



# **Transportation Actions Included in State Climate Action Plans**

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# Presentation Roadmap

- 1. Overview of State Climate Action Plans**
- 2. Transportation Mitigation Strategies –  
Quantification Methods and Uncertainties**
- 3. Impacts and Adaptation**
- 4. Key Opportunities for Involvement**





# What is a Climate Action Plan?

- **Provides Distinct Strategies to Reduce GHG Emissions from Multiple Sectors**
- **Typical Components**
  - **Emission inventory and forecast (baseline)**
  - **Description of GHG mitigation strategies**
  - **GHG impacts, costs, and cost-effectiveness of strategies**
  - **Implementation steps**
  - **Net impact of strategies, compared to baseline (BAU) forecast**



# The Climate Action Plan in Context



## State Climate Action Plans Typically ARE:

- Strategy scoping documents
- Sketch-level emissions analyses

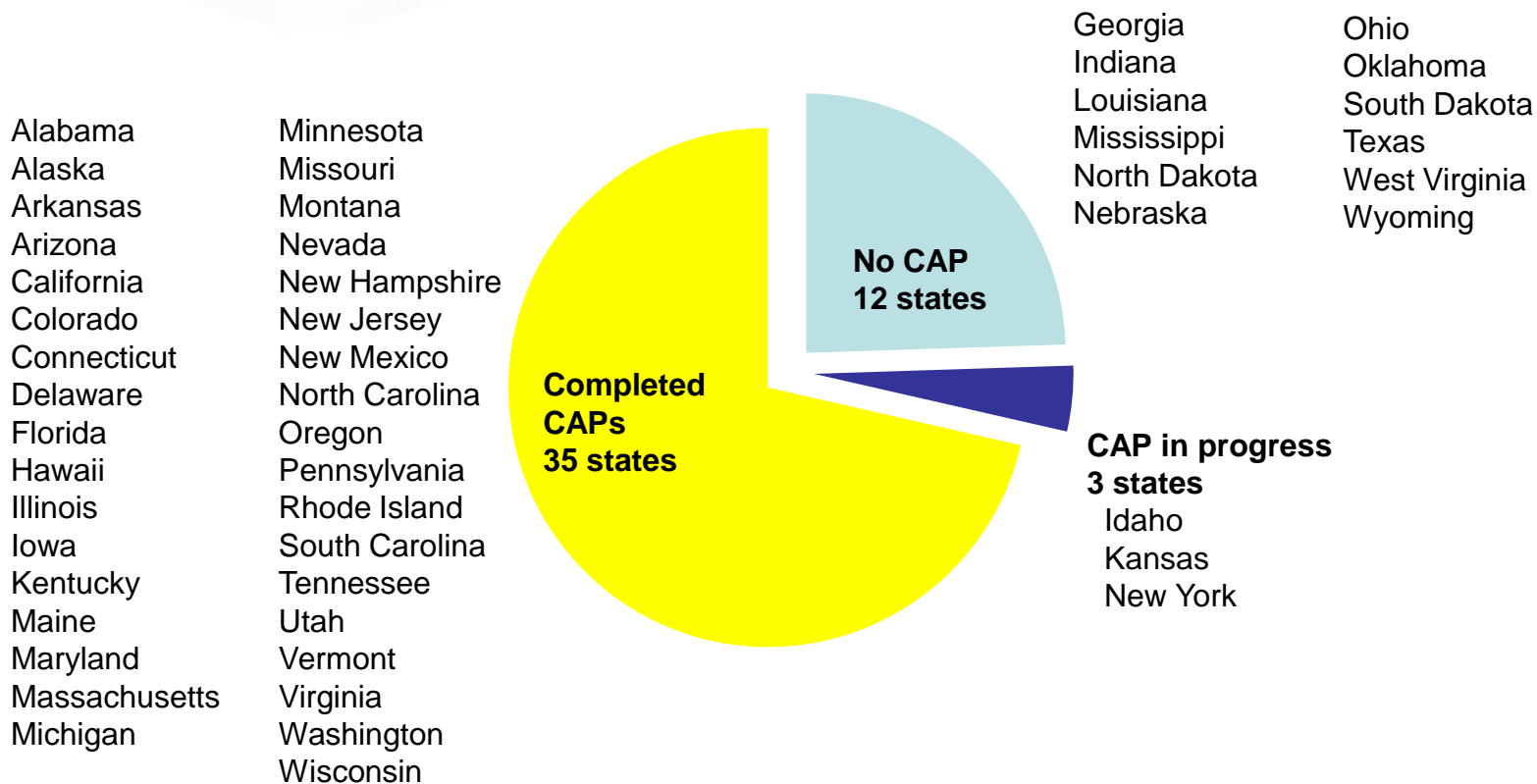
## State Climate Action Plans Typically ARE NOT:

- Fiscally constrained
- Constrained by current limits on implementation authority
- Developed by agencies that would implement the plans
- Analogous to LRTPs





