



**Alaska Climate Mitigation
Advisory Group**
of the Governor's Climate Change Sub-Cabinet
Meeting #5
February 5, 2008
Anchorage, Alaska

Brian Rogers
University of Alaska, Fairbanks
chancellor@uaf.edu

Ken Colburn / Gloria Flora
Center for Climate Strategies
kcolburn@symbioticstrategies.com
gflora@s-o-solutions.org

Meeting Agenda

- **Welcome, Introductions & Objectives for the Day**
 - **Date and Time of Next MAG Meeting**
- **Introductory Remarks** - Commissioner Larry Hartig, Chair,
- **Process Update**
- **Review and Approve Priority Option Descriptions**
 - Forestry, Agriculture and Waste
 - Transportation and Land Use
 - Energy Supply and Demand – Part I
- **Lunch Presentation: “Potential Legislation & Impacts to Alaska”**
- **Break**
- **Continued Review and Approval of Priority Option Descriptions**
 - Energy Supply and Demand - cont'd
 - Oil and Gas
 - Cross-Cutting
- **Next Steps for the MAG and its Technical Work Groups**
- **Public Input and Announcements**
- **Wrap-Up and Adjournment**
- **Optional: Review of Quantification Process**

Prospective Timetable: Climate Change Mitigation Advisory Group

Date	Action
May 15, 2008	1 st Meeting: Launch Process; Review Inventory
July 15, 2008	2 nd Meeting: Catalog of Potential Policy Options
September 22, 2008	3 rd Meeting: Presentations; Some Selection of Priority Policy Options
November 6, 2008	4 th Meeting: Select Priority Policy Options
February 5, 2009	5th Meeting: Approve Straw Proposals
March 23, 2009 (tent.)	6 th Meeting: Initial Quantification of Options
April 29, 2009 (tent.)	7 th Meeting: Approve Recommended Options
Following Conclusion	Final Report to Sub-Cabinet
Between Meetings	Regular TWG teleconference meetings and possible face-to-face meetings

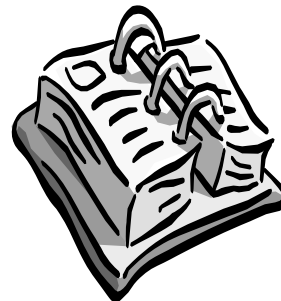
February 5, 2009

www.climatestrategies.us

3

Next MAG Meeting

- **Agenda**
 - Review Implementation Mechanism, Key Assumptions and initial quantification of priority policy options based on TWG recommendations
- **Date and Location**
 - March 23, 2009 (?)
 - Anchorage



February 5, 2009

www.climatestrategies.us

4

Stepwise Planning Process

1. Develop/revise baseline inventory and forecast
2. Identify a full range of possible actions (“catalog”) and programs already in place
3. Identify initial priorities for analysis & development
4. Develop straw proposals
5. **Evaluate (and quantify to the extent possible) costs and benefits**
6. **Evaluate feasibility issues; associated issues; linkages**
7. Develop alternatives if needed to enhance consensus
8. Iterate to final agreement
9. Finalize and report recommendations

Straw Proposals

- Content and format
- Policy Option Template
 - Description and Design
- Key initial elements:
 - Goals
 - Parties Involved / Coverage
 - Timing
 - Implementation Mechanisms
- TWGs present straw proposals to MAG for its review and approval at February MAG meeting (*This meeting*)

Policy Option Template

- Policy Description (Concept)
- Policy Design (Goals, Timing, Coverage)
- Implementation Methods (parties, mechanisms)
- Related Programs and Policies (BAU)
- Estimated GHG Savings and Costs Per MMTCO₂e
 - Data sources, methods, and assumptions
 - Key uncertainties
- Additional (non-GHG) Benefits and Costs, as Needed
- Feasibility Issues, if Needed
- Status of Group Approval
- Level of Group Support
- Barriers to Consensus, if Any

Review of TWGs' Recommended Policy Options for Further Analysis

- Forestry, Agriculture & Waste (FAW)
- Transportation & Land Use (TLU)
- Energy Supply & Demand (ESD)
- *Lunch Break*
- Energy Supply & Demand (ESD) - continued
- Oil & Gas (O&G)
- Cross-Cutting Issues (CC)

