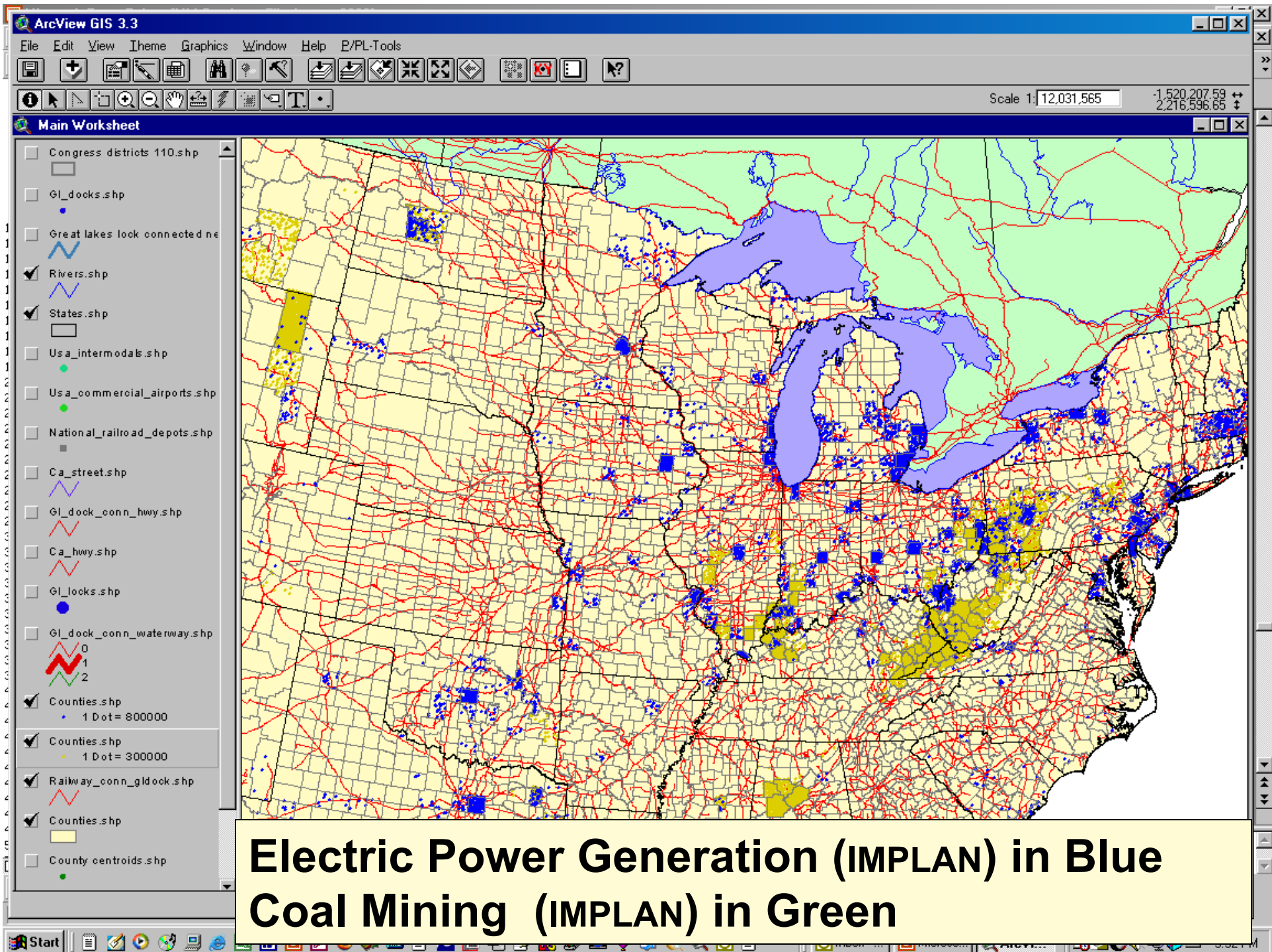


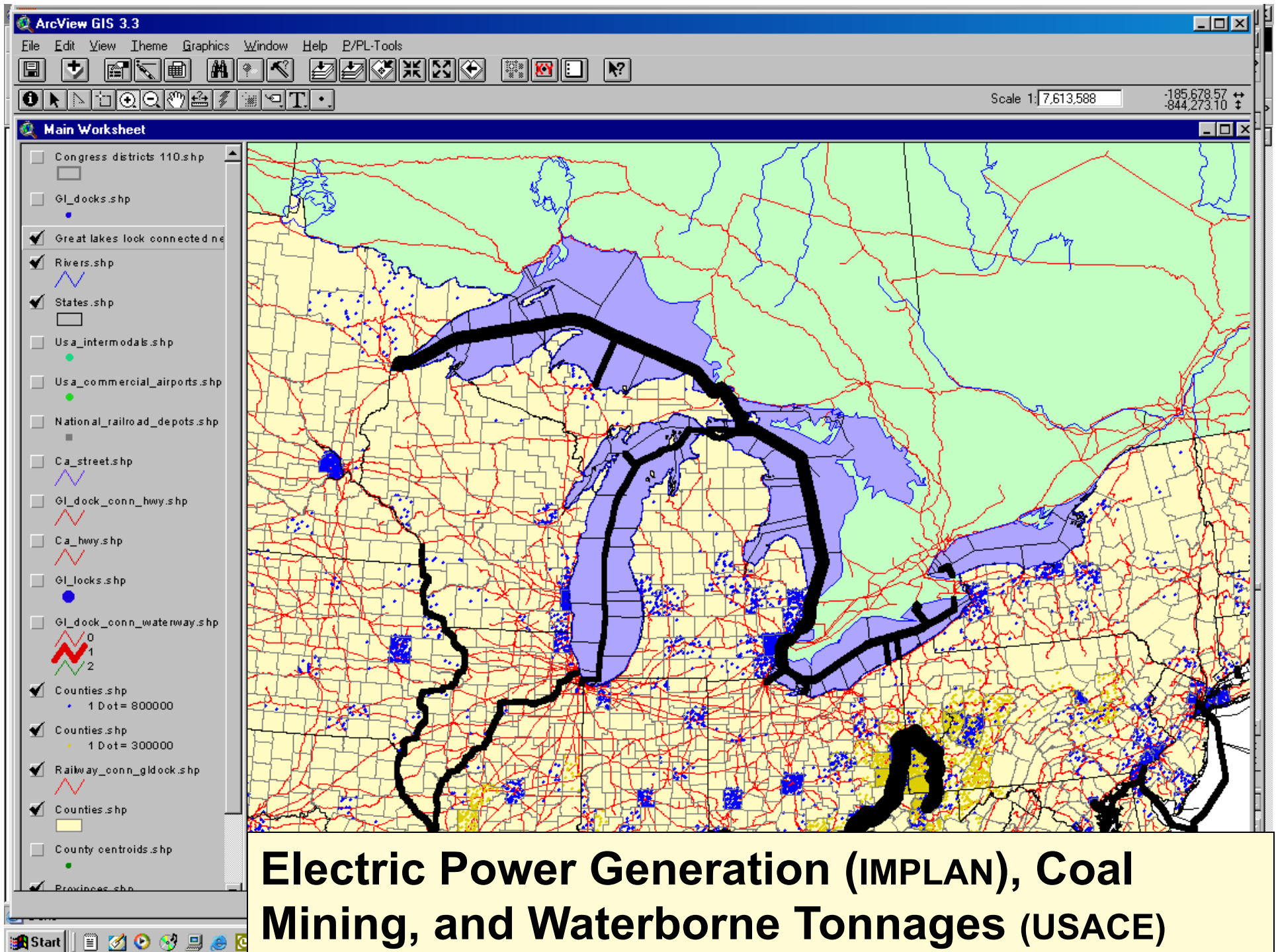


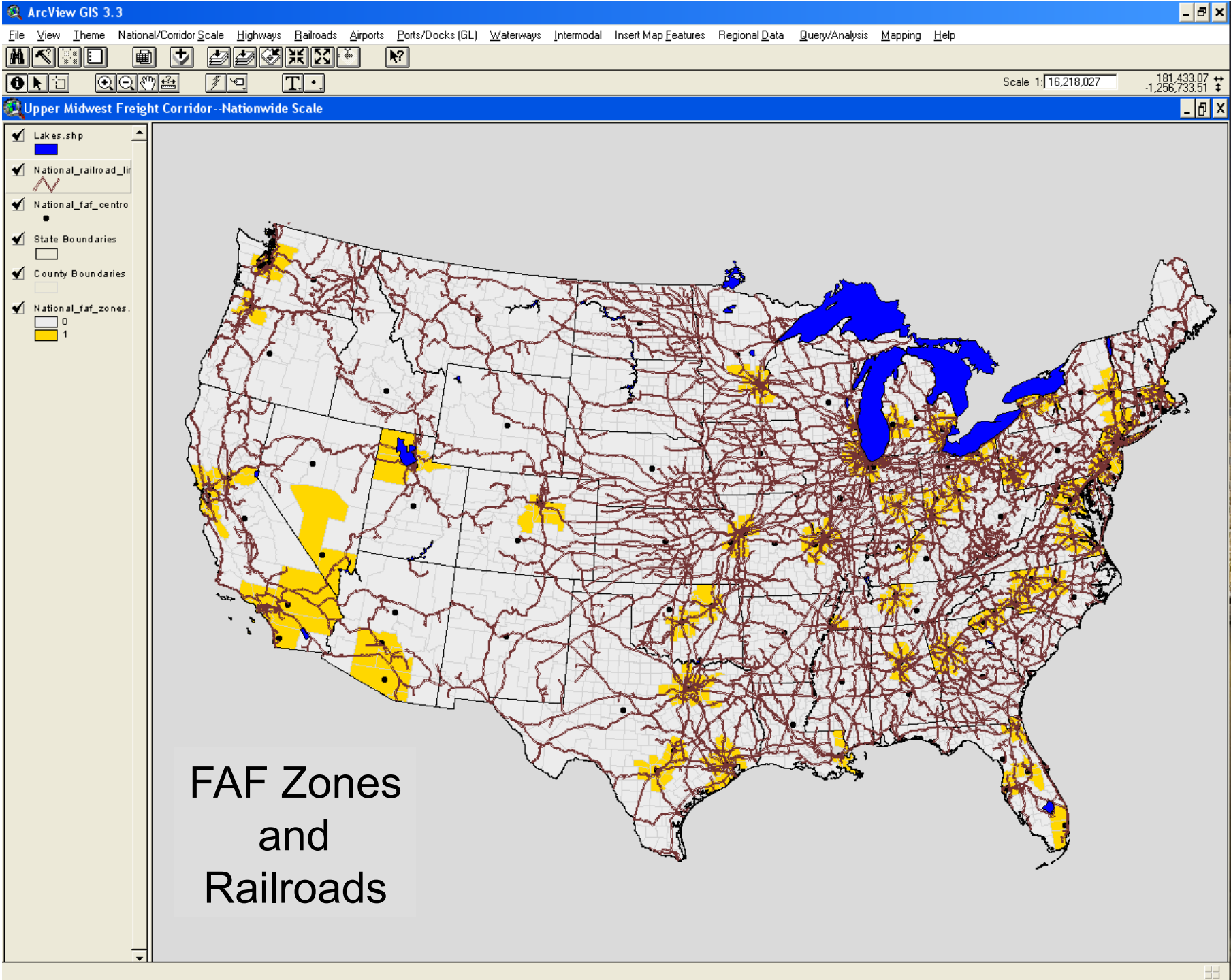


**Iron and Steel Mills (IMPLAN) & Downbound
Crude Material Tonnage (USACE)**









FAF Zones
and
Railroads

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Midwest FreightView

Part III: Working with *Midwest FreightView*

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Midwest FreightView

Midwest FreightView: **Geospatial Information Delivery**

Accessing Midwest FreightView on the Network

<http://www.maritime.utoledo.edu>

<http://midwestfreightdata.utoledo.edu>



Mississippi Valley Freight Coalition

"The University of Toledo, partnering the coalition"

HOME

OVERVIEW

DATA DOCUMENTATION

RESOURCES

CONTACT

INTRODUCTION

The Mississippi Valley Freight Coalition has built upon the work of the Upper Midwest Freight Corridor Study to establish a regional organization to cooperate in the planning, operation, preservation, and improvement of transportation infrastructure in the Mississippi Valley region. The Mississippi Valley region includes ten states (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin) that share key interstate corridors, rail infrastructure, and inland and Great Lakes waterways. The signing of a Memorandum of Understanding by these states' Departments of Transportation indicates their willingness to meet freight demand through regional cooperative efforts.

The Mississippi Valley Freight Coalition is currently involved in the formation of Executive and Technical Committees, the surveying of transportation Customers in the region (to form a Customer Committee), and the development of a Charter and Assessment of Financial Needs.

DATA VIEWER

Here is the link to the Data Viewer: Click Below



Data Viewer

MVFC - DataViewer User's Guide

The data contained in the viewer has a complete meta-data, which could be found in the **Data Documtation** page.

PROJECT SPONSORS

- Midwest Regional University Transportation Center (University of Wisconsin-Madison)

LATEST NEWS