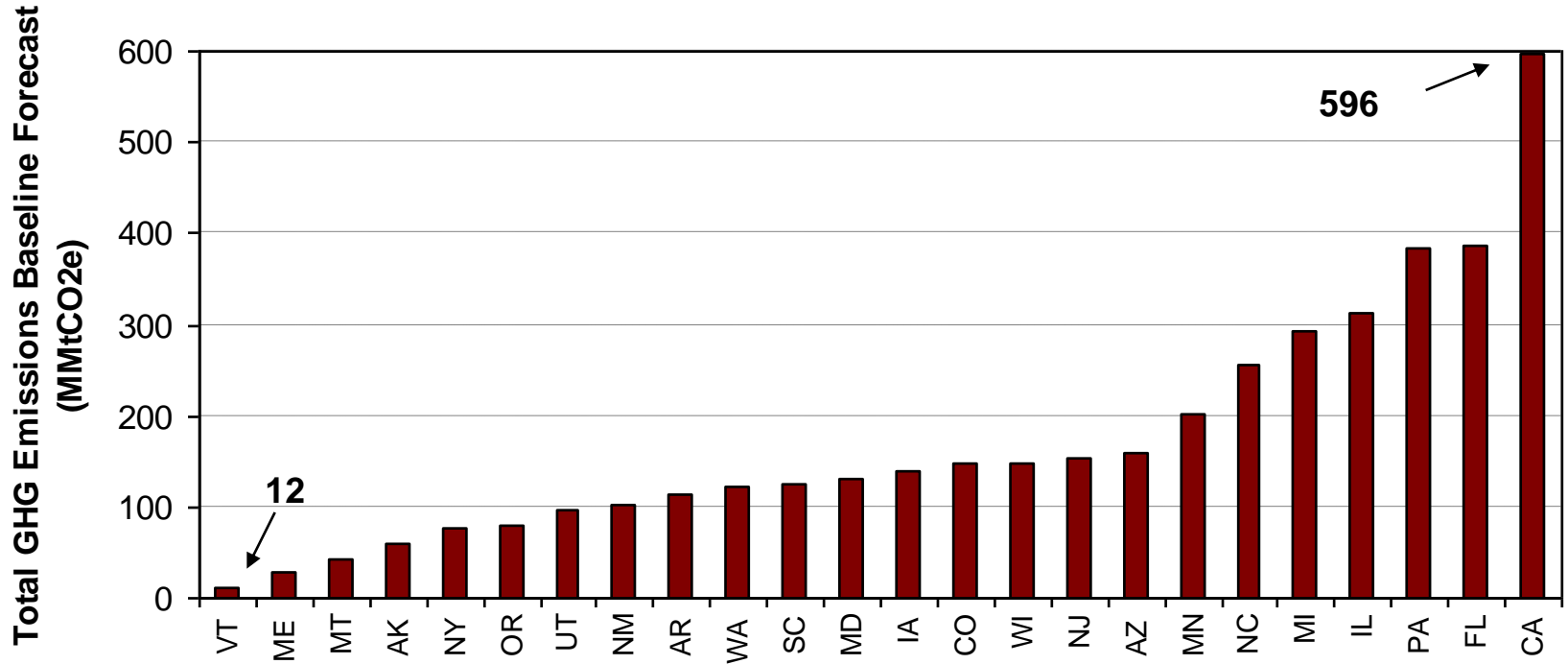
# Status of State Climate Action Plans



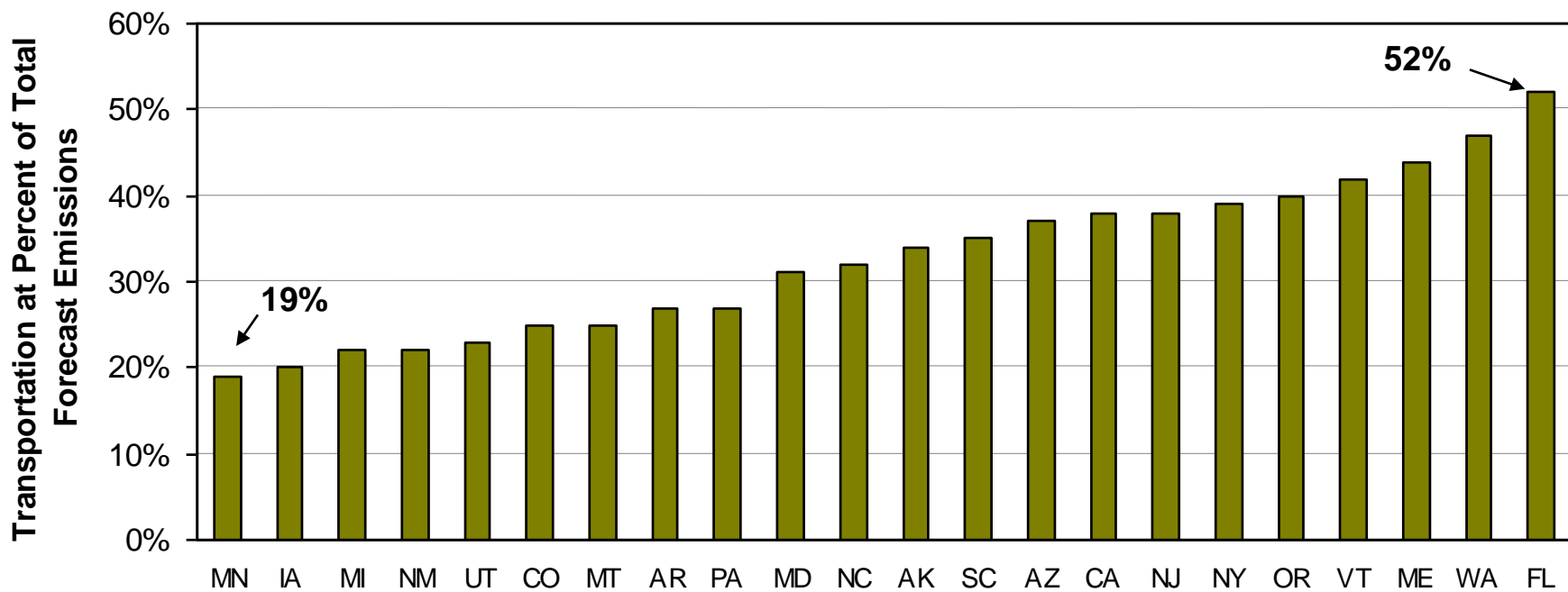
**Source:** Pew Center on Global Climate Change, "U.S. Climate Policy Maps – Climate Action Plans", July 2010



