

# Comprehensive Climate Action And Economic Planning

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# Center for Climate Strategies

## Leading Catalyst

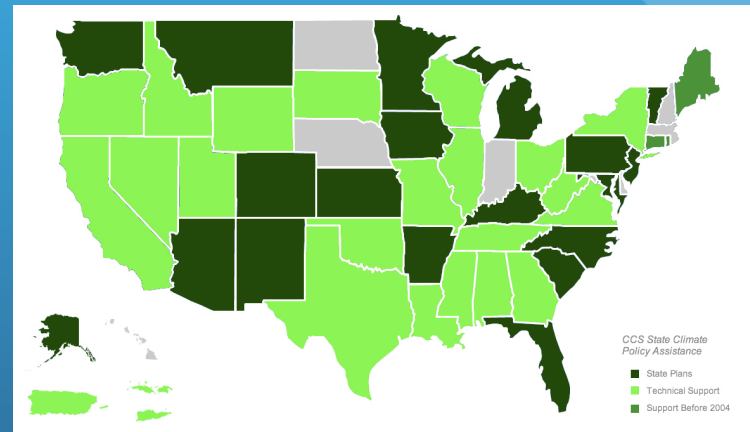
Nonpartisan, Non Advocacy, Nonprofit  
501c3, 30+ team members

National leader on policy development and  
consensus building since 2004

- Projects with 40+ states, 3 regions,  
1,500+ stakeholders
- 22 U.S. State Climate Action Plans
- Policy facilitation, design, analysis,  
implementation
- Mitigation and Adaptation
- All sectors and instruments

Funded by foundations, donors, agencies

## Policy Advancement



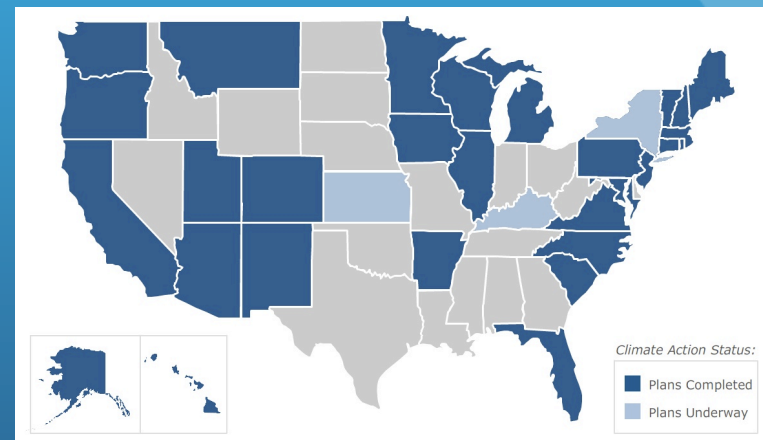
CCS Assisted States,  
2004-2009

# U.S. State Climate Actions

## Contents

- 32 climate action plans completed or in progress
- Cover 2/3 of U.S. economy and population
- Cover 1/2 of US GHG emissions
- Cover all sectors, tools, levels of government
- Include cost effectiveness
- Over 1,500 Stakeholders

## Coverage



# Importance of State Initiatives

## Value Added

- Establish comprehensive planning capacity and fact base
- Identify best actions and instruments
- Integrate climate, energy, economic, environmental development
- Inform and support federal action
- Mobilize and target investments of resources
- Support partnership actions

## Global Significance

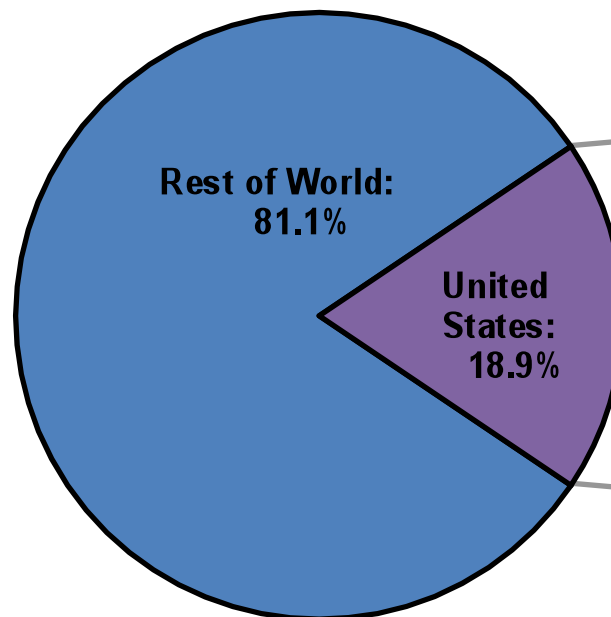


# New York State

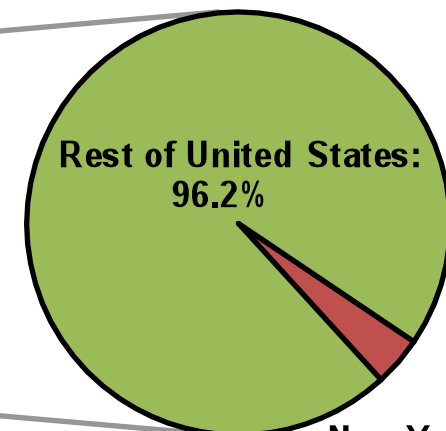
## ***National and Global Context for Greenhouse Gas Emissions***

(Carbon Dioxide Equivalent Units)

**2005 World Emissions Total:**  
**41.6 Billion Tons**



**2005 U.S. Emissions Total:**  
**7.9 Billion Tons**



**New York State:**  
**3.8%**

Note: New York State represents 6.5% of the U.S. population. The U.S. represents 4.6% of the world population.

# Climate & Economic Recovery

## Jobs and Income

Save energy, money

- Boost disposable income
- Boost investment

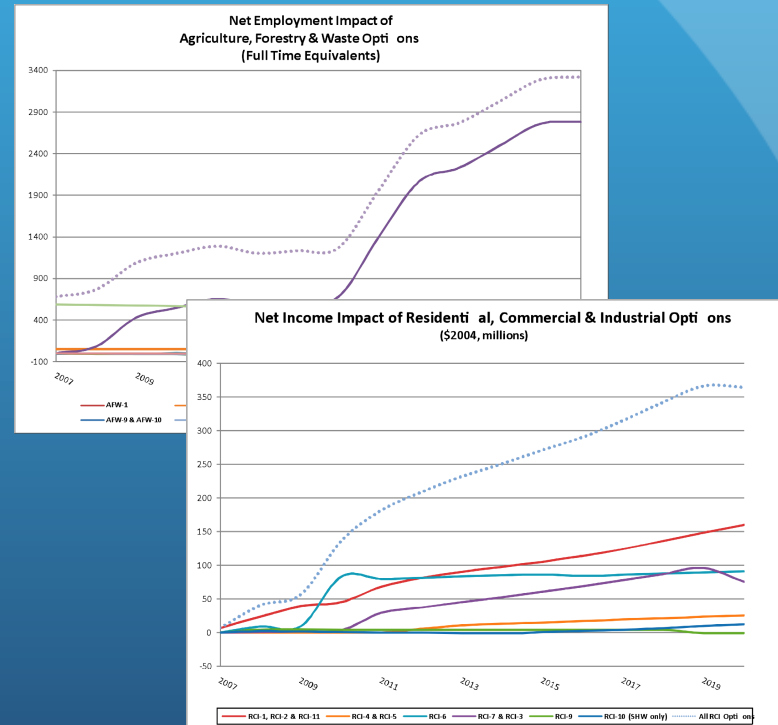
Create jobs

- New, home grown energy
- New technology and products

Value added investment

- New energy future
- Local actions

## Response Curves



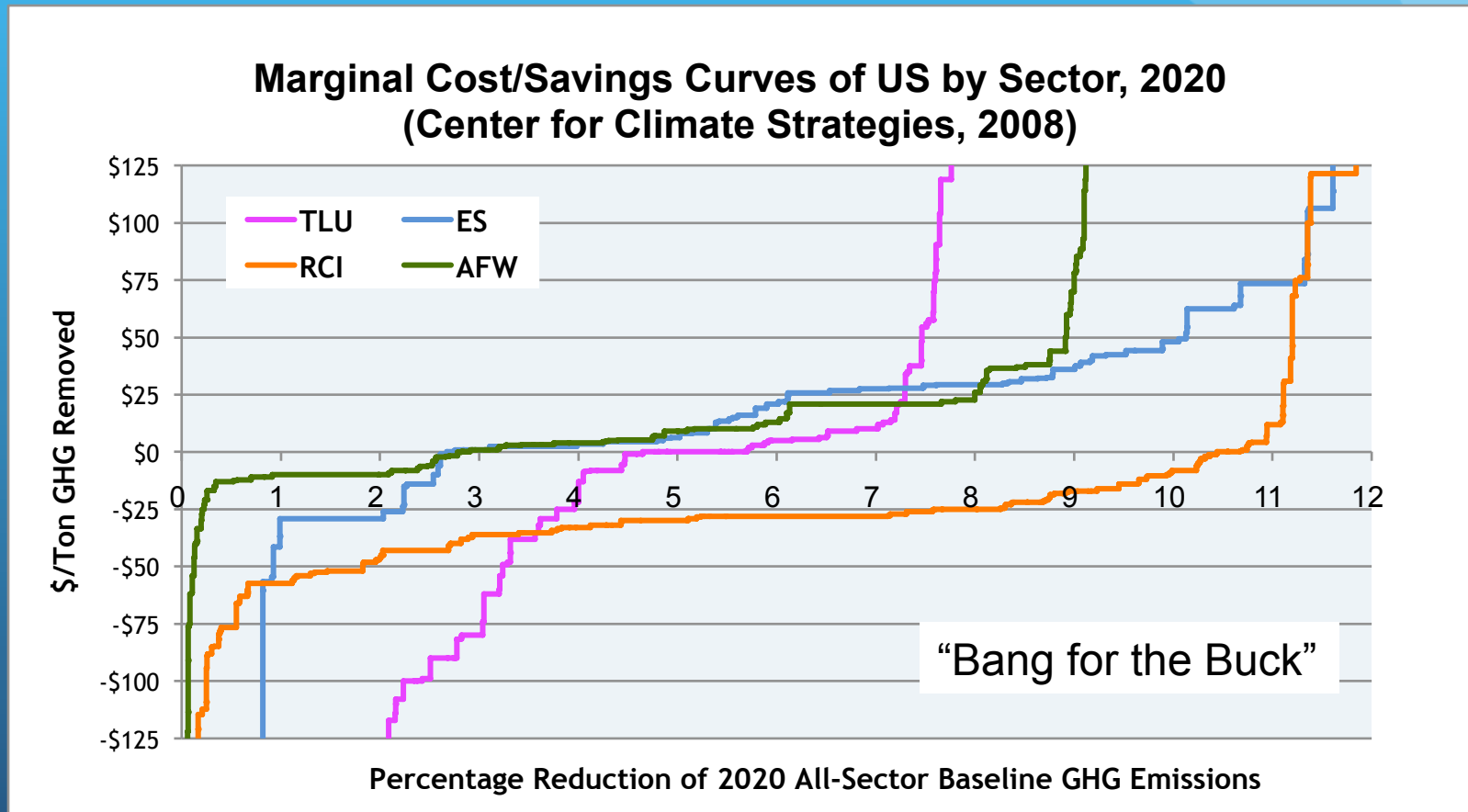
Analysis by CCS, 2008

[www.climatestrategies.us](http://www.climatestrategies.us)

# U.S. State Plan Results (Sample)

State	Policy Options	Degree of Unanimity	Amount of GHG Reductions	Overall NPV Cost or Savings	Net Job Gain
AZ	49	92%	<ul style="list-style-type: none"> <li>• 2000 level by 2020</li> <li>• Half 2000 level by 2040</li> </ul>	\$5.5 billion savings 2007-2020	289,000
CA	n/a	n/a	<ul style="list-style-type: none"> <li>• AB-32: 1990 level by 2020</li> </ul>	AB-32 \$4 billion savings	AB-32 83,000
CO	70	87%	<ul style="list-style-type: none"> <li>• 37% below projected emissions by 2020</li> </ul>	~\$3 billion savings 2007-2020	Not assessed
FL	50	High	<ul style="list-style-type: none"> <li>• 33% below 1990 level by 2025</li> </ul>	\$28 billion savings 2009-2025	148,000
MD	42	100%	<ul style="list-style-type: none"> <li>• 25% below 2006 level by 2020</li> </ul>	\$2 billion savings 2008-2020	Not assessed
MN	46	83%	<ul style="list-style-type: none"> <li>• 15% below 2005 level by 2015</li> <li>• 30% below 2005 level by 2050</li> </ul>	~\$1.3 billion energy savings 2009-2025; \$725 million cost	Not assessed
MT	54	98%	<ul style="list-style-type: none"> <li>• 1990 level by 2020</li> </ul>	\$78 million savings 2007-2020	Not assessed
NC	56	85%	<ul style="list-style-type: none"> <li>• 47% below projected emissions by 2020</li> </ul>	\$7.5 billion savings 2007-2020	15,000
NM	69	97%	<ul style="list-style-type: none"> <li>• 2000 level by 2012</li> <li>• 10% below 2000 level by 2020</li> </ul>	\$2.2 billion savings 2007-2020	Not assessed

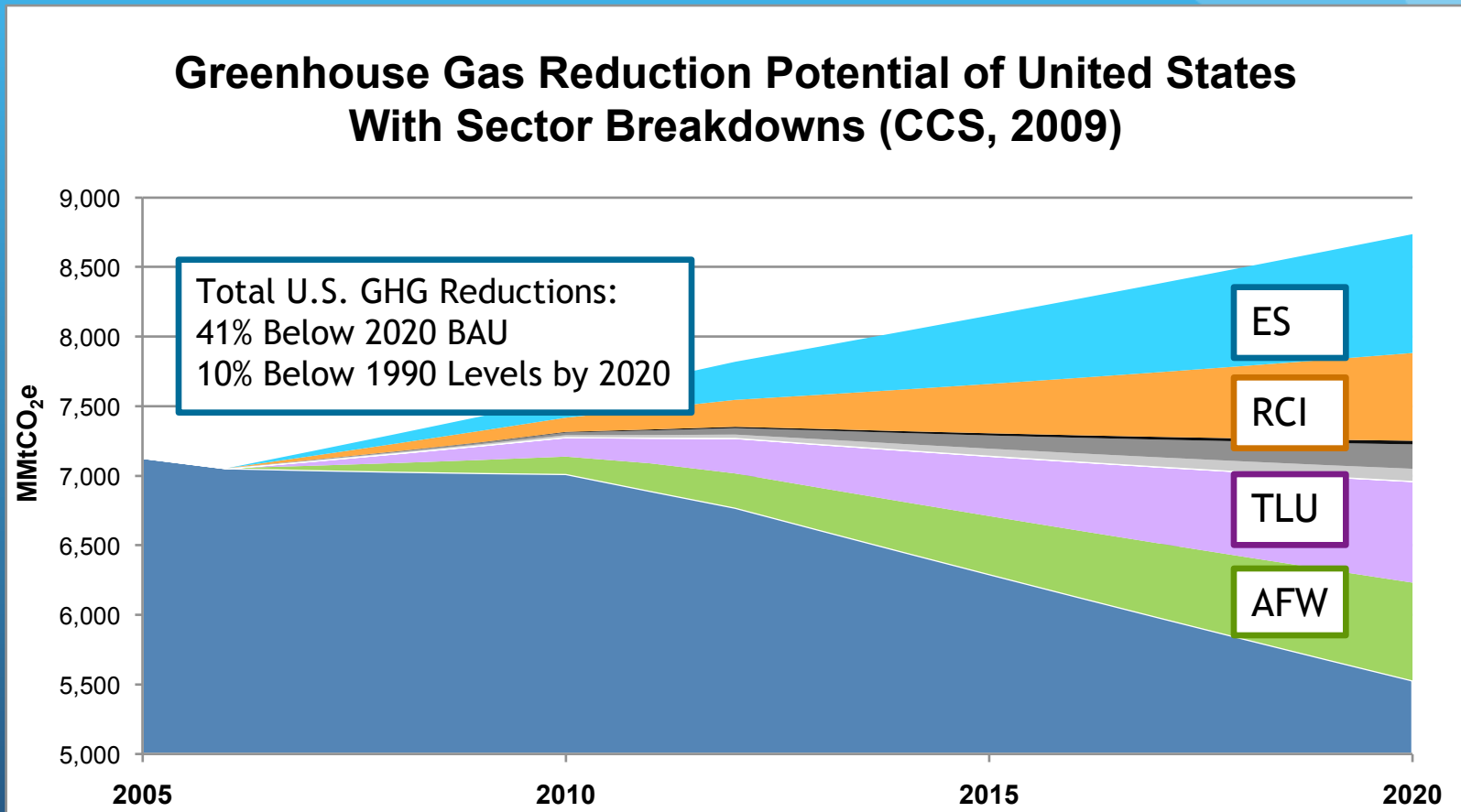
# U.S. Costs/Savings By Sector



(Over 900 Proposed Actions)



# U.S. National Scale Up



Analysis by CCS, 2008; 20 states, 900+ Options

[www.climatestrategies.us](http://www.climatestrategies.us)

# Comprehensive Policy Integration

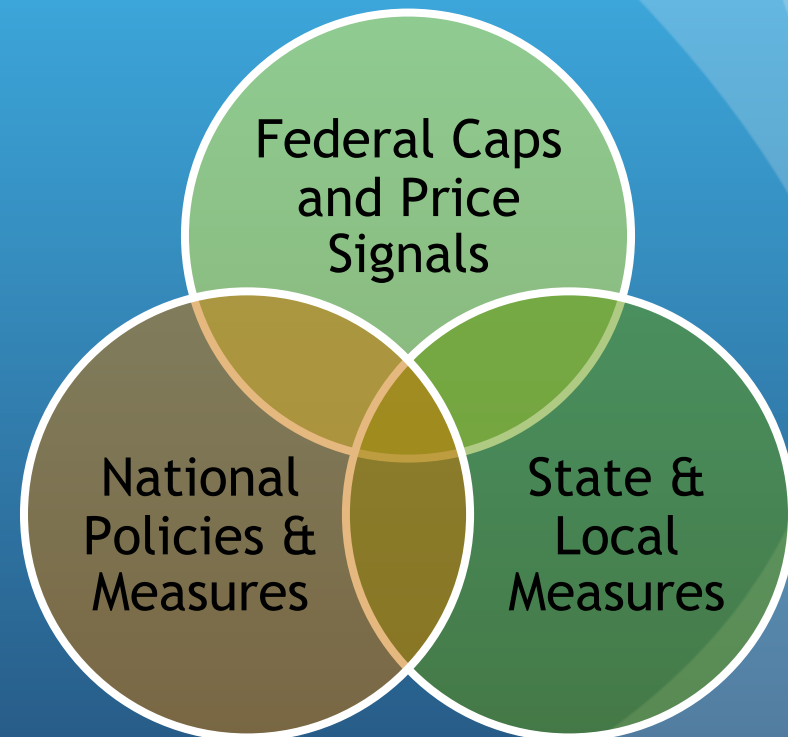
## Needs

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- Achieve GHG targets
- Minimize costs
- Maximize savings
- Maximize co-benefits
- Maximize consensus
- Address governance
- Maximize implementation

## Solutions

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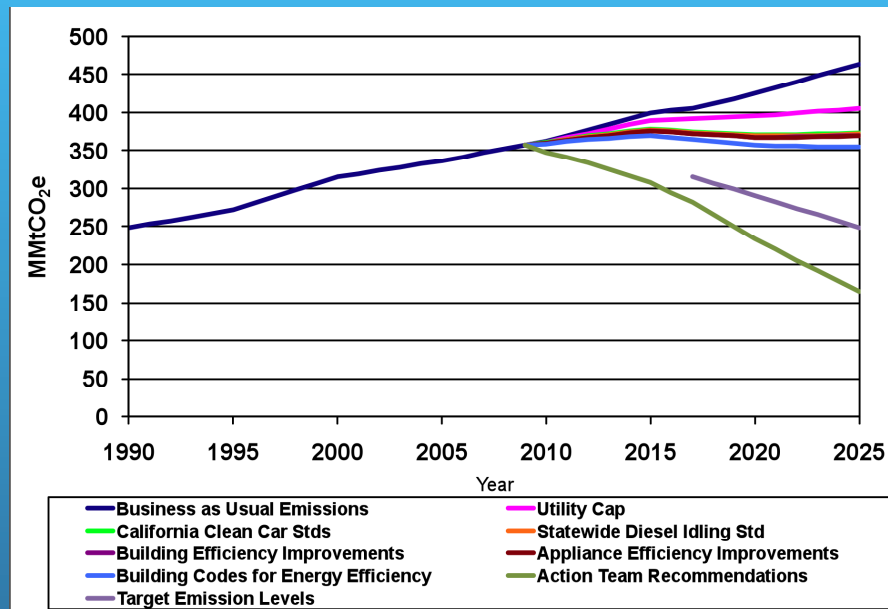


# Implementation Barriers

- Investment (Outlays)
- Authority (Legal and Administrative)
- Markets (Split Incentives)
- Capacity (Program and Market)
- Awareness and Acceptance (Consumers, Producers)

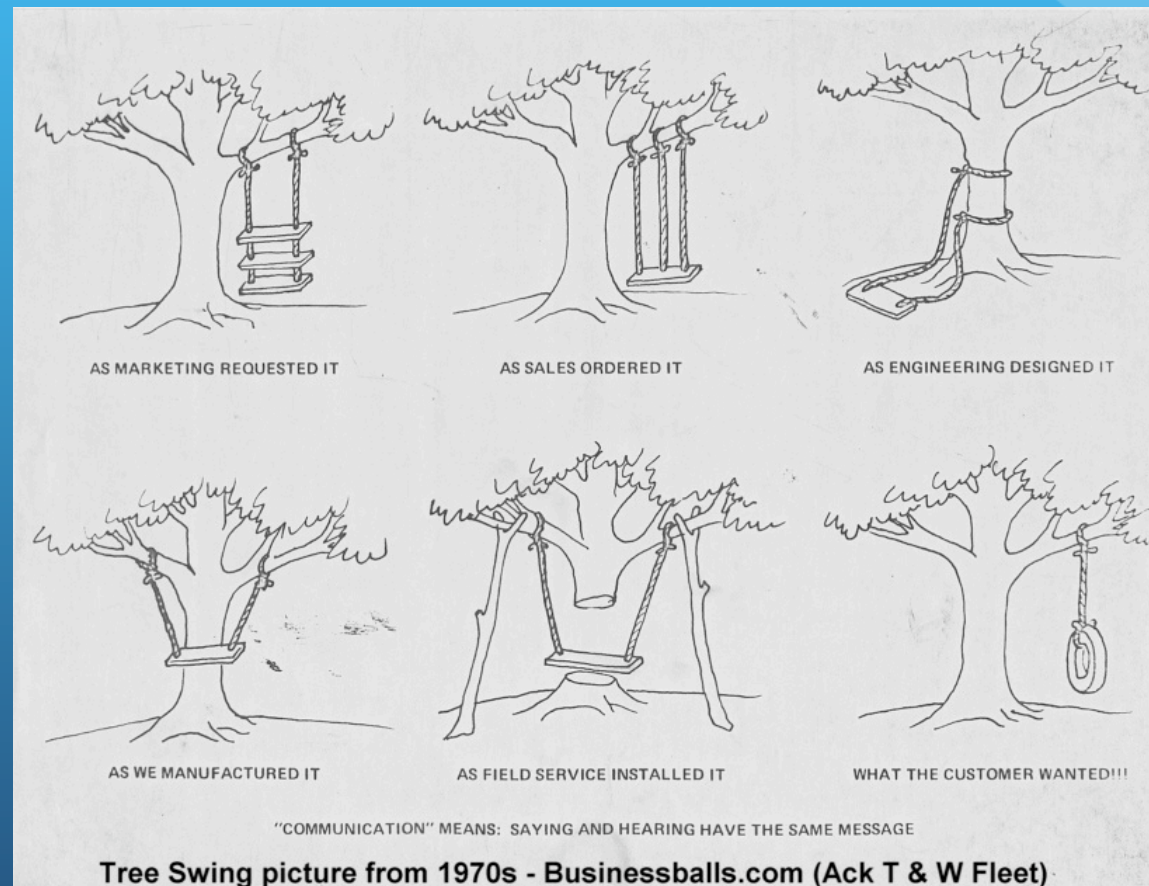


# Progress Through Action!



- Emissions baselines
- Recent and planned actions
- New policy actions and goals

# Collaboration



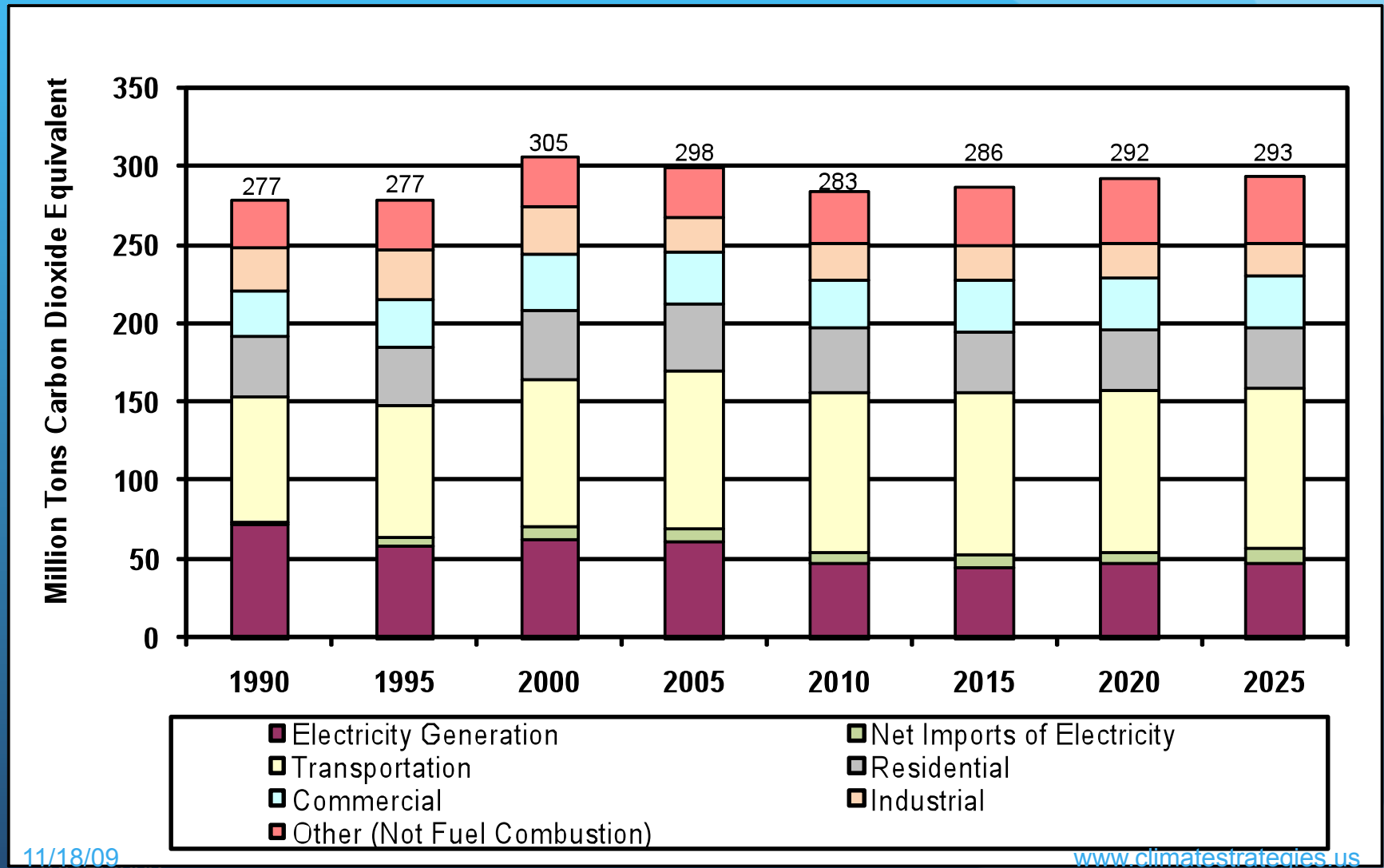
# CCS Ten Step Planning Process

1. Identify full range of existing policy actions and choices
2. Conduct gap analysis, innovate and expand range of choices
3. Narrow list for further analysis and development
4. Formulate draft policy specifications and tools
5. Formulate draft analytical approaches for analysis (best data, assumptions, methods)
6. Conduct preliminary analysis of options, iterate to final
7. Conduct analysis of co-benefits, feasibility as needed
8. Conduct aggregate impact analysis of full set of policies
9. Iterate to final agreement on policy recommendations and overall goals
10. Issue final report and recommendations

# Policy Action Portfolio

Sector	Codes and Standards	Targeted Funding	Technical Assistance	Price Mechanisms	Agreements	Disclosure	Information and Educations
Agriculture	?	?	?	?	?	?	?
Forestry	?	?	?	?	?	?	?
Waste	?	?	?	?	?	?	?
Transportation	?	?	?	?	?	?	?
Heat & Power Supply	?	?	?	?	?	?	?
Residential, Commercial, Industrial Energy Use	?	?	?	?	?	?	?
Full Economy	?	?	?	?	?	?	?

# New York State Greenhouse Gas Emissions by Source Category, 1990 - 2025

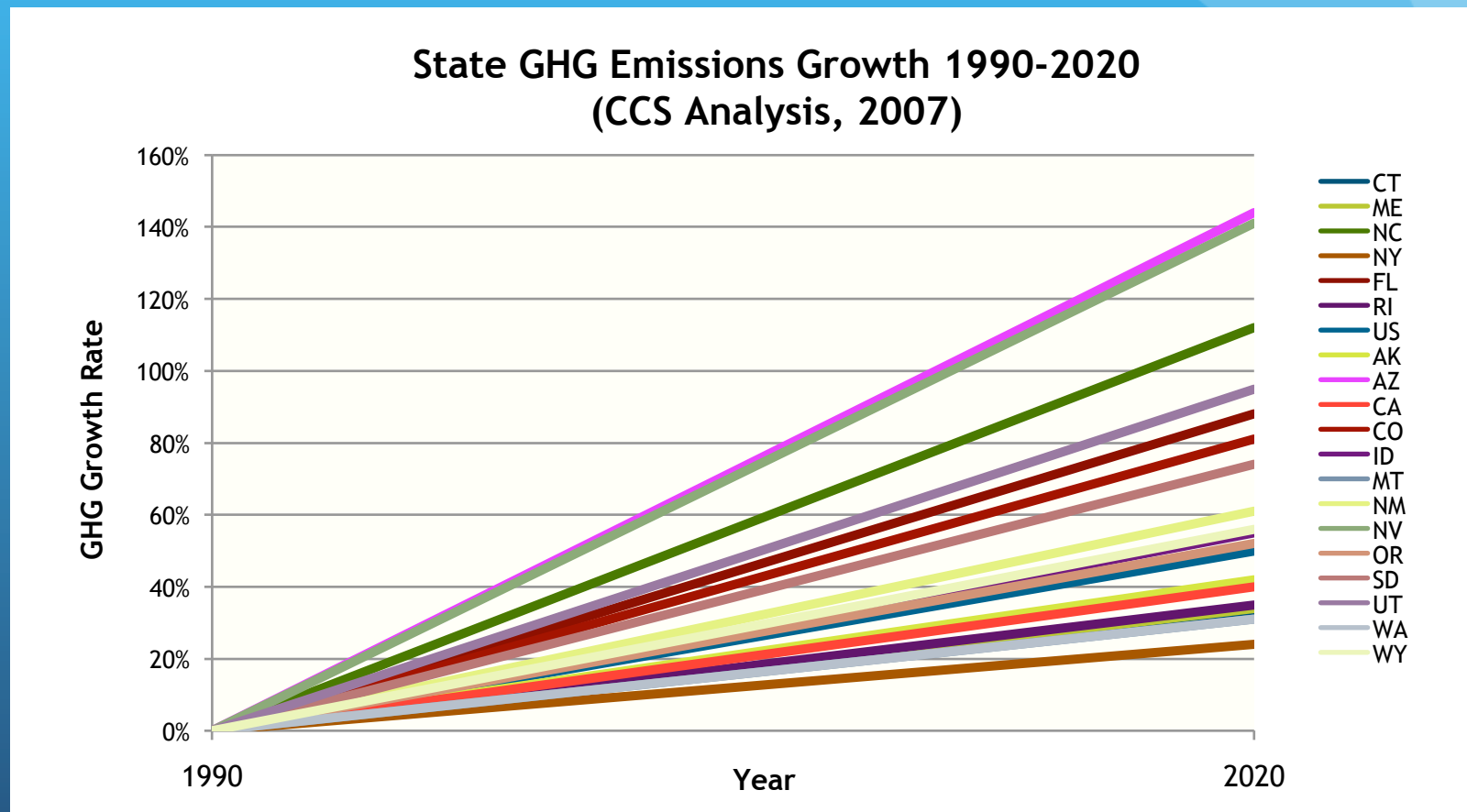


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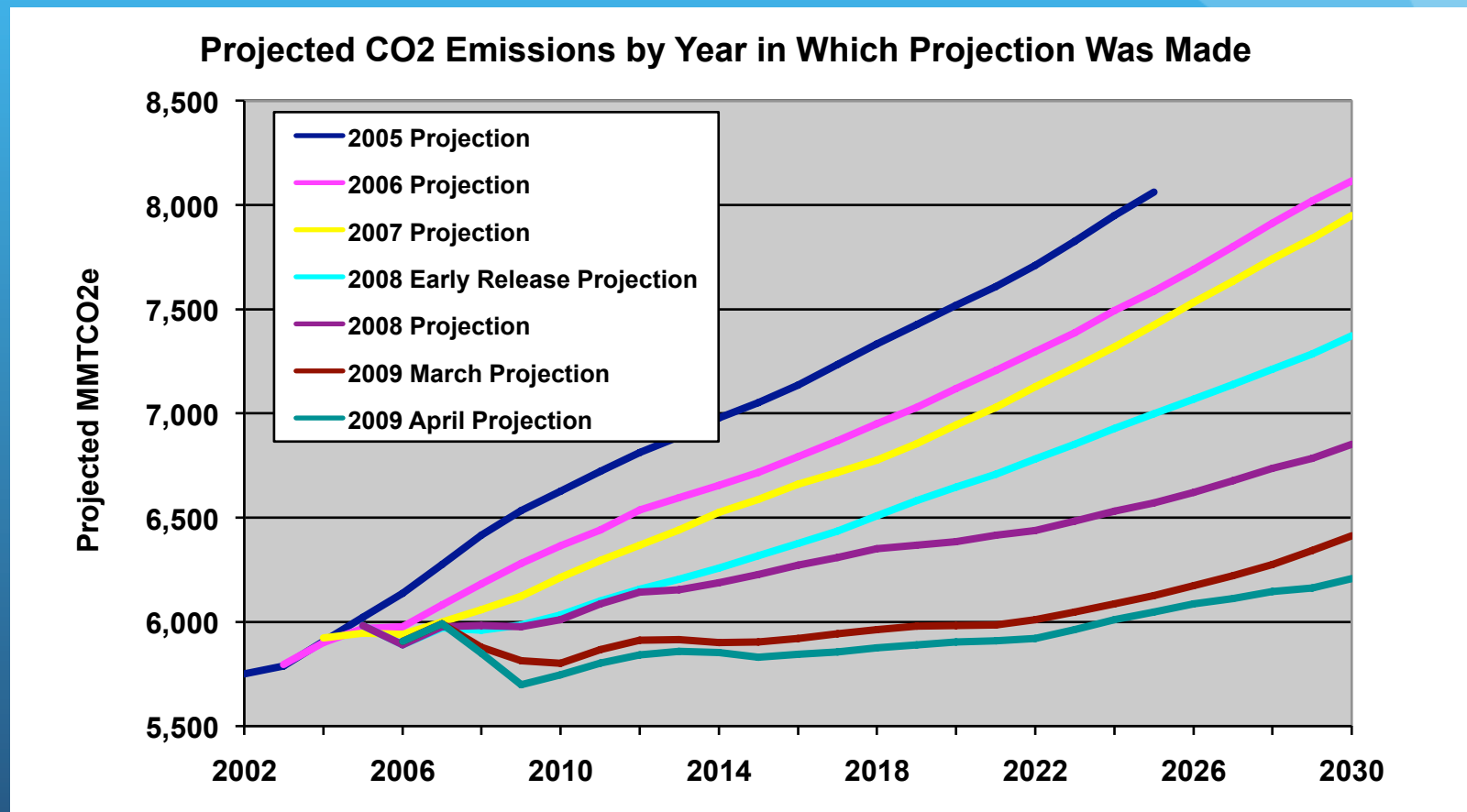
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# U.S. State GHG Growth Rates



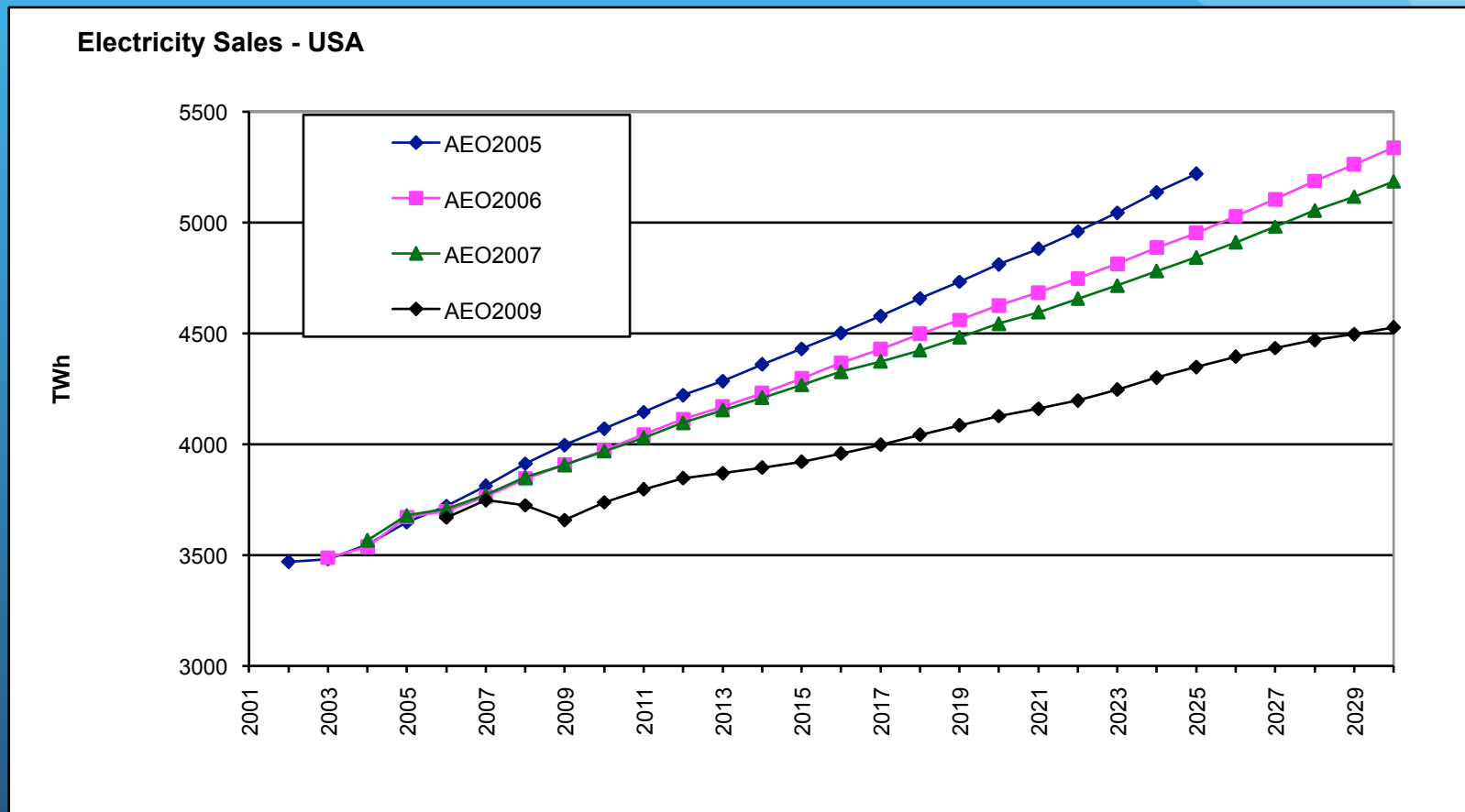
# U.S. GHG Forecast Changes



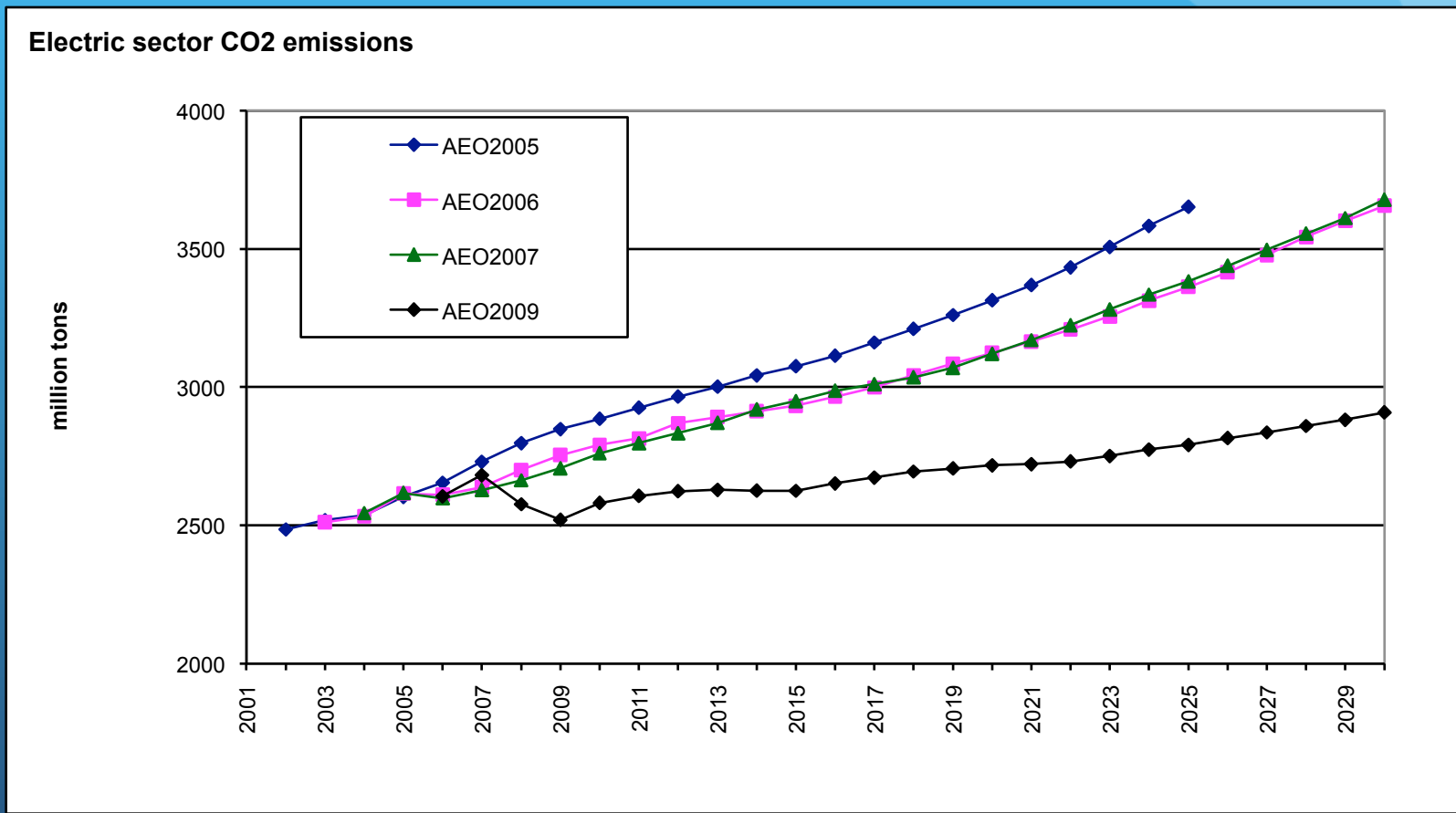
# Factors Reducing Emissions

- Recent and planned federal actions
- Recent and planned state and local actions
- Anticipatory actions
- Unrelated actions
- Price changes
- Recession effects

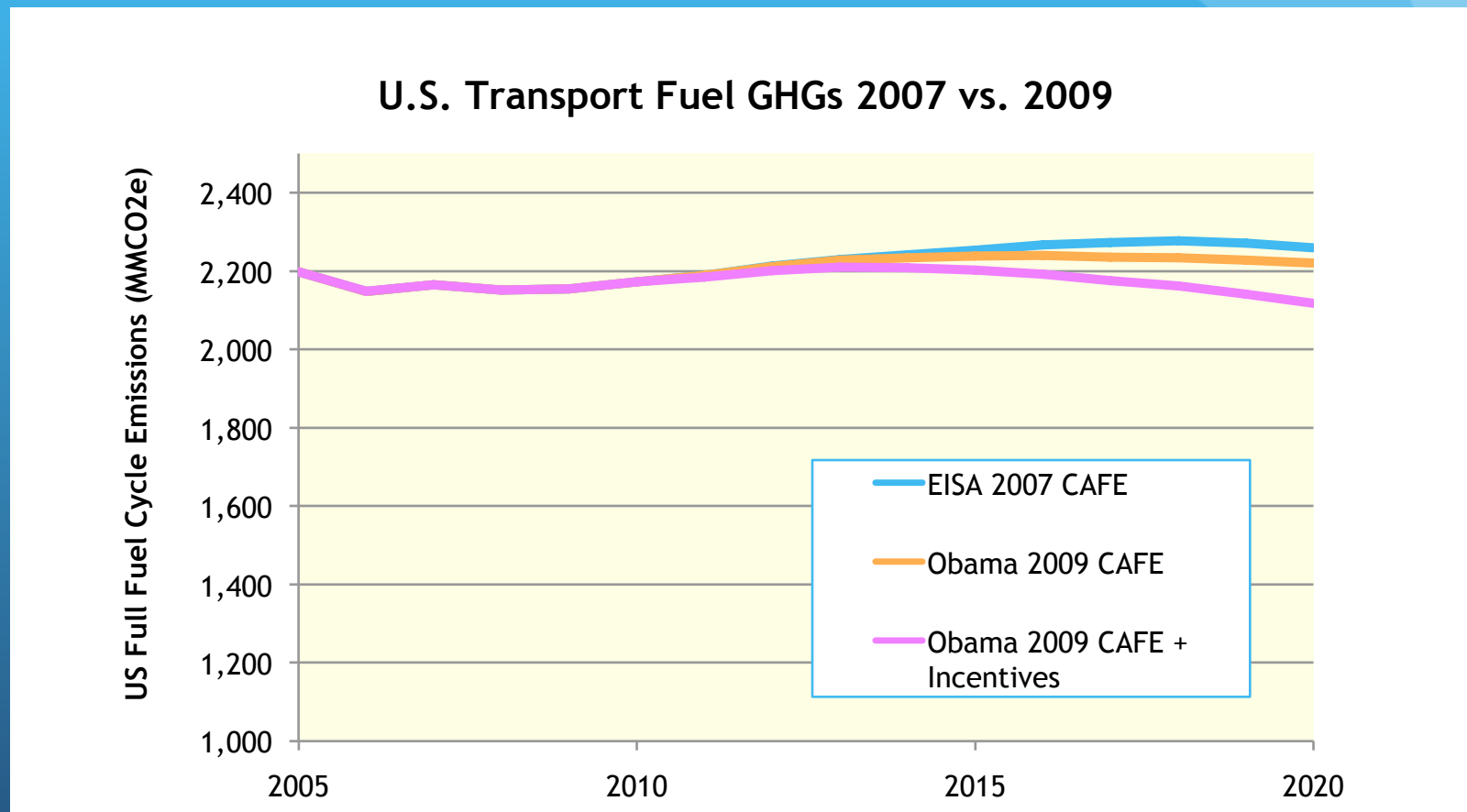
# U.S. Electricity Sales Projections



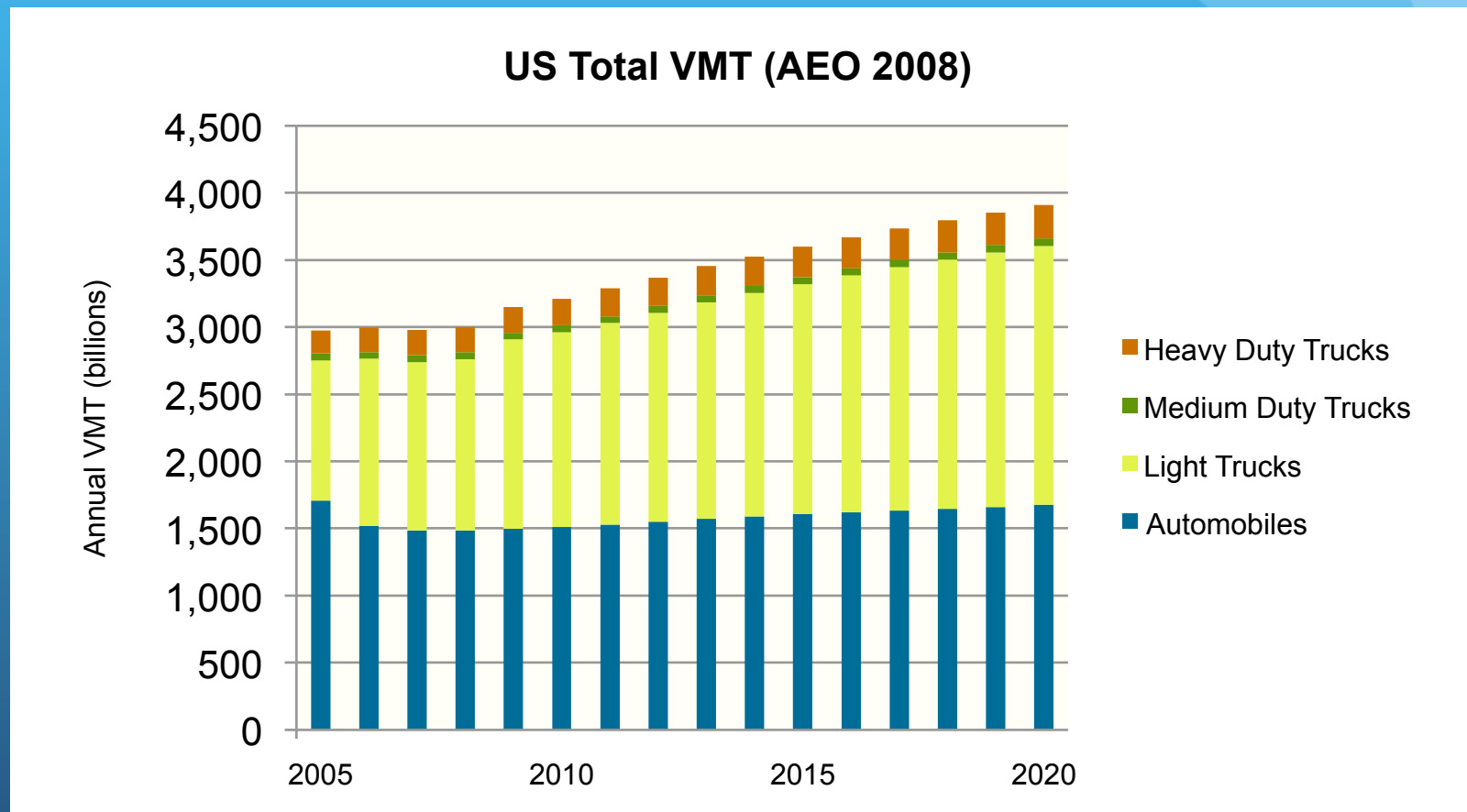
# U.S. Electricity CO2 Emissions



# U.S. Transport Fuels Projection



# Vehicle Miles Traveled Growth

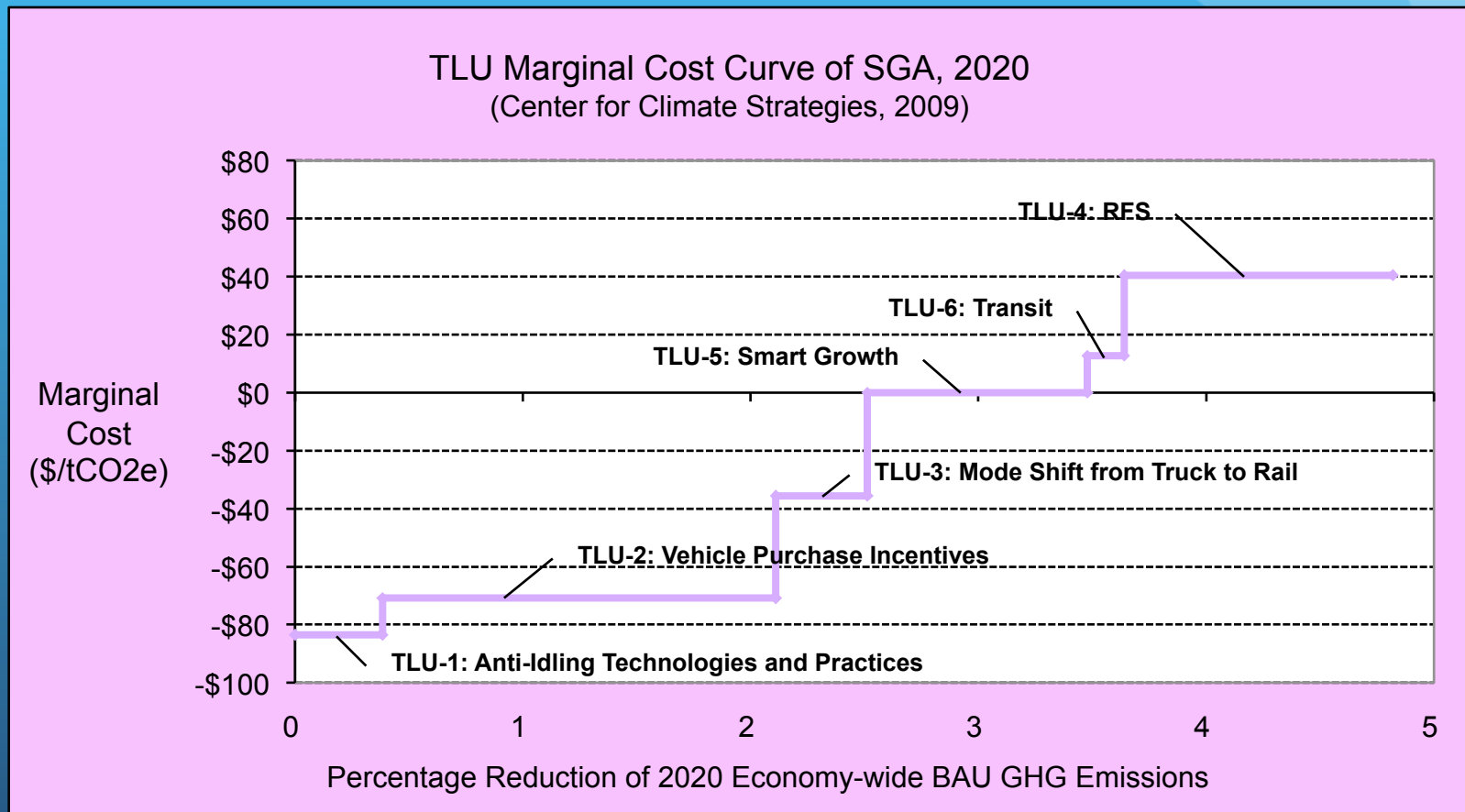


# Major Policy Options

Agriculture, Forestry and Waste (AFW)	Transportation and Land Use (TLU)	Residential, Commercial and Industrial (RCI)	Energy Supply/Heat and Power (ES)
<ul style="list-style-type: none"> <li>Forest Retention</li> </ul>	<ul style="list-style-type: none"> <li>Smart Growth/Land Use</li> </ul>	<ul style="list-style-type: none"> <li>Building Codes</li> </ul>	<ul style="list-style-type: none"> <li>Coal Plant Efficiency Improvements and Repowering</li> </ul>
<ul style="list-style-type: none"> <li>Urban Forestry</li> </ul>	<ul style="list-style-type: none"> <li>Transit</li> </ul>	<ul style="list-style-type: none"> <li>Demand Side Management Programs</li> </ul>	<ul style="list-style-type: none"> <li>Renewable Portfolio Standard</li> </ul>
<ul style="list-style-type: none"> <li>Reforestation/Afforestation</li> </ul>	<ul style="list-style-type: none"> <li>Renewable Fuel Standard (biofuels goals)</li> </ul>	<ul style="list-style-type: none"> <li>High Performance Buildings</li> </ul>	<ul style="list-style-type: none"> <li>Carbon Capture Storage and Reuse</li> </ul>
<ul style="list-style-type: none"> <li>Soil Carbon Management</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle Purchase Incentives, including rebates</li> </ul>	<ul style="list-style-type: none"> <li>Appliance standards</li> </ul>	<ul style="list-style-type: none"> <li>Nuclear Power</li> </ul>
<ul style="list-style-type: none"> <li>Nutrient Management</li> </ul>	<ul style="list-style-type: none"> <li>Anti-Idling Technologies and Practices</li> </ul>	<ul style="list-style-type: none"> <li>Combined Heat and Power</li> </ul>	
<ul style="list-style-type: none"> <li>Manure - Anaerobic Digestion and Methane Use</li> </ul>	<ul style="list-style-type: none"> <li>Mode Shift from Truck to Rail</li> </ul>		
<ul style="list-style-type: none"> <li>Recycling of Municipal Solid Waste</li> </ul>			
<ul style="list-style-type: none"> <li>Landfill Gas Management</li> </ul>			

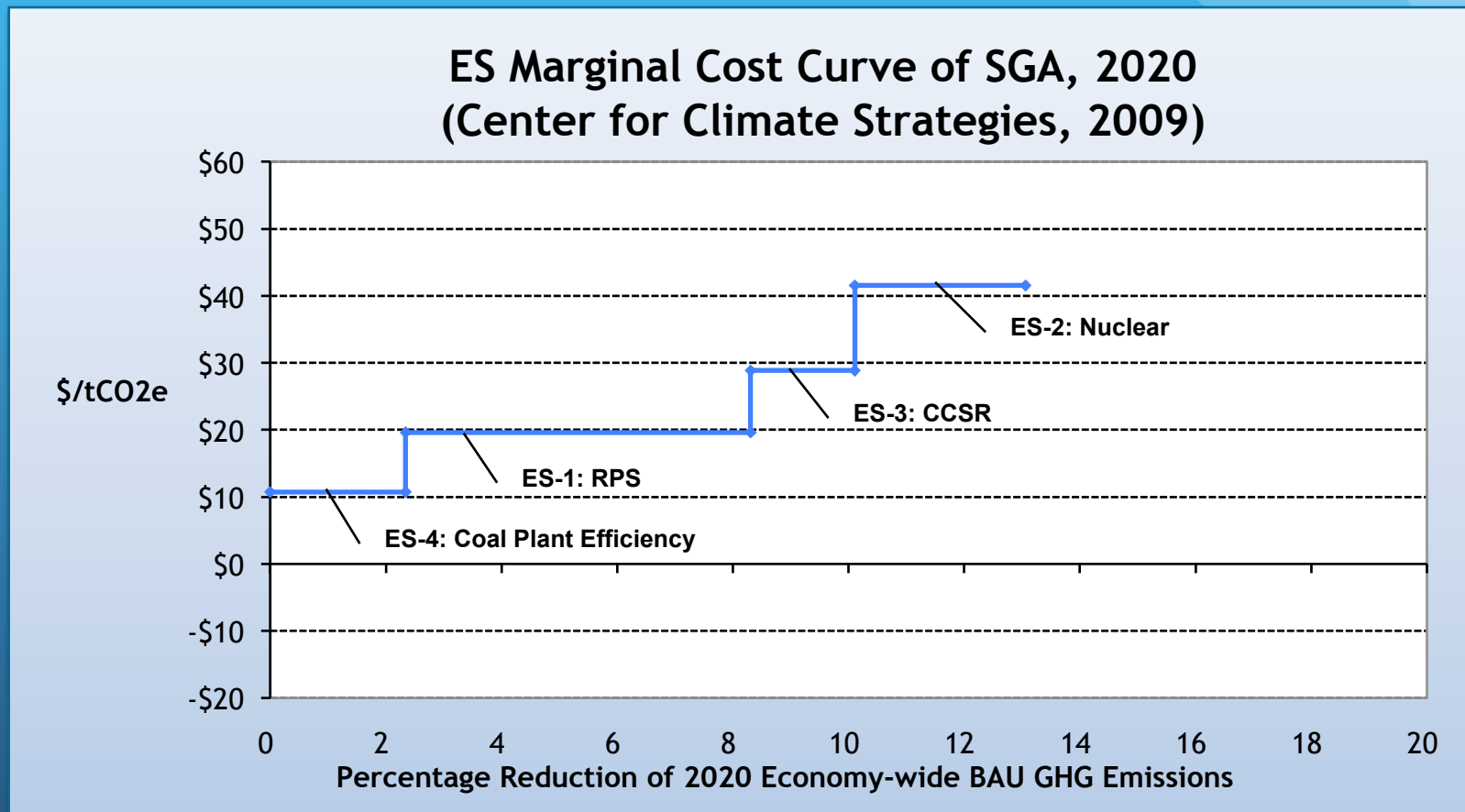


# TLU Cost Effectiveness

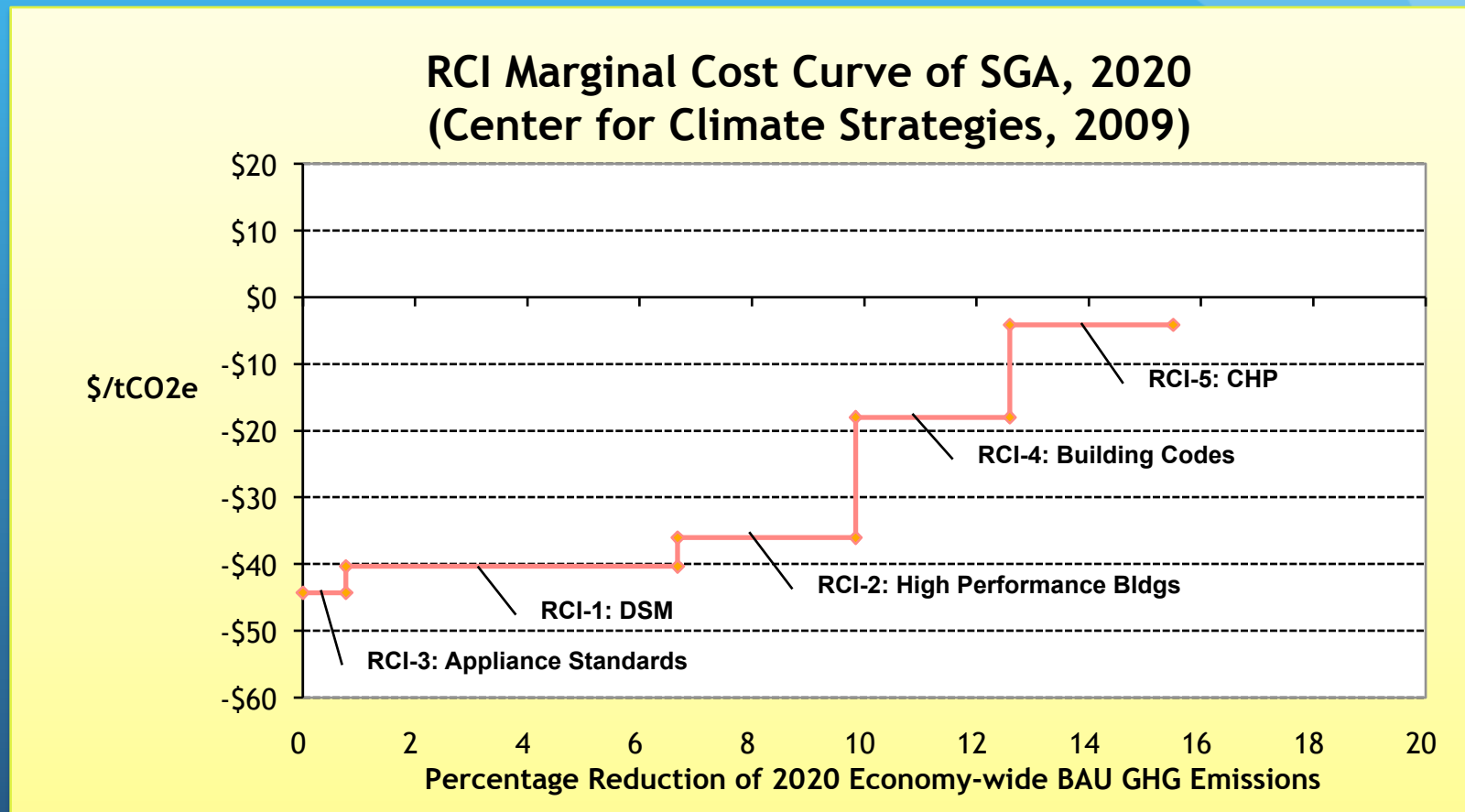


*Draft Preliminary Results*

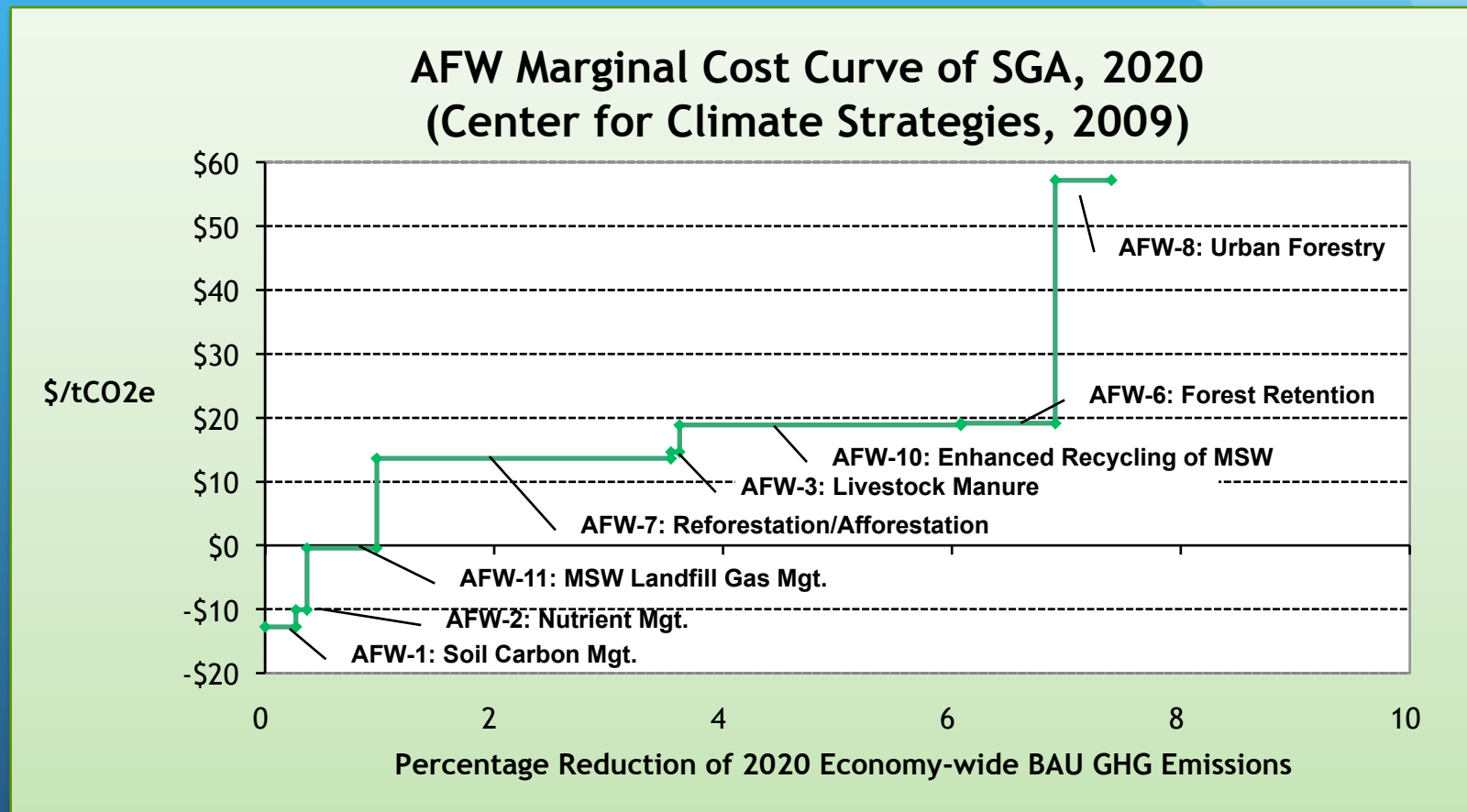
# ES Cost Effectiveness



# RCI Cost Effectiveness

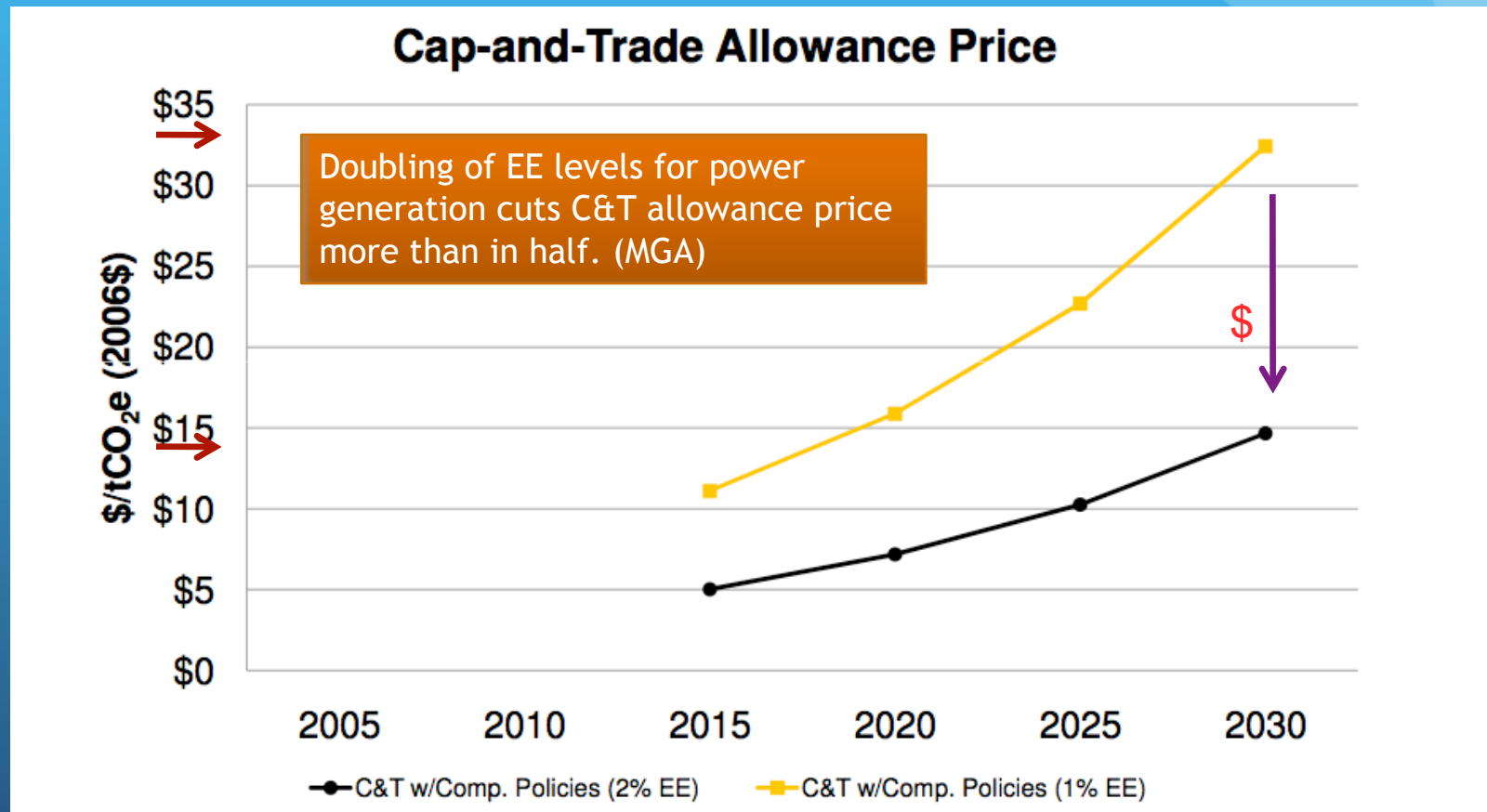


# AFW Cost Effectiveness



*Draft Preliminary Results*

# EE and Cap-&-Trade Costs



Analysis by MGA, 2009

# Florida Energy & Climate Plan

A Report to Governor Charlie Crist