10.06.2006

Corridor of the Future

❖ read more ...

02.06.2007

TRB News

❖ read more ...

ADDITIONAL LINKS

- ❖ ITI Univ. Toledo
- ❖ Geography & Planning
- ❖ MRUTC Reference Library
- ❖ GLMRI Clearing House
- ❖ AASHTO
- ❖ BTS
- ❖ FHWA (Freight Planning)
- ❖ USACE
- ❖ USDOT (Freight)

DOCUMENTS

MetaFrame Presentation Server Log In - Windows Internet Explorer

http://gisag94.uhwi.utoledo.edu/Citrix/MetaFrame/auth/login.aspx

File Edit View Favorites Tools Help

MetaFrame Presentation Server Log In

CITRIX | **Web Interface**
for MetaFrame® Presentation Server

Log in

User name:

Password:

Domain:

[Advanced Options >>>](#)

Welcome

Please log in

To log in to MetaFrame Presentation Server, enter the credentials required, and then click Log In.

If you do not know your log in information, please contact your help desk or system administrator.

Message Center

The Message Center displays any information or error messages that may occur.

Done

Internet 100%

Outline Default Design

Start X... 2 2 S... A.. 4:02 PM

MetaFrame Presentation Server - Windows Internet Explorer

http://gisag94.uhw.utoledo.edu/Citrix/MetaFrame/site/default.aspx

File Edit View Favorites Tools Help

MetaFrame Presentation Server

CITRIX Web Interface for MetaFrame® Presentation Server

Applications

Top Up

ArcGIS 92 MWFC

Reconnect Disconnect Log Off

Welcome

MetaFrame Presentation Server Applications

Welcome to your personalized view of your MetaFrame Presentation Server applications. The Applications box contains icons for the applications that you can use. Click an icon to launch an application. Click Refresh to view the latest applications. Click Settings to change your settings. Click a folder icon to display its contents. If you have problems using an application, please contact your help desk or system administrator for more information.

Message Center

The Message Center displays any information or error messages that may occur.

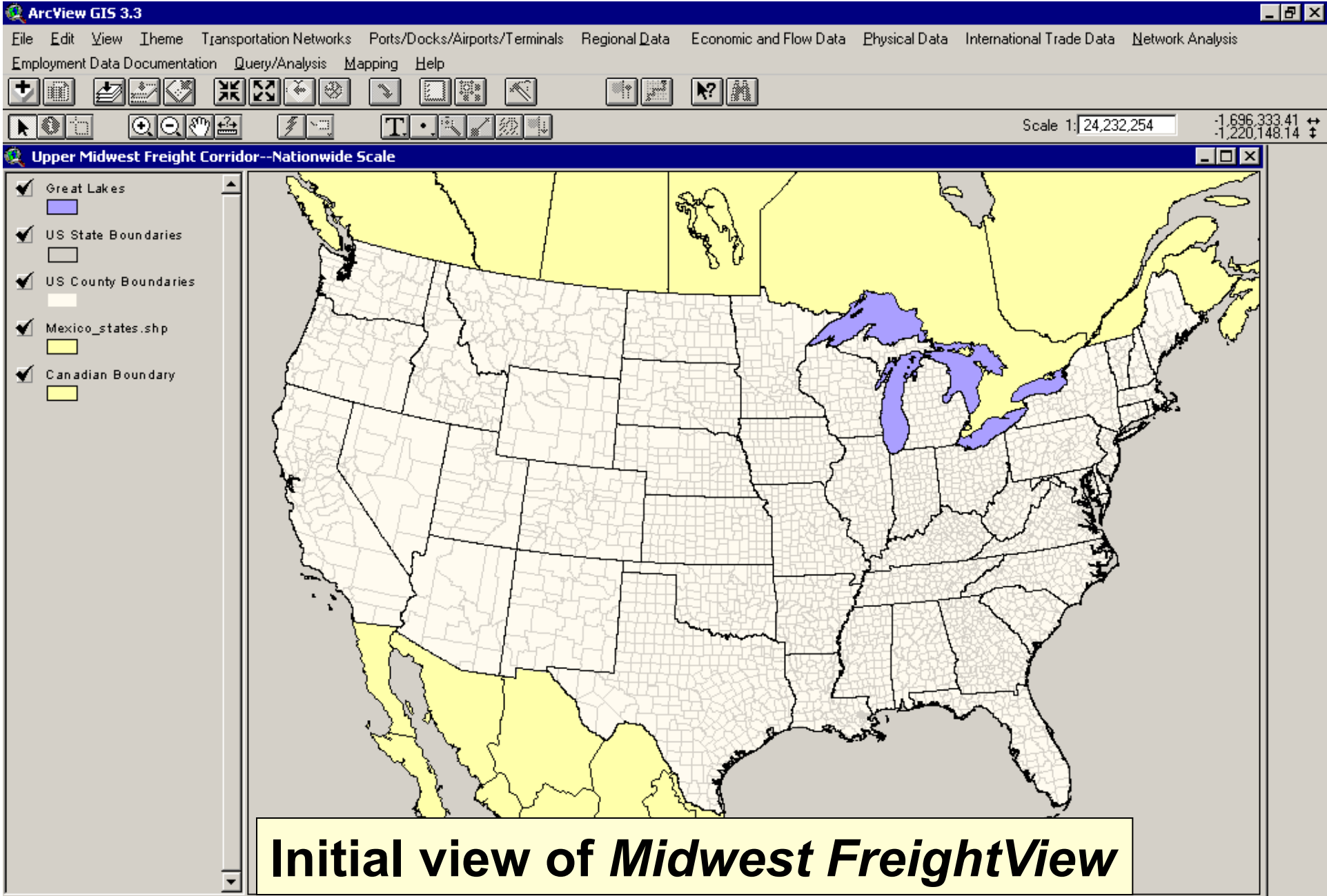
 There are no existing applications available for reconnection.

