

The NH Climate Action Plan The Transportation and Land Use Connection

**Travel Demand Management
Advocacy Group Meeting
April 7, 2010**

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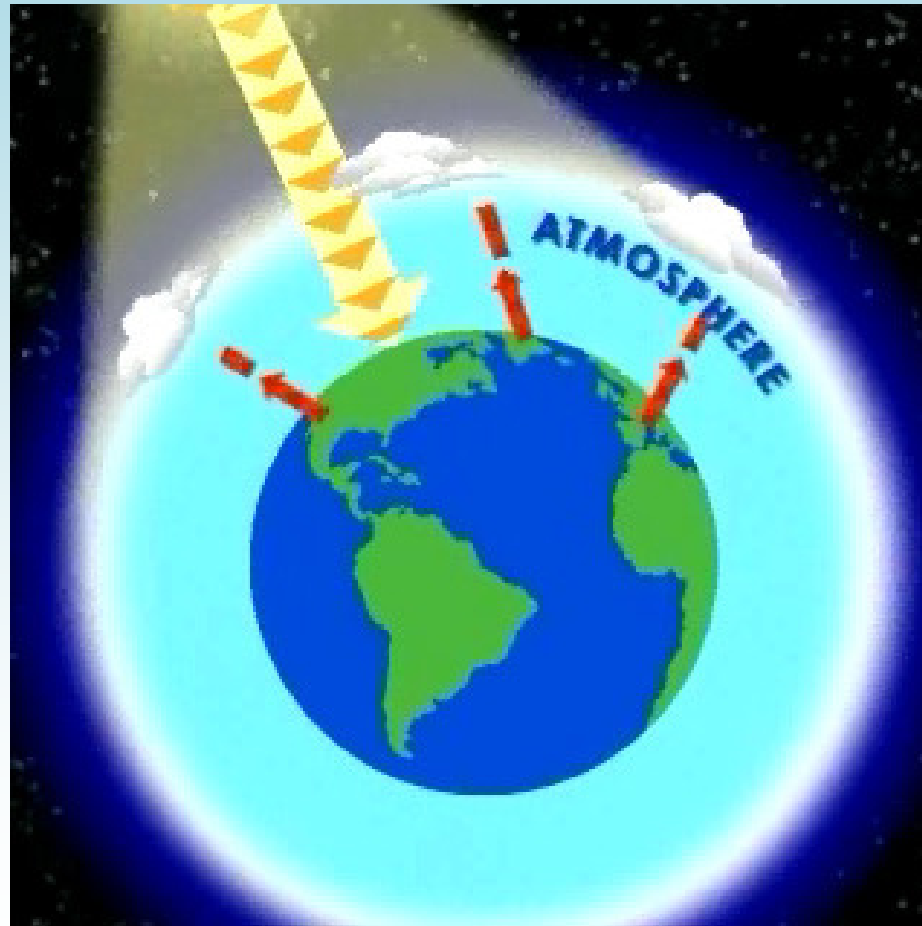


Overview

- Climate Change in the Northeast
- New Hampshire Greenhouse Gas Emissions
- Climate Change Policy Task Force Action Plan Recommendations
- Implementation



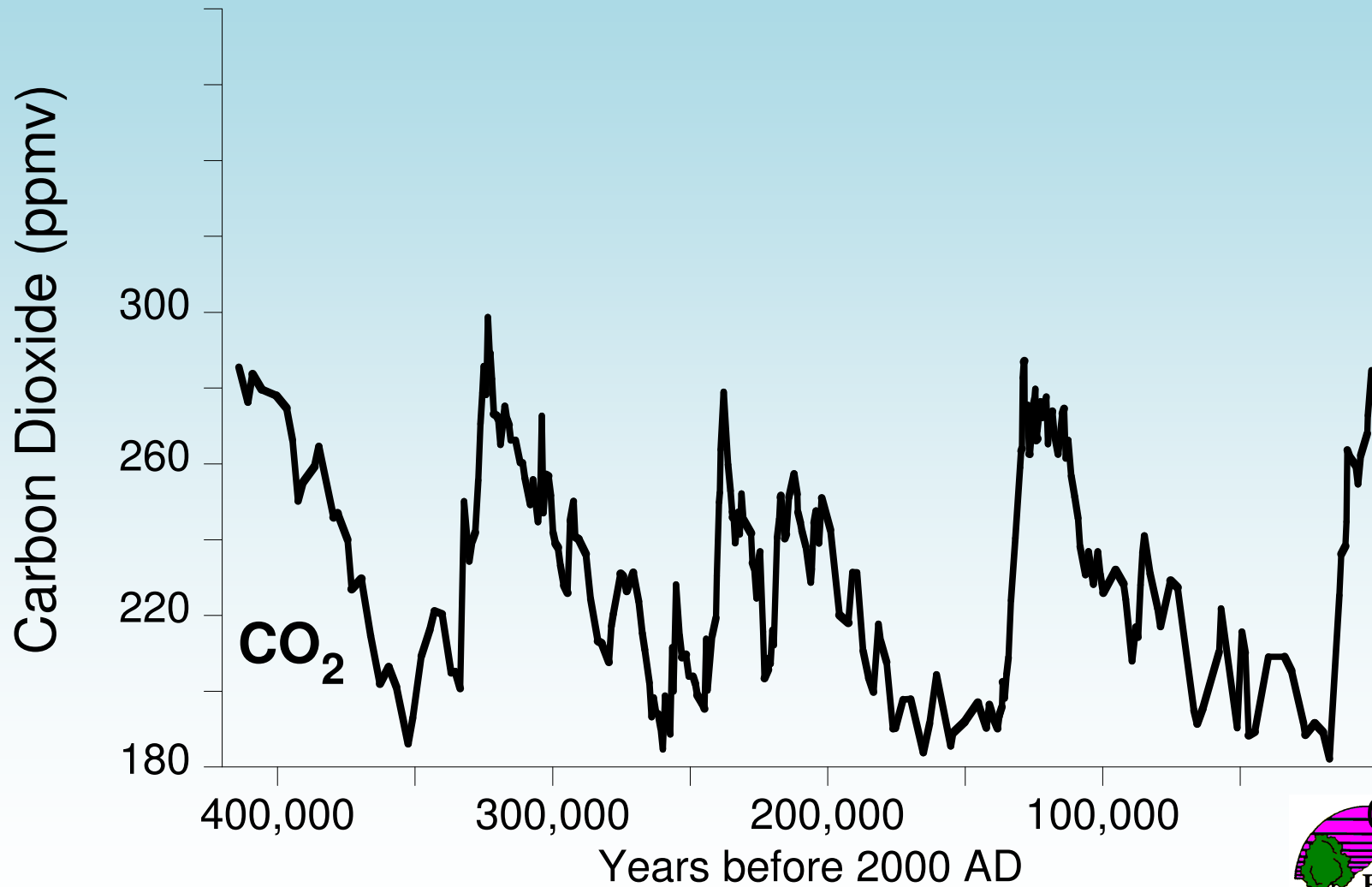
Our Planet Has a “CO₂-Blanket”



http://earth.rice.edu/mtpe/atmo/atmosphere/hot/anom_99/0Greenhouse_Effect.html



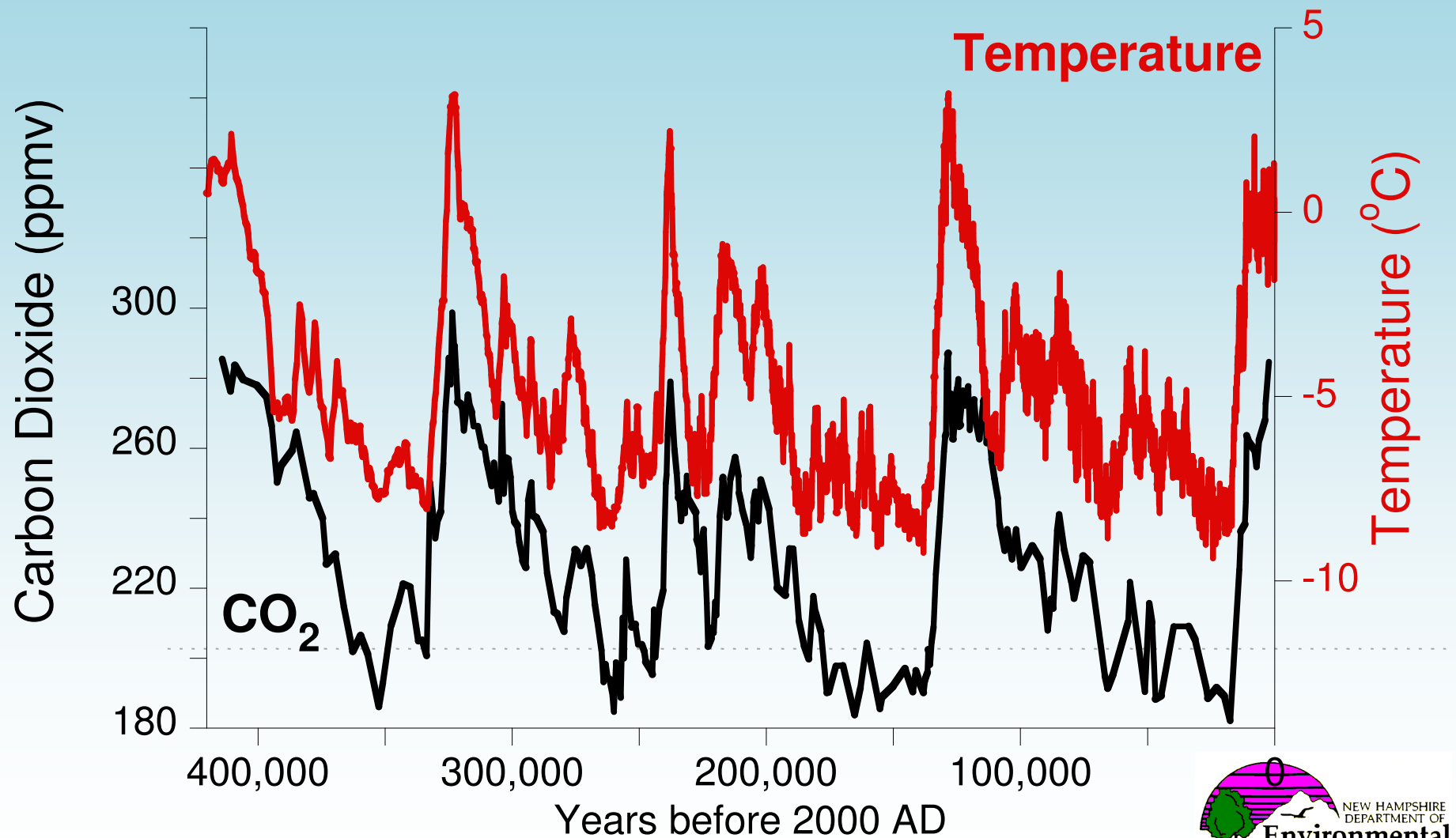
Atmospheric Carbon Dioxide Record



Petit et al., 1999



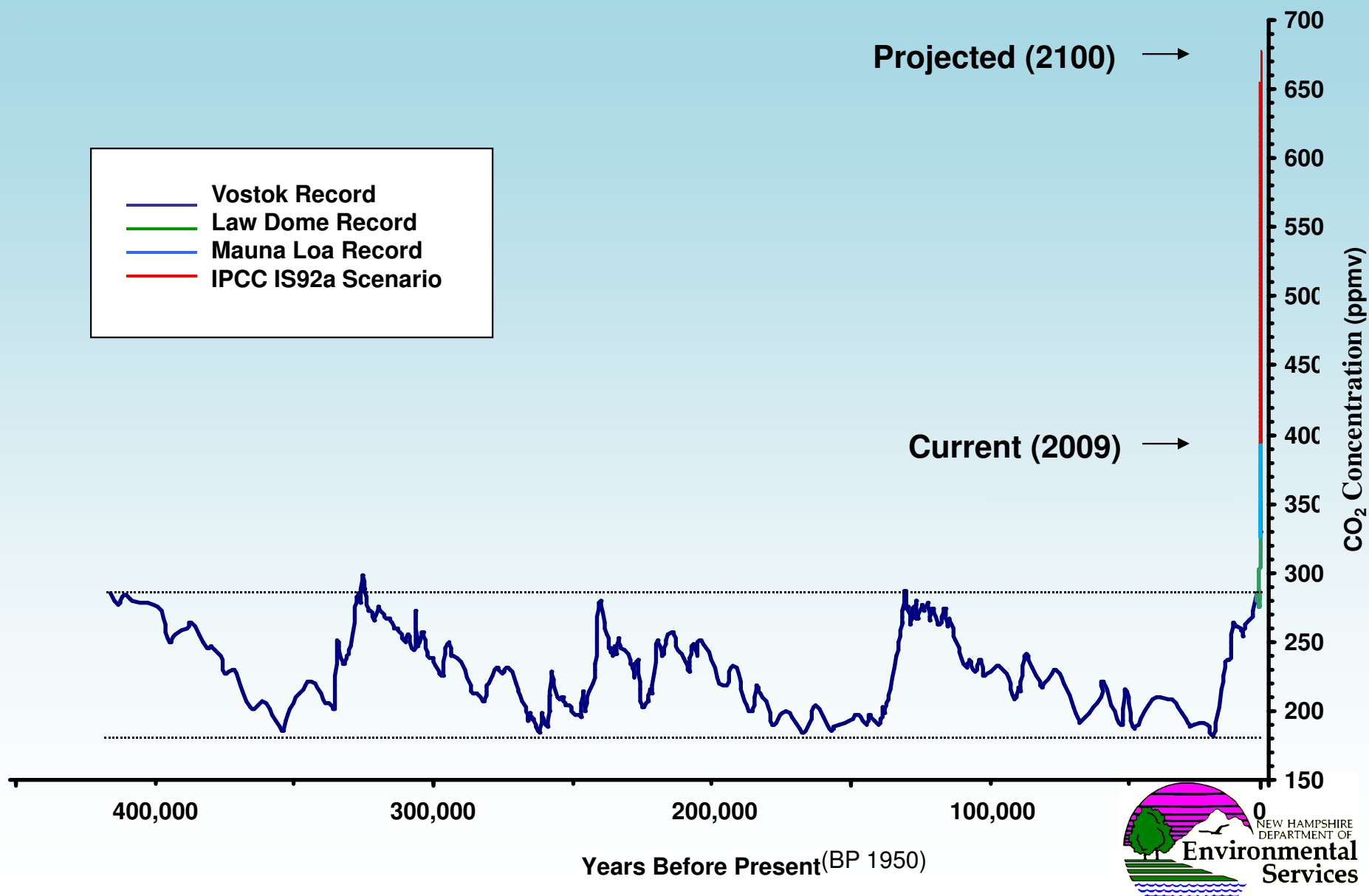
Atmospheric Carbon Dioxide & Temperature Record



Petit et al., 1999

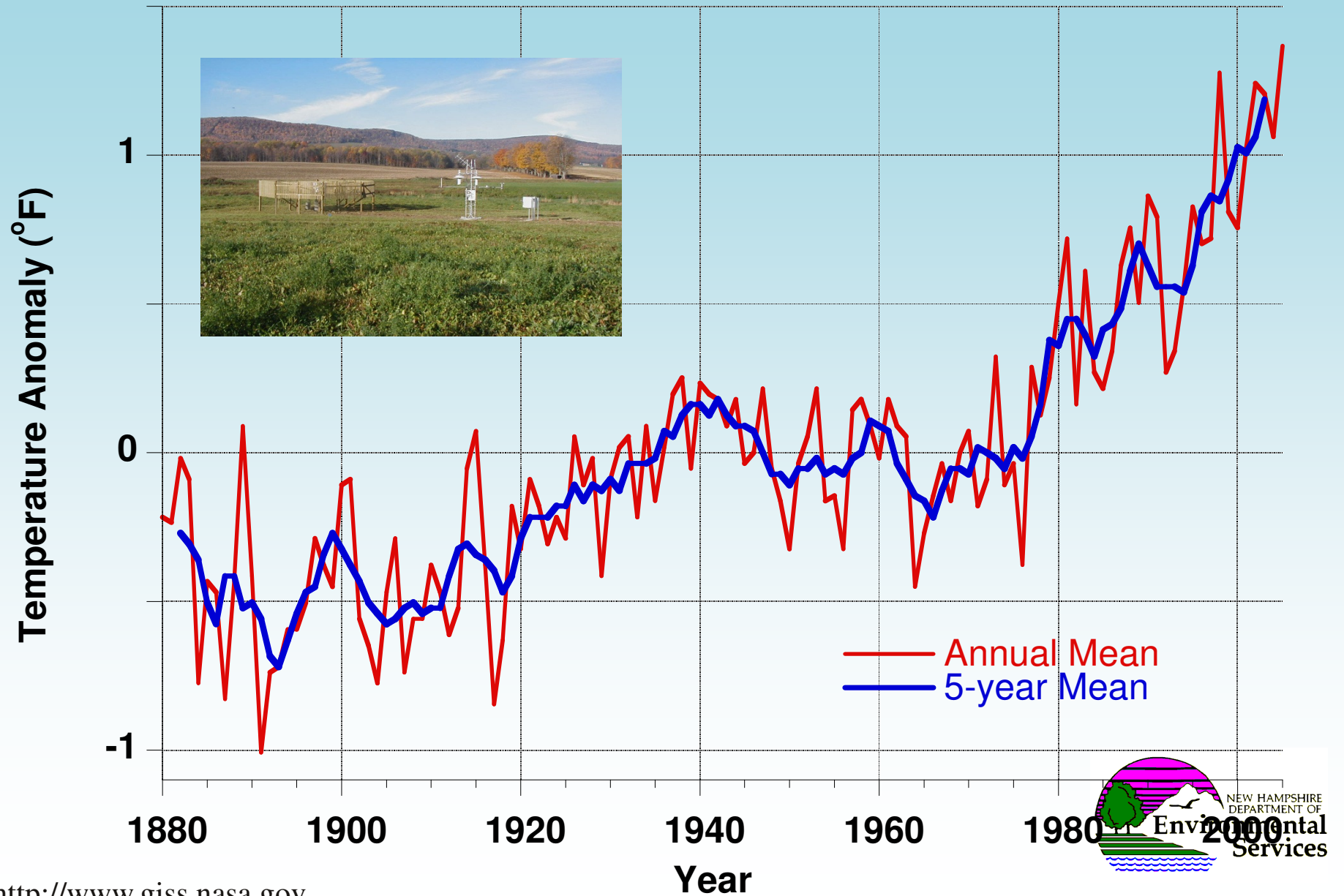


Historical and Future Carbon Dioxide Levels



Source: C. D. Keeling and T. P. Whorf; Etheridge *et.al.*; Barnola *et.al.*; (PAGES / IGBP); IPCC

Global Temperature 1880-2005



Indicators of Climate Change in the Northeast

- More precipitation
- More frequent extreme precipitation
- Winter warming
- Decreased snowfall
- Fewer days with snow on ground
- Lake ice out dates earlier
- Earlier spring runoff
- Extended growing season
- Sea-level rise

Hodgkins et al., 2002; 2003; Wolfe et al., 2005;
Wake and Markham, 2005; Wake et al., 2006



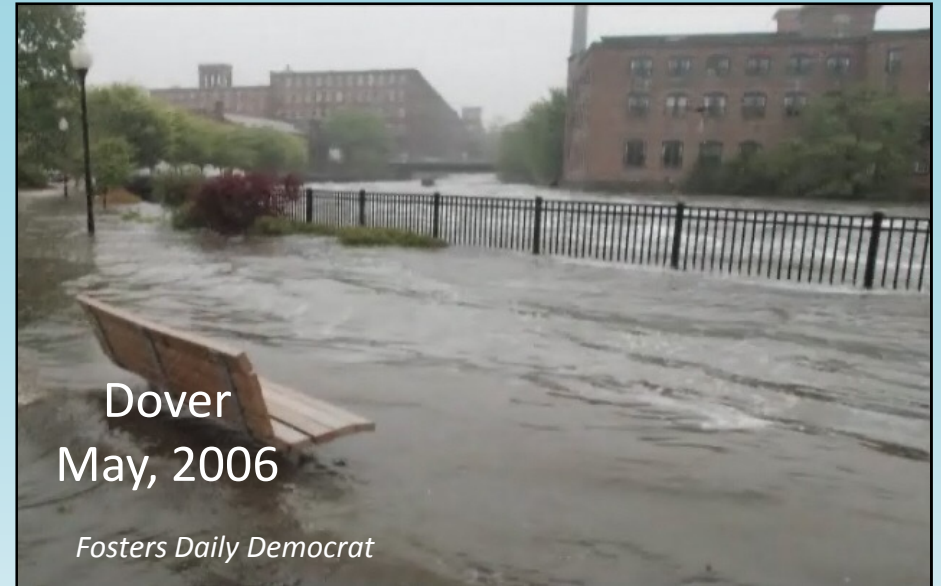
Flooding in NH

October 2005

May 2006

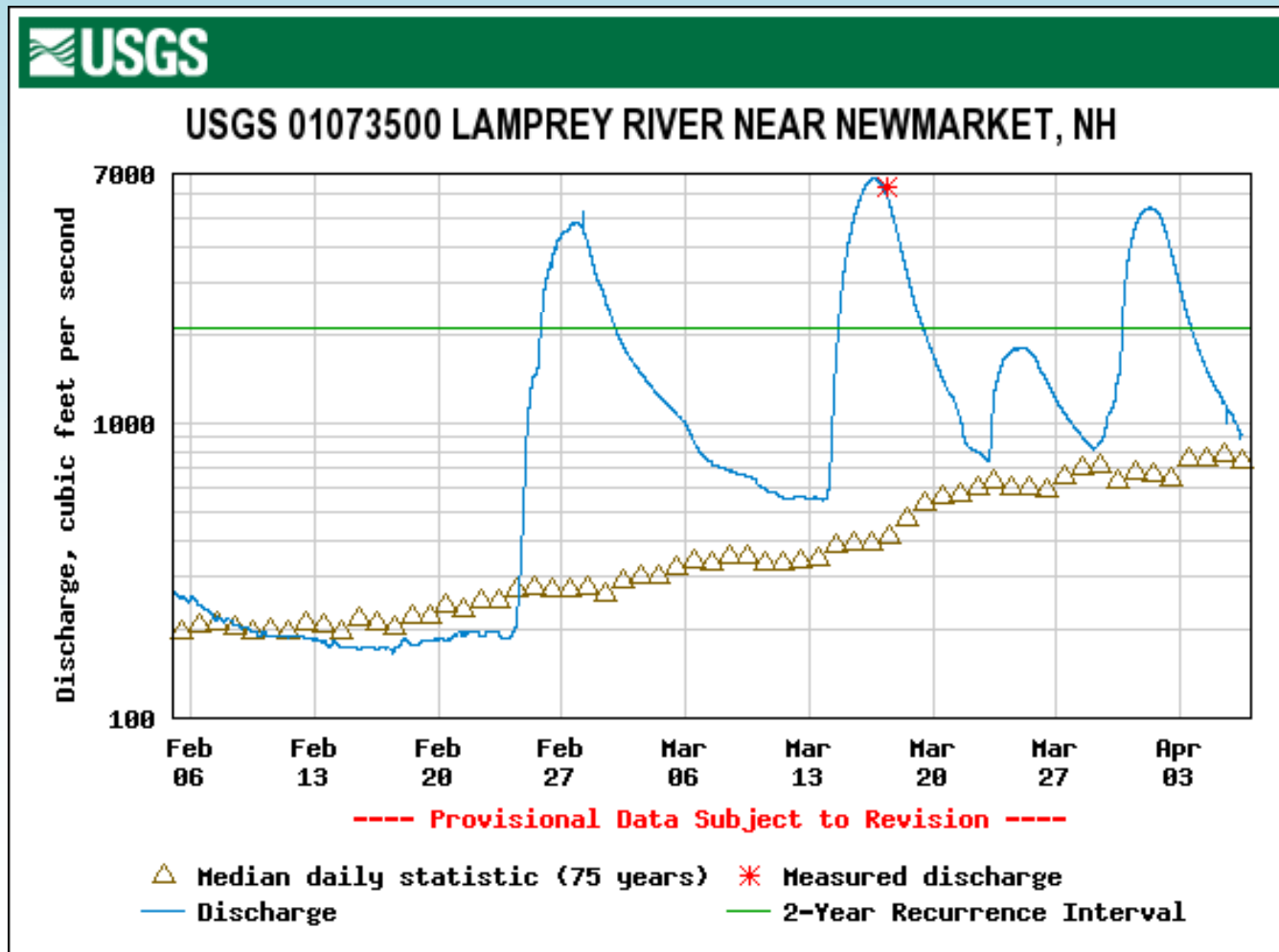
April 2007

September 2008

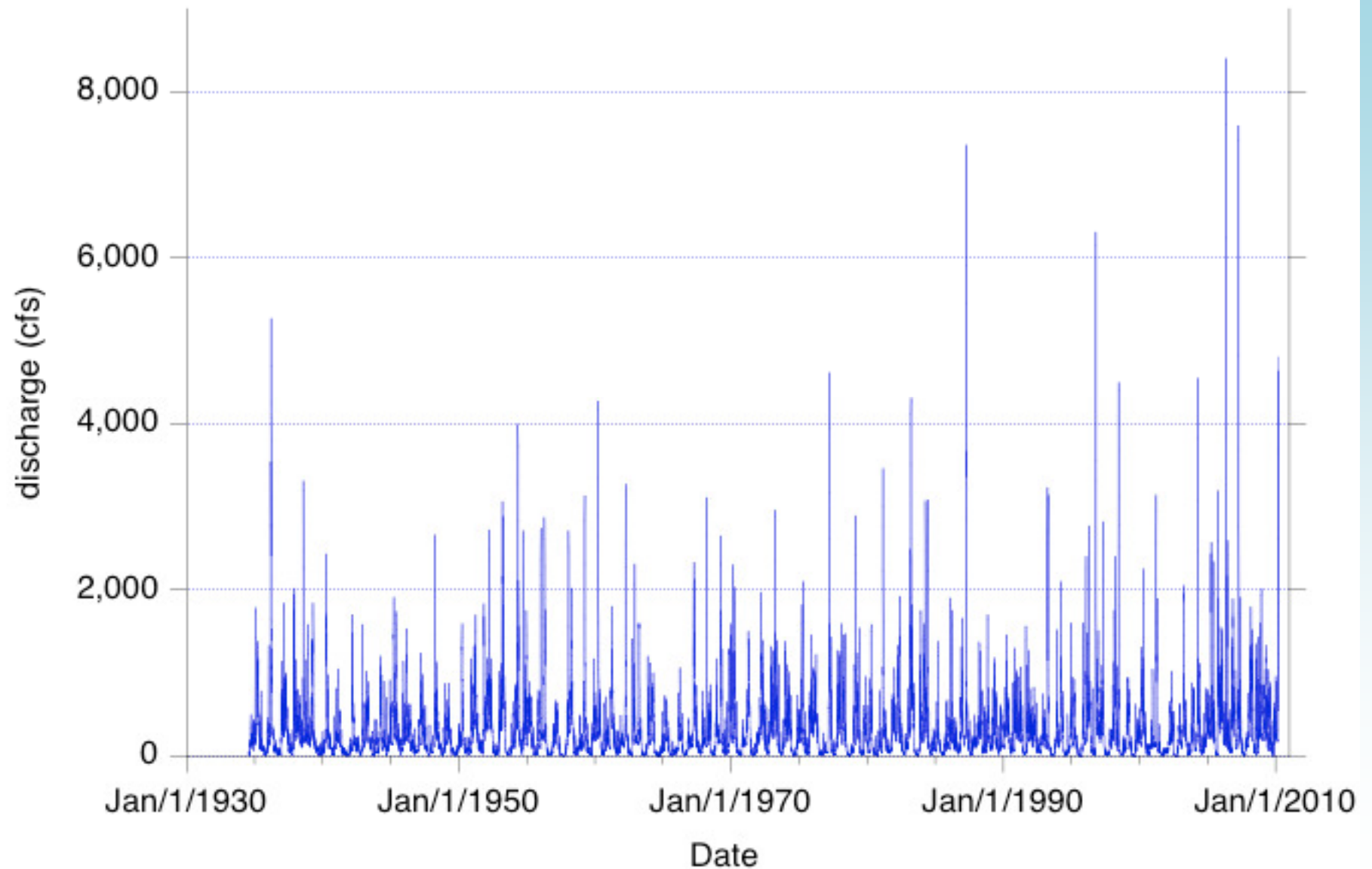


Lamprey River

Instantaneous Discharge



Daily Discharge for Lamprey River near Newmarket, NH



Data from: <http://waterdata.usgs.gov/nwis>

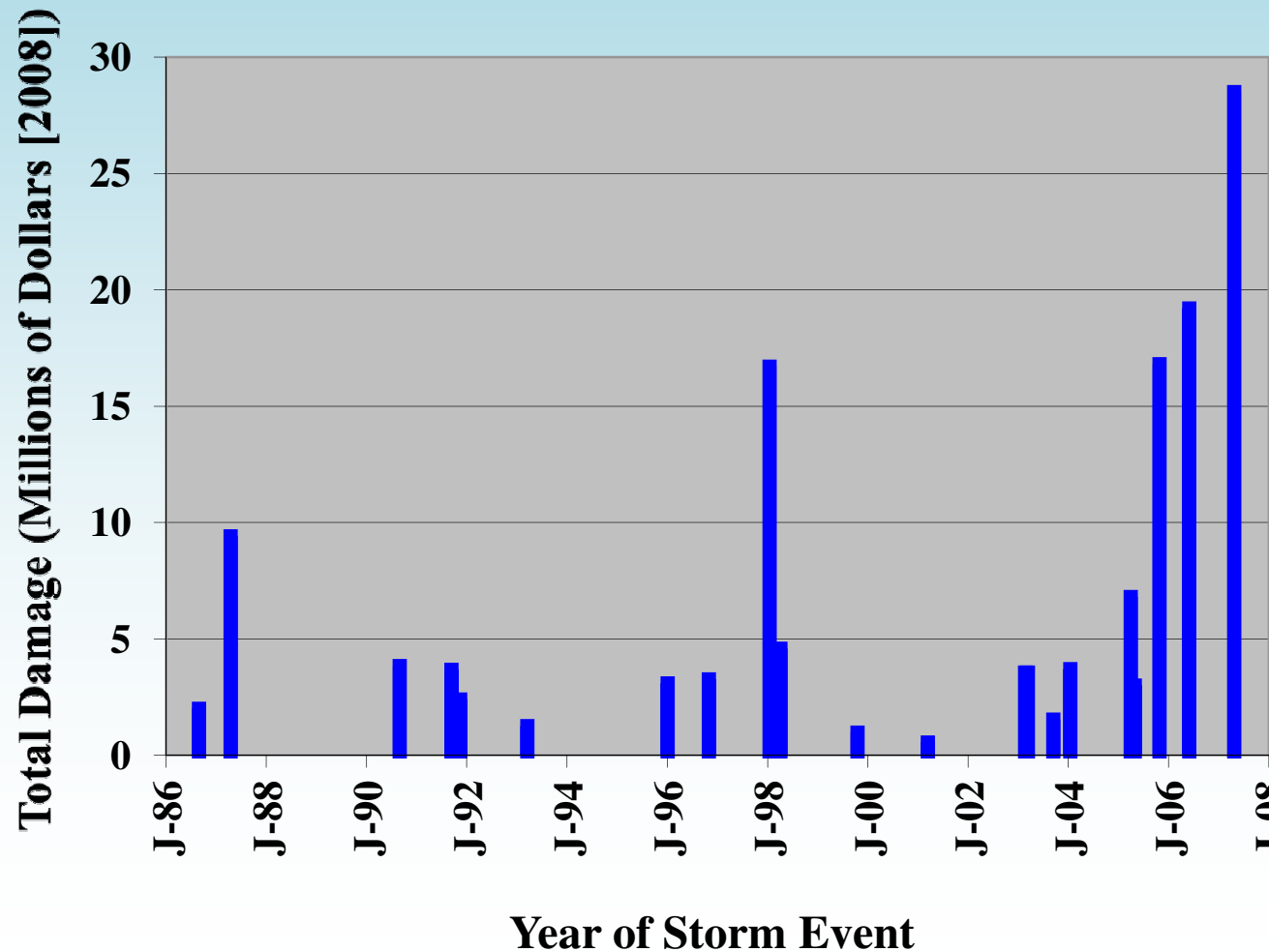
Highest Daily Discharge - Lamprey River near Newmarket since 1934

Rank	Date	Discharge (cfs)
1	16-May-2006	8400
2	15-May-2006	7600
3	18-Apr-2007	7590
4	17-Apr-2007	7410
5	7-Apr-1987	7360
6	22-Oct-1996	6310
7	17-May-2006	6240
8	23-Oct-1996	6150
9	8-Apr-1987	5920
10	6-Apr-1987	5460
11	20-Mar-1936	5270
12	19-Apr-2007	4830
13	15-Mar-2010	4810
14	21-Mar-1936	4690
15	27-Feb-2010	4640

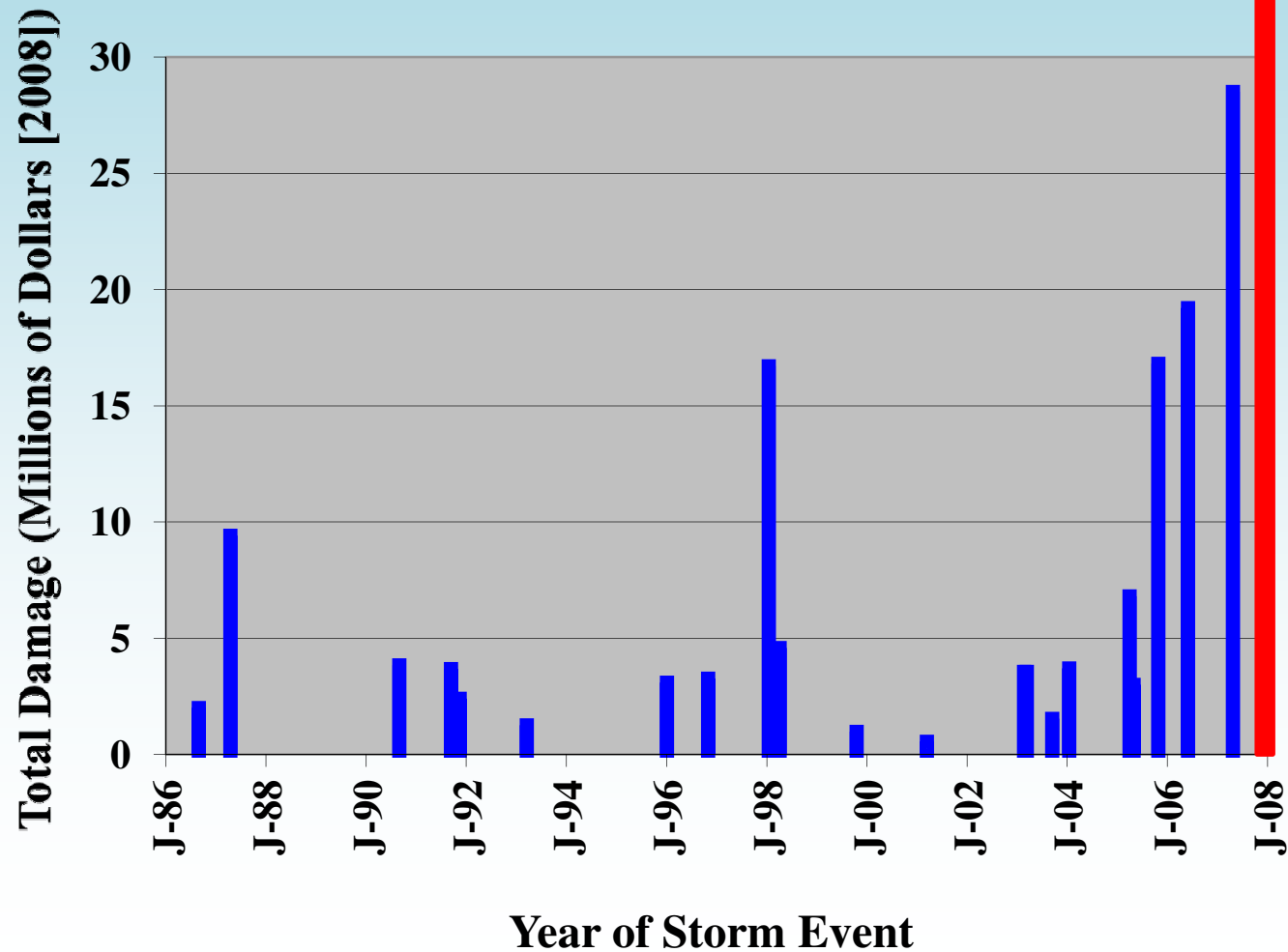
Of 15 largest events since 1934:
13 have occurred in last 24 years
10 have occurred in last 15
years
8 have occurred in last 5 years



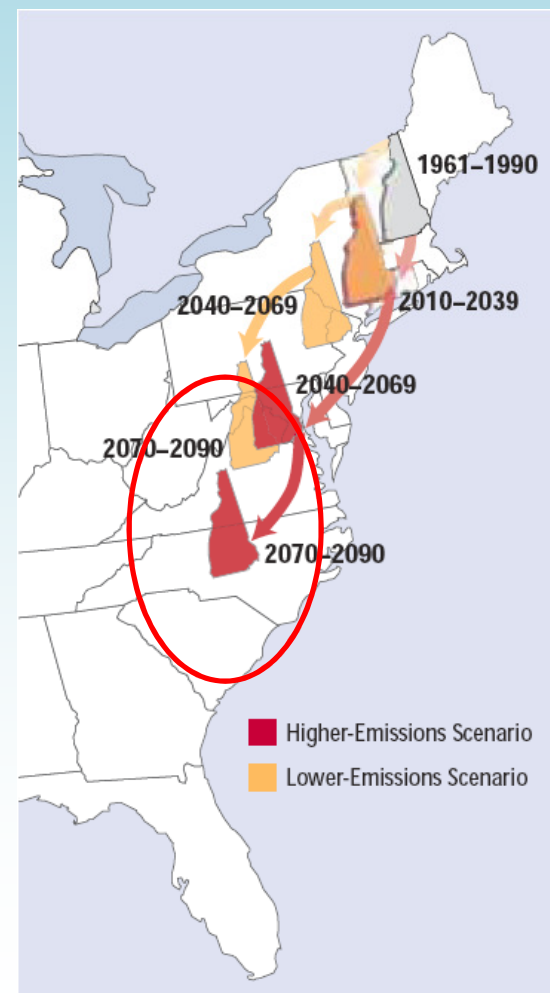
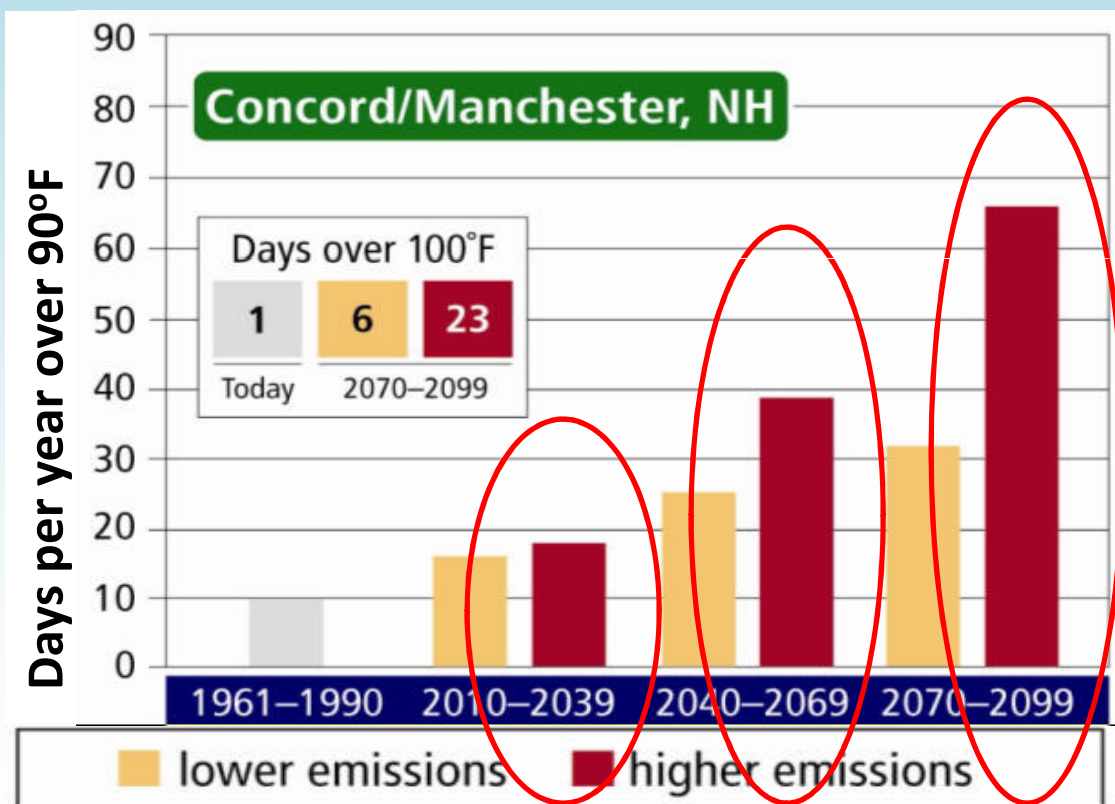
Presidentially Declared Storm-Related Disasters



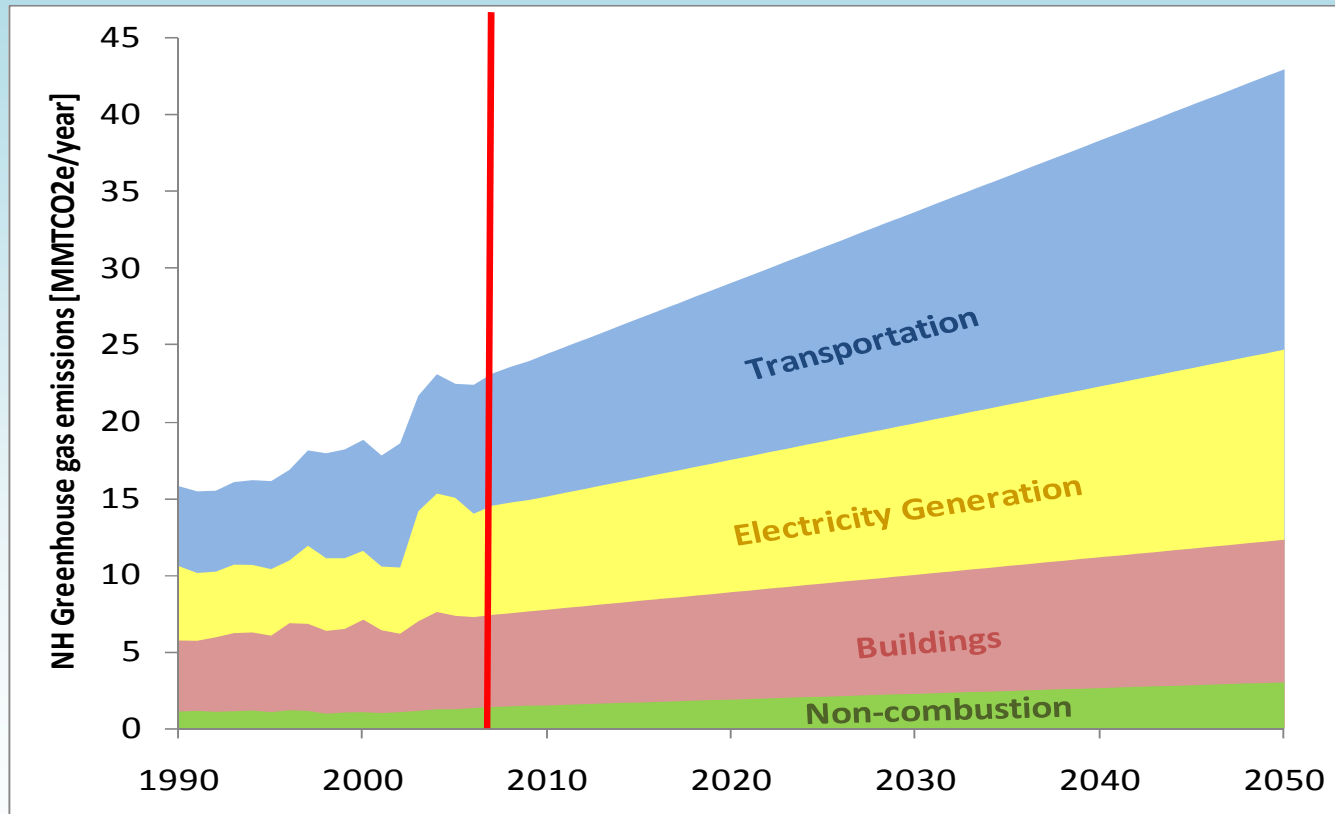
Presidentially Declared Storm-Related Disasters



Projections of Climate Change in New Hampshire



Greenhouse Gas Emissions Projections



Historical data from EPA

Business as Usual (BAU) estimates from CSNE



Climate Change Policy Task Force

- Established through Executive Order 2007-3
December 6, 2007
 - Establish quantified greenhouse reduction goals
 - Recommend specific actions to achieve its
greenhouse gas reduction goals



Climate Change Policy Task Force Recommended Goals

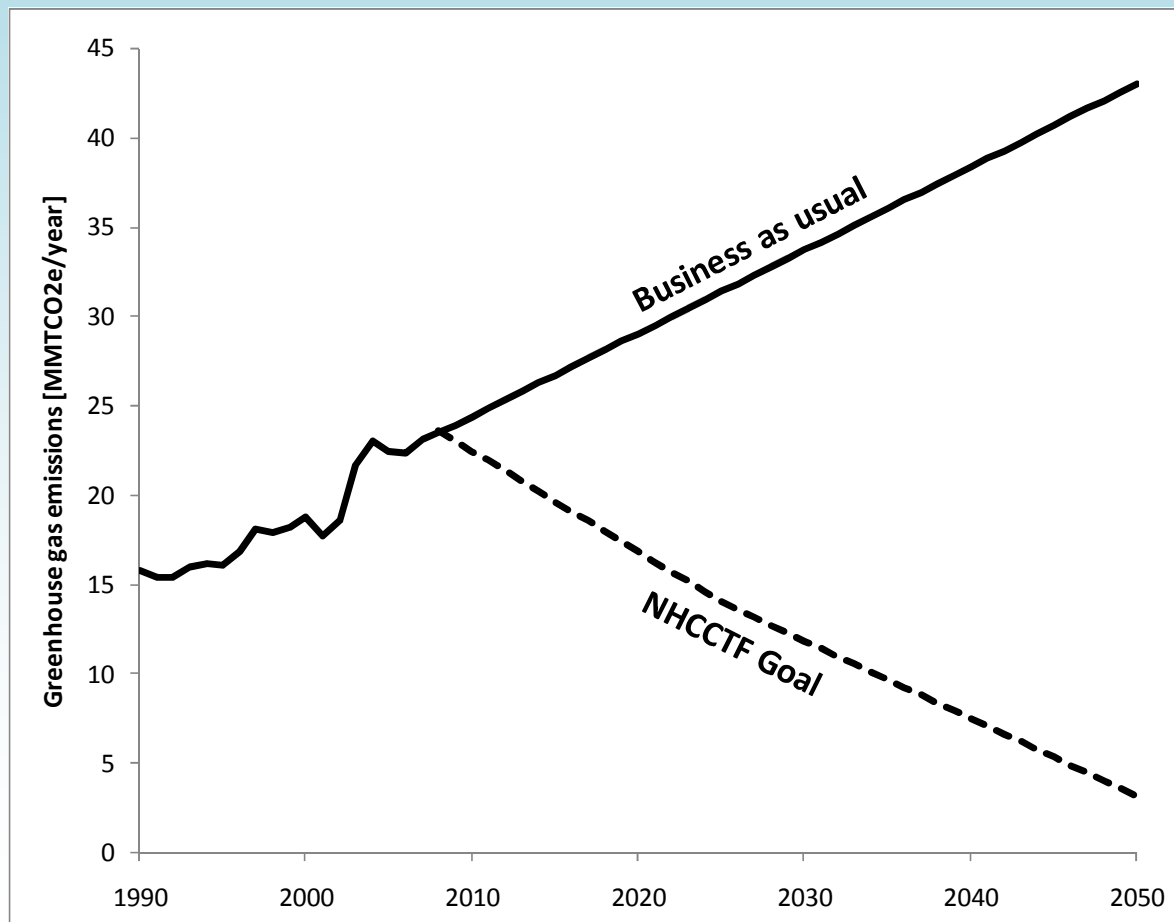
- Reduce greenhouse gas emissions
20% below 1990 levels by 2025
- Reduce greenhouse gas emissions
80% below 1990 levels by 2050

STATE ACTION COMPLEMENTS GLOBAL EFFORTS



Climate Action Plan

Emission Reduction Potential



Overarching Strategies to Achieve Goals

1. Maximize energy efficiency in buildings and transportation;
2. Increase renewable and low-emitting heat and electric power sources;
3. Protect our natural resources to maintain the amount of carbon sequestered;
4. Develop an integrated education, outreach and workforce training program; and
5. Adapt to existing and potential climate change impacts.

