



V
Vermont



Governor's Commission on Climate Change

www.vtclimatechange.us

Catalog of State-Level GHG Reduction Policy Options

December 15, 2006

Prepared by the Center for Climate Strategies (CCS) for the Governor's Commission on Climate Change (GCCC), its Plenary Group (PG), and Technical Work Groups (TWGs) based on actions undertaken or considered by US states.

Tables of Policy Options

Table	Sectors Covered
1	Residential, Commercial, Industrial (RCI)
2	Energy Supply (ES)
3	Transportation and Land Use (TLU)
4	Agriculture, Forestry and Waste Management (AFW)

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Cross Cutting Issues - Reporting, Registries, Education (CC)

Key To Future Rankings of Options in the Tables that Follow:

Potential Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
High (H): At least 100,000 Metric Tons (MT) carbon dioxide equivalent (CO ₂ e) per year by 2020 (~1% of emissions)	High (H): \$50 per Metric Ton CO ₂ e (MTCO ₂ e) or above
Medium (M): From 10,000 to 100,000 MT CO ₂ e per year by 2020	Medium (M): \$5-50/MTCO ₂ e
Low (L): Less than 10,000 MT CO ₂ e per year by 2020, or 100,000 MT CO ₂ e by 2050	Low (L): Less than \$5/MTCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
<u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.	

Definition of “Priorities for Analysis”:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

Notation of Options:

Options marked with an asterisk (*) indicate options that are at least partially “base case” policies, i.e., that have been considered or undertaken at some level in Vermont.

Table 1 - Residential, Commercial, Industrial (RCI)

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
RCI-1	ENERGY EFFICIENCY PROGRAMS, FUNDS, AND GOALS					
1.1.	Demand Side Management (DSM) Programs for improving efficiency in electricity, natural gas, propane, fuel oil *					<i>E.g., Efficiency Utility mechanism, (Efficiency VT, and Burlington Electric for electricity, and Vermont Gas for natural gas), analogous entity for other fuels. (Note “all fuels” study underway by DPS.)</i>
1.2.	Energy Efficiency Funds (e.g. Public Benefit Funds) administered by State agency, utility, or 3rd party (e.g. Energy Trust) for funding efficiency activities					A portion of VT Yankee’s uprate created a fund for electricity efficiency projects. This option includes fuels as well as electricity.
1.3.	Energy Efficiency Requirements (e.g. Utility Savings Goals or Energy Portfolio Standards) legally binding on utility*					Has been debated by legislature, but not yet acted upon.
1.4.	Market transformation and technology development programs					These programs go beyond typical DSM programs and aim for long-term shift in market choices and consumer behavior.

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RCI-2	APPLIANCE STANDARDS					
2.1.	Expansion of State-level Appliance Efficiency Standards *					Done by legislature
2.2.	Support for Federal-level Appliance Efficiency Standards					
2.3.	Collaborate regionally to have consistent building and appliance standards across borders					
RCI-3	BUILDINGS					
3.1.	Improved Building Codes *					Initiatives at the Department of Public Service (DPS)
3.2.	Promotion and Incentives for Improved Design and Construction (e.g. LEED ¹ , green buildings)					E.g., through Vermont's 5-Star rating
3.3.	Training and Education for Builders, Contractors, Building Managers, Enforcement Officials and others.					
3.4.	Building Commissioning and Recommissioning, including Energy Tracking and Benchmarking					

¹ LEED = Leadership in Energy and Environmental Design, a national building certification program.

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3.5.	Reduction of Emissions from Diesel Engines Used in New Construction Developments *					Have initiated limited pilot work with VTrans
3.6.	Periodic building energy use assessments and disclosure policy.					E.g., assessment at time of tax reassessments and disclosure at time of sale. (See VPIRG report)
RCI-4	EDUCATION AND OUTREACH					
4.1.	Consumer education programs*					<i>Efficiency Vermont / DPS</i>
4.2.	Introduce in School, College, and University Curricula					Check with DPS Service and the Department of Education
RCI-5	PRICING AND PURCHASING					
5.1.	Green Power Purchasing *					Available to customers from Green Mountain Power (GMP) and Central Vermont Public Service (CVPS)
5.2.	Bulk Purchasing Programs for Energy Efficiency or other Equipment (Public or Private sector)					
5.3.	Net Metering Policies *					Adopted by legislature
5.4.	Time of Use Rates					

