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

Meeting #6
September 17 & 18, 2008

Welcome and Introductions

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

Remarks from Alastair Totty,
First Secretary, Climate Change,
British Embassy, Washington

Agenda

Meeting Agenda - Wednesday, September 17

10:00 Welcome and Introductions

10:05 Remarks from Alastair Totty, First Secretary, Climate Change, British Embassy, Washington

10:15 Review and Approval of Action Team Meeting #5 Summary

10:20 State and Federal Update

10:30 ▪Review and Approval of Policy Options: Overview

10:40 ▪Consideration of Remaining Draft Adaptation Policy Options and Early Action Proposals

11:50 Public Comments on Adaptation

12:00 Lunch Break

Agenda

Meeting Agenda - Wednesday, September 17 (cont'd)

12:45 ▪Consideration of the Draft Cap-and-Trade Policy Option

2:15 Public Comments on Cap-and-Trade

2:25 ▪Consideration of Draft Transportation and Land Use Policy Options

4:00 Public Comment on Transportation and Land Use

4:10 ▪Consideration of the Revised Florida Inventory & Forecast of GHG Emissions

5:20 Public Comments on the Revised Inventory & Forecast

5:30 Adjourn

Agenda (revised)

Meeting Agenda - Thursday, September 18

8:30 Welcome and Introductions

8:35 ▪Consideration of Remaining Draft Agriculture, Forestry, and Waste Management Policy Options

10:05 Public Comments on Agriculture, Forestry, and Waste Management

10:15 ▪Consideration of Draft Energy Supply and Demand Policy Options

12:45 Working Lunch Served to Action Team and 10-Minute Break

12:55 Public Comment on Energy Supply and Demand

1:05 ▪Consideration of Remaining Draft Government Policy Options

2:05 Public Comments on Government Policy

2:15 Agenda, Time, and Date for Next Meeting

2:20 General Public Input and Announcements

2:30 Adjourn

Review and Approve Action Team Meeting #5 Summary

State and Federal Update

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 Draft Policy Options: Overview

- Six TWGs have met by teleconference
- Reviewed the Action Team's approved priority policies and guidance for further development
- Drafted revisions to policies pursuant to Action Team guidance
- Continued quantification of policy options

Adaptation Options

ADP-8 Insurance (Property and Casualty)

ADP-9 Emergency Preparedness and Response (Extreme Events)

ADP-10 Human Health Concerns

ADP-11 Social Effects

ADP-12 Organizing State Government for the Long Haul

ADP-13 State Funding and Financing

ADP-14 Coordinating with Other Regulatory and Standards Entities

ADP-15 Public Education and Outreach

(Public Comment after Early Action Strategies)

Adaptation Early Action Strategies

ADP□1. Advancing Science Data and Analysis for Climate Change

Goal 2: Foster and support climate science research agenda for Florida.
Goal 3: Conduct research needed to support incorporation of climate change into the protection of Florida's ecosystems and biodiversity.
Goal 4: Enhance support for mapping, monitoring, and modeling.

ADP□2.1. [Comprehensive Planning] Local Government Level

Goal 2: State and regional agencies provide financial and technical assistance to local governments.
Goal 4: Local governments should review their coastal management elements.

ADP□2.3. [Comprehensive Planning] State Government Level

Goal 3: Balancing Property Rights and Protecting Communities and Natural Resources

ADP□3.1. [Protection of Ecosystems and Biodiversity] Uplands, Freshwater and Marine Systems

Goal 1: Ensure that Florida's terrestrial, freshwater, and marine natural communities are protected to maximizes the health and resilience of these communities.

Adaptation Early Action Strategies

ADP□3.2. [Protection of Ecosystems and Biodiversity] Beaches and Beach Management

Goal 1: Reduce future reliance on bulkheading/hardening to stabilize estuarine and beach shorelines.

ADP□3.3. [Protection of Ecosystems and Biodiversity] Species Protection

Goal 1: Assess the vulnerability of Florida's fish and wildlife to climate change impacts.

ADP-4. Water Resource Management

Goal 1: Identify and quantify the vulnerabilities and reliability of existing water supplies .