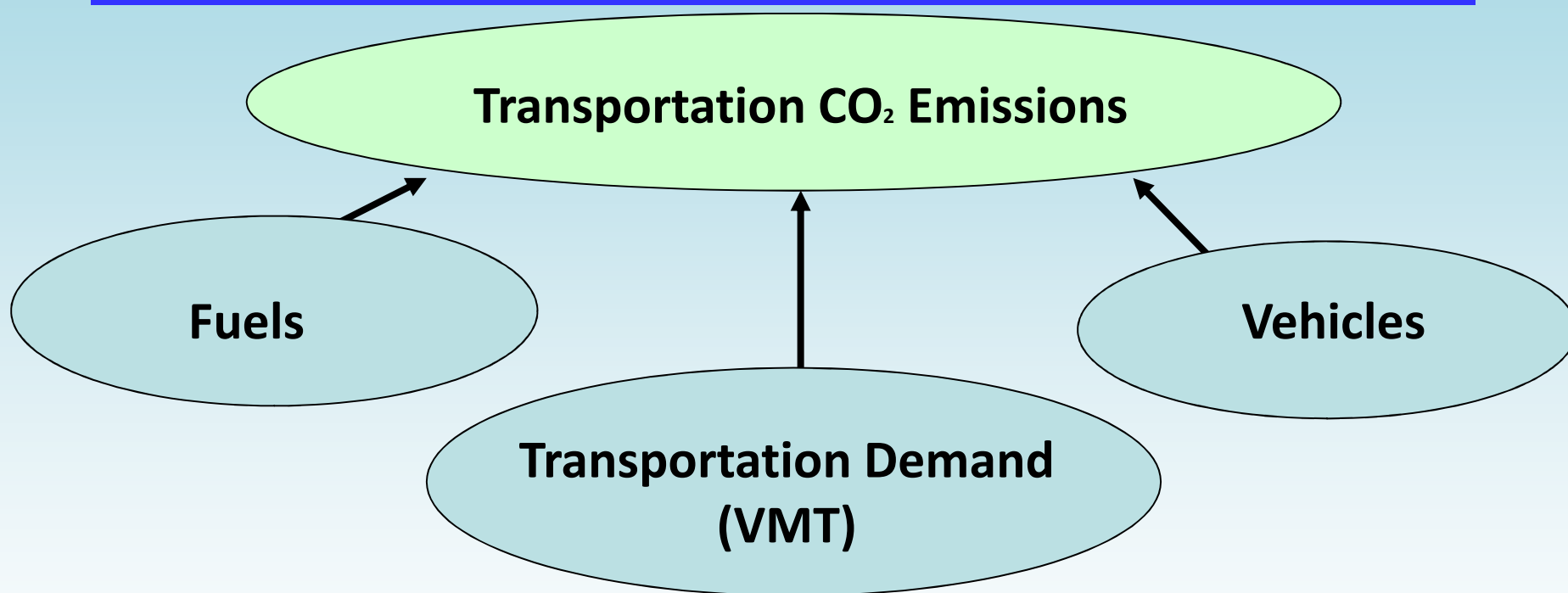


Overarching Strategies to Achieve Goals

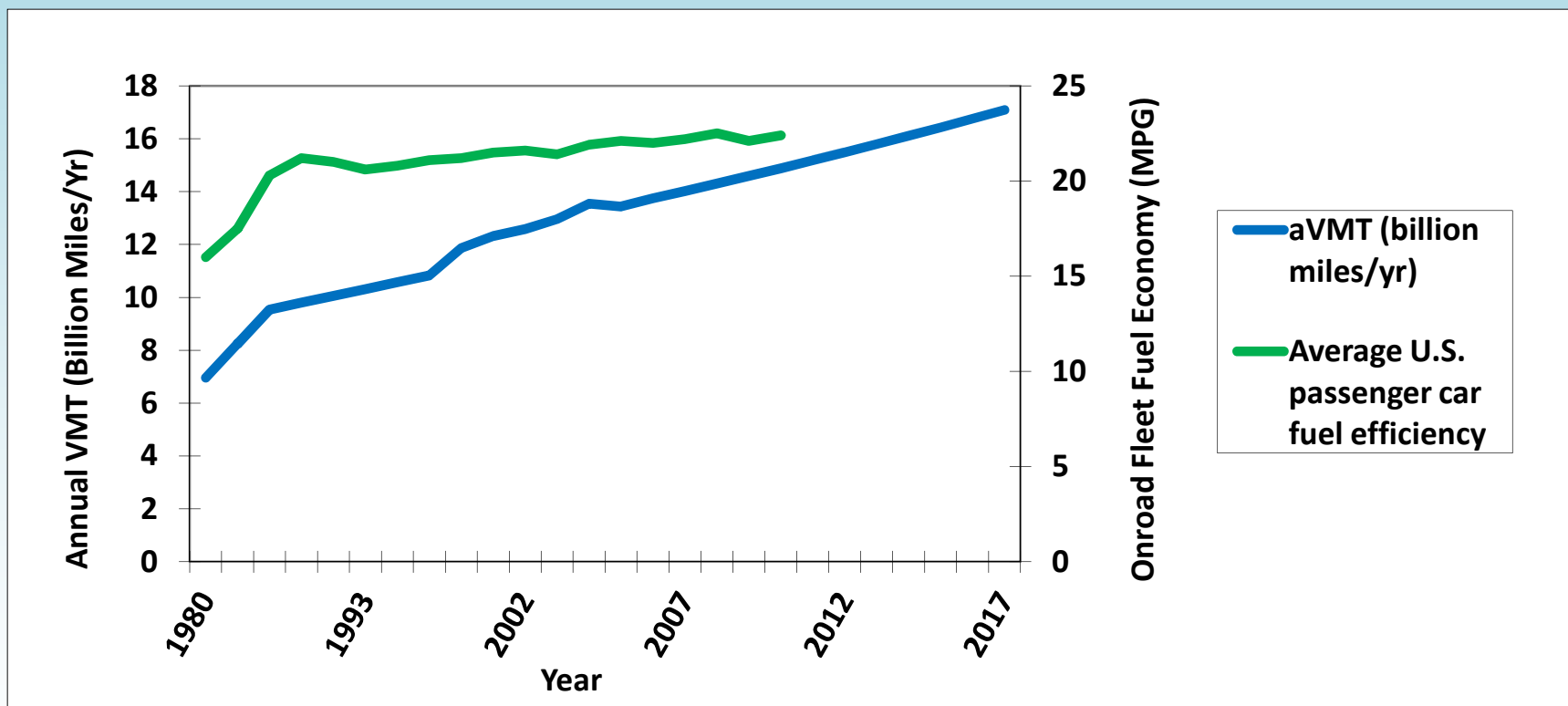
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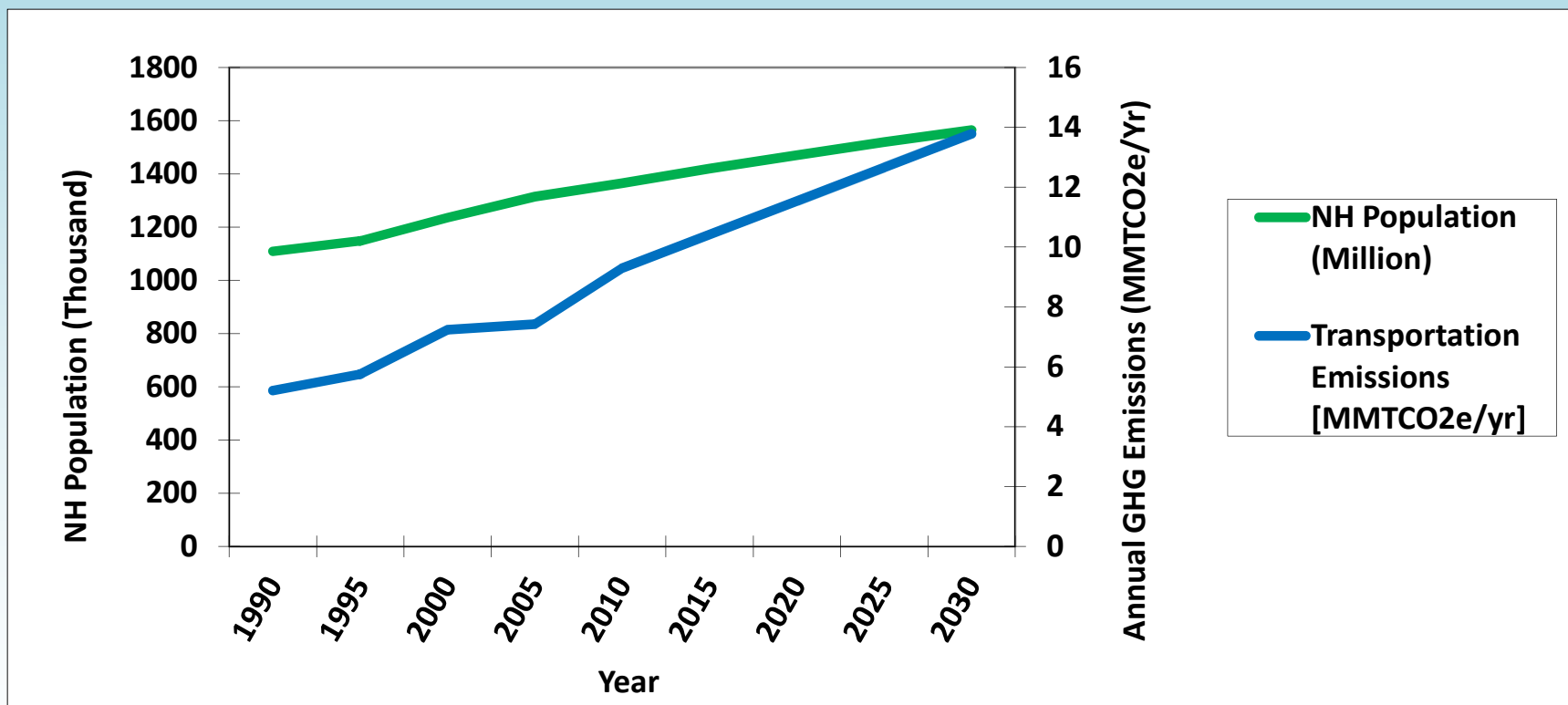
Greenhouse Gas Emissions Transportation Sector



