

Chicago Region Transportation Energy

Chicago Advanced Energy
Stakeholder Series

Energy, Mobility, and
Transportation

December, 2016

ON
TO
2050

The Chicago Region's Passenger Transportation

Countdown

Inventory Element	Number, 2015
All Public Roads, Route Miles	30,327
National Highway System, Route Miles	2,396
Vehicle Registrations	5,330,924
Rapid Transit, Route Miles	103
Rapid Transit, Number of Stations	145
Commuter Rail, Route Miles	493
Commuter Rail, Number of Stations	241
CTA Bus, Route Miles	1,301
Pace Suburban Bus, Route Miles	3,092
Regional Trails Complete, Miles	1,162

Passenger Travel Strategies

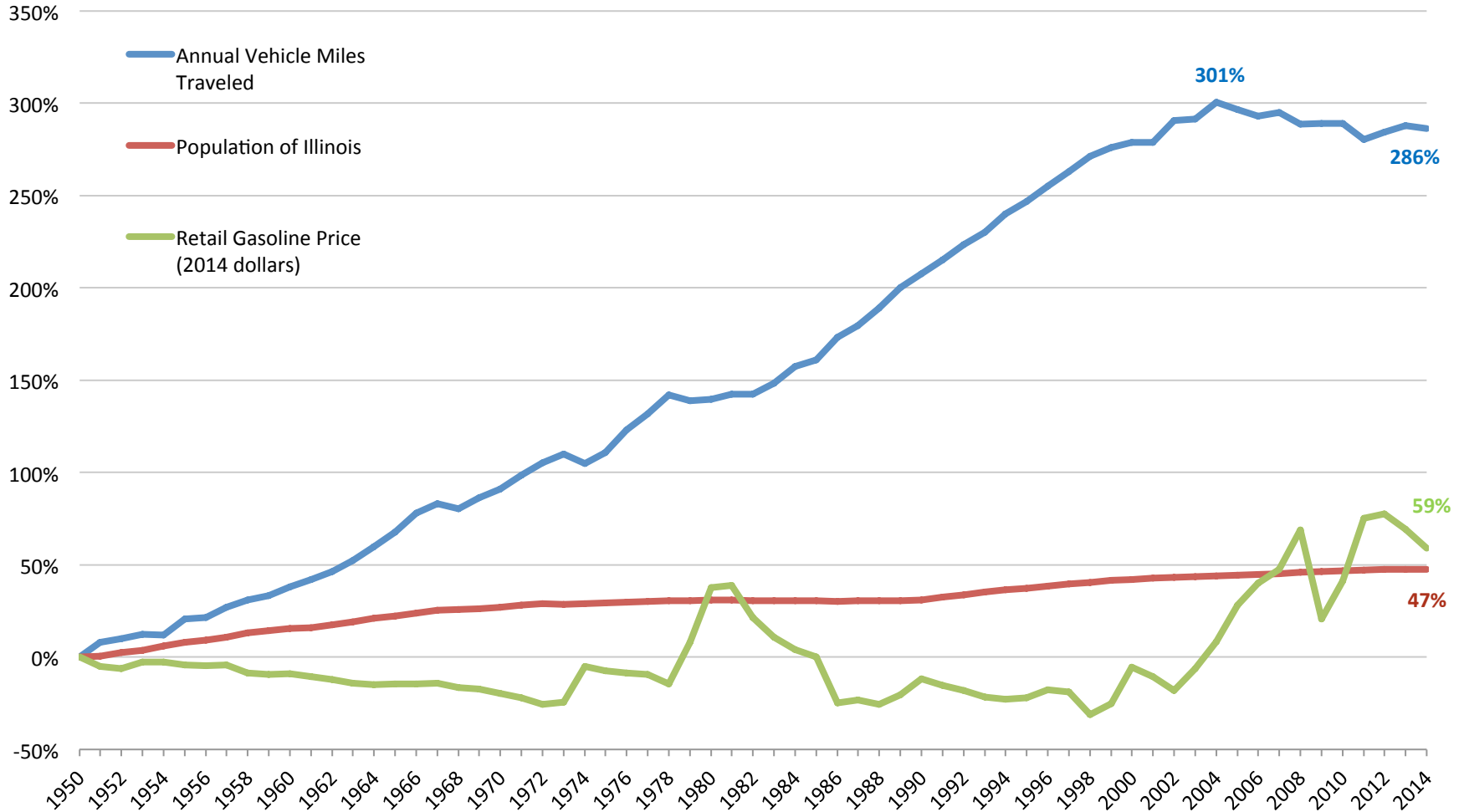
Some Trends We'll Talk About (briefly):

- Peak Auto?
- Mode Share
- Increased Consideration of Non-Commute Trips
- Growing Emphasis on Planning for Accessibility vis-à-vis Mobility
- Beginnings of Shared Mobility
- Will We Turn the Tide on Congestion?

Growth in Vehicle Miles Traveled (VMT) Stalled

Percent change in annual VMT, population and gas prices in Illinois, 1950-2014

Source: U.S. Census Bureau, Illinois Department of Transportation (Illinois Travel Statistics) and U.S. Energy Information Administration

