

Freight Analysis Framework (FAF): The Latest

Freight/Land Use Travel Demand Evaluation

Talking Freight Webinar

April 19, 2017



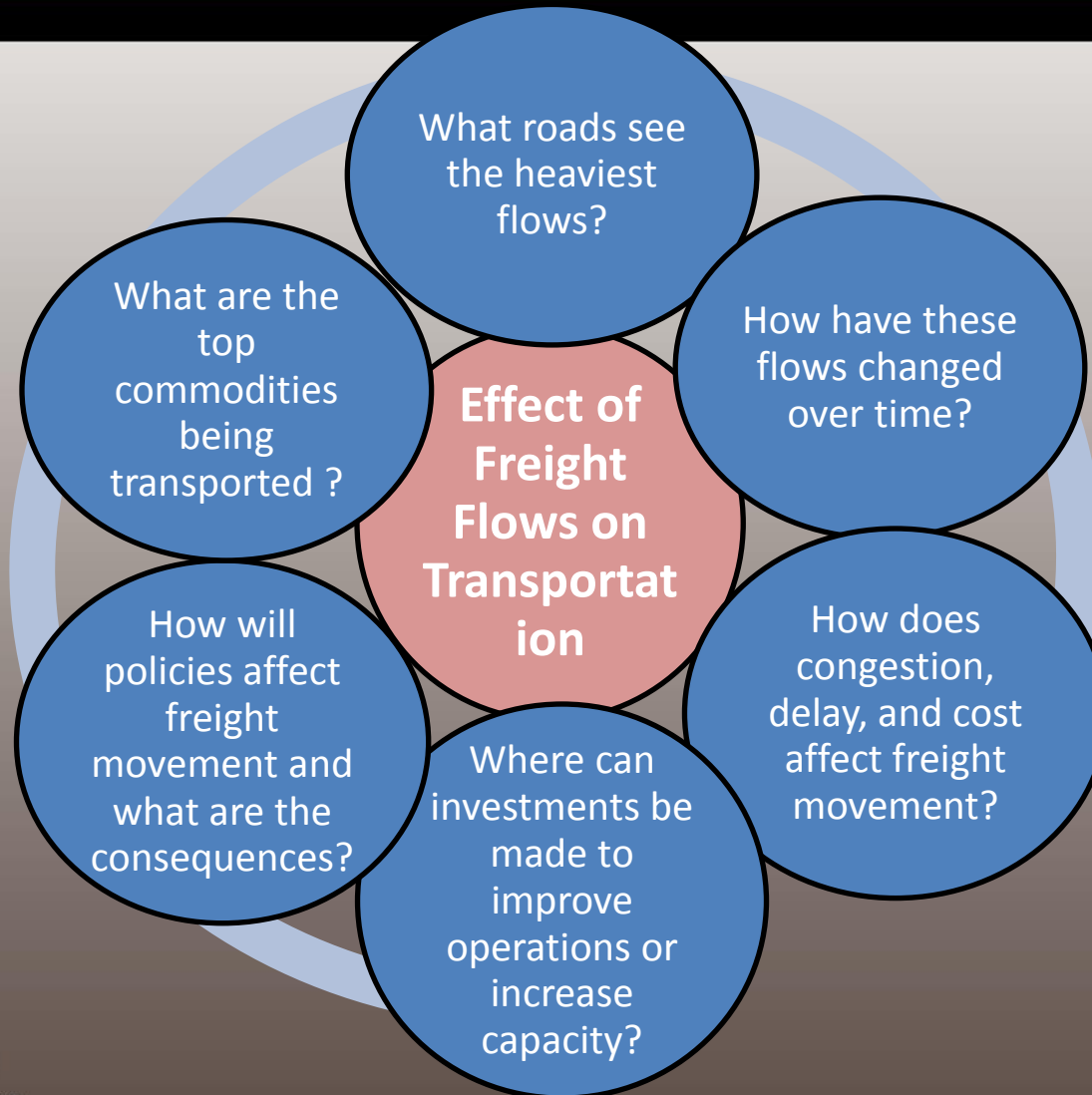
Purpose of FAF

To Provide a Comprehensive Resource of National Long Distance Freight Flow.