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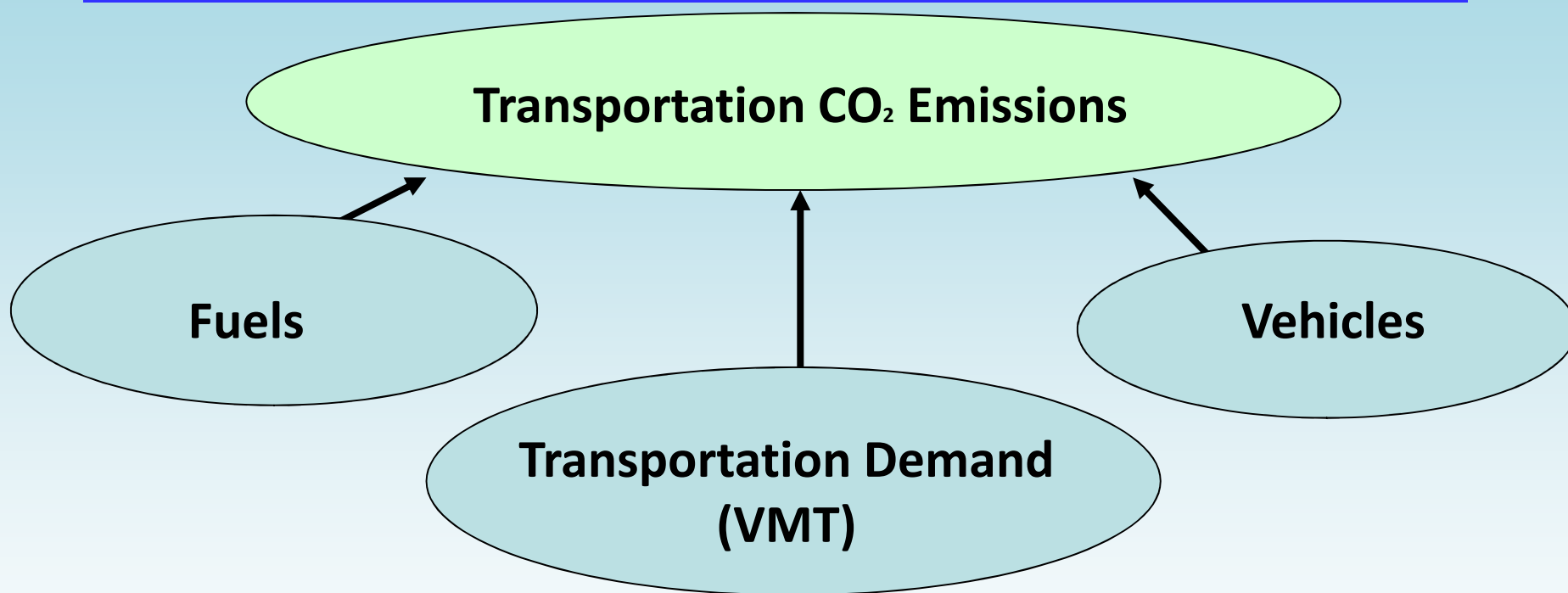
Current New Hampshire Land Use Patterns

