

Resource Paper on Freight Data Requirements for SAFETEA-LU

The freight data community has made great strides towards developing a framework to guide the development of a comprehensive program to collect, analyze and disseminate information. The passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation contains a number of freight data-related elements. This paper will review the legislative intent and provide discussion materials for how to proceed with fulfilling the requirements of the bill.

Repositioning the Bureau of Transportation Statistics under the Research and Innovation Technology Administration

The legislation provides for the continued operations of the Bureau of Transportation Statistics (BTS), under the newly established Research and Innovation Technology Administration (RITA). This change is a restatement of the Mineta Improvement Act language. It also changes the director from a fixed-term Senate-confirmed Presidential appointee to a Secretarial appointee from the competitive service.

The change in organizational structure and leadership may significantly impact the budget available for freight data programs and the freedom and expression of ideas on how to best serve the freight community's data needs. The BTS budget both constrains and oversubscribes the larger Department of Transportation research budget (Schmidt 2005).

Change in designated stakeholders

Freight data, as one of the types of transportation data needed by decision makers, is implicitly incorporated in the language of the legislation instructing BTS to **provide data, statistics, and analysis** to transportation decision makers from seven specifically designated realms: **Federal, State, and local governments, metropolitan planning organizations (MPOs), transportation-related associations, the private sector (including the freight community), and the public**. The language in the Transportation Equity Act for the 21st Century (TEA 21) instructed BTS to ensure the statistics compiled be relevant for transportation decisionmaking by “the Federal Government, State and local governments, transportation-related associations, private businesses, and consumers”.

SAFETEA-LU specifically calls out the “freight community” as a stakeholder to be served by BTS data efforts.

Defining the appropriate geography for the national transportation system

The legislation contains a specific charge to ensure that the **statistics compiled under paragraph (5)** of Subtitle F – Bureau of Transportation Statistics, serve these users. Paragraph 5 instructs BTS to collect, compile, analyze, and publish a comprehensive set of transportation statistics on the performance and impacts of **the national transportation system**.

Although the set of designated decision makers suggests that BTS is responsible for data, statistics, and analysis, it is unclear how exactly these users can be adequately served with the specified type of data they will need as, the legislation calls for information only on the performance and impacts of the national transportation system. The freight data community has previously pointed out that relevant data needs to be local in nature. How should this be reconciled with the reference to the “national transportation system”? Does this mean only national level data and statistics are needed or does it make it possible for BTS to collect data relevant to the users?

Coordination mission

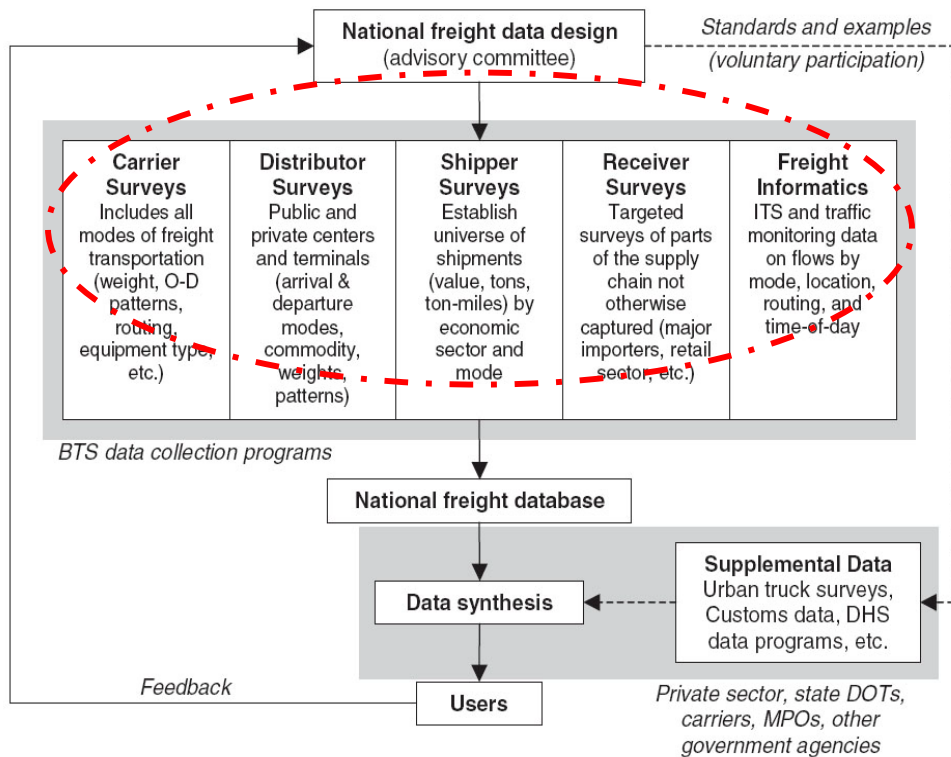
BTS is also responsible for **coordinating the collection of information** by working with the operating administrations to establish and implement its data programs and to improve efforts with other Federal agencies. Previously, BTS was instructed more narrowly to be involved in coordination efforts to measure outputs and outcomes of the Department of Transportation and the transportation systems of the United States under the Government Performance and Results Act of 1993 (107 Stat.. 285 et seq.).

