



Governor's Action Team on Energy and Climate Change  
*State of Florida*

Governor's Action Team on Energy and  
Climate Change  
Phase II Process

*Meeting #4, July 9-10, 2008*

*day one*

# Welcome and Introductions

- Action Team
- Florida Department of Environmental Protection
- Florida Governor's Office
- TWG Members in Attendance
- Center for Climate Strategies

# Agenda

## **Meeting Agenda for Wednesday, July 9, 2008:**

- 10:00 Welcome and Introductions
- 10:15 Review and Approval of Action Team Meeting #3 Summary
- 10:20 Update: Florida Serve to Preserve II Summit – June 27, 2008
- 10:45 Climate Change News – Federal, State
- 11:00 Comments on Florida Inventory and Forecast
- 11:30 Review and Approval of Straw Policy Descriptions and Designs: Overview
- 12:00 Lunch Break

# Agenda

## **Meeting Agenda for Wednesday, July 9, 2008 (continued):**

- 1:00 Consideration of Transportation and Land Use Straw Policy Drafts
- 2:00 Public Comment
- 2:15 Consideration of Energy Supply and Demand Straw Policy Drafts
- 4:15 Public Comment
- 4:30 Consideration of Agriculture, Forestry, and Waste Management Straw Policy Drafts
- 5:30 Public Comment
- 5:45 Public Input and Announcements
- 6:00 Adjourn

# Agenda

## **Meeting Agenda for Thursday July 10, 2008:**

- 8:30 Welcome and Introductions
- 8:45 Consideration of Government Policy Straw Policy Drafts
- 9:45 Public Comment
- 10:00 Adaptation TWG Report
- 11:00 Public Comment
- 11:15 Cap and Trade TWG Report
- 12:15 Public Comment
- 12:30 Agenda, Time, and Date for Next Meeting
- 12:40 Public Input and Announcements
- 1:00 Adjourn

# Review and Approve Action Team Meeting #3 Summary

# Update: Florida Governor's Serve to Preserve Summit II



# Other Federal and State News, Updates

# Phase II Process Updates:

- Florida Inventory and Forecast
  - Presented in last Action Team meeting
  - Questions/comments from members?
- Quantification Memo
  - Presented in last Action Team meeting
  - Questions/comments from members?

# Stepwise Planning Process

1. Develop inventory and forecast of emissions
2. Identify a full range of possible actions
3. Identify initial priorities for analysis
4. **Develop straw proposals**
5. Quantify GHG reductions and costs/savings
6. Evaluate externalities, feasibility issues
7. Develop alternatives to address barriers
8. Aggregate results
9. Iterate to final agreements
10. Finalize and report recommendations

# Review and Approval of Straw Policy Descriptions and Designs: Overview

- Six TWGs have met by teleconference
- Reviewed the Action Team's approved priority policies
- Drafted straw policy descriptions and designs

# Lunch Break

# Transportation and Land Use

TLU-1 Develop and Expand Low-GHG and Alternative Fuels

TLU-2A Increased Fuel Economy and GHG Emissions Standards for New Vehicles

TLU-2B Add-on Technologies for Existing Vehicles and New Vehicles

TLU-3 Smart Growth Planning

TLU-4 Improving Transportation System Management

TLU-5 Increasing Choices in Modes of Transportation

TLU-6 Factoring GHG Emissions into Transportation and Land Use Planning Processes

TLU-7 Incentive Programs for Increased Vehicle Fleet Efficiency

TLU-8 Increasing Freight Movement Efficiencies

TLU-9 Consider Transportation System Pricing Options

- Public Comment

# Energy Supply & Demand

- ESD-1 Technology Research & Development with Near-term Commercial Opportunities
- ESD-2 Technology Research & Development with Longer-term Commercial Opportunities
- ESD-3 Renewable Energy Incentives and Barrier Removal
- ESD-4 Electricity Transmission and Distribution Improvements
- ESD-5a Renewable Portfolio Standard (RPS)
- ESD-5b Environmental Portfolio Standard (EPS)
- ESD-6 Nuclear Power
- ESD-7 Integrated Resource Planning (IRP)
- ESD-8 Combined Heat and Power Systems (CHP)
- ESD-9 Power Plant Efficiency Improvements
- ESD-10 Grace Period for Replacement of Carbon-Intensive Units