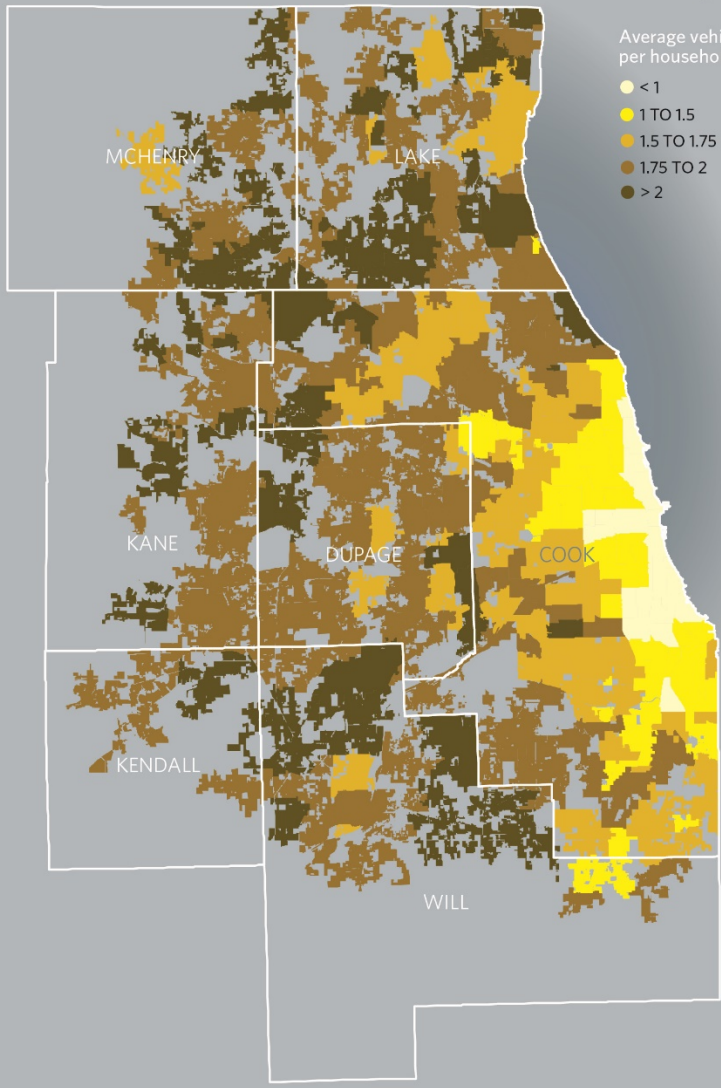


VMT Depends on Vehicles and Daily

Average vehicles per household

Note: Municipalities with fewer than 100 odometer observations and/or municipalities without census vehicle ownership estimates are excluded from this analysis.

Source: Chicago Metropolitan Agency for Planning analysis of American Community Survey estimates for 2009-2013; odometer readings from the Illinois Environmental Protection Agency, 2011-2013.



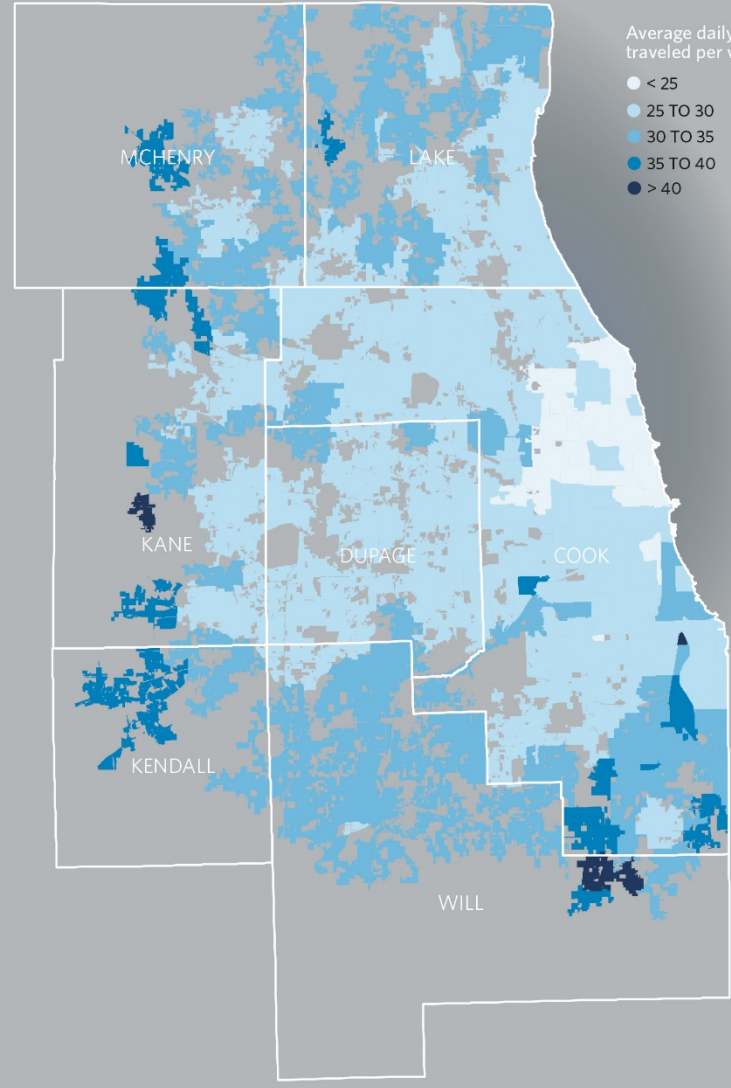
Average vehicles per household

- < 1
- 1 TO 1.5
- 1.5 TO 1.75
- 1.75 TO 2
- > 2

Average daily miles traveled per vehicle

Note: Municipalities with fewer than 100 odometer observations and/or municipalities without census vehicle ownership estimates are excluded from this analysis.

Source: Chicago Metropolitan Agency for Planning analysis of American Community Survey estimates for 2009-2013; odometer readings from the Illinois Environmental Protection Agency, 2011-2013.



Average daily miles traveled per vehicle

- < 25
- 25 TO 30
- 30 TO 35
- 35 TO 40
- > 40

So VMT Depends on Settlement Patterns

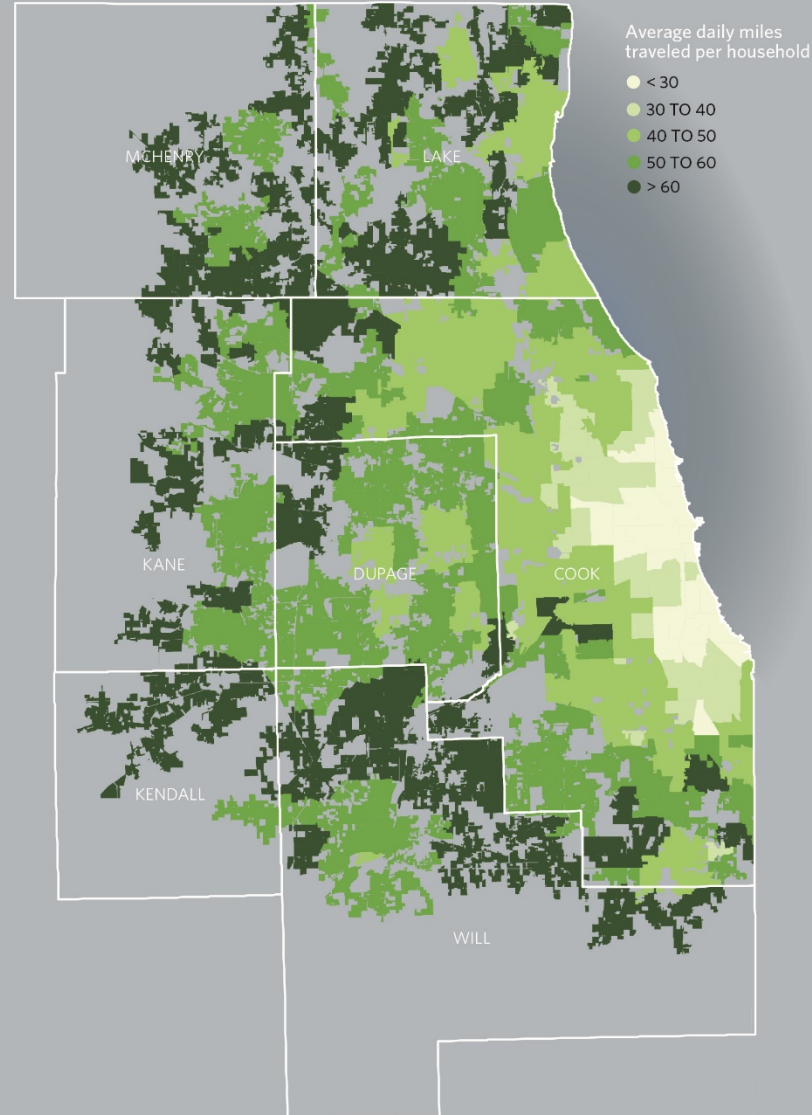
Strategies to Affect
Where People
Settle...

Strategies to Make
Exurban
Communities More
Accessible to Reduce
Trip Lengths...

Average daily miles traveled
per household

Note: Municipalities with fewer than 100
odometer observations and/or municipalities
without census vehicle ownership estimates
are excluded from this analysis.

Source: Chicago Metropolitan Agency for
Planning analysis of American Community
Survey estimates for 2009-2013; odometer
readings from the Illinois Environmental
Protection Agency, 2011-2013.

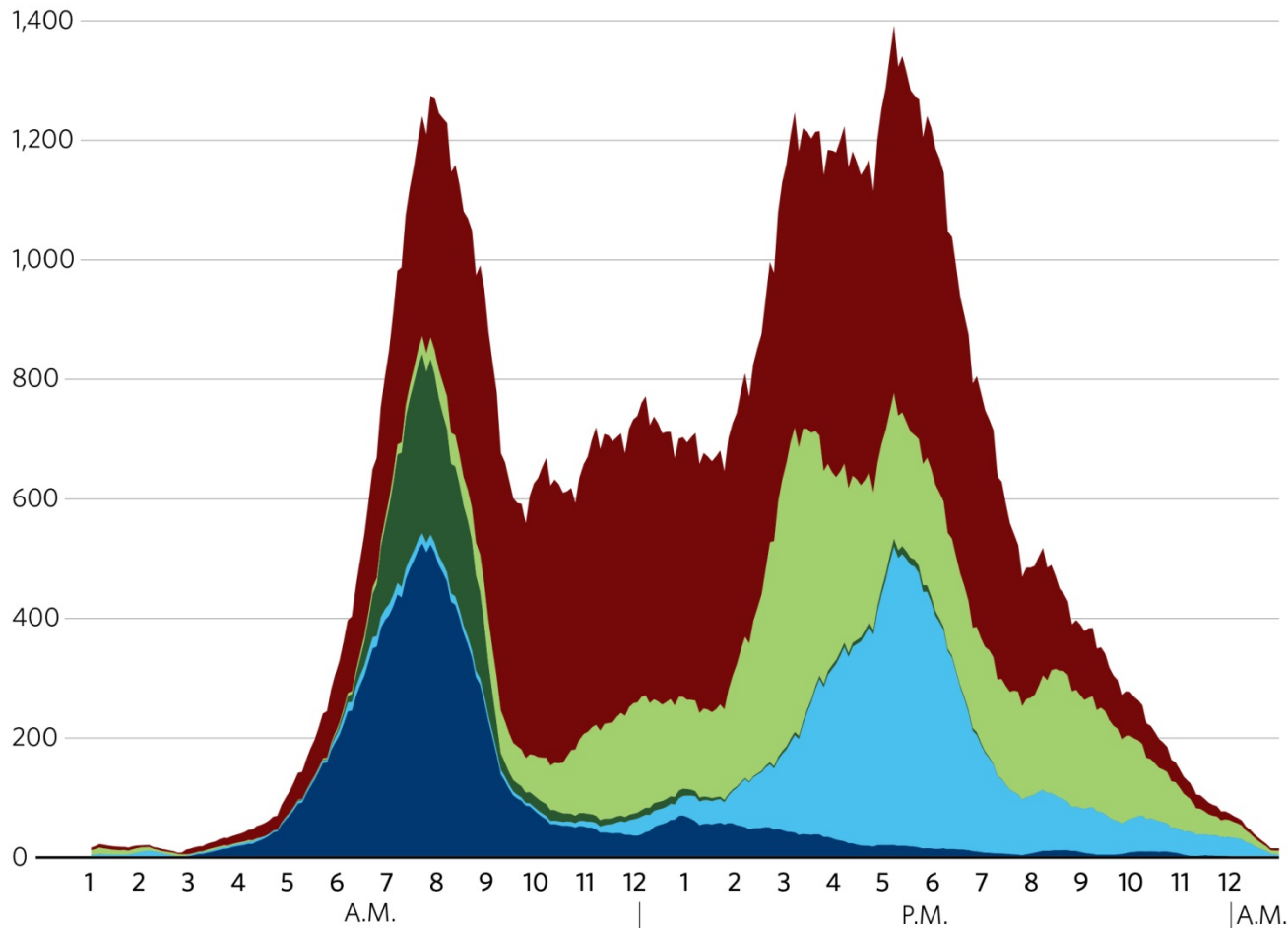


We need to pay much more attention to non-work trips.

Trips in motion by time of day in the Chicago region, 2008, scale in thousands

Source: Chicago Metropolitan Agency for Planning analysis of Travel Tracker Survey.

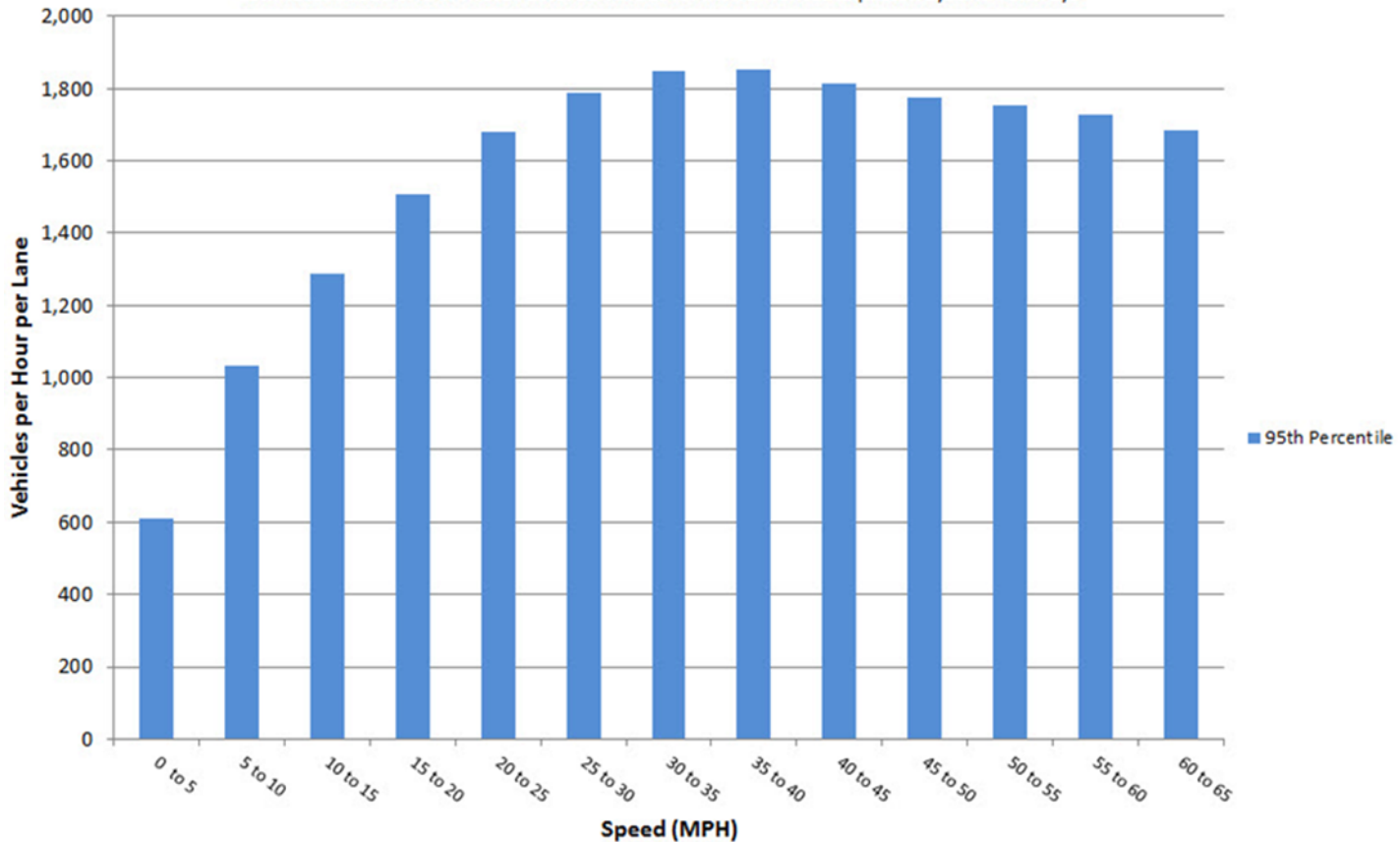
- OTHER TRIP PURPOSE
- RETURN HOME FROM NON-WORK LOCATION
- TRAVEL TO CLASS
- RETURN HOME FROM WORK
- TRAVEL TO WORK



Highway Congestion

95th Percentile Vehicles per Hour per Lane by Speed, 2009, Northeastern Illinois Limited Access Highways

Estimates Based on 5-Minute Factored Values for Instrumented Expressways and Tollways



Prepared March 9th, 2011 by CMAP based on information provided by IDOT, ISTHA, and Traffic.com
Updated January, 2012

Note: Speed "5 to 10" Means ≥ 5 MPH and < 10 MPH

Addressing Congestion

Tomorrow's highways may operate differently than today's.

- Communications
- Congestion Pricing and Active Management
- Autonomous Vehicles
- Shared Mobility

CMAP **Congestion Pricing**

What are express toll lanes?

With congestion pricing, toll rates in express lanes rise at times when more drivers want to use the highway, then tolls fall when demand is low. The simple logic of supply and demand can help to manage highway resources more effectively: Drivers will choose to enter or leave the express toll lanes based on the variable cost.

The toll rate can be finely calibrated to manage demand at a level that leads to faster, more-reliable travel times. Higher prices during peak periods may also reduce congestion by encouraging travelers to carpool, take transit, or consider alternative routes and times for their trips.

At the access points, signs indicate the toll charged to travel certain distances. Prices are set to ensure smooth traffic flow and reliable speeds in the express lanes. Transit vehicles and registered carpools typically ride free or at a discount.

About
What are express toll lanes?

Locations
Where should this be implemented?

Reasons
Why is this important?

Instances
Where else is this underway?

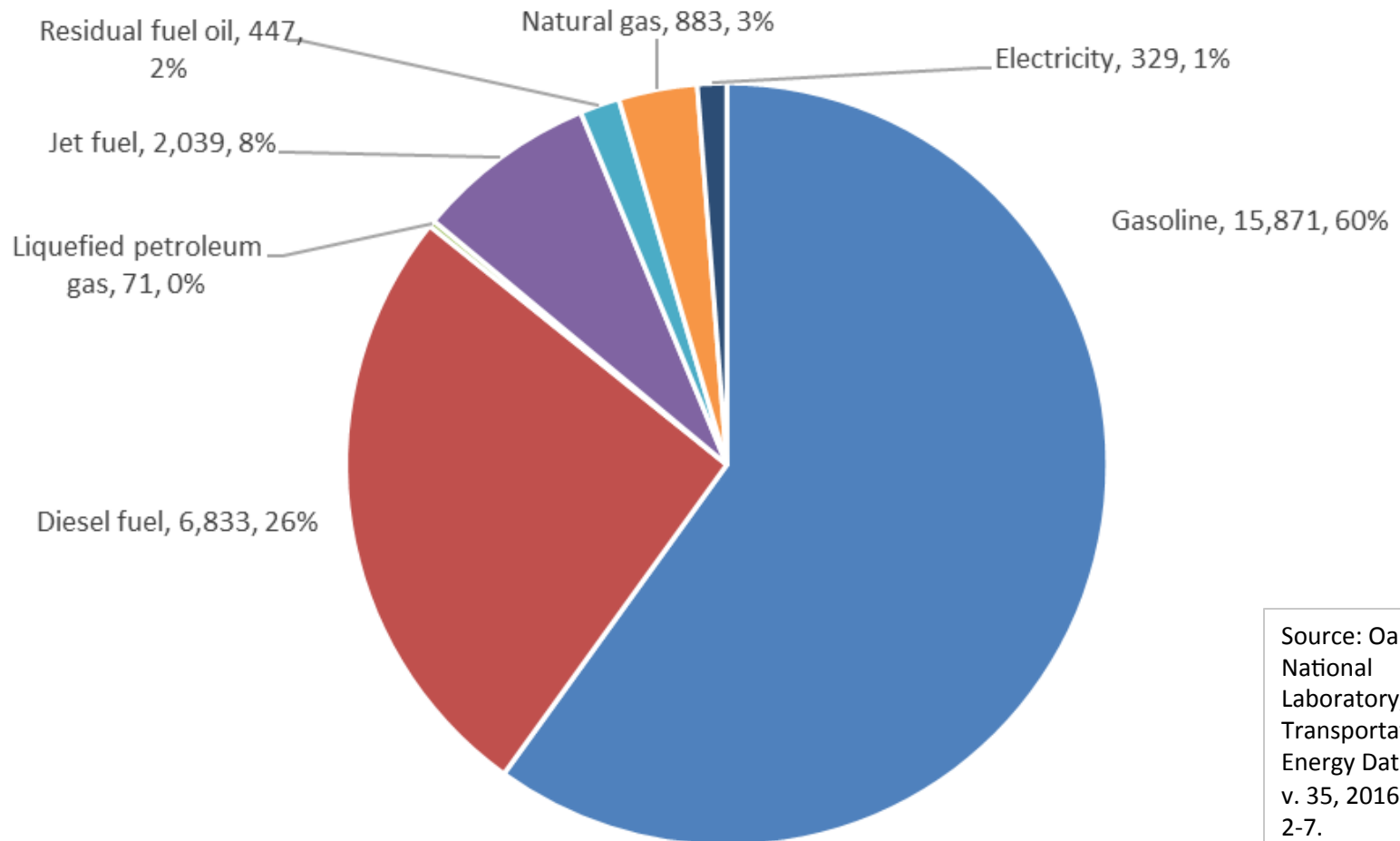
Resources
How can I learn more?

SHARE

Terms & Conditions | www.cmap.illinois.gov | Policy updates about Congestion Pricing

Transportation Energy Consumption by Fuel

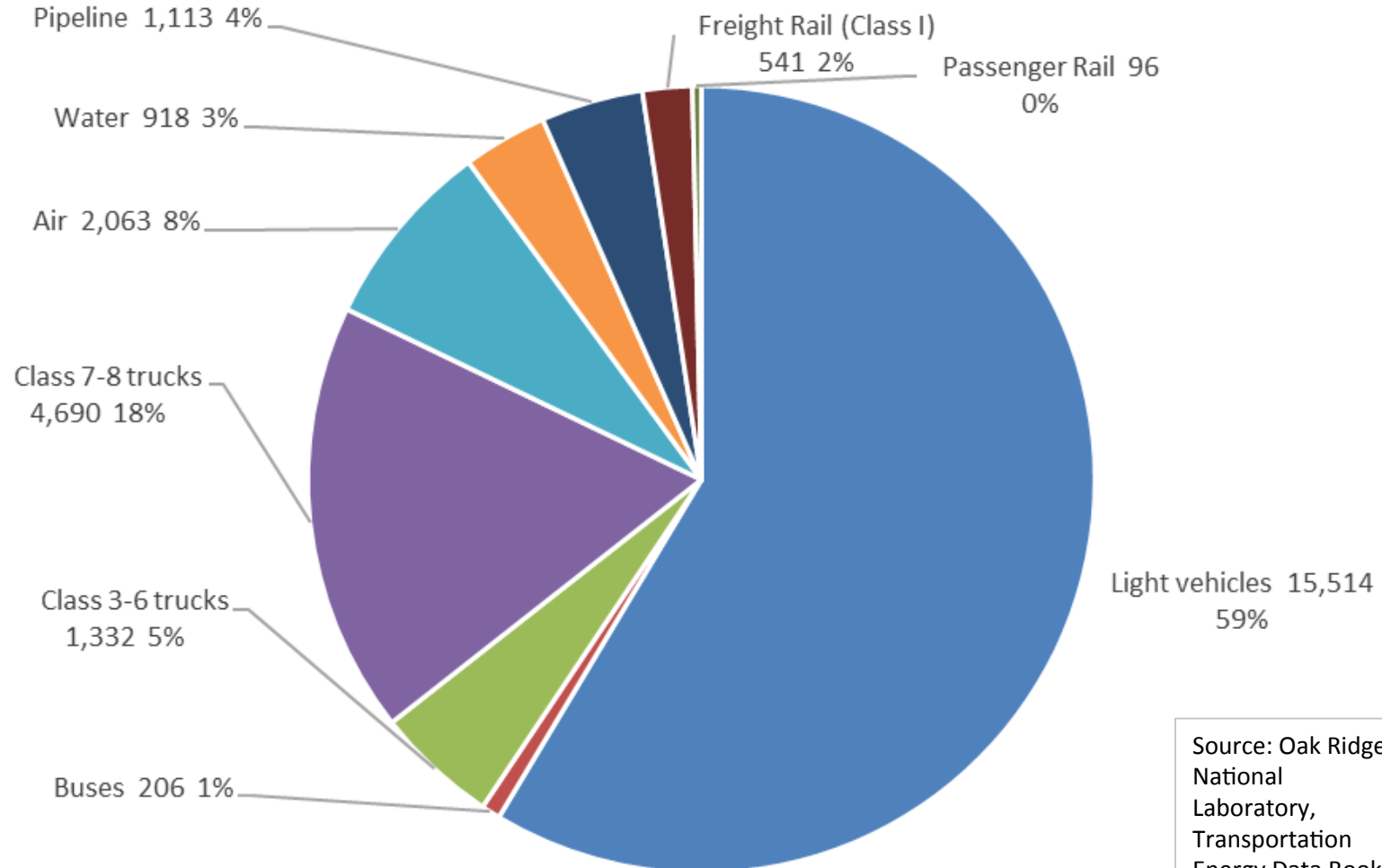
U.S. Domestic Transportation Energy Consumption, 2015
Trillions of BTUs



Source: Oak Ridge National Laboratory, Transportation Energy Data Book, v. 35, 2016. Table 2-7.

Transportation Energy Consumption by Mode

US Domestic Transportation Energy Consumption, 2014
Trillions of BTUs



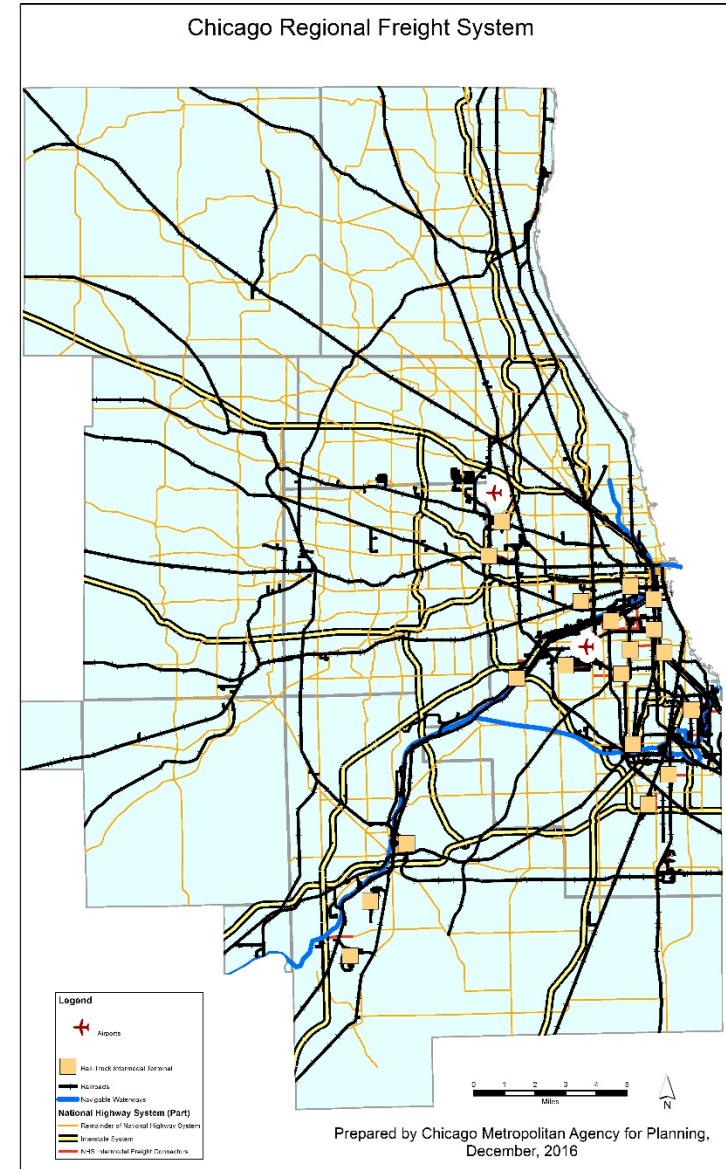
Source: Oak Ridge National Laboratory, Transportation Energy Data Book, v. 35, 2016. Table 2-8.

The Chicago Region's Freight Transportation System

The Freight System

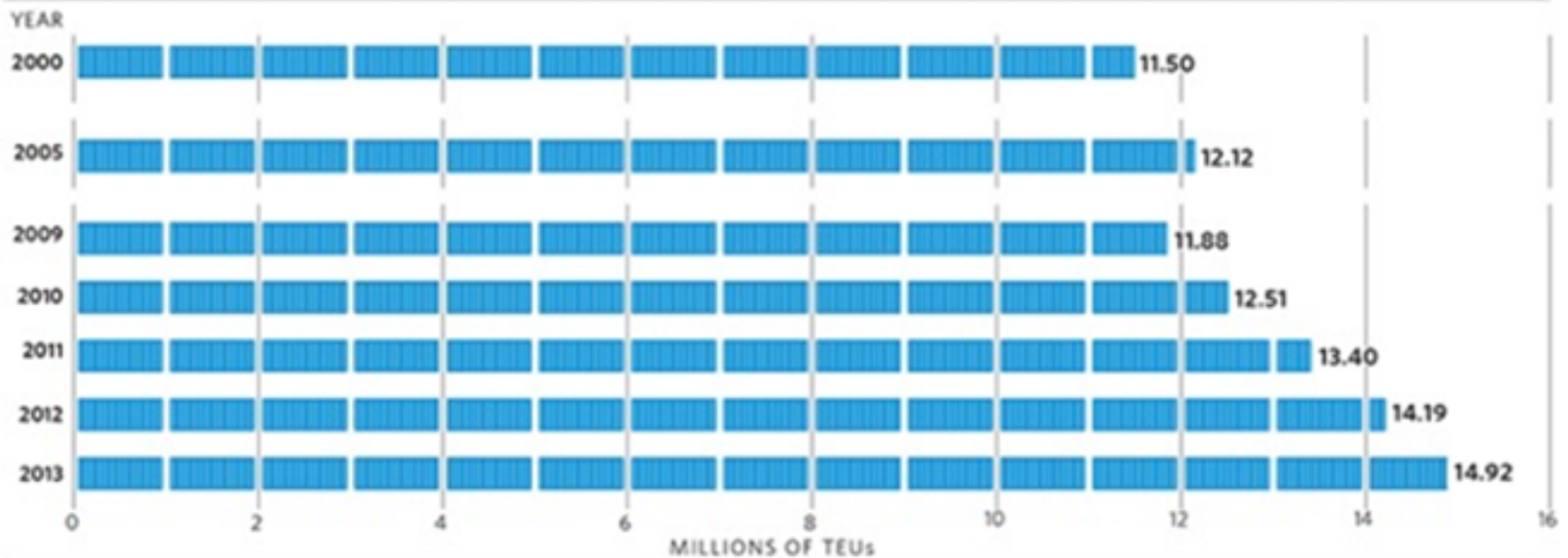
consists of:

- Railroads
- Navigable Waterways
- Airports
- Highways, including
 - Interstate System
 - Intermodal Connectors
 - Remainder of National Highway System



Freight Growth

TEUs moved through rail-truck intermodal facilities in Chicago region in select years, 2000-13, in millions

