



## I-95 CORRIDOR COALITION PROPOSED PROJECT IDEA

### **Project Title: Development of Base and Future Year Commodity Flow Origin-Destination Tables by Disaggregating FAF2 Commodity Flow Data**

#### **Briefly Describe Your Project Idea (please include a list of any partners):**

##### *Objective*

The objective of this project is to develop ICAT maps showing the origins, destinations, and routes of truck trips in the Coalition region by type of commodity being carried. ICAT currently has estimates of the origins, destinations, and routes of truck trips in the Coalition region, but no information about the commodities carried by those trucks. The FHWA, through its Freight Analysis Framework Two (FAF2) project, has recently released information about freight flows by commodity. However, the FAF2 information aggregates the origins and destinations of the commodities into very large zones (typically there are only two to three large zones in each state). To be useful for planning purposes, the Coalition needs information about the origins and destinations of commodities by smaller zones such as counties or port districts.

This project will disaggregate the FAF2 information, making it possible to generate ICAT maps showing show the origins and destinations of commodities by county (or other zones) and the likely routes of truck trips used to carry the commodities. This will allow the Coalition to understand how the origins, destinations, and volumes of truck trips will change over time as the economy changes and generates demand for movement of different types of commodities. And because different commodities have different commercial values and are used by different industries, the information can also be used to estimate the regional economic impacts of the temporary loss of transportation services, evaluate the effectiveness of highway investments and operations improvements, assess the impact of diversion of commodities from truck-to-rail or rail-to-truck, and estimate the effect of regulatory actions. The project will develop information about current commodity flow patterns and future commodity flow patterns based on economic forecasts.

##### *Technical Approach*

The project will disaggregate FAF2 commodity flow data, producing commodity flow tables that describe the volume of commodities (typically tons by type of commodity) moving between any two counties in the Coalition region. The tonnage can then be converted into the equivalent number of trucks need to carry the commodity and the trucks assigned (in a transportation network model) to the highways connecting the counties. The product is an ICAT map showing the number of trucks on the highways connecting the two counties.

The development of multimodal and multi-commodity freight O-D matrices requires a methodology that is capable of estimating freight production, freight consumption, and freight distribution patterns by mode and commodity simultaneously. Methods have been developed to do this. Methods have also been developed to adjust and validate the estimation results by assigning freight flows on multimodal networks and comparing assigned flows with real-world observations or data obtained from different sources. The proposed project will research and combine available methods in areas of freight production, consumption, and distribution to form an integrated and practical solution to allocate FAF data to a geographic level that is suitable for freight analysis within the I-95 Corridor.

Forecasts of population, employment, and economic development will then be used scale the FAF2 base-year commodity flow matrices (which are based on 2002 national commodity flow survey data) to current and future years. Population, employment, and economic development will be obtained from the

participating state DOTs and MPOs, which maintain these data for routine travel demand modeling. These data can be supplemented, as needed, from standard publicly available Census data.

The forecast multi-modal flow matrices will then be converted to truck trip tables and assigned to the highway network using conventional traffic assignment techniques to estimate the current and future commodity truck flows over the ICAT highway network. The truck flows on individual roadway links can then be used for regional analysis.

This approach will provide a more accurate representation of truck trips for the entire Corridor region, and it will provide detailed information about individual commodity movements on the highway system within the corridor.

### ***Key Work Steps***

- Evaluation of existing data sources and methods for disaggregation of FAF2 origin-destination (O-D) matrices to the ICAT traffic analysis zone (TAZ) level (typically county level);
- Collection of freight data, including but not limited to;
  - FAF2 O-D matrices;
  - Input-Output Accounts Data;
  - TAZ-level socioeconomic data;
- Disaggregation of FAF2 freight flow matrices into ICAT TAZ-level multi-modal O-D matrices;
- Conversion of TAZ-level, multi-modal, commodity flow matrices into truck trip tables that can be assigned to the ICAT network;
- Development of growth factors based on socioeconomic forecasts for each trip table;
- Integration of commodity-based truck trip tables with general-vehicle trip tables developed in Year 14 ICAT project;
- Refinement of assignment procedures in TransCAD;
- Re-validation of base-year assignments;
- Development of GIS-based mapping tool to display freight movements in the Coalition region; and
- Documentation.

### ***Schedule***

The estimated time required for this work is nine (9) months. The prerequisites for this project are the ICAT roadway network and the FHWA FAF2 database, both of which are available and ready for use.

### **Program Relevance:**

**A. Check one or more Strategic Plan strategies related to this project:**

**Yes** Learning and Information Sharing

- Facilitate communication and learning among members and partners
- Conduct forums and provide training on topics of critical importance
- Foster networking in support of sharing experiences and mutual education

- Yes** Information Management
  - Provide easier access to information for system management and operation
  - Provide a source of long-distance travel information that will be disseminated to the traveling public
  - Provide a source of information to support future investment decisions of the Coalition and its member agencies

- Yes** Facilitate Deployments across Jurisdictions and Modes
  - Promote multimodal and intermodal coordination
  - Encourage interoperability among jurisdictions
  - Foster adoptions of standards and procedures that promote deployment
  - Coordinate information exchange to enhance the speed of deployment and seamless operations

**B. Check any relevant Program Tracks:**

- |                          |                                 |                          |                    |
|--------------------------|---------------------------------|--------------------------|--------------------|
| <input type="checkbox"/> | Agency Support                  | <b><u>Yes</u></b>        | Intermodal         |
| <input type="checkbox"/> | Traveler Information            | <input type="checkbox"/> | Electronic Payment |
| <input type="checkbox"/> | Coordinated Incident Management | <input type="checkbox"/> | Coalition Support  |
| <input type="checkbox"/> | CVO                             | <b><u>Yes</u></b>        | Emerging Issues    |

**C. Provide a brief summary of the importance of this project to the Coalition:**

ICAT currently has the capability of mapping truck flows by trip origin, destination, and like route. ICAT does not have information to differentiate truck flows by type of commodity being carried. This information is needed to estimate changes in truck flows caused by economic growth and to estimate the economic benefits and costs of member agency highway improvement, operations programs, etc.

**Budget:** \$100,000 total project costs.  
 \$100,000 in Coalition funds.

Please provide information below regarding other funding sources available/required including: agency, private, or other federal funds.

**FHWA  
Match  
Requirement:**

**A. Check which best describes the “type” of project. (See Appendix A for details.):**

Deployment and/or Integration of ITS infrastructure Components (Complete section B below)

or

General Support Activity including administrative activities, training, studies, etc. (Complete section C below)