FAW TWG Straw Proposals

1. Forest Management Strategies for Carbon Sequestration
2. Expanded Use of Biomass Feedstocks for Energy Production – *Approved 11/6*
3. Advanced Waste Reduction and Recycling – *Approved 11/6*

TLU TWG Recommended Policy Options for Further Analysis

1. Transit, ridesharing, and commuter choice programs
2. Vehicle idling regulations and/or alternatives
3. Transportation system management
4. Promote efficient development patterns (Smart Growth)
5. Promotion of alternative fuel vehicles
6. VMT and GHG reduction goals in planning
7. On-road heavy-duty vehicle efficiency improvements
8. Marine vessel efficiency improvements
9. Aviation emission reductions

TLU-1. Transit, Ridesharing, and Commuter Choice Programs

- Double transit ridership in Alaska by 2025, compared to 2007 levels.
- Double ridesharing in Alaska by 2025, compared to 2007 levels.
- Support the development of a Regional Transportation Authority in Anchorage and Fairbanks to integrate all alternatives into one coordinated regional system.

TLU-2. Heavy-Duty Vehicle Idling Regulations and/or Alternatives

- Increase adoption of idle reduction technology and/or idle reduction policies/procedures:
 - 20% of equipment by 2012
 - remaining 80% equipped by 2020
 - exception for seasonal-use vehicles
- Alaska DOT&PF lead by example
- Local gov'ts, school districts, private fleets to pursue similar goals

TLU-3. Transportation System Management

- Improve traffic flow and reduce emissions through strategies such as:
 - Traffic signal timing
 - Incident management
 - Use of roundabouts
 - Lower speed limits
 - Access management

TLU-4. Promote Efficient Development Patterns (Smart Growth)

- By 2020, at least 50% of Alaska's annual new residential and commercial construction should occur within the denser parts of urban areas through re-development, infill, and mixed uses that take advantage of the existing public investment in infrastructure, public services, and facilities.

TLU-5. Promotion of Alternative Fuel Vehicles

- Use incentives to:
 - Increase the use of light-duty AFVs by gov't and private fleets to 25% of on-road fuel consumption by 2020 and 35% by 2030.
 - Increase the use of AFVs by consumers to 10% of on-road fuel consumption by 2020 and 25% by 2030.
 - State support for analysis of life-cycle GHG benefits of alternative fuels in the Alaska context.

TLU-6. VMT and GHG Reduction Goals in Planning

- GHG emissions analysis required for state and MPO transportation system plans, and for major transportation projects.
- By 2015, reduce the per-capita light-duty vehicle miles traveled (VMT) by 1% in communities that offer transit services and 3% by 2025.

TLU-7. On-Road Heavy-Duty Vehicle Efficiency Improvements

- Achieve public and private fleet participation in SmartWay program – 30% of total trucks in Alaska by 2012 and to 50% by 2020.
- Phase out 50% of “old” (1988 and older) high GHG emitting on-road heavy-duty diesel engines by 2015.
- Encourage government HDV fleets to reduce GHG emissions. By 2020, achieve 20% reduction compared to 2008 levels.

TLU-8. Marine Vessel Efficiency Improvements

- Provide financial incentives to accelerate replacement of marine vessel engines such that, by 2020, no more than 50% will be pre-1999 engines.
- Encourage federal and state agencies that regulate commercial fishing to consider GHG emissions when making policy decisions.

TLU-9. Aviation Emission Reductions

- Support redesign and improvement of the existing air traffic management system through NextGen.
- Encourage voluntary implementation of operational strategies to reduce aircraft emissions.
- Support rapid introduction of alternative fuels for aviation that are both economically viable and have reduced life-cycle emissions.

ESD TWG Recommended Policy Options for Further Analysis

1. Transmission system optimization and expansion
2. Energy efficiency for residential and commercial customers
3. Implementation of renewable energy
4. Building standards & incentives
5. Efficiency Improvements for Generators

Lunch Presentation
- *Panel Discussion* –
**Potential Legislation
and
Impacts to Alaska**

Moderator

Michael Tubman

Office of the Governor, State of Alaska

Panel

Heather Grahame, *Dorsey & Whitney*

Marcus Hartley *Northern Economics*

February 5, 2009

www.climatestrategies.us

21

Break



February 5, 2009

www.climatestrategies.us

22

ESD TWG Recommended Policy Options for Further Analysis (continued)

6. Energy Efficiency for Industrial Installations
7. Implementation of Small-Scale Nuclear Power
8. Research and Development for Cold-Climate Renewable Technologies
9. Implementation of Advanced Supply-Side Technologies

OG TWG Recommended Policy Options for Further Analysis

1. Best Conservation Practices
2. Reductions in Fugitive Methane Emissions
3. Electrification of Oil and Gas Operations, with Centralized Power Production and Distribution
4. Improved Efficiency Upgrades for Oil and Gas Fuel Burning Equipment
5. Renewable Energy Sources in Oil and Gas Operations

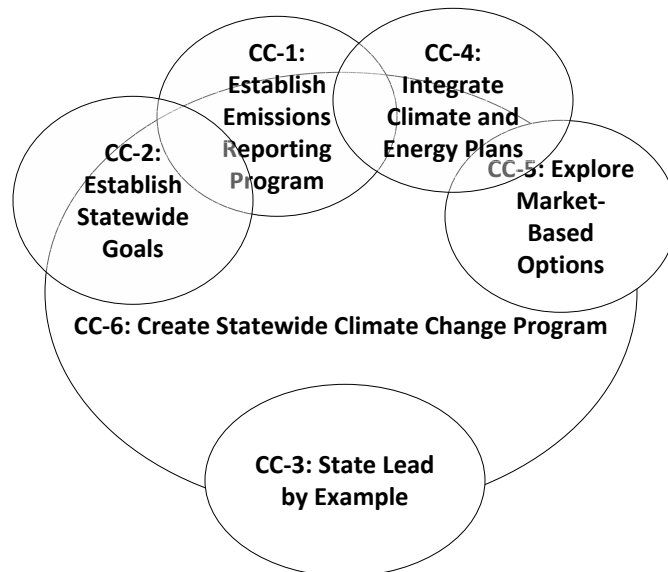
OG TWG Recommended Policy Options for Further Analysis

6. Carbon Capture and Geologic Sequestration with Enhanced Oil Recovery from High CO₂ Fuel Gas at Prudhoe Bay
7. Carbon Capture and Geologic Sequestration with Enhanced Oil Recovery in and near existing Oil or Gas Fields
8. Carbon Capture and Geologic Sequestration away from Known Geologic Traps

CC TWG Recommended Policy Options for Further Analysis

1. Establish an Alaska GHG Emissions Reporting Program
2. Establish Goals for Statewide GHG emission reduction
3. Identify and Implement State Government Mitigation Actions
4. Integrate Alaska Climate Change Mitigation Strategy with the State Energy Plan
5. Explore Various Market-Based Systems to Manage GHG Emissions
6. Create an Alaska Climate Change Program that Coordinates State Efforts for Addressing Climate Change

CC TWG Options



February 5, 2009

www.climatestrategies.us

27

CC-1. Establish an Alaska Greenhouse Gas Emissions Reporting Program

- Establish reporting program that ensures publicly accessible, accurate, verifiable, and transparent reporting of GHG emissions data using well-documented mandatory and voluntary reporting and verification procedures.
- Develop and publish an Alaska GHG inventory and forecast every three years. Use to inform GHG baselines and state goals (see CC-2)

February 5, 2009

www.climatestrategies.us

28

CC-2. Establish Goals for Statewide Greenhouse Gas Reduction

- The State of Alaska adopts goals of:
 - Begin to reduce GHG emissions by 2012,
 - Achieve reductions up to 10 percent by 2017,
 - Reduce GHG emissions by 60-80% below 1990 levels by 2050
- Establish a GHG emissions baseline and refine it based on updates from mandatory and voluntary reporting program and GHG inventories (CC-1).

CC-3. Identify and Implement State Government Mitigation Actions

- The State implements no cost and low cost “Early Actions” that can be taken without new funding or legislative approval to reduce the State’s GHG emissions.
- The State publicizes successes quickly through a “Report Card” to encourage others to act and to generate political momentum.

