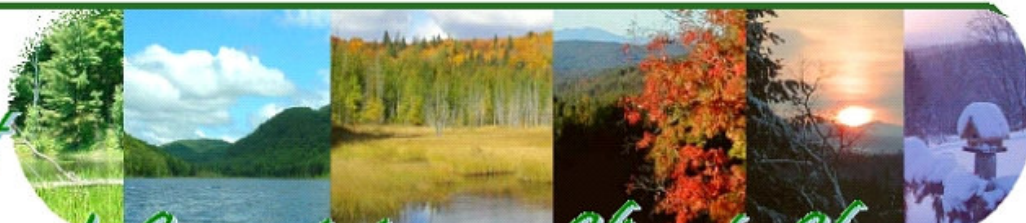




Vermont



Governor's Commission on Climate Change

Energy Supply and Demand Technical Work Group Teleconference Meeting #7

April 30, 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
- 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

Discussion quantification of ESD-6,9,10

Assumptions:

- *Sufficient to eliminate reliance on fossil sources by 2030.*
- *Rely primarily on wind, hydro, biomass*
- *Current techno economics (no assumptions of tech advances)*
- *AESC avoided costs*

ESD-6, 9, 10: targets

- Targets:
 - 2015: 20%
 - 2030: 30% (enough to back off all fossil electricity)
- (Note: 2006 renewables are at 15%)
- Of this, additional renewables are distributed as:
 - Wind: 40%
 - Hydro: 30%
 - Biomass: 40%

ESD – 6,9,10: parameters

		Wind	Hydro	Biomass
Capital Cost	\$/kW	\$ 1,194	\$ 3,000	\$ 1,833
Transmission	\$/kW	\$ 80	\$ 80	\$ 80
Lifetime	Years	20	25	30
Capital Recovery Factor	%	11.7%	11.0%	10.6%
Levelized Cost	\$/kW-yr	149.6	339.3	202.9
Fixed O&M	\$/kW-yr	\$ 27.6	\$ 14.0	\$ 50.2
Fixed Costs	\$/kW-yr	\$ 177.2	\$ 353.3	\$ 253.1
Capacity Factor	%	35%	50%	75%
LevCapCost	\$/MWh	\$ 57.81	\$ 80.67	\$ 38.53
Variable O&M	\$/MWh	\$ -	\$ 4.00	\$ 3.0
Fixed+Variable Costs	\$/MWh	\$ 57.8	\$ 84.7	\$ 69.9
Fuel Cost	\$/MBtu			\$ 3.19
Heat Rate	Btu/kWh			\$ 8,911.0
Fuel Gen Cost	\$/MWh			\$ 28.5

ESD-6,9,10: resources

Biomass: ~1.5 million dry tons/yr (DPS/BERC study prelim results)

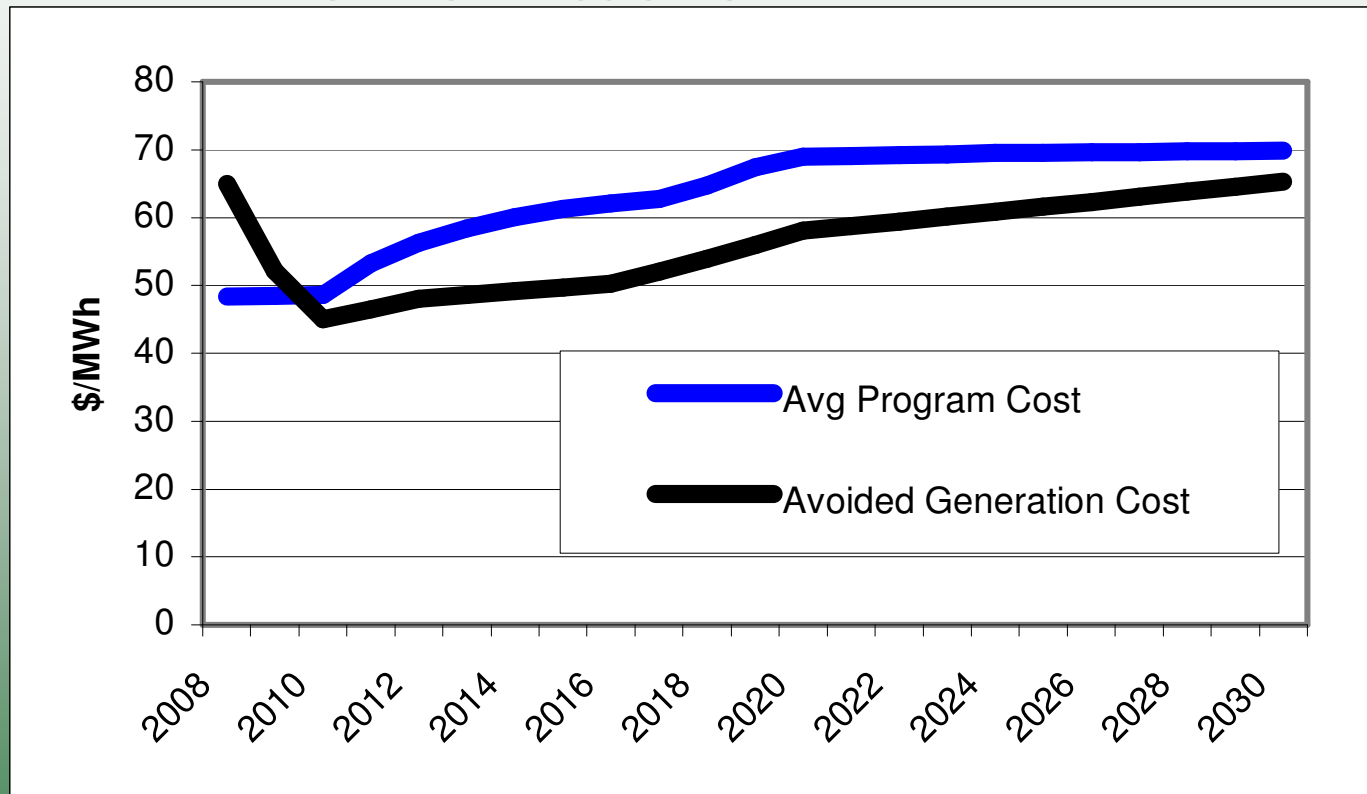
Wind: 810 MW @ < 5.6 cents/kWh (PERI study)

Hydro: 50 MW = 1/2 of additional power available from existing impoundments (INL study, awaiting ongoing study)

ESD-6,9,10: prelim results

Additional renewables for 20% RPS in 2015			
	%	GWh	MW
Wind	2.3%	149	49
Hydro	1.2%	75	17
Biomass	2.3%	149	23
Additional renewables for 30% RPS in 2030			
	%	GWh	MW
Wind	6.6%	451	147
Hydro	3.3%	225	51
Biomass	6.6%	451	69

