# Amtrak and Chicago Hub Operations

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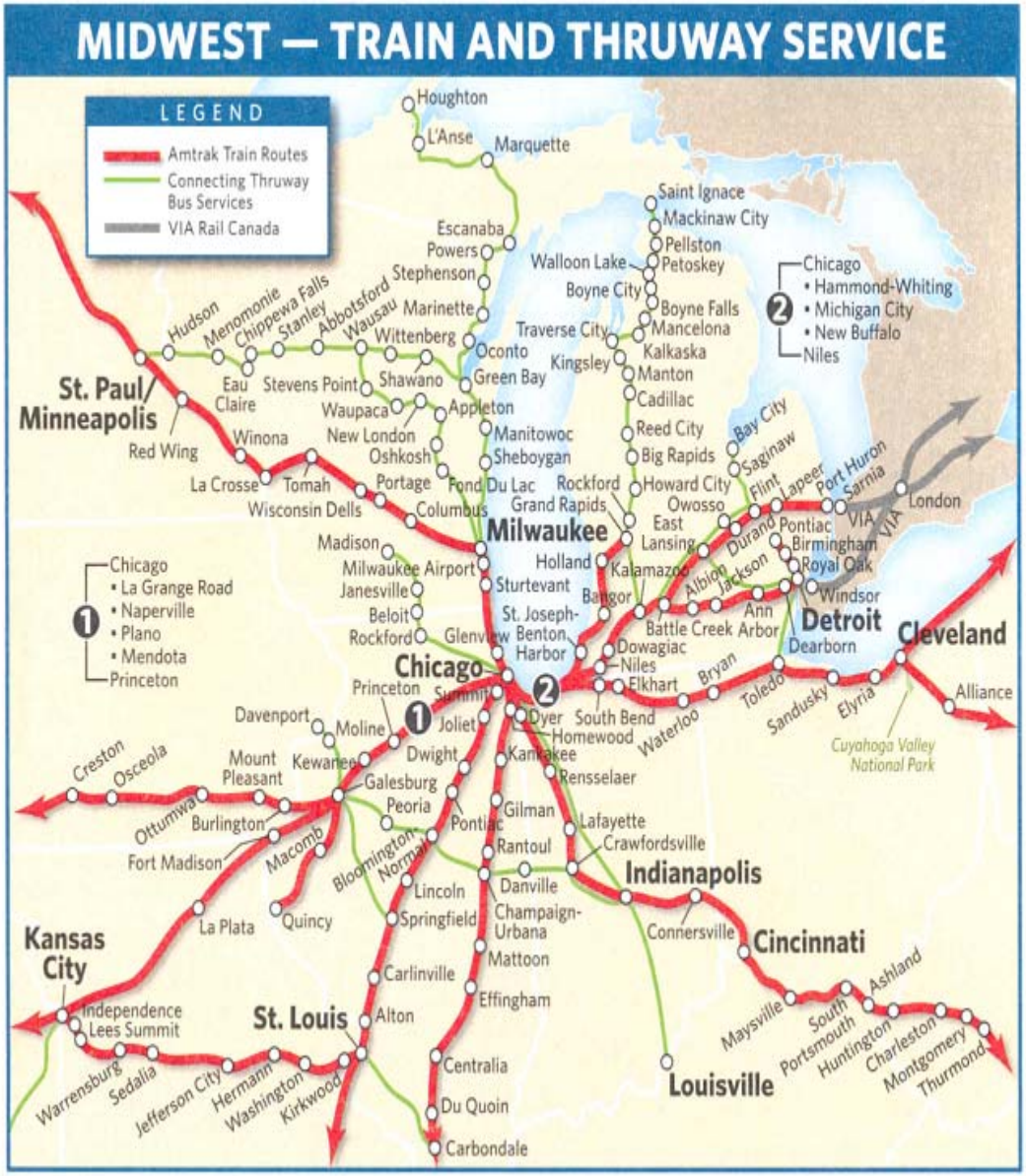
# Global Climate Change and the Transportation Sector

- As policymakers at state and federal levels address the issue of global climate change, there is consideration to significantly reduce greenhouse gas (GHG) emissions
- Some proposals include an 80% reduction in GHG emissions by 2050.
- Approximately 1/3 of GHG emissions come from the transportation sector in US.
- Energy efficiency is a low cost alternative to developing low-carbon and zero-carbon alternative fuels.

# Amtrak's Place In Domestic Transportation

- Amtrak is the nation's principal intercity rail passenger carrier
- Operates 22,000 route-miles of service in 46 states
- Carried over 27 million riders in FY09
- In 2008, Auto-Train service between Virginia and Florida removed 105,439 cars from the 1-95 corridor (train carries cars and passengers)

# MIDWEST — TRAIN AND THRUWAY SERVICE




## Host Railroads

**CHICAGO - ST. LOUIS - KANSAS CITY**
Chicago – Joliet
*Canadian National (CN)*
Joliet – Kansas City
*Union Pacific (UP)*

**ILLINOIS ZEPHYR**
Chicago – Quincy
*BNSF Railway Company (BNSF)*

**HIAWATHA SERVICE**
Chicago – Glenview
*(METRA)*
Glenview – Milwaukee
*Canadian Pacific (CP)*

**WOLVERINE, BLUE WATER AND PERE MARQUETTE SERVICE**
Chicago – Porter
*Norfolk Southern (NS)*

**PERE MARQUETTE SERVICE**
Porter – Grand Rapids
*CSX Transportation (CSX)*

**BLUE WATER AND WOLVERINE SERVICE**
Porter – Kalamazoo
*Amtrak*
Kalamazoo – Battle Creek
*Norfolk Southern (NS)*

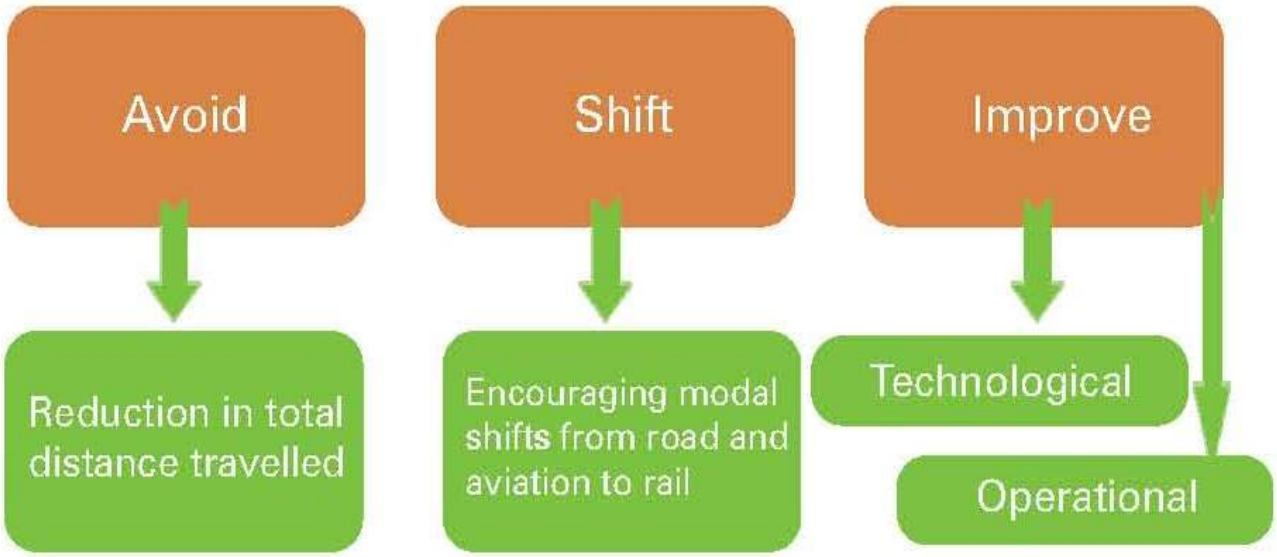
**BLUE WATER SERVICE**
Battle Creek – Port Huron
*Canadian National (CN)*

