Climate Change and Cities—Sustainable Transportation Solutions

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1. Review sources of GHG in cities and consider findings from recent analyses
2. Focus on transportation and identify actions that cities can lead
3. Present one case study in depth
4. Recommend strategies and next steps
1. What We’re Learning About Greenhouse Gases and Cities
No Time to Waste but Different Paths Yield Different Results

- Business As Usual
- 750 ppm ceiling
- 550 ppm ceiling = 2 X Pre-Industrial CO
- 350 ppm ceiling

Billion Metric Tons of Carbon/Year

1990 2015 2040 2065 2090 2115 2140 2165 2190 2215 2240 2265 2290
Cities Starting to Score Emissions and Transportation is Significant

London 2006

Transportation 22%

Excluding Aviation

Ground Based Transport

Industrial

Commercial & public sector

44 mt CO₂
(8% of UK emissions)

Including Aviation

Ground Based Transport

Aviation

Commercial & public sector

67 mt CO₂
(11% of UK emissions)

New York 2005

Transportation 23%


Figure ii. 2005 New York City citywide CO₂e emissions, (58 million metric tons).
City Emissions and Transportation

San Francisco Region 1990

Transportation 51%

Seattle 1990

Transportation 42%

City Emissions and Transportation

Boulder, CO 2004

Transportation 28%

Berkeley, CA 1990

Transportation 45%

City Emissions and Transportation

Madison, WI 1990
Transportation 17%

Charleston, SC 2002
Transportation 43%

### Different Places, Profiles

- Different baseline years
- Different electrical fuel mixes
- Different geographic footprints and location efficiencies
- Different accounting systems
- Different philosophies about how to treat sources (e.g., electrical by regional power pool or just local, do or do not include aviation, etc.)
Different places, profiles, strategies

Many areas have set short-term reduction targets of around 20%*... 

<table>
<thead>
<tr>
<th>City</th>
<th>% reduction</th>
<th>Target Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>London</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Melbourne</td>
<td>20</td>
<td>2010</td>
</tr>
<tr>
<td>San Diego</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>San Francisco</td>
<td>20</td>
<td>2012</td>
</tr>
<tr>
<td>Toronto</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>25</td>
<td>2020</td>
</tr>
<tr>
<td>Connecticut</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

...however, long-term targets are significantly higher, ranging from 50-85%**

- **All reduction are off 1990 levels, except Melbourne (1996), CA, (unknown)**
- **CT, EU Environmental Council are off 1990 levels, IPCC, CA, Netherlands (unknown), London (2000)**, By 2100

Scientifically developed recommendations

- EU Council: 60-80%
- IPCC**: 77%

Resulting long-term targets

- California: 75-80%
- Connecticut: 75-10-85%
- London: 60%
- Netherlands: 50-30-80%

Source: IPCC, www.theclimategroup.org
The Idea of Stabilization Wedges

Fifteen example wedges

- **Wind and Solar**
  1. Add 2 million 1-MW windmills (50 times current level) at 30 MWhr, replacing coal electricity.
  2. Add 4 million windmills of 4000-GW peak PV plants generating 1400 GWh per year, replacing gasoline hybrid cars.
  3. Add 2050-GW peak PV plants (40 times current level) at 2 MWhr, replacing coal electricity.

- **Energy Storage**
  1. Add 4 million windmills of 4000-GW peak PV plants generating 240 MWhr.

- **Energy Efficiency & Conservation**
  1. Increase energy-use efficiency in buildings and appliances by 14% and vehicle fuel economy by 25%.

- **Nuclear Fusion**
  1. Implement conservation techniques on all cropland (10 times current level).

- **Biodiversity, competing land uses**
  1. Beyond 2054

**References**

2. Why Focus on Transportation

- Can be affected directly by municipal and other non-federal decisions
- Dominated by public investment decisions that have long-term effects
- Knowledge gained in past 20 years from air quality and transportation planning can be deployed
- Deployment can potentially be quite rapid
- Every ton counts
- Best pathway to CLEAN Energy Independence
Potential Transportation Emissions Mitigation Strategies

- Cleaner vehicles
- Cleaner fuels
- Reduction in vehicle-miles traveled
Travel Demand Growing, Wiping Out Efficiency Gains
What We Use for Power Counts: Alternative Fuels Net Lifecycle GHG Emissions

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Net Lifecycle GHG Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Reduction</td>
<td>-100.0%</td>
</tr>
<tr>
<td>Cellulosic Ethanol</td>
<td>-90.9%</td>
</tr>
<tr>
<td>Biodiesel</td>
<td>-67.7%</td>
</tr>
<tr>
<td>Sugar Ethanol</td>
<td>-56.0%</td>
</tr>
<tr>
<td>Electricity</td>
<td>-46.8%</td>
</tr>
<tr>
<td>Gaseous Hydrogen</td>
<td>-41.4%</td>
</tr>
<tr>
<td>Compressed Natural Gas</td>
<td>-28.5%</td>
</tr>
<tr>
<td>Liquefied Natural Gas</td>
<td>-22.6%</td>
</tr>
<tr>
<td>Corn Ethanol (Average)</td>
<td>-21.8%</td>
</tr>
<tr>
<td>Liquefied Petroleum Gas</td>
<td>-19.9%</td>
</tr>
<tr>
<td>Methanol</td>
<td>-8.5%</td>
</tr>
<tr>
<td>Coal-to-Liquids w/Carbon C &amp; S</td>
<td>3.7%</td>
</tr>
<tr>
<td>Liquid Hydrogen</td>
<td>6.5%</td>
</tr>
<tr>
<td>Gas-to-Liquid Diesel</td>
<td>8.6%</td>
</tr>
<tr>
<td>Coal-to-Liquids w/o Carbon C &amp; S</td>
<td>118.5%</td>
</tr>
</tbody>
</table>

Source: EPA420-F-07-035, April 2007
Getting to 2050: Stable and Clean

• Relative value of VMT reduction
• Approximately equal to the value of reductions from CAFÉ and better fuels
• “Double CAFÉ === Double vehicle occupancy” Marc Ross, 1984
• “VMT reduction as significant as cleaner cars and fuels”—Socolow and Pacala, Science Magazine 2005
Emissions and Travel Demand—82 % Short Non Work Trips, Only 18 % Journey to Work

US Trip-Making by Purpose

- Family (44)
- Work (27)
- School (18)
- Shopping (10)
- Other (1)
Emissions and Transportation Modes

U.S. CO₂ Transportation Emissions by Mode

- Passenger vehicles are largest transportation source of CO₂
- Transportation is the #2 household expense
- These problems are directly connected
- Solutions are connected too

Data from the EPA’s 2007 Draft Greenhouse Gas Inventory Report
Money is Potentially There

- US economy spends $2 Trillion annually on transportation
- 90 percent spent by households and businesses, 10 percent by federal/state/local
- Just 3 percent of $2 Trillion is federal
- Overwhelming majority is for personal transportation, mostly personal motor vehicles
Location Efficiency: One Way to Value Accessibility

- A fancy way of saying convenience or accessibility
- Measures urban performance the way that energy efficiency measures equipment, buildings
- Density, Transit Access (Proximity, Frequency, Connectivity), and Amenities Determine Transportation Demand
- Statistics Used to Estimate Likely Travel Demand
- Demand is Verified by Measuring Vehicle Ownership and Extent of Use
- Demand is Then Valued in Dollars and Cents
- Demand is also Scored in Emissions: CO2 Equivalents
**Explain Using Regression?**

**Veh/Hh, VMT/Veh and VMT/Hh in metropolitan San Francisco**

\[
\frac{Veh}{Hh} = 4.722 \left( 22.520 + \frac{H}{RA} \right)^{-0.3471} \left( 1 - e^{-\left( \frac{0.000112 \cdot S}{P} \right)^{1.2386}} \right) \left( 1 + 1.0519 \frac{P}{H} \right) (Tr + 60.312)^{-0.2336}
\]

\[
\frac{VMT}{Veh} = 10386 \left( 0.5041 + \frac{H}{TA} \right)^{-0.0419} \left( 1 + 0.02759 \frac{P}{H} \right) \left( 1 - 0.0704 \sqrt{Ped} \right) - 0.01743 \left( \frac{\$}{P} - 22136 \right)
\]

\[
\frac{VMT}{Hh} = \frac{Veh}{Hh} \times \frac{VMT}{Veh}
\]

For the 3 metropolitan areas, the \( R^2 = 79 – 96\% \) for Veh/Hh and \( 80 – 94\% \) for VMT/Hh.

H/RA is Households/Residential Acres, H/TA is Households/Total Acre, \$/P is Income/Capita, P/H is Persons/Hh, Tr is Zonal Transit Density and Ped is Ped/Bicycle Friendliness


Also reported at http://www.sierraclub.org/sprawl/transportation/holtzclaw-awma.pdf
Showing the Benefit Graphically

![Graph showing the benefit graphically. The x-axis represents Households/Residential Acre, and the y-axis represents Annual VMT/Hh. The graph compares SF, LA, and Chicago. The lines show a decrease in Annual VMT/Hh as the number of Households/Residential Acre increases.]
Or Geographically, Maps Show Location Efficiency Drives Demand for Gasoline

- Convenience and density reduce demand
- More miles traveled means more spent on gas, more cars paid for per household and more emissions
The Value of Getting It Right

- In the green areas, households own one less car than the regional average
- Saves $400 per household per month
- Boosts disposable income 10-12% for bottom two income quintiles
Where We Build Matters: Poor Locations Drive Up Emissions and Costs
Convenient Remedy to an Inconvenient Truth

2 km drive vs. 1 km walk
Connectivity Counts
Showing the Benefits: Two Views of Cities and CO2
Same View: Southern California
Same View: Bay Area
3. Case Study: Car Sharing
Sample Strategy: Car-Sharing
The Program

• Non-profit, started by Center for Neighborhood Technology in 2002
• 150 cars and growing
• 32 neighborhoods in Chicago and two suburbs-committed to serving all neighborhoods
• 5000 individual members
• 100% low emission cars
• Serve individuals, businesses, government, five universities, and a variety of organizations
Measured Results

- 37 users per car
- 46 percent selling car or delaying purchase
- 17 cars of the road for each one made available
- Increase in transit, walking, biking
- Reduction in taxi use
- Almost identical results in Bay Area
Simple Basis for Scaling Up

• Specify as a city-wide spatial array
• Everywhere equally available
• Use findings to date from evaluations in Chicago (CNT) and Bay Area (Cervero - U of California)
• There are 24,667 blocks in Chicago, 221 square miles, 112 blocks per square mile
Full Benefit Includes Mode Shift in Journey to Work and Increased Biking, Walking

Travel Mode Analysis

- Car/Truck/Van
- Car w/ Other Passengers
- Transit
- Walk
- Bicycle
- Taxi
- Other

Chicago Average: 2005 Work

I-GO Members: Work/School

Full Benefit Includes Mode Shift in Journey to Work and Increased Biking, Walking.
<table>
<thead>
<tr>
<th>The Effects of Going to Scale</th>
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</thead>
<tbody>
<tr>
<td><strong>When the Number of I-Go Cars is</strong></td>
</tr>
<tr>
<td><strong>We Expect Measured Reductions in</strong></td>
</tr>
<tr>
<td>Private Vehicles</td>
</tr>
<tr>
<td>Annual VMT in Millions</td>
</tr>
<tr>
<td>VOCs in Metric Tons</td>
</tr>
<tr>
<td>NOx in Metric Tons</td>
</tr>
<tr>
<td>CO2 in Metric Tons</td>
</tr>
</tbody>
</table>
Impact of 1 Shared Car per Block

- 112 cars per square mile
- 37 users per car
- 4144 users per square mile, 915,824 users citywide
- Savings per user = 5,064 VMT/year
- Savings per user = 1.764 Metric Tons of CO2 equivalent per year
- Total annual savings = 1.62 Million MT
- Currently under exploration in Berkeley, Chicago
The Scale of What it Will Take

• To reduce ½ MMT CO2e:
  – Implement Lighting Retrofits (CFLs & LEDs) in 50% of commercial buildings
  – 463,000 more annual CTA rail riders (350% increase)

• To reduce 1 MMT CO2e:
  – Weatherize 462,000 (42%) of existing residential housing units
  – 920 million miles of VMT driven with bio-fuel (8% of total VMT).

NOTE these are not our actual strategies.
Taking Advantage of Reliable Trends
Demographic & Price Trends Promote Urbanism and Demand Reduction

- Continuous drop in household size since 1790
- Aging in place
- “Married w/kids” only 23% of total
- Rising energy and gas prices
- Limited public funds to keep sprawling
US Population is Increasingly Metropolitan and Suburban
Increasingly Located in Larger Regions

- 1950: 12.2% ≤ 250,000
- 1960: 15.8% ≤ 250,000
- 1970: 25.5% ≤ 250,000
- 1980: 25.2% ≤ 250,000
- 1990: 28.9% ≤ 250,000
- 2000: 27.5% ≤ 250,000

- 1950: 8.7% ≤ 250,000
- 1960: 9.1% ≤ 250,000
- 1970: 8.4% ≤ 250,000
- 1980: 9.8% ≤ 250,000
- 1990: 8.7% ≤ 250,000
- 2000: 6.9% ≤ 250,000

- 1950: 17.9% ≤ 250,000
- 1960: 18.9% ≤ 250,000
- 1970: 19.9% ≤ 250,000
- 1980: 19.4% ≤ 250,000
- 1990: 18.7% ≤ 250,000
- 2000: 16.0% ≤ 250,000

- 1950: 56.1% ≤ 250,000
- 1960: 63.3% ≤ 250,000
- 1970: 69.0% ≤ 250,000
- 1980: 74.8% ≤ 250,000
- 1990: 77.5% ≤ 250,000
- 2000: 80.3% ≤ 250,000

- 2000: 29.9% > 5,000,000

- 2000: 27.5% 1,000,000 to 4,999,999

- 2000: 16.0% 250,000 to 999,999

- 2000: 6.9% ≤ 250,000
Very Little Population Living in Truly Low-Density Areas

- Metro is now 5:3 Suburban to Urban
- But majority of suburban population lives in older central counties and also includes satellite cities
- Majority of households live in urban form
Population is Getting Older, Women Living Longer than Men
Most Recent Net Growth is in Pre-Retirement and Retirement Age Brackets
This Kind of Net Growth has Strong Implications for Household Size and Location Preference.
Percent of Households Earning Less Than:

- < 10: 8.7%
- < 15: 15.9%
- < 25: 27.9%
- < 35: 39.4%
- < 50: 54.5%
- < 75: 72.4%
- < 100: 83.8%
- < 150: 93.9%
- < 200: 97.1%

Household Income in Dollars

- Median Household Income = $46,242
- Mean Household Income = $65,556
Bigger Homes, Smaller Households

Home size increases by 41%

Household size shrinks by 20%
US Fixed Guideway Transit: 42 Regions, 4,000 Places

Transit Zones by Region

Transit Region and System Size

Extensive
Large
Medium
Small
Big Opportunities Looming to Get this Right

- Public willing to pay: local option sales tax referenda overwhelmingly passed in last 7 years, most in last 3 years, approved $125 Billion in new spending, transport passed at twice the rate of all other issues
- Pipeline for “New Starts” would take 50 years to clear at recent rates of Federal spend-down
- Highway Trust Fund will have negative balance in a year
- Surface Transportation law gets reauthorized 2009-2010
Demand for Housing Near Transit is Growing

- Unmet demand for 8.5 million units within ½ mile by 2030
- Many times that within bus or shuttle distance (up to 2.5 miles or 20 minutes)
- Cuts vehicle ownership
- Cuts VMT
- Cuts emissions
Investors Like This

• Top pick in annual PriceWaterhouseCoopers survey of fund managers with $350 Billion is mixed-use TOD
• Only 5% of money goes there, “not enough deals”
• Commanding a price premium—a function of not enough supply against rising demand
• Demographic trends should hold throughout 21st Century
## Not Just for the Wealthy

### National Means of Transportation to Work by Income 2000

<table>
<thead>
<tr>
<th>Annual Income</th>
<th>Personal Vehicle</th>
<th>Transit</th>
<th>Walk or Bike</th>
<th>Other or Work at Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $20,000</td>
<td>80%</td>
<td>7.8%</td>
<td>7.0%</td>
<td>5.1%</td>
</tr>
<tr>
<td>$20,000 to $34,999</td>
<td>87%</td>
<td>5.3%</td>
<td>4.0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>$35,000 to $49,999</td>
<td>89%</td>
<td>4.3%</td>
<td>2.8%</td>
<td>3.4%</td>
</tr>
<tr>
<td>$50,000 to $74,999</td>
<td>91%</td>
<td>3.7%</td>
<td>2.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>$75,000 to $99,999</td>
<td>91%</td>
<td>3.9%</td>
<td>1.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>$100,000 or more</td>
<td>88%</td>
<td>5.2%</td>
<td>1.9%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Total</td>
<td>89%</td>
<td>4.7%</td>
<td>2.8%</td>
<td>3.9%</td>
</tr>
</tbody>
</table>
5. Five Strategies to Consider

• Focus on Last Mile Connectivity
• Use Local Land Use Authority to Shape Travel Demand
• Use Local Authority to Promote Innovative Financing
• Make the Most of Existing Systems and Assets
• Mine Regional and Inter-City Opportunities
Strategy: Focus on Last Mile Transportation Choice and Connectivity
First Strategy:
Focus on Last Mile Transportation Choices

- Rapid Deployment of Car Sharing
- Rapid Deployment of Street Cars
- Re-divide Streets for Pedestrian, Bicycle and Transit Access
- Re-define “complete streets” as “places that come with transportation choice” and embed in capital planning and capital budgeting
Streetcar Revival
Fueling Climate Friendly Revitalization

WHY STREETCARS AND WHY NOW?
BECAUSE STREETCARS ARE:

• relatively inexpensive -- recent streetcar systems have ranged in price from $6 million (Kenosha) to $55 million (Portland, Phase 1)
• uniquely suited to serve all the higher-density development occurring in downtowns across the U.S.
• hugely successful in promoting intense development and vibrant streetlife
• easily integrated into built environments because they can run in mixed traffic and share stops with buses (and don’t require the massive infrastructure of stations, parking structures, bus bays and exclusive rights-of-way that make bigger rail systems difficult and expensive to build)
• and they feed regional transit systems, making transit more convenient by providing the “last mile” connection.
STREETCARS ARE DEVELOPMENT-ORIENTED TRANSIT

DEVELOPERS SAY THAT the permanence of the fixed guideway helps mitigate the risk, and the higher densities and lower parking ratios typically permitted in downtowns make projects more profitable. These densities would not be possible, however, if there was no streetcar. Before the alignment was selected for the Portland streetcar land in the Pearl only captured 19 percent of all development in the CBD; after it was chosen the land captured 55 percent.