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RCI-6	TECHNOLOGY-SPECIFIC POLICIES					
6.1.	Promotion and Incentives for Renewable Energy Applications (Solar roofs, water heaters, etc.) *					Limited availability from DPS
6.2.	Support for Combined Heat and Power from eligible sources					A source is eligible if it satisfies criteria as defined defined in VSA 2005/61. 802 text ² .
6.3.	Waste Energy Recovery (via waste heat, pressure drops, or tail gases)					
6.4.	Appliance Recycling/Pick-Up Programs *					Services through Solid Waste Districts
6.5.	White Roofs, Rooftop Gardens, and Landscaping (including Shade Tree Programs)					
6.6.	Target specific appliances / buildings / processes that are the least energy efficient with incentives for improvement, replacement programs or standards, product-specific retailer training, marketing and promotion, education, etc.					Focus on specific end-uses / technologies: e.g., window AC units, lighting, water heating, plug loads, networked PC management, power supplies, motors, pumps, boilers, etc.

² See www.leg.state.vt.us/statutes/fullsection.cfm?Title=30&Chapter=089&Section=08002

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RCI-7	NON-ENERGY EMISSIONS (HFCS, PFCS, SF6, CO2 PROCESS EMISSIONS)					
7.1.	Participation in Voluntary Industry-Government Partnerships *					CVPS participates in EPA's voluntary SF6 program
7.2.	Require process changes / optimization where there are energy saving opportunities (e.g., leak reduction/capture, recovery and recycling of process gases)					
7.3.	Use of Alternative Gases (other HFCs, hydrocarbon coolants/refrigerants, etc.) *					Done by the legislature in the 1990s
RCI-8	GHG EMISSIONS-SPECIFIC GOALS AND POLICIES					
8.1.	Support for switching to less carbon-intensive fuels (coal and oil to natural gas or biomass)					This measure focuses on displacing oil, especially for residential heating, as coal is not a major RCI sources in Vt ³ . Includes expansion of natural gas infrastructure, and biomass fuel supply.
8.2.	Industry-Specific Emissions Cap and Trade Programs *					Regional Greenhouse Gas Initiative (RGGI)
8.3.	Voluntary emissions targets					
8.4.	Small-source Aggregation					
8.5.	Negotiated Emissions or Energy Savings Agreements					Voluntary agreements with private sector

³ See memo from Don Gilbert dated Dec 1, 2006 posted on website.

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RCI-9	OTHER					
9.1.	Government Agency Requirements and Goals (including procurement) *					Climate Neutral Working Group (CNWG) established by Executive Order #14-03
9.2.	Focus on specific market segments: existing homes (weatherization), new construction, apartments, low income, etc. *					State weatherization program for existing homes / Act 250 for new homes
9.3.	Reinvestment Fund					Revolving fund for investments in energy efficiency.
9.4.	Municipal Energy Management *					New initiative from <i>Efficiency Vermont</i>
9.5.	Focus on Small and Medium Enterprises (SMEs)					
9.6.	Industrial ecology/ by-product synergy					Organization of industries to optimize use of by-products, energy cascades, etc.
9.7.	Industrial and Commercial Energy Efficiency Audits					

Table 2 - Energy Supply (ES)

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
ES-1	RENEWABLE ENERGY					
1.1.	Environmental Portfolio Standard (renewables and energy efficiency) with renewable energy credit trading					Proposed by Senate, did not pass as RPS.. Could be separate renewable and energy efficiency standards. (Should be designed to provide incentive for maintaining existing renewables and off-grid renewables.)
1.2.	Feed-in tariff for renewable energy					Guaranteed incentive price for renewable electricity suppliers.
1.3.	State purchase of electricity through green power renewable resources programs					Including green power procurement standard for public sector entities
1.4.	Financial incentives for renewable energy (e.g., payback buydown, production tax credits, PBF fund, etc.) incl. PBF funds if you want.					

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1.5.	Renewable energy development issues (zoning, siting, etc.)					Facilitation and reduction of barriers for renewable energy. (Streamlining of large wind and hydro siting and licensing)
1.6.	Support for Energy Storage Technologies					To facilitate greater use of intermittent renewables.
1.7.	Renewable energy research and development (R&D)					
1.8.	Landfill gas recovery (see also Waste TWG) *					2 or 3 existing generation sites
1.9.	Support for Solid Waste to energy (see also Waste TWG)					
1.10.	Support for community scale power					Incentives, facilitation, regulatory reform, etc.
1.11.	Support for Utility Scale Wind					Adopt statewide objective to encourage large scale wind development. Addresