NARC Freight Summit

- Welcome!
- Erika Young, Transportation Director, National Association of Regional Councils
- Warren Henry, VP of Transportation, Toledo Metropolitan Area Council of Governments
- Greg Harris, PhD, P.E., The University of Alabama in Huntsville
- Kevin Harrison, Transportation Planning Director, South Alabama Regional Planning Commission
- Leslie Blakey, Executive Director, Coalition for America's Gateways and Trade Corridors

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Freight Summit: Overview

- April 6 – General State of Practice in Public and Private Sector Freight Planning
- April 7 – Challenge areas for further examination
- April 8 - Positive examples of regional level solutions for both the public and private sectors
  - Can these examples be replicated elsewhere?

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Freight Summit: Overview

- Efforts will result in a Resource Manual for both public and private sector freight planning stakeholders
  - Will identify positive real-world examples addressing the three main challenges
  - Offers information to assist private sector partners with accessing the public planning process
- Intended to be a living document, evolving as positive examples are created

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NARC Freight Summit: Overview

- About the NARC/AAPA/AAR/FHWA project
- Recap of Day 1 and Day 2
- Day 3: Exemplary regional and state level solutions to challenges surrounding
  - Stakeholder involvement
  - Data accessibility and utilization
  - Financing Freight Infrastructure
- Questions and General Discussion

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Freight Capacity Building in Public and Private Sector: About

- NARC partnered with AAPA, AAR, FHWA
- 1.5 year long project
- Examine ways in which public and private sector freight industry planners can better understand one another and work together

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Freight Capacity Building in Public and Private Sector: About

- Formation of Technical Advisory Group (TAG)
  - Comprised of industry experts from port, rail and planning sectors nationwide
  - Examined how the system works currently
  - Suggested ways to improve areas where collaboration was deficient

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Freight Capacity Building in Public and Private Sector: About

- TAG identified 3 challenge areas in both the public and private sector for further examination
  - Data Quality
  - Stakeholder Integration/Involvement
  - Finance
- Workshops held and case studies identified to provide information and positive examples in these areas

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Freight Summit: Day 1

- FHWA detailed their recent Freight Partnership III meeting in Philadelphia
  - Presentation available at www.narc.org
- Stressed the need for greater cooperation by
  - FHWA, State DOTs, MPO's & RPC's
  - Private sector
  - Elected officials
  - Economic Development/Chamber of Commerce
  - Environmental agencies

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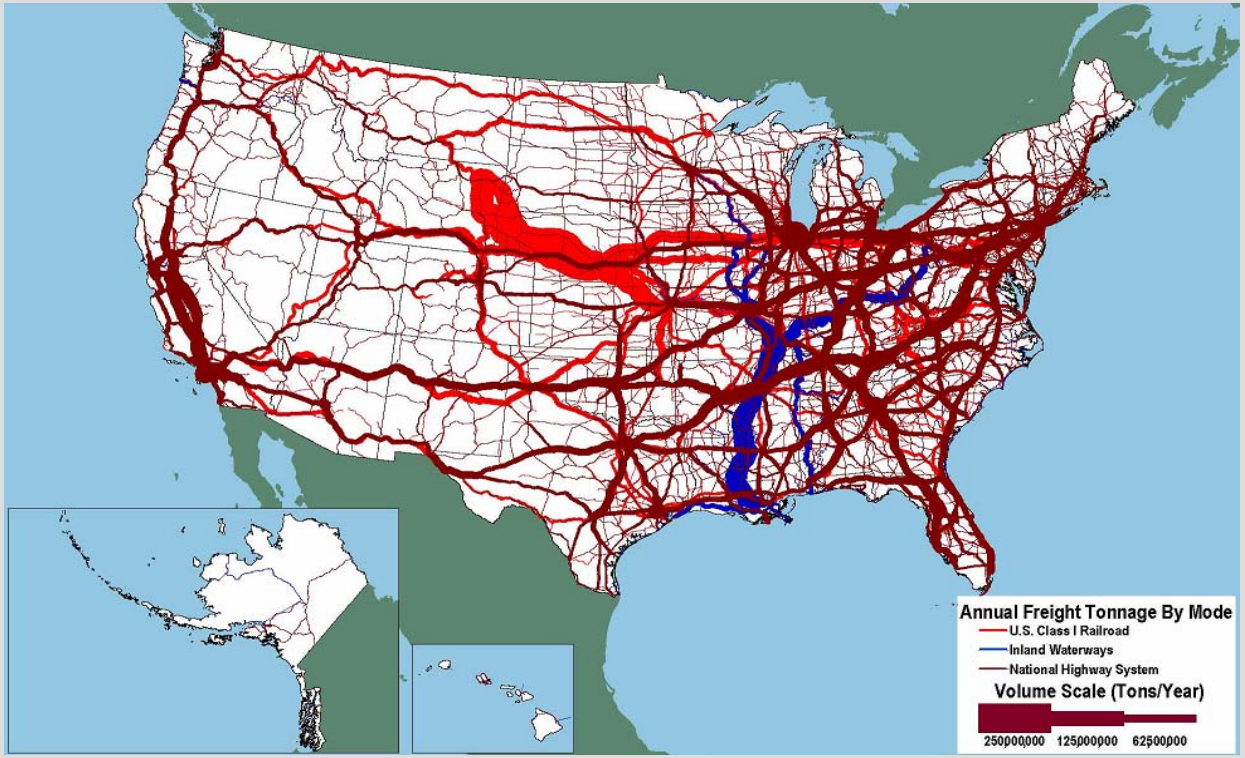
Freight Summit: Day 1

- FHWA highlighted why greater planning capacity is critical
- Tonnage on Highways, Railroads, and Inland Waterways: 2002



FHWA Freight Facts and Figures, 2007

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Freight Summit: Day 1

- NARC reviewed the concepts and resources identified by the Technical Advisory Group
- Items are helping to shape the State of the Practice for the Freight Capacity Building in Public and Private Sector project
- Focus narrows to 3 specific barriers to greater integration of the public and private sectors

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Freight Summit: Day 2

- Identification of barriers to greater public and private sector integration into the freight planning process
- How do these barriers hinder greater integration of the two sectors?
- Examples of these barriers in
  - Data
  - Stakeholder involvement/integration
  - Finance

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Freight Summit Day 2:

Barriers to Public Private Freight Sector Integration

Data

- Cost-prohibitive
- Proprietary nature
- Lack of capacity to collect on a localized level

Integrating Stakeholders

- Identifying
- Keeping private sector engaged

Finance

- Decreasing Federal role
- Appropriate public-private nexus

- Technical Advisory Group identified the 3 areas in which there is a lack of positive solutions and examples for both public and private sector stakeholders

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Freight Summit Day 3:

- Positive examples of solutions for both the public and private sectors
- Based on gaps identified in current practice and the “state of the art”, or ideal, practice
- Goal of identifying practices that are replicable to other regions of varying densities and complexities

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Freight Summit Day 3:

- Stakeholder involvement

Barriers	Possible Solution
Identifying	Outreach to local industry associations
Maintaining	Creating relationships that are both formal and informal simultaneously

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Stakeholder Involvement

Toledo Metropolitan Area Council of Governments

Warren Henry, Vice President of Transportation

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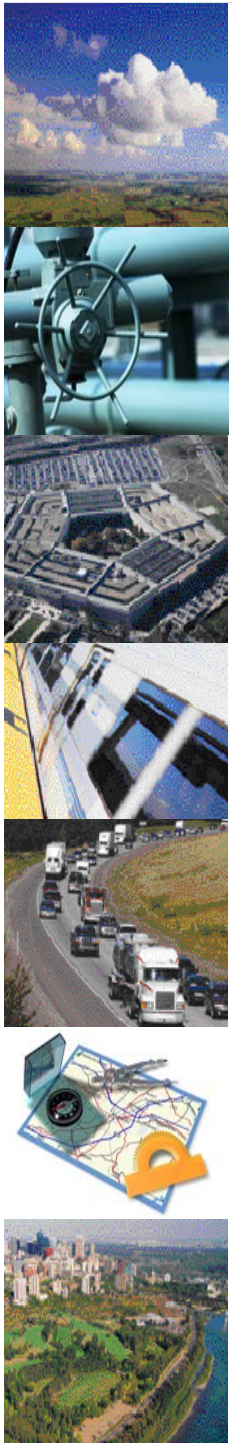