CC-4. Integrate Alaska's Climate Change Strategy with the Alaska Energy Plan

- In 2010, the State will initiate development of Alaska's 10-year "Climate Protection & Energy Plan" to achieve Alaska's mitigation objectives and energy consumption goals through the year 2020. This will be done by integrating the Climate Action Strategy with the Alaska Energy Plan.
- In 2010, the State will initiate development of an "Energy Database" to track commercial, residential, industrial, and transportation energy consumption and production.

CC-5. Explore Various Market Based Systems to Manage Greenhouse Gas Emissions

- Examine interactions of market-based programs with existing and proposed emission reduction measures including regulations, performance-based standards, price subsidies, tax credits, and other technology promoting initiatives.
- Consider means to oversee and manage revenues generated by a future market-based approach and consider needed changes to existing laws.
- Participate in federal and regional discussions on and implementation of a market-based program for Alaska

CC-6. Create an Alaska Climate Change Program that Coordinates State Efforts

- Coordinate policy and legislation
- Provide information on mitigation technology and regulatory guidance to industry and the public;
- Coordinate the GHG emission reporting program and associated inventories (see CC-1);
- Coordinate Subcabinet's climate change mitigation policy efforts with the Alaska Energy Plan, the Alaska Municipal League, industry, the Western Climate Initiative and advisory groups and coordinate and track climate change efforts in Alaska;
- Support educators to teach students of all levels regarding climate change.

February 5, 2009

www.climatestrategies.us

33

CC-6. Create an Alaska Climate Change Program that Coordinates State Efforts

- Coordinate activities across State agencies
- Coordinate policy and legislation
- Provide information on mitigation technology and regulatory guidance to industry and the public
- Coordinate the GHG emission reporting program and associated inventories (see CC-1)
- Coordinate Subcabinet's climate change mitigation policy efforts with the Alaska Energy Plan, the Alaska Municipal League, industry, the Western Climate Initiative and advisory groups and coordinate and track climate change efforts in Alaska

February 5, 2009

www.climatestrategies.us

34

CC-6. Create an Alaska Climate Change Program that Coordinates State Efforts (cont'd)

- Develop partnerships with private citizens, businesses, and local governments;
- Conduct direct outreach on climate change and GHG reduction strategies;
- Develop a web portal and a repository of relevant resources and information; and
- Support educators to teach students of all levels regarding climate change.

Next Steps for MAG & TWGs

- 2-3 TWG calls between now and March meeting to develop initial quantification and further completion of priority policy options
- MAG reviews Draft Policy Option Documents at its March meeting
 - Quantification of appropriate options included
 - Discussion of policy option additions
- Continue review and refinement of Alaska Inventory and Forecast (*ongoing – recently extended to 2025*)

Public Input & Announcements

February 5, 2009

www.climatestrategies.us

37



The Center for Climate Strategies

Helping States and the Nation Tackle Climate Change

*Thank you
for your continuing
time, effort and attention!*

*Brian Rogers
University of Alaska, Fairbanks
chancellor@uaf.edu*

*Ken Colburn / Gloria Flora
Center for Climate Strategies
kcolburn@symbioticstrategies.com
gflora@s-o-solutions.org*

February 5, 2009

www.climatestrategies.us

38

Quantification of Policy Options

February 5, 2009

www.climatestrategies.us

39

Estimating Cost-Effectiveness of GHG Reduction Actions: Purpose

- Support strategic decisions
- Make decisions explicit
- Search for preferred results
- Compare choices systematically
- Identify and resolve barriers
- Manage risk and uncertainty
- Objectify debate
- Speed decisions
- Create value

February 5, 2009

www.climatestrategies.us

40

Estimating Cost-Effectiveness of GHG Reduction Actions: Limits

- Not all actions are easily measured
- Not all outcomes are easily monetized
- We may value time and outcomes differently
- Need for analysis varies by decision at hand
- Perfect information does not exist
- Accuracy may be time sensitive
- Analysis takes time and money