# Total Forecast State GHG Emissions (BAU)

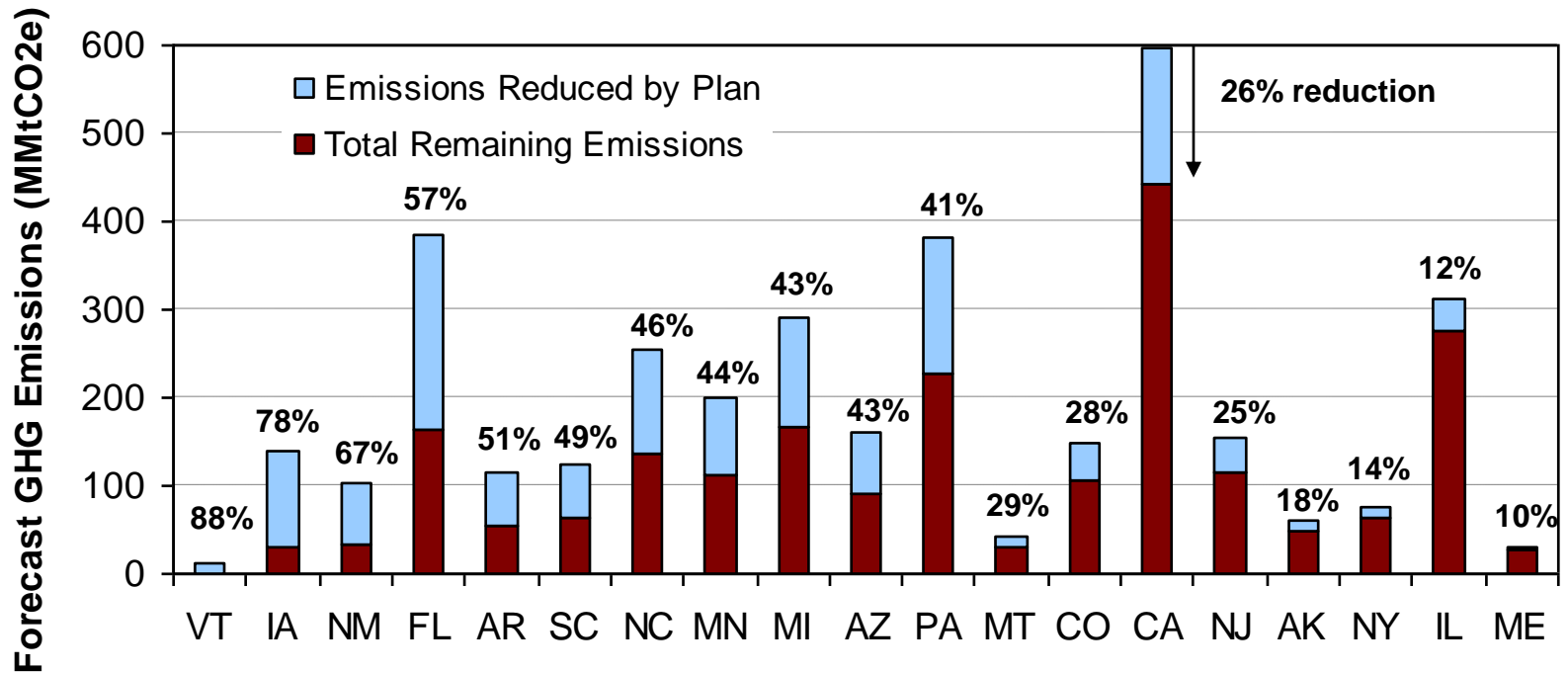


# Transportation Contribution to Total State GHG Emissions



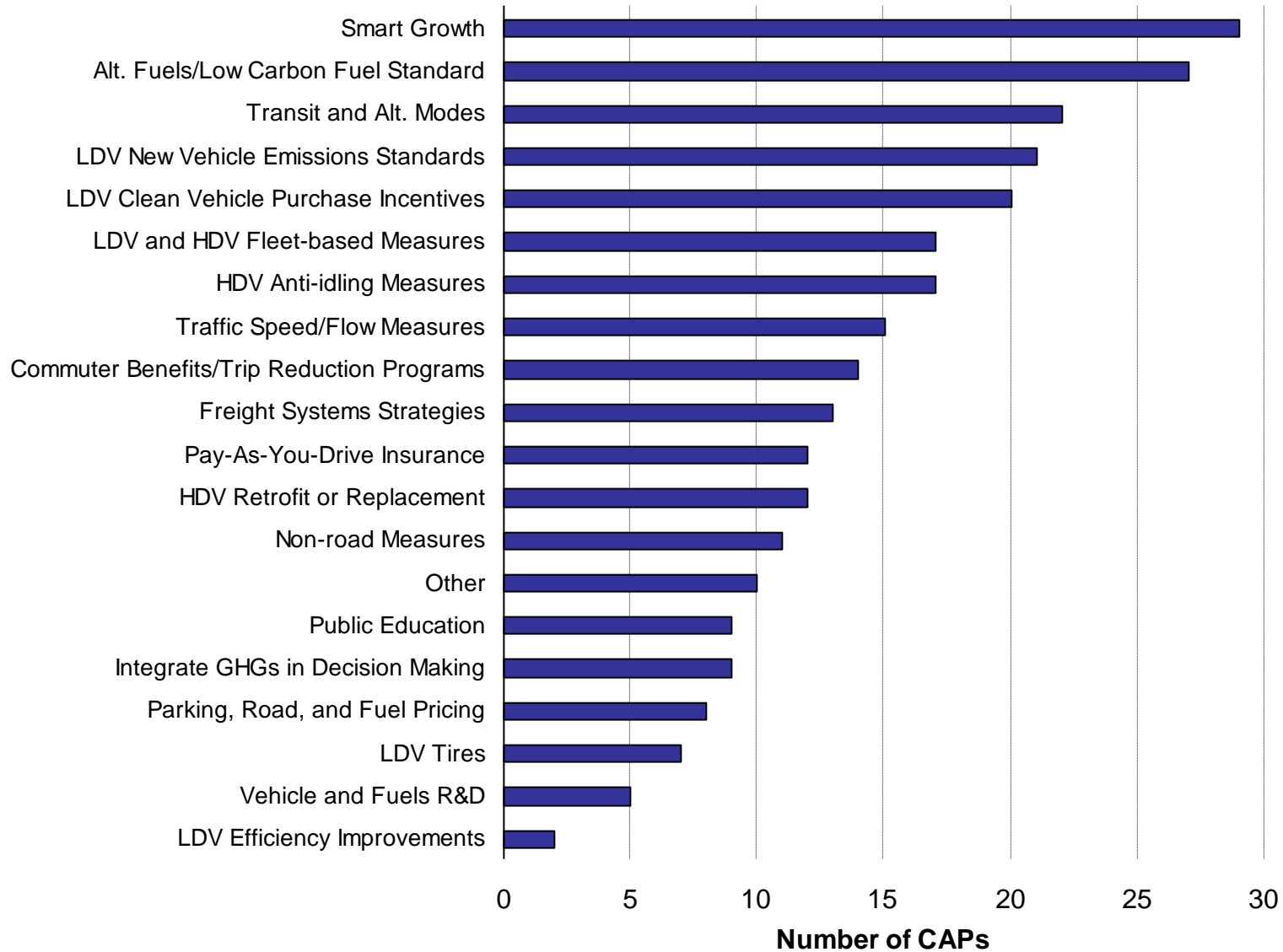


# GHG Reductions from Plan



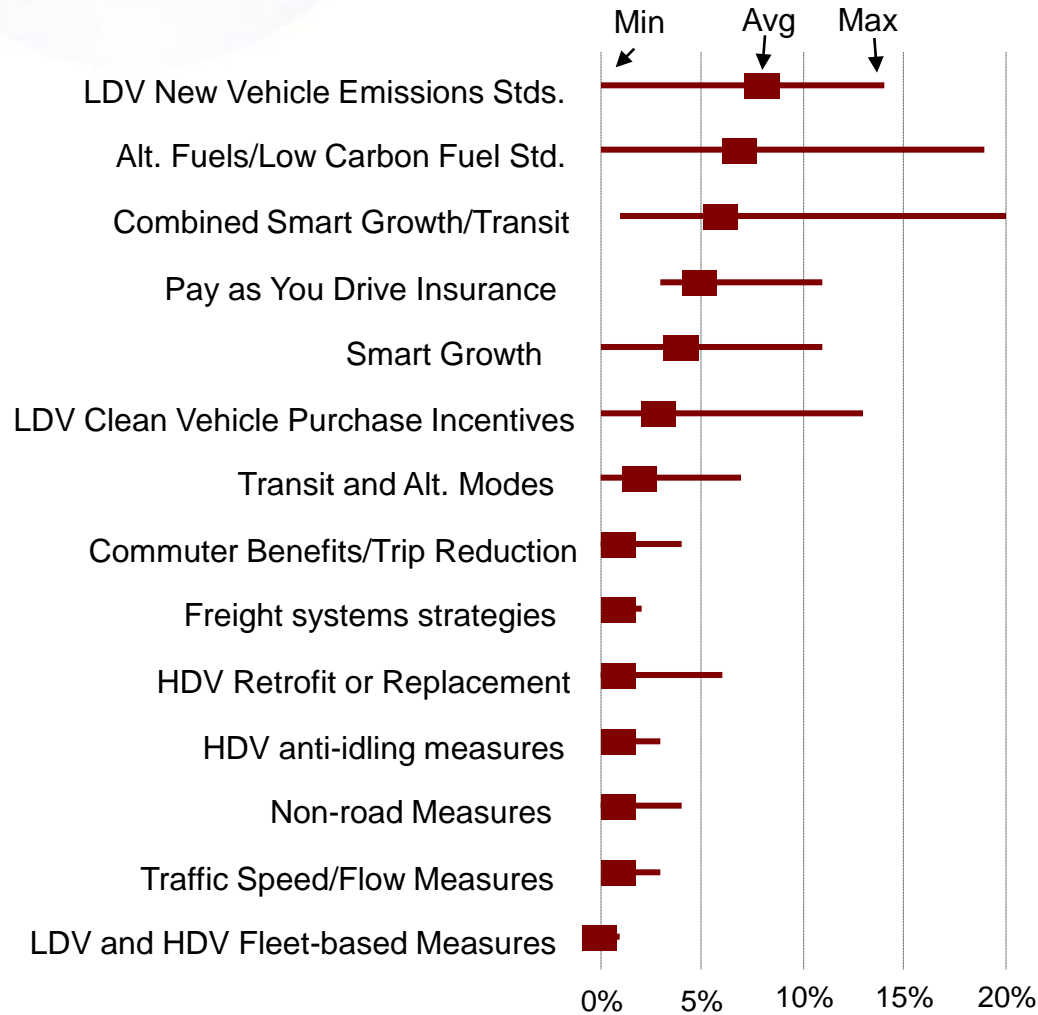


# Mitigation Strategies in 30 CAPs





# Effectiveness of Individual Mitigation Strategies



Percent Reduction from Transportation Baseline



# Steps in Climate Action Plan Development (typical)



- 1. Create Emission Inventory and Forecast (baseline)**