Stakeholder Involvement

- Toledo- multimodal crossroads
  - Marine
    - Fifth largest port on the St Lawrence Seaway
    - Predominately an exporter of agricultural products
  - Rail
    - 80 to 100 trains/day – east/west
    - 50 to 60 trains/day – north/south
  - Trucking
    - 227,000 truck movements/day in the region
    - Number 1 gateway into Ohio (by freight tonnage)

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Stakeholder Involvement

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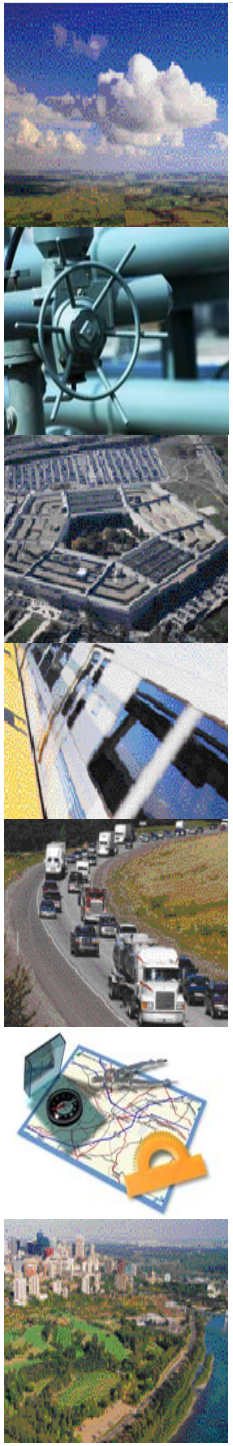

Stakeholder Involvement

- Freight Committee (30 members)
  - Toledo Lucas County Port Authority
  - University of Toledo
    - Univ Trans Center/Intermodal Transportation Institute
  - Ohio Department of Transportation Planning
  - County Commissioners & Engineers
  - Commercial Realtors
  - Economic Development Interests
  - Shipper & Logistics Companies
  - Local Class 1 rail employees (NS & CSX)
  - Mail Carriers
  - Toledo Trucking Association

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Stakeholder Involvement

- Regional Freight Objectives/*Actions*
  - Raise public awareness of freight movement issues
    - **Public meetings and presentations to community entities**
    - *Host Annual Ohio Conference on Freight*
    - *CSX National Gateway*
    - *Development of Melford International Terminal*
  - Identify freight flow efficiency needs
    - **Develop plans to address identified needs**
    - *Section of our Long Range Plan dedicated to Intermodal Freight Movement*
    - **Solicit input from stakeholders in all modes of transportation**
    - *Conduct routine Surveys and Listening Sessions with regional trucking and commercial companies*

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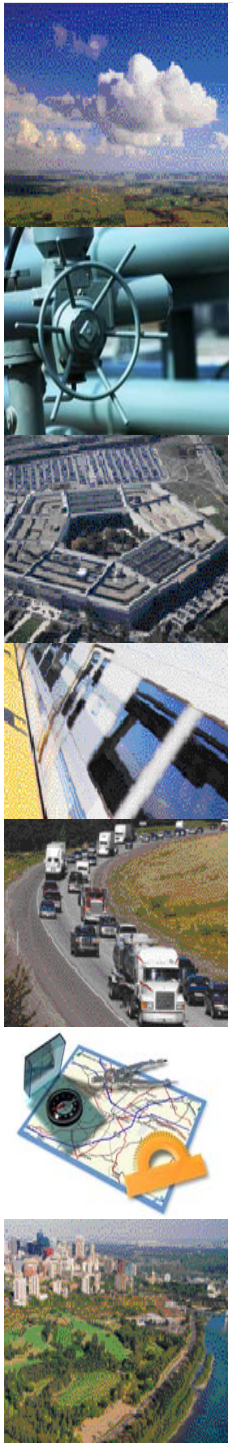

Stakeholder Involvement

- Regional Freight Objectives/*Actions*
  - Support freight transportation improvements
    - **Consider impacts on safety, the environment, the local community, and the business community**
    - *TIP and ARRA stimulus projects selection includes non conventional port projects that will promote permanent job creation*
    - *Player in Coalitions developing regional intermodal sites*
      - *CSX Gateway & NS Airline Yard*
  - Provide a venue for discussion
    - **Speak with a unified voice on freight issues**
    - *Lead role for local commercial firms and Port Authority negotiating revisions to ODOT Overweight permit fee*
    - *Reciprocal Agency and Board memberships to build relationships*
      - *Ohio Contractor's Association, Toledo Trucking Association, Transportation Advocacy Group NW Ohio*

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Freight Summit Day 3:

- Obtaining and Utilizing Quality Datasets

Barriers	Possible Solution
Proprietary information concerns	"Wash" the information through a 3rd party, i.e. a university

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A Freight Planning Framework

Building Planning Capacity Between Public and Private Sector Planning Partners
Peer-to-Peer Exchange

April 8, 2009
Mobile, AL

Gregory A. Harris, Ph.D., P.E.
The University of Alabama in Huntsville
Office for Freight, Logistics & Transportation

Kevin Harrison
Director – Transportation Planning
South Alabama Regional Planning Commission

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We have some freight transportation issues

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A bigger ox cart is not always the best answer

Introduction

- The efficient and effective movement of freight is critical to the transformation and growth of an economy
- Continued growth of the economy cannot occur without adequate and appropriate transportation infrastructure
- The concept of a Freight Planning Framework (FPF), based upon industry sectors has evolved over several years of research into the relationship of transportation infrastructure and economic growth in Alabama
- The FPF is based on forward looking industry sector analysis rather than backward looking trend line forecasting
- Aggregation of known freight behaviors for the major industry sectors in an area makes it possible to approximate freight needs more accurately
- A forward looking approach must incorporate the interaction between the economic activity, infrastructure, population, and congestion of a region

Review of Freight Planning

- Freight planning in the US has traditionally been performed by the application of data analysis and trend line forecasting

- This method of data development and analysis:
  - Is inadequate for the economic environment of today with the growth of global supply chains and international trade
  - Does not provide adequate insight into the dynamics of the existing and future economic environment
  - At best, assumes that whatever has happened in the past is going to be replicated in the future

Review of Freight Planning

- Planners often disregard truck data provided by the state DOT
  - lack of confidence in the numbers, which are often given as a percentage of overall traffic
- Freight planning has taken a back seat to urban traffic planning
  - understandable when congestion is associated with populated areas
  - frustration with problem traffic flow areas
- Due to the increase in globalization of manufacturing and international supply chains, truck traffic is increasing at a significant rate and there is no end in sight
- Aging transportation infrastructure is being stressed to limits
  - the speed at which capacity can be added is significantly slower than current and future infrastructure needs

