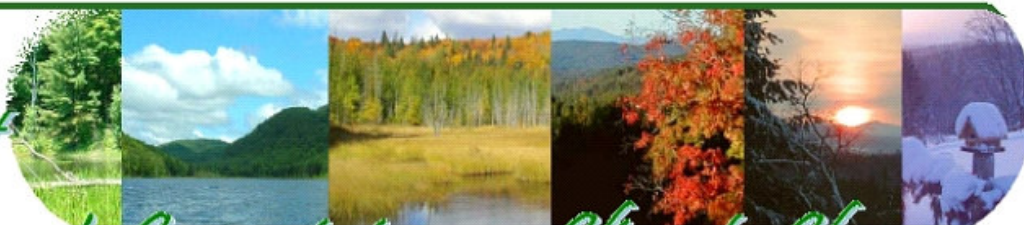




**V**ermont

*Governor's Commission on Climate Change*



# Energy Supply and Demand Technical Work Group Teleconference Meeting #9

June 29, 2007



**VERMONT**  
ENVIRONMENTAL CONSERVATION



CENTER FOR CLIMATE STRATEGIES

# Today's Agenda

- Call to order, roll call, and approval of prior meeting summary
- Discussion of draft policy descriptions and analysis: focus on Plenary group feedback
- Agenda, date and time for next meeting
- Call to the public
- Announcements

# ESD Policy Options

Option #	Option Name
ESD-1	Evaluation and continuation / expansion of existing DSM for electricity and natural gas
ESD-2	Evaluation and expansion of DSM to Other Fuels
ESD-3	Building Efficiency Codes, Training, Tracking
ESD-4	Evaluate Potential for Contracting Nuclear Power
ESD-5	Support for Combined Heat and Power
ESD-6	Incentives and/or Mandate for Renewable Electricity
ESD-7	GHG Cap & Trade and/or GHG tax
ESD-8	Incentives for Clean Distributed Technologies for Electricity or Heat
ESD-9	Wind-specific support measures
ESD-10	Hydro-specific support measures

# Provisional Summary Results

	Mitigation Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value (Million \$) 2008-2030	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Level of Support
		2012	2028	Total 2008-2030			
ESD-1	Evaluation and continuation / expansion of existing DSM for electricity and natural gas	0.66	1.68	25.11	(\$274)	(\$10.9)	
ESD-2	Evaluation and expansion of DSM to Other Fuels	0.12	0.59	7.49	(\$172)	(\$23.0)	
ESD-3	Building Efficiency Codes, Training, Tracking	<i>See ESD-2</i>					
ESD-4	Evaluate Potential for Contracting Nuclear Power						
	(scenario 1)	0.87	1.30	24.3	\$0	\$0.0	
	(scenario 2)	0.43	0.65	12.1	\$0	\$0.0	
ESD-5	Support for Combined Heat and Power	0.06	0.23	3.05	(\$33)	(\$11)	
ESD-6	Incentives and/or Mandate for Renewable Electricity						
	(scenario 1)	0.08	0.55	6.5	\$9	\$1.4	
	(scenario 2)	0.20	1.11	13.02	2.60	0.20	
ESD-7	GHG Cap & Trade and/or GHG tax	<i>pending</i>					
ESD-8	Incentives for Clean Distributed Technologies for Electricity or Heat						
	Natural Gas fuel switching	0.08	0.13	2.51			
	Solar thermal water heating	0.05	0.22	2.74	\$126	\$46.1	
ESD-9	Wind-specific support measures						
	(New wind, scenario 1)	0.03	0.22	2.58	\$11	\$4.3	
	(New wind, scenario 2)	0.08	0.44	5.12	\$30	\$5.9	
ESD-10	Hydro-specific support measures						
	(Continued large hydro, scenario 1)	0.02	1.28	19.9	\$0	\$0.0	
	(Continued large hydro, scenario 2)	0.01	0.64	9.9	\$0	\$0.0	
	(New hydro, scenario 1)	0.01	0.08	0.97	(\$4)	(\$4.3)	
	(New hydro, scenario 2)	0.03	0.17	1.95	(\$12)	(\$6.0)	
	<b>Total</b>						
	<b>Scenario 1 (generation of nuclear and hydro at historic levels)</b>	1.88	5.77	88.52	(\$311)	(\$3.5)	
	<b>Scenario 2 (generation of nuclear and hydro at 50% historic levels)</b>	1.60	5.26	76.00	(\$351)	(\$4.6)	

# ESD-1: electricity DSM

- Mention (qualitatively) that reduced demand may have cost implications (as lower consumption is shared across fixed costs).
- Get new AESC study results (to be finalized July 12). Also, use DPS costs for distribution.
- Clarify that this assumes no technological advances. (Also for ESD-2.)