Does the new statement suggest that BTS will be able to assist the Department of Homeland Security in the collection of data deemed important to the freight data community? For example, the Custom’s database project contains data on commodities, vehicle type, etc. Does this statement allow BTS to work with Intelligent Transportation Systems (ITS) operators to develop opportunities to use archived ITS data to produce freight data elements?

Modernization process

BTS is instructed to modernize data continually improving **surveys and data collection methods to improve the accuracy and utility of transportation statistics**.

Does this statement pertain to improving the Commodity Flow Survey as per previous studies and recommendations (Carrier Surveys)? Does this call for the development of uses of archived Intelligent Transportation Systems (ITS) data for freight (Freight Informatics)? Does this statement call for the examination of new surveys such as Distributor, Shipper, and/or Receiver surveys?



Source: *A Conceptual Framework for a National Freight Data Program: Special Report 276.*

Standardization strategies

BTS is to **encourage data standardization, data collection methods, and data management and storage technologies** for itself, other operating administrations of the DOT, State, local, MPO and private sector entities.

By standardizing freight data across the various entities, BTS would be able to assemble vast quantities of data with some level of certainty as to the nature, character, and validity of the end products. A major new initiative to reach out to all of these potential data generators could help support the success of a data synthesis program. It may be possible to expand data collection efforts with a strategy similar to the “add-on” process used in the collection of the National Household Travel Survey (NHTS).

Required statistical elements

The legislation enumerates a list of transportation statistics that BTS is to collect, compile, analyze and publish on performance and impacts of the national transportation systems with freight implications.

- **productivity in various parts of the transportation sector**

Does this suggest that satellite accounts are necessary to accomplish an understanding of productivity? Economists familiar with freight productivity will be need to involved in the types of freight data needed for this element.

- **traffic flows for all modes of transportation**

The use of the term “flows” calls for freight data on origins and destinations of vehicles and vessels moving goods. It may be possible to develop new forms of freight data from electronic data flows, based on on-board ITS (i.e., Global Positioning Systems (GPS) equipment, transponder data, etc.).

- Elements in the **Intermodal Transportation Database** include **information on the volumes and patterns of movement of goods, including local, interregional, and international movement, by all modes of transportation and intermodal combinations and by relevant classifications.**

These elements were previously required in TEA 21. (See attached TranStats document). Currently, BTS is indicated as the “provider agency” for 14 databases that make up the TranStats Intermodal Transportation Database (<http://www.transtats.bts.gov/>). Of these 14, the following support freight data: the Border Crossing Data; the Commodity Flow Survey; the Motor Carrier Financial & Operating Information¹; the Transborder Surface Freight Data. A number of reports have addressed the shortcomings of the CFS, with suggestions for improvements that could be included under the call for modernization of BTS products.

- **travel times and measure of congestion**

Although not explicitly declared as freight data, travel times and impacts of congestion as they effect the movement of goods. Will the work completed in NCHRP 3-68, “Guide to Effective Freeway Performance Measurements” be relevant to this charge?

- **vehicle weights and other vehicle characteristics**

Vehicle weights and other vehicle characteristics, such as vehicle length and height are relevant freight data. Does the VIUS serve this charge?

- **demographic, economic, and other variables influencing traveling behavior, including choice of transportation mode and goods movement**

Freight data is needed as indicated by the choice of transportation mode for goods movement.

- **transportation costs for ... goods movement**

¹ This data series has been discontinued.

Freight data will be needed to calculate this information, in addition to other economic data that needs to be collected on costs.

- **safety and security for ... vehicles**

Identification by vehicle for safety and security will require freight data. It will require integration of available safety data and freight data – or new survey data that collects both types of data simultaneously. Electronic data flows may support this effort.

- **transportation-related variables that influence the domestic economic and global competitiveness**

This element suggests new types of data are needed that are transportation-related that make it possible to understand economic forces responsible for domestic and global competitiveness. It is unclear how this can be accomplished without freight data on the flow of goods responsible for economic advantages.

Provision of guidelines

BTS is instructed to **issue guidelines** for the collection of information to ensure accurate, reliable, relevant, and formatted that permits systematic analysis.

The freight data community needs to maximize their input to the development of guidelines for any freight data elements.

Information Needs Assessment

The legislation call for the National Research Council to prepare report (within 2 years) to identify transportation data not being collected by BTS, operating administrations of the Department, or other Federal, State, or local entities, but is needed to improve transportation decision making.

It is imperative that the freight data community participate in this effort.

The legislation expects the NRC to describe new data collection methods (including changes in surveys) and other changes the Bureau or other Federal, State, or local entity should implement to improve the standardization, accuracy and utility of transportation data and statistics.

This suggests that freight informatics be described as a new data collection method. Standardization practices will impact the fidelity of the information and could expand or limit its usefulness.

National Transportation Atlas Database

Legislation continues to call for the development and maintenance of a national transportation atlas database comprised of geospatial databases depicting flows of goods, vehicles and crafts.

BTS is currently supporting the North American Transportation Atlas Database (NORTAD)

http://www.bts.gov/publications/north_american_transportation_atlas_data/

The geospatial data only contains facility data – not flow, vehicle or craft data. Freight data on flows of goods by vehicle and/or craft will be required to the atlas.

Intermodal Network Analysis

The legislation continues to call for the intermodal databases to be capable of supporting intermodal network analysis.

It is unclear how the intermodal databases assembled on the TRANSTAT website can be used for intermodal network analysis. The key need for an intermodal system is the linkages among modes rather than individual networks.

Special Authority to Gather Freight Data

The legislation contains a special authority for gathering freight data:

“Mandatory Response Authority for Freight Data Collection. – Whoever, being the owner, official, agent, person in charge, or assistant to the person in charge of any freight corporation, company, business, institution, establishment, or organization of any nature whatsoever, neglects or refuses, when requested by the Director or other authorized officer, employee or contractor of the Bureau, to answer completely and correctly to the best of the individual’s knowledge all questions relating to the corporation, company, business, institution, establishment, or other organization, or to make available records or statistics in the individual’s official custody, contained in a data collection requires prepared and submitted under the authority of subsection (c)(1) , shall be fined not more than \$500; but if the individual willfully gives a false answer to such a question, the individual shall be fined not more than \$10,000.”

This power appears to be comparable to that of the Census Bureau. It is also possible that electronic data as a form of data collection for freight would be covered under this authority. The opportunity to develop and implement improvements in a number of freight surveys, includes the previously examined Commodity Flow Survey (a carrier survey), and suggested types of surveys, such as receiver surveys, distributor surveys, and/or shipper surveys.