Click on MWFC

Internet 100%

Outline Default Design

Start X... 2 2 S... A.. 4:11 PM



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Midwest FreightView

**Part IV: Looking Ahead: Updates, Additions,
Revisions and Improvements to
*Midwest FreightView***

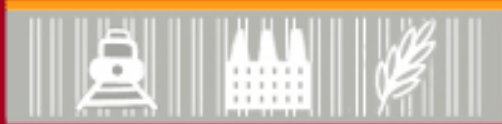


Midwest FreightView

Midwest FreightView

Data Currently Being Added to MWFV:

- ORNL CTA North American Rail Interlining Network
- **Integrated Network**—Great Lakes Waterway, Highway, Rail linked to Commercial Docks, Locks (Army Corps of Engineers)
- Updated US Highway Network
 - Speed / Estimated Travel Times
 - Add ESRI Traffic Counts to integrated highway network
 - Add ATRI Travel Time Data (by time of day, day of week)
 - Link highways to Rail Network through Intermodal Sites/Ports
- Link BEA Regions/BEA GDP Data to Public Rail Waybill Data
- Encode EPA eGRID Power Plant Database, Keystone Coal Mine Database into MWFV; linkages to Rail and Waterway Networks



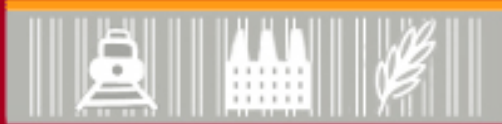
Midwest FreightView

Midwest FreightView

Data Currently Being Added to MWFV:

- Add T100 Air Flows between Airports (by month, year)
- USACE Foreign Traffic Vessel Entrances and Clearances
- USACE Waterborne Commerce Data
- Recently finished “Last Mile” Connections and Added Satellite Imagery to Viewer Site
- County-to-County Mileage and Impedance Tables:
 - Highway
 - Rail
 - Water

Useful for Analytical Tools—Accessibility, Location Analysis, *etc.*

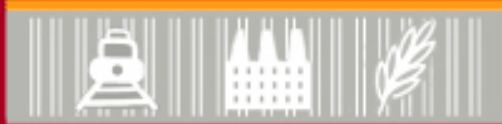


Parallel Projects:

Midwest FreightView

Data Currently Being Added to Repository:

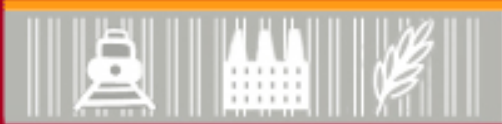
- Data Collection: USACE Master Docks Plus Data Collection
 - ◆ Developed and Tested New Methods for Data Collection
 - ◆ Tested Methods at Selected Ports
- FINDE: Federal Integrated Navigation Data Enhancement
 - ◆ Automated Data Gathering for Port Calls
 - ◆ Development of GIS Database at Dock Facilities
 - ◆ AIS-Data Acquisition referenced to GIS Dock Locations
 - ◆ Joint Project with USACE, US Customs, IRS, BTS
US Coast Guard



Midwest FreightView

LOOKING AHEAD:

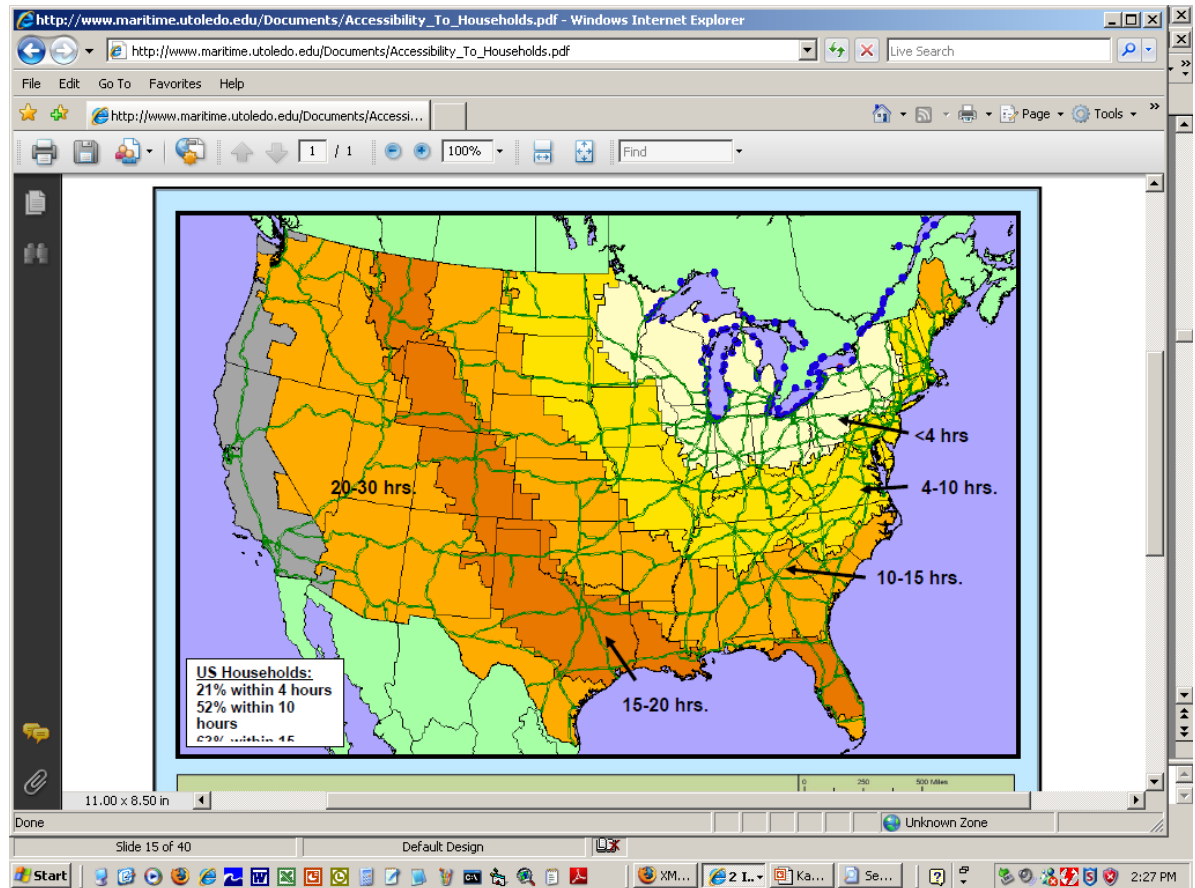
- Continue development of integrated network:
 - ◆ Highway Performance Indicators
 - ◆ Time-Dependent Vehicle Routing on Highway Network
- Development of New Data Viewer to Replace *ArcView* Interface
- Development of Streamlined Data Viewer
- Development of “User Friendly” Query Functions
- Continued Development of Analytical Tools
 - ◆ Location Analysis and Site Selection Models
 - ◆ Accessibility Measures and Trade Area Analysis
 - ◆ Economic Indices and Analyses
 - ◆ Intermodal Cargo Routing using Integrated Network

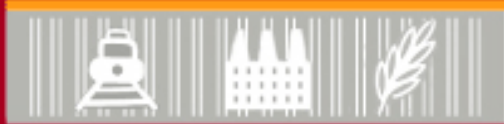


Midwest FreightView

Functions:

Basic prepared maps for viewing and download,



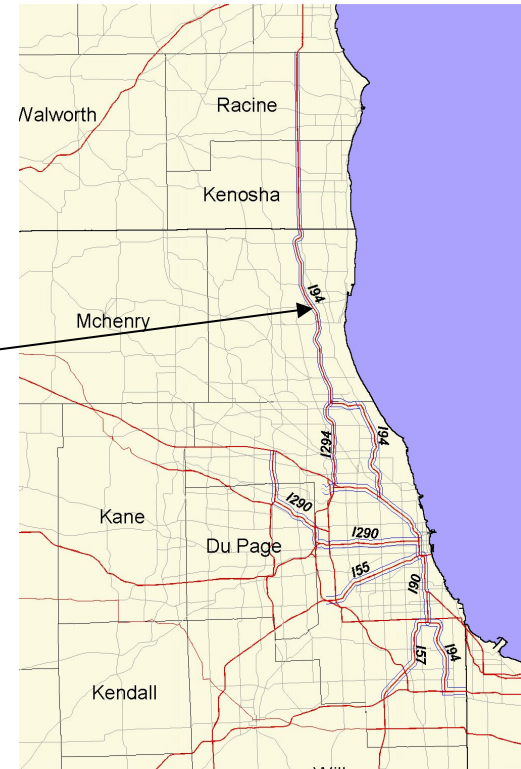
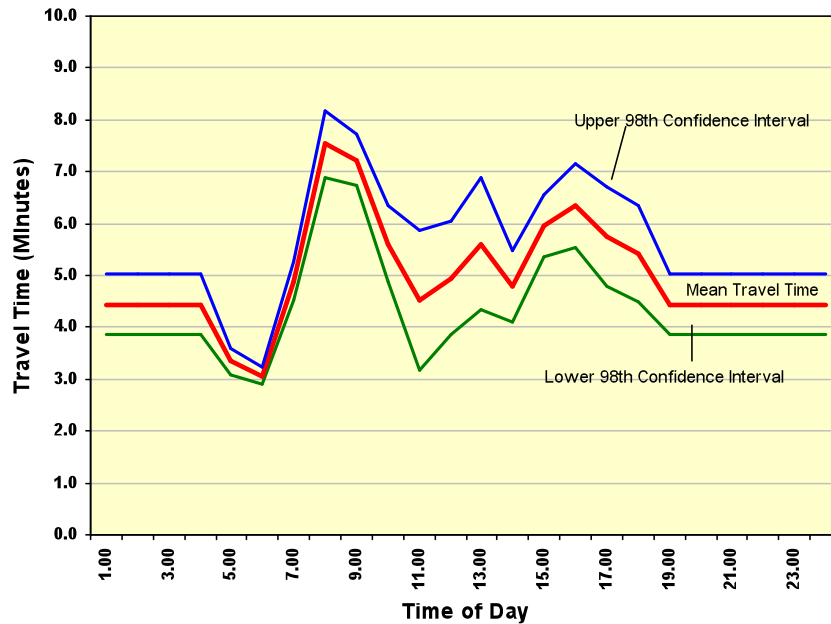


Midwest FreightView

Functions:

Prepared tables and graphs for viewing and download

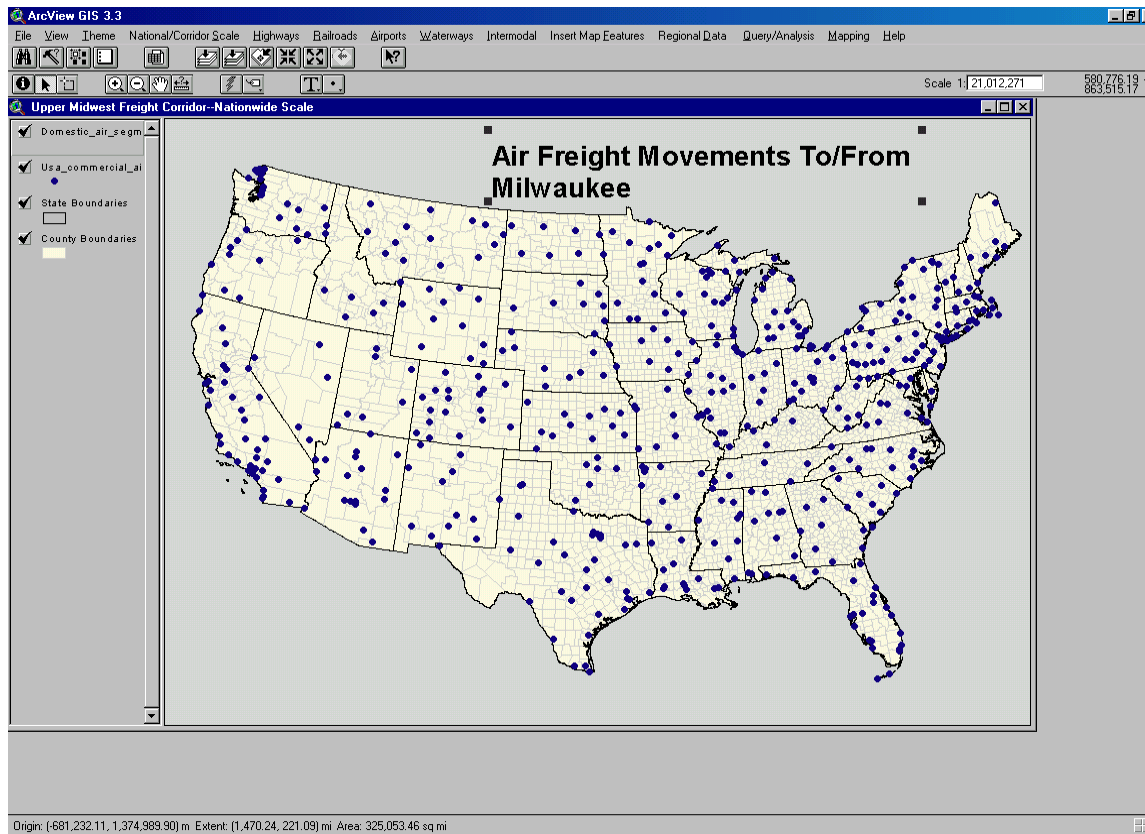
**Weekday Travel Times:
Kennedy Expressway
Addison to Fullerton**



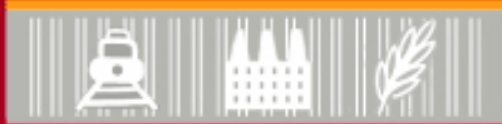


Midwest FreightView

***Functions:
Query functions for more advanced users***

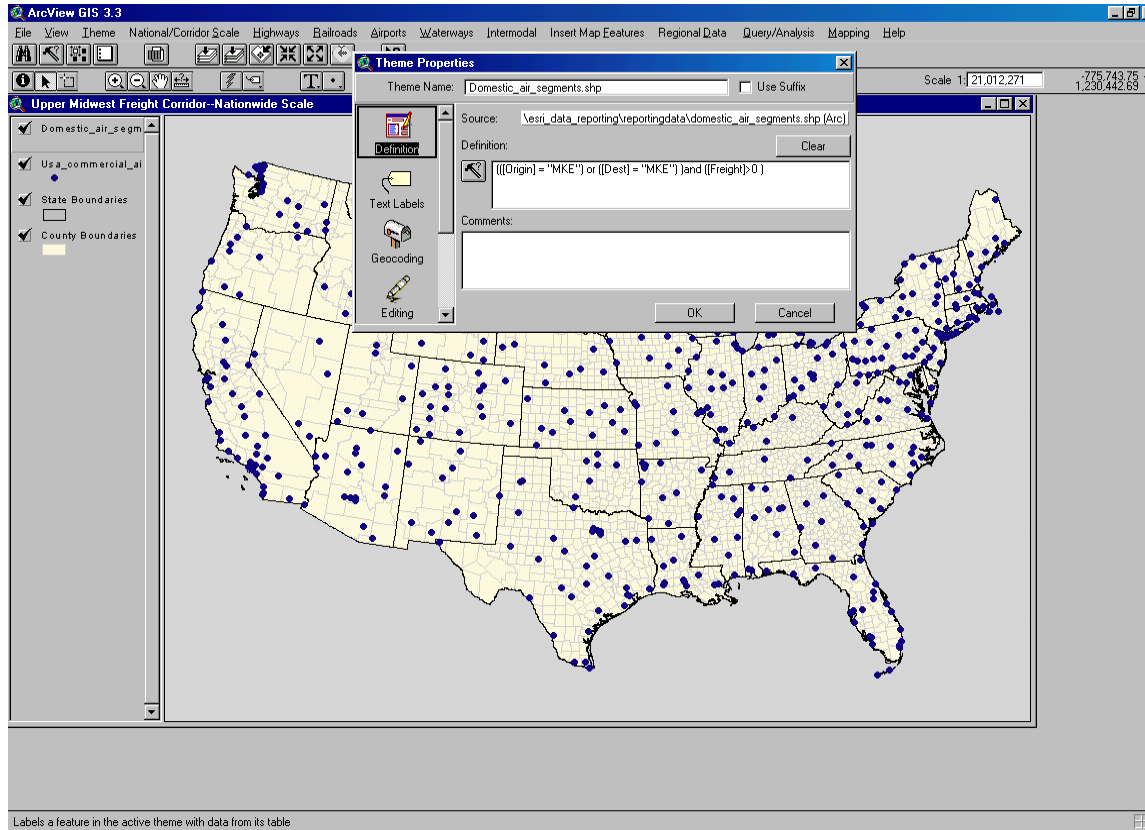


**Air Freight
Query and
Mapping**

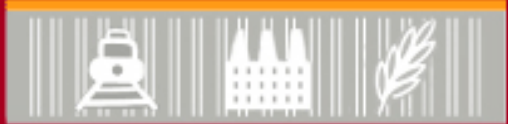


Midwest FreightView

***Functions:
Query functions for more advanced users***

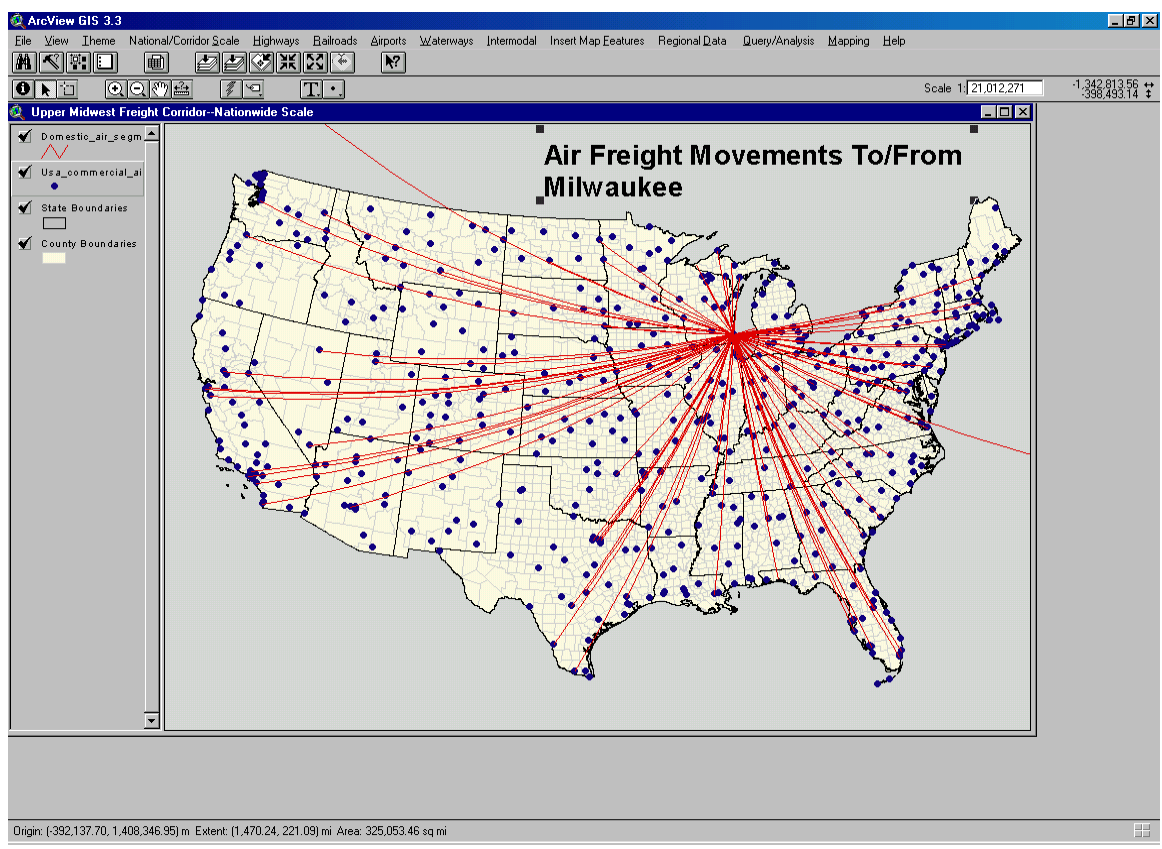


**Air Freight
Query and
Mapping**



Midwest FreightView

Functions:
Query functions for more advanced users



**Air Freight
Query and
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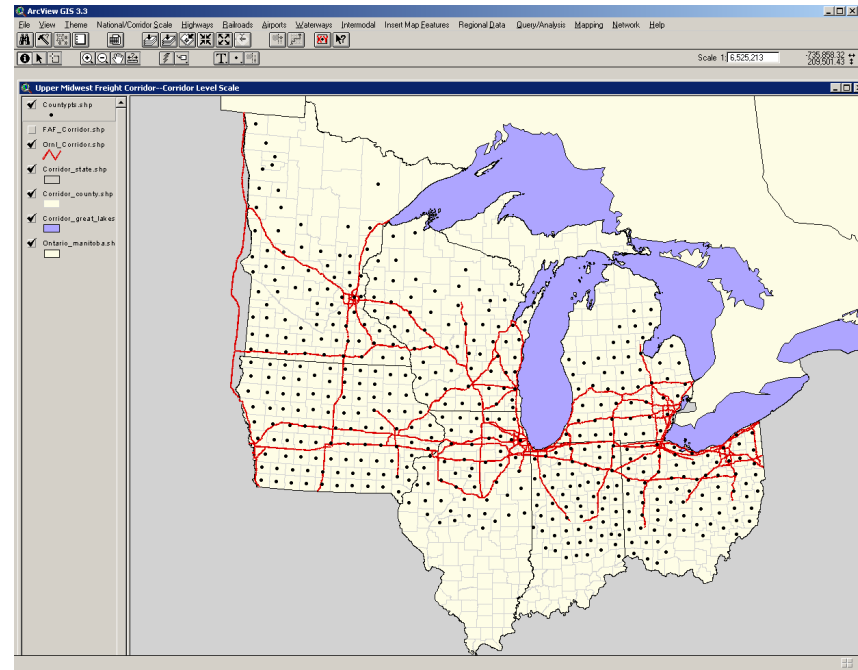
Midwest FreightView

