Maryland Climate Change Commission Mitigation Working Group

Residential, Commercial & Industrial Technical Work Group

Teleconference #6

November 6, 2007

Maryland Department of the Environment
Maryland Energy Administration
Center for Climate Strategies

Today's Agenda

- Call to order and roll call
- Review and approval of prior call summary
- Review of stepwise process
- Agenda, date and time for next meeting
- Update from MWG meeting
- Review of Early Action Items
- Review of policy option template
- Assign work group volunteers for the development of straw proposals
- Public Input and announcements

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

TWG Roles

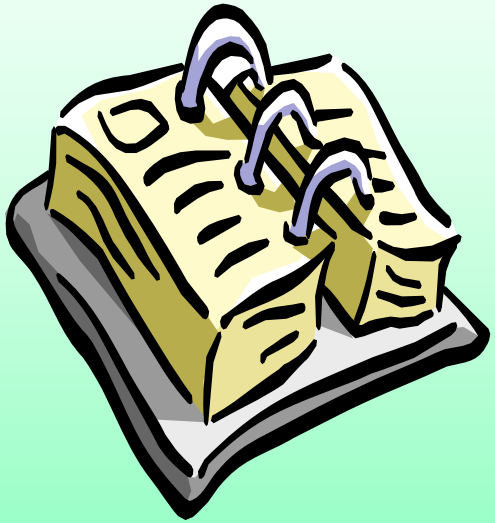
- Assist MWG
  - Identify potential state actions
  - Identify potential priorities for analysis
  - Identify Fast Track Options
  - Suggest straw policy designs
  - Assist with analysis and review of options
  - Assist with development of policy alternatives
  - Assist with input to and review of MWG reports
  - Review and assist with the state GHG inventory and forecast

Key Dates

Date	Meeting
October 26, 2007	4th MWG Meeting
November 2007	Interim Report RCI TWG Meeting, 11/26/07
November 30, 2007	5th MWG Meeting
February 2007	Tentative 6th MWG Meeting
March 2007	Possible 7th MWG Meeting
April 20, 2007	Final Report
Between MWG Meetings	Technical Working Group (TWG) Calls and/or Meetings

Next TWG Meeting

- Proposed Date and Time
  - November 26, 2007, 12:00 PM–5:00 PM, location TBD, will decide on this TWG call
- Agenda:
  - Review straw proposals and modify, as needed
  - Approve straw proposals for forwarding to the MWG



TWG Next Steps

- Today:
  - Review Early Action Items
  - Review MWG priority policy options
  - Assign volunteers and a lead for each of the priority policy options
- After this meeting:
  - Volunteers collaborate to draft the first two sections of the policy options template
  - Volunteer leads return straw proposals to CCS by Nov. 16
  - CCS edits and posts the straw proposals for the meeting on Nov. 26
- Next meeting:
  - Review straw proposals and modify, as needed
  - Approve straw proposals for forwarding to the MWG

Update from Oct. 26 MWG Meeting

- Approved all policy options submitted
- Added DSM for Natural Gas to RCI-2
- Combined RCI-4 (Improved Design and Construction in New and Existing State and Local Government Buildings) and RCI-5 (same, for appliances and lighting)
- Transferred RCI-8, “Smart Growth” to TLU (RCI will review the analysis for the energy component)
- Add new policy option: phase out of incandescent light bulbs

MD GHG Reduction Goals

- **2015**
  - 10% below 2006 levels by 2012
  - 15% below 2006 levels by 2015 (consumption based)
- **2020**
  - 25-50% below 2006 levels (min. to aspiration)
- **2050**
  - 90% below 2006 levels (80% from 1990)
- **2100** - Zero emissions = carbon neutral.
- Review every 4 years

Early Action Items

- RCI TWG members should review the language contained in the policy descriptions, esp those recommended for early actions, as these will be the basis for the November 14th report to the Governor and MD General Assembly. Please comment if you see any need for changes to them.

Policy Design Proposals

- MWG identifies about 50 draft potential priority options for further development
- TWGs refine policy descriptions and develop initial policy option designs ("straw proposals")
  - Straw Proposal Template – current language provided as starting point
  - Volunteers draft policy description and policy design (including goals, timing, and coverage of parties)
  - Outside experts and research can be used to craft these straw proposals
- MWG reviews, modifies and approves basic straw proposals at November 30 meeting
- TWG refines straw proposals for quantification and cost/benefit analysis
- CCS quantifies and presents for review
- MWG revisits list of potential priorities, as needed

Priority Policy Options

Option No.	Draft Policy Option Name	Straw Proposal Volunteers
RCI-1	Improved Building Codes for Energy Efficiency (2.1)	
RCI-2	Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity and Natural Gas (including expansion of existing programs and peak load reduction) (1.1, 1.2)	
RCI-3	Low-cost loans for energy efficiency (1.5)	
RCI-4	Improved design, construction, appliances, and lighting in new and existing state and local government buildings, "Government Lead-by-example" (2.3, 3.4)	
RCI-5	Energy Efficiency and Environmental Impacts Awareness and Instruction in School Curricula (4.2)	
RCI-6	Promotion and Incentives for Improved Design and Construction (e.g. LEED, green buildings, or minimum % improvement better than code) in the Private Sector (2.2)	
RCI-7	More Stringent Appliance/Equipment Efficiency Standards *(state-level, or advocate for regional or federal-level standards) (3.1)*	
RCI-8	Rate structures and Technologies to Promote Reduced GHG Emissions (including inverted block rates) (5.3)	
RCI-9	GHG or Carbon Tax (7.2)	
RCI-10	White Roofs, Rooftop Gardens, Landscaping (including Shade Tree Programs), and solar electric panels. (8.1)	
RCI-11	Energy Efficiency Resource Standard (EERS)	
RCI-12	Phase out incandescent light bulbs in state (3.3)	