Concepts

- Joint Fact-Finding
 - Joint development of draft Inventory & Forecast
 - Agency support to secure best available data for Alaska; on existing actions, etc.
- Iterative Development of Policy Options
 - Legwork & recommendation by TWGs
 - Review and approval by MAG
 - “Cross-pollination” between the two
- Collective Wisdom
 - Multiple heads are better than one

Concepts

- Custom Policy Development
 - Each option is selected, designed and analyzed under a common framework/template unique to Alaska
- Multiple choice of methods
 - Existing studies of related policy actions that can be scaled to Alaska, or...
 - Existing models that can be run to match Alaska's profile and MAG policy options, or...
 - New custom analyses that can be developed for MAG options, etc.
 - Individual and aggregate level analyses

Concepts

- Transparency
 - Details for policy design and analysis are explicit, public and well-documented
 - Assumptions that form basis of analyses are determined by TWG/MAG
- Individual and Aggregate Impacts
 - Stand-alone GHG reductions and costs/savings are calculated for individual policy options
 - Cumulative impacts are calculated for all options combined and overlaps scrubbed

Guidelines

- Costs/Savings Calculations
 - Net Present Value (NPV) of direct societal costs/savings are calculated
 - Full life-cycle GHG calculations are preferred
 - Indirect impacts seldom calculated, only on an as-needed basis where data availability and resources are adequate, and/or conducted in subsequent analyses
 - Costs/savings are compared to GHG reductions to derive cost-effectiveness as “\$/ton GHG removed”

Guidelines

- Timing
 - Impacts are calculated on an annualized basis from the start of the project period to its end (2009-2025) and cumulative costs/savings and GHG reductions are reported
 - Annual “snapshots” of GHG reductions are reported for target years (2015 and 2020)

Guidelines

- Geographic Coverage
 - Costs/savings and GHG reductions are calculated at the state level
 - GHG reductions outside the state can be counted if they are a direct result of actions taken by Alaska (such as enhanced recycling)
 - Both production- and consumption-based accounting systems often used for analysis of policies

Guidelines

- Some policy options may not be quantified
 - Example: AZ recommendation that the Governor advocate for a federal cap-and-trade program
 - Example: NM recommendation that the Legislature create a “Renewable Energy Transmission Authority”
 - Example: NM recommendation for additional study of carbon capture and sequestration in oil and gas operations
 - Cross-Cutting TWG options are rarely quantified

Guidelines

- Program-level caveats
 - Any assumptions regarding specific sources and uses of funds for implementation are described in the policy option template
 - Detail for policy planning recommendations is typically less than for actual program implementation
 - Policy planning recommendations do not involve costs/savings analysis for individual entities, and instead is for sectors and sub-sectors

Steps

1. Identify priority policy options for analysis
2. Define key parameters of analysis (initial policy design or “straw proposals”)
 - Timing, level of effort, implementation parties & mechanisms
3. Identify approach to analyzing each option
 - Data sources, methods, key assumptions
 - Define baseline assumptions, if needed beyond I&F
 - Policy option will be incremental to this

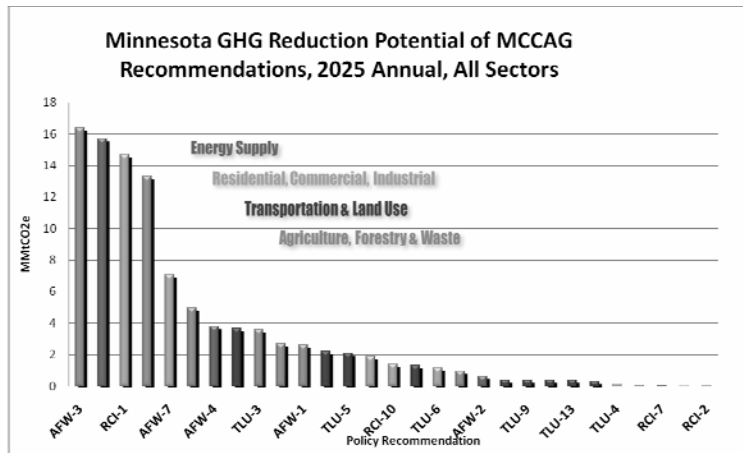
Steps

4. Select analytical approach, produce initial results for individual policy options
 - First round of analysis may or may not be sufficient for final decisions
5. Review and revise analysis as needed
 - Revisions include policy design and analysis

Steps

6. Analyze aggregate or integrated effects of actions
 - Remove double-counting and overlap among policy options (intra-TWG and inter-TWG)
 - Reconcile any inconsistencies in assumptions, methods, data sources
7. Identify needs for subsequent follow-on assessments, supplemental analyses, etc.