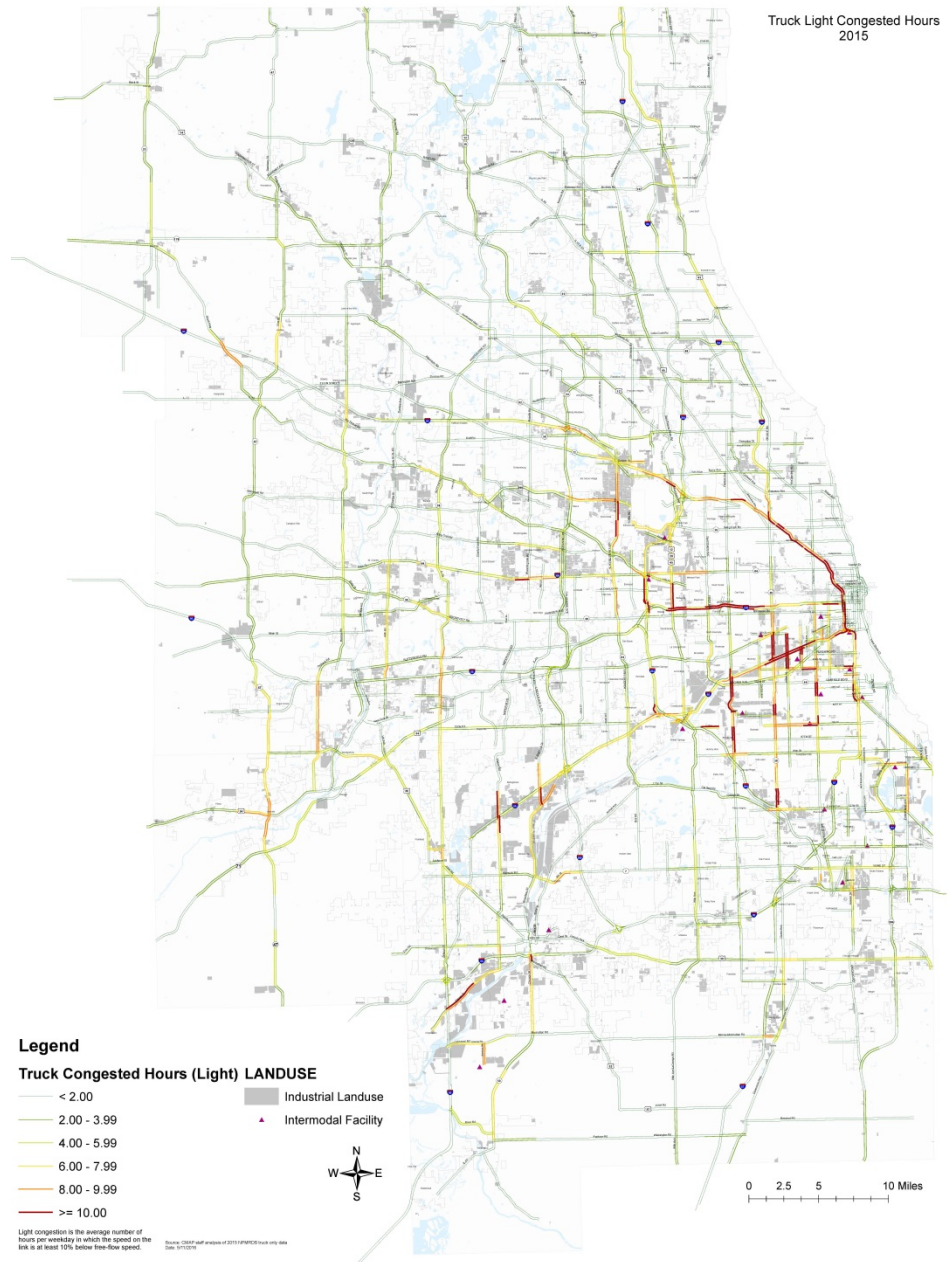


Note: TEU is a 20-foot equivalent freight cargo container. Data not available for 2001-04 and 2007-08.

Source: Chicago Metropolitan Agency for Planning estimates.

Freight Bottlenecks

Many National Highway System locations in the region have more than 10 hours per day of truck freight congestion.



Right Truck, Right Place, Right Time

Trucks account for about 28% of highway energy use, but only 9% of vehicle miles traveled.

Turnover is slow. In 2013, 21% of trucks were 15 or more years old. The median age was 8 years.

From 2007 to 2014, Class 7-8 fleet fuel economy declined from 6.0 to 5.8 mpg. But new SuperTrucks can get over 10 mpg.



Image: Peterbilt



Image: Freightliner

Right Truck, Right Place, Right Time

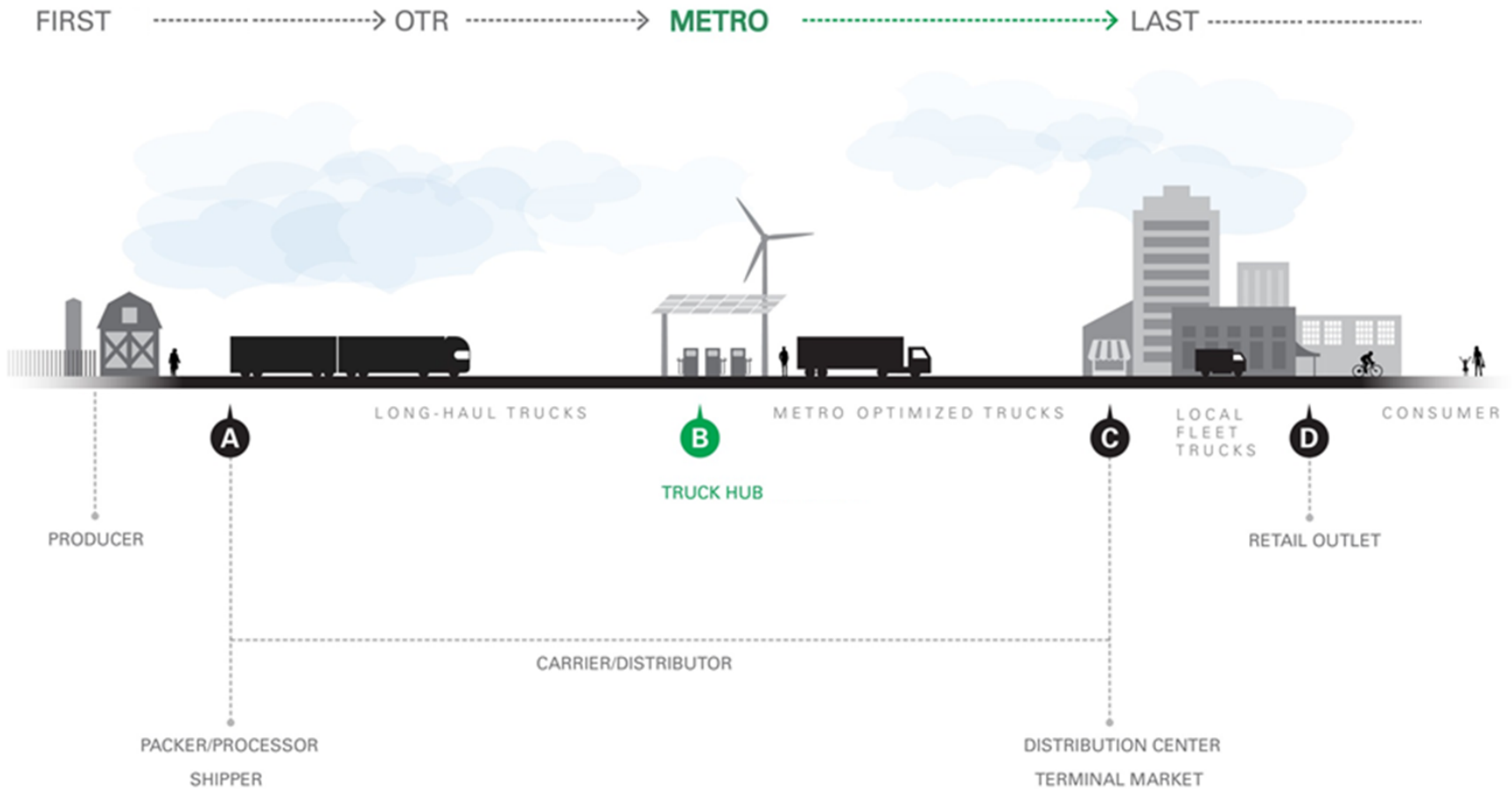
Many trucks are now equipped with telematics technologies. Logging devices will be required for many trucks beginning in 2017.