ADP-5.1. [Built Environment, Infrastructure, and Community Protection] Building Codes and Regulation

Goal 1: Require that the Florida Building Code incorporate building design criteria for resisting future loads.
Goal 4: Develop a required training program to educate professionals in relevant fields.

ADP-15. Public Education and Outreach

Goal 1: Provide immediate training on climate change adaptation.
Goal 2: Educate the public.

Cap-and-Trade

- Reduction Targets and Timeframes
- Sector Coverage
- Regional Programs
- Caps and Goals
- Flexibility and Cost Containment Mechanisms
- Allowance Distribution
- Reporting
- Leakage
- Trial Period
- Federal Program
- Grace Period for Retiring Sources (ESD-10)

Public Comment

Transportation and Land Use

TLU-1 Develop and Expand Low-GHG and Alternative Fuels
TLU-2 Add-on Technologies for Existing Vehicles and New Vehicles
TLU-3 Smart Growth Planning
TLU-4 Improving Transportation System Management (TSM)
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

Public Comment

Florida Inventory & Forecast Revisions

AFW I&F Revisions – Agriculture

- Revised soil carbon flux emission estimates using data from University of FL on cultivation of organic soils

Revised AFW I&F

Table F4. Gross GHG Emissions from Agriculture in Florida ($MMtCO_2e$)

Source	1990	1995	2000	2005	2010	2015	2020	2025
Enteric Fermentation	2.51	2.67	2.30	2.18	2.05	1.95	1.85	1.75
Manure Management	0.76	0.78	0.76	0.69	0.63	0.60	0.57	0.55
Ag Soils-Fertilizers	0.98	0.84	0.90	0.56	0.56	0.45	0.33	0.21
Ag Soils-Crops	0.06	0.04	0.03	0.05	0.04	0.03	0.03	0.03
Ag Soils-Livestock	1.97	1.85	1.57	1.67	1.28	1.10	0.93	0.75
Ag Soils-Liming	0.35	0.24	0.23	0.15	0.15	0.15	0.15	0.15
Rice Cultivation	0.06	0.12	0.09	0.06	0.06	0.06	0.06	0.06
Agricultural Burning	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
→ Soil Carbon (Cultivation Practices)*	9.63	9.63	9.63	9.63	9.63	9.63	9.63	9.63
TOTAL	**16.3**	**16.2**	**15.5**	**15.0**	**14.4**	**14.0**	**13.6**	**13.1**

*Previous estimate 10.1 $MMtCO_2$ (all years)

AFW I&F Revisions - Forestry

- Applied 1995-2005 loss rate for forests (7,400 acres/yr) to the forecast
- Revised estimates for non-CO_2 gases from wildfires and prescribed burns (add prescribed burn acres)

Revised Forestry I&F

Original Estimates

Table H4. Forestry and Land Use Flux and Reference Case Projections ($MMtCO_2e$)

Subsector	1990	2000	2005	2010	2020
Forested Landscape (excluding soil carbon)	0.96	-24.5	-24.5	-24.5	-24.5
Urban Forestry and Land Use	-14.5	-5.65	-6.23	-6.23	-6.23
Wildfires & Prescribed Burns	1.35	1.15	0.16	0.16	0.16
Sector Total	**-12.1**	**-29.0**	**-30.6**	**-30.6**	**-30.6**

