

# Transportation, Land Use and Energy

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Rebecca Ohler

Transportation and Energy Programs Manager  
Department of Environmental Services



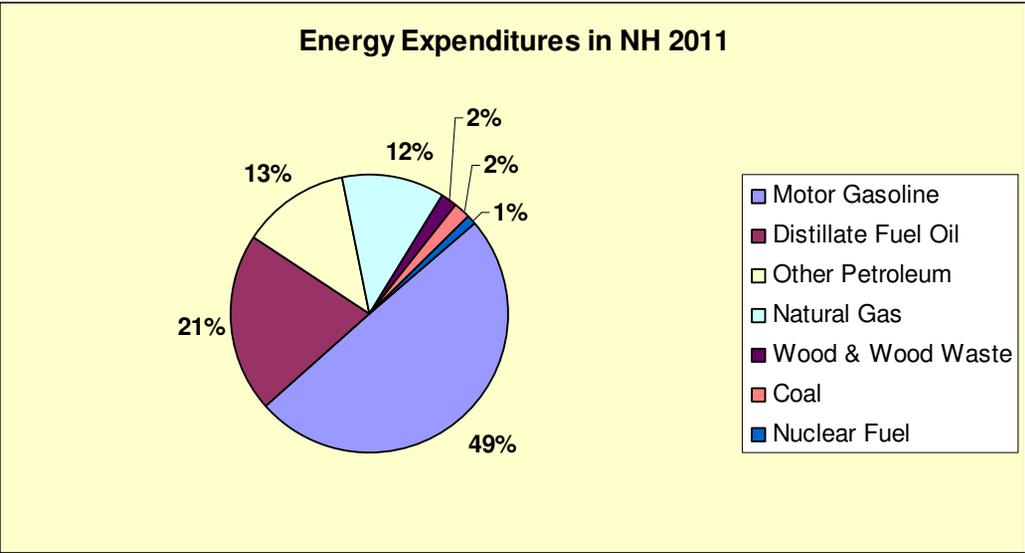
# Transportation Energy Statistics for New Hampshire

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- NH workers have an average commute of about 25 minutes<sup>1</sup>
- 35+ million miles driven daily on NH roads<sup>2</sup>
- 2.16 million gallons of gasoline and diesel fuel sold in-state per day<sup>3</sup>
- Approximately \$7.5 million per day spent on fuel



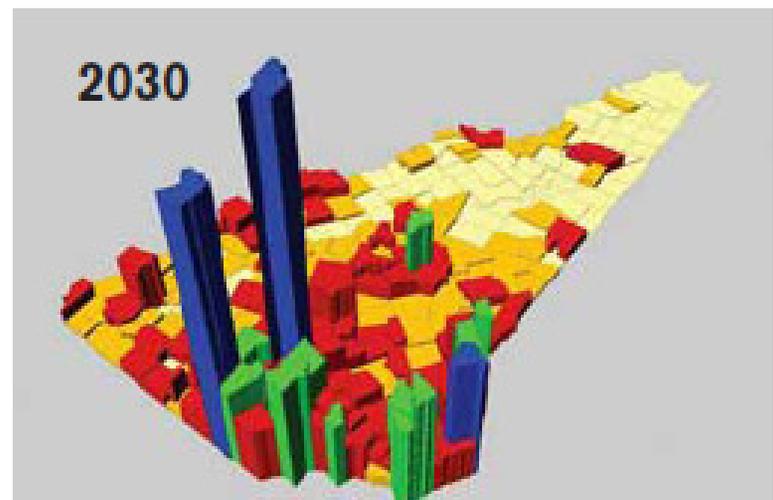
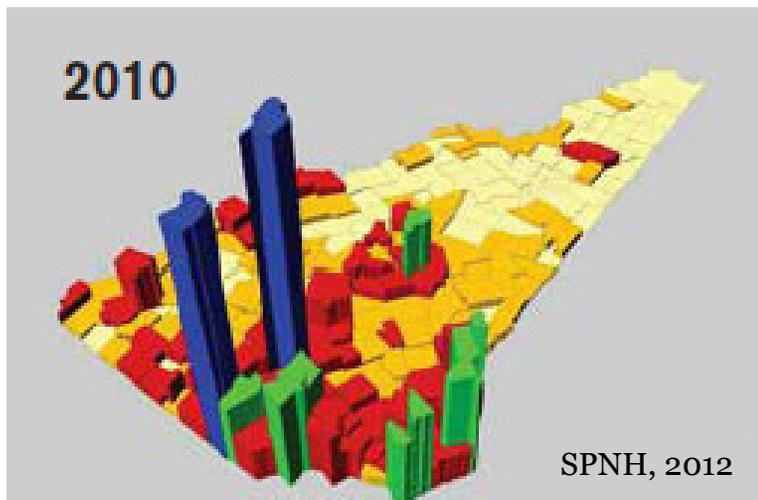
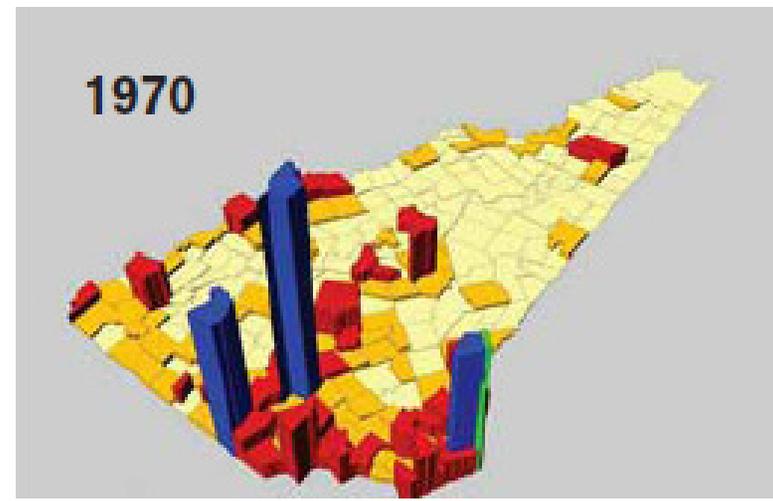
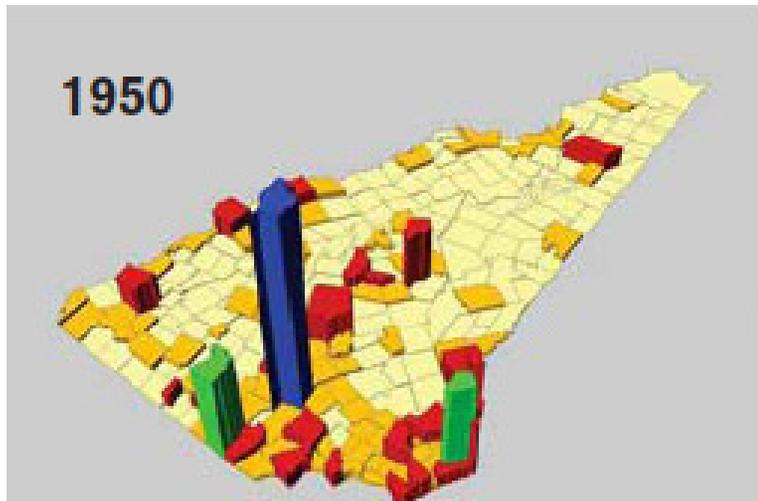
1. 2000 U.S. Census
2. NH DOT Highway Performance Monitoring System – 2011
3. US Energy Information Administration – 2009 State Energy Data System