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



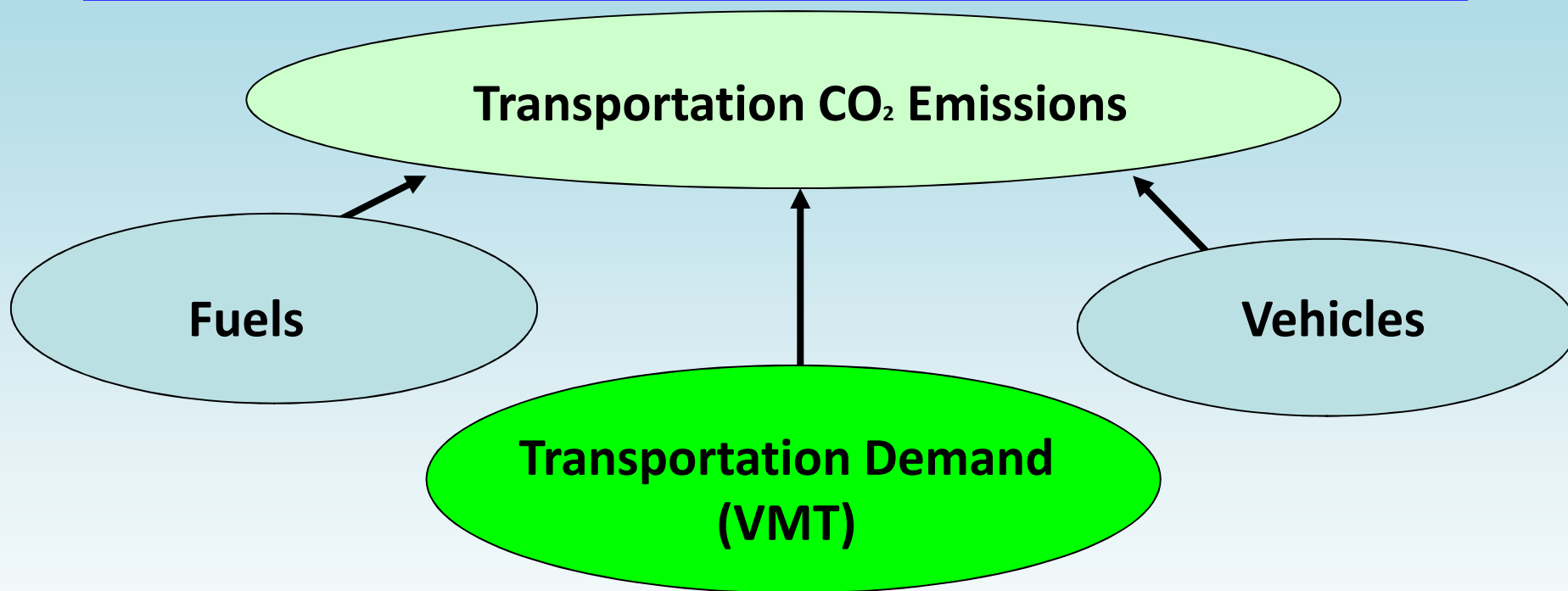
Greenhouse Gas Emission REDUCTIONS

Transportation Sector



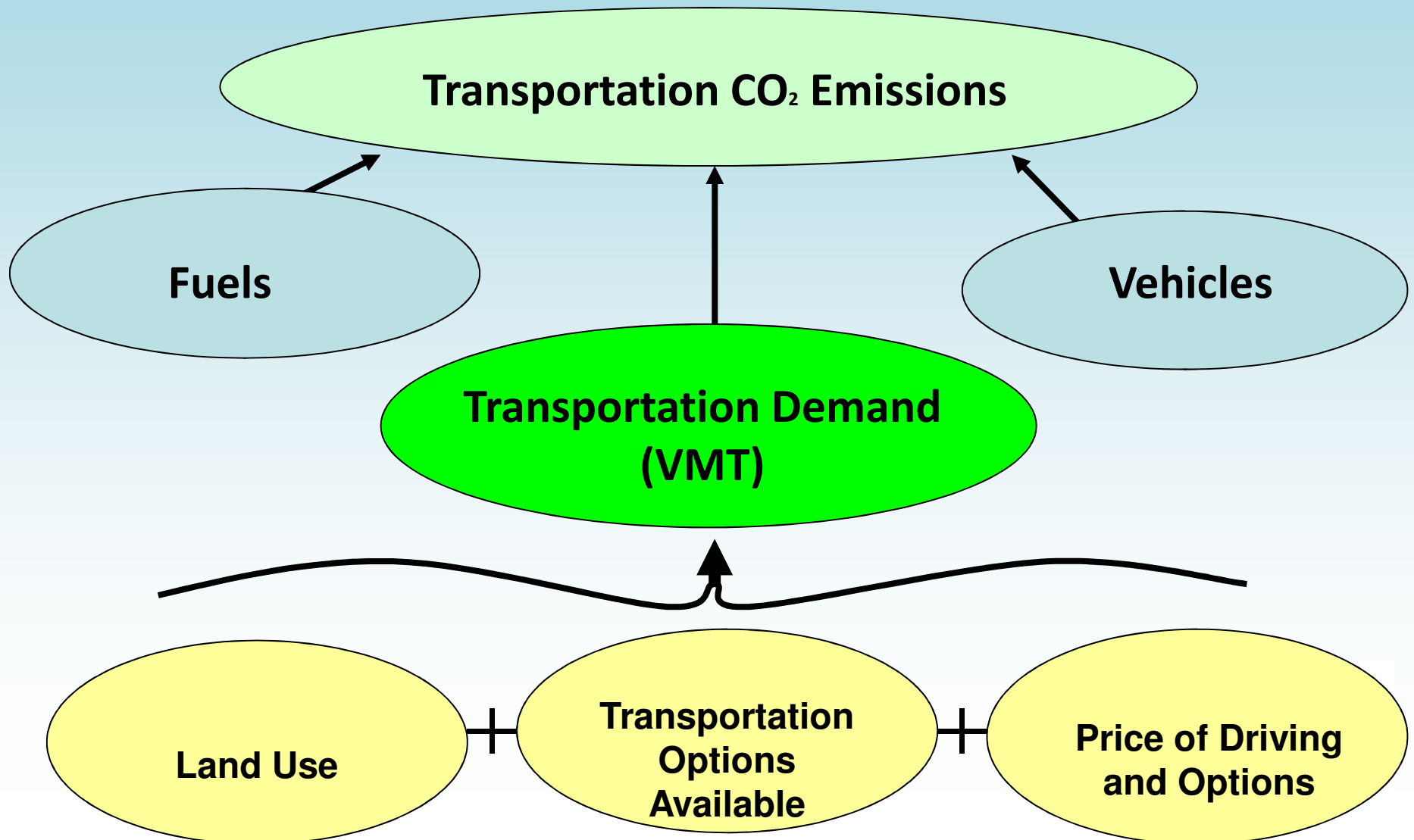
Greenhouse Gas Emission REDUCTIONS

Transportation Sector



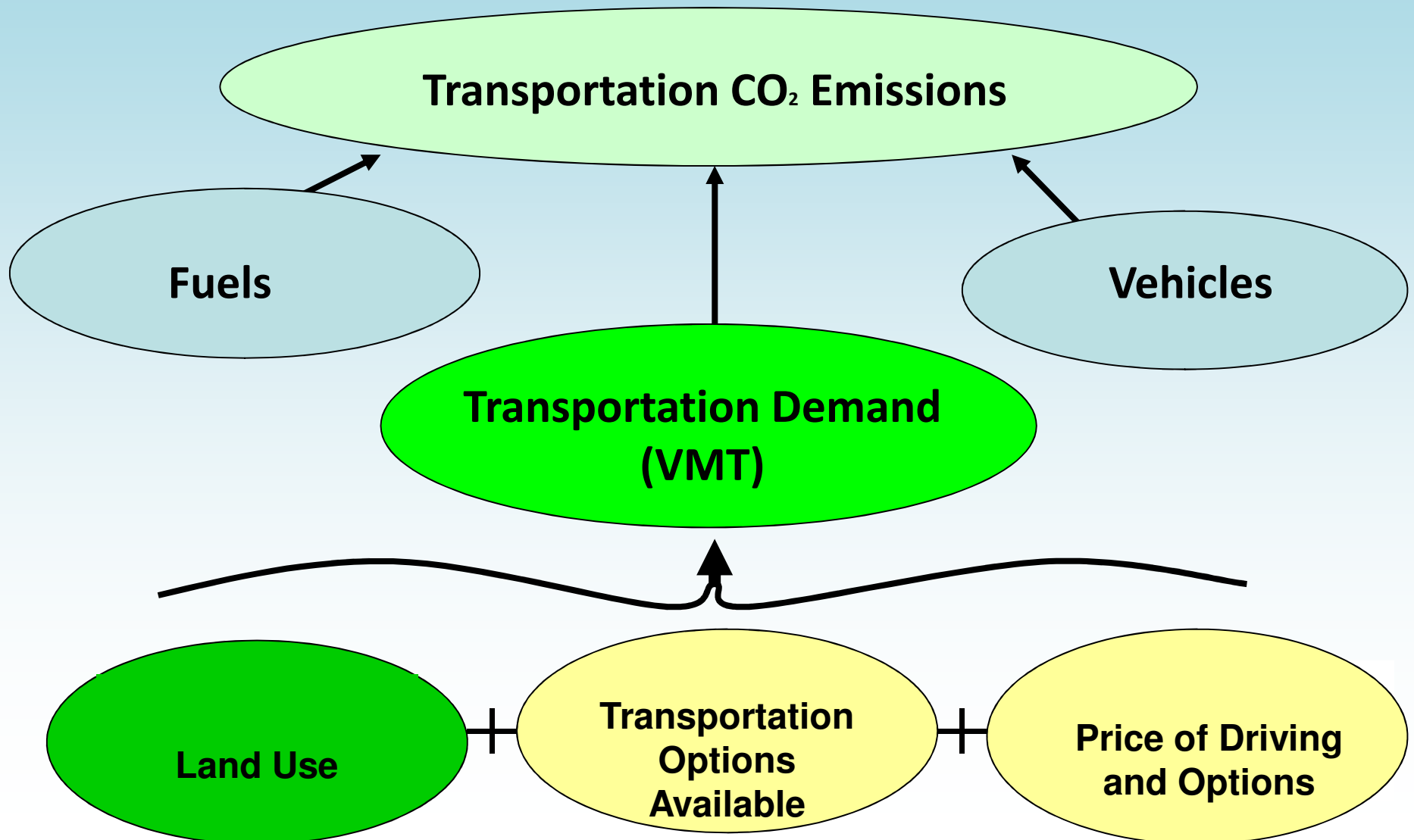
Greenhouse Gas Emission REDUCTIONS

Transportation Sector



Greenhouse Gas Emission REDUCTIONS

Transportation Sector



Desired Land Use Conditions

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



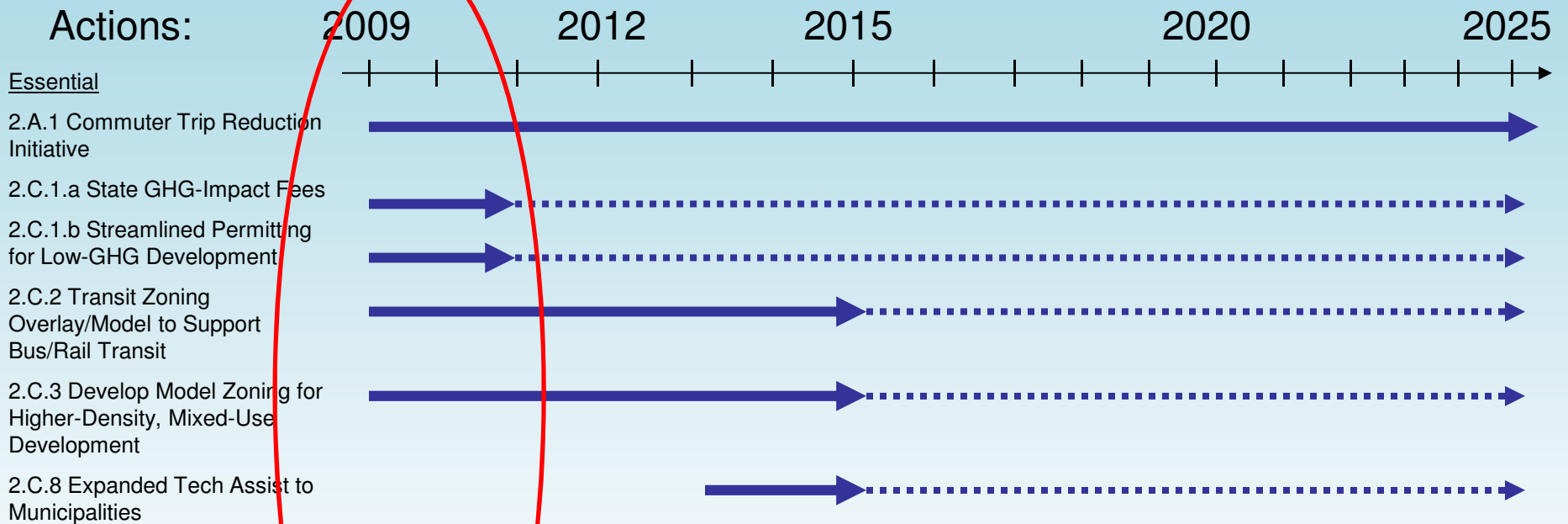
Recommended Land Use Actions

- Assess Greenhouse Gas Development Impact Fees
- Streamline Approvals for Low- Greenhouse Gas Development Projects
- Develop Model Zoning to Support Bus/Rail Transit
- Develop Model Zoning for Higher-Density, Mixed-Use Development
- Continue/Expand Funding, Education, and Technical Assistance to Municipalities

Encourage Appropriate Land-Use Patterns that Reduce VMTs

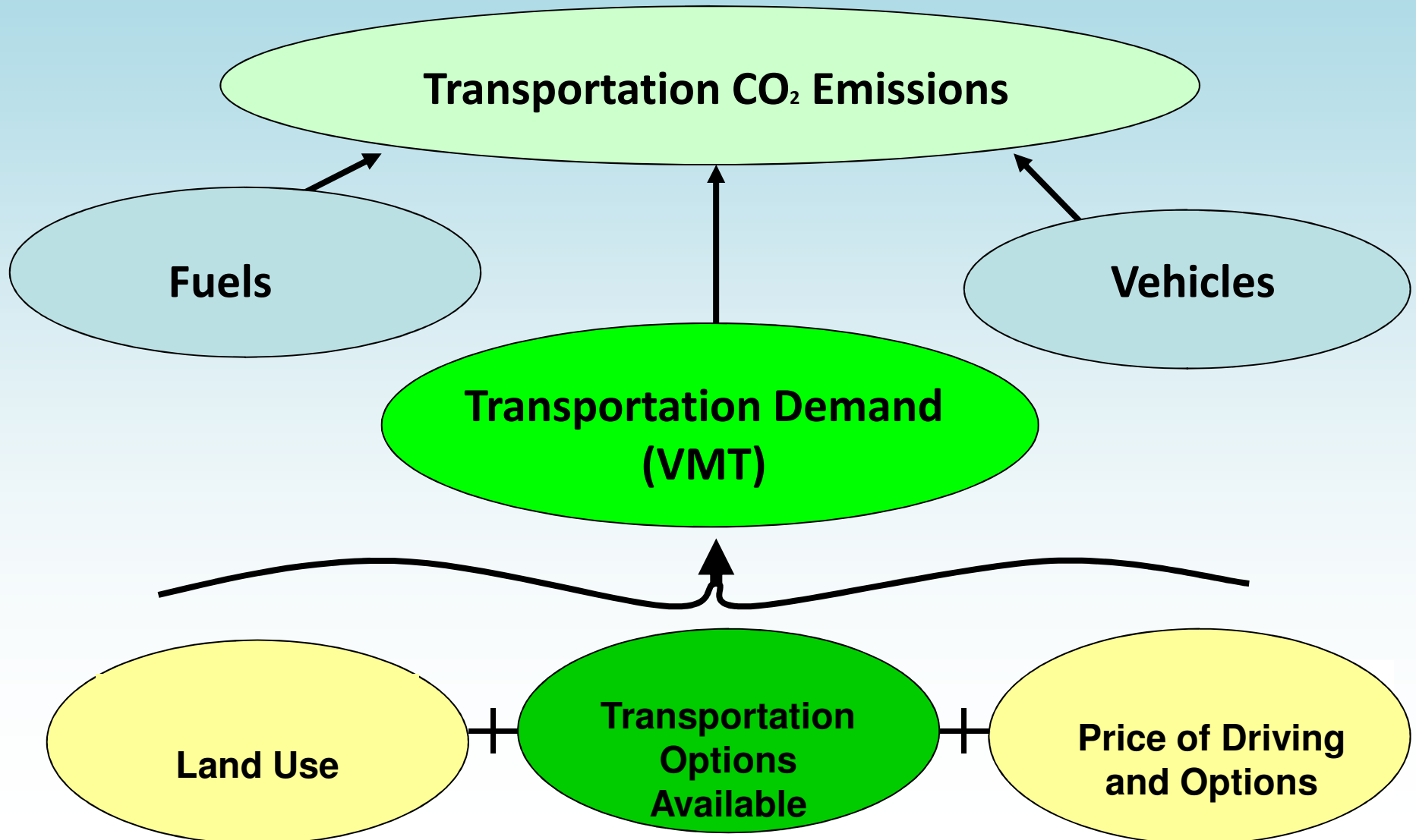
Key:

-> Begin Work on Action
- > Active Implementation
-> Action Continues



Greenhouse Gas Emission REDUCTIONS

Transportation Sector



Desired Transit Outcomes

- Expand existing transit availability
- Increase transit options
- Increase connectivity and accessibility of transportation system



Desired Transit Outcomes



Recommended Transit Actions

- Implement a Stable Funding Stream to Support Public Transportation
- Improve Existing Local/Intra-Regional Transit (Bus) Service
- Expand Local/Intra-Regional Transit (Bus) Service
- Improve Existing Inter-City Bus Service



Recommended Transit Actions

- Maintain and Expand Freight Rail Service
- Maintain and Expand Passenger Rail Service
- Expand Park-and-Ride Infrastructure
- Expand and Improve Bicycle and Pedestrian Infrastructure



Reduce VMTs through an Integrated Multi-Modal Transportation System

Key:

-> Begin Work on Action
- > Active Implementation
-> Action Continues

Actions:

2009

2012

2015

2020

2025

Essential

2.B.1.a Expand Local Bus Service

2.B.1.b Improve Existing Local Bus Service

2.B.2 a Maintain and Improve Passenger Rail Service

2.B.2.b Maintain and Improve Freight Rail Service

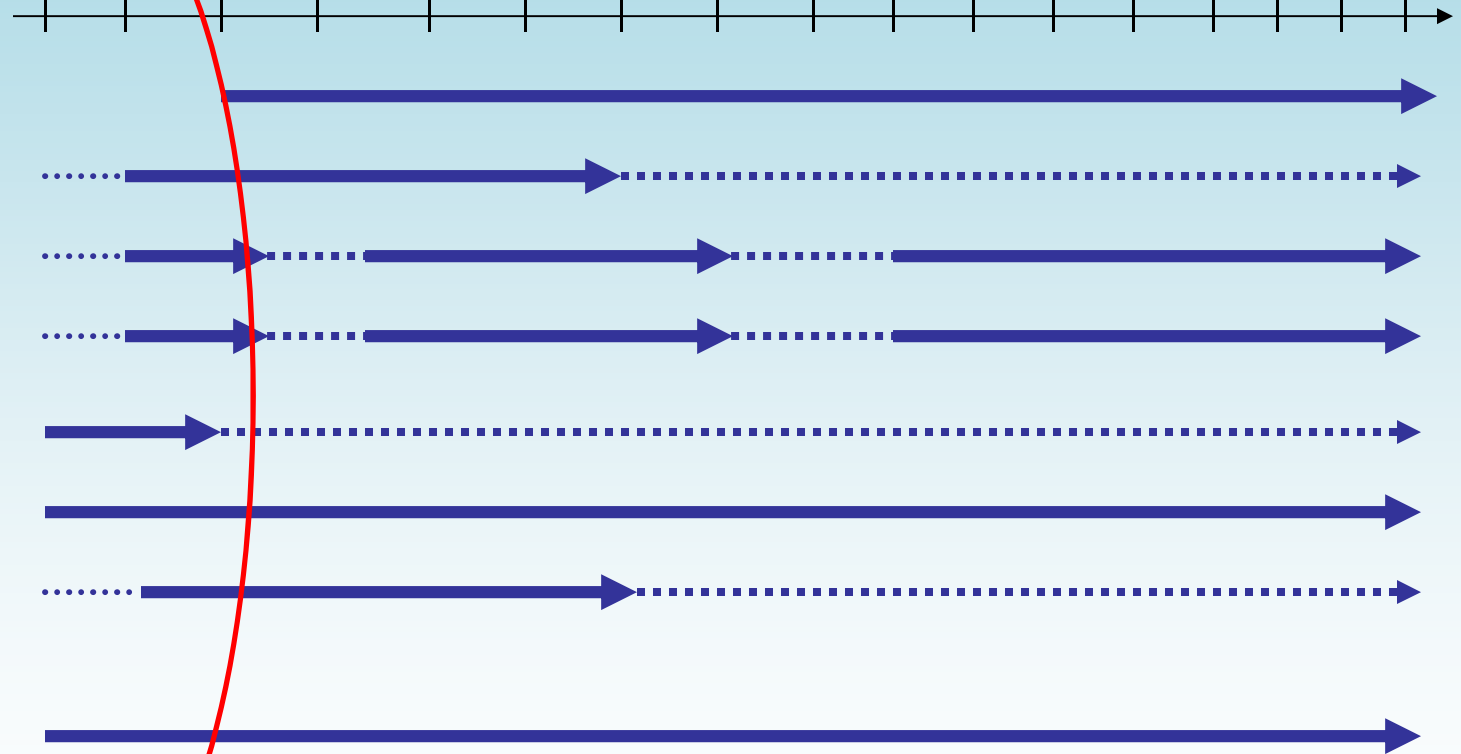
2.B.2.c Establish a Dedicated Funding Source for Public Transportation