Revised Estimates

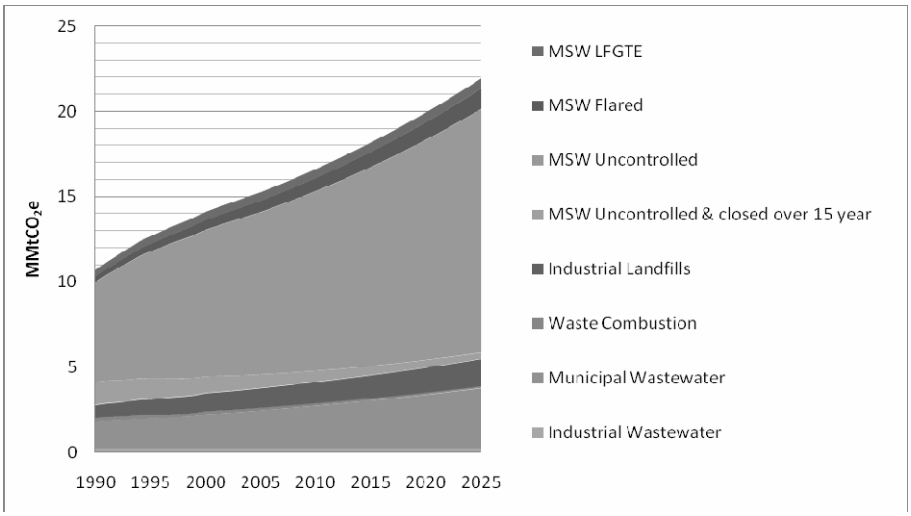
Table H5. Forestry and Land Use Flux and Reference Case Projections ($MMtCO_2e$)

Subsector	1990	2000	2005	2010	2020	2025
Forested Landscape (excluding soil carbon)	-3.38	-21.1	-21.1	-21.0	-20.9	-20.9
Urban Forestry and Land Use	-14.4	-5.65	-6.23	-6.23	-6.23	-6.23
Forest Wildfires	1.35	1.15	0.16	1.00	1.00	1.00
Forest Prescribed Fires	5.70	4.14	6.66	5.70	5.70	5.70
Sector Total	**-16.5**	**-25.6**	**-27.1**	**-20.5**	**-20.4**	**-20.4**

Revised Waste Management I&F

- Revised landfill methane emissions by creating separate estimates for uncontrolled, flared, and landfill gas to energy sites

Revised Waste Management I&F



Revised Waste Management I&F

Original Estimates

Table G2. Florida GHG Emissions from Waste Management ($MMtCO_2e$)

Source	1990	1995	2000	2005	2010	2015	2020	2025
MSW Landfills	7.92	9.55	10.63	11.49	12.41	13.41	14.48	15.65
Industrial Landfills	0.76	0.93	1.05	1.14	1.24	1.35	1.46	1.59
Waste Incineration	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01
Municipal Wastewater	1.57	1.75	2.01	2.23	2.50	2.81	3.15	3.54
Industrial Wastewater	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Residential Open Burning	0.22	0.20	0.18	0.17	0.16	0.14	0.13	0.12
Total	**10.7**	**12.7**	**14.1**	**15.3**	**16.5**	**17.9**	**19.5**	**21.1**

Revised Estimates

Table G2. Florida GHG Emissions from Waste Management ($MMtCO_2e$)

Source	1990	1995	2000	2005	2010	2015	2020	2025
MSW LGTE	0.39	0.46	0.49	0.51	0.53	0.55	0.57	0.59
MSW Flared	0.35	0.47	0.58	0.68	0.78	0.90	1.04	1.21
MSW Uncontrolled	5.86	7.45	8.60	9.52	10.5	11.7	12.9	14.3
MSW Uncontrolled & closed over 15 year	1.33	1.18	0.97	0.79	0.65	0.53	0.43	0.36
Industrial Landfills	0.76	0.93	1.05	1.14	1.24	1.35	1.46	1.59
Waste Combustion	0.23	0.22	0.20	0.19	0.17	0.16	0.15	0.14
Municipal Wastewater	1.57	1.75	2.01	2.23	2.50	2.81	3.15	3.54
Industrial Wastewater	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Total	**10.7**	**12.7**	**14.1**	**15.3**	**16.6**	**18.2**	**19.9**	**21.9**

Revised Electricity Supply and Demand Forecast

Draft CAT Forecast Comparison with FRCC Forecast

- At the July 23, 2008 FL ESD TWG meeting, the TWG requested that a comparison be made between:
  - The existing FL ES forecast prepared by CCS and
  - The forecast by the Florida Reliability Coordinating Council (FRCC) in its report entitled: "2008 Regional Load & Resource Plan" that was published in July 2008, and including utility forecasts as filed through April 15, 2008
    - Note that several utilities report that their more recent forecasts do and/or will show lower growth in sales
- At the September 9, 2008 FL ESD TWG meeting, the TWG by consensus recommended an approach to revised the Electricity Supply forecast, based in part on the FRCC forecast, but with significant changes