# Energy Supply & Demand

- ESD-11 Waste-to-Energy (WtE)
- ESD-12 Demand-Side Management/Energy Efficiency Programs, Funds or Goals for Electricity
- ESD-13 Incentives for Improved Building Design, Construction and Operation in the Private Sector
  - ESD-13a Existing Residential
  - ESD-13b New Residential
  - ESD-13c New Master Planned Residential Communities
- ESD-14 Improved Building Codes for Energy Efficiency in Existing Buildings
- ESD 15a Training and Education for Built Environment Professionals
- ESD 15b Training and Education for Building Operators and Community Association Managers

# Energy Supply & Demand

ESD-16 More Stringent Appliance/Equipment Efficiency Standards

ESD-17 Consumer Education Programs

ESD-18 Incentives to Promote Implementation of Customer-sited Renewable Energy Systems

ESD-19 Energy Efficiency Financing and Alternative Business Models

ESD-21 Rate structures and Technologies to Promote Reduced GHG Emissions

ESD-22 Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas

ESD-23 Decoupling

- Public Comment

# Agriculture, Forestry, and Waste

AFW-1 Forest Retention— Reduced Conversion of Forested to Non-forested Land Uses

AFW-2 Afforestation and Restoration of Non-forested Lands

AFW-3 Forest Management for Carbon Sequestration

AFW-4 Expanded Use of Agriculture, Forestry and Waste Management Biomass  
Feedstocks for Electricity, Heat and Steam Production

AFW-5 Promotion of Farming Practices that Achieve GHG Benefits

AFW-6 Reduce the Rate of Agricultural Land and Open Green Space Conversion to  
Development

AFW-7 In-state Liquid/Gaseous Biofuels Production

AFW-8 Promotion of Advanced Municipal Solid Waste Management Practices (Including  
Bioreactor Technology )

AFW-9 Improved Commercialization of Biomass to Energy Conversion and Bio-products  
Technologies

AFW-10 Programs to Support Local Farming/Buy Local

- Public Comment

# Tomorrow's Agenda

## **Meeting Agenda for Thursday July 10, 2008:**

- 8:30 Welcome and Introductions
- 8:45 Consideration of Government Policy Straw Policy Drafts
- 9:45 Public Comment
- 10:00 Adaptation TWG Report
- 11:00 Public Comment
- 11:15 Cap and Trade TWG Report
- 12:15 Public Comment
- 12:30 Agenda, Time, and Date for Next Meeting
- 12:40 Public Input and Announcements
- 1:00 Adjourn

# Public Input, Announcements

Adjourn, July 9, 2008.



Governor's Action Team on Energy and Climate Change  
*State of Florida*

Governor's Action Team on Energy and  
Climate Change  
Phase II Process

*Meeting #4, July 9-10, 2008*

*day two*

# Today's Agenda

## **Meeting Agenda for Thursday July 10, 2008:**

- 8:30 Welcome and Introductions
- 8:45 Consideration of Government Policy Straw Policy Drafts
- 9:45 Public Comment
- 10:00 Adaptation TWG Report
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# Government Policy and Coordination

- GP-1 Targets, reporting, funding and accountability measures
- GP-2 Public awareness and education
- GP-3 Inter-government and inter-sector planning, coordination and assistance
- GP-4 “Green” business development policies
- GP-5 Introduce core competencies into professional licensing programs
- Public Comment

# Adaptation

- The Adaptation TWG made substantial progress since the last Climate Action Team meeting in drafting policy templates for each of the 15 ADPs. As of this posting, TWG members have drafted ten policy templates. Each draft includes a description of the issue, identification of objectives, and description of what is at risk. In addition, all the drafts have preliminarily identified goals for adaptation policies.
- During the three-hour TWG call on June 30, each of the draft ADPs was discussed. Members offered comments on the drafts and in particular, what topics should be covered under each ADP. By Action Team Meeting #5, the TWG is expected to have fully drafted ADPs to present and may have Early Actions identified.