To Support Analysis to Strategically Direct Resources for Freight Transportation System Improvement.



Basic Freight Transportation Questions: Example



FAF4 Main Components

Origin- Destination Flow Tables

Weight, Value and Ton-Miles by 43 SCTG 2-digit Commodities

Truck, Rail, Water, Air, Pipelines, Multiple Modes & Mail

Base Year 2012, Annual Data 13-15 & Forecasts up to 2045 in a 5-Year Increment

Truck Traffic Flow Network

Estimates of Long Distance Truck Volumes

Ton-Miles & Other Network Attributes

Base Year 2012 & Forecast Year 2045



FAF4 Main Components: National Examples

National Data

Table 3. Top 5 Commodities by Weight

2045		
Commodity	Tons (thousands)	% of total
Natural gas (Coal-n.e.c.)	4,177,757	16%
Gravel	2,463,547	10%
Nonmetal min. prods.	1,740,402	7%
Cereal grains	1,418,370	6%
Other foodstuffs	1,211,927	5%
All commodities	25,344,760	100%

Table 4. Top 5 Commodities by Value

2045		
Commodity	Value (millions \$)	% of total
Electronics	5,181,998	14%
Machinery	3,066,414	8%
Pharmaceuticals	2,477,753	7%
Mixed freight	2,435,188	7%
Motorized vehicles	2,140,823	6%
All commodities	37,079,927	100%

Table 5. Export by Shipment Weight

Trade Partner	Tons (thousands)	% of total
Eastern Asia	595,123	27%
Canada	357,474	16%
Rest of Americas	343,656	16%
Mexico	292,647	13%
Europe	260,009	12%
Total export*	2,189,644	100%

Trading Partners 2045

Table 6. Imports by Shipment Weight

Trade Partner	Tons (thousands)	% of total
Canada	745,874	33%
Eastern Asia	363,341	16%
Rest of Americas	304,279	14%
Mexico	282,685	13%
SW & Central Asia	191,262	9%
Total import**	2,241,059	100%

Sources: Freight Analysis Framework 4 (FAF4.2), 2045 data

Note: Includes all modes and both domestic and international flows. *Other export =340,735/16% **Other import =353,618/16%

