SHRP2 C20: Freight Demand Modeling and Data Improvement Strategic Plan

Implementation Plan

Vidya Mysore
January 13, 2015
SHRP2 C20 Implementation:
Purpose

Freight data & analytical tools and its necessity

- Decision-makers recognize that transportation investments are being informed by an understanding of the implications, benefits, and trade-offs relative to freight.

Today - “ECONOMY drove Freight transportation need”

Vision for tomorrow –

“Freight transportation drives the ECONOMY”
Background: Logistics and Freight Models

- Freight transport demand is a derived demand
- Good representation of logistics in freight demand models allows better prediction of future flows
- More representative freight flows → Better cost estimates

Figure 1. Evolution of logistics networks through time. The dark dots (top, left) indicate suppliers, the light ones (right, bottom) indicate consumers, and the black triangles warehouses and cross-dock locations.

Implementation Plan:

• Implementation Assistance Program
• National Initiatives
Implementation Assistance Program (IAP) Purpose:

To foster fresh ideas and new approaches to freight demand modeling and data collection that ultimately enhance decision-making.
C20: Implementation Assistance Program

Innovations in Local Freight Data Pilot Assistance Program
- Identify and adapt disparate sources of data
- Refine current data sources
- Develop new data sources on smaller geographic scales

Behavior-Based Freight Modeling Pilot Assistance Program
- Advance ‘tour-based’ and ‘supply chain’ freight modeling
- Improve the understanding of decision-making by freight agents and their implications for network modeling
Recipient: Portland Metro
State: Oregon
Pilot Type: Behavior-based Model

- Improve the freight model's range of responses to network conditions and costs
- Focuses to support metro freight transportation programs in combinations with statewide/national freight demand forecasts.
Recipient: Maricopa Association of Governments  
State: Arizona  
Pilot Type: Behavior-based Model  

- Multi-modal freight model to understand economic behaviors of establishments, shippers, and carriers by modeling travel and tour formations  
- Geographic setting is a freight gateway and mega region
**IAP Projects**

**Recipient:** Wisconsin DOT  
**State:** Wisconsin  
**Pilot Type:** Behavior-based Model

- Hybridized model that integrates statewide model with regional travel demand models
- Allows for sensitivity testing to quantify how different scenarios affect freight transportation in the region
IAP Projects

Recipient: Maryland State Highway Administration and Baltimore Metropolitan Council
State: Maryland
Pilot Type: Behavior-based Model

- Regional tour-based truck model covering intra-local distribution
- Sensitive to the long-distance truck flows represented in the statewide freight model
IAP Projects

Recipient: Capital District Transportation Committee
State: New York
Pilot Type: Local Data

- Creates a unified data set for the region at the zip code or transportation analysis zone (TAZ) level
- Uses from data developed in the project:
  - Mitigating impacts of trucks
  - Determining the impact of freight on quality of life
  - Improving safety and security
  - Prioritizing investments
  - Performance measurement
Recipient: Delaware Valley Regional Planning Commission
State: Pennsylvania
Pilot Type: Local Data

- Integrates freight data, including distribution supply chains and for performance management
- Interactive mapping application with potential to be replicated elsewhere
Recipient: City of Winston-Salem
State: North Carolina
Pilot Type: Local Data

- Collecting freight carrier establishment survey data to support development of an advanced Piedmont Triad regional freight model
- Establishing strong regional partnerships with the private sector, specifically with freight transportation business establishments.
Recipient: Florida DOT
State: Florida
Pilot Type: Local Data

- Investigating new technology for data collection
- Data will represent the supply and demand chain for petroleum commodities distributed throughout South Florida
Recipient: Mid-America Regional Council
State: Missouri
Pilot Type: Local Data

- Using a combination of existing data and new sources of commercial waybill data
- Demonstrates the impacts to the cost of freight movement
Recipient: South Dakota DOT
State: South Dakota
Pilot Type: Local Data

- Focuses on an important industry in the region
- Will improve the understanding of the linkage between agriculture growth, origin and freight movement
Recipient: Washington State DOT  
State: Washington  
Pilot Type: Local data

- Collecting information from industry and local urban truck volume data for the State's food distribution, and wheat commodity supply chain logistics impacts on state transportation systems.

- Data will assist in modeling behavioral responses to different State policy scenarios.
Freight Demand Modeling and Data Improvement

National Initiatives:

By 2020, a vision for improved freight modeling and data will be characterized as follows:

- Robust freight forecasting tools have been developed and are the standard for public sector freight transportation planning.
- These tools and data are dynamic in terms of linking with other key variables such as development and land use, and are dynamic in terms of application to local scale, corridors, or regions.
- The knowledge and skills of DOT and MPO staff have been methodically enhanced to complement the development of better tools and data.
C20 National Initiatives

- Freight Modeling and Data Expert Task Group
- Freight Data and Modeling/Tool Innovation Regional Workshops
- Promote Advanced Research activities
- FMIP Portal – ‘Freight Information Place’

- Collaboration, Knowledge Sharing and Outreach
  - Practitioner Handbook
  - Project Case Studies
  - Briefings
  - Peer Exchanges
  - Cross-agency trainings
  - Conferences and presentations
  - Executive training
  - Champion outreach

- Additional Strategic Plan Objectives Development
Regional Workshop Locations: Freight connected places - Megaregion!

C20 Implementation Plan

Interaction and Collaboration

National Initiatives
- Expert Working Group
- Freight Data and Modeling/Tool Innovation Regional Workshops
- Freight Analytics Community

IAP Projects
- Behavior-based Modeling Projects
- Innovations in Local Data Projects

Reporting and Documentation
- Case studies
- Evaluation
- Self-assessment Tool
C20 Implementation Plan

National Initiatives
- Expert Task Group
- Freight Data and Modeling/Tool Innovation Workshops
- Freight Analytics Community

IAP Projects
- Behavior-based Modeling Projects
- Innovations in Local Data Projects

Reporting and Documentation

Stakeholder Involvement
C20 Implementation Roadmap

2014  2015  2016  2017  2018

- **IAP Projects and Case Studies**
- **Expert Task Group**
- **Regional Workshops**  **Address Gaps**

- **2014**
- **2015**
- **2016**
- **2017**
- **2018**
<table>
<thead>
<tr>
<th>Organization</th>
<th>Name</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHWA</td>
<td>Ed Strocko</td>
<td>202-366-2997</td>
<td><a href="mailto:ed.strocko@dot.gov">ed.strocko@dot.gov</a></td>
</tr>
<tr>
<td></td>
<td>Vidya Mysore</td>
<td>404-562-3929</td>
<td><a href="mailto:vidya.mysore@dot.gov">vidya.mysore@dot.gov</a></td>
</tr>
<tr>
<td>AASHTO</td>
<td>Matt Hardy</td>
<td>202-624-3625</td>
<td><a href="mailto:mhardy@aashto.org">mhardy@aashto.org</a></td>
</tr>
<tr>
<td>TRB</td>
<td>David Plazak</td>
<td>202-334-1834</td>
<td><a href="mailto:dplazak@nas.edu">dplazak@nas.edu</a></td>
</tr>
</tbody>
</table>
Questions?