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Phase 2 Report:  
Florida's Energy and Climate Change Action Plan  
Pursuant to Executive Order 07-128

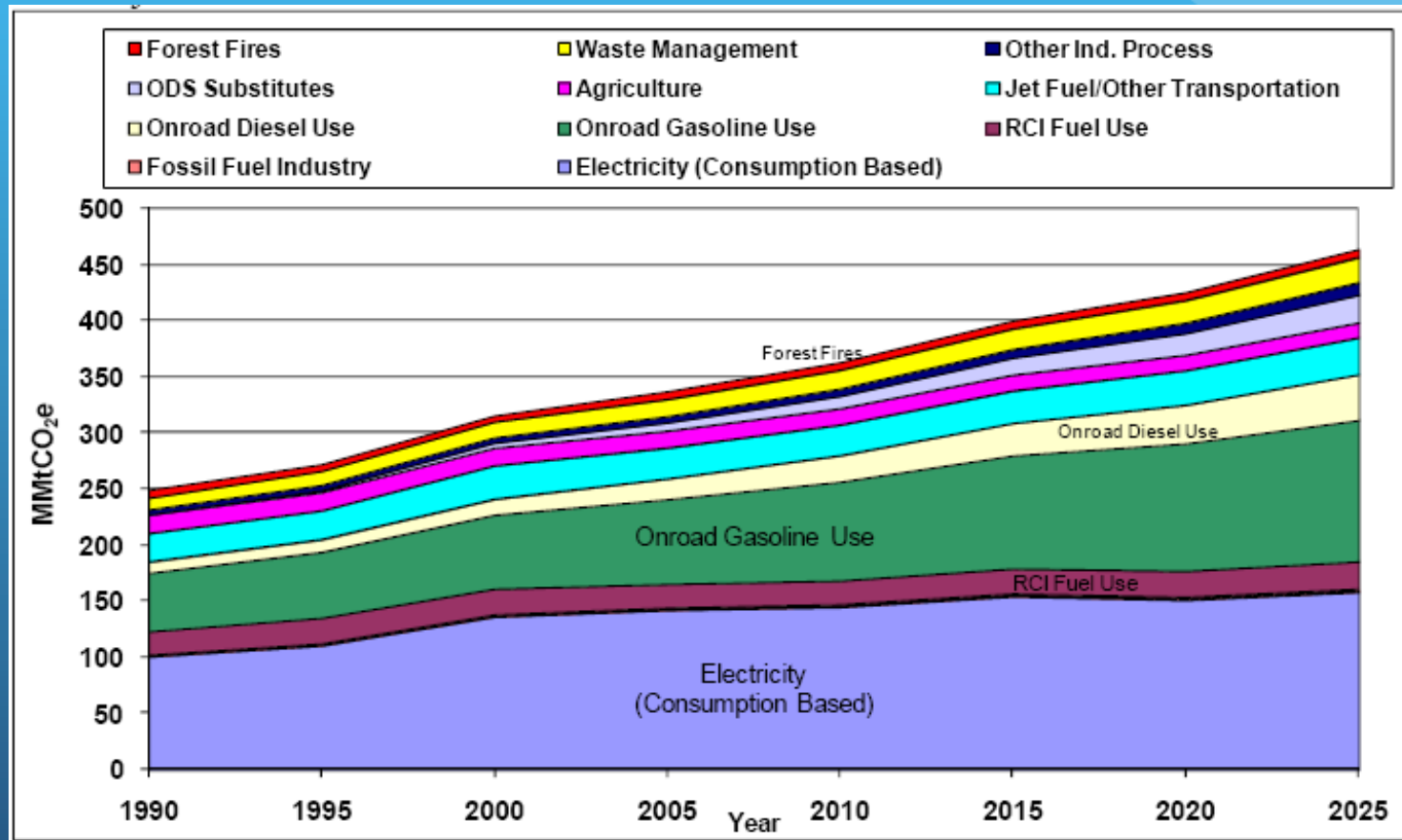
Governor's Action Team on Energy and Climate Change

October 15, 2008



- Statewide Goals and Targets
- GHG Inventory and Forecast
- Climate Vulnerability Assessment
- Mitigation policy actions
- Adaptation policy actions
- Supporting analysis and documentation
- Reporting and Monitoring