Systems Approach

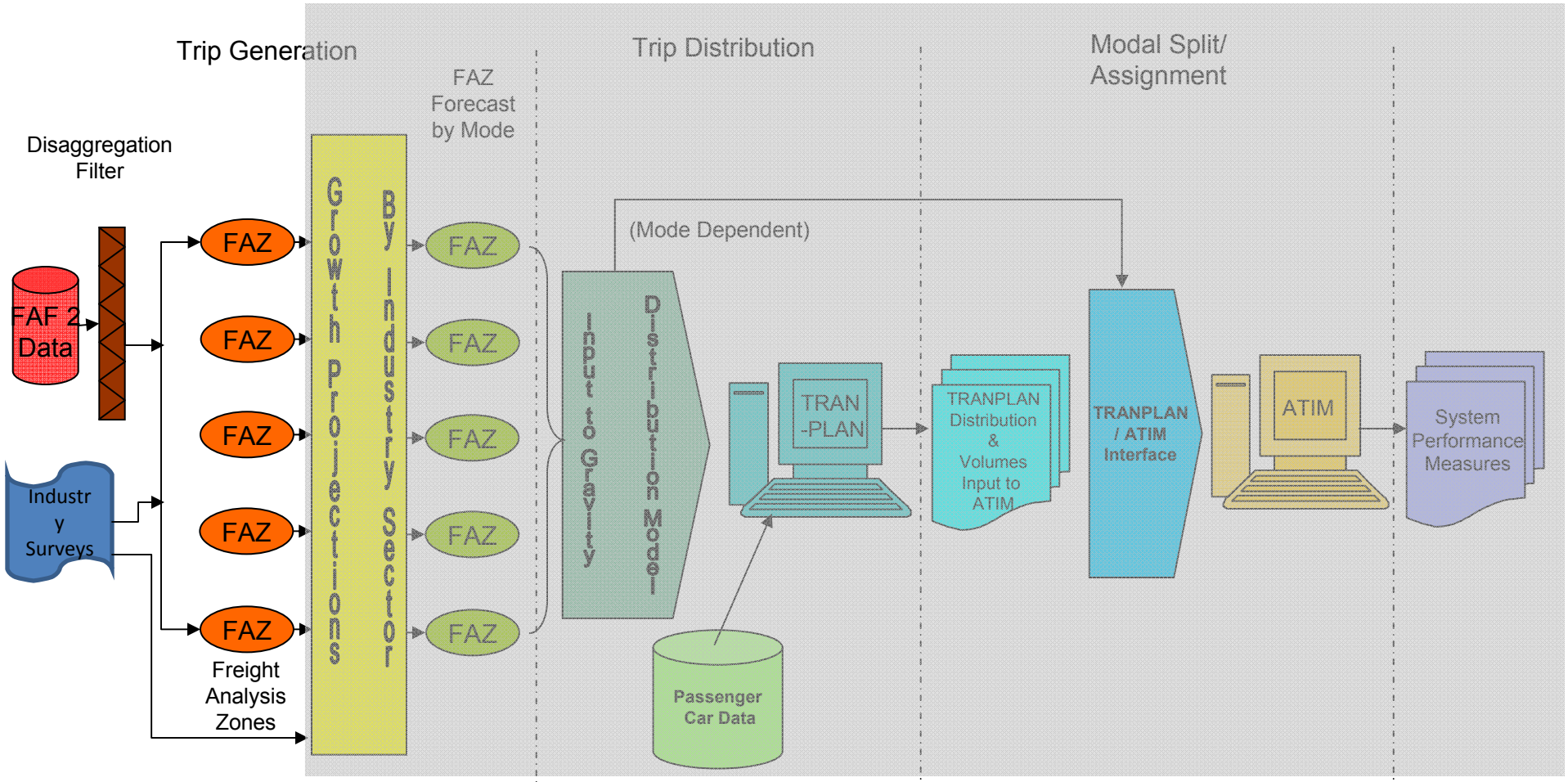
- "No matter how functional the individual parts of the system may be, the effectiveness of the overall system depends on the interconnectivity of the different parts and modes… Connections now must reach beyond a single mode, to foster an integrated and efficient transportation system."
  - June 2002, U.S. House Subcommittee on Highways and Transit

- Experts in the field often tout the need for a systems approach to transportation, but there are few methodologies and tools available to aid the transportation planner in achieving the systems approach

Freight Planning Framework

- The Freight Planning Framework (FPF):
  - builds upon the traditional four-step transportation planning process
  - creates a forward looking approach to the trip generation issues
  - foundation is in the use of industry sector analysis to establish the basic need for transportation infrastructure access
- If the underlying principles of freight demand generation can be discovered, the ability to accurately predict infrastructure requirements is enhanced
- Once the freight generation principles of an industry sector are known:
  - it is possible to apply the principles anywhere the industry exists
  - can be used to estimate the demand for freight system requirements

FPF – Trip Generation (A)



Freight Data

- The basis of any reasonable predictor of freight activity in an area is the availability of accurate and verifiable data
- Freight Analysis Framework Database
  - Publicly available data for freight is provided by the Federal Highway Administration's Freight Analysis Framework (FAF) database
  - FAF2 is the second generation of the Freight Analysis Framework (FAF) developed by the Federal Highway Administration (FHWA)
  - FAF was based upon proprietary data where FAF2 is based on publicly available databases
  - FAF2 provides a commodity flow origin-destination (O-D) data and the freight movement data on all highways within the FAF2 highway network
  - The O-D data covers the base year (2002) and forecasts in 5-year intervals between 2010 and 2035

Freight Data - 2

- Surveys
  - Surveys are used to supplement and enhance industry knowledge and FAF2 data
  - Surveys provide a clearer understanding of the activity of industry within a region and the factors affecting freight generation and attraction
  - It is critical to develop accurate conversion factors for turning the data into the number of shipments by mode represented by the data

Disaggregation Filter

- Once the freight destined for, originating in, internal to, and passing through Alabama is compiled, a method of disaggregation must be applied to determine what portion of the freight will be destined for or originating in points within Alabama

- This could be performed at:
  - The county level
  - The metropolitan level
  - Freight Analysis Zones (FAZs)

Freight Analysis Zones

- In a state such as Alabama, it might be feasible to perform the disaggregation at a county level
  - This would result in a 67 by 67 matrix of freight data
- In states such as Texas and California the freight matrix would be essentially unmanageable
- There are many counties where the level of freight activity is so low that it does not justify the resources necessary to actively plan for freight activity
- Using metropolitan areas as Freight Analysis Zones leaves out significant portions of infrastructure that may need to be included in a freight analysis

Freight Analysis Zones - 2

- The appropriate approach seems to be the development of FAZs that can be sized so that each FAZ contains approximately equal proportions of freight activity

- A significant industrialized metropolitan area may be a FAZ or an aggregation of several rural counties may constitute a FAZ at the state FAZ level

- At the MPO level TAZs or Zip Code areas can be combined to develop FAZs.

- Once the FAZs are defined, the planning factors, Value of Shipments, Personal Income, and Employment/Population, can be used to allocate the appropriate volume of freight to each zone