2.B.2.e Expand Park-and-Ride Infrastructure

2.B.2.h Improve Existing Inter-city Bus Service

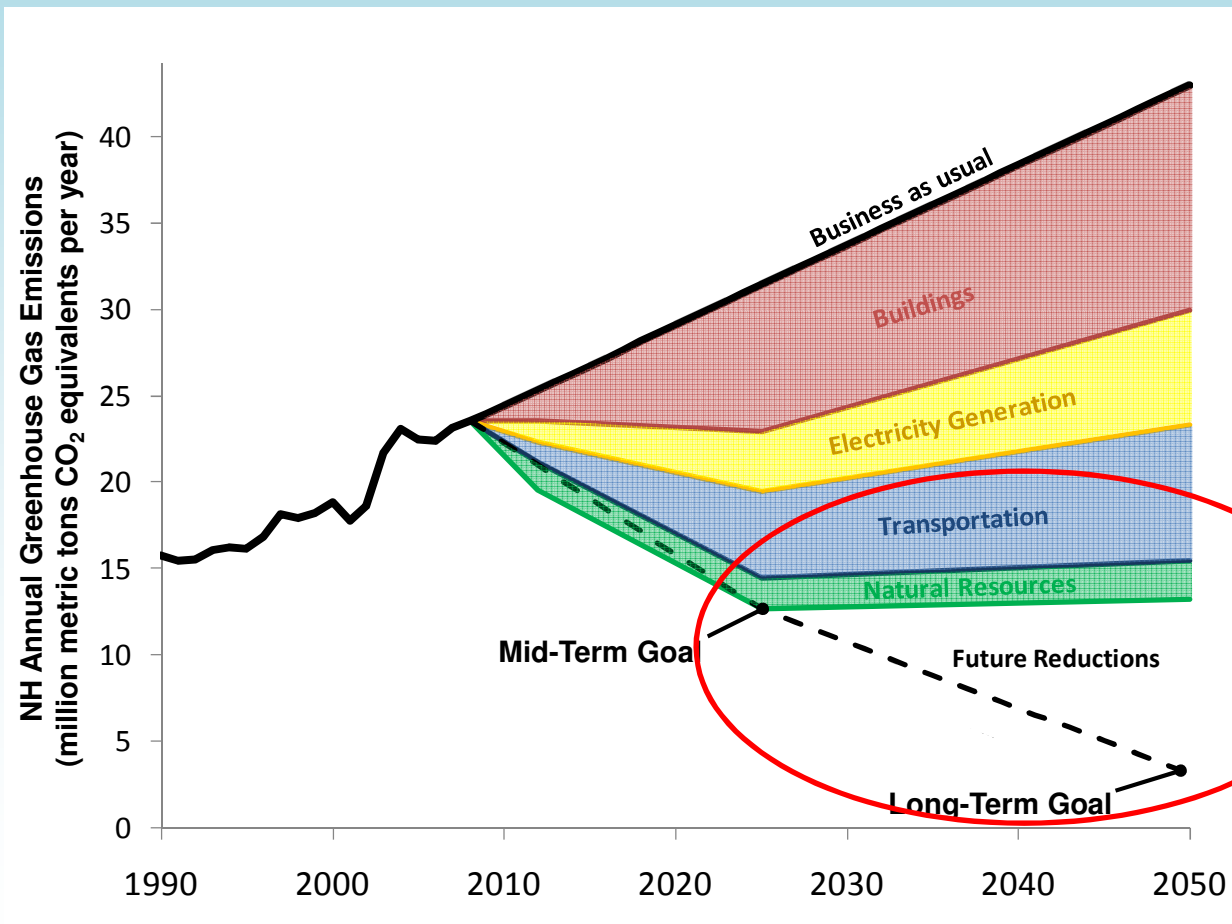
Supporting

2.B.1.c Expand/Improve Bike/Ped Infrastructure



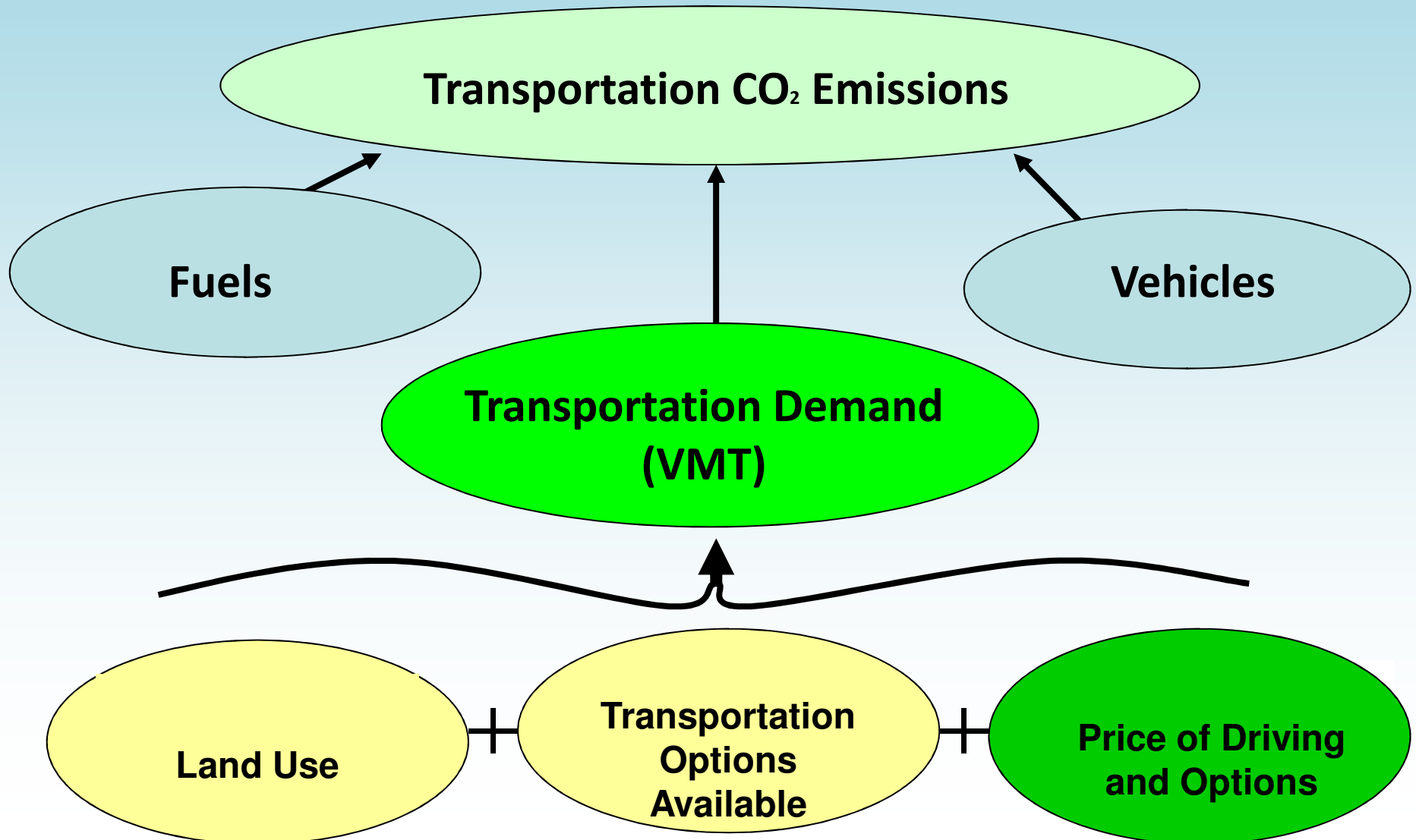
Climate Action Plan

Emission Reduction Potential



Greenhouse Gas Emission REDUCTIONS

Transportation Sector



Actions for Future Consideration

Key:

-> Begin Work on Action
- > Active Implementation
-> Action Continues

Actions:

2009

2012

2015

2020

2025

**1.B.2 Carbon-Based
Registration Fees**

1.D.5 Congestion Pricing

2.A.4 VMT-Based Registration
Fees

2.A.3 VMT-Based Insurance

2.A.5 Increase Gas Tax

2.A.6 Fuel Carbon Surcharge

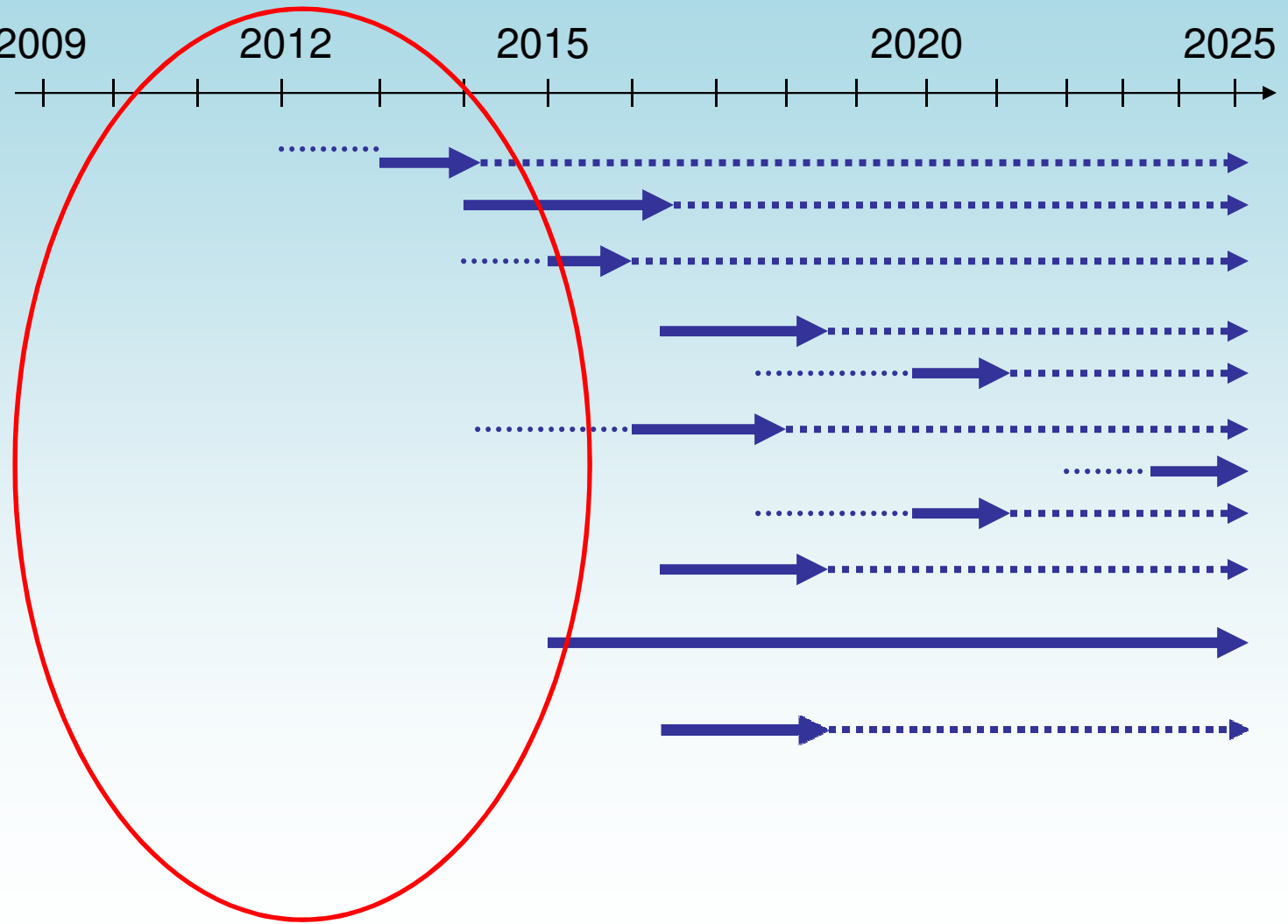
2.A.7 Reduced Parking

2.C.5 Two-Rate Tax Structure

2.C.6 Promote Location Efficient
Mortgages

2.B.2.g Expand Inter-City Bus
Service

2.B.2.f State-Funded
Transportation Management
Associations



Moving Forward

- NH Climate and Energy Collaborative
 - Six members from the business community.
 - Six members from the public sector.
 - Six members from the education and nonprofit sectors.
 - Legislative liaison committee.
- Implementing Partners
 - “Boots of the Ground”

Contacts

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Action Plan Development Process

- Climate Change Policy Task Force
 - Twenty-nine (29) members
- Working Groups (6)
 - 125+ Participants
- Six (6) Official Public Listening Sessions
 - 15 Locations
 - 275 Participants
 - 100 Commenters
- 300 Pages of Public Comments
 - e.g., mail, email, phone calls