Revised Electricity Supply and Demand Forecast

Please note the following:

- The FL CAT Energy Supply GHG forecast is for the period 2000-2025
- The FRCC forecast is for the period 2000-2017
- There are several (relatively minor) generation categories that do not match completely between the CAT and FRCC forecasts
- Therefore, to compare the two forecasts:
  - Assumptions have been made regarding the extrapolation of the FRCC forecast over the 2018-2025 period—approximately **2.3% annual growth**
  - Assumption have been made about the generation mix for underdetermined categories of generation

Revised Electricity Supply and Demand Forecast

At their 9/9 Meeting, the ESD TWG Suggested:

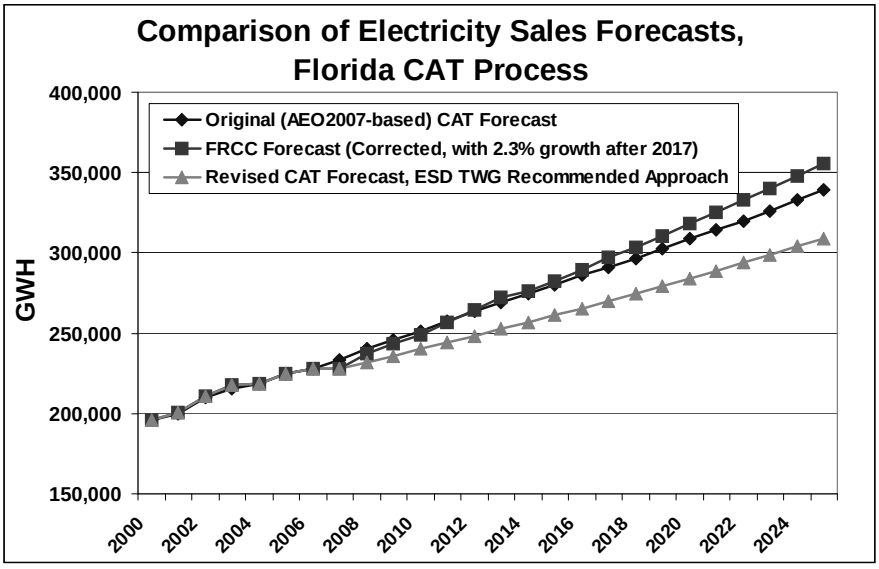
- Estimate future FL sales based on application of a 1.7%/yr growth rate from 2008-2025 (lower than FRCC results for 2008-2017)
- Adjust future generation estimates by fuel source downward to meet demand for generation by reducing FRCC estimates of generation from natural gas
- Adjust Solar generation upward to account for 110 MW (22% capacity factor) to be on line in 2010/2011
- Note: no specific TWG guidance provided on use of alternative trends in transmission and distribution losses

Revised Electricity Supply and Demand Forecast

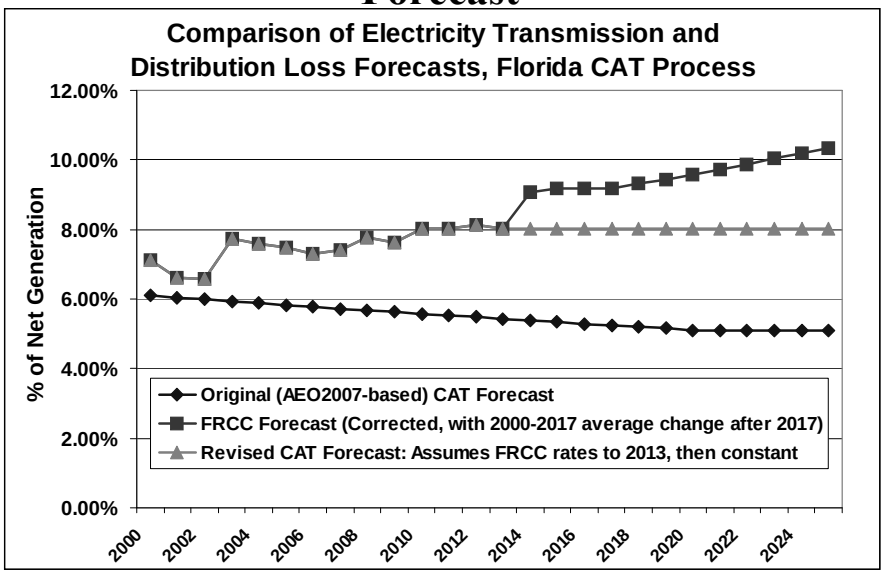
Preliminary revisions including TWG input now complete for:

- FL Electricity Sales: Using TWG recommendations, sales in 2025 are 8.8% lower than original (AEO2007-based) CAT forecast, 13.2% lower than (extrapolated) FRCC forecast
- Transmission and Distribution Losses: FRCC estimates of T&D losses as a fraction of net generation increase over 2008-2017, and are substantially higher than in original CAT forecast.
  - Preliminary revision assumes FRCC T&D loss fraction through 2013, then constant through 2025

Revised Electricity Supply and Demand Forecast



Revised Electricity Supply and Demand Forecast



Revised Electricity Supply and Demand Forecast

Revised estimate of future generation fuel shares and CO_2e emissions impacts **not yet complete**

- Based on review of FRCC estimates through 2017 and TWG suggestions, **likely** major elements of Revised Forecast generation fuel shares will be, relative to existing (AEO2007-based CAT Forecast):
  - More nuclear generation (nearly double by 2023)
  - Less oil-fired generation (>90% less by 2017)
  - Less coal-fired generation (~20% less by 2017, difference likely increasing thereafter)
  - More gas-fired generation (~30-40% more by 2017)
- Initial calculations suggest that CO_2e/MWh will be **10-15% less** in 2017 than in existing forecast

Revised Electricity Supply and Demand Forecast

Impacts of Forecast Changes on ESD Options Results

- Forecast changes will affect ESD options through three mechanisms:
  - Change in **Sales forecast** where ESD options goals are sales-based
  - Change in **T&D losses** where ESD options provide demand-side generation or savings
  - Changes in **generation fuel shares**, which affect the avoided emissions "factor" (CO_2e emissions avoided per MWh generated) **for all options**
- Note that forecast changes will also reduce overall FL GHG emissions, **thus reducing required reductions**

Revised Electricity Supply and Demand Forecast

Impacts of Forecast Changes on ESD Options Cumulative 2009-2025 CO_2e Savings and Costs (pending completed revisions)

- ESD-3, ESD-5 (RPS): (affected by sales, emission factor changes)
  - GHG Savings reduced by 15-20%
  - Total Net NPV Costs reduced by ~5%
  - Cost per unit CO_2e increased by ~12-19%
- ESD-6 (Nuclear): (affected by emission factor changes only)
  - GHG Savings reduced by 10-15%
  - Total Net NPV Costs unaffected
  - Cost per unit CO_2e increased by ~11-18%

Revised Electricity Supply and Demand Forecast

Impacts of Forecast Changes on ESD Options Cumulative 2009-2025 CO_2e Savings and Costs (pending completed revisions)

- ESD-8 (CHP): (affected by T&D and emission factor changes)
  - GHG Savings reduced by 8-13%
  - Total Net NPV Costs Unaffected
  - Cost per unit CO_2e increased by ~9-15%
- ESD-9 (Power Plant Efficiency): (affected by emission factor changes only)
  - GHG Savings reduced by 10-15%
  - Total Net NPV Costs Unaffected
  - Cost per unit CO_2e increased by ~11-18%

Revised Electricity Supply and Demand Forecast

Impacts of Forecast Changes on ESD Options Cumulative 2009-2025 CO_2e Savings and Costs (pending completed revisions)

- ESD-11 (Landfill Gas):
  - GHG Savings reduced by less than 1%, as most GHG savings from LFG capture, not generation
  - Total NPV Net Costs unaffected
  - Cost per unit CO_2e increased by less than 1%
- ESD-12 (DSM): (affected by sales, T&D, emission factor changes)
  - GHG Savings reduced by 13-18%
  - Total NPV Net Costs reduced by ~5%
  - Cost per unit CO_2e slightly more negative