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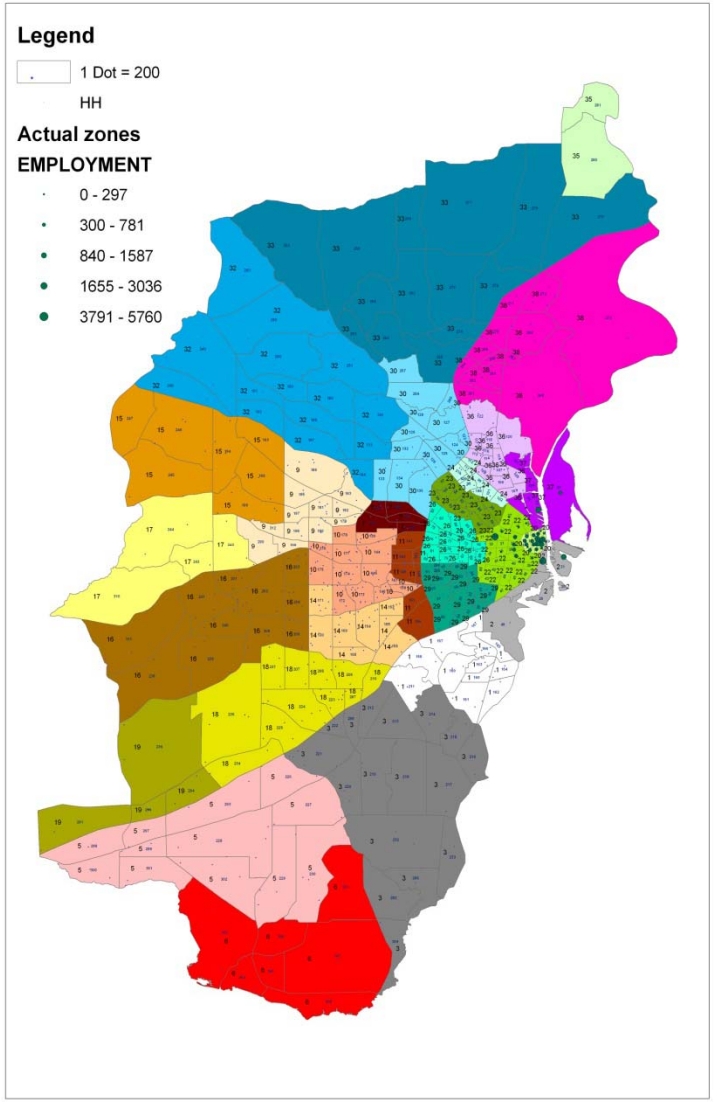
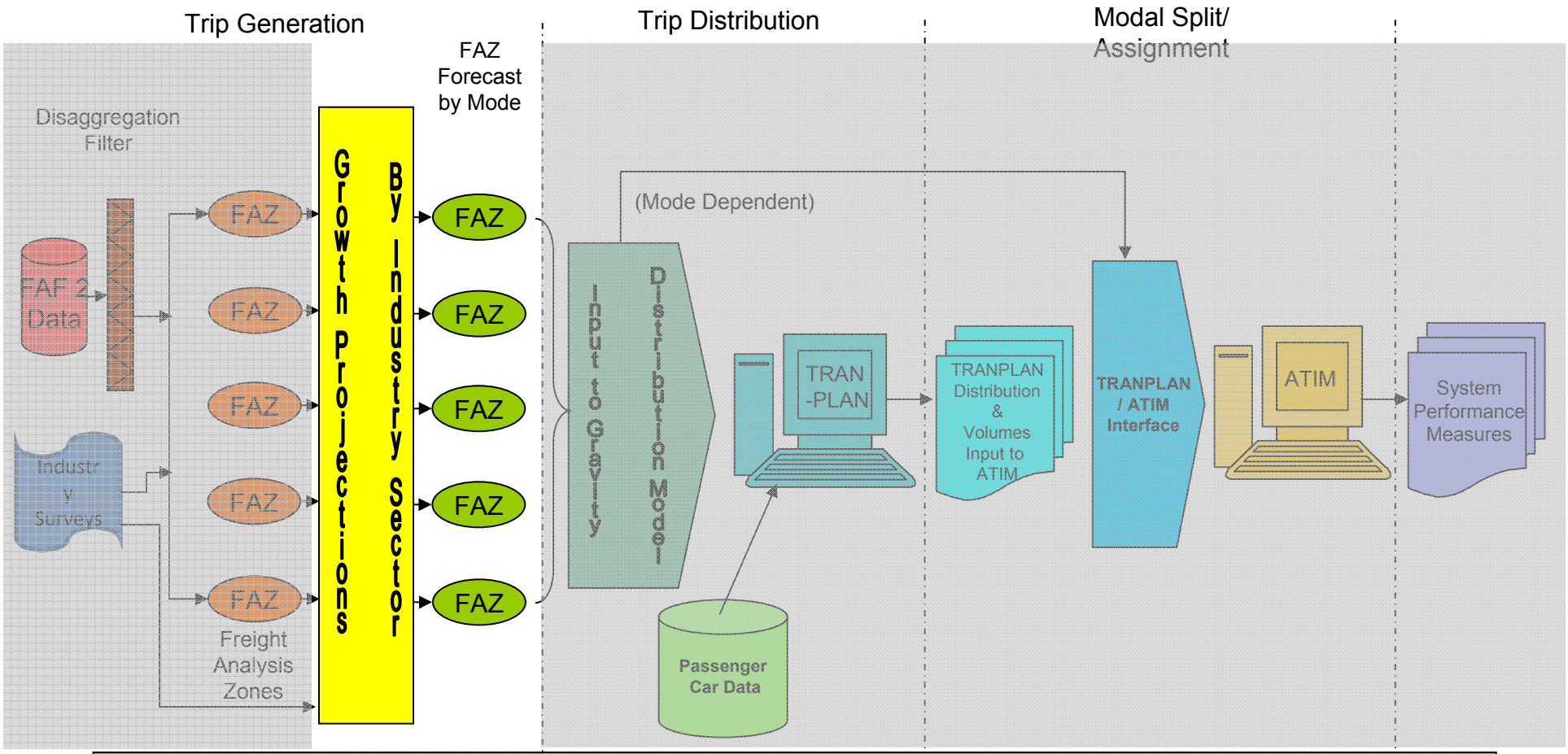
Sample FAZ Charts



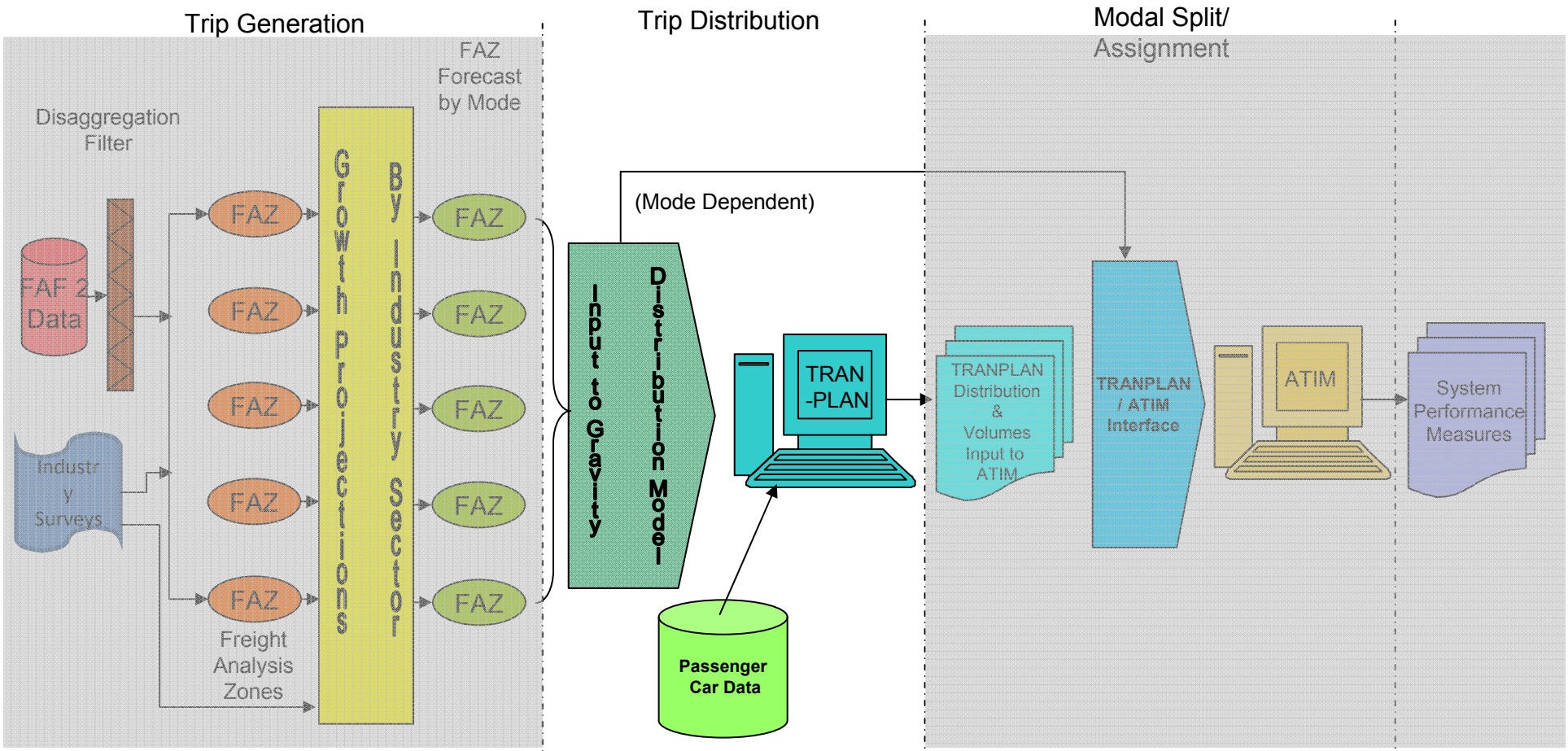
FPF – Trip Generation (B)



Growth Projections

- Industry sector analysis is used to determine the make up of each FAZ
- Once the industry sectors in a FAZ are known and sized, conversion factors for those industries are applied to determine the freight volume in the FAZ by mode
- A forecast for the state is needed that can be segmented at the NAICS level to allocate growth by industry sector
- A forecast by industry sectors is then used to establish a prediction of the freight volume in a FAZ for future periods
- The forecast by sector is then used to develop the forecast for an individual FAZ by applying the appropriate planning factor ratios