<table>
<thead>
<tr>
<th></th>
<th>Start of Service</th>
<th>Initial Track Miles</th>
<th>Initial System Cost Per Track Mile</th>
<th>Initial System Cost</th>
<th>Development Investment</th>
<th>Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenosha</td>
<td>2000</td>
<td>2.0</td>
<td>3.10</td>
<td>6.20</td>
<td>150</td>
<td>2319.35%</td>
</tr>
<tr>
<td>Little Rock</td>
<td>2004</td>
<td>2.5</td>
<td>7.84</td>
<td>19.60</td>
<td>200</td>
<td>920.41%</td>
</tr>
<tr>
<td>Tampa</td>
<td>2003</td>
<td>2.4</td>
<td>20.13</td>
<td>48.30</td>
<td>1000</td>
<td>1970.39%</td>
</tr>
<tr>
<td>Portland (1)</td>
<td>2001</td>
<td>4.8</td>
<td>11.50</td>
<td>55.20</td>
<td>1046</td>
<td>1794.93%</td>
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<tr>
<td>Portland (Ext.)</td>
<td>2005</td>
<td>1.2</td>
<td>14.83</td>
<td>17.80</td>
<td>1353</td>
<td>7501.12%</td>
</tr>
</tbody>
</table>

Source: Reconnecting America
Not Just for Large Cities—Modest Density + Good Coverage + Ease of Use = Low Car Use + Affordability
Second Strategy: Use Local Land Use Authority to Shape Travel Demand
Strategy: Use Local Land Use Authority to Shape Travel Demand

• Transit-oriented zoning and districting
• Expedited permitting for conforming uses within targeted zones
• Brownfield redevelopment & land recycling
• Access management
• Approve accessory dwelling units = “Housing for people, not for cars”
• Lower minimum parking requirements = “Space for housing people and jobs, not for cars”
KENOSHA: SMALL TRANSIT FOR SMALL CITIES

- As in Portland, the streetcar connected Kenosha’s downtown with a large redevelopment site.
- The city dusted off a 1925 plan to connect downtown and the waterfront with a grand boulevard, sidewalks and streetcars, and created a new neighborhood on the waterfront.
- The streetcar runs between this new development and a Metra commuter rail station with service into Chicago.
- Kenosha is growing rapidly as people leave Chicago in search of more affordable housing. The streetcar enables Kenosha to accommodate this growth sustainably and without significant increases in traffic.
Mission Bay San Francisco

Extremely Well Connected Streets, Streetcars + Rail = 1 Car Zoning

3d St. Streetcar / LRT Runs Down Center
Third Strategy:
Promote and Use Innovative Financing
**Strategy: Promote Innovative Financing**

- Use TIF districts to boost TOD and streetcars
- Price congestion and recycle money into transit and transportation choice (London, Stockholm, NYC)
- Form multi-city coalitions within states and push for greater urban share for transit programs—e.g. use “bridge” money for light rail and streetcars
- Create a trust fund or development bank
- Adopt new Housing+Transportation Affordability Index℠
- Promote & adopt Location Efficient Mortgages®
Fourth Strategy: Make the Most of Existing Transportation Assets
Strategy: Make the Most of Existing Transportation Systems and Assets

• Enhanced marketing—special organizations market transport incentives in NYC; prepaid year-long discounted tickets in Portland & Seattle; university pass pools in fifty cities; EcoPass in Boulder and Denver

• Bundle services—smart cards link transit +car-sharing+ communications

• Improve levels of service for existing transit
South Lake Union—Large Scale Redevelopment Linked to Downtown & Regional Rail by Streetcar

South Lake Union—All Homes and Jobs Come with Transit Passes = 1 Car Zoning
Reconnecting—Replace Elevated Road with Boulevard + Park + Transit = Accelerated Value in Portland

- Over 20 years
- Value increased 41% ½ Mile I-5 Buffer on east side of river
- Increased 213% ½ Mile I-405 on west side of river
- Increased 397% Downtown-wide Waterfront URA
- Increased 460% ½ Mile waterfront park and transit lines
Reconnecting by Replacing Freeway with Streets
Accelerated Value in Milwaukee Even Without Transit

