GO TO 2040
GO TO 2040 CAPITAL PROJECTS

- RAPID TRANSIT
- COMMUTER RAIL
- MULTIMODAL CORRIDOR
- NEW OR IMPROVED HIGHWAY
- EXISTING TRANSIT
- EXISTING HIGHWAY
Livable Communities
Human Capital
RECOMMENDATION

Support economic innovation
RECOMMENDED ACTIONS

IMPROVE
Data and Information Systems

NURTURE
Regional Industry Clusters
Efficient Governance
Regional Mobility
RECOMMENDATION

Invest strategically in transportation
RECOMMENDATION

11 Increase commitment to public transit
Create a more efficient freight network
Core Freight Planning Principles

Source: Cambridge Systematics
Freight System Elements

- **Economy**
  - Type of Businesses, Number of Households

- **Industry Logistics Patterns**
  - Supply Chains, Distribution Networks

- **Freight Infrastructure**
  - Highways, Rail Lines, Ports, Airports...

- **Commodity/Vehicle Traffic Flows**
  - Trucks, Planes, Rail Cars, Ships...

**Environment and Community Impacts**

Organization and Public Policy
- Ownership, Regulation, Pricing...

Source: Cambridge Systematics, CMAP
RECOMMENDED ACTIONS

COMPLETE
CREATE

IMPLEMENT
A National Vision

CREATE A MORE EFFICIENT FREIGHT NETWORK
RECOMMENDED ACTIONS

IMPROVE
The Truck System

ESTABLISH
A Regional Freight Authority

CREATE A MORE EFFICIENT FREIGHT NETWORK
Recent Work: Freight Cluster Drill-Down

OUTLINE

(a) Metropolitan Chicago’s Freight Cluster

(b) International and National Developments in Freight

(c) Challenges and Opportunities: Infrastructure, Innovation and Workforce

(d) Case Studies of Existing Cluster Support Strategies

(e) Moving Forward: Priority Areas to Strengthen the Cluster
Metropolitan Chicago’s Freight Cluster

Composed of 42 six-digit NAICS industries. Divided into:

- **Core industries** that drive economic activity
- **Supply industries** that provide the core with production or other value-added inputs
- **Support industries** that offer maintenance and infrastructure
- **Customer industries** who purchase goods or services from the core
Freight employment often concentrates along key corridors, in close proximity to airports, intermodal facilities and container yards. Major employment centers include:

- Southside of Chicago
- O’Hare and northeastern DuPage County
- Southern Cook County
- An emerging concentration in southwest Will County
## Freight Industry Employment, 2000 – 2010

### Transportation and Warehousing Employment (000s) by County, 2000-2010

<table>
<thead>
<tr>
<th>County</th>
<th>2000</th>
<th>2005</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook</td>
<td>122</td>
<td>115</td>
<td>113</td>
<td>103</td>
<td>101</td>
</tr>
<tr>
<td>DuPage</td>
<td>28</td>
<td>24</td>
<td>28</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Kane</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Kendall</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Lake</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>McHenry</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Will</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>163</td>
<td>159</td>
<td>166</td>
<td>152</td>
<td>149</td>
</tr>
</tbody>
</table>

Source: County Business Patterns. [http://censtats.census.gov/cgi-bin/cbnpac/cbpdetl.pl](http://censtats.census.gov/cgi-bin/cbnpac/cbpdetl.pl)
### Freight-Related Employment, Selected Industries, 2000-2010

#### Manufacturing Employment (000s) by Area, 2000-2010

<table>
<thead>
<tr>
<th>Area</th>
<th>2000</th>
<th>2005</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook County</td>
<td>341</td>
<td>246</td>
<td>223</td>
<td>193</td>
<td>179</td>
</tr>
<tr>
<td>7-County Region</td>
<td>560</td>
<td>432</td>
<td>412</td>
<td>360</td>
<td>336</td>
</tr>
</tbody>
</table>

Note: Manufacturing is outside the Freight Cluster.

#### Wholesale Trade Employment (000s) by Area, 2000-2010

<table>
<thead>
<tr>
<th>Area</th>
<th>2000</th>
<th>2005</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook County</td>
<td>156</td>
<td>129</td>
<td>116</td>
<td>113</td>
<td>111</td>
</tr>
<tr>
<td>7-County Region</td>
<td>270</td>
<td>254</td>
<td>248</td>
<td>239</td>
<td>233</td>
</tr>
</tbody>
</table>

Source: County Business Patterns. [http://censtats.census.gov/cgi-bin/cbpnaic/cbpdetl.pl](http://censtats.census.gov/cgi-bin/cbpnaic/cbpdetl.pl)
Characteristics of Freight Cluster