FPF – Trip Distribution



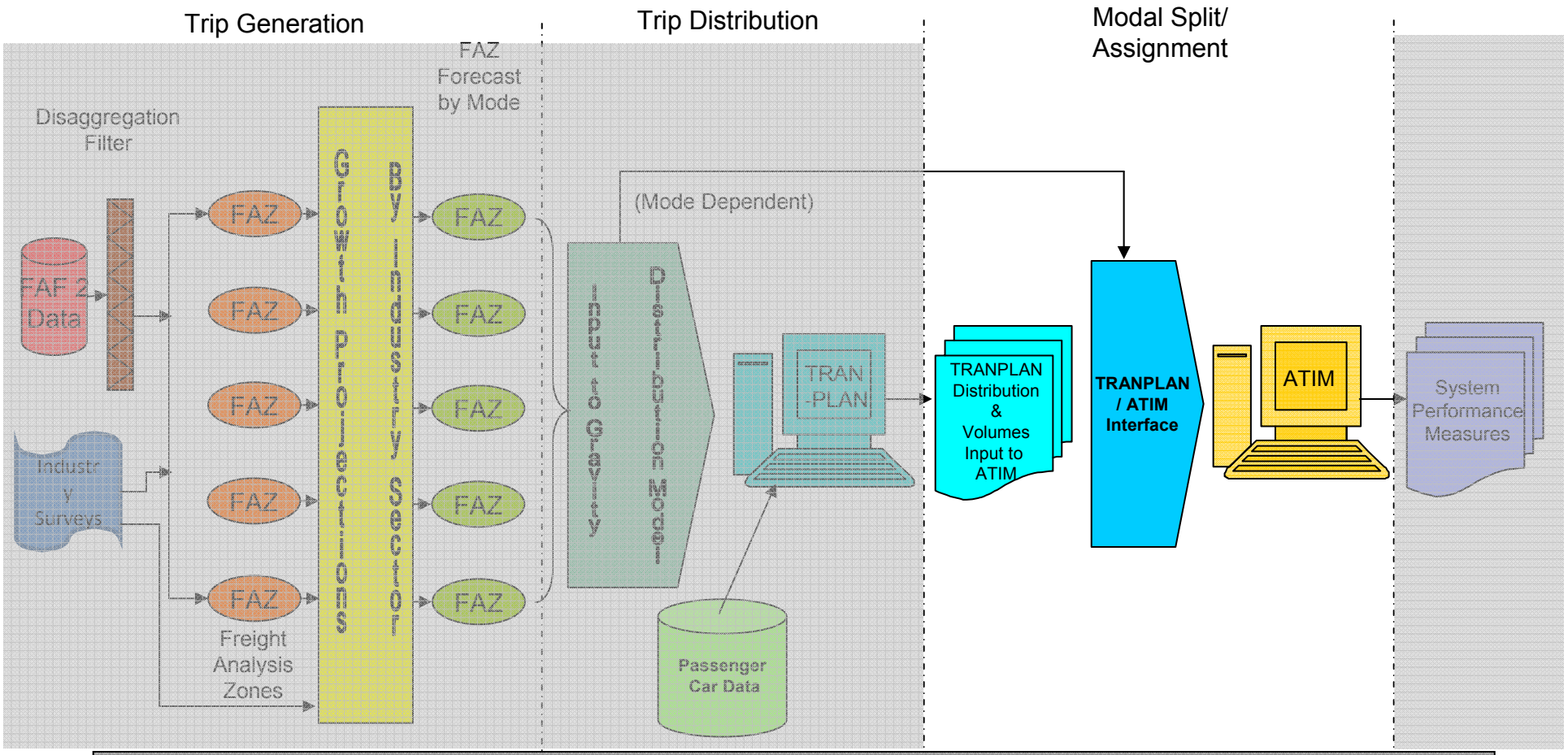
Planning Factors – Value of Shipments, Personal Income, Population/Employment

Industry Sector Analysis

The Gravity Distribution Model

- Networks are created in the gravity distribution model for each mode
- Forecasted volume in origin/destination format is loaded into the model and scenarios are run on the networks
- Passenger car volume data is in the model as a separate layer
- TRANPLAN distributes the volume by mode over the network, generating network loads
- The results of the gravity distribution model are input to the Alabama Transportation Infrastructure Model (ATIM), a statewide discrete event multi-modal simulation, through an interface designed to translate the data into the appropriate format for use in the simulation
- The coordination of gravity distribution modal networks and the modal networks within the statewide multi-modal simulation are critical for the load volumes to be accurately distributed

FPF – Modal Split & Assignment



Planning Factors – Value of Shipments, Personal Income, Population/Employment

Industry Sector Analysis

Statewide Multi-Modal Discrete Event Simulation

- The Alabama Transportation Infrastructure Model (ATIM) is a discrete event simulation to evaluate the impact of changing freight patterns to more accurately plan for future transportation infrastructure needs

- The ATIM is a statewide multi-modal transportation model with the ability to rapidly evaluate the impact of system decisions on the highway, rail, and water routes that compose the statewide freight transportation system

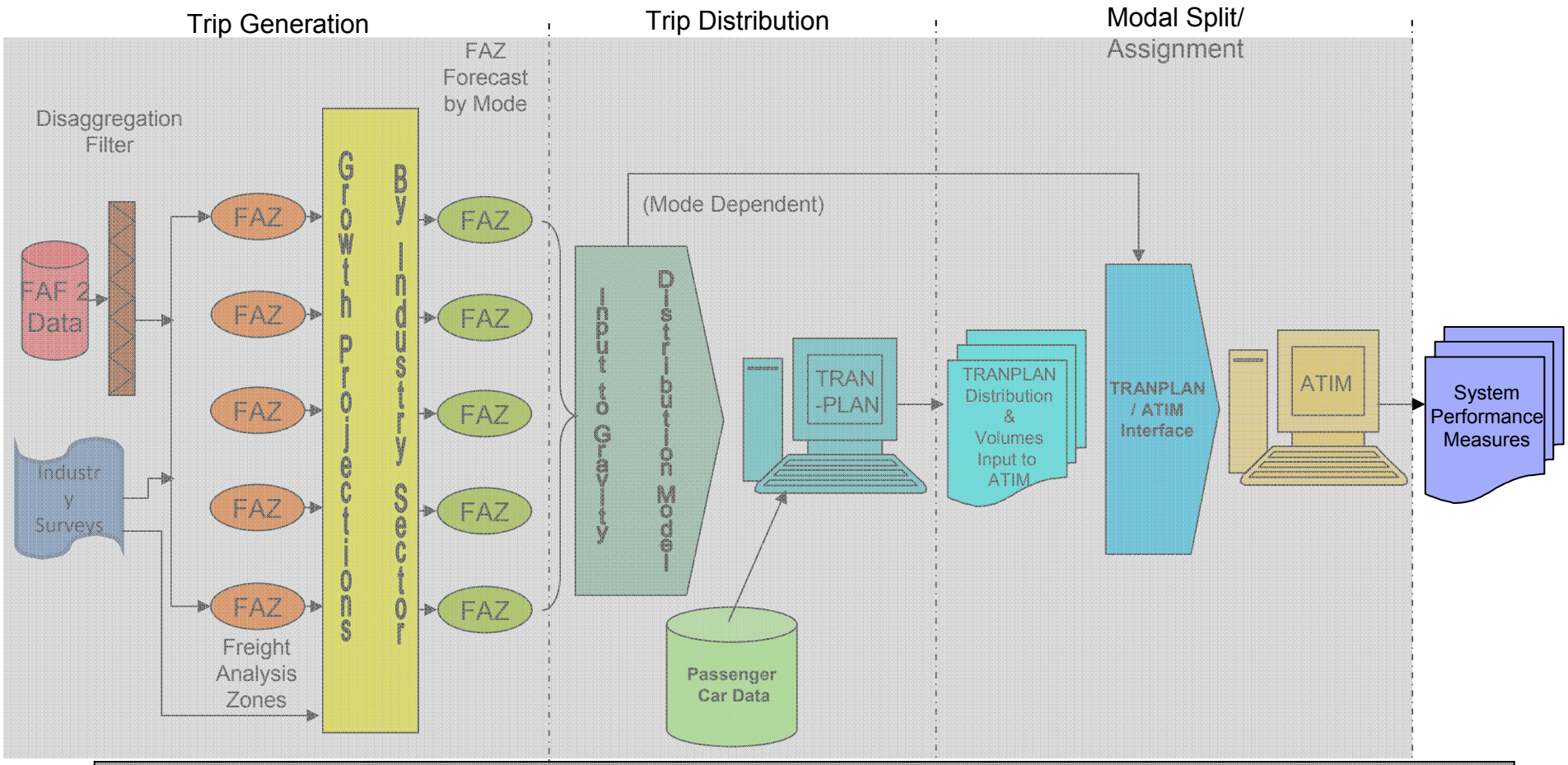
- The transportation network includes intermodal transfers between truck, rail, and water at the freight handling centers in Huntsville, Birmingham, Montgomery, and Mobile