  - By sector; may be done in advance
- 2. Form Stakeholder Groups**
  - Plenary group + 4-5 technical working groups
- 3. Review “Catalog” of Potential Strategies**
- 4. Select Short List of Strategies for Evaluation**
  - Typically 6-12
- 5. Analyze GHG Impacts and Costs of Select Strategies**
- 6. Formulate Strategy Implementation Steps**
- 7. Calculate Combined Impact of All Plan Strategies**
- 8. Final Report**





# **Part 2: Transportation Mitigation Strategies – Quantification Methods and Uncertainties**





# Real Impacts of CAP Strategies

- **Actual GHG Reductions Will Depend On:**
  - Enactment of strategies (Hurdle #1)
  - Implementation of strategies (Hurdle #2)
  - Variables that determine impact (Hurdle #3)



- **Sources of Uncertainty Arise at Each**





# Requirements for Enactment (Hurdle #1)



- **Public funding**



- **Legislation or rulemaking**



- **Major public agency initiative**

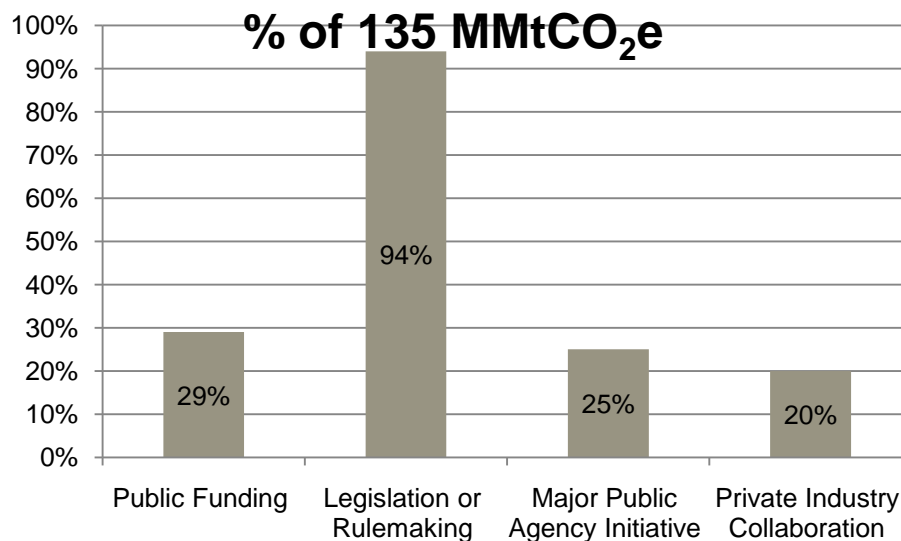
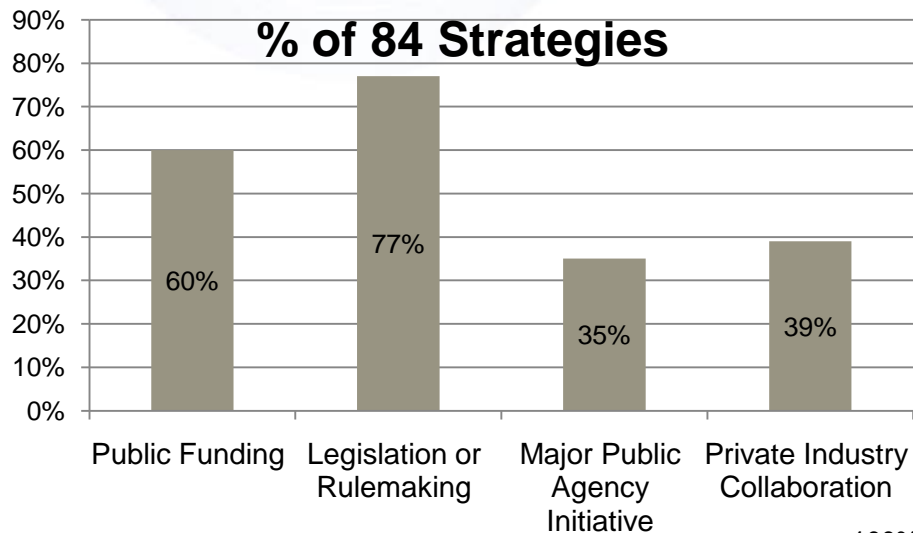