# Cap and Trade

- C&T-1 Set a statewide limit or cap on the amount of greenhouse gases emitted by major emitters.
- C&T-2 Establish methods, requirements, and conditions for allocating the cap among major emitters.
- C&T-3 Establish methods, requirements, and conditions for emissions allowances and the process for issuing emissions allowances.
- C&T-4 Establish the relationship between allowances and the specific amounts of greenhouse gas emissions they represent.
- C&T-5 Set the length of allowance periods and the time over which entities must account for emissions and surrender allowances equal to emissions.
- C&T-6 Set the timeline of allowances from the initiation of the program through to 2050.
- C&T-7 Establish a process for the trade of allowances between major emitters, including a registry, tracking, or accounting system for such trades.
- C&T-8 Establish cost containment mechanisms to reduce price and cost risks associated with the electric generation market in Florida.
- C&T-9 Establish a process to allow DEP to exercise its authority to discourage leakage of GHG emissions to neighboring states attributable to the implementation of this program.
- C&T-10 Establish a trial period on the trading of allowances before full implementation of a trading system.
- C&T-11 Position Florida to anticipate and influence the development of a national program

- Public Comment

# Preliminary Cap and Trade Modeling Results

- Analysis of an Auction-based Cap and Trade among Power Sectors of RGGI States and Florida in 2020.
  - Florida State Goal Scenario
  - Florida with RGGI Goal Scenario

# Introduction

- The Non-linear Programming (NLP) Model used is capable of analyzing various environmental policy instruments, under a variety of conditions.
- A free granting allowance allocation cap & trade (C&T) system for RGGI states plus Florida is first analyzed. Because of the extensive availability of low-cost mitigation options, the supply of allowances would exceed the demand at all positive allowance prices. Supply and demand would only be equal at a negative price, which would never prevail in the real world; hence allowance trading would not take place .
- Similar to the free granting case, in a 100% auction-based C&T program, the total mitigation undertaken by the 10 RGGI states plus Florida would exceed the overall cap at all positive allowance prices.
- Therefore, we analyze two cases with hypothetical positive allowance price levels and evaluate the mitigation and allowance purchase choices of the states in a 100% auction-based C&T.

# Auction-based Cap and Trade among Power Sectors of RGGI States and Florida in 2020

- In the auction case, there would be no trading among states. According to the basic rationale for permit trading, in equilibrium, each state would choose to mitigate emissions as long as its marginal abatement cost is lower than or equal to the price of allowances, and purchase the remaining allowance (the difference between the state's BAU level and the amount mitigated by its own actions) from the auctioneer.
- We first analyze a 100% auction-based C&T case with a hypothetical allowance price at \$7/tCO<sub>2</sub>e.
- The table on the next slide presents the amount of emissions that can be reduced by each state's own mitigation actions associated with a marginal cost of \$7/tCO<sub>2</sub>e (these are computed based on the states' marginal abatement cost curves).
- Please note that because of the lack of direct data for Florida, for now the marginal cost curve for the state is estimated based on mitigation options data for South Carolina. We will re-develop the Florida cost curve when data become available.

Table 3. Mitigation Potential Associated with MC=\$7/tCO<sub>2</sub>e

	Reduction Target (MMtCO <sub>2</sub> )	In-state Reduction Potential with MC≤ \$7 (%)	In-state Reduction Potential with MC≤ \$7 (MMtCO <sub>2</sub> )
CT	4.17	5.78%	0.77
DE	4.65	44.17%	4.89
MD	0.00	53.34%	16.96
ME	0.00	39.92%	0.76
NH	0.00	6.78%	0.33
NJ	3.95	8.49%	1.99
NY	1.45	5.44%	3.05
VT	0.00	100.00%	0.03
MA	2.31	47.72%	11.92
RI	0.00	62.95%	1.12
FL	58.75	34.72%	58.58
Total	75.27	29.70%	100.39

# Marginal Cost (MC) = Auction Price = \$7/tCO<sub>2</sub>e

Table 4. Simulation Results of an Auction Case among RGGI States and Florida (with assumed auction price at \$7/tCO<sub>2</sub>)

State	Total BAU Emissions in 2020 (million tCO <sub>2</sub> )	2020 Emissions Cap/Budget (million tCO <sub>2</sub> )	Emission Reduction Undertaken by the State <sup>a</sup>		Mitigation Cost (million dollars)	Emission Allowances Bought from Auctioneer (million tCO <sub>2</sub> )	Auction Cost (million dollars) <sup>b</sup>	Net Cost (million dollars) <sup>c</sup>
			(percent from BAU)	(million tCO <sub>2</sub> )				
CT	13.26	9.09	5.78	0.77	-49.64	12.50	87.47	37.83
DE	11.07	6.43	44.17	4.89	-164.01	6.18	43.28	-120.73
MD	31.79	31.79	53.34	16.96	-617.74	14.83	103.83	-513.91
ME	1.90	1.90	39.92	0.76	-41.36	1.14	8.00	-33.36
NH	4.93	4.93	6.78	0.33	-25.67	4.59	32.16	6.48
NJ	23.40	19.46	8.49	1.99	-313.93	21.42	149.92	-164.01
NY	56.11	54.66	5.44	3.05	-573.12	53.06	371.43	-201.69
VT	0.03	0.03	100.00	0.03	-2.34	0.00	0.00	-2.34
MA	24.97	22.66	47.72	11.92	-692.28	13.06	91.40	-600.88
RI	1.78	1.78	62.95	1.12	-61.32	0.66	4.61	-56.71
FL	168.71	109.97	34.72	58.58	-1,502.57	110.14	770.95	-731.62
Total	337.97	262.70	29.70	100.39	-4,043.99	237.58	1,663.04	-2,380.95

<sup>a</sup> In equilibrium, each state will choose to mitigate to the level at which its marginal abatement cost equals the auction price.

<sup>b</sup> We assume the auction price is \$7/tCO<sub>2</sub> in this case.

<sup>c</sup> Sum of Mitigation Cost and Auction Cost.

# Auction-based Cap and Trade among Power Sectors of RGGI States and Florida in 2020 —

Auction Price = \$7/tCO<sub>2</sub>e

- In the auction case, each state would utilize all its mitigation potential with marginal cost less than \$7/tCO<sub>2</sub>e before purchasing allowances from the auctioneer; it would be cheaper to reduce emissions than to buy allowances from the auctioneer at \$7.
- The total emission reductions achieved by the 11 states in this case are 100.39 MMtCO<sub>2</sub>.
- As indicated before, the sum of the mitigations undertaken by the states would exceed the mitigation needed to achieve the cap of the 11 states as a whole at all positive allowance prices.
- In the \$7 auction price case, the 11 states would mitigate emissions 25.12 MMtCO<sub>2</sub>e more than the total cap indicates.
- CT, NJ & FL will reduce less emissions than their emissions budgets require. The other 8 states would mitigate more than their budgets require.

# Auction-based Cap and Trade among Power Sectors of RGGI States and Florida in 2020 —

Auction Price = \$7/tCO<sub>2</sub>e

- As shown in the simulation results Table 4, because of the availability of large cost saving mitigation potentials, *mitigation cost* for all the 11 states are negative.
- The *auction cost* is computed by multiplying the amount of allowances the state buys from the auctioneer by the allowance price.
- The *total net cost* of a state is the sum of its *mitigation cost* and the *auction cost*.
- Most states have negative *total net cost*, which indicates overall cost savings from joining the auction-based C&T program.
- The total cost savings for Florida in the \$7/tCO<sub>2</sub>e auction price case are \$731.62 million.
- The recycling of the auction revenues by the government is not evaluated in this study.

# Auction-based Cap and Trade among Power Sectors of RGGI States and Florida in 2020 —

Auction Price = \$1/tCO<sub>2</sub>e

- Comparing the two auction cases with prices at \$7 and \$1:
  - The amount the states choose to reduce by mitigation options and the amount to be bought from the auctioneer differ slightly.
  - However, the results show that when the allowance price is lower, the states would choose to reduce less emissions on their own and purchase more allowances from the auctioneer.
  - The biggest difference between these two cases is the total auction cost. This is due primarily to the difference of the two auction price levels.
  - In addition, Delaware shifts to the list of states that mitigate less than their budget requires.
  - Cumulatively, the 11 states would mitigate emissions 5.49%, or 18.56 MMtCO<sub>2</sub>e more than the total cap indicates.

# Marginal Cost (MC) = Auction Price = \$1/tCO<sub>2</sub>e

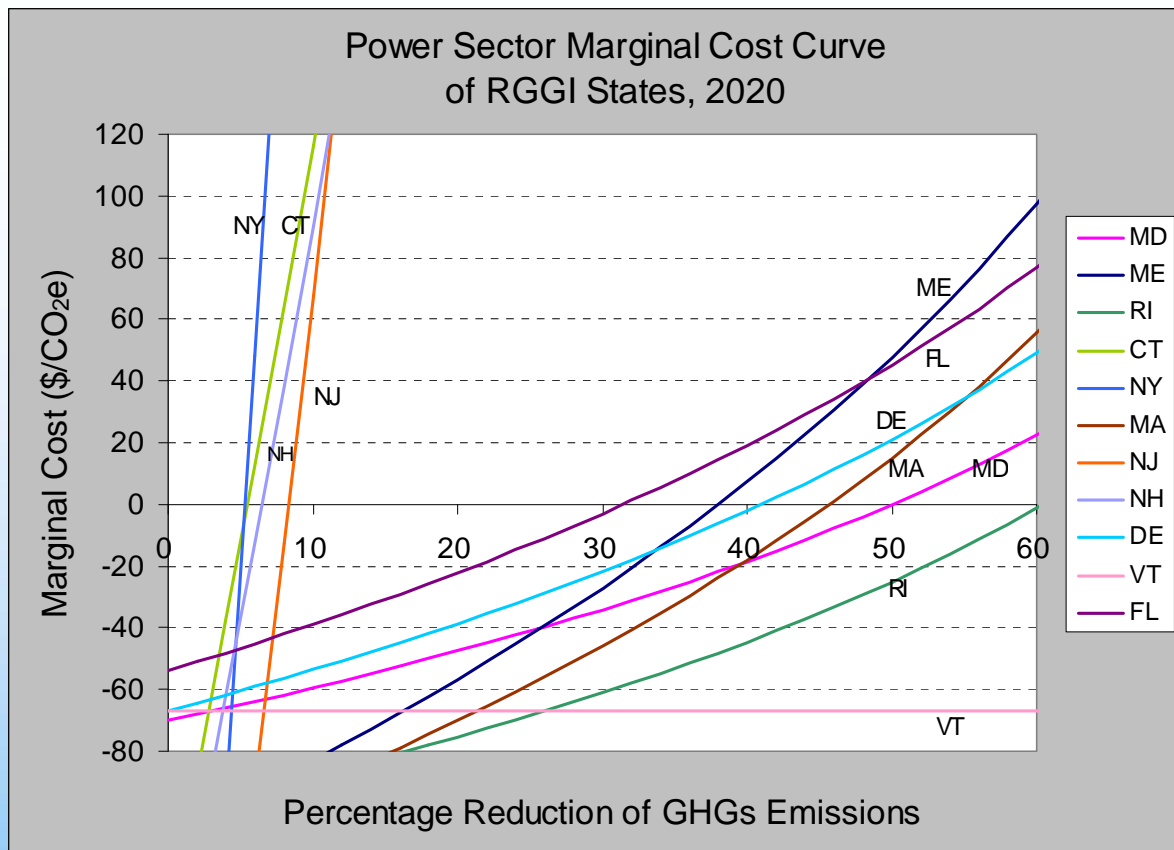
Table 5. Simulation Results of an Auction Case among RGGI States and Florida (with assumed auction price at \$1/tCO<sub>2</sub>)

State	Total BAU Emissions in 2020 (million tCO <sub>2</sub> )	2020 Emissions Cap/Budget (million tCO <sub>2</sub> )	Emission Reduction Undertaken by the State <sup>a</sup>		Mitigation Cost (million dollars)	Emission Allowances Bought from Auctioneer (million tCO <sub>2</sub> )	Auction Cost (million dollars) <sup>b</sup>	Net Cost (million dollars) <sup>c</sup>
			(percent from BAU)	(million tCO <sub>2</sub> )				
CT	13.26	9.09	5.54	0.73	-49.77	12.53	12.53	-37.24
DE	11.07	6.43	41.46	4.59	-165.20	6.48	6.48	-158.72
MD	31.79	31.79	50.49	16.05	-621.34	15.74	15.74	-605.60
ME	1.90	1.90	38.28	0.73	-41.49	1.17	1.17	-40.31
NH	4.93	4.93	6.54	0.32	-25.72	4.61	4.61	-21.11
NJ	23.40	19.46	8.34	1.95	-314.07	21.45	21.45	-292.62
NY	56.11	54.66	5.35	3.00	-573.31	53.11	53.11	-520.20
VT	0.03	0.03	100.00	0.03	-2.34	0.00	0.00	-2.34
MA	24.97	22.66	45.96	11.48	-694.03	13.50	13.50	-680.54
RI	1.78	1.78	60.81	1.08	-61.47	0.70	0.70	-60.78
FL	168.71	109.97	31.92	53.86	-1,521.35	114.86	114.86	-1,406.49
Total	337.97	262.70	27.76	93.83	-4,070.08	244.14	244.14	-3,825.95

<sup>a</sup> In equilibrium, each state will choose to mitigate to the level at which its marginal abatement cost equals the auction price.