Functions:

Specialized analysis functions for advanced users

- Mileage Tables
- Time-Based Routing
- Accessibility Computations
- Flow Mapping
- New forms of analysis to link freight flows to the regional economy:

Spatial Econometrics, Neural Net Analysis *etc.*





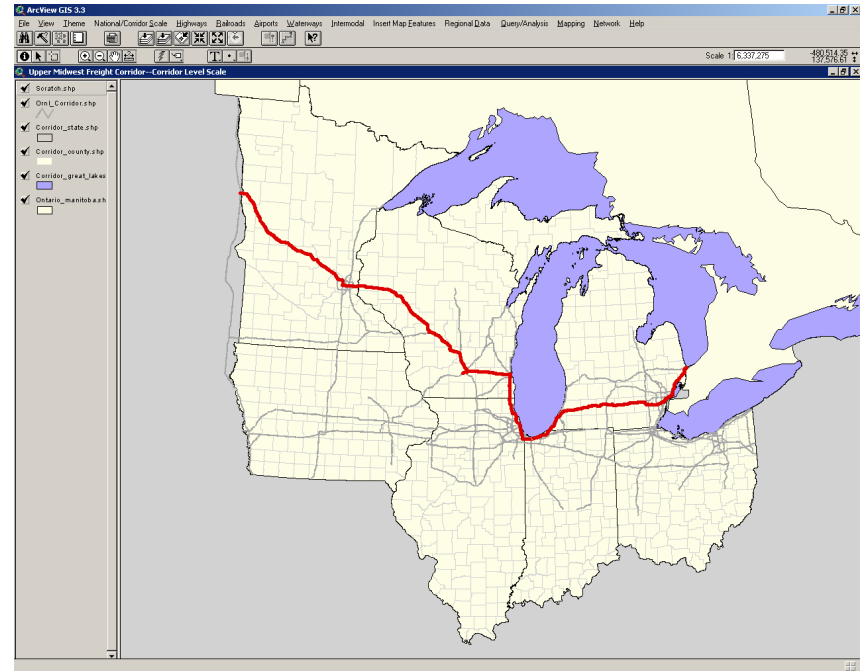
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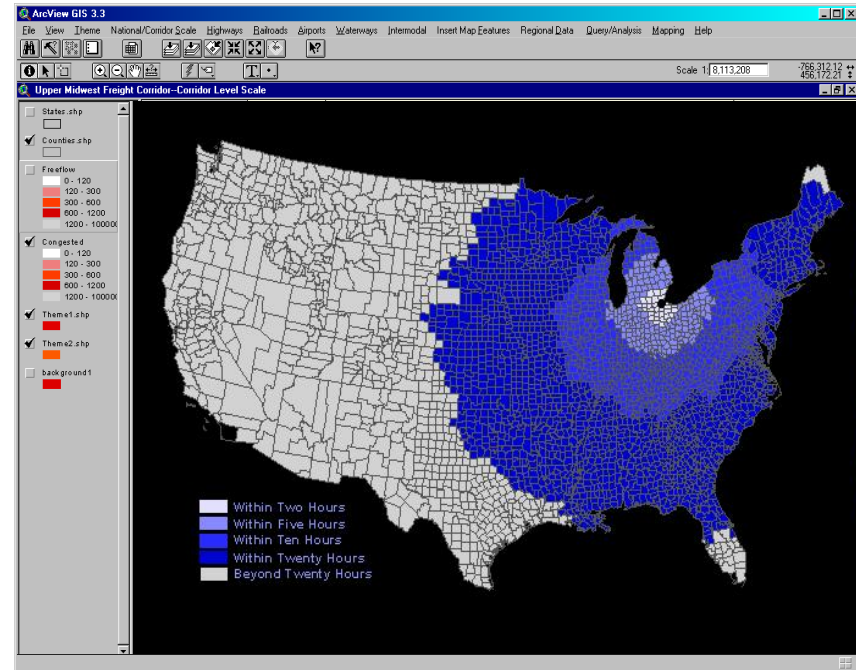


Midwest FreightView

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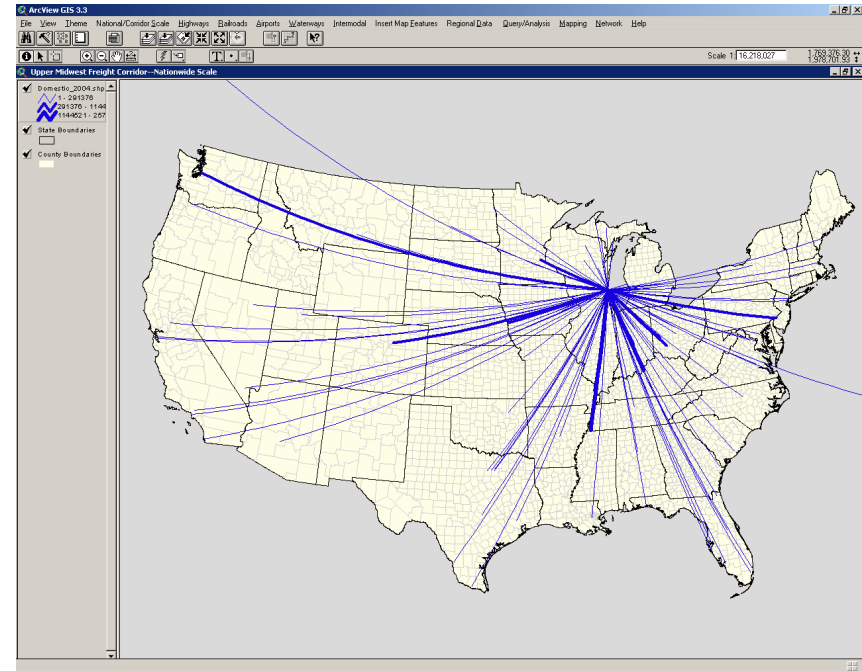
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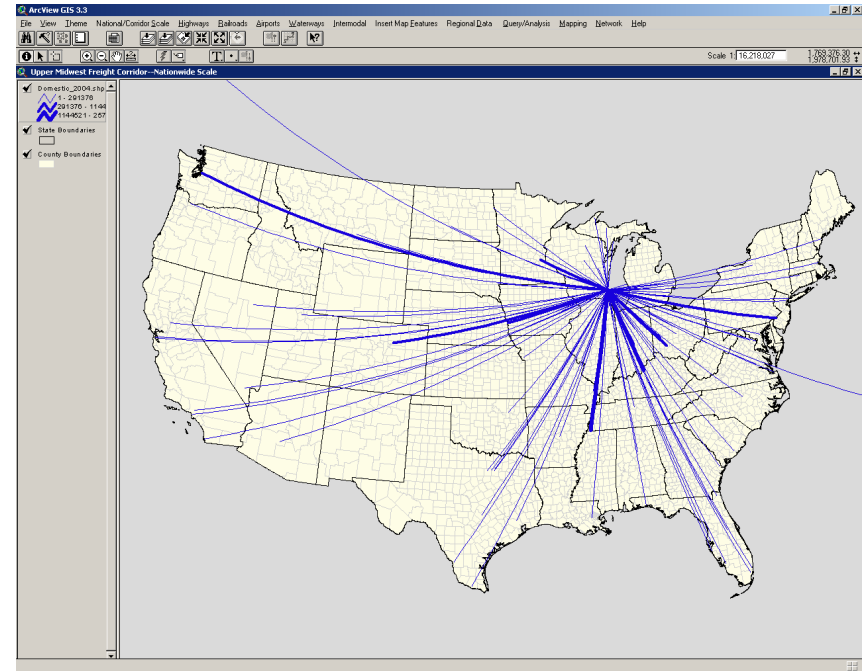
Midwest FreightView