**Core Industries**

Circle size indicates number of jobs per industry

- TRUCKING
- RAIL
- AIR
- WATER

Location Quotient

- 11,470
- 908
- 61,430
- 1,078

Employment Growth, 2001-11

**Supply Industries**

Circle size indicates number of jobs per industry

- PALLET, BOX INPUT MANUFACTURING
- TRANSPORTATION MACHINERY MANUFACTURING
- WAREHOUSING
- TRANSPORTATION LEASING
- LOGISTICS AND DISTRIBUTION CONSULTING
- PACKAGING AND LABELING

Location Quotient

- 3.0

Employment Growth, 2001-11
Characteristics of Freight Cluster

Support Industries

Circle size indicates number of jobs per industry
- **HIGHWAY, STREET, BRIDGE CONSTRUCTION**
- **AIRPORT OPERATIONS**
- **ROAD SUPPORT**
- **RAIL SUPPORT**
- **AIR SUPPORT**
- **WATER SUPPORT**

Customer Industries

Circle size indicates number of jobs per industry
- **FREIGHT TRANSPORTATION**
- **MAIL-ORDER HOUSES**
- **WHOLESALE TRADE AGENTS AND BROKERS**
- **COURIERS**

LOCATION QUOTIENT

- 3.5
- 3.0
- 2.5
- 2.0
- 1.5
- 1.0
- 0.5
- 0.0

EMPLOYMENT GROWTH, 2001-11

- -50%
- -25%
- 0%
- 25%
- 50%
- 100%
Why should the region care about the freight cluster?

The prosperity of the overall economy mirrors the health of the freight cluster.

- Over ¼ of all jobs in the state are in industries directly tied to freight.
- The expansion or contraction of freight industries impacts areas such as:
  - SUPPORT
  - CUSTOMER
  - CORE
  - OUTSIDE CLUSTER
  - SHIPPERS
  - WHOLESALE AGENTS
  - FREIGHT TRANSPORTATION ARRANGEMENT
  - COURIERS
  - MAIL ORDER HOUSES
  - WATER
  - TRUCK
  - AIR
  - TRANSPORTATION EQUIPMENT MANUFACTURING
  - TRANSPORTATION EQUIPMENT LEASING
  - PALLET MANUFACTURING
  - LOGISTICS CONSULTING
  - WAREHOUSING
  - PACKAGING
Comparative Advantages of Cluster

- **Trucking**: Most major U.S. metro areas are less specialized in trucking. In contrast, the Chicago region added 7500 general trucking jobs the last decade.

- **Rail**: The region handles 50 percent of all rail movement in the county.

- **Logistics**: Freight Transportation Arrangement is one of the fastest growing industries in the cluster.

- Regional strengths in smaller industries such as air freight, equipment leasing, and rail support bolster the larger comparative advantages of the cluster.
Comparative Advantages of Cluster
Major developments and trends

Economic growth and supply chain innovations

- Growth in exports
- Near sourcing
- Just-in-time production

International infrastructure investments

- Canal expansions
- Prince Rupert, BC

Domestic infrastructure investments

- Heartland Corridor
- National Gateway

Domestic competition

- Memphis
- Kansas City
- North Baltimore, OH (CSX)
Challenges and opportunities

Infrastructur  Innovation  Workforc

How will the needs of the cluster change?
Challenges and opportunities: 
Innovation

Supply Chain Management  
Terminal and Carrier efficiencies  
Greening the Freight Cluster

Innovation is rapidly changing the needs and operations of businesses within the cluster
Innovation is key for sustained economic growth

Past innovations in freight have fueled productivity gains

For example, in the past 30 years the rail industry has:
- Decreased maintenance expense per ton-mile by half
- Increased pound load limits by 20%
- Introduced double-stack container trains

Industry clusters spur innovation

While detailed data about freight innovation are lacking,
- By patent output the region is the 4th most important in railway transportation and 2nd most in logistic-related activities
- The region is home to innovators such as
Challenges and opportunities: Preparing a Workforce for an Innovating Cluster

On-the-job Training

Preparing and Attracting Workers

Upgrading Skills

Retaining Workers

Freight Cluster Drill-Down
Preparing a workforce for a dynamic cluster

- Challenges
  Innovations are creating a skills mismatch
  *Retaining workers:* Trucking
  Need soft-skills training
  *Attracting workers:* Highly skilled

- Opportunities
  Cluster growth means more job opportunities
  *On-the-job Training workers:* Upgrade skills
  Private and Public sector partnerships
Challenges and opportunities: Infrastructure

- System congestion
  - Well studied
  - Region is amongst most congested in nation

- Land use
  - Freight activities very land intensive
  - Freight-related land use designation not keeping pace