- Passenger car and roadway freight traffic in the ATIM have been decoupled

Statewide Multi-Modal Discrete Event Simulation - 2

- De-coupling the growth in freight traffic from the growth in passenger car traffic allows ATIM to show how changes to the transportation infrastructure or volume of traffic types utilizing the network impact the system's performance
- ATIM can modulate passenger car traffic according to time of day
- While other simulations assume a regular, steady arrival of passenger cars in the system, ATIM allows for peak hour periods during the traditional morning and evening rush hours
- The value of using discrete-event simulation in addition to the static gravity distribution optimization algorithm is the ability to study the system's performance over time
- Gravity distribution provides an average daily estimation of traffic levels; discrete-event simulation allows the user to evaluate those estimates at various points during the day, such as during the morning rush hour

FPF – System Analysis



System Performance Measures

- Performance data has been collected for many years of the highway systems across the U.S. for multiple purposes

- The data collected is point specific and does not provide the managers and planners of the transportation systems with a measurement of how the system as a whole is performing

- Metrics that accurately portray the performance of the system as a whole are needed before serious efforts can be employed to optimize the performance of the entire system

System Performance Measures - 2

- An optimal set of performance measures are needed for:
  - Evaluating the performance of multimodal transportation systems
  - Measuring the effectiveness and efficiency by which it is able to supply reasonable user access
    - To jobs
    - To goods
    - To Services
  - Access to an efficient transportation system is key to the promotion of economic growth and development within a region
- The appropriate performance metrics will provide the ability to:
  - Determine the impact of improvements to the transportation system over time
  - Compare the results of improvements to short-term and long-term goals and objectives

Relationship to the MPOs

- The FPF methodology has been scaled to account for freight transportation within the MPO
- The statewide application of the FPF can assist in determining the freight trips to, from and passing through the MPO
- Both can be used to improve the long range transportation plan developed by the MPO

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Expectations of the Mobile Freight Project

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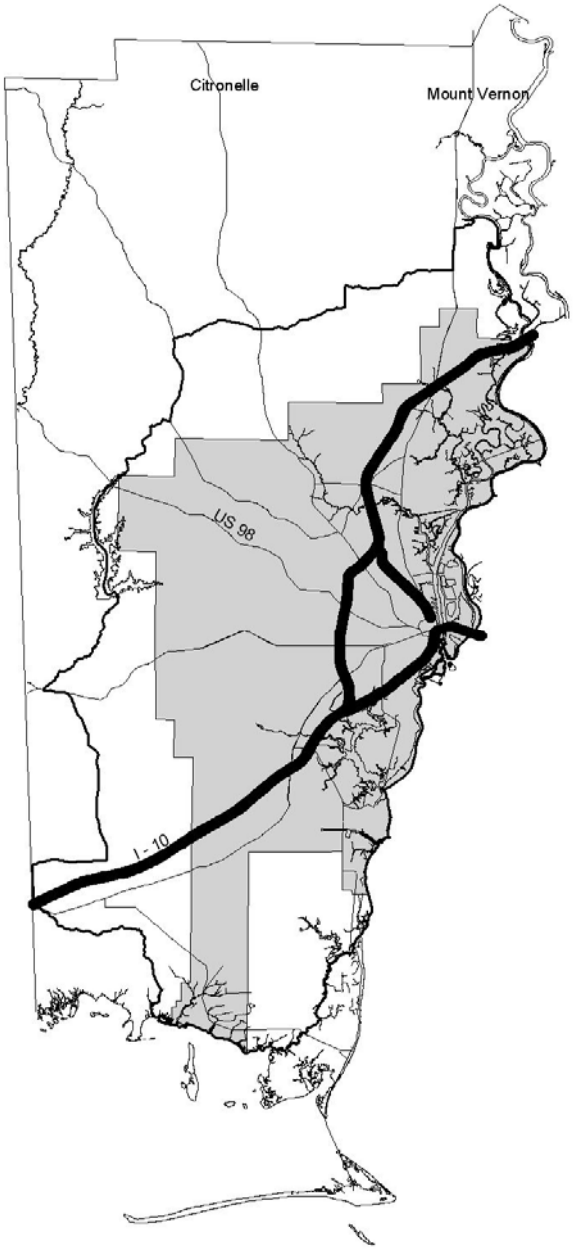
Mobile, AL

Convergence of
Two Interstates:
I-10 running EW
I-65 running NS



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Mobile, AL

Convergence of
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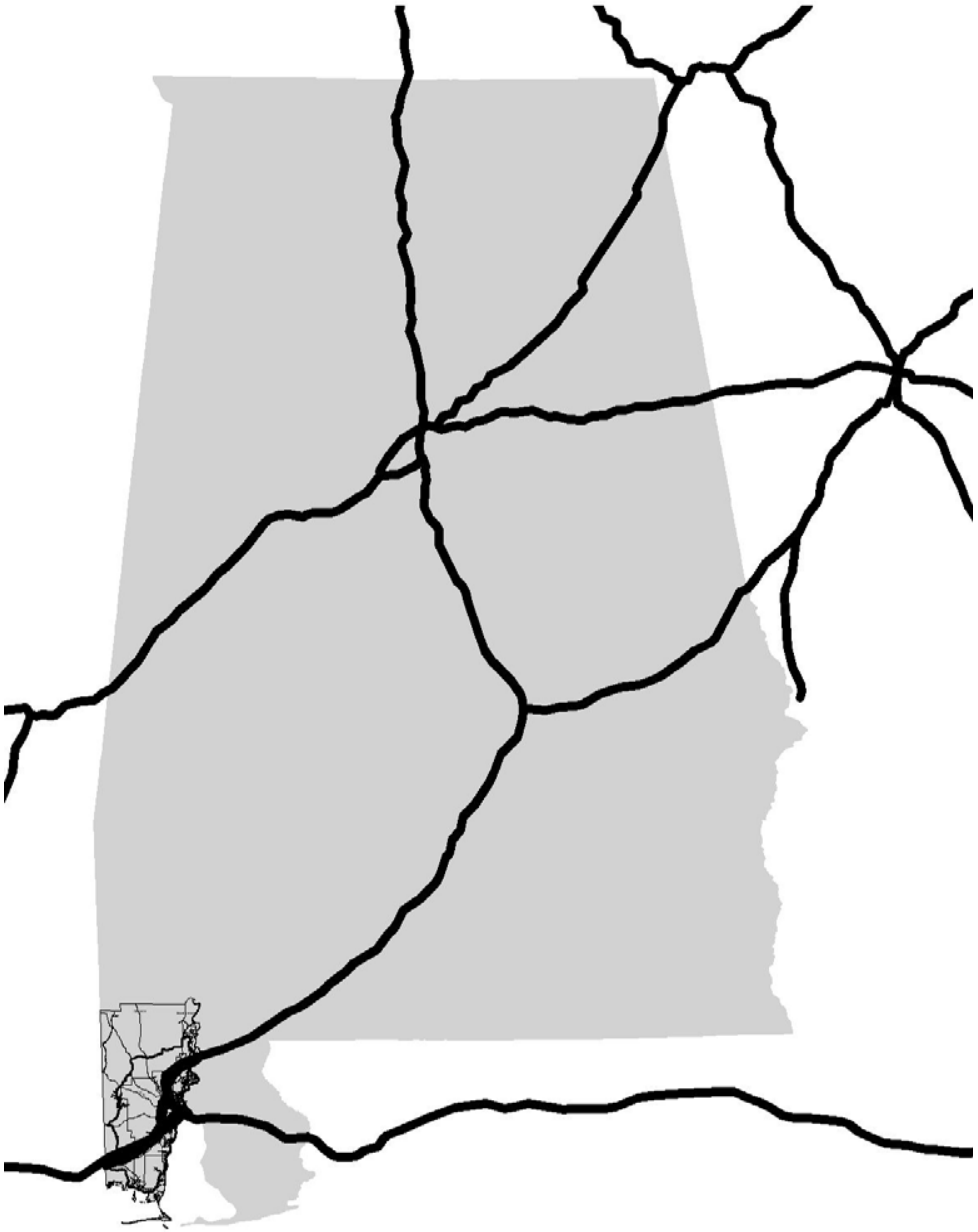