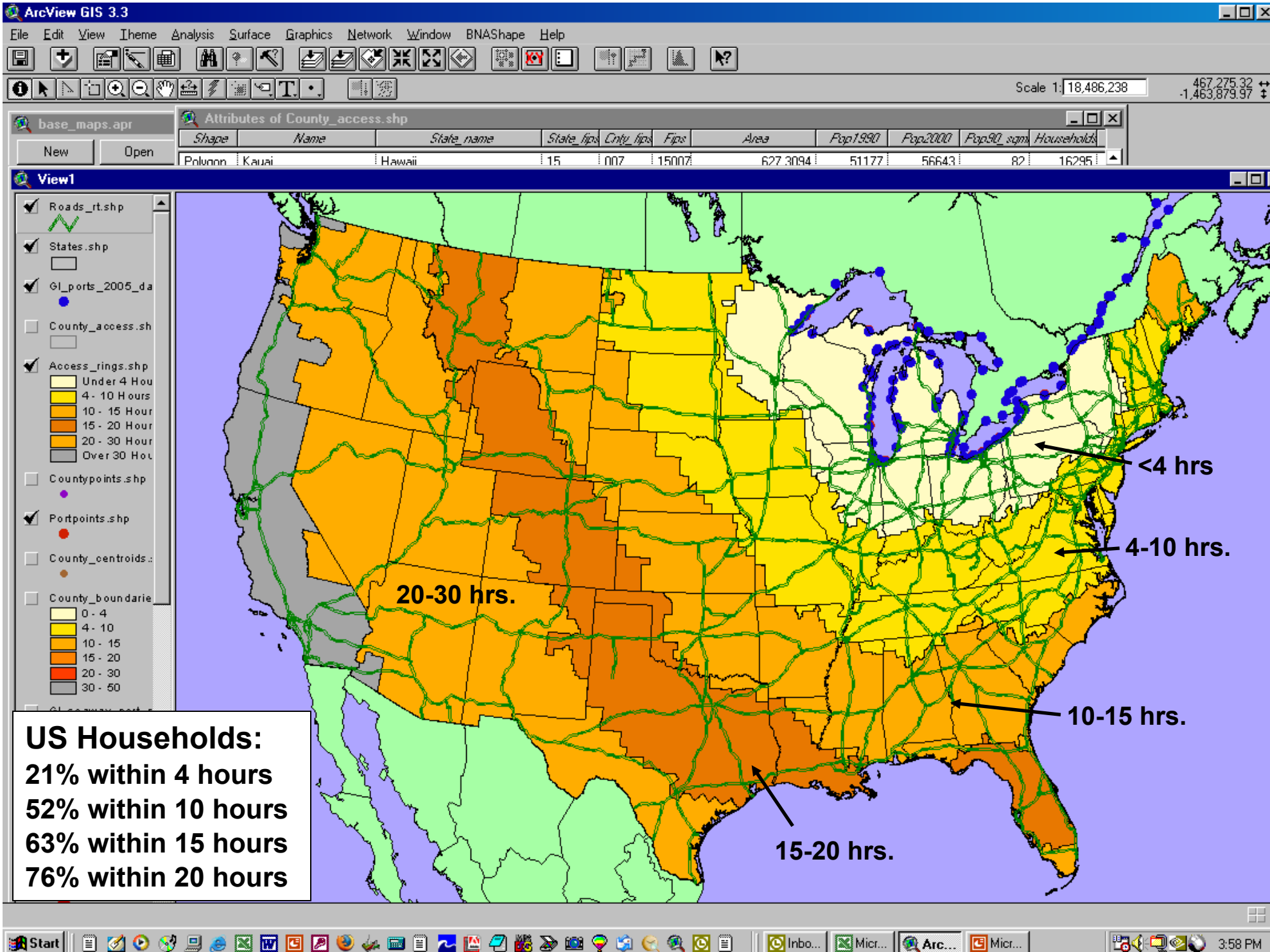
Functions:

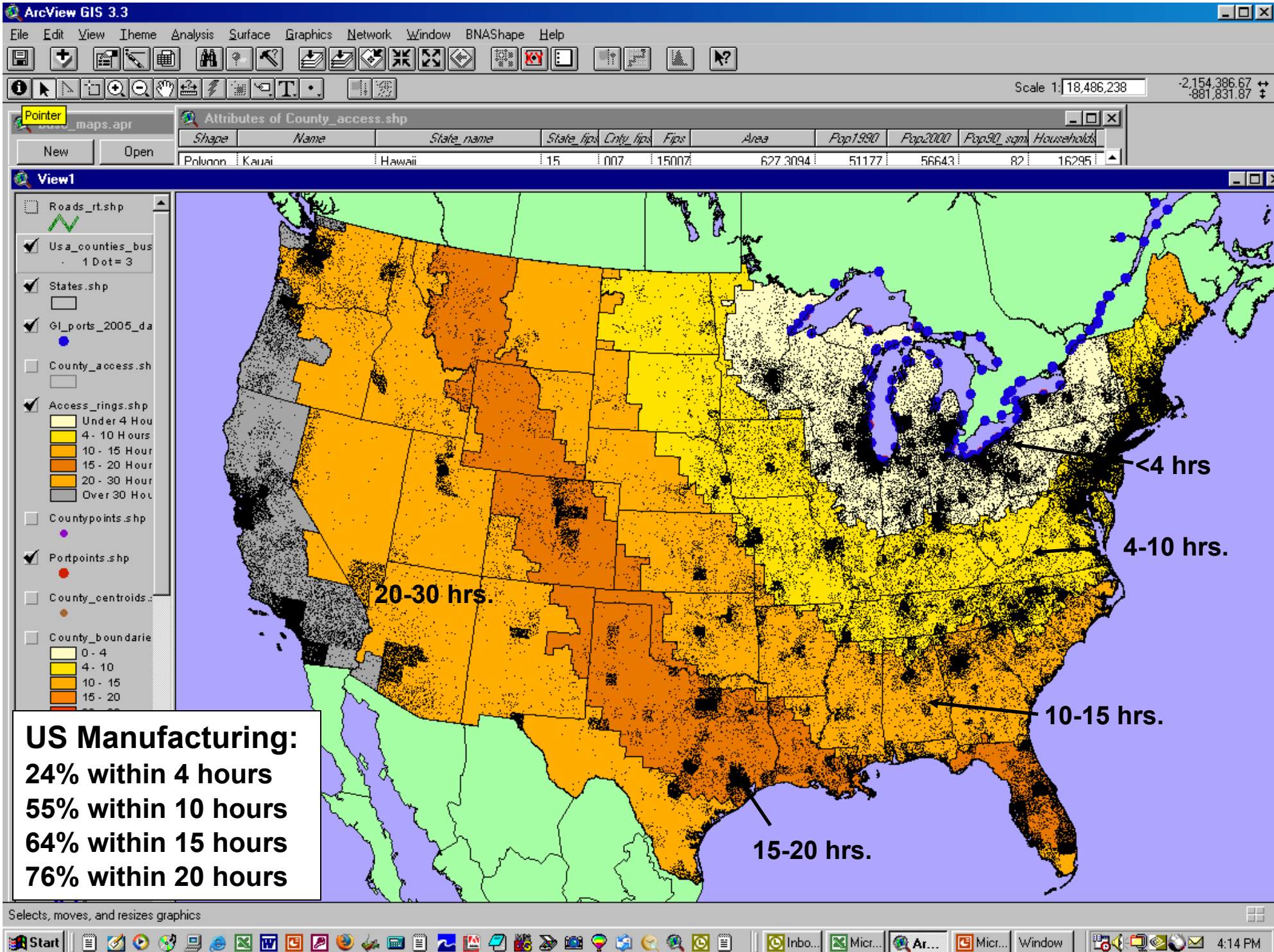
Specialized analysis functions for advanced users

- Mileage Tables
- Time-Based Routing
- Accessibility Computations
- Flow Mapping
- New forms of analysis to link freight flows to the regional economy:

Spatial Econometrics, Neural Net Analysis *etc.*









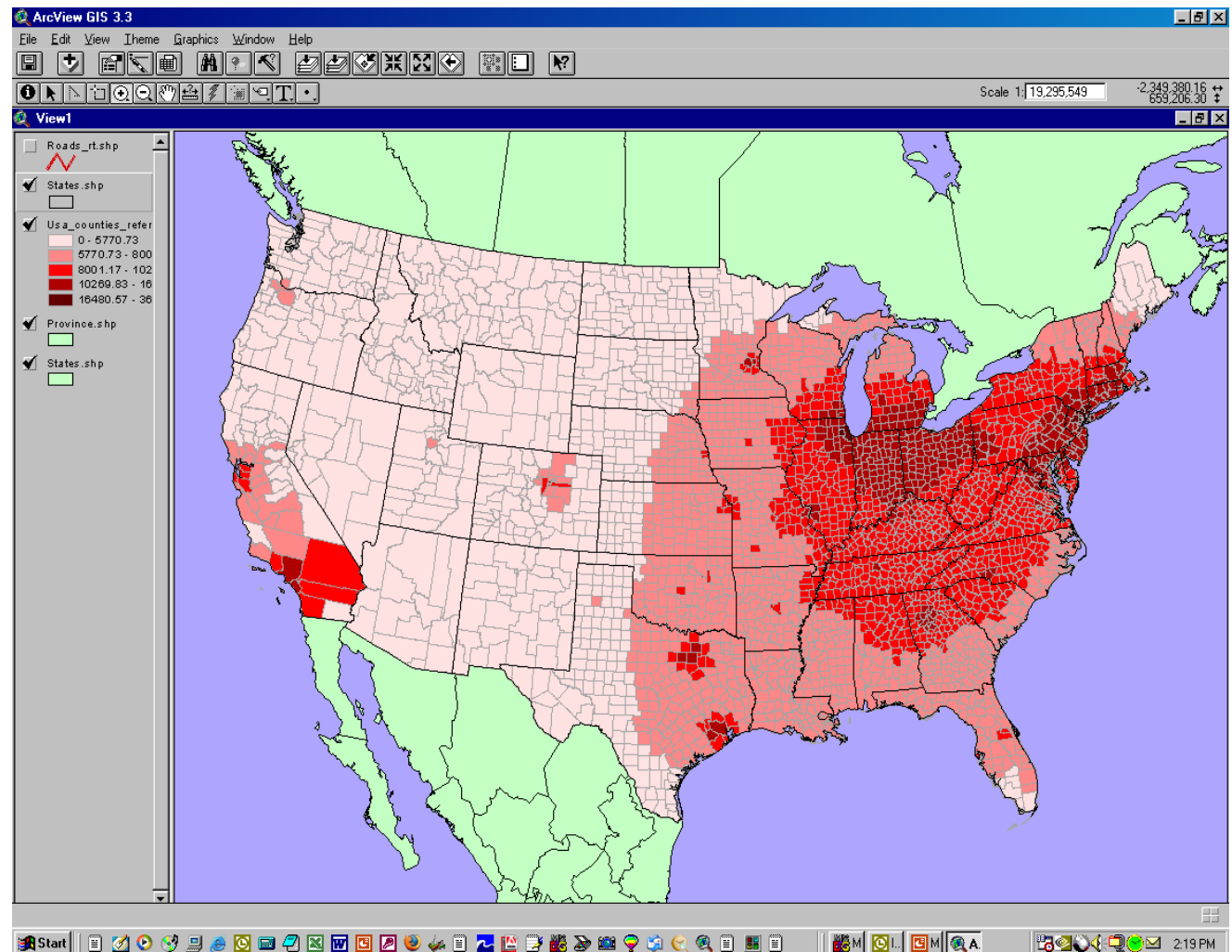
Great Lakes Maritime Research Institute

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GREAT LAKES MARITIME INFORMATION DELIVERY SYSTEM

Data Analysis Software

The map at the right displays the density of *wholesale trade* activity in the US among counties. This density map shows the proximity of wholesale distributors relative to each county, weighted by employment. Those regions in the darkest colors have the greatest accessibility to wholesale trade in the U.S.