- **Private industry collaboration**





# Requirements for Enactment (Hurdle #1)



# External Factors Affecting Implementation (Hurdle #2)



Factor	Source of Uncertainty for
Commercial Availability of Technology	Alternative fuel and technology strategies
Local Government Action or Coordination Among Government Agencies	Smart growth strategies, Infrastructure for bicycles, pedestrians, and transit
Market Forces	Transportation pricing strategies, Transit strategies
Land Use Changes	Smart growth strategies





# Variables that Determine Impact (Hurdle #3)

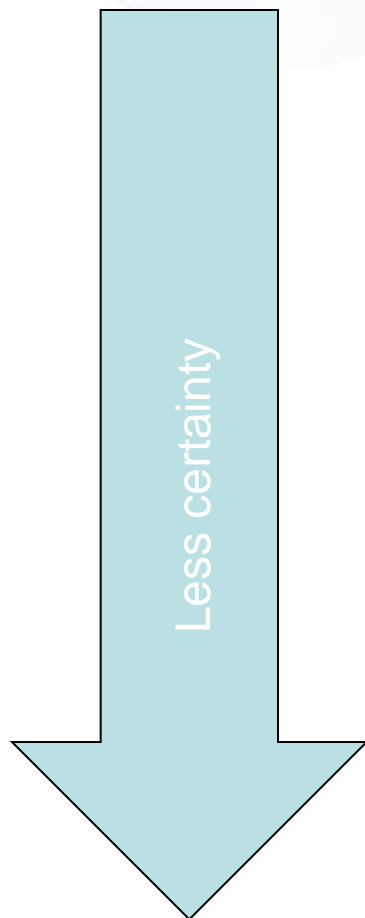


Variable	Source of Uncertainty for
Affected population	Anti-idling strategies
Market Penetration	Most strategy types, except where penetration rate is mandated
Effectiveness	Traffic Speed/Flow strategies, Smart growth strategies
Timing	Strategies including large capital investments, such as Smart growth strategies, Transit strategies





# Quantification Techniques



- **Apply empirical results from studies of similar measures**
- **Set a reduction goal, supported by a local feasibility study**
- **Set a reduction goal, not supported by a local feasibility study**