**WOLVERINE SERVICE**
Battle Creek – Detriot
*Norfolk Southern (NS)*
Detroit – Pontiac
*Canadian National (CN)*

**ILLINI**
Chicago – Carbondale
*Canadian National (CN)*

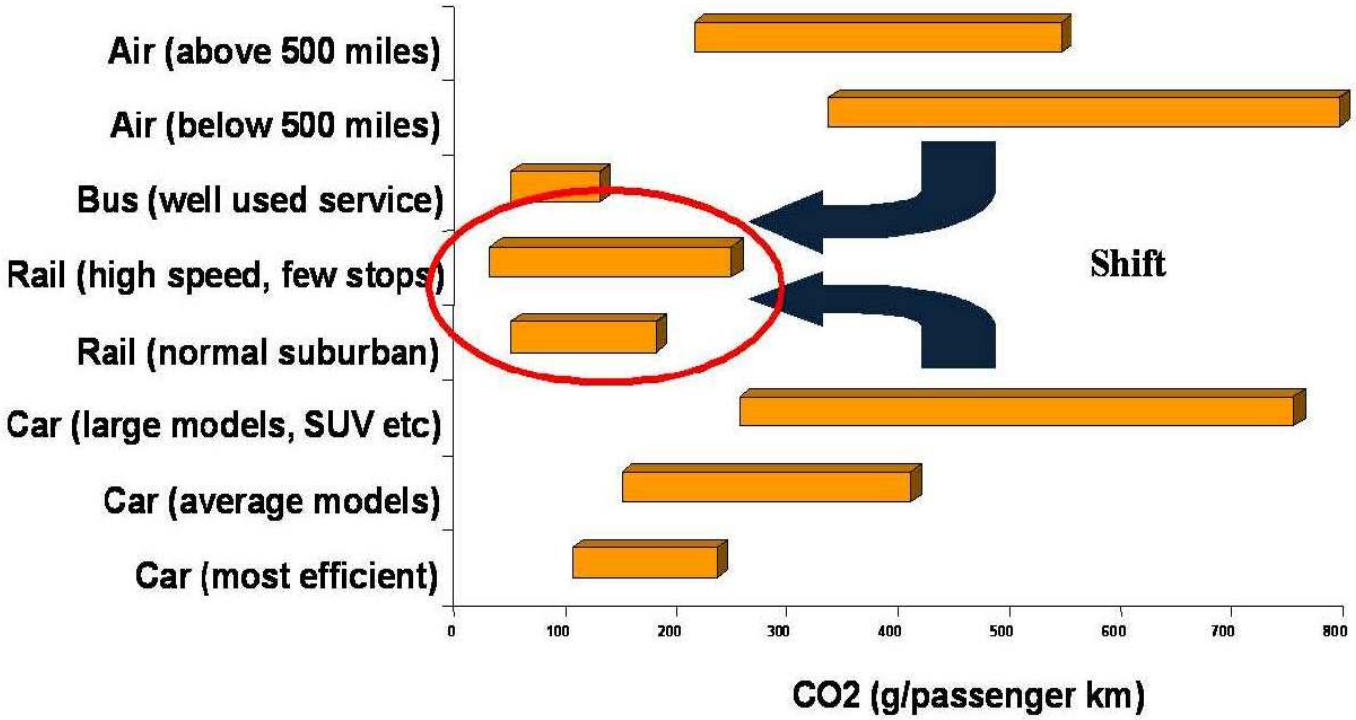
**CITY OF NEW ORLEANS**
Chicago – New Orleans

# Reducing the Environmental Impact of Transport




**Potential rail strategy responses to reduce environmental impacts.** ***From "Keeping Climate Solutions on Track: The Role of Rail" a global position paper by Kathryn Avery, Holger Dalkmann, Dani Myers, Shaneen Khambata and Margrethe Sagevik.***

# Ranges of $CO_2$ Emissions Across Different Modes of Transport



# Chicago Climate Exchange (CCX)

- **Operates the only “cap and trade” system in North America**
- **Members voluntarily agree to reduce their GHG emissions by 6 percent from 2003-2010 from their 1998-2001 baseline**
- **Third party independent verification by the Financial Industry Regulatory Authority (FINRA, formerly NASD)**
- **Membership commitment is voluntary but legally binding**

# Amtrak's Voluntary Commitment to Emissions Reduction

- **Amtrak is committed to a phased reduction in its diesel emissions levels**
- **The baseline for the reduction is an average of 1998-2001 emissions levels**

| Calendar Year | Emissions Commitment in Metric Tons of $CO_2$ |
|---|---|
| 2004 | 810,000 (actual: 731,400) |
| 2005 | 801,700 (actual: 723,100) |
| 2006 | 793,400 (actual: 668,200) |
| 2007 | 791,400 (actual: 678,400) |
| 2008 | 789,300 (actual: 669,600) |

# GHG Inventory: Overview

- **The Climate Registry's General Reporting Protocol**
- **Must report emissions of six GHGs:**
  - Carbon dioxide ($CO_2$)
  - Methane ($CH_4$)
  - Nitrous oxide ($N_2O$)
  - Sulfur hexafluoride ($SF_6$)
  - Hydrofluorocarbons (HFCs)
  - Perfluorocarbons (PFCs)
- **Must report both direct and indirect emissions down to the facility level**
- **Obtain third-party verification for each annual report**

# Amtrak's Carbon Offset Program

- Program operated by Carbonfund
- Offsets are available to passengers (voluntary) for:
  - 2500 miles (992 pounds of CO2) of travel at $4.50
  - 5500 miles (2182 pounds of CO2) of travel at $10.00
- Program started in April 2008
- Through June 2009, over 8,000,000 miles of offsets have been purchased by Amtrak passengers

# Diesel Fuel Reduction Methods

- Anti-idling practices
- Automatic Start/Stop installation
- Aerodynamic improvements of rolling stock
- Consist/Locomotive management
- Locomotive upgrades and improved maintenance
- Locomotive Engineer Training

# Electric Locomotives

- **Higher BTU Use**
  - Some power loss in transmission lines
- **Higher Speeds**
- **Regenerative Braking**
- **Carbon Emissions Dependent on Type of Power Purchased**
  - Electricity generated by coal yields higher carbon emissions
  - Nuclear, Wind and Hydro-electric power have limited carbon emissions
  - Emissions of other contaminants likely lower due to “stack controls” on power plants



# Diesel Locomotives

- **Engine drives an electric generator that runs electric motor**
- **High Horsepower, over 4000 hp**
  - 12 to 16 cylinder engines
- **Manufactured by General Electric and EMD**
- **Installing 480 volt plug-ins to provide Head End Power (HEP) for service at layover stations**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# Zero Emissions Rail Travel