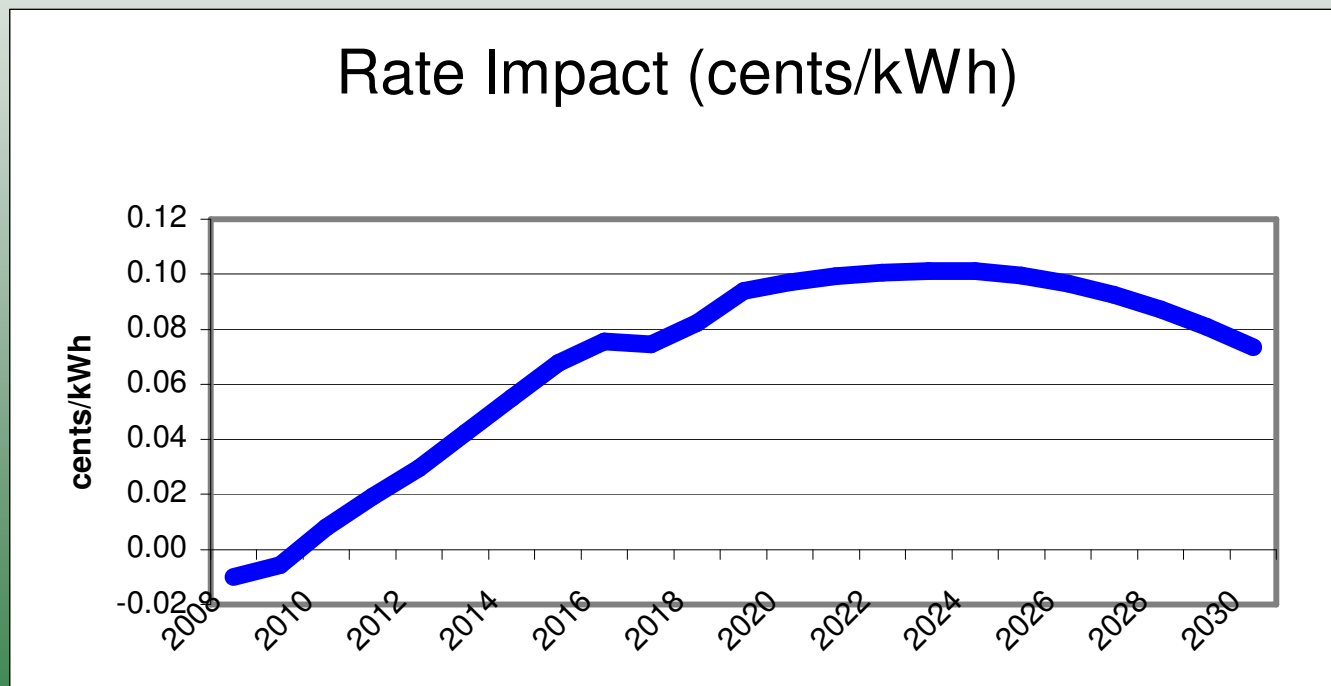
ESD-6,9,10: program costs per renewable MWh



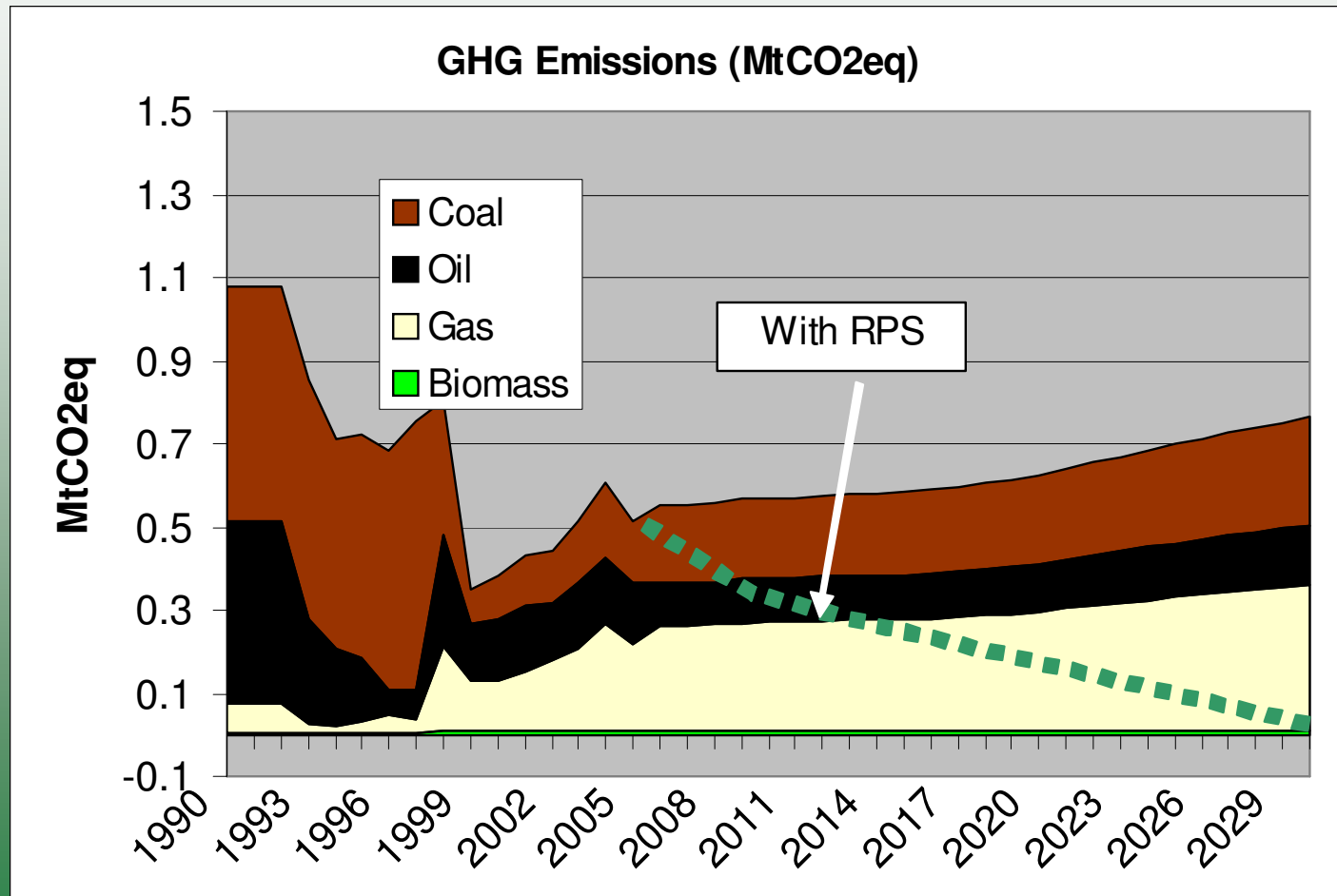
- NPV net costs: \$75 million (2007-2030)

