CENTER FOR INTERNATIONAL TRADE & TRANSPORTATION

iTT

Delivering the Goods in an Urban World

Climate Policy in an Energy Boom
Asilomar Conference on Transportation and Energy
August 8, 2013

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CSULB

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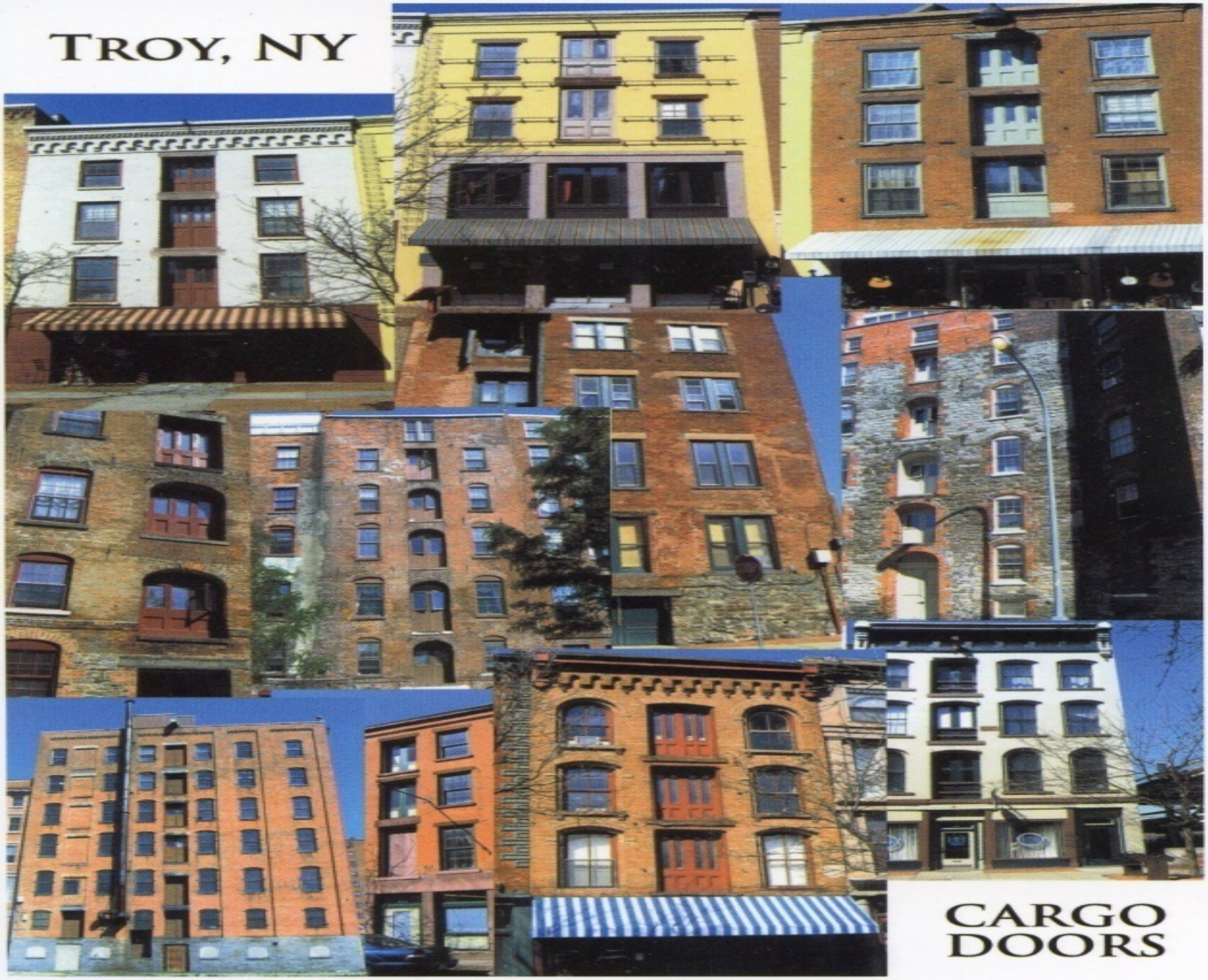
TROY, NY
CARGO
DOORS

Qualitative Characteristics of Alternative Transportation Modes					
	Truck	Rail	Air	Water	Pipeline
Capacity	Moderate	High	Moderate	Very high	High
Variable cost	Moderate	Low	High	Low	Very low
Fixed cost	Low	High	Low	Moderate	High
Lead time	Moderate	Long	Short	Long	Moderate
Lead time reliability	Moderate	Low	High	Moderate	Very high
Availability of service	High	Moderate	Moderate	Moderate	Low
Typical products and shipment distances	Wide variety of products shipped over a wide range of distances	Raw materials, autos, machinery shipped over long distances (e.g., > 500 miles)	Small, high-value, perishable, or time-sensitive product shipped over long distances (e.g., > 500 miles)	Inland: raw materials shipped over long distances (e.g., > 300 miles) Ocean: wide variety shipped over long distances	Liquids and gasses shipped over a range of distances

Five Key Trends

Mode mix: Identifying the correct combination of transportation modes (road, rail, ocean, and air) for freight movements can increase the overall cost effectiveness of shipping activities.

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Five Key Trends

Consolidation: Consolidation has gained considerable interest as more companies utilize regional supply chains in order to increase flexibility:

- establishing operations in suitable locations to reduce the average distance needed to service regional operations
- consolidating and centralizing some processes (such as manufacturing and distribution) in favorable countries.

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Transloading and Cross-docking

- Transload: Usually transfer from 40' marine container to 53' domestic (3 into 2), reduces transport costs by 30%, savings of $200-$500 per FEU door to door
- Cross-dock: Transfer of freight from one vehicle to another
- More common on west coast
- 21% of containers imported through LA-LB are transloaded at warehouses in So Cal.
- In 2006, about 35% of imports that left So Cal by train were transloaded (2011= 45%)

Five Key Trends

Postponement: Increased use of postponement strategies can reduce volatility in inventory and shipment volume by delaying certain processes and completing them at later points in the supply chain.

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Postponement Opportunities in Operations

StorefrontBacktalk
Techniques, Tools and Tirades about Retail Technology and E-Commerce

Amazon's Five-Mile Threat

Written by Frank Hayes

May 1st, 2013

Amazon will open eight new U.S. distribution centers between now and the holiday selling season, bringing the total to 54—with almost as many DCs outside the U.S…

The result of the ferocious building spree is that Amazon will then have a DC within five miles of most major U.S. cities. Put another—and more frightening—way: That means Amazon will very likely have a DC closer to your customers than many of your stores.

Five Key Trends

Rerouting: Changing the route of a particular supply chain leg can reduce transportation and inventory costs while increasing speed to market. The benefits of this relatively simple change can be substantial.

Five Key Trends

Rightshoring: "Rightshoring," involves taking total landed cost into consideration in order to determine the optimal location of distribution centers and plants for serving a particular market. Not only can rightshoring help companies reduce costs in certain cases, but it can also reduce supply chain complexity.

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Total Cost of Ownership

Chinese unit price	$70
U.S. unit price	$100
# units/year	12,000
unit weight, lbs	2
Shipments/year	6
product life, yrs	5
Packaging*	1%
Payment on shipment	Yes
Quality*	2%

Product liability risk*	0.5%
IP risk*	1.9%
Innovation*	0.5%
Trips/yr	2
Carrying cost, rate	22%
Emergency air freight %*	5%
Wage inflation, annual*	8%
Currency appreciation, annual*	5%

Source: Reshoring Initiative

*** Chinese differential vs. U.S.**

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Freight Research in Urban Transportation Planning

- Research Objective: to examine the effectiveness of alternative strategies on urban freight and assess their transferability for broad US implementation
- Based on the National Cooperative Freight Research Program Project 36(05) – to be published
- Co-authors: Laetitia DaBlanc, IFSTTAR; Gen Giuliano and Kevin Holliday (USC)




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Method

- Review of the domestic and international literature including journal publications, government reports, consultant reports, and unpublished papers and materials
- 261 references of which 108 are academic papers and scientific books
- Selection of 63 practices based on recurrence in the literature and reported positive results
- Half of practices from North America