These changes are facilitating a new industry of freight-efficiency development, ranging from real-time driver coaching to route optimization.



Right Truck, Right Place, Right Time

INNOVATION IN MOVING FOOD FREIGHT



Right Truck, Right Place, Right Time

Urban Delivery

- Quiet
- Low or Zero Emission
- Optimized for Maneuverability, Starts/Stops
- Alternative Fuels;

Issue: Alternative fuel for power trains are widespread, but not for refrigeration units.



Image: Testa Produce

Right Truck, Right Place, Right Time

Off-Peak Delivery

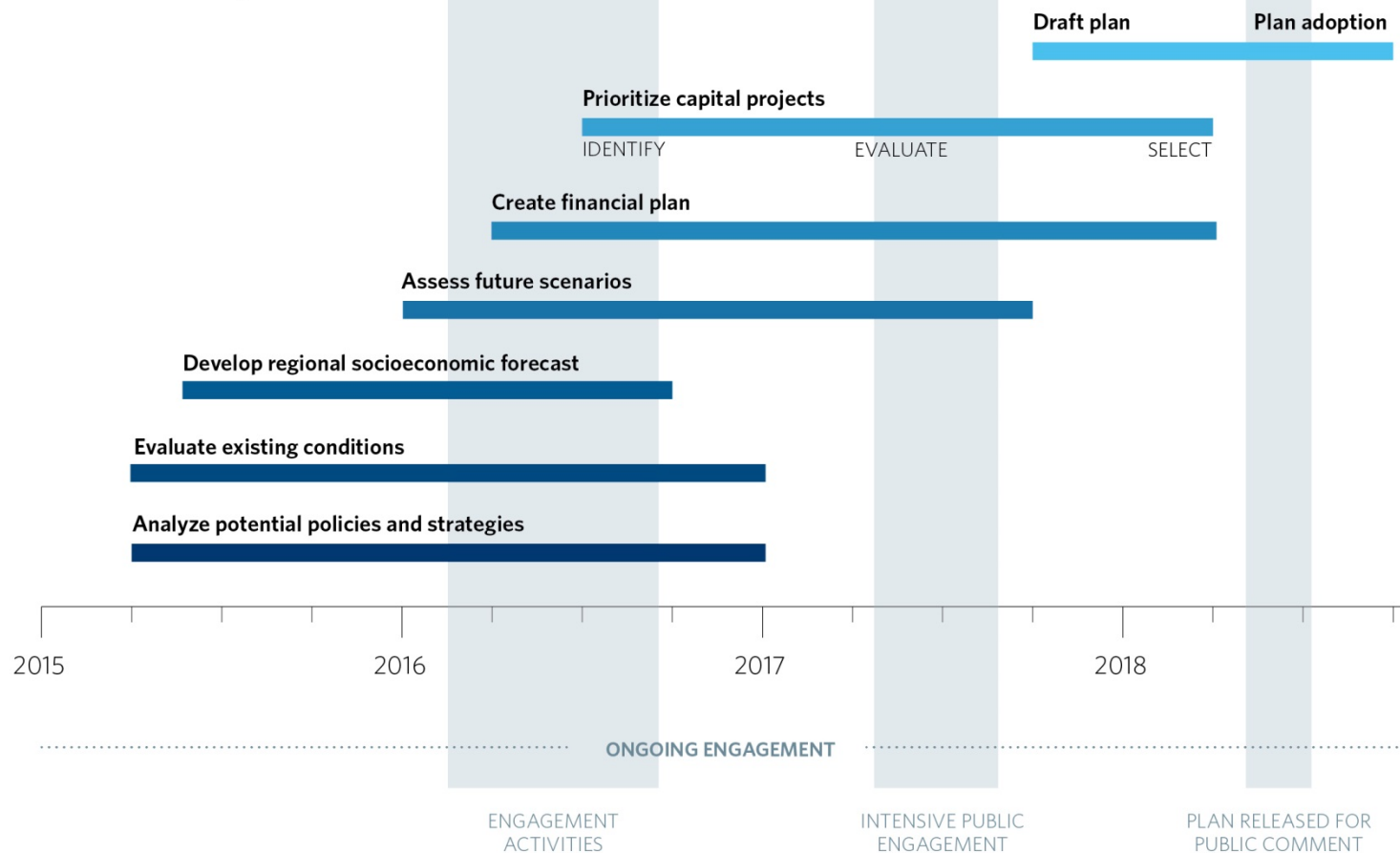
- Pilot projects in NYC and elsewhere show off-peak delivery programs can move some trucks to the off-peak period. Lowers costs and saves fuel.
- In metropolitan Chicago, local regulations may be a challenge.
- Region-scale implementation will require innovation.



Image: USDOT

ON TO 2050: a new long-term plan for the region

ON TO 2050 development timeline



Get involved

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