National Cooperative Freight Transportation Research Program

The legislation calls for the establishment and support of a new National Cooperative Freight Transportation Research Program through an agreement with National Academy of Sciences. Included in the list of topics is research on:

- ***The feasibility of consolidating origins and destinations for freight movement***
- ***Other research areas to identify and address emerging and future research needs related to freight transportation by all modes***

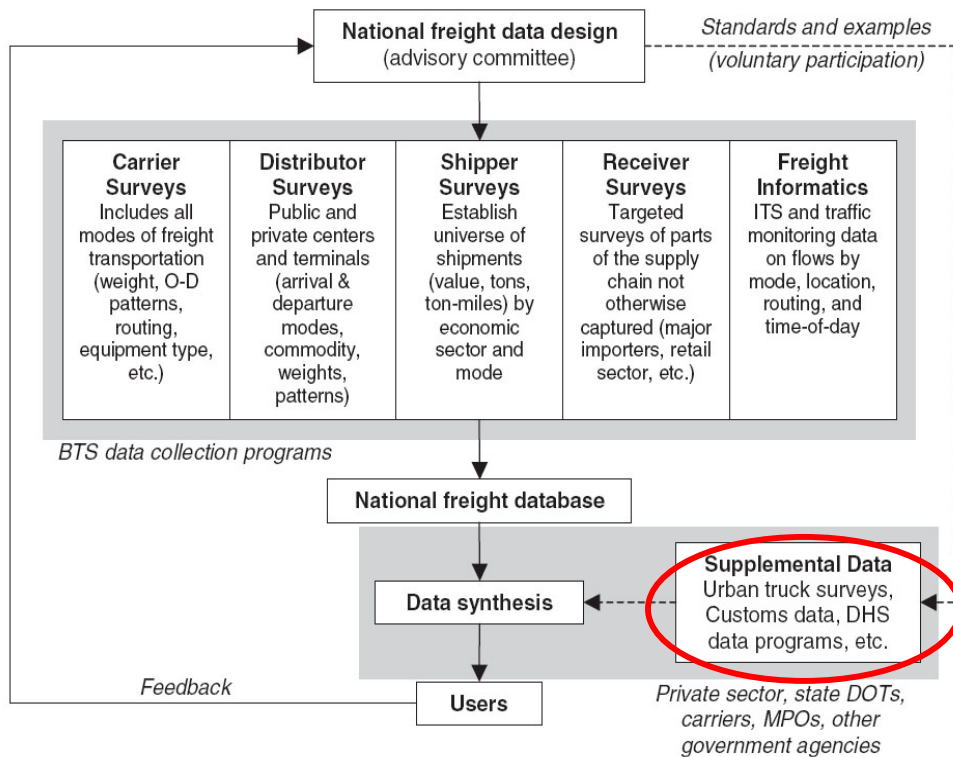
This funded research could be used to address a number of issues now confronting freight data community and could be useful for a number of outstanding needs and the development of various freight data elements.

Metropolitan Transportation Planning

The legislation, in describing the role of MPOs, encourages the inclusion of “mobility needs of ...freight” in their planning process. Specifically, the Scope of the Planning Process includes language to:

- **increase the accessibility and mobility of people and for freight**
- **enhance the integration and connectivity of the transportation system, across and between modes, for people and freight**

To meet these directives, MPOs will need freight data relevant to their geographic influence. If BTS provides standardized methodologies and guidelines for data collection, management and storage, MPO efforts could become a large data collection effort to support a national perspective (see diagram below).