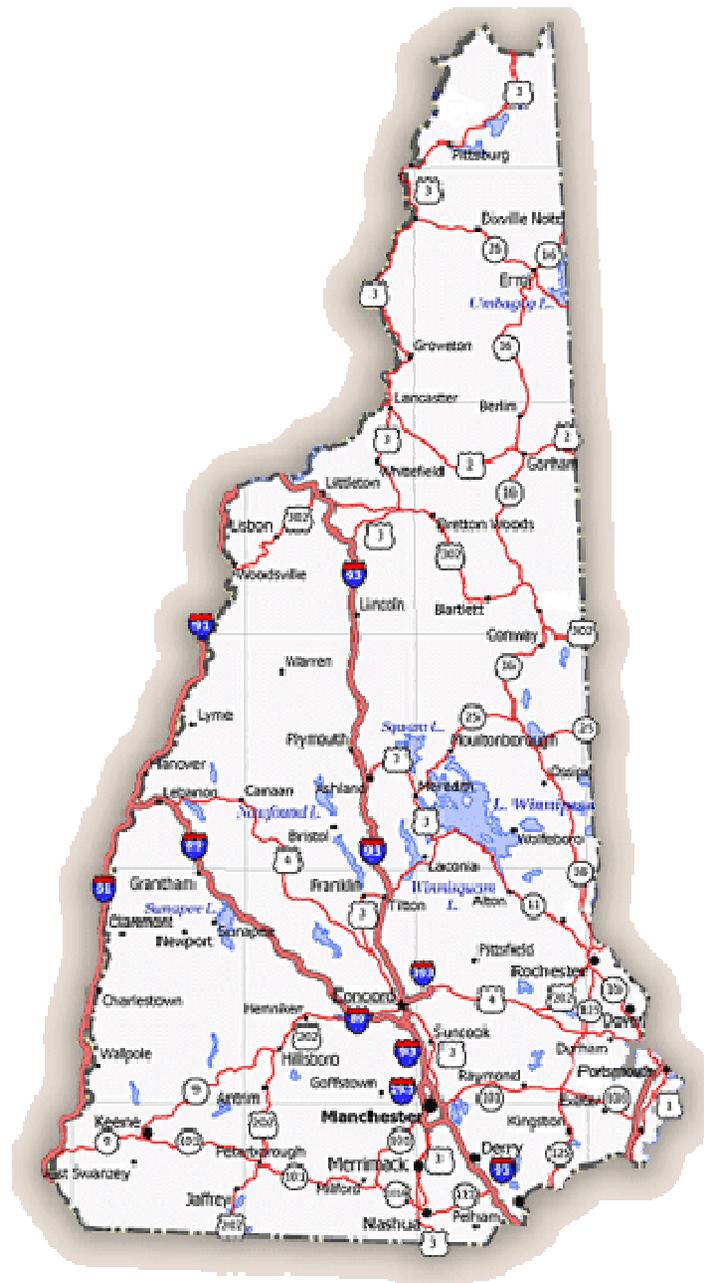
Source: EIA Data



# NH Population Growth 1950-2030



Which came first,  
the highways or  
sprawl?



# Current New Hampshire Land Use Patterns

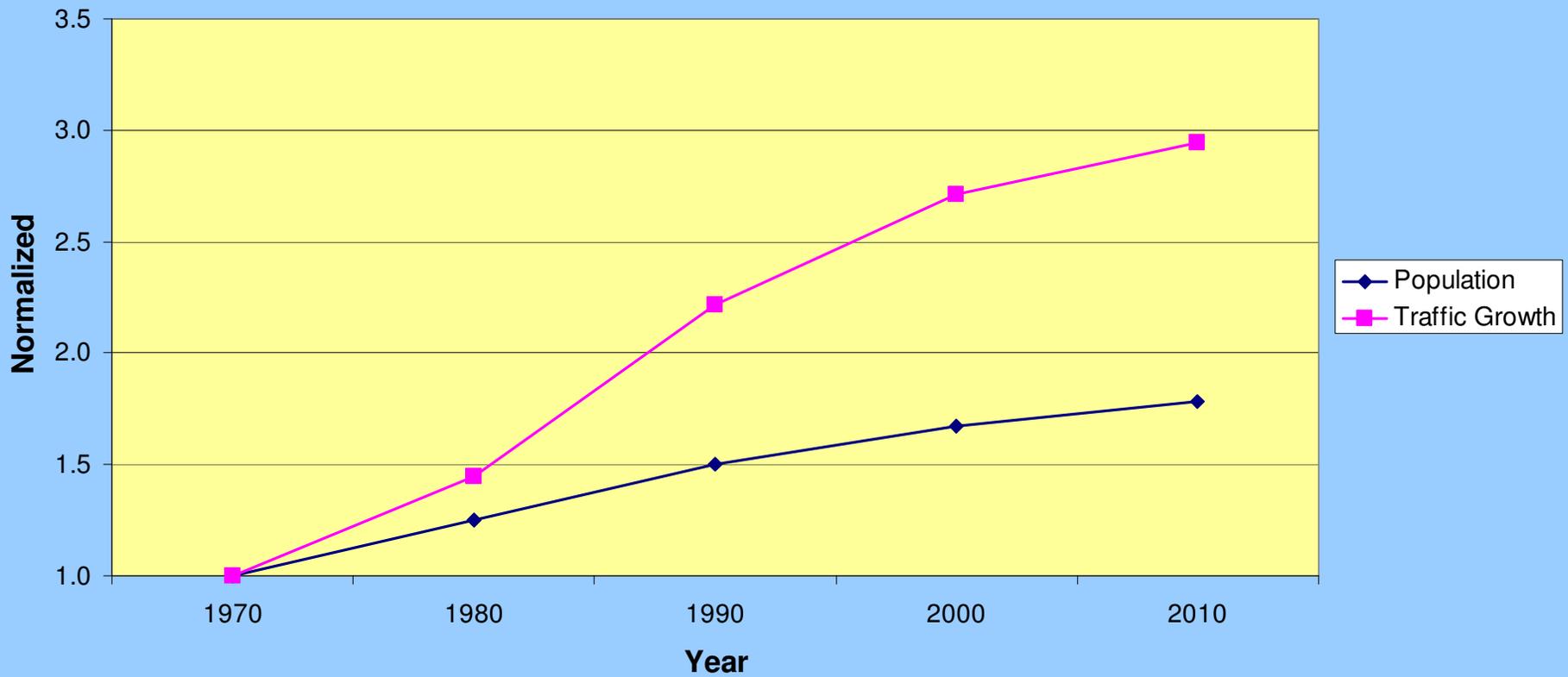
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- Rapidly growing small towns
- Scattered development
- Dispersing population
- Increasing rate of land consumption
- Segregated land uses
- Lack of activity centers
- Poor connectivity

# Growth Rates

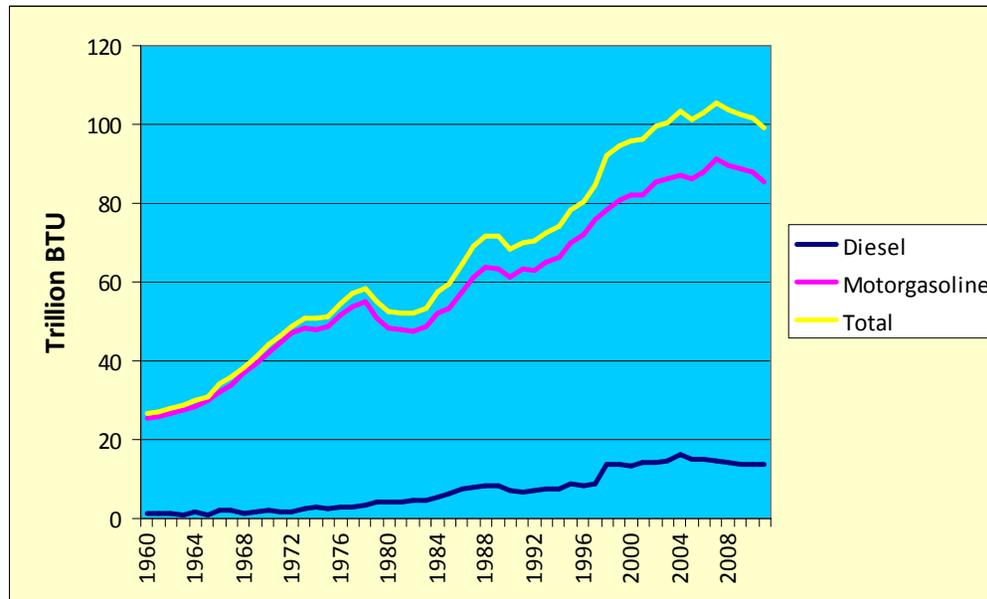
## Population and Vehicle Miles Traveled

Population vs Traffic Growth  
Comparison of Growth Rates - 1970 to 2010



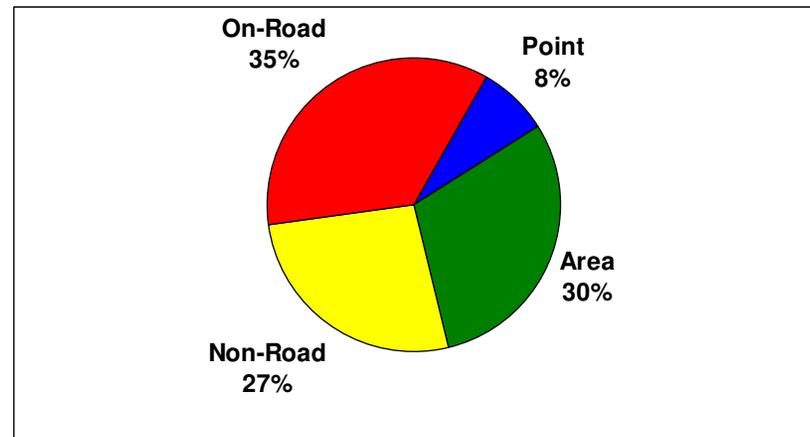
# Transportation Fuel Use

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# Ground Level Ozone by Source