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Three Categories of Urban Freight Management

- Last-mile strategies: address local deliveries and pick-ups to or from urban businesses or residences (home deliveries) aiming towards making these trips more efficient
- Environmental impacts: strategies that reduce truck emissions and noise by regulation or incentives to use less polluting vehicles
- Trade nodes: strategies related to freight flows in cities that are hubs for national and international trade with goods movement to and from ports, airports, or intermodal facilities

Results of the Evaluation

	Strategy	Effectiveness	Applicability to US
Last-mile	Labeling or other certification programs	High	High
	Traffic and parking regulations	Medium	High
	Local planning policy	High	High
	City logistics and consolidation programs	Low	Low
	Off-hours deliveries	High	Medium
	Intelligent Transport Systems (ITS)	Medium	Medium
Environment	Truck fuel efficiency and emissions standards	High	High
	Alternative fuels and vehicles	Low	Medium
	Low Emission Zones (LEZs)	High	Low
	Alternative modes	Low	Low
	Community environmental mitigation	Medium	High
Trade node	Appointments and pricing strategies at ports	Medium	High
	Road pricing and dedicated truck lanes	High	Low
	Accelerated truck emissions reduction programs	High	Medium
	Equipment management	Medium	Medium
	Rail strategies	Medium	Medium
	Border crossings	Medium	High

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Results of the Evaluation

- The strategies getting the most attention in Europe and Asia – such as zero emission delivery vehicles or urban consolidation centers – are not always best fitted for the U.S. case
- They are limited in scope and have a small market share, or are too costly, or require high levels of regulation or subsidies not always possible in the U.S. case



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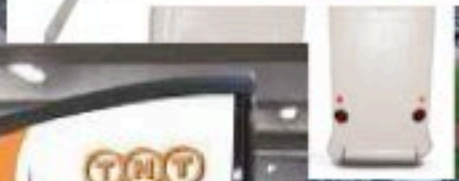



FedEx

TNT



Colizen

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1. Labeling and Certification Programs

- Voluntary regulation: the public sector negotiates with private industry to develop a set of voluntary targets that confer recognition or special benefits like flexible delivery hours
- Include "green" certification programs that promote use of cleaner vehicles, cleaner fuels, or operations during less congested time periods
- London Freight Operator Recognition Scheme, Netherlands PIEK label program

Piek

FORS
FLEET OPERATOR
RECOGNITION SCHEME

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2. Local Planning Policy

- Includes policies and guidelines for incorporating freight deliveries into new developments, for the design of loading docks, and for parking and loading standards
- New development or redevelopment offers the opportunity to implement planning standards for on site freight facilities
- City of New York: loading/unloading requirements for new commercial building of >8,000 sq ft; Barcelona: minimum 5 square meter storage for new bars, restaurants
- Efficient in the long term

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3. Truck Fuel Efficiency and Emission Standards

- Effective because they address the entire commercial fleet
- Trucks and vans are major contributors of diesel particulates and NOx emissions in cities with fleets generally older than in non urban operations
- California Air Resource Board's diesel particulate filter standards for trucks; EPA 2011 truck CO_2 emissions and fuel efficiency standards; Los Angeles/Long Beach ports' Clean Truck Program

The Port of LONG BEACH
Clean Trucks Program

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4. Appointment and Pricing Strategies at Ports

- Spread the flow of truck traffic passing through terminal gates across more hours of the day, reducing truck turn times and idling
- This generates changes along the rest of the supply chain, including distribution centers and retail establishments operating on more traditional work schedules
- Los Angeles/Long Beach ports PierPASS offpeak Program managed to shift 40% of eligible cargo to the evening hours

PIERPASS

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Future Research Needs

- Data collection: types of vehicles, operators, frequency of deliveries, home deliveries, environmental impacts, actual fleet movements
- Assessment studies on benefits and costs of emission reduction strategies: for example, what are the costs of 'low emission zones' on government and logistics firms; are these zones legally possible in the US, and if so, at what level of government?
- Comprehensive evaluation of existing policies and experiments, including certification schemes, truck access restrictions, requirements for alternative fuel trucks, urban consolidation centers

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