Understanding Urban Goods Movements
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Key Learning Objectives:

• How, why, and where freight/goods move

• How goods movement connect to the urban economy, infrastructure, and land use patterns

• Impact of planning and zoning regulations

• What planners can do to improve access and mobility – and their local economy
How to make your community freight friendly

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NCFRP 15
Understanding Urban Goods Movements

PREPARED FOR THE TRANSPORTATION RESEARCH BOARD
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Purpose/products:

• Guidebook (NCFRP Report 14):
  – For public decision makers
  – Focused on consumer goods urban pick-up and delivery for end user
  – Helps understand and improve decisions affecting urban commercial motor vehicle movement for goods delivery
  – Recommends how to accommodate and expedite urban goods movements while minimizing environmental impacts and community consequences
Guidebook Audience

• Local elected officials
• Appointed planning commissioners and officials
• Public and private sector planners
• Metropolitan planning organizations (MPOs) who advise the local elected officials
• Public agency decision makers and officials, both elected and appointed
• Academic instructors and researchers
• Private sector stakeholders
Four Products

- Guidebook
- Executive Summary
- Resource CD
  - (includes 2 ppt w/ speaker notes)
- Final report
Executive Summary and Overview
Executive Summary and Overview

• Goal
  – Quickly capture attention of decision makers

• Outcome
  – Being a champion for goods movement issues in urban area
  – Assigning staff to do further research
  – Assigning staff to review and change regulations
Guidebook Contents

1. The Importance of Urban Goods Movement in the Urban Environment
2. Moving Urban Goods: It’s all about Supply Chains
3. Using Freight Data for Planning
4. Regulations Impacting Urban Goods Movement
5. Putting it all together: A process for Evaluating and Addressing the Impacts
6. Case Studies
7. How to get more information - Resource CD
Lesson 1:

The Importance of Goods Movements in an Urban Environment
Your Community and QOL Depends on Freight
Keeping grocery store shelves stocked

- 2 day: eggs and dairy
- 1-3 days: produce and frozen food
- 7 days: dry goods
The Importance of Goods Movement in the Urban Environment

Freight is the economy in motion

It supports:
• Job creation and economic growth
• Access to markets
Urban goods movement / freight is important

• In 2010, in US
  – approximately 55 tons of freight / person was moved

• By 2040 estimates ...
  – 70 tons/person – a 27% increase
  – for every 2 trucks there will be 3

• 65% of US goods originate or terminate in urban areas
  – the value of these goods is 81% of all US goods movements
Urban goods movement / freight is important

• 9-10% of US GDP is logistics
  – This is 10 cents of every dollar in the economy

• Transportation costs can range from 4¢ and 14¢ of the cost of every $1 of product
  – Improved efficiency can result in lower product costs / higher company profits
Urban goods movement / freight is important

- Nationally transportation and warehousing is
  - 3.64 % of employees
  - 3.49 % of annual payroll

- The U.S. logistics sector is growing at 7-8% per year, outstripping all other traded sectors in terms of scale and growth rate
Freight Volumes are Growing Faster than Passenger Volumes
Congestion and Capacity

• “Nationwide, road congestion costs the U.S. economy about $67 billion annually—and more than 3.6 billion of delay and 5.7 billion gallons of excess fuel consumed.”

• “[The US transportation] system each year moves $7 trillion of goods from business to business, and business to home...contributes $200 billion to America’s economy every year...But a growing population and advanced technologies such as e-commerce and just-in-time delivery are placing even greater demands on America’s transportation network. While demands on America’s transportation system are growing, our nation’s investment isn’t keeping pace.”

- American’s for Transportation Mobility (A coalition of the U.S. Chamber of Commerce)
How, why, where, who moves goods

- How goods move
- Who moves goods
- What moves
- Why and where
- Congestion and costs
- The “last mile”
Key message

- Freight mobility is a key issue to support economic development and QOL

- It is important to regional competitiveness to understand the transportation needs of major employers
Lesson 2:

Moving Urban Goods: It’s all about Supply Chains
1. Soft Drink Beverages
2. Gasoline & Petroleum Fuels Supply Chain
3. Food Services Supply Chain
4. Urban Wholesale Food Supply Chain (Produce)
5. Supermarket Grocery Supply Chain
6. Big Box Retail Supply Chain
7. Retail Drug Store Supply Chain
8. Apparel Retail Supply Chain
9. Pharmaceutical and Biotechnology Supply Chain
10. Aggregate-Based Construction Materials Supply Chain
11. Hospital Supply Chain
12. Waste & Recyclables Supply Chain
Lesson 3:

Using Freight Data for Planning
Good planning requires good data

Sources: IHS Global Insight and Wilbur Smith Associates
Freight Flow Data

- Commodity Flow Survey (Bureau of Transportation Statistics - BTS)
- Freight Analysis Framework (Federal Highway Administration – FHWA)
- Railroad Waybill (Surface Transportation Board)
- TRANSEARCH® (IHS Global Insight).
Freight nodes

• Endpoints that generate or receive freight flows
• Key points of production, consumptions or intermediate handling for goods

• Examples:
  1. Production/Consumption Node
     a. Manufacturing facilities
     b. Waste transfer sites
     c. Cement plant
     d. Retail store, center or mall
  2. Goods Handling Node
     a. Postal distribution center
     b. Warehouse / distribution center
     c. Truck terminal / sorting facility
     d. Railroad intermodal terminal
Issues of concern to citizens:

• Safety and security
• Traffic impacts and congestion
• Emissions and air quality
• Noise and vibrations
• Land use and value
• Environmental justice
Lesson 4:

Regulations and Conditions Impacting Urban Goods Movements

– This section assumes planners know what their regulations are and does not go into a lot of detail
Regulations that make a difference:

- Design Standards
- Land Use and Zoning
- Urban Truck Regulations
- Parking and Loading Zones
- Delivery Windows/Time of Day Restrictions
- Truck Size and Weight Regulations
Common Issues

• Set back ordinances
• Parking ordinances
• Urban geometric design issues
  – turning radius
  – height/with clearances that often affect the ability of large vehicles to maneuver safely among other motorists
  – at-grade crossing clearance and distance of rail lines from parallel highway corridors,
• Construction delay
• Signal timing in heavy-use truck corridors
• Access management for commercial vehicles
Parking Ordinances
Bridge Geometrics

GOT STUCK?

Truck Drivers:
Don’t let this happen to you.
Roadway Geometrics
Construction Delays
At the urban level regulations over commercial vehicle operations fall into several categories:

- Route restrictions
- Commercial vehicle parking regulation / curbside Access
- Size and weight regulation
- Emission controls
Commercial Vehicle Route Restrictions / Truck Routes

- To facilitate freight movements, truck routes should be:
  - Designated
  - Designed
  - Operated and maintained to accommodate trucks
- Serve the following purposes:
  - Increase freight transit reliability
  - Reduce congestion and provide congestion relief due to incidents on major arterials
  - Improve safety
Lesson 5:

Putting it all Together: a Process for Evaluating and Addressing the Impacts
Follow the planning process....

- Understand the political environment – you need support to begin
- Get organized
- Develop baseline information
  - Field surveys: Identify stakeholders and conduct interviews
  - Inventories
- Review and evaluate current regulations
- Summarize the issues, problems and their locations
- Education, outreach and gaining support
- Identify potential solutions and strategies to improve urban goods movements
Follow the planning process....

- Reach out to decision makers to explain the importance of urban freight movements
- Receive authorization
- Get organized

- Pick a PM
- Contact MPO's
- Network
- Research
Follow the planning process:

1. **DEVELOP BASELINE INFORMATION**
   - Field Surveys
   - Truck Movements
   - Bottlenecks

2. **IDENTIFY STAKEHOLDERS AND CONDUCT INTERVIEWS**

3. **SUMMARIZE THE ISSUES**
Engaging the Private Sector in Freight Planning
Follow the planning process....