• Over just 5 years
• Value increased 133% Citywide
• Increased 144% Downtown-wide TID
• Increased 147% at ¼ mile from the former lakefront freeway
• Increased 288% in streets formed after freeway demolition
Fifth Strategy:
Mine Regional and Intercity Opportunities
Intercity and Goods Movement

- 529 airports have scheduled airline service, all owned by local governments except in NJ, MD, Alaska and Hawaii; only 21 have scheduled bus service
- Start by adding scheduled bus service at airport passenger curb—no state or federal regulatory barrier, local decision only
- Trade-off some runway financing capacity for investment in air-rail connections, both regional access and for inter-city HSR
- Expand airport demand management
- Create shared markets between airports with overlapping airspace
- Include all these measures as part of mayors’ climate protection pledges and plans
- Expand intercity level of rail service, e.g., Oakland-Sacramento increased from 2 to 13 daily round-trips
- Expand rights-of-way for rail; work with both network & short-line carriers
- Create broadband channels and affordable access to videoconference software and facilities
- Demand management for goods movement—swap land needed for TOD with municipal land to produce inter-modal freight yards
- Promote daytime and after-hours use of mass transit network for local and regional freight delivery
- Most tonnage is for construction, locate prefab factories near ports, rivers and freight yards
- Locate secondary materials recovery near these facilities too
Air Travel Today is Mostly Short Trips, Very High Emissions

57 Percent of Trips in the Lower 48 States are under 500 miles in length

Short Trips Have the Highest Emissions Intensities
Inter-City Travel is Both Long Distance and Short Distance Between Metro Areas

Source: American Travel Survey - 1995
Note: One way person trips. Map shows only those Metropolitan Travel Compartments where more than 26 people were sampled and no one person represents more than 25% of the sampled population.

Source: April 2002 Flight Schedules

Weekly Frequency

- 8,200
- 4,100
- 820

- Over500Miles
- Under500Miles
The Fences are Coming Down—
Airports Becoming 2d Downtowns or Travelports
Gary-Chicago Airport Today

- Just around the bend
- Air-Rail-Bus Connectivity
- Can be accessed from South Shore Line
- Will connect to MW HSR Network
Gary-Chicago Travelport Tomorrow—Air-Rail-Bus on the MW HSR and Connects to 2016 Olympics
Older Communities Becoming Portals for Modern Intercity Travel
In older cities, commuter and freight trains share track and may share yards.

Reconfiguring freight yard can allow for TOD.

Land swaps make both TOD and Cargo Oriented Development possible.
Potential Scale

- 3,280 intermodal yards in the U.S. (NTAD 2003), 2,636 are within an Metro Areas

- Small innovations for relatively small investments, e.g. re-routing trucks, reducing idling times, etc. can reduce emissions, benefit freight movements and reduce congestion

- Potentially doubles US transit network
Summary

- Travel demand reduction simultaneously addresses traffic, affordability and emissions
- Matches cleaner vehicles and fuels
- Much of the opportunity is within the authority of local governments to directly affect
- If framed well and with good local engagement, the public will be with you
- Large trends favor these kinds of actions and investments and cities need to use their influence to ensure policy is in synch with these goals
What Cities Can Do to Get Started

• Use the power of GIS to help target opportunities
• Re-frame as a financial and environmental necessity
• Use emerging software (ICLEI, CNT, Microsoft, Clinton) to scope out bold strategies
• Partner with capable intermediaries who can quickly assemble resources and partners
• Use your non-financial resources to create a favorable climate for investment-performance standards, transparency, supportive rules
• Use your financial resources to get early wins and then to establish systematic and sustained investments
Thank You!

www.cnt.org
www.travelmatters.org
www.cnt.org/resources
www.reconnectingamerica.org
www.transact.org

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