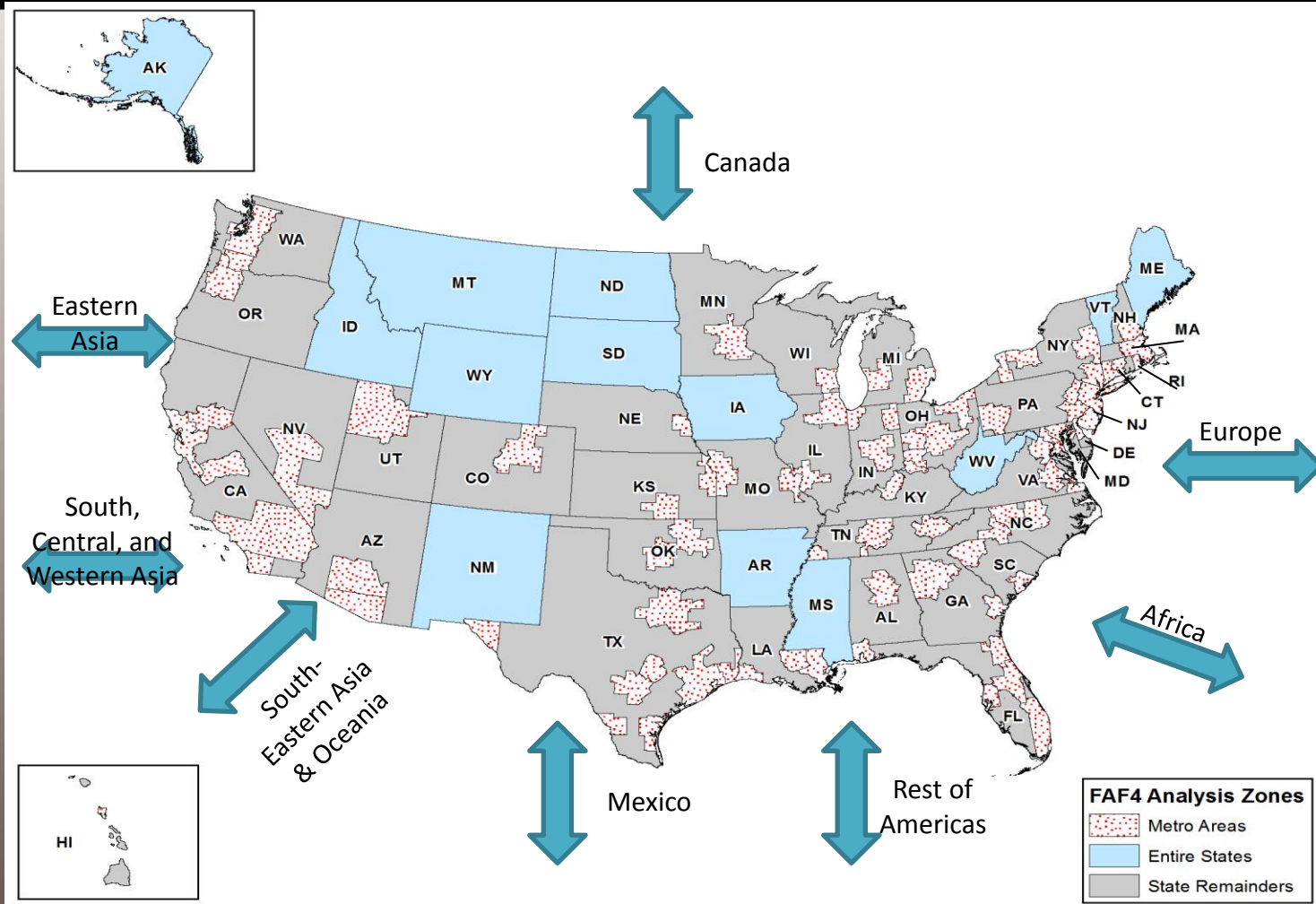
Average Daily Long-Haul Truck Traffic on the National Highway System: 2045



Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 4.1, 2016.