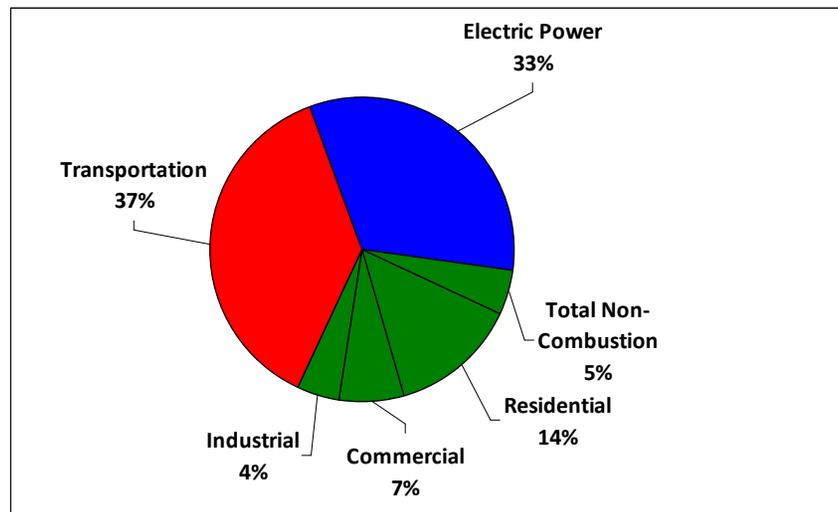
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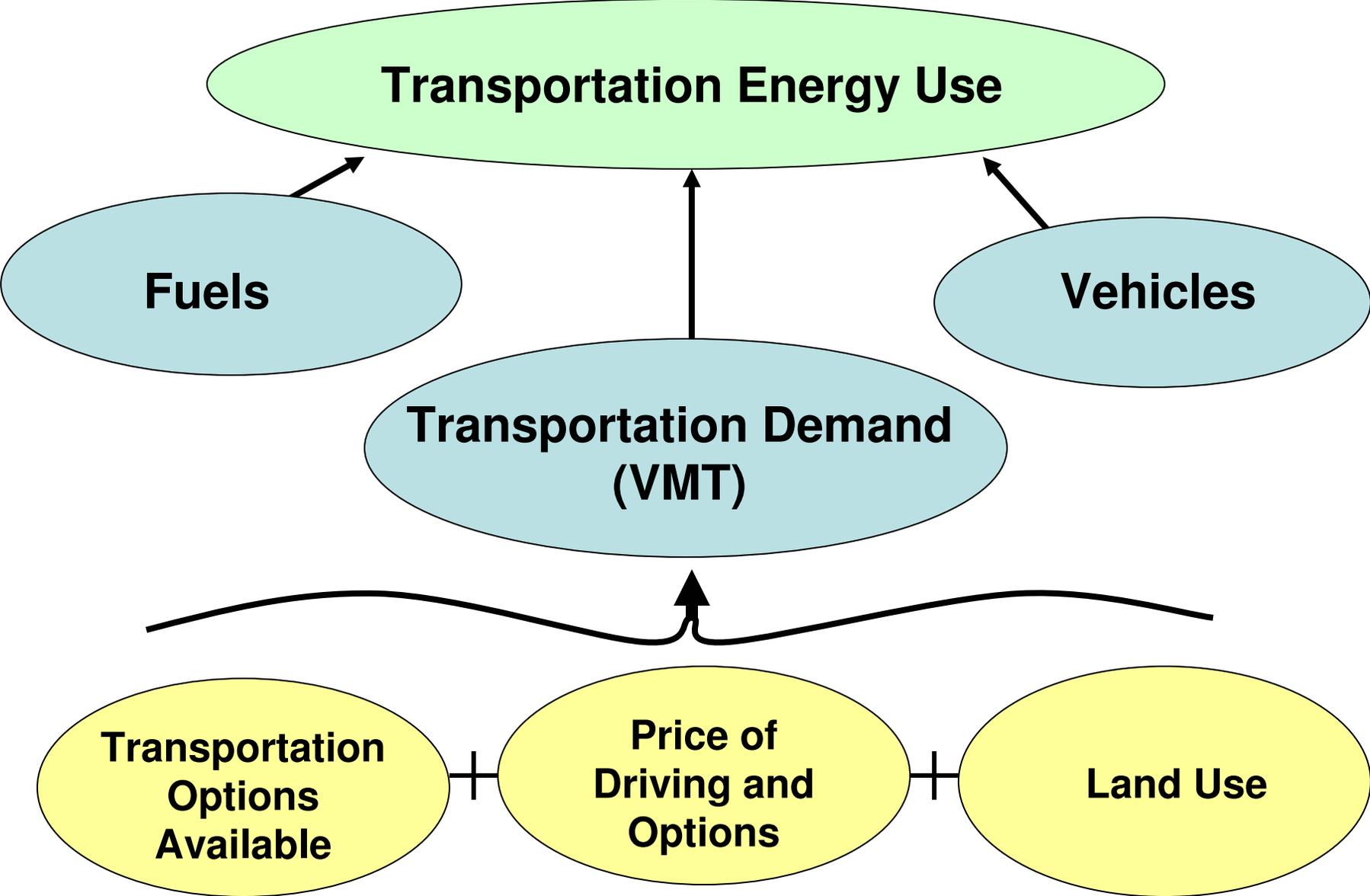


Source: 2008 National Emissions Inventory (NEI) General Purpose Release (GPR) Version 1

# New Hampshire 2008 Greenhouse Gas Emissions [MMTCO<sub>2</sub>e]

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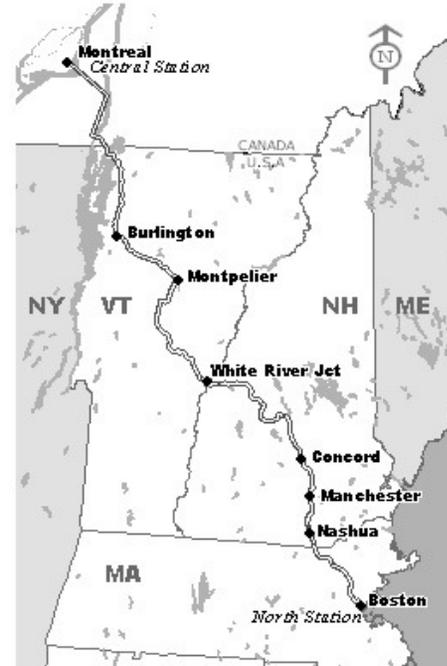
# Land Use Patterns That Help Reduce Travel Needs

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- Open space preservation
- Higher density development
- Concentrated activity centers
- Mixed use development
- Pedestrian oriented design
- Increased density near transit
- Inter-connected neighborhoods

# Alternate Transportation Modes

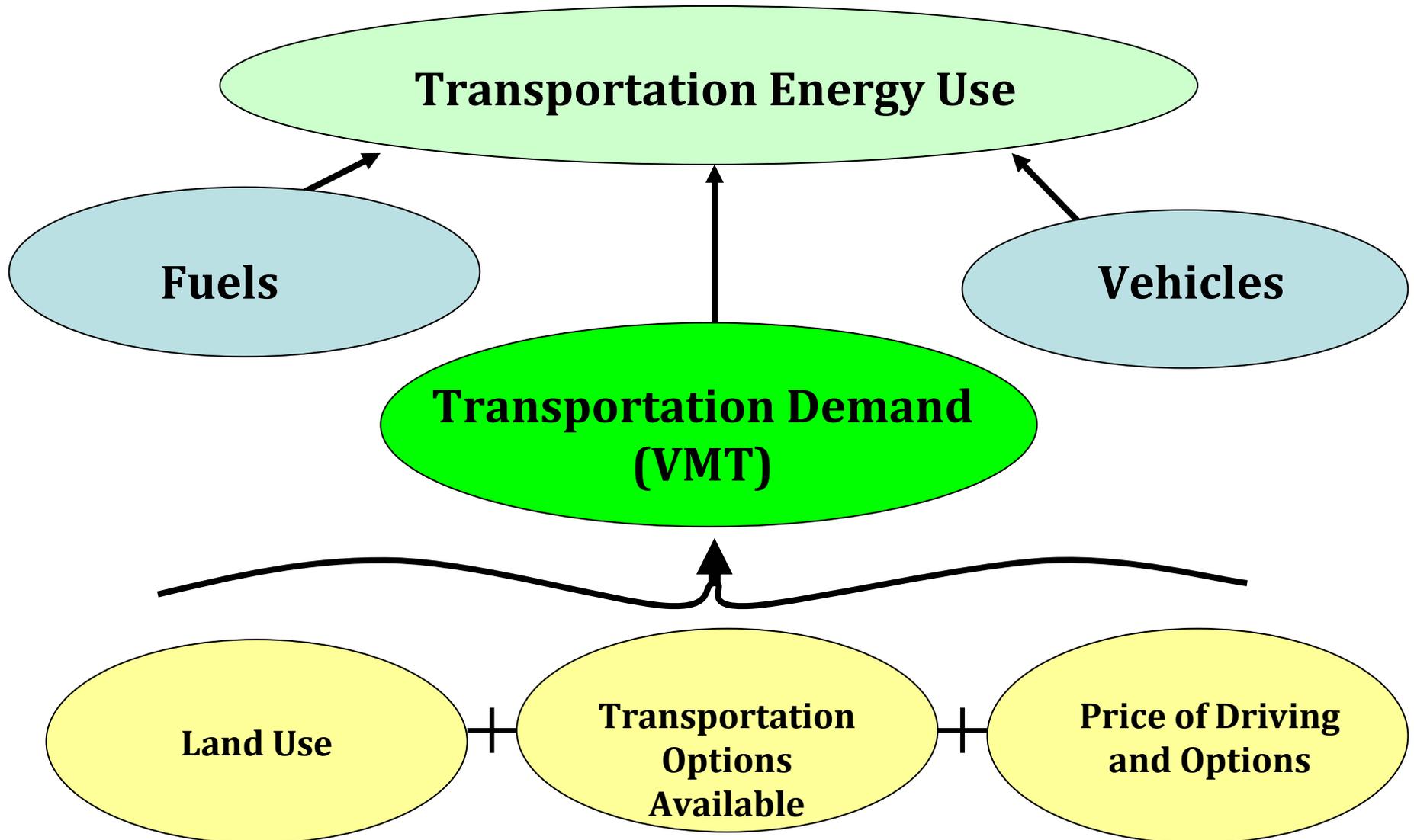
- Only 6 other states spend less on public transportation per capita than NH
- New regional rail routes are going around NH, not through



Amtrak Routes in NE

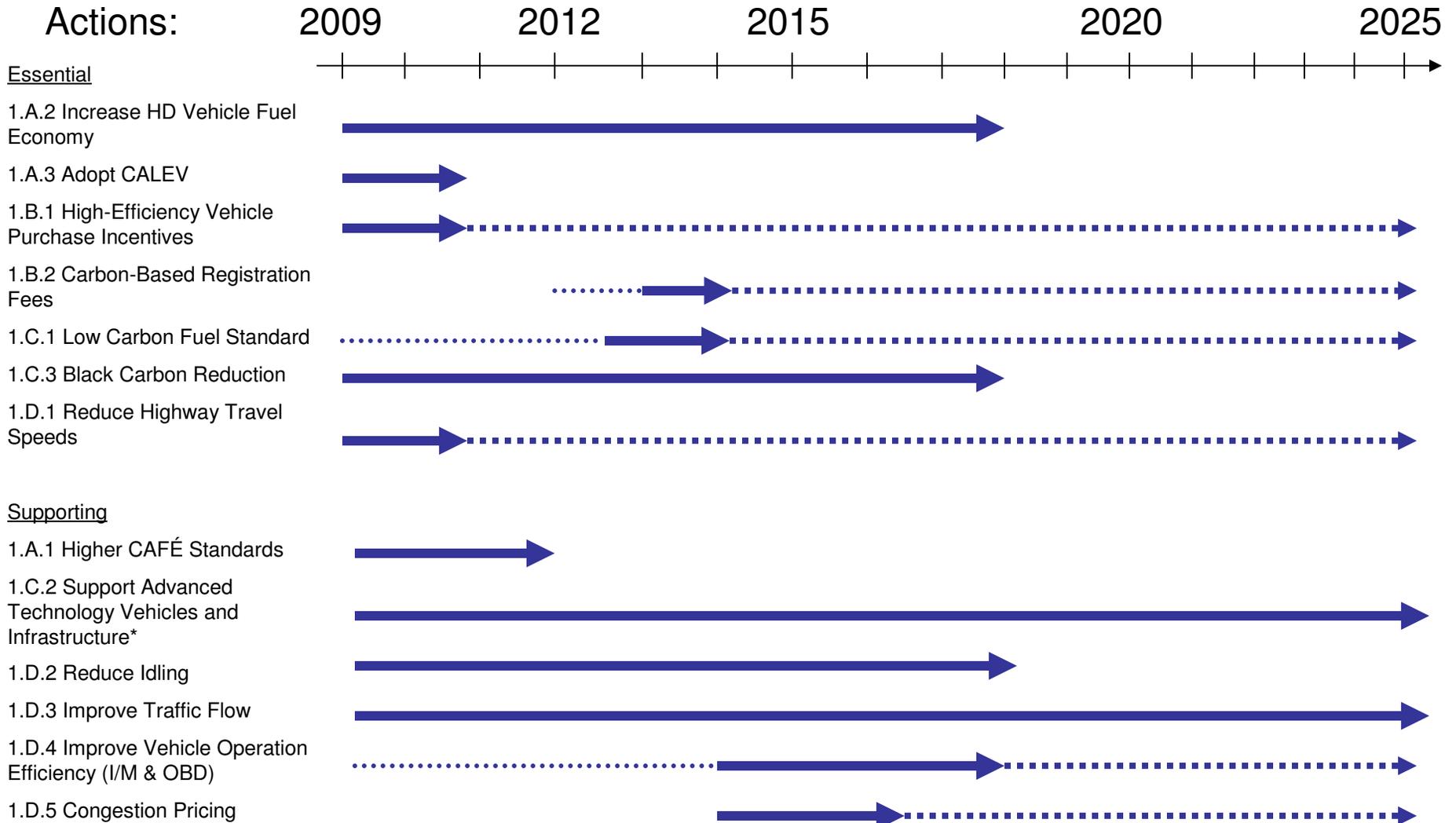
# Reducing Energy Use in the Transportation Sector

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## Goal 1: Reduce Vehicle Emissions per Vehicle Mile Traveled

- Subgoals:
- 1.A Influence the Vehicle Market through Regulatory Standards
  - 1.B Influence Consumer Demand for Higher Fuel Economy Vehicles
  - 1.C Increase the Use of Cleaner Fuels and Advanced Technology
  - 1.D Decrease GHG Via Changes in Driver Behavior and Reduced Congestion



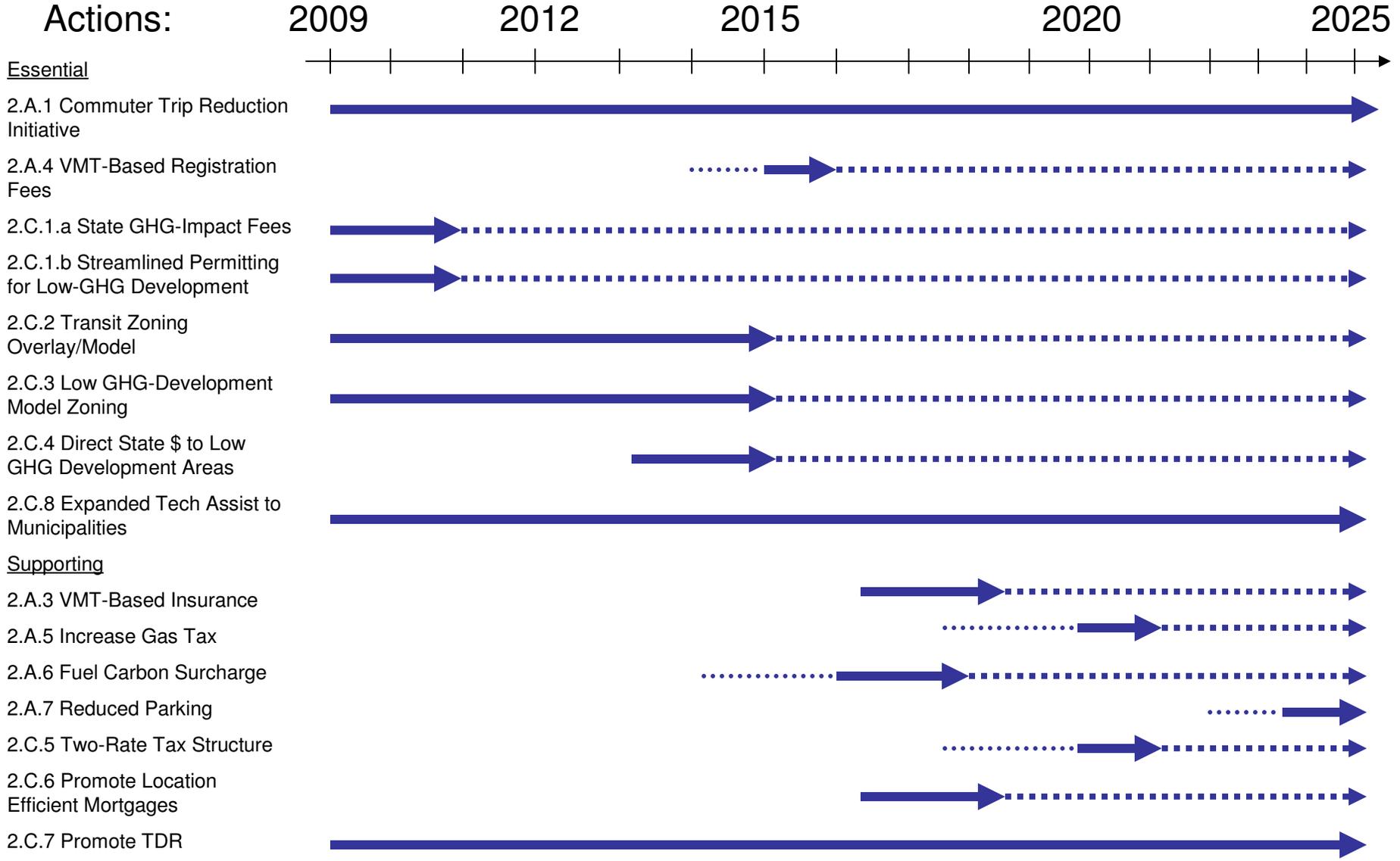
\*Group was split on whether action is Essential or Supporting

## Goal 2: Reduce Vehicle Mile Traveled

Subgoals: 2.A Change Consumer Behavior to Reduce Travel Demand  
 2.C Develop Land Use Patterns that Support Multi-modal Transportation and Disincent VMT

Key:

-  Begin Work on Action
-  Active Implementation
-  Action Continues



**Goal 2: Reduce Vehicle Mile Traveled**

Subgoals: 2.B Establish a Balanced, Integrated, Multi-Modal Transportation System

2.B.1 Increase the Use of Alt Modes for Local/Intra-City Travel

2.B.2 Increase the Use of Alt Modes for Longer-Distance, Inter-City Travel

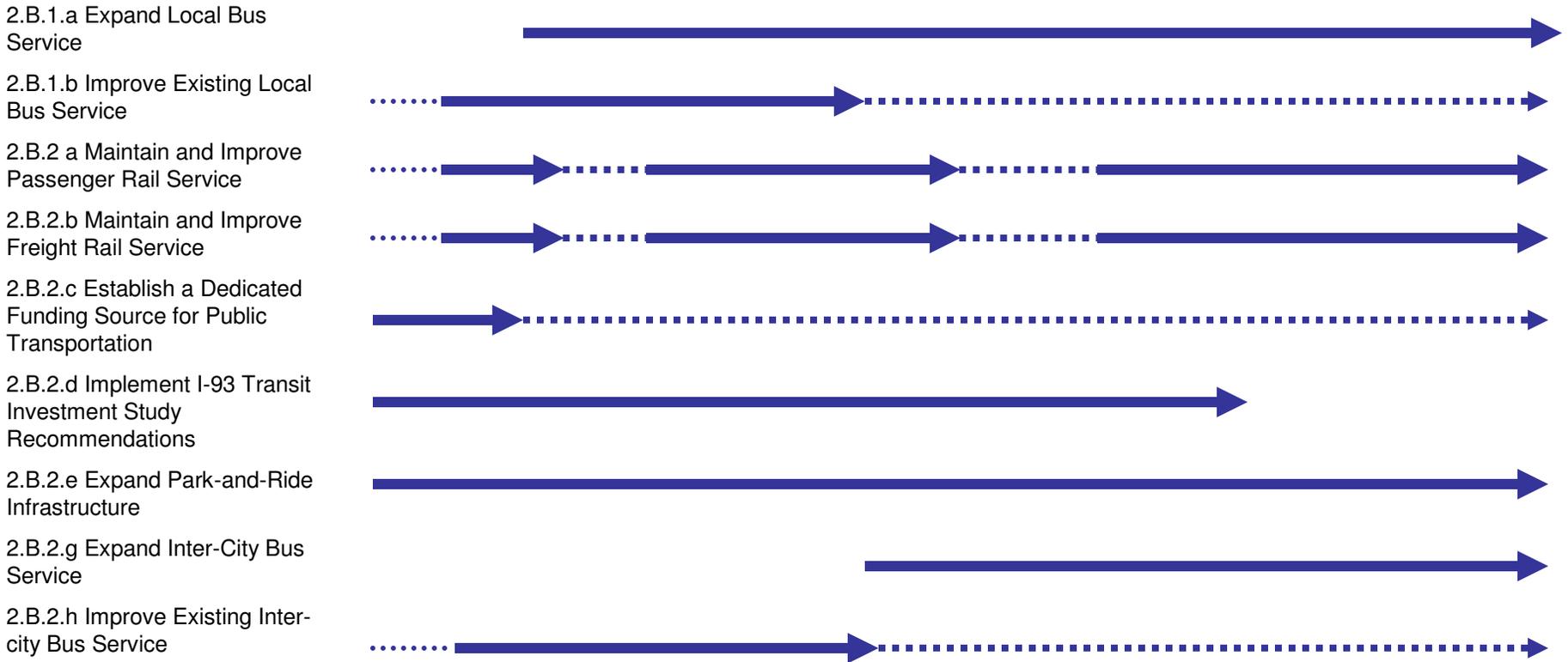
Key:

-  Begin Work on Action
-  Active Implementation
-  Action Continues

**Actions:**

2009                      2012                      2015                      2020                      2025

Essential



Supporting



# State Programs/Statutes

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- RSA 9A – State Development Plan
- RSA 9B – Smart Growth Planning Policy
- Executive Orders 2004-7, 2005-4 and 2011-1
  - fuel economy and emission standards for state fleet
  - development of a Best Management Practices for operation and maintenance of vehicles
  - energy efficiency in state buildings
- Vehicle Inspection & Maintenance and RFP
- Granite State Clean Cities Coalition
- State Clean Diesel Program



# Regional Initiatives

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- Transportation Climate Initiative
- Northeast Electric Vehicle Network
- Clean Fuels Standard
- New England Governors/Eastern Canadian Premiers
- California Low Emission Vehicles standards
- RGGI (impact on electric vehicle emissions)

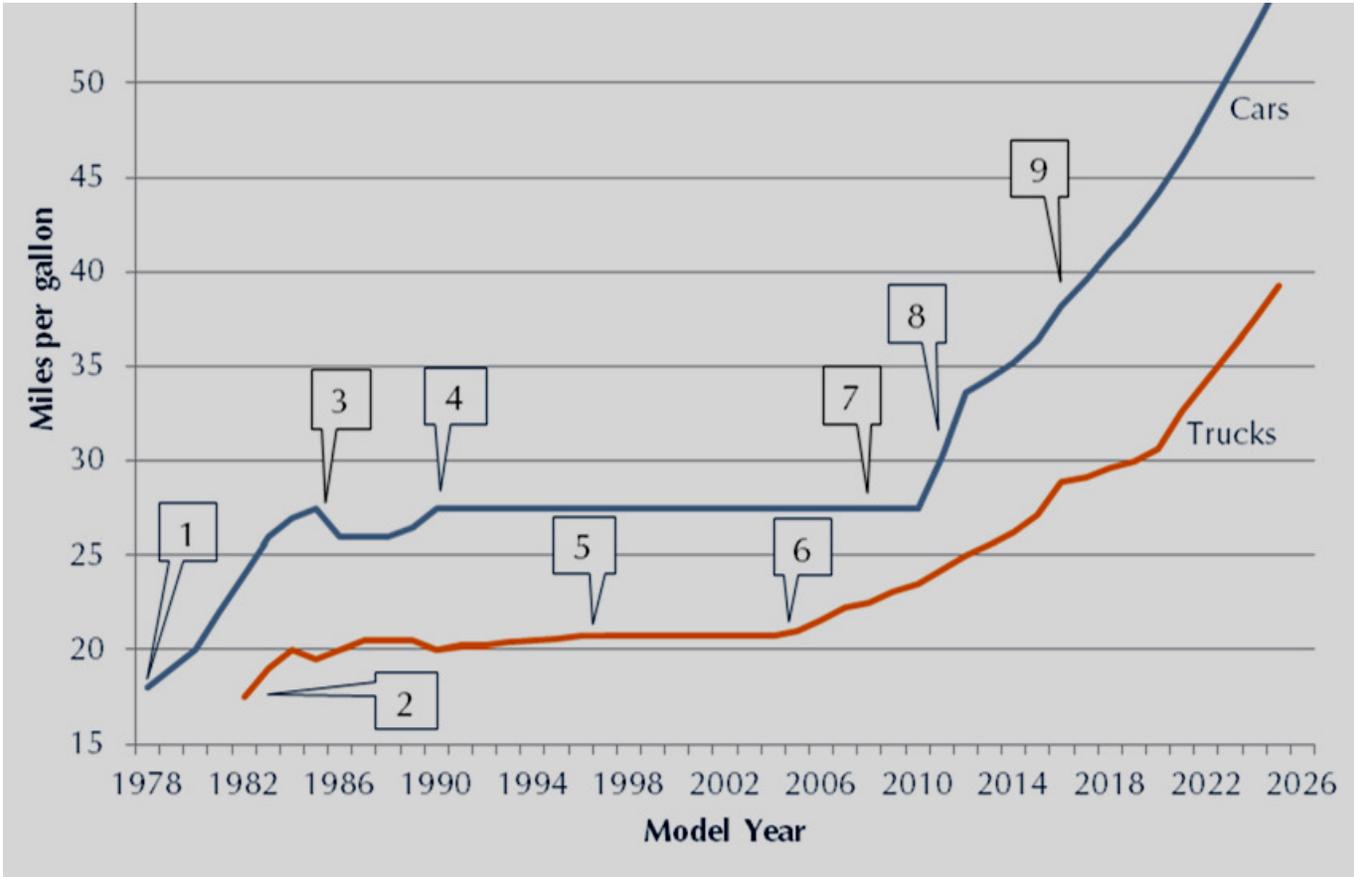


# Federal Policy Influences

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- Clean Air Act Amendments of 1990 (CAA)
- Energy Policy Act (EPACT) – 1992, 2005
- Energy Independence & Security Act (EISA) - 2007
  - Renewable Fuels Standard (RFS)
  - Corporate Average Fuel Economy Standards (CAFE)
  - Vehicle GHG Emission Standards
- Transportation Conformity (Planning Requirements)

# Gas Vehicles – Efficiency Improvements



Source: NHTSA Summary of Fuel Economy Performance, NHTSA MY2017-2025 Factsheet

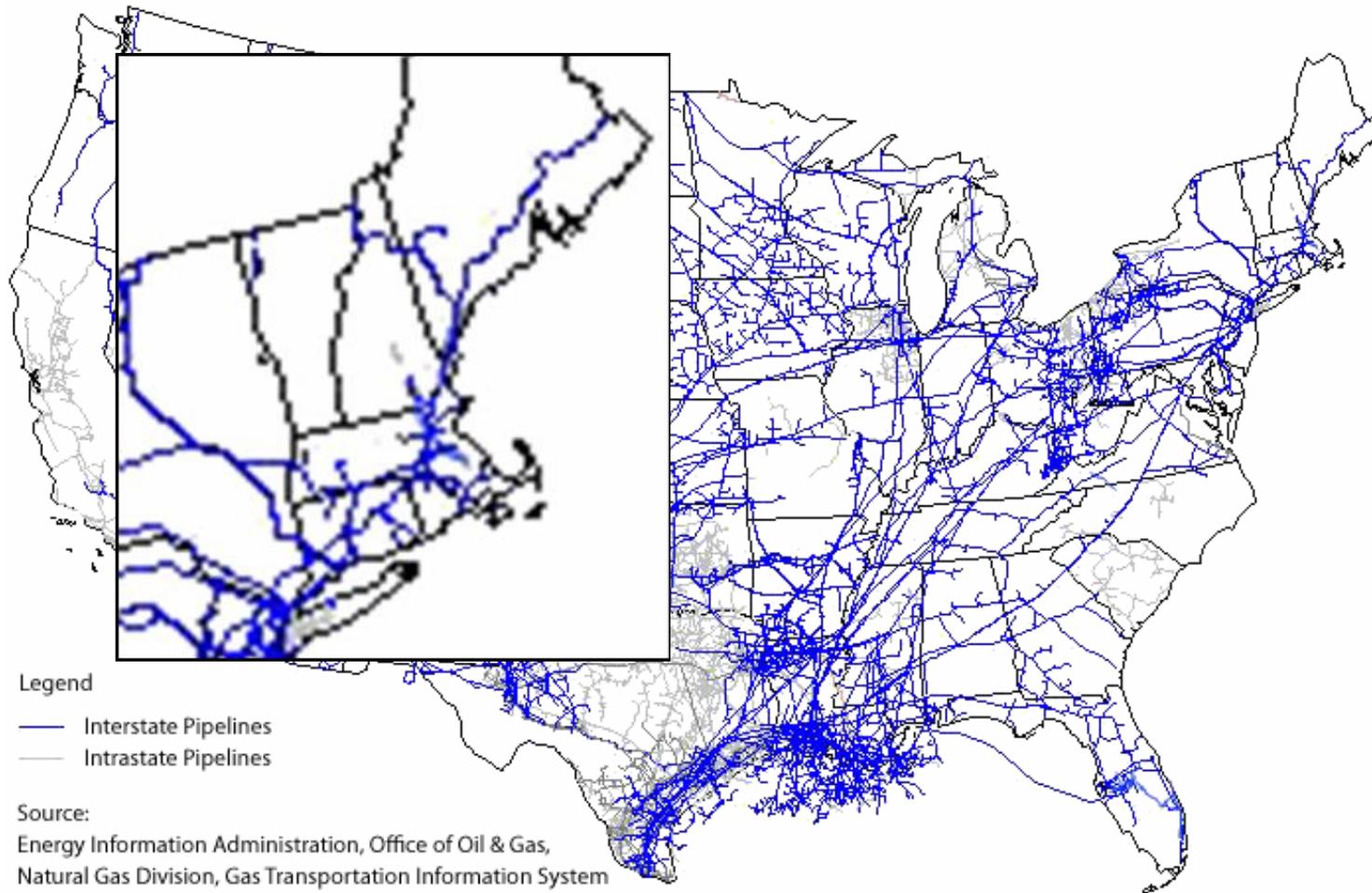
# Impact of New Vehicle Technologies

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- Highway Fund – \$0.18/gallon
  - increased vehicle efficiency
  - alternative fuels - some are not currently taxed
  - changing demographics
- Electric Grid
  - lowest emissions of all vehicles
  - PEVs will add electric demand
  - time of charging is a key issue
- Natural Gas Vehicles
  - cleaner, quieter
  - competes with electric suppliers for fuel source

# Natural Gas Pipeline

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# Vehicles that run on CNG

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# Available Electric Vehicles (EVs)

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**GM Chevy Volt (40 miles)**



**Mitsubishi iMiEV (62 miles)**



**Nissan Leaf (60-100 miles)**



**Chevy Spark (60 miles)**



**Ford Focus (100 miles)**



**Tesla Model S (160 miles)**



# Electric Vehicle Charging

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**Level 1 charging**  
**110-120 Volt**



**Level 2 charging**  
**220-240 Volt**

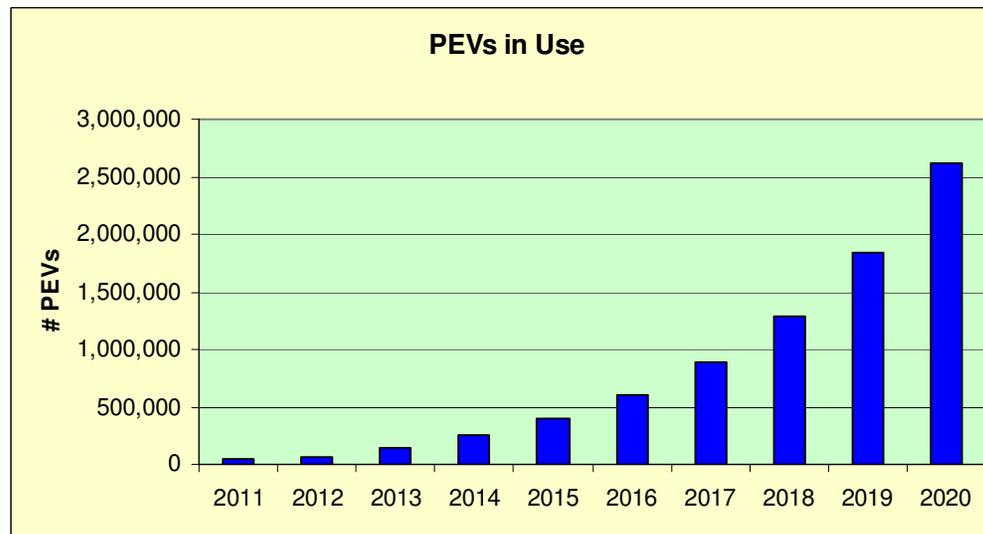


**Level 3 charging**  
**440+ Volt**



# Projected Growth in PEVs

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<http://www.forbes.com/sites/peterdetwiler/2013/01/28/electric-cars-and-the-power-grid-how-are-they-coming-together/>

# Questions?

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Rebecca E. Ohler

Transportation, Climate and Energy  
Programs Manager

Dept. of Environmental Services

(603) 271-6749

[rebecca.ohler@des.nh.gov](mailto:rebecca.ohler@des.nh.gov)