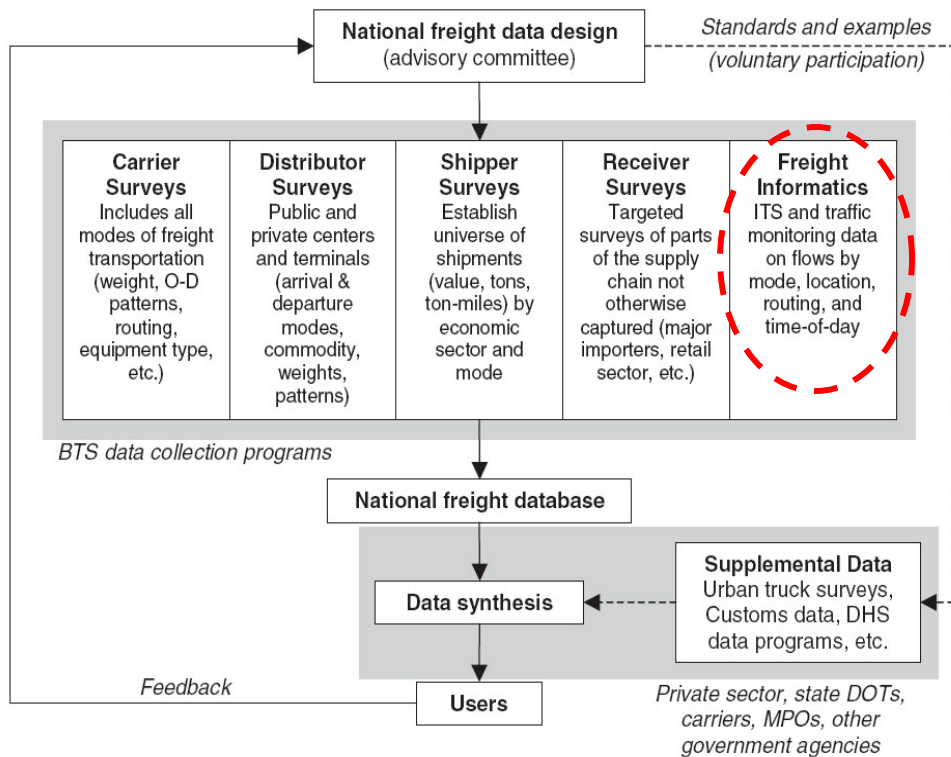


Source: *A Conceptual Framework for a National Freight Data Program: Special Report 276.*

The legislation calls for MPOs to develop of Transportation Plan that is to consider

- Operational and Management Strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods.

MPOs need to obtain data to support travel modeling programs, including demand data and network data. These data need to be able to support traditional static models as well as emerging simulations models. “Just-in-time” deliveries and system reliability (or lack of thereof) are becoming issues and simulation approaches will be required to adequately address them. Emerging models may be designed to model the movement of loads rather than vehicles -- to make it possible to model the movement of a parcel from one vehicle to another, tracing the parcel from origin to destination. MPOs may also need to develop new models which would allow firms to evaluate whether a particular location is a good site for manufacturing, with adequate shipping capacity. In addition to the traditional forms of freight data (i.e., CFS), it may be possible to consider the use of freight informatics (see diagram below) to support the acquisition of freight data, given sufficient research is conducted on ho to capture and transform the data into useable formats.



Source: *A Conceptual Framework for a National Freight Data Program: Special Report 276.*

Office of Intermodalism

The legislation calls for a National Intermodal System Improvement Plan that is to provide:

- *an assessment and forecast of the national intermodal transportation system's impact on mobility, safety, energy consumption, the environment, technology, international trade, economic activity, and quality of life in the United States*
- *an assessment of the operational and economic attributes of each passenger and freight mode of transportation and the optimal role of each mode in the national intermodal transportation system*

Clearly, freight data will be needed to conduct these two requirements.

The legislation also calls for **a description of emerging trends that have an impact on the national intermodal transportation system**

A major project is described that will require the Director and the Director of BTS to develop an Impact Measurement Methodology. They will:

- formulate a methodology for measuring the impact of intermodal transportation on the environment; public health and welfare; energy consumption; the operation and efficiency of the transportation system; congestion, including congestion at the Nation's ports; the economy and employment

This effort will require extensive freight data, particularly the requirement to address congestion at ports.

Coordinated Border Infrastructure Program

The legislation states that on ***October 1 of each fiscal year, the Secretary shall apportion among border States sums authorized to be appropriated to carry out this section for such fiscal year as follows:***

(1) 20 percent in the ratio that –

- (A) the total number of incoming commercial trucks that pass through the land border ports of entry within the boundaries of a border State, as determined by the Secretary, bears to***
- (B) the total number of incoming commercial trucks that pass through such ports of entry within the boundaries of all the border States, as determined by the Secretary***

(3) 25 percent in the ratio that

- (A) the total weight of incoming cargo by commercial trucks that pass through land border ports of entry within the boundaries of a border State, as determined by the Secretary; bears to***
- (B) the total weight of incoming cargo by commercial trucks that pass through such ports of entry within the boundaries of all the border States, as determined by the Secretary***

From the freight data community perspective, who will provide the underlying data for these apportionments? These data would provide control totals for localized transportation planning efforts. These data can be developed as elements of a freight informatics program.

Training and Education

The legislation calls for a new program for Freight Planning Capacity Building. One of the eligible activities for the freight planning capacity building initiative shall include research, training, and education in the following areas:

- ***Refinement of data and analysis tools used in conjunction with assessing freight transportation needs***

The freight data community can benefit from these research efforts.

National Corridor Infrastructure Improvement Program

The legislation calls for the Secretary to consider a number of factors in making allocation decisions. Factor to be included are:

- the extent to which commercial vehicle traffic in the corridor (1) has increased since the date of enactment of the NAFTA; and (2) is projected to increase in the future
- The extent to which international truck-borne commodities move through the corridor
- The reduction in commercial and other travel time through a major freight corridor expected as a result of the project
- The value of the cargo carried by commercial vehicle traffic in the corridor and the economic costs arising from congestion in the corridor.

What will be the role for BTS in providing the necessary freight data? If not BTS – who?

State Transportation Planning

The legislation calls for States to be involved in the coordination with metropolitan planning as part of their own State Implementation Plans. The scope of their planning process requires **each State shall carry out a statewide transportation planning process that provides for consideration and implementation of projects, strategies, and services that will:**

- increase the accessibility and mobility of people and freight
- enhance the integration and connectivity of the transportation system across and between modes throughout the State, for people and freight

Future of Surface Transportation System

The legislation calls for the formation of a new commission responsible for producing a report on the Transportation Needs of 21st Century. Reference is made **for a special emphasis should be devoted to providing safe and efficient access for the type and size of commercial and military vehicles that access designated National Highway System intermodal freight terminals.**

The report is to include information on **the expected use of the surface transportation system, including the effects of changing vehicle types, modes of transportation, fleet size and weights, and traffic volumes.**

The freight data community needs to participate in this effort as many of the factors to be covered in the report are freight-related.

Truck Parking Facilities

The legislation states that the Secretary shall give priority for the allocation of funds based on the demonstration of **a severe shortage of commercial motor vehicle parking capacity in the corridor** and a demonstration that **their proposed projects are likely to have positive effects on highway safety, traffic congestion or air quality**

The essential data pertaining to commercial motor vehicle parking spaces within a corridor could be considered a freight data element.

Freight Intermodal Distribution Pilot Grant Program

The legislation states that the Secretary shall give priority for the allocation of funds to projects that will:

- reduce congestion into and out of international ports located in the United States
- demonstrate ways to increase the likelihood that freight container movements involve freight containers carrying goods
- establish or expand intermodal facilities that encourage the development of inland freight distribution centers

To meet these criteria, the freight data community will need to provide specific data on containers and on intermodal movements.

Idling Reduction Facilities in interstate rights-of-way

Language for this provision...so long as those idling reduction measure do not reduce the existing number of designated truck parking spaces at any given rest or recreational area

Again, data on available truck parking spaces may be considered a new freight data element.

Questions for Discussion

How has the repositioning of BTS impacted the freight data community in the near-term and what are the expectations for the long-term?

Does it make a difference that the freight community is explicitly names in the list of stakeholders?

What are the ramifications of the use of the phrase “national transportation system” with respect to where freight data is to be made available for analysis?

Which SAFETEA-LU provisions mandate federal coordination of everyone else in the freight arena? Which provisions would be aided by such coordination? Has the coordination mission of BTS changed with respect to the Department of Homeland Security?

How will the call for modernization impact current surveying and collection efforts?

Who should be coordinating whom on the standardization of freight analysis, as well as data collection and storage? Who will participate in the review and development of standardization strategies and who will be responsible for the establishment of standardized forms of data?

Can the development of guidelines and standardized surveys increase the value of the mandatory reporting authority to increase sample size if regions invest in “add-on” data collection on behalf of BTS?

What should the mandatory response authority be used on? What else is needed, especially if BTS cannot afford new data collection programs under SAFETEA-LU funding? Can mandatory reporting authority be transmitted to State or local governments or MPOs on behalf of BTS?

What role should previous Transportation Research Board reports play in informing the Commission slated to do the Information Needs Study?

With so few current products or coordination efforts actually supporting freight data, what other avenues are available for advancing collection, storage, and/or analysis? Can freight informatics offer some possible forms of new freight data? What is the role of third party providers of data?