Example: Minnesota GHG Reduction Potential by Policy Option

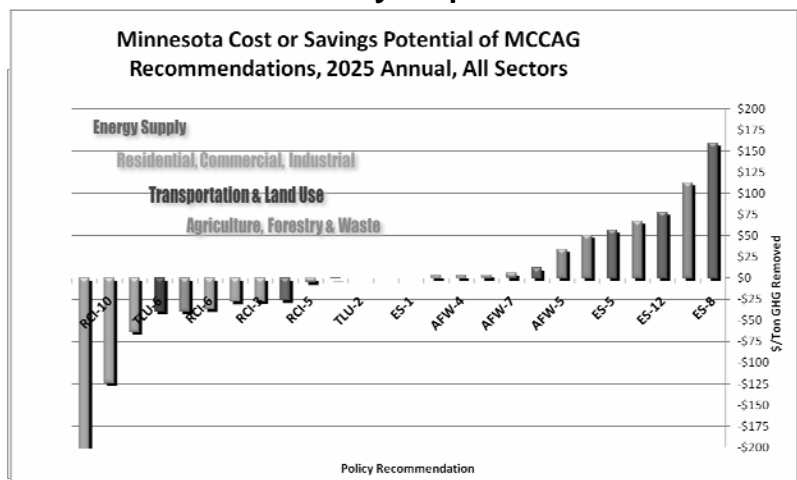


February 5, 2009

www.climatestrategies.us

53

Minnesota \$/Ton GHG Removed by Policy Option

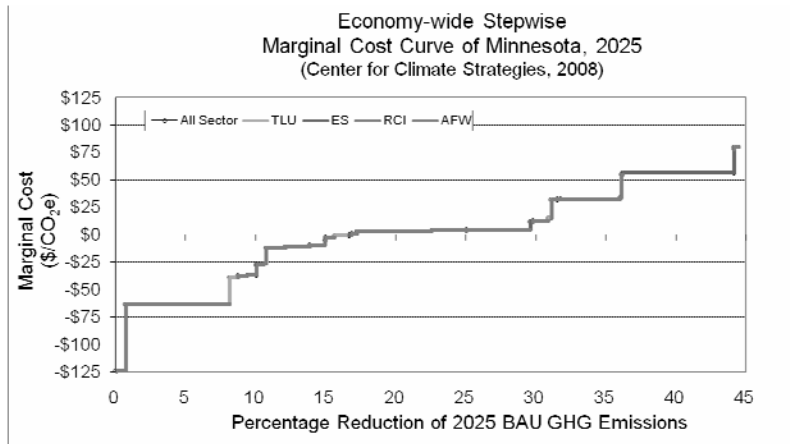


February 5, 2009

www.climatestrategies.us

54

Minnesota GHG Reduction Cost Curve, All Sectors

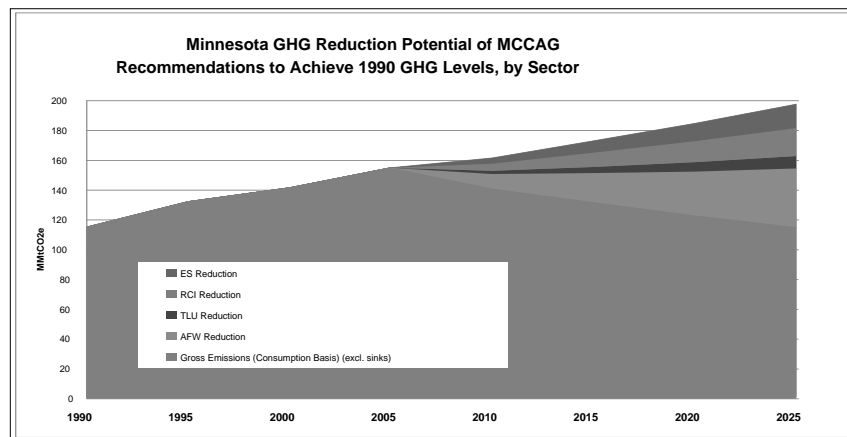


February 5, 2009

www.climatestrategies.us

55

Minnesota Aggregate Results



February 5, 2009

www.climatestrategies.us

56

Statewide GHG Reduction Goals and Targets

Statewide GHG Reduction Goals and Targets Types of Approaches

- Gross vs. Net (Sinks)
- Production vs. Consumption
- Levels
- Timing

Summary by State GHG Reduction Goals and Targets

State, Province, or Region	1990-2020 GHG Forecast	State Goals	Climate Plan Coverage
Arizona	144%	• 2000 levels by 2020; 50% below by 2040 • 15% below 2005 levels by 2020 (WCI)	106%
California	40%	• E.O.: 2000 level by 2010; 1990 by 2020; 80% below 1990 by 2050 • AB-32: 1990 levels by 2020 • 15% below 2005 levels by 2020 (WCI)	100%
Colorado	71%	• 20% below 2005 level by 2020; 80% below by 2050	75%
Connecticut	32%	• 1990 level by 2010; 10% below by 2020; 75% below by 2050	100%
Florida	?	• 2000 level by 2017; 1990 level by 2025; 80% below 1990 by 2050	?
Massachusetts	?	• 1990 level by 2010; 10% below by 2020; 75% below by 2050	?
Maine	34%	• 1990 level by 2010; 10% below by 2020; 75% below by 2050	100%
Maryland	42%	• Recommended: 10% below 2006 levels by 2012; 15% below 2006 levels by 2015; 25% (enforceable)-50% (science based) below 2006 levels by 2020; 90% below 2006 levels by 2050.	100%
Minnesota	48%	• Next Generation Energy Act: 15% below 2005 levels by 2015; 30% by 2025; 80% by 2050	TBD
Montana	30%	• 1990 level by 2020; 80% below by 2050 (consumption & production)	89%-105%
North Carolina	113%	?	TBD
NEG/ECP	?	• 1990 level by 2010; 10% below by 2020; 75% below by 2050	TBD

February 5, 2009

www.climatestrategies.us

59

Summary by State GHG Reduction Goals and Targets

State, Province, or Region	1990-2020 GHG Forecast	State Goals	Climate Plan Coverage
New Jersey	28%	• E.O. 54: 1990 level by 2020; 80% below 2006 levels by 2050	TBD
New Mexico	65%	• 2000 level by 2012; 10% below by 2020; 75% below by 2050 • 15% below 2005 levels by 2020 (WCI)	133%
New York	24%	• 5% below 1990 by 2010	?
Ontario	?	• 6% below 1990 by 2014	n/a
Oregon	61%	• 10% below 1990 by 2020; 75% below 1990 by 2050 • 15% below 2005 levels by 2020 (WCI)	85%
Puget Sound	37%	• 1990 level by 2010; 10% below by 2020; 75% below by 2100	100%
Rhode Island	35%	• 1990 level by 2010; 10% below by 2020; 75% below by 2050	100%
South Carolina	87%	• Recommended: 5% below 1990 levels by 2020	99%
Vermont	26-59%	• 25% below 1990 levels by 2012; 50% below 1990 by 2028; 75% below by 2050	TBD
Utah	95%	• 15% below 2005 levels by 2020 (WCI)	TBD
Washington	40%	• E.O.: 1990 levels by 2020; 25% below 1990 by 2035; 50% below 1990 by 2050 • 15% below 2005 levels by 2020 (WCI)	TBD
WCI	54%	• 15% below 2005 levels by 2020 (AZ, NM, CA, OR, UT, WA, BC, MB)	TBD
British Columbia	69%	• 15% below 2005 levels by 2020 (WCI)	TBD
Manitoba	TBD	• 15% below 2005 levels by 2020 (WCI)	TBD

February 5, 2009

www.climatestrategies.us

60