ESD-6,9,10: rate impact

- Rate impact ≤ 0.1 cent/kWh



ESD-6,9,10: emission impacts



Status of other options

- ESD-1,2,3: In progress (assessing savings potential and costs.)
- ESD-4: In progress (assessing cost of increasing reliability)
- ESD-5: In progress (assessing CHP potential)
- ESD-7: not to be quantified. Instead, explanation of options.
- ESD-8: assessing potential (solar water heaters, shifting to gas/biomass)

Policy Template



Policy Description:

Policy Design:

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

Implementation Methods:

Related Policies/Programs in Place:

Estimated GHG Savings and Costs per tCO₂e:

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

Key Uncertainties:

Additional Benefits and Costs:

Feasibility Issues:

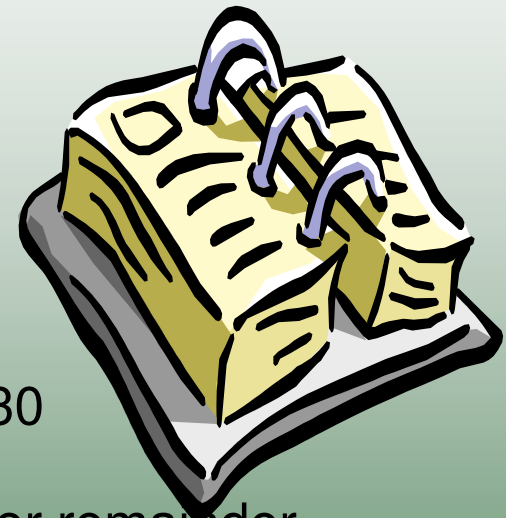
Status of Group Approval:

Level of Group Support:

Barriers to Consensus:

Next TWG Call

- Agenda:
 - Discuss Draft Policy Descriptions and provisional analysis
- Scheduled:
 - Thursday June 7, 2007 from 1:30 - 3:30



Note: A document with the full schedule for remainder of the process posted on the Energy TWG page...

www.vtclimatechange.us/Energy_Supply.cfm

Public Input, Announcements