FAF4 – Regions

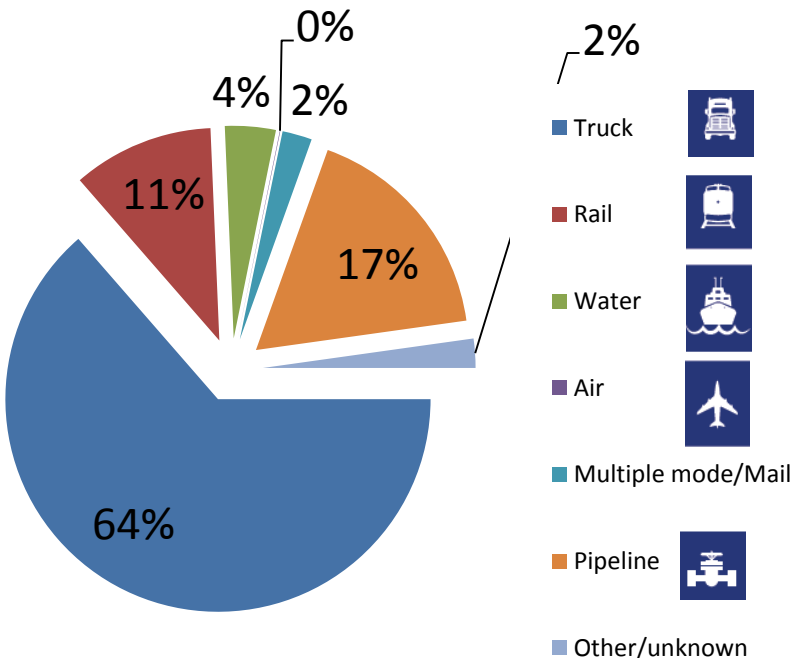


Growth in U.S. Freight by 2045

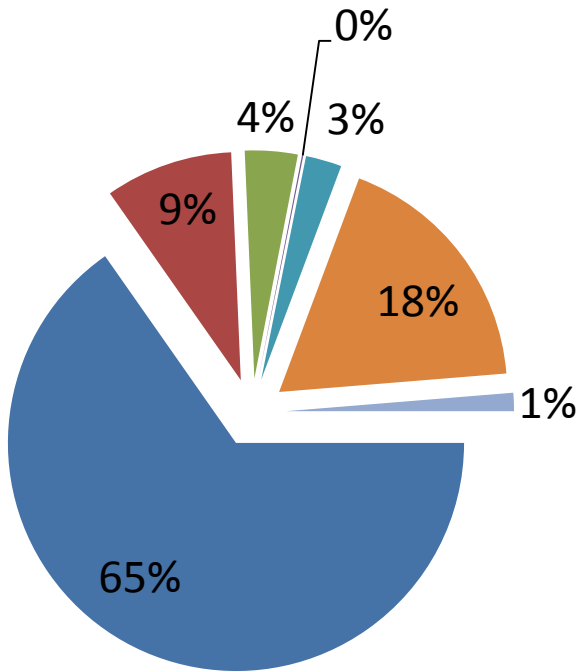


National Freight Movement Mode Share: Tonnage

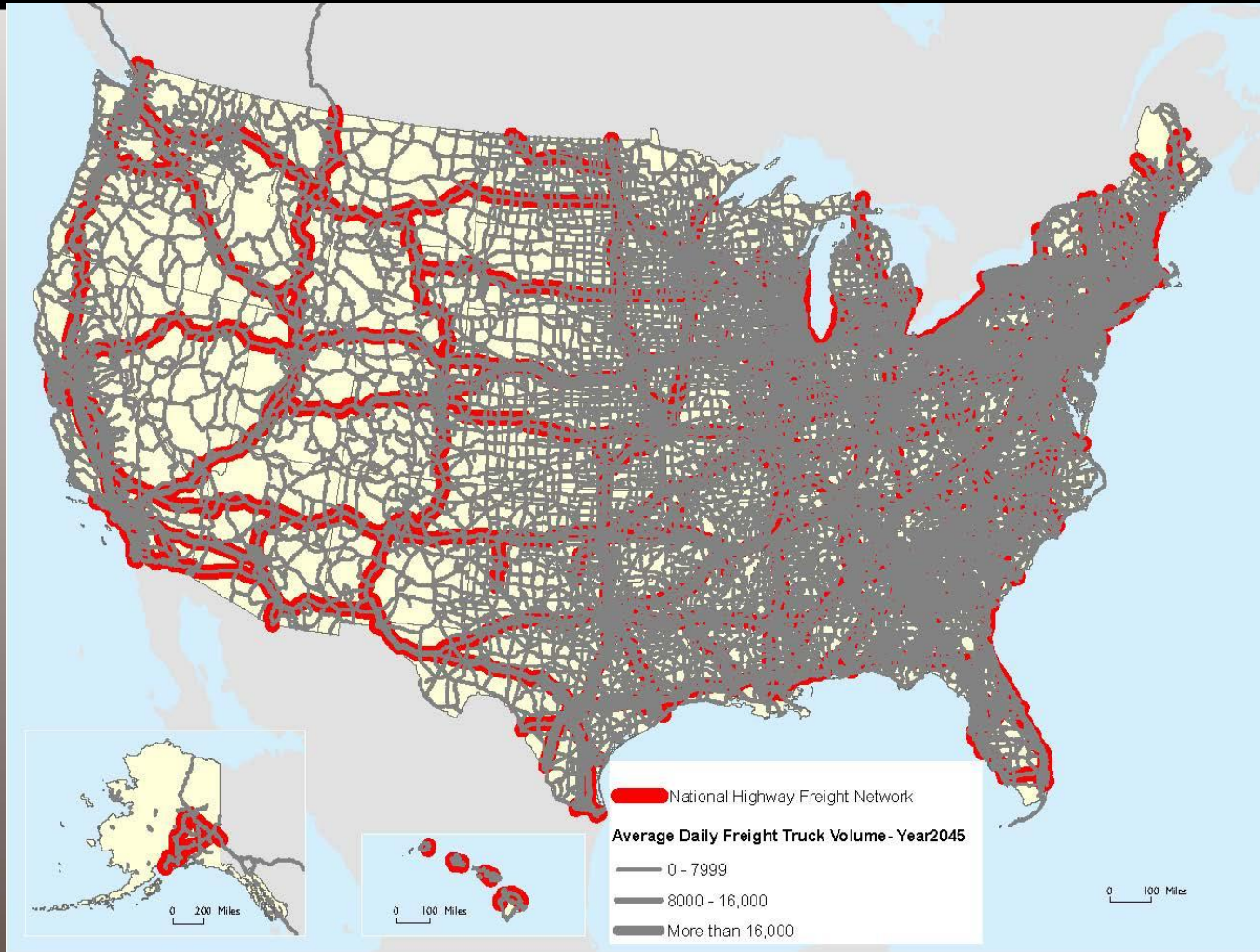
Year 2012



Year 2045



FAF4- Network Coverage



FAF4 Products Example: Web Downloads

Data File and Network Flows

- www.ops.fhwa.dot.gov/freight/freight_analysis/faf/

Web-Based Data Tool

- <http://faf.ornl.gov/fafweb/Extraction0.aspx>

Freight Facts and Figures

- www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/data_and_statistics/by_subject/freight/freight_facts_2015



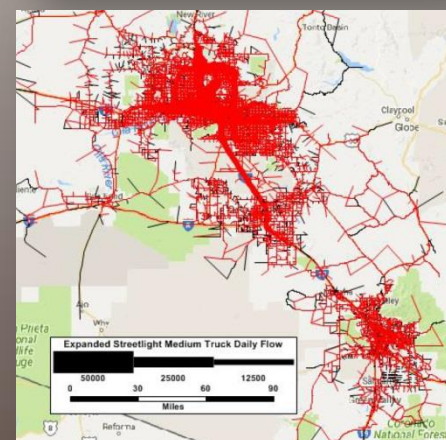
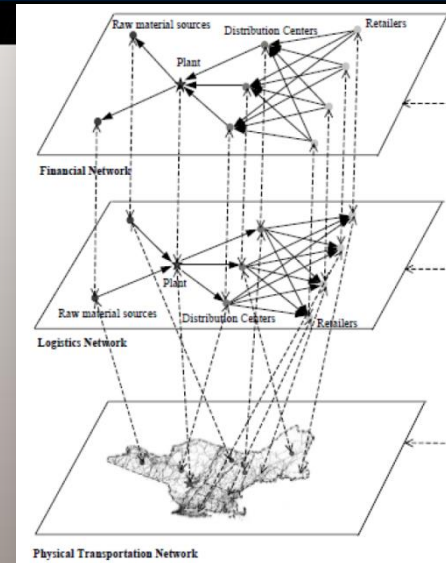
Quick Response Freight Manual (QRFM)

- Freight Demand Factors
- Simple Growth Factor Methods
- Freight “Four-Step” Travel Forecasting
- Commodity Models
- Hybrid Approaches
- Economic Activity Models
- Model Validation
- Freight Data
- Intermodal Considerations
- Case Studies
- <https://ops.fhwa.dot.gov/freight/publications/qrfm2/index.htm>



QRFM Update

- Land use & demographic trends in freight trip generation, demand analysis & modeling.
- Behavior-based freight modeling, including:
 - Supply chain/firm synthesis modeling.
 - Truck touring models for delivery of freight.
 - Commercial vehicle touring models.
- Decision-making by freight agents/shippers.
- Inventorying & creating a database of local or regional freight-generating facilities.
- New methods for data collection including:
 - GPS probe data.
 - New ITS technology.
- Freight visualization to aid decision making & performance dashboards.
- Sharing freight data between jurisdictions.



Source: Maricopa Association of Governments

Freight Model Improvement Portal

- Community of Practice - Travel Model Improvement Portal (TMIP) and Freight Model Improvement Portal (FMIP).
- Platform to facilitate information sharing, exchange of ideas and capacity building for travel/freight modeling and planning communities.
- Webinars.
- Resource library.
 - Freight Data.
 - Freight Networks.
 - Freight Models.
 - Bibliography List.
- Discussion forum.
- <https://tmip.org/>



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