Revised Electricity Supply and Demand Forecast

Impacts of Forecast Changes on ESD Options Cumulative 2009-2025 CO_2e Savings and Costs (pending completed revisions)

- ESD-13a, -14 (Existing Building improvements and new building code changes): affected by T&D, emission factor changes)
  - GHG Savings reduced by 8-13%
  - Total Net NPV Costs Unaffected
  - Cost per unit CO_2e increased by ~9-15%

Inventory & Forecast

Public Comment

Adjourn

September 17, 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 #6

September 18, 2008

Agenda (revised)

Meeting Agenda - Thursday, September 18

8:30 Welcome and Introductions

8:35 ▪Consideration of Remaining Draft Agriculture, Forestry, and Waste Management Policy Options

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2:30 Adjourn

Agriculture, Forestry & Waste

AFW-2 Afforestation and Restoration of Non-Forested Lands

B. Urban Forestry

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

(Ag and Forest biomass previously approved. The whole option is ready for approval)

AFW-5 Promotion of Farming Practices That Achieve GHG Benefits

B. Land Use Management that Promotes Permanent Cover - NQ

D. Improved Harvesting Methods - NQ

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

Agriculture, Forestry & Waste

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

A. Manure Digestion/Other Waste Energy Utilization

B. WWTP Biosolids Energy Production

C. Other Biomass Conversion Technologies

D. Bio-Products Technologies & Use

Public Comment

Energy Supply & Demand

Tier 1

ESD-3 Renewable Energy Incentives and Barrier Removal

ESD-5 Renewable Portfolio Standard (RPS)

ESD-6 Nuclear Power

ESD-7 Integrated Resource Planning

ESD-8 Combined Heat and Power Systems (CHP)

ESD-9 Power Plant Efficiency Improvements

ESD-11 Waste-to-Energy (WTE)

ESD-12 Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Electricity

ESD-13a Energy Efficiency for Existing Residential

ESD-14 Improved Building Codes for Energy Efficiency

ESD 15 Training and Education for Building Operators and Community Association Managers

ESD-17 Consumer Education Programs

ESD-23 Decoupling

Energy Supply & Demand

Tier 2

ESD-1	Technology Research and Development (R&D) With Commercial Opportunities
ESD-4	Electricity Transmission and Distribution Improvements
ESD-13b	Incentives for New Residential Building Achieving High Energy Performance Standards
ESD-16	More Stringent Appliance/Equipment Efficiency Standards
ESD-18	Incentives to Promote Implementation of Customer-Sited Renewable Energy Systems
ESD-21	Rate Structures and Technologies to Promote Reduced Greenhouse Gas Emissions
ESD-22	Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas

Working Lunch
10-Minute Break

- Public Comment on Energy Supply and Demand

Government Policy

GP-3 Inter-Government Planning, Coordination, and Assistance

GP-4 "Green" Business Development Policies

Public Comment

Action Team Meetings

Date	Location	Action
February 1, 2008	Tallahassee	1st Action Team meeting
March 17, 2008	Tallahassee	2nd Action Team meeting
May 29-30, 2008	Tallahassee	3rd Action Team meeting
July 9-10, 2008	Tallahassee	4th Action Team meeting
August 6-7, 2008	Orlando	5th Action Team meeting
August 22, 2008	St. Petersburg	6th Action Team meeting CANCELLED
September 17-18, 2008	Tallahassee	6th Action Team Meeting
October 1-2, 2008	Tallahassee	7th Action Team Meeting
October 8, 2008	Tallahassee	8th Action Team Meeting
October 13, 2008	Teleconference	9th Action Team Meeting (if needed)
October 15, 2008		Phase II Final Report due

Next Action Team Meeting

- Agenda:
  - Review final quantification of policies;
  - Review and act on any remaining policy options;
  - Review drafts of several final report chapters;
  - Identify barriers to consensus for policies lacking unanimous support.
- October 1-2, 2008, Tallahassee

Public Comments and Announcements

Adjourn

September 18, 2008