# Florida GHGs 1990-2025



# FL GSP: Sector Results (\$Billions)

<b>Sector</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>NPV</b>
<b>Forestry et al.</b>	\$0.023	\$0.108	\$0.181	\$0.243	\$1.19
<b>Agriculture</b>	\$0.057	\$0.234	\$0.416	\$0.615	\$2.84
		-	-	-	
<b>Oil, gas extraction</b>	\$0.000	\$0.001	\$0.004	\$0.007	-\$0.02
		-	-	-	
<b>Mining (except oil, gas)</b>	\$0.000	\$0.004	\$0.009	\$0.018	-\$0.06
		-	-	-	
<b>Support activities for mining</b>	\$0.000	\$0.000	\$0.000	\$0.001	\$0.00
	-	-	-	-	
<b>Utilities</b>	\$0.099	\$0.672	\$1.481	\$2.550	-\$9.84
<b>Construction</b>	\$0.064	\$0.149	\$0.290	\$0.421	\$1.96
<b>Wood product mfg</b>	\$0.000	\$0.003	\$0.007	\$0.013	\$0.05
<b>Nonmetallic mineral prod mfg</b>	\$0.001	\$0.006	\$0.013	\$0.024	\$0.09
		-	-	-	
<b>Primary metal mfg</b>	\$0.000	\$0.004	\$0.013	\$0.027	-\$0.09
<b>Fabricated metal prod mfg</b>	\$0.002	\$0.007	\$0.018	\$0.035	\$0.12
<b>Machinery mfg</b>	\$0.001	\$0.008	\$0.020	\$0.046	\$0.14
<b>Computer, electronic prod mfg</b>	\$0.028	\$0.111	\$0.272	\$0.563	\$1.93



# FL Jobs (1,000s)

## Policy Option Based Results

Scenario	2010	2015	2020
ESD 5	2.054	8.335	23.370
ESD 6	0.000	0.000	-3.554
ESD 8	-0.681	-3.779	-7.616
ESD 9	0.000	1.129	2.980
ESD 11	0.000	0.077	0.163
ESD 12	0.158	3.023	6.097
ESD 13a	0.000	2.554	6.722
ESD 14	0.298	-0.202	-1.326
<b>Subtotal - ESD</b>	<b>1.829</b>	<b>11.137</b>	<b>26.836</b>
AFW 1	0.075	0.283	0.305
AFW 2	6.760	18.300	29.450
AFW 3	0.030	0.113	0.204
AFW 4	0.000	2.957	9.600
AFW 5	-0.023	0.034	0.090
AFW 6	0.428	1.520	3.283
AFW 7	0.000	17.290	15.460
AFW 8	0.008	0.072	0.422
AFW 9	0.273	1.996	4.079
<b>Subtotal - AFW</b>	<b>7.551</b>	<b>42.566</b>	<b>62.893</b>
TLU 1	1.112	3.951	7.712
TLU 2	0.000	0.126	0.265
TLU 4	-0.140	-1.982	-3.981
TLU 8	0.985	0.509	0.945
<b>Subtotal - TLU</b>	<b>1.958</b>	<b>2.604</b>	<b>4.941</b>
<b>Summation Total</b>	<b>11.338</b>	<b>56.307</b>	<b>94.670</b>
<b>Simultaneous Total</b>	<b>11.380</b>	<b>57.720</b>	<b>100.400</b>

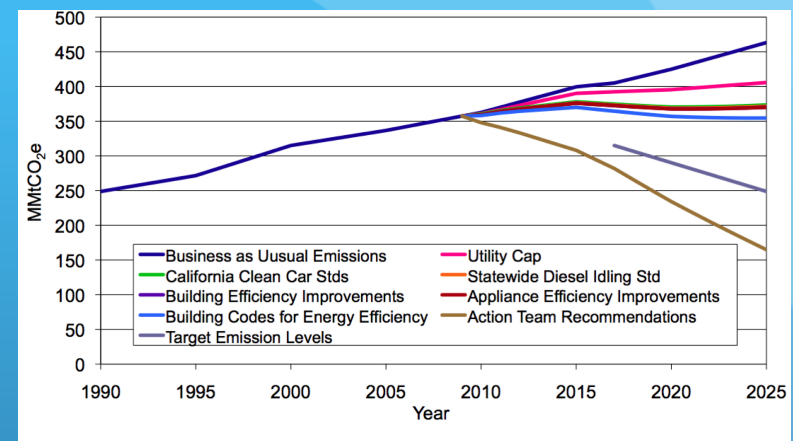
# FL TLU Policies, Jobs, Growth

Florida Policy Recommendation	2017 GHG Savings	2025 GHG Savings	\$ NPV Millions	\$ Ton GHG Removed
Develop and Expand Low-GHG Fuels	6.2	12.62	-\$15,161	-\$142
Low Rolling Resistance Tires and Other Add-On Technologies	0.8	1.84	-\$1,259	-\$90
Improving Transportation System Management	3.94	6.98	-\$5,106	-\$80
Increasing Freight Movement Efficiencies	0.59	1.1	\$21	\$2
	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>
<b>Cumulative Jobs (Thousands)</b>	2.0	2.6	4.9	7.2
<b>GSP Growth (Billions)</b>	\$0.10	\$0.19	\$0.39	\$0.63, NPV \$2.93

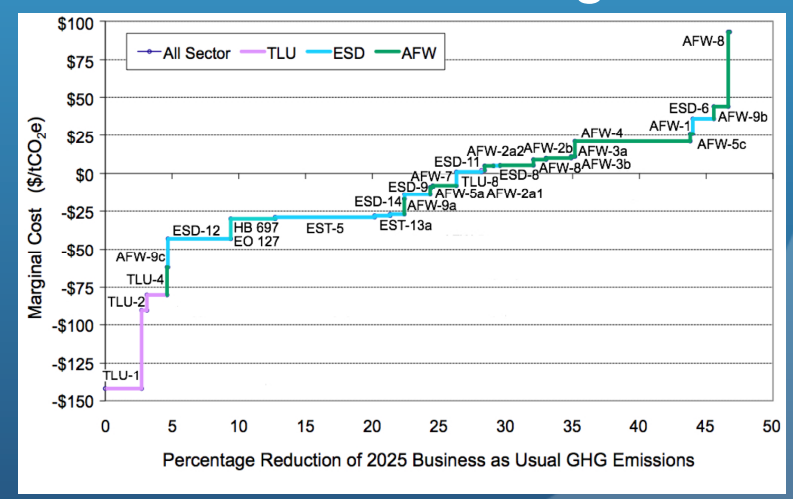
# Florida Results

- 50 full consensus climate measures in all sectors, plus cap and trade
- Implementation substantially underway
- Mitigation Plan:
  - GHGs 20% below 1990 levels by 2020
  - \$28 billion net economic savings, 148,000 net job gains, \$37 billion net economic expansion
- Adaptation Plan:
  - Covers all risk response areas, includes full set of early actions
- 125 stakeholders and technical work group members, 7 stakeholder meetings, 75 technical work group meetings

## GHG Reductions



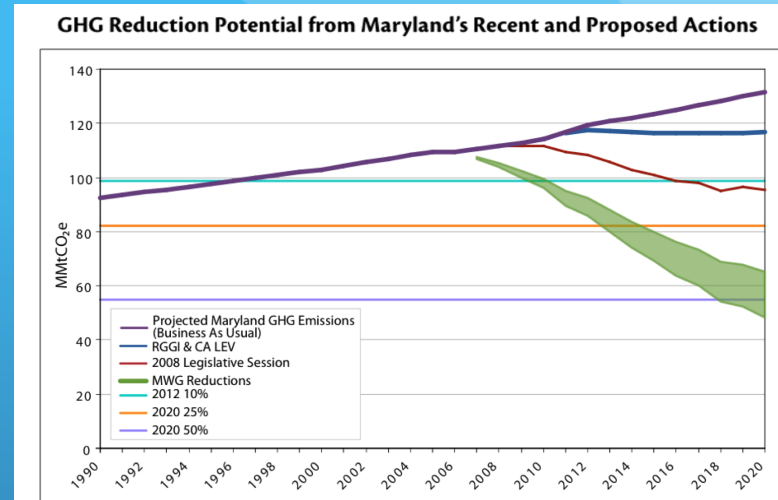
## Costs/Savings



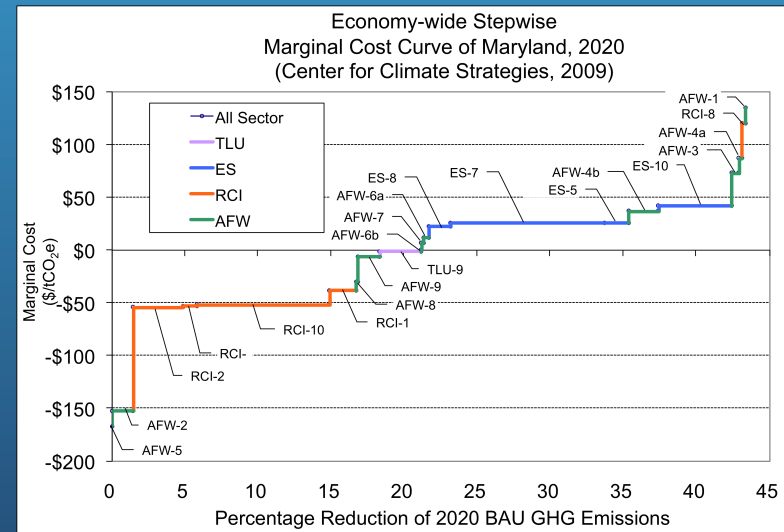
# Maryland Results

- 42 full consensus climate measures in all sectors, plus cap and trade
- Implementation substantially underway
- Mitigation Plan:
  - GHGs 13% below 1990 levels by 2020
  - \$2 billion net economic savings
- Adaptation Plan:
  - Covers all risk response areas, includes full set of early actions
- 27 stakeholders and technical work group members, 10 stakeholder meetings, 100 technical work group meetings

## GHG Reductions



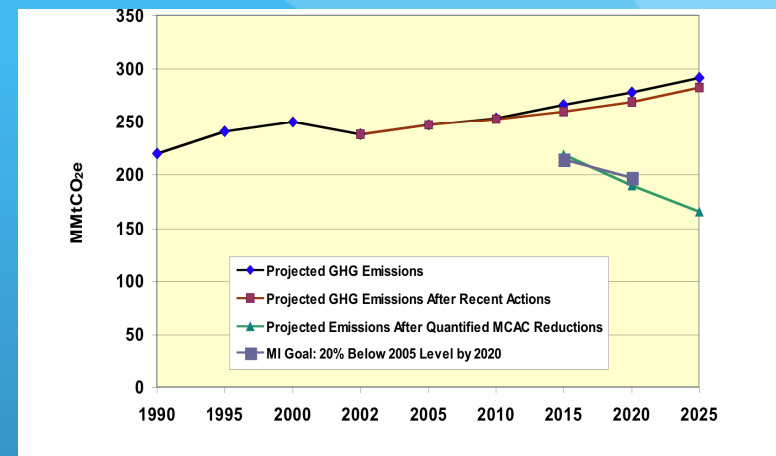
## Costs/Savings



# Michigan Results

- 53 Recommended Climate Policy Actions in All Sectors
- 7 Stakeholder meetings, 75 Technical Work Group Meetings
- Full Consensus on 52 Recommendations (Supermajority on Nuclear Power)
- \$10 Billion Net Economic Savings from Full Analysis of 33 Quantified Actions
- Pathways to Achieve Statewide Goals of 20% Below 1990 Levels by 2020
- Next Steps include Priority Setting, Macro Economic Analysis, Investment Targeting, Early Actions

## GHG Reductions



## Costs/Savings