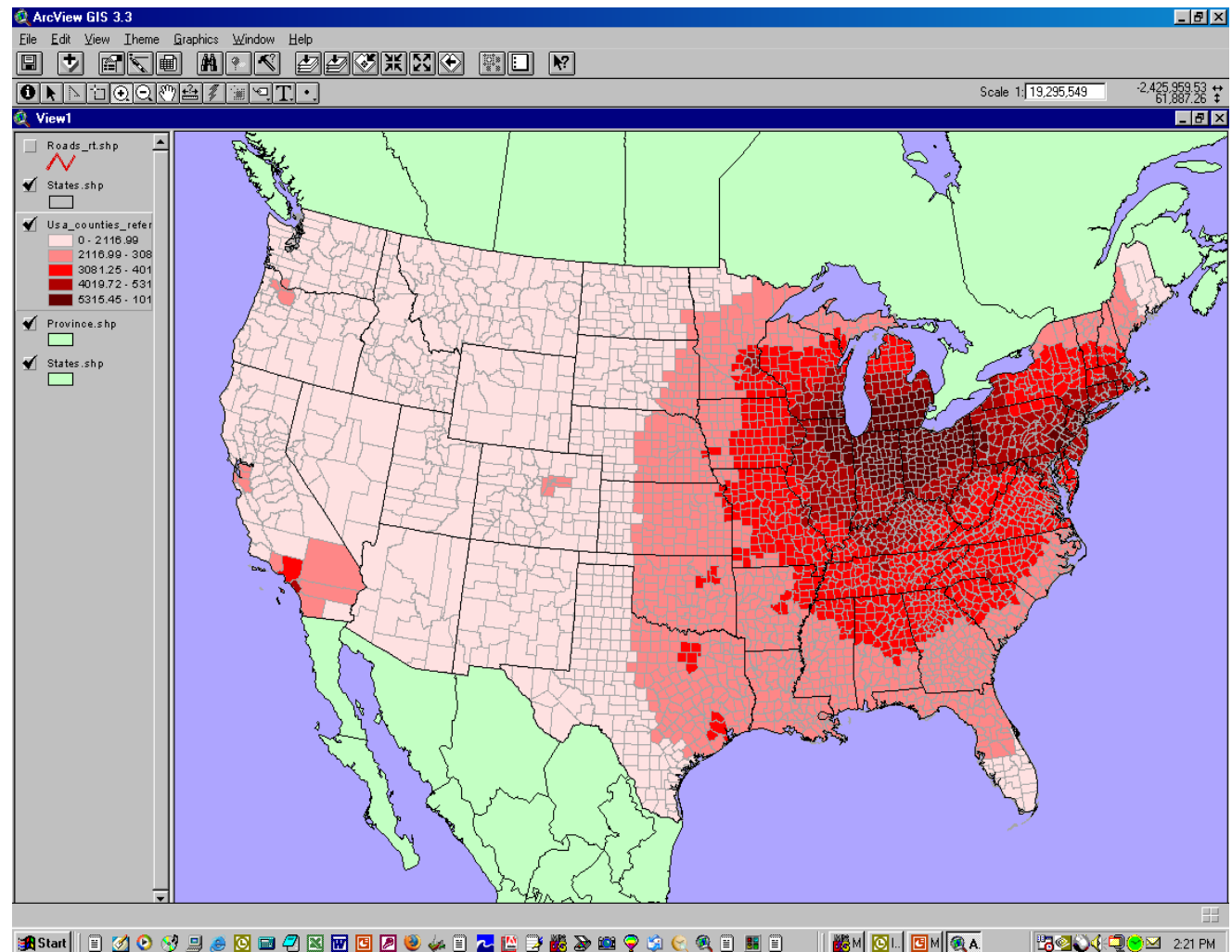
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GREAT LAKES MARITIME INFORMATION DELIVERY SYSTEM

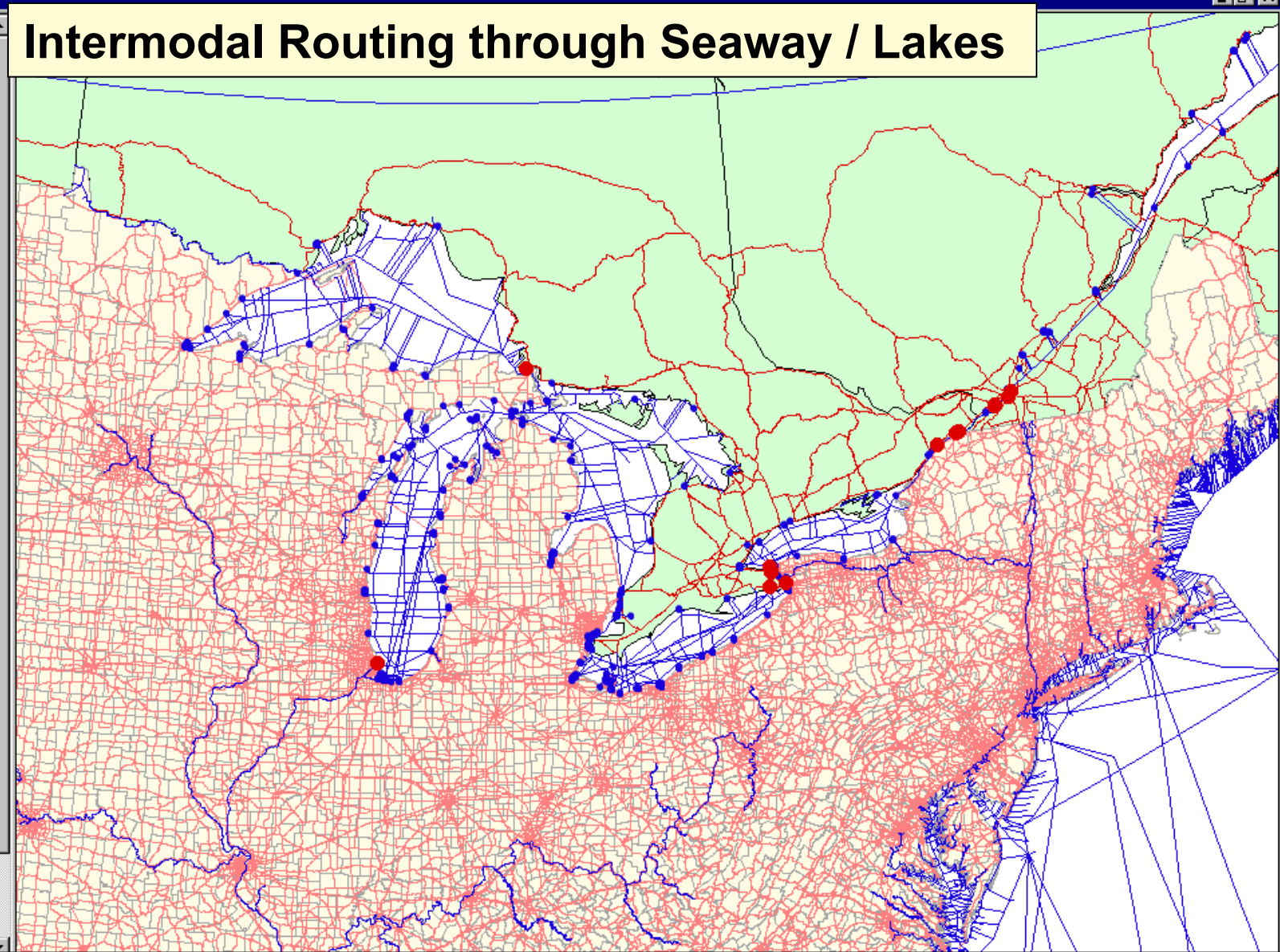
Data Analysis Software

MWFV now uses the same software to display the density of *heavy equipment manufacturing by county*. This density map shows the proximity of heavy equipment manufacturers relative to each county weighted by employment. Those regions in the darkest colors have the greatest accessibility to this sector in the U.S.