- **EDUCATE AND GAIN SUPPORT FOR POTENTIAL CHANGES**
  - WORKSHOPS
  - CHARRETTE
  - PARTNERSHIPS

- **REVIEW AND EVALUATE REGULATIONS**

- **IDENTIFY SOLUTIONS**
Identify problems

**Constraints on Urban Goods Movement**

- **Access Issue:** Trucks unable to turn left... Tight turning radius
- **Regulation Issue:** No trucks permitted through town square
- **Geometrics Issue:** Bridge overpass to city park... Height restrictions
- **Parking Issue:** Passenger vehicle blocking truck loading zone

*Regulation, access, geometrics, and space issues often lead to circuitous routes driving up costs, and impacting residents.*
Identify solutions

SOLUTIONS TO URBAN GOODS MOVEMENT CONSTRAINTS

Access Solution:
Designate truck routes to accommodate large trucks

Parking Solution:
Enforce parking regulations; designate additional curbside commercial vehicle parking spaces for off-peak delivery hours

Regulation Solution:
Allow truck access through town square during off-peak hours

Geometrics Solution:
Add caution signs to bridge warning of height restrictions; designate truck routes
Define the problems – identify solutions
Photo from LA Guidebook A Tool kit for Goods Movement Ch 3. p.1, March 2009
Parking Enforcement

Vehicles in Freight Loading Zones

Alley Delivery with Parked Cars
Example Solutions

• Air quality
  – Reduce congestion
  – Consistent speed
  – Fuels

• Traffic and safety
  – Scheduling or appointments
  – Incentives to operate in off-peak hours
  – Reduce empty truck loads
Case studies:

Examples in the Guidebook
Case studies

1. Atlanta: Effectively Managing Truck Traffic in the Urban Environment
2. Baltimore: The Maritime Zone Overlay District (MIZOD)
3. Toronto: Harmonizing of Loading Area Regulation across a Mega-City
5. Nashville: Vanderbilt Medical Center – Freight Consolidation
7. Bristol: Reducing Freight Impacts through Consolidation Centers (U.K.)
8. New York City: Commercial Vehicle Regulation and Off-Peak Delivery
New York Case Study

100 years of commercial vehicle regulations
Problem - Enforcement
Problem - Truck routing, signage

Only 5% of streets were designated as truck routes
Signage inconsistent
Problem - 20 year old regulations
Approach and actions

- Conducted truck study
- Created Office of Freight Mobility
- Identified problem and potential solutions
Approach and actions

- Communicate mission; identify champion
- Developed an action agenda / programs
  - NYPD Truck enforcement program - educate officers
  - Truck route signage pilot
  - Delivery windows program
  - Off-hours delivery program
New York City Case Study

Principal findings:

• Traffic and law enforcement officers must have details of truck route and waiting rules

• Guidance signage should be considered for aiding truck drivers through urban areas

• Out-of-hours delivery is an effective way of maximizing efficiency
Resource CD
Resource CD includes:

- PowerPoint presentations
- Literature review
- Additional data, information and in-depth analysis
- Glossary
- How to examples
- Examples from other states
Resource CD

• PowerPoint Presentation
  – In depth overview of Guidebook
  – 10 minute summary of issues
Learning objectives:

• **Why** urban goods movement is important to the quality of life in an urban area
• **How** urban supply chains function and how freight pick up and delivery services operate in urban settings
• How supply chains and related goods movement connect to the urban economy, infrastructure, and land use patterns
• The **impacts** of land use codes and regulations governing metropolitan goods movement on private sector freight service providers
• Urban planning **process** and **strategies** to accommodate goods movement, including methods for engaging a range of stakeholders
• **Case studies** to illustrate applications in practice
• Urban goods movements are important to the economy and quality of life in urban areas
• Local regulations and decision can impact the efficient movements of freight
• Local officials and planners can make changes to improve freight movement and access within their community
NCFRP 14


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SUPPLY CHAIN: GASOLINE & PETROLEUM FUELS

- Overseas Crude Production
- Ethanol Plant
- Refinery
- Tank Farm
- Additives Plant
- Gas Station
- Domestic Crude Production
SUPPLY CHAIN: URBAN WHOLESALE FOOD

Airport

Seaport

Regional Vendors

Extra Regional Vendors

Multiple Warehouse Market

Retail Outlets & Institutions

Purveyors & Jobbers

Grocers & Restaurants

18 Wheeler  Small Truck/Van  Direct Rail  Intermodal Rail