- Impacts of congestion and land use challenges
  - Overcapacity
  - Fragmentation
Infrastructure and land use challenges undermine key drivers of profitability: **intermodal connectivity** and **just-in-time processes**

**Opportunities** to overcome these challenges include:

- Utilization of region’s superior **multimodal system**
- Promoting existing infrastructure investments identified in **regional comprehensive plan**
- Build on recent interest to augment **freight support**
- Emphasize regional planning to preserve **freight corridors**
- Expand scope of cluster to build on strengths of tri-state **mega-region**
# Chicago Region Freight Movements By the Numbers

<table>
<thead>
<tr>
<th>Regional Freight Movements</th>
<th>Air</th>
<th>Rail</th>
<th>Truck</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (K tons)</td>
<td>847</td>
<td>631,175</td>
<td>736,158</td>
<td>72,976</td>
</tr>
<tr>
<td>Value ($ Millions)</td>
<td>8,165</td>
<td>917,524</td>
<td>2,820,214</td>
<td>15,387</td>
</tr>
<tr>
<td>$/ton</td>
<td>9,640</td>
<td>1,450</td>
<td>3,830</td>
<td>1,160</td>
</tr>
</tbody>
</table>

Source: CMAP analysis of Transearch database for Chicago Bureau of Economic Analysis area. For year 2007
Chicago Region Freight Movements
By the Numbers

Percent of regional freight volume by trip type

- **INBOUND TRAFFIC**
  - WATER: 33%
  - AIR: 3%
  - TRUCK: 39%
  - RAIL: 15%

- **OUTBOUND TRAFFIC**
  - WATER: 27%
  - AIR: 48%
  - TRUCK: 17%
  - RAIL: 29%

- **LOCAL TRAFFIC**
  - WATER: 3%
  - AIR: 3%
  - TRUCK: 17%
  - RAIL: 2%

- **THROUGH TRAFFIC**
  - WATER: 0.3%
  - AIR: 49%
  - TRUCK: 19%
  - RAIL: 19%

Source: Transearch database for year 2007. Estimates are for CMAP 7 county area.
## Facilities & Volumes

### Total Cargo Tonnages for Chicago Airports by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>O’Hare</th>
<th>Midway</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1,436,386</td>
<td>83,472</td>
</tr>
<tr>
<td>2003</td>
<td>1,601,736</td>
<td>25,847</td>
</tr>
<tr>
<td>2004</td>
<td>1,685,808</td>
<td>29,048</td>
</tr>
<tr>
<td>2005</td>
<td>1,701,446</td>
<td>19,460</td>
</tr>
<tr>
<td>2006</td>
<td>1,718,011</td>
<td>17,060</td>
</tr>
<tr>
<td>2007</td>
<td>1,690,742</td>
<td>14,727</td>
</tr>
<tr>
<td>2008</td>
<td>1,480,847</td>
<td>14,254</td>
</tr>
<tr>
<td>2009</td>
<td>1,198,426</td>
<td>25,010</td>
</tr>
<tr>
<td>2010</td>
<td>1,577,048</td>
<td>28,228</td>
</tr>
<tr>
<td>2011</td>
<td>1,505,218</td>
<td>26,091</td>
</tr>
</tbody>
</table>
2010 Tonnages for Locks in Metropolitan Chicago

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>TOTAL TONNAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHICAGO HARBOR</td>
<td>102,105</td>
</tr>
<tr>
<td>THOMAS O’BRIEN (CALUMET RIVER)</td>
<td>5,131,780</td>
</tr>
<tr>
<td>LOCKPORT (CHICAGO SANITARY AND SHIP CANAL)</td>
<td>9,844,388</td>
</tr>
<tr>
<td>BRANDON ROAD (DES PLAINES RIVER, JOLIET)</td>
<td>10,010,190</td>
</tr>
<tr>
<td>DRESDEN ISLAND (ILLINOIS RIVER, CHANNAHON)</td>
<td>12,727,367</td>
</tr>
</tbody>
</table>

Source: USACE
Facilities & Volumes

Abandonments and Out-of-Service Lines, 2011

Rail industry continues to consolidate lines, focusing on modernization and productivity.
Facilities & Volumes

Intermodal Facilities, 2011

Rail industry continues to consolidate terminals, focusing on modernization and productivity.