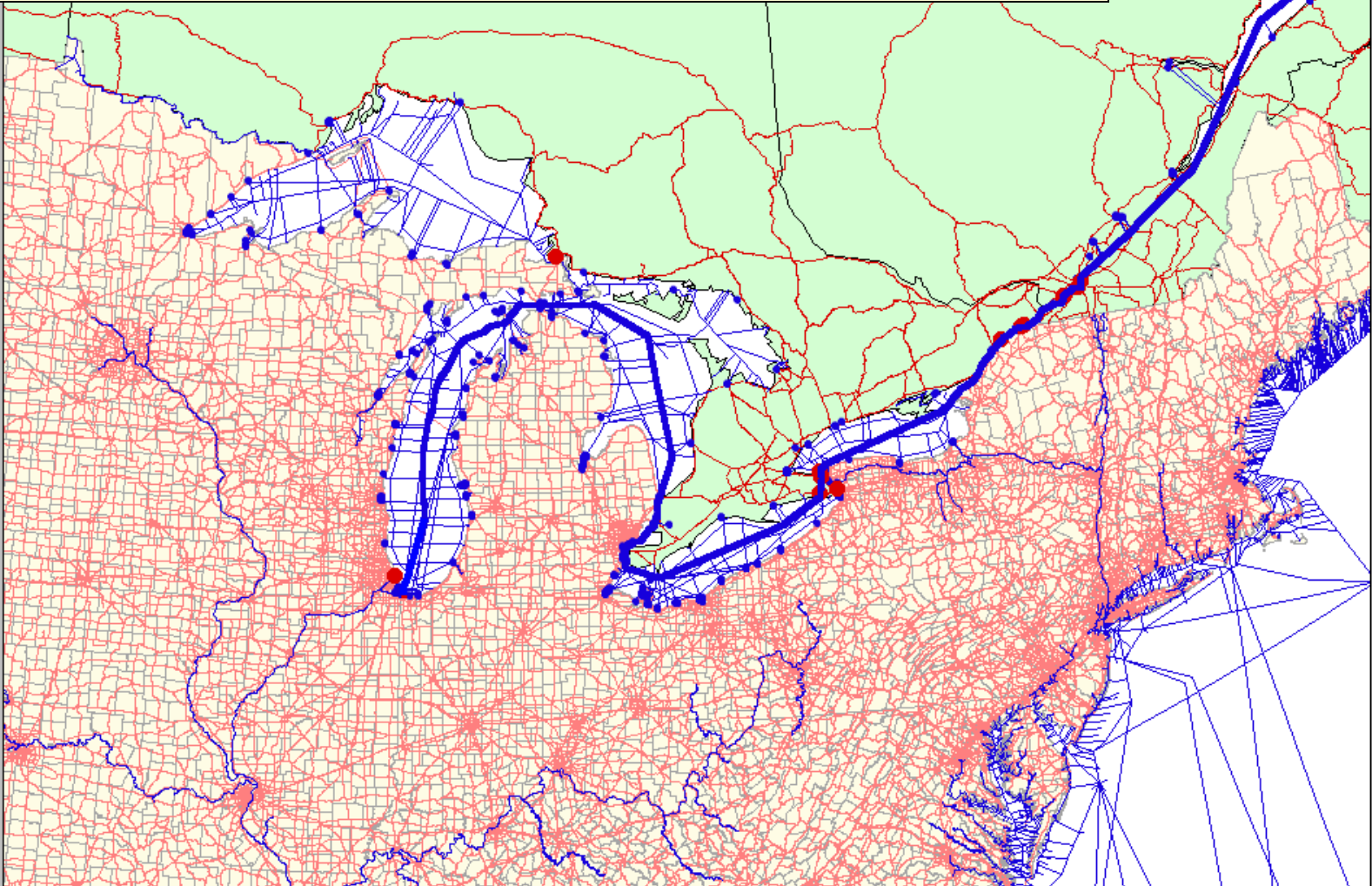


- GI_locks.shp
- Shorts.shp
- Congress districts 110.shp
- GI_docks.shp
- Nodes (Great lakes lock conn...
 - Dangle
 - Real
- Great lakes lock connected ne
- Rivers.shp
- States.shp
- Usa_intermodals.shp
- Usa_commercial_airports.shp
- Railway_conn_gldock.shp
- National_railroad_depots.shp
- Ca_street.shp
- GI_dock_conn_hwy.shp
- Ca_hwy.shp
- GI_dock_conn_waterway.shp
- County centroids.shp
- Counties.shp



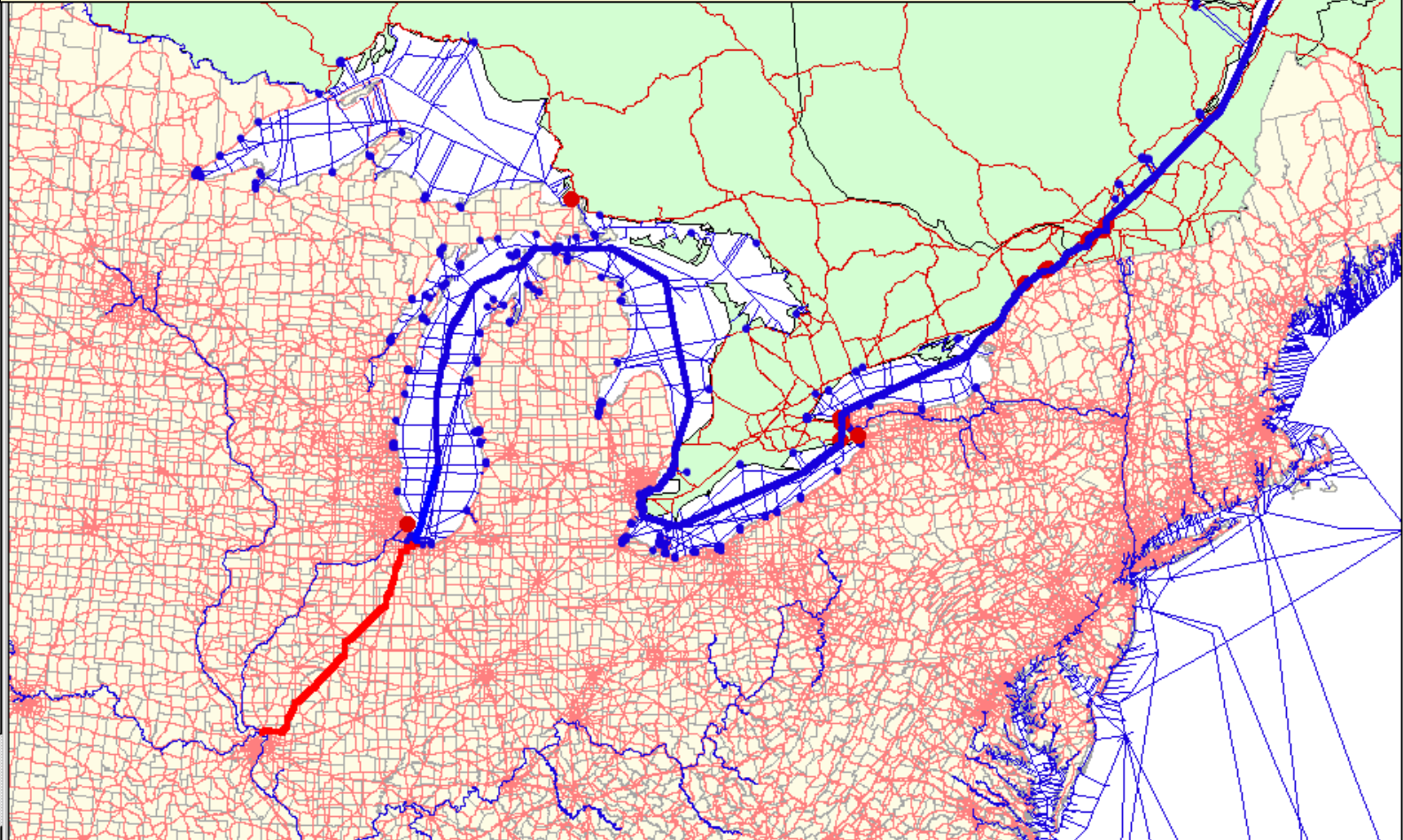
- Main Worksheet
- GI_locks.shp
 - Shorts.shp
 - Congress districts 110.shp
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 - Nodes (Great lakes lock conn)
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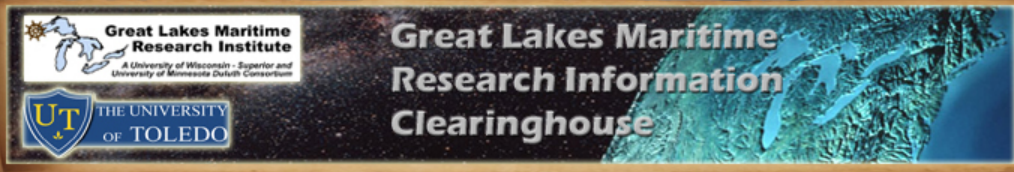
Intermodal Routing through Seaway / Lakes Routing through Port of Chicago



- Main Worksheet
- GI_locks.shp
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 - GI_dock_conn_waterway.shp
 - County_centroids.shp
 - Counties.shp

Intermodal Routing through Seaway / Lakes Routing through Port of Chicago Connection via Highway to St. Louis





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- Contact



US Army Corps
of Engineers

Dock Information Systems

[Dock User's Guide](#)

State Town
 Commodity Service
 Facility Type

Search

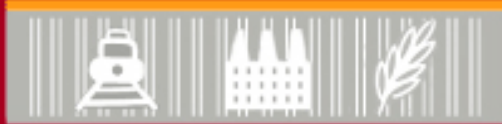
GUID	Name	Waterway	Town	St./Prov.
0009	HUNGRY HARBOR DOCK	bcn	Toledo	OH
0660	CITY DOCK PUT-IN-BAY		Put-In_Bay	OH
0666	LAFARGE NORTH AMERICA		Marblehead	OH
066A	STANDARD LAFARGE CEMENT CORP		Marblehead	OH
066A	LAFARGE NORTH AMERICA		Marblehead	OH
0Q04	ONTARIO STONE CORP., OLD RIVER DOCK NO. 1 AND 3		Cleveland	OH
0Q06	SUNOCO MID AMERICA MARKETING & REFINING CO HOCKING VALLEY PIERS		Toledo	OH
0QPH	PINNEY DK&TRANSPORT CO&R SAND&STN R ORE		Ashtabula	OH
0RBA	S. H. BELL CO., STATE LINE & LITTLE ENGLAND TERM. WHARVES	OHIO	East Liverpool	OH
0RCW	Agland Co-op, East Liverpool Grain Dock.	Ohio River	East Liverpool	OH

- Profile
- Corporate
- Function
- Features
- Snaps
- My Account

Dock Details will be displayed here once a dock is selected.
(Please click on a magnifying glass to select a dock.)

- Login
- Edit
- <- Back
- Next ->
- Cancel

MISSISSIPPI VALLEY



FREIGHT COALITION

MISSISSIPPI VALLEY FREIGHT COALITION



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CFIRE

National Center for Freight & Infrastructure
Research & Education

Thank you

***Comments / Feedback
are appreciated***

GISAG

Applied Geography



**INTERMODAL
TRANSPORTATION INSTITUTE**