<sup>b</sup> We assume the auction price is \$1/tCO<sub>2</sub> in this case.

<sup>c</sup> Sum of Mitigation Cost and Auction Cost.



**Notes:**

1. Marginal cost curves of CT, MD, ME, NY, VT, and RI are developed based on mitigation options data of these states (from state final or drafted climate action plans).
2. The marginal cost curves of the states are developed based on the reduction potential and mitigation cost/saving data of individual options that contribute to the emission reductions from power sector. These options not only include those designed directly for the electricity supply sector (such as promotion of renewable energy utilization, repowering existing plants, generation performance standards, etc.), but also include options in RCI sectors that contribute to the reduction of electricity consumption (e.g., demand-side management, energy efficiency appliances, building codes, etc.). The emission reduction potentials of these options are adjusted by multiplying the percentage of electricity consumption to total energy consumption in the RCI sector. RCI options that relate entirely to reduction of other fossil fuels consumption (such as gas, oil) are not included in the cost curves above.
3. There are no direct data for MA, NJ, NH, and DE and the direct options data for Florida is not ready to use yet. Marginal cost curves for these five states are developed based on cost curves of four reference states RI, NY, CT, MD, and SC, respectively. For each of the five states that lack the direct data, mitigation cost/saving data for the reference state is adopted. Emission reduction potential data of the reference state is adjusted by the weights of emissions from the ES and R, C, I sectors of the state under estimation.

# Second Scenario: Florida with the RGGI Goal

- Previous scenario: Florida 2020 cap is equal to its state goal (interpolation of the state 2017 and 2025 goals).
- Second scenario: Florida has the same 2020 cap as the RGGI states as whole, which is 10% below 2005 levels.
- The RGGI goal of 10% below 2005 levels translates to 121.51 MMtCO<sub>2</sub>e emissions budget to Florida (compared with the 109.97 MMtCO<sub>2</sub>e budget in the Florida state goal scenario).
- With the same hypothetical allowance price levels (\$7/tCO<sub>2</sub>e and \$1/tCO<sub>2</sub>e) as in the previous scenario (Florida state goal scenario), the amount of emissions the state chooses to mitigate and the amount of allowances it purchases from the auctioneer are the same as before.
- However, since Florida has less stringent mitigation target in the RGGI goal scenario than in the state goal scenario (27.98% vs. 34.82%, or 47.20 MMtCO<sub>2</sub>e vs. 58.75 MMtCO<sub>2</sub>e below 2020 BAU), Florida would reduce more emissions than required by its emissions budget in the RGGI goal scenario.
- In the Florida state goal scenario, Florida is in the list of states that mitigate less than their budget requires.

# Next Steps for Action Team and TWGs

- 2 or more TWG meetings/calls in July/early August
- Perform initial policy quantification
- Continue Cap and Trade design and analysis
- Additional Cap and Trade modeling information to come
- Continue adaptation framing, priority development
- Review GHG Inventory and Forecast for Florida

# Revised Timing – Action Team Meetings

<b>Date</b>	<b>Location</b>	<b>Action</b>
February 1, 2008	Tallahassee	1 <sup>st</sup> Action Team meeting
March 17, 2008	Tallahassee	2 <sup>nd</sup> Action Team meeting
May 29-30, 2008	Tallahassee	3 <sup>rd</sup> Action Team meeting
<b>July 9-10, 2008</b>	<b>Tallahassee</b>	<b>4<sup>th</sup> Action Team meeting</b>
August 6-7, 2008	Orlando	5 <sup>th</sup> Action Team meeting
August 22, 2008	St. Petersburg	6 <sup>th</sup> Action Team meeting
September 17-18, 2008	Tallahassee	7 <sup>th</sup> Action Team Meeting
September 26, 2008	Tallahassee	8 <sup>th</sup> Action Team Meeting
October 1, 2008		Phase II Final Report due
Between Action Team Meetings		TWG conference calls and meetings

# Next Action Team Meeting

- Agenda:
  - Review initial quantification of priority policies
  - Review expanded priority policy templates
  - Continue to refine the FL GHG Emissions Inventory and Forecast
  - Review first C&T design recommendations
- August 6-7, 2008, Orlando



# Public Comments