Overview

• **Project Goal**
  – Replaces 2001 Truck Model in BMC Travel Demand Model with multimodal Freight Modeling System (FMS)
  – Used SHRP2 C20 grant and a consultant (RSG) to create a freight modeling system using existing data sources, several existing freight modeling components and a new commercial vehicle model

• **Project Status**
  – Working model delivered in August 2018
  – MDOT SHA conducting validation on FMS
  – BMC working on integration of FMS with InSITE
  – Seeking feedback and application suggestions from locals
Model Inputs

• **Business Data**
  – Establishment Survey: 2003 Ohio Statewide General Establishment Survey
  – Logistics Nodes: Intermodal facilities, warehouses and distribution center locations / Leonard’s Guide, Bureau of Transportation Statistics (BTS), Center for Transportation Analysis (CTA) & Maryland county planning departments
  – Employment: Longitudinal Employer-Household Dynamics (LEHD) / US Census

• **Freight Data**

• **Modal Data**
  – Truck - Traffic Counts: SHA, MdTA & BMC
  – Truck - GPS: American Transportation Research Institute (ATRI)
  – Port: 2012 State and Port Cargo Movement Data / US Army Corps of Engineers
  – Air: 2012 Air Freight Data (T100) / BTS
Model Inputs
Model Outputs

Figure 1a: Freight Modeling System 2012 Daily Heavy Truck Volume

Figure 1b: Freight Modeling System 2040 Daily Heavy Truck Volume
FMS Dashboard – 2012

About this Document

This document is stand-alone interactive dashboard viewable from most modern internet browsers. The dashboard is meant to be a high-level summary of an rFreight scenario. All of the data, charts, and maps viewable in this dashboard are embedded directly into the HTML file, so users are encouraged to share their scenario results with others via this document. An internet connection is necessary for the best user experience, but is not required.

Users may navigate to different areas of the dashboard using the navigation bar at the top of the page and may interact directly with most tables, charts, and maps.

This document is best viewed using the most recent versions of the following web browsers:

- Google Chrome
- Microsoft Edge (Must be running Windows 10)

2018-03-07
Model Run Date

50.8
Model Runtime (mins)

60,146
Synthesized Firms

16,441
Freight Shipments

27,642
Freight Truck Tours

62,637
Commercial Vehicle Tours

167,016
Total Stops

15,049
Intermediate Stops
# FMS Dashboard – 2040

**BMC Freight Model: 2040 Scenario Summary, Region Report**

**About this Document**

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## Key Metrics

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<tr>
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<td>Freight Shipments</td>
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<td>Commercial Vehicle Tours</td>
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<td>Total Stops</td>
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<td>Intermediate Stops</td>
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**BMC Region and Traffic Analysis Zone (TAZ) System**

For full details, visit the [BMC Freight Model: 2040 Scenario Summary, Region Report](#).
Commercial Vehicle Tours – 2012

62,637
Commercial Vehicle Tours

139,442
Total Stops

34,661
Goods Deliveries

63,174
Service Stops

29,090
Meeting Stops

12,517
Intermediate Stops
Commercial Vehicle Tours – 2040

84,256
Commercial Vehicle Tours

194,200
Total Stops

51,072
Goods Deliveries

85,165
Service Stops

41,231
Meeting Stops

16,732
Intermediate Stops
Freight Shipments – 2012

- **62,084** Daily Shipments
- **10,226** Internal-to-Internal (II)
- **19,047** External-to-External (XI)
- **19,883** External-to-External (XX)
- **47,640** Domestic
- **3,004** Exports (EX)
- **11,440** Imports

**Movement Type and Mode**

- **Mode**: Air, Multiple modes, Rail, Truck, Water

**Shipment Size**

<table>
<thead>
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<tr>
<td>Less than 50 lbs</td>
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<tr>
<td>50 - 99 lbs</td>
<td>10,000 - 49,999 lbs</td>
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<tr>
<td>100 - 499 lbs</td>
<td>500 - 749 lbs</td>
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<td>500 - 749 lbs</td>
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<tr>
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<td>10,000 - 49,999 lbs</td>
<td>15,000 - 20,000 lbs</td>
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<tr>
<td>20,000 lbs or more</td>
<td>0</td>
</tr>
</tbody>
</table>

**Commodity and Movement Type**

- Shipments by Origin County
- Shipments by Destination County

**Movement Type and Production/Consumption**

- **ProCon**: Consume, Produce, Transfer

**Shipments Size by Movement Type**

- **Howard County, MD**
- **Harford County, MD**
- **Carroll County, MD**
- **Orange County**
- **Baltimore County, MD**
- **Baltimore city, MD**
- **Anne Arundel County, MD**

**Note**: Mode refers to the mode or the combinations of modes of the full shipment route.

**Note**: Internal-to-Internal shipments are counted as both production and consumption for the model region.
Freight Shipments – 2040

- **Daily Shipments**: 91,776
- **Internal-to-Internal (II)**: 14,520
- **Internal-to-External (IX)**: 14,572
- **External-to-External (XI)**: 30,655
- **Domestic**: 61,633
- **Exports (EIX)**: 6,271
- **Imports**: 23,872

**Movement Type and Mode**

- **Shipment Size**
  - 100,000 lbs or more
  - 50,000 - 99,999 lbs
  - 10,000 - 49,999 lbs
  - 5,000 - 9,999 lbs
  - 1,000 - 4,999 lbs
  - 500 - 749 lbs
  - 100 - 499 lbs
  - 50 - 99 lbs
  - Less than 50 lbs

**Movement Type and Production/Consumption**

- **Shipment Size by Movement Type**

Note: "Mode" refers to the mode or the combinations of modes of the full shipment route.

Note: Internal-to-Internal shipments are counted as both production and consumption for the model region.
Freight Modeling System:
Destination of Daily Freight Truck Trips
by BMC TAZ
2012

Legend
Daily Freight Truck Trip Destinations
- 1 - 50 Trips
- 50 - 100
- 100 - 250
- 250 - 500
- 500 - 1,000
- 1,000 - 2,613 (max.)
- No Trips

Baltimore Metropolitan Council, March 2018
Implementation

- **Passenger Model / Freight Modeling System Integration**
  - Replace 2001 Truck Model in BMC Travel Demand Model with 2018 Freight Modeling System

- **Validation/Scenario Testing**
  - Continue testing and comparing to 2001 Truck Model outputs
  - Develop a traffic count collection plan
  - Develop scenarios to test the 2018 Freight Modeling System including:
    - Truck restrictions in East Baltimore (April 2019)
    - Port of Baltimore expansion (future)
    - FAF high, medium and low (future)
For More Information

Brian W. Ryder | Transportation Planner
410-732-0500 x1054 | bryder@baltometro.org | www.baltometro.org