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Mobile, AL

Convergence of
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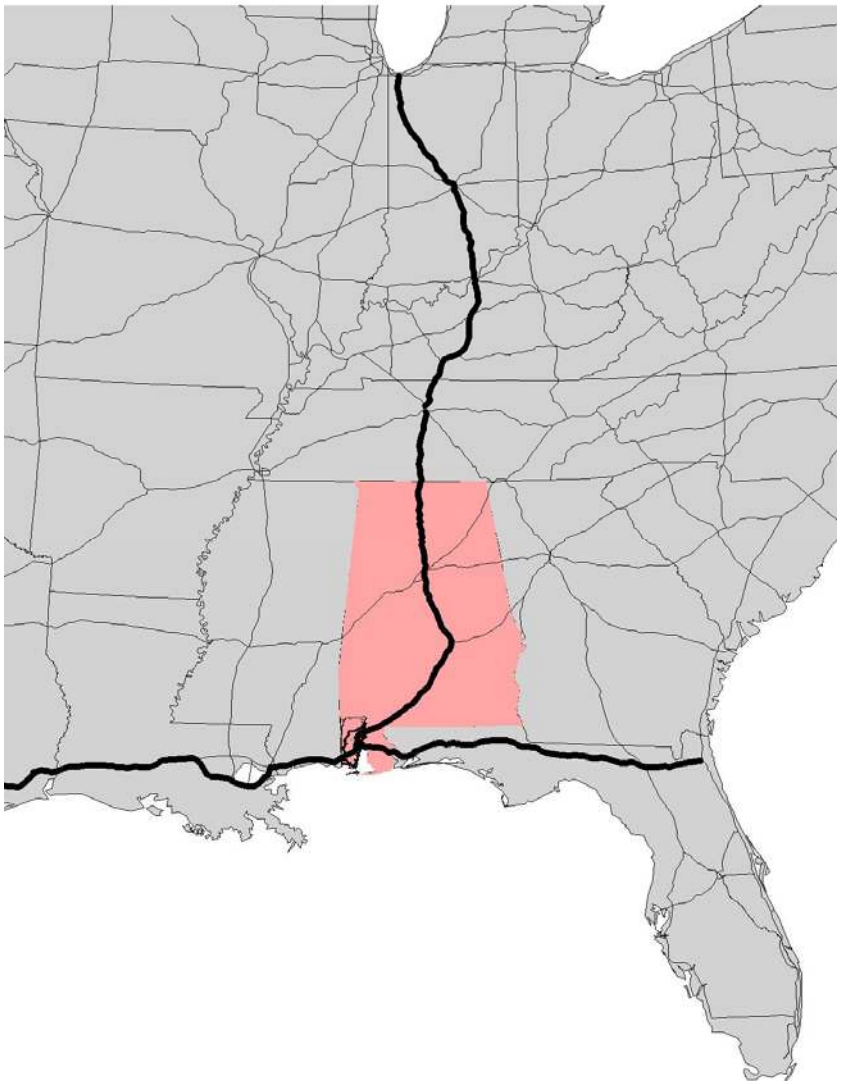

Freight Modeling of the Past

- None!
- State of Alabama used “estimated” percentages for truck trips
- Truck trips were estimated percentage as a Non Home Based trips
- Trucks are not factored in the External to External trips, or Internal / External Trips
- No other mode than cars are modeled

Mobile's Freight Reality

- 5 class A Railroads in Mobile
- Mouth of Alabama's inland Waterways;
  - 4500 miles of system via Tenn-Tom
- 25 steam ship agencies
- 4 foreign trade zones
- 60 trucking companies
- 4 bulk liquid terminals
- 13 warehouses, 9 of which are US Customs bonded
- 16 shipbuilding or ship repair companies

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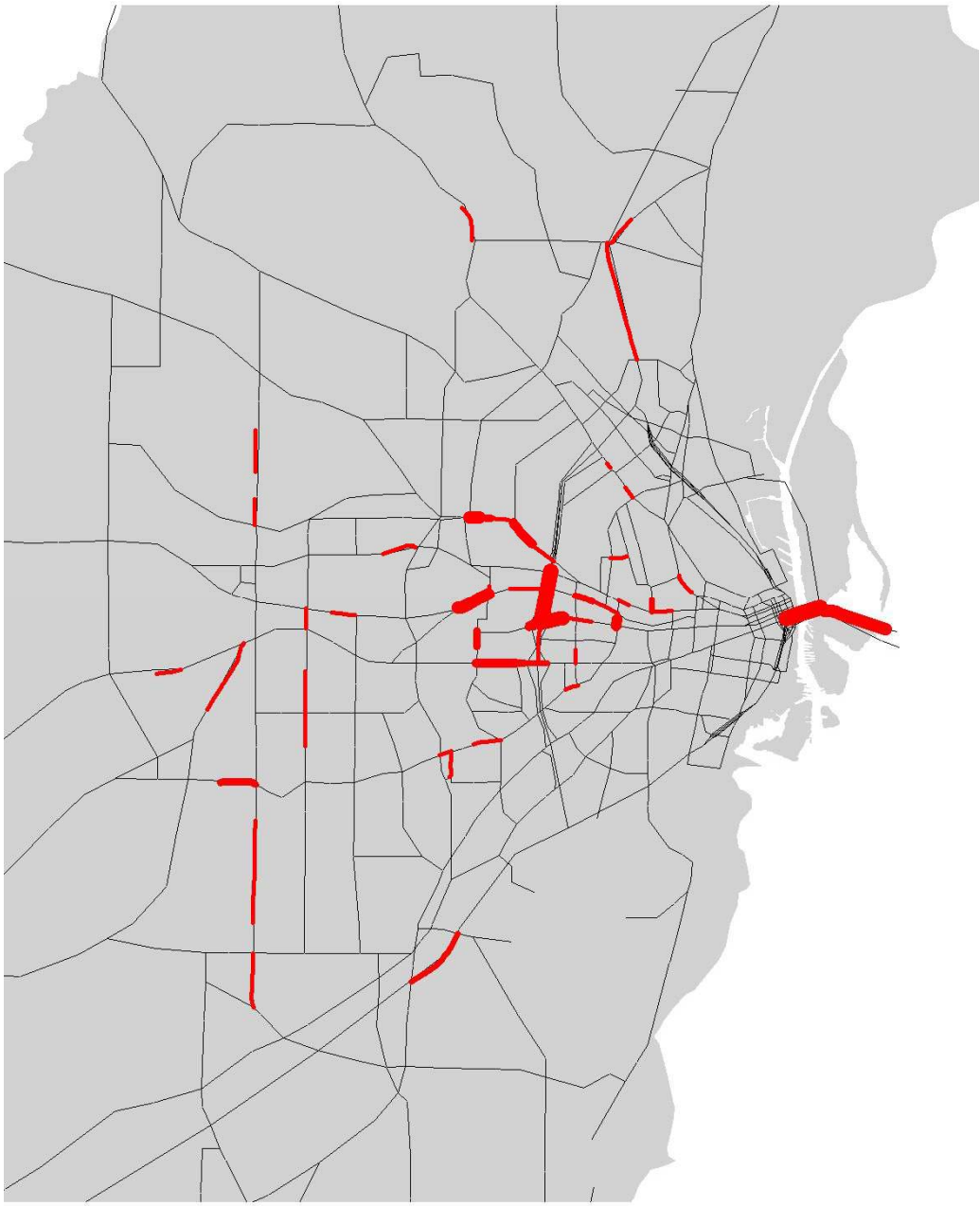
Mobile's 2007 Network

Red=Capacity Deficiency

Interstate 65
Traffic Count = 98,500
Capacity = 88,800

Wallace Tunnels
Traffic Count = 67,000
Capacity = 56,000



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Reality for Mobile

- Thyssen Krupp
- Choctaw Point
- Northrup Grummond / EADS
- Expansion of Austal Ship Building
- Berg Steel

Why Should We Be Planning for Freight at the MPO level?