# Part 3: Impacts and Adaptation

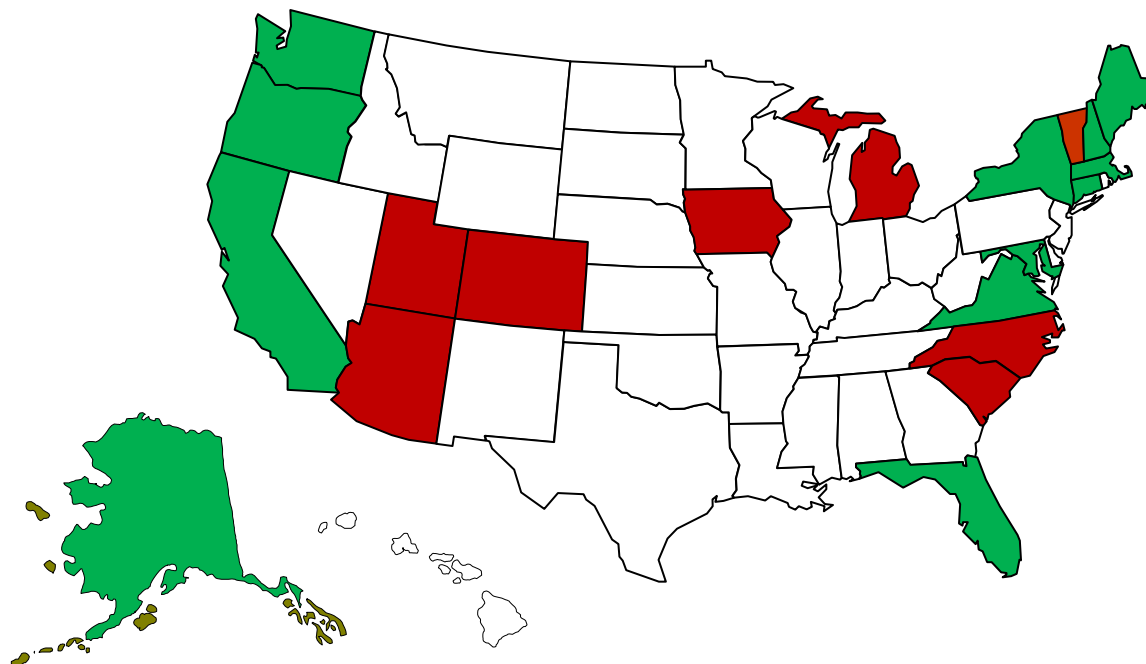


# State Climate Change Adaptation Plans



## In Progress or Completed:

- Alaska
- California
- Connecticut
- Florida
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New York
- Oregon
- Washington
- Virginia



## Recommended in CAP

- |          |                |
|----------|----------------|
| Arizona  | South Carolina |
| Colorado | North Carolina |
| Iowa     | Utah           |
| Michigan | Vermont        |

**Source:** Pew Center on Global Climate Change, “U.S. Climate Policy Maps – State Adaptation Plans”, May 2010





# Impact and Adaptation – Approaches

- **Vulnerability Assessment**

- Identifies existing stressors facing transportation systems and projects how climate change will introduce new stressors in the future

- **Risk Assessment**

- Evaluates the likelihood and consequence of climate-related impacts on transportation

- **Adaptation**

- Transportation management options available for effectively adapting to climate change impacts



Most state plans have not advanced beyond vulnerability





# **Part 4: Key Opportunities for Involvement**



# 6 Points Where Involvement is Important



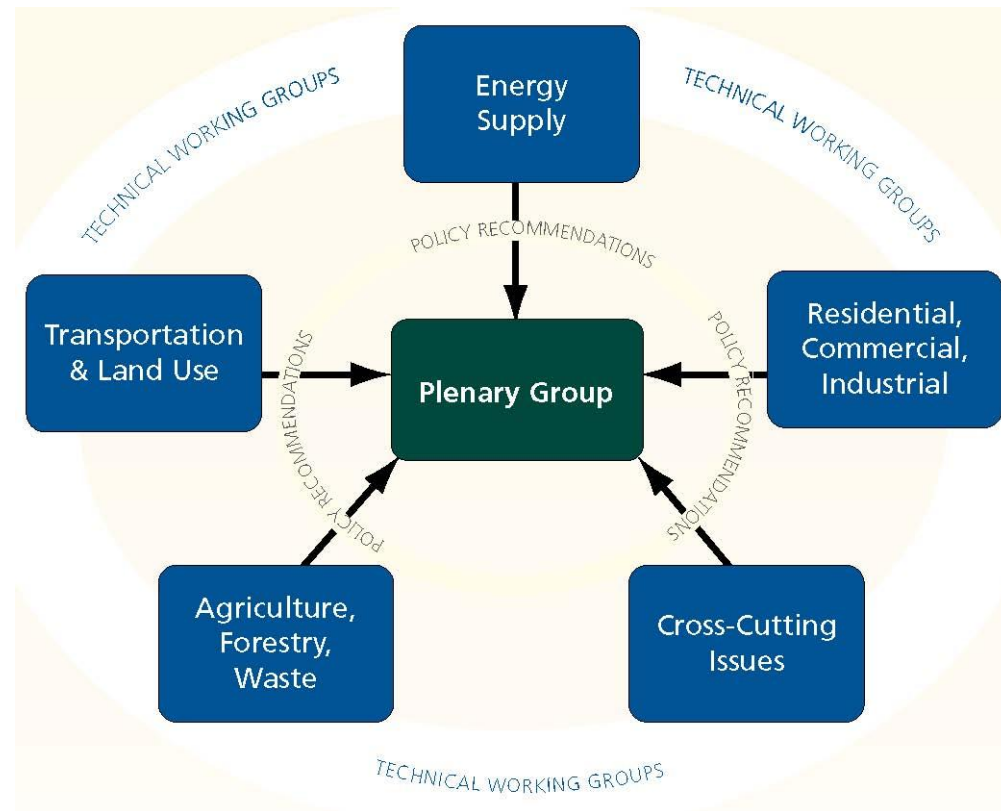
- 1. Formation of Stakeholder Groups**
- 2. Inventory and Forecast (Baseline)**
- 3. Selection of Strategies**
- 4. Strategy “Design”**
- 5. Quantification of Strategy Impacts**
- 6. Identification of Implementation Steps**





# 1. Formation of Stakeholder Groups

- Working groups make recommendations to a plenary group
- Transportation TWG usually includes the DOT and/or MPO
- Plenary group does not usually include DOT or MPO







## 2. Inventory and Forecast (Baseline)

- Pay attention to growth factors for forecast years
- On-road gasoline and diesel forecast based on VMT projections
  - DOT vs. MPO projections