Policy Option Template

- Policy Description (Concept)
- Policy Design (Goals, Timing, Coverage)
- Implementation Methods
- 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

Example from Colorado: RCI-1. Expanded DSM

- Policy Description
  - This option focuses on improving energy efficiency through increased investment in demand-side management programs. Energy efficiency is the lowest cost resource for reductions in electricity and natural gas use by the residential, commercial and industrial sectors. There is a long track record of cost effective energy efficiency initiatives, typically called demand side management (DSM), at the local, state and regional levels in areas around the country. There is vast potential for improving the energy efficiency of homes, appliances, businesses and industry in Colorado.
- Policy Design
  - Goals: 1%/year reduction in energy use in all sectors relative to a Business-As-Usual (BAU) forecast
  - Timing: Starting in 2008, through 2020 with five year ramp-in (full 1% by 2013)
  - Parties Involved: Entire state's gas and electric producers, suppliers and customers

Example from Colorado (cont.)

- Implementation Mechanisms
  - Both electric and natural gas DSM programs are designed to be consistent with the implementation mechanisms established by HB 07-1037. However, because roughly 40 percent of natural gas customers are purchasing gas on wholesale markets, this policy option would require new legislation that requires wholesale gas customers to fund their own gas efficiency measure.
  - Municipal utilities and cooperatives would have the option of participating in a System Benefits Charge (SBC).

Example from Colorado (cont.)

- Related Policies/Programs in Place
  - Several investor owned utilities (IOUs), municipal utilities (muni's) and rural electric cooperatives have established DSM policies.
  - House Bill 07-1037 will facilitate and expand energy efficiency programs implemented by natural gas utilities (IOUs only) in Colorado. The bill would roughly double the energy and demand savings targets of IOUs from existing levels.
  - In pursuit of a "settlement agreement" between Colorado stakeholders and the Colorado PUC, Xcel Energy is committed to achieve 100 GWH/yr of energy savings during the years 2006–2013.
- Type(s) of GHG Reductions
  - Reduction in GHG emissions (largely CO2) from avoided electricity production or on-site fuel combustion

Example from Colorado (cont.)

- Data Sources, Methods and Assumptions
  - *Electricity*
    - Estimated DSM potential:
      - KEMA 2006. Colorado DSM Market Potential Assessment, March 31, 2006
      - The Southwest Energy Efficiency Project (SWEEP) 2002. THE NEW MOTHER LODE: The Potential for More Efficient Electricity Use in the Southwest, November, 2002
    - Cost of saved energy and other energy efficiency policy and program assumptions: Western Governor's Association (WGA) 2006. The Energy Efficiency Task Force Report to the Clean and Diversified Energy Advisory Committee, January, 2006
    - Electricity price forecast by sector: KEMA 2006.
  - *Gas …*

Example from Colorado (cont.)

Quantification Methods

- Regional studies of gas and electricity efficiency potential and analyses/experience in other western US states (best practices) were used to estimate efficiency savings per $ spent on programs, which in turn were used to calculate the spending required to reach the energy use reduction target.

Example from Colorado (cont.): Data Sources, Methods and Assumptions

Parameter	Value	Notes
Avoided cost of natural gas	$6.3/ MMBtu	Based on AEO 2007 for Mountain region
Avoided cost of electricity	$56/MWh	Sales-weighted average, includes energy & capacity costs. KEMA 2006.
Assumed average measure lifetime	13 years	Lifetime of an efficiency program varies significantly depending on the type of program, which could range from 8 to 30 years. Measures associated with building envelopes typically last longer, while appliances last shorter.
Real discount rate for levelized cost of natural gas savings	5.00%	Consistent with utility operation of program
Cost of Saved Electricity	2.5 cents/kWh (2005$ levelized)	From WGA 2006. $25/MWh of saved energy is slightly higher than other estimates reviewed but is reasonable given the timeframe for this analysis. Other sources identified include: • City of Fort Collins Utilities implements DSM at $11/MWh of saved energy (Phelan, John 2007. "City of Fort Collins Utilities Demand Side Management") • NorthWestern Energy: $21/MWh • SWEEP (2002): $20/MWh

Example from Colorado (cont.): Estimated GHG Savings and Costs per MtCO2e

Length of ramp-in (years)	GHG Reductions ($MMtCO_2e$)			Gross Costs (Million $)	Gross Benefits (Million $)	Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)
	2012	2020	Total 2007-2020				
7	1.0	6.8	34.7	$591	–$1,690	–$1,098	–$32
5	1.4	7.5	41.4	$711	–$2,030	–$1,320	–$32
3	2.2	8.3	50.1	$871	–$2,489	–$1,617	–$32
1	2.8	8.9	56.3	$987	–$2,819	–$1,831	–$33

Example from Colorado (cont.)

- Additional Benefits and Costs
  - Reducing dependence on imported fuel
  - Reducing energy price increases and volatility
  - Reducing peak demand and improving the utilization of the electricity system
  - Supporting local businesses and stimulating economic development
  - Enabling avoidance of the most controversial energy supply projects
  - Reducing pollutant emissions by power plants and improving public health
  - …
- Key Uncertainties
  - Impact of legislation
- Feasibility Issues
  - Difficulty of implementing 1% per year in the early years of the program, esp. for rural coops or munis with no existing DSM
- Status of Group Approval
  - Unanimous consent
- Level of Group Support
  - A number of CAP members qualified their affirmative votes based on a range of concerns such as the mandatory structure of this policy, the attainability of the goal, and the goal not being ambitious enough.
- Barriers to Consensus
  - None identified.

Public Input, Announcements