# ESD-2: fuels DSM

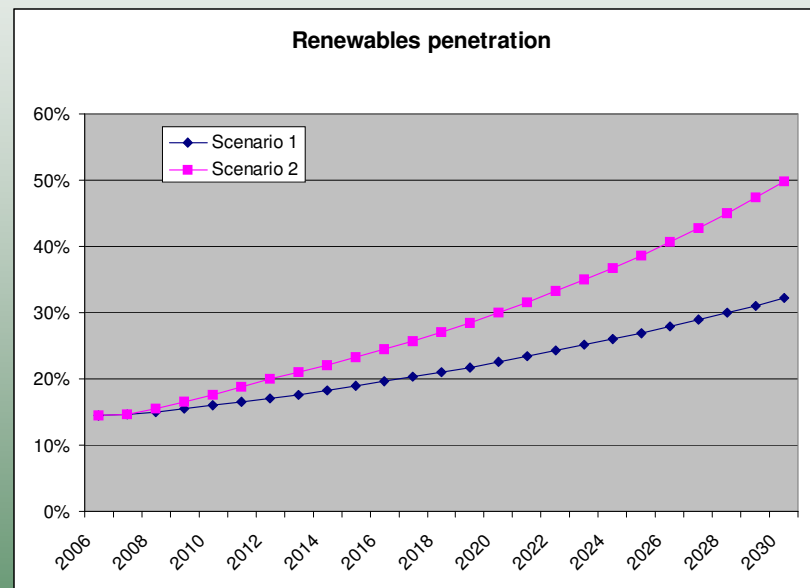
- For oil costs use retail prices net of taxes.
- Allocate benefits to both ESD-2 and ESD-3. Attribute existing buildings savings to ESD-2, and new building savings to ESD-3. (Don't want to give impression that everything is results of DSM programs.) Also, make sure that language does not underemphasize the importance of the non-DSM (i.e. ESD-3) measures.
- Assume higher rate of efficiency in new builds.
- New proposed language for Architecture2030-type standard (consistent with architectural preservation concerns).

# ESD-4: nuclear power

- Final decision on cost-adder – if any - for ESD-4, 6, 10.

# ESD-6, 9,10: Renewables

- Consider more rapid ramp-up of renewables.
  - (scenario 1: ~ 2000 GWh from 900 GWh)
  - (scenario 2: ~3000 GWh from 900 GWh)



- Review and finalize techno-economic assumptions (see p. 28 of Policy Descriptions document)

# ESD-6,(9,10): renewables

<b>Additional renewables for 20% RPS in 2015</b>			
	%	GWh	MW
<b>Wind</b>	3.3%	198	69
<b>Hydro</b>	1.3%	75	17
<b>Biomass</b>	3.8%	228	35

<b>Additional renewables for 45% RPS in 2030</b>			
	%	GWh	MW
<b>Wind</b>	13.7%	801	277
<b>Hydro</b>	5.2%	304	69
<b>Biomass</b>	15.8%	922	140

# ESD-7: GHG Cap/tax

- To be completed last, with design criteria being to generate sufficient revenue to fund mitigation options.
- For which costs is it most important to generate revenue?
  - 2012 emissions: ~ 6 MtCO<sub>2</sub>
  - 2028 emissions: ~ 2-4 MtCO<sub>2</sub>

# ESD-8a: natural gas expansion

- Expansion to:
  - Middlebury, Rutland, Bennington, Brattleboro, Newport, Montpelier
- Costs: TBD

# ESD-9: wind

- (as per earlier discussion on adders and techno-economic assumptions)

# ESD-10: hydro

- (as per earlier discussion on adders and techno-economic assumptions)

# Policy Template



**Policy Description:**

**Policy Design:**

- **Goals:**
- **Timing:**
- **Coverage of Parties:**

**Implementation Methods:**

**Related Policies/Programs in Place:**

**Estimated GHG Savings and Costs per tCO<sub>2</sub>e:**

- **Data Sources:**
- **Quantification Methods:**
- **Key Assumptions:**

**Key Uncertainties:**

**Additional Benefits and Costs:**

**Feasibility Issues:**

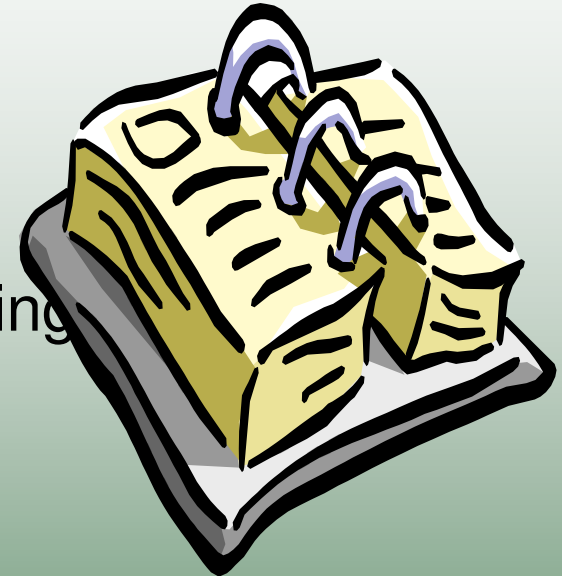
**Status of Group Approval:**

**Level of Group Support:**

**Barriers to Consensus:**

# Next Steps

- Finalize all assumptions
- Iterate with TWG as necessary.
- Distribute for final Plenary Group Meeting #7: July 26, 2007
- Finalize report with DEC



Note: A document with the full schedule for remainder of the process posted on the Energy TWG page...  
[www.vtclimatechange.us/Energy\\_Supply.cfm](http://www.vtclimatechange.us/Energy_Supply.cfm)

# Public Input, Announcements