Little or no uncertainty



High uncertainty



MMtCO<sub>2</sub>-eq

	1990	1991	1992	...	2003	2004	2005
Motor Gasoline	19.38	19.69	20.06	...	23.83	24.10	23.74
Onroad Distillate Fuel	4.05	4.24	4.75	...	6.94	7.44	7.48
Rail Distillate Fuel	0.84	0.72	0.57	...	0.70	0.75	0.75
Jet Fuel	8.06	7.79	8.98	...	6.95	7.64	7.61
Aviation Gasoline	0.11	0.09	0.10	...	0.08	0.07	0.10
Residual Fuel	2.54	2.65	2.65	...	2.71	2.87	3.01
Natural Gas	0.28	0.28	0.17	...	0.37	0.49	0.47
LPG	0.07	0.05	0.05	...	0.02	0.02	0.02

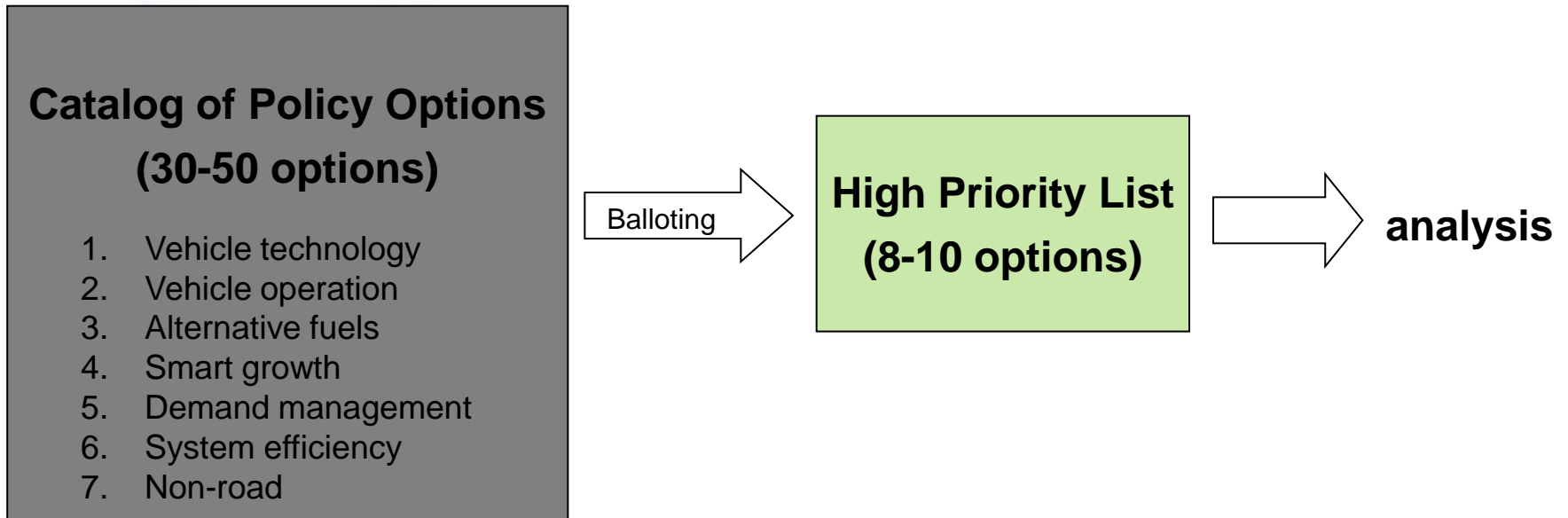
**Growth Factors**

	2005-2010	2010-2015	2015-2020
Motor Gasoline	1.1%	1.2%	0.8%
Onroad Distillate Fuel	3.4%	3.4%	2.7%
Rail Distillate Fuel	0.0%	0.0%	0.0%
Jet Fuel	0.8%	0.5%	0.4%
Aviation Gasoline	1.5%	1.4%	1.2%
Residual Fuel	2.1%	2.1%	2.1%
Natural Gas	16.7%	9.9%	5.9%
LPG	8.7%	5.6%	4.7%





# 3. Selection of Strategies



**Multiple options may be “bundled” during or after balloting**

- Details on individual strategies may be lost

**Backtracking discouraged**

- Decisions are made on which strategies to include before analysis is done





## 4. Strategy “Design”

### Numeric goals for strategy effectiveness

#### Examples:

- Reduce light-duty VMT by 2% statewide by 2020
- Reduce fuel consumption from extended (overnight) idling of heavy-duty vehicles 50% by year 2012 and 95% 2020
- By 2010, all employers covered by a transportation authority with more than 100 employees will offer a commuter benefits program
- By 2010, ensure that 50% of employers who provide leased parking spaces to employees will offer parking cash-out.
- By 2020, 20% of drivers will be covered by mileage-based automobile insurance
- Increase the bicycle and walking mode share (all trips) in urban growth areas to 15% by 2020

### Quantification of GHG impacts often directly tied to design goal

- Make sure Design Goals are realistic





## 5. Quantification of Strategy Impacts

- **Questions to consider when reviewing quantification**
  - **Is impact quantified based on strategy goal? If so, is the goal supported by research?**
  - **What segments of travel are affected? (e.g., light-duty vehicles only, urban VMT only)**
  - **Are offsetting emissions quantified? (e.g., increase in transit emissions)**
  - **Are strategy overlaps accounted for?**