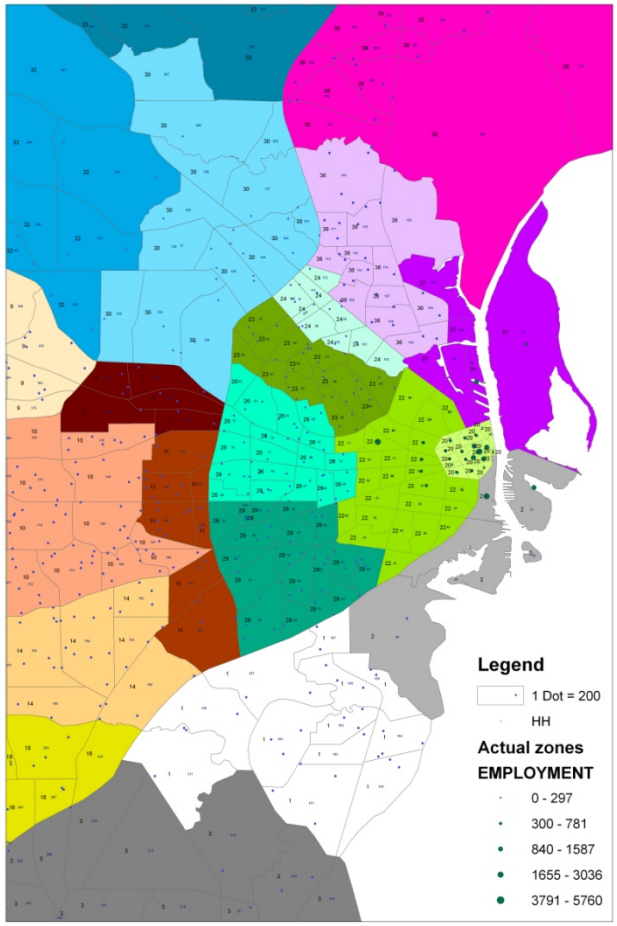
- It is pretty obvious in Mobile
- Plan will include a truck matrix to preload prior to equilibrium assignment
  - Ability to validate freight movements
  - Ability to forecast freight movements and potential conflicts; identify projects
- Ability to run scenarios through the discrete event simulation model
- Regional freight profile, with potential freight projects identified as an element to TLRP
- We don't want infrastructure to be an impediment to our growth

Application of the FPF at an MPO – NCHRP 570

1. Freight Program Structure
2. Freight Program Strategy
3. Regional Freight Profile
4. Engage the Private Sector
5. Gap analysis
6. Key decision points
7. Refine program goals and objectives
8. Develop freight data collection system and regional simulation model
9. Establish performance measures
10. Identify freight projects
11. Develop freight project evaluation criteria
12. Integrate freight projects into existing planning program
13. Identify potential funding
14. Develop regular updating procedure

Freight Trips Generated

Shipments Per Employee	Inbound	Outbound
7 - Food	16.0	26.3
10-12 -Construction Mat'ls	161.4	166.9
17 - Petroleum	100.9	257.1
20 - Chemicals	12.0	26.6
24 - Plastics	68.8	193.8
26 - Wood Products	406.9	-
28 - Paper	51.0	63.0
30 - Textiles	28.2	11.4
32 - Primary Metals	50.1	60.1
33 - Fabricated Metals	19.1	23.6
34 - Machinery	32.7	21.2
37 - Transportation	3.9	17.8
40 - Misc. Manufacturing	0.4	1.7
41 - Waste/Scrap	13.9	7.9
42 - Mixed Freight	17.5	57.3
Overall	23.1	36.9



Mode Choice & Freight Distribution

Type of Vehicles Used		Inbound	Outbound	Combined
	Truck	64.0%	77.5%	70.0%
	Rail	22.0%	10.0%	16.7%
	Water	12.0%	12.5%	12.2%
	Air	20.0%	0.0%	1.1%

Freight O/D In/Outside		Origins	Destinations
	w/in Mobile County	14.5%	16.4%
	Outside Mobile County	84.5%	80.7%
	Local Port	1.0%	2.8%
Freight O/D Compass Direction			
	North	25.5%	30.2%
	East	59.4%	12.3%
	West	14.5%	57.5%
	South	0.6%	0.0%

Conclusions

- The FPF presents a major contribution in freight planning in much the same way as the four-step modeling process has for passenger travel
- The FPF is currently being developed, researched and evaluated at UAH through a series of independent, but complementary research projects
- Transferability of the research results will be useful to State DOTs and MPOs in understanding freight transportation, as well as the relationship between economic activity and transportation infrastructure

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Thank You

Questions?

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Freight Summit Day 3:

- Financing Infrastructure Improvements

Barriers	Possible Solution
Lack of clear Federal vision and funding partner	Dedicated monies for freight specific infrastructure

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Freight-21:

A National Strategic Freight Mobility Program & Trust Fund

Coalition for America's Gateways and Trade Corridors

The Vision

The United States freight transportation system will ensure the efficient, reliable, safe, and secure movement of goods and support the nation's economic growth while improving environmental quality.

Framework for a National Freight Policy, US DOT

The Problem

Our nation's economic growth and prosperity depend on the vitality of our multimodal freight transportation system, which we have neglected as a national priority. Failing to invest in this key national asset carries serious and well documented consequences.

"Current volumes of freight are straining the capacity of the transportation system to deliver goods quickly, reliably, and cheaply. Anticipated long-term growth of freight could overwhelm the system's ability to meet the needs of the American economy…"

The Freight Story 2008, US DOT FHWA, November 2008

A Growing Consensus for a National Freight Program

- National Surface Transportation Policy and Revenue Study Commission (1909)
- AASHTO
- ARTBA
- NRC
- ATA
- AAPA
- US Chamber
- And many others, including the GAO:

GAO recommends "a national strategy to transform the federal government's involvement in freight transportation projects. This strategy should include defining federal and nonfederal stakeholder roles and using new and existing federal funding sources and mechanisms to support a targeted, efficient, and sustainable federal role."

National Strategic Freight Mobility Program & Trust Fund

The creation of a National Strategic Freight Mobility Program and Trust Fund (FTF) will require:

- National strategy for planning & investment
- Merit-based criteria for prioritizing projects
- Predictable, dedicated, sustained funding for freight infrastructure
- Partnership with the private sector to anticipate and meet the needs of system users

FTF: National Strategy for Planning & Investment

Establish a new USDOT Office of Multimodal Freight

- Implement new discretionary grant program, for freight only, on a competitive basis with objective criteria
- Coordinate with states and MPOs
  - State freight plans for every state should identify needed projects and collectively provide the basis for a national freight plan
- Collect data and perform long-term analysis
- Focus on nationally and regionally significant infrastructure
- Coordinate policy with other federal agencies
- Engage with private sector partners
- Provide a framework for environmental sustainability and assistance for communities with local mitigation

FTF: Merit-based Criteria for Prioritizing Projects

- Identify and prioritize projects that improve national freight efficiency and system performance
- Document direct and indirect public benefits
- Objective, mode-neutral criteria
- Multi-jurisdictional and multi-state projects eligible
- Awards made with full-funding grant agreements

FTF: Predictable, Dedicated, Sustained Funding for Freight Infrastructure

An adequate, guaranteed funding stream, which will grow commensurate with the demand for freight infrastructure, is needed to:

- Meet the current backlog of neglected connectors, bottlenecks and other present day needs.
- Provide continuing improvements, encourage adoption of new, green technologies, and respond to changing trade routes of the future.
- Incentivize state and local investment and leverage the widest array of public and private financing.

FTF: Partnership with the Private Sector

The new freight program must work with private sector partners in two ways:

- Leverage private participation and give transportation agencies the largest toolbox of options possible

- Establish USDOT advisory board to maintain support for the user fee structure by providing the counsel of private sector users, maintain efficiency in program implementation and ensure a forum for expanding the information platform for the new program

FTF: Revenue Sources

- A new user fee dedicated to the FTF for freight transportation infrastructure only
  - Assessed as broadly as possible, on all domestic and international freight, without advantaging or burdening any sector or mode
- Does not preclude other new and current revenue sources

The Coalition for America's Gateways and Trade Corridors

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CAGTC
Coalition for America's Gateways & Trade Corridors

Questions?

- Are these strategies potentially replicable?
  - Are there any particular tools that would assist you in replicating a particular project?
- What strategies that you learned about (today or any of the other days) will you be able to utilize in your work?
- Do you have any alternative strategies to share with the group?

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THANK YOU FOR PARTICIPATING!

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