

Advancing Freight Fluidity Measures

Implementation Options

presented to

Transportation Research Board

presented by

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Freight Performance Monitoring System (FPMS)

Economy/ Markets

- **Freight Analysis Framework (FAF)**
*Economic output and growth by industry and region;
commodity flows between regions by mode*

Logistics/ Operations

- **Supply Chain Performance Monitoring System (SCPMS)**
*Travel time, travel-time reliability, and cost of
representative supply chain freight trips*

Networks/ Flows and Infrastructure

- **Highway Performance Monitoring System (HPMS)**
Condition and performance of the freight highway network
- **National Performance Measurement Research Data Set (NPMRDS)**
Vehicle speeds and travel times over the freight highway network
- **Rail Carload Waybill Sample (CWS)**
Volume of freight flows over the freight rail network

Potential Markets for Freight Fluidity Information

- Agencies and firms focused on **international import/export** transportation supply chain performance
- Agencies and firms focused on **domestic and North American** (NAFTA) transportation supply chain performance
- Agencies and firms focused on **local and regional** transportation supply chain performance

Potential Users and Scale of Application of Supply Chain Performance Measures

| | Global | NAFTA | US | Mega-Region | State | Metro |
|--------------|--------|-------|----|-------------|-------|-------|
| USDOC | B | A | A | A | C | C |
| USDA | B | A | A | A | C | C |
| Private Firm | A | A | A | A | A | A |
| FHWA | C | A | A | A | B | B |
| Coalition | C | B* | B | A | A | A |
| State DOT | C | C* | B | A | A | A |
| MPO | C | C* | C | B | A | A |

A = primary interest, B = secondary interest, C = tertiary interest

** Maybe A if on major border crossing/trade lane*

Data Available About Supply Chain Performance

- **Travel time, travel-time reliability and cost**
 - » **Domestic truck, rail and barge**
 - Available, accessible and affordable
- **Travel time, travel-time reliability and cost**
 - » **Ports**
 - Available, but not readily accessible
- **Safety and risk**
 - » **Domestic supply chains**
 - Available, but generally not accessible

Availability and Cost of Supply Chain Performance Measures

| | Travel/ Dwell Time | Travel- Time Reliability | Cost | Safety | Risk |
|-------|--------------------------|--------------------------------|-----------|-------------|--------------|
| Truck | A \$ | A \$ | B \$\$ | B \$\$\$ | B \$\$\$ |
| Rail | A \$\$ | A \$\$ | B \$\$ | B ? | C \$\$\$ |
| Barge | A \$\$ | B \$\$ | B ? | C ? | C \$\$\$ |
| Port | B \$\$ | B \$\$ | B \$\$ | C ? | C \$\$\$ |
| Ship | B \$ | B \$ | B \$\$ | C? \$ | C? \$\$\$ |

A = readily available, B = somewhat available, C = less available

Priorities for Implementation

- **National/North American** supply chain performance
- **Megaregion/metropolitan** supply chain performance
- **Global** supply chain performance

Implementation Options

- **Federal program lead**, focusing on measuring supply chain performance and network fluidity at the national and megaregion scales with subsequent expansion to support a North American system
- **State and local lead**, focusing initially on supply chain performance and network fluidity at the metropolitan-, state- and freight-corridor levels with subsequent expansion to the megaregion and national scales
- **Private sector lead**, focusing on supply chain performance at the national and megaregion levels and serving public sector clients at these or other scales as demand warrants

Implementation Options

| | | FEDERAL LEAD | | STATE AND LOCAL LEAD | | PRIVATE SECTOR LEAD | |
|----------------------------|----------------------------------|---|---|---|--|---|-----------------------------|
| | | Initial Phase | Subsequent Phases | Initial Phase | Subsequent Phases | Initial Phase | Subsequent Phases |
| Market/ Mandate | What, When, Where | Track performance at the national and megaregion scales. Cover two dozen representative industries and supply chains. Report quarterly or annually. | Add regional and state coverage through grants or on-going planning funds to regional coalitions, states and MPOs. Add major North American trade routes and corridors. | Track performance at regional/metro scales. Cover a dozen representative industries and supply chains in each of six mega-regions (out of ~12 regions?), so potentially upwards of 70-80 supply chains. Report quarterly or annually. | Add additional megaregion coverage. Add national coverage. | Track performance as requested by clients. Assume 1/2 of sales to federal clients, 1/4 to regional and metro clients and 1/4 to private clients. Report cycles range from weekly to annual. | Expands with market demand. |
| | Why | Inform federal policy and investment priorities in freight transportation. Meet MAP-21 mandates. | | Inform state and local policy and investment priorities in freight transportation. Support local economic development. | | Provide profitable data service to public and private sector clients. | |

Implementation Options *(continued)*

| | | | | | | |
|---------------------|-------------------------------------|--|--|---|---------------------------------|--|
| Organization | By Whom | FHWA Freight Office | Migrate to BTS? Establish research program within TRB (SHRP X?) to develop methods, etc.? | Multistate coalitions and state DOT planning/freight offices in the larger state DOTs. | Leverage regional UTC programs? | One or more private firms. |
| | How <i>(process)</i> | FHWA direction; contracted data collection, interview and processing services. | | Contracted data collection, interview and processing services. FHWA liaison to coordinate programs. | | Own or subcontracted data collection, interview and processing capabilities. |
| Resources | How Much <i>(funding)</i> | \$__M/year (comparable to FAF program?) | | \$__M/year | | \$__M/year |
| | Staff and Skills | 2-3 responsible for management, procurement and dissemination. | | 1-2 per coalition or state responsible for management, procurement and dissemination. | | 5-8 responsible for management, procurement and dissemination. |
| | Technology | Data storage and web-based dissemination to stakeholders | | Data storage and web-based dissemination to stakeholders | | Data storage and web-based dissemination to clients. |

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