Facilities and Volumes: Intermodal Terminals

- Intermodal terminal lifts, 2000: 5,970,769
- Intermodal terminal lifts, 2010: 6,698,607
  Includes Global III, Rochelle
- Estimated Twenty-Foot Equivalent Units: 12,813,615
  - 2.23 TEUs per container for US RRs
  - 1.75 TEUs per container for Canadian RRs
  - 87.95% of Containers Are Laden with Goods

- If Chicago were a seaport, its TEU ranking would have been 8th, behind Singapore, four Chinese ports, Busan, South Korea and Los Angeles + Long Beach.
Facilities & Volumes

Estimated **Freight Trains per Day, 2011**

Rail industry continues to consolidate lines, focusing on modernization and productivity.
Facilities & Volumes


Passenger and freight system conflicts continue.
Freight Forecasts

Freight Tonnage by Mode 2007-2040

Source: IHS Global Insight, TRANSEARCH Database (Excludes Retail Distribution)
Freight Flow Forecasts
Congestion costs the region

- Region is home to the most congested exchange in the nation (I-290 at I-90/I-94)
- $3.3 billion annual cost of truck congestion highest in nation (overall cost of congestion to region is $7.3 billion)

Lost fuel and time

Undermines just-in-time processes

Top concerns of freight shippers

Source: Vickerman, 2012
Addressing Congestion

Operations initiatives under way:

Improving Truck Route System

Increasing the percent of trucks traveling off-peak (6-9 am and 4-7 pm, currently about 71% on the Illinois Tollway, and 62% on regional arterials for multi-unit trucks).
Addressing Congestion

- How to reduce motorist-train conflicts at highway-rail grade crossings
  - Consolidate and improve crossings
  - Separate crossings where train/auto conflicts arise from proximity to yards, arterial traffic volumes, etc.
  - Speed up trains through CREATE Program improvements
  - Move trains to less congested corridors

- Typical weekday delay fell from 10,982 hours in 2002 to 7,817 hours in 2011.

- Number of crossings were reduced from 1,732 crossings in 2002 to 1,468 in 2011.
Addressing Congestion: I-55 Freight Corridor

Truck Traffic Volumes Indicate Importance of I-55:

- Approximately 12,000 in Chicago
- Up to 14,000 in Willowbrook
- More than 20,000 approaching Bolingbrook
I-55 Congestion Scan: Average Speeds by Time of Day by Milepost
Southbound I-55 Performance Measures, Lake Shore Drive to I-294

<table>
<thead>
<tr>
<th>Measure</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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</thead>
<tbody>
<tr>
<td>AM Travel Time Index</td>
<td>1.31</td>
<td>1.33</td>
<td>1.31</td>
<td>1.34</td>
</tr>
<tr>
<td>PM Travel Time Index</td>
<td>2.13</td>
<td>2.37</td>
<td>2.19</td>
<td>2.07</td>
</tr>
<tr>
<td>AM Peak-Period Planning Time Index</td>
<td>1.76</td>
<td>1.92</td>
<td>1.84</td>
<td>2.05</td>
</tr>
<tr>
<td>PM Peak-Period Planning Time Index</td>
<td>3.72</td>
<td>4.13</td>
<td>3.75</td>
<td>3.39</td>
</tr>
<tr>
<td>Congested Hours</td>
<td>12.29</td>
<td>12.66</td>
<td>11.96</td>
<td>11.82</td>
</tr>
</tbody>
</table>

Source: CMAP analysis of IDOT data. http://www.cmap.illinois.gov/cmp/scans
Addressing Congestion:
Short-term Rail Infrastructure Recommendations

CREATE
Addressing Congestion:

Long-term Rail Infrastructure Recommendation

Potential “CREATE II”
### Future Potential Rail Capacity Improvements

<table>
<thead>
<tr>
<th>Projects/Project Bundles</th>
<th>Sectors</th>
<th>Project Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermod al Con nect or</td>
<td>Avi ation</td>
</tr>
<tr>
<td>Rail Capacity Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATE Program</td>
<td>I</td>
<td>T</td>
</tr>
<tr>
<td>BNSF Chillicothe Subdivision – Joliet Arsenal to Nerska</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>BRC – 59th Street Subdivision from Clearing Yard to Kenton Line</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>BRC – Kenton Line from Hayford to Hawthorne</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>CSXT Barr Subdivision – Blue Island to Indiana border (segments)</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>CSXT Blue Island Subdivision – Blue Island to Forest Hill Yard</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>UP Geneva Subdivision – A-2 to Maple Park</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>UP Milwaukee Subdivision – Proviso Yard to Shermer</td>
<td>A</td>
<td>R</td>
</tr>
</tbody>
</table>
Rail Delay Anecdotes (18 Hours Cut from Chicago Rail Transit Time?)


“Railroaders say it takes 48 hours to reach Chicago from the coasts, and 48 hours to get through, because of the delays and heavy traffic.” - John Schmeltzer, “A Plan to Uncork Rail Bottleneck,” Chicago Tribune, April 7, 1999.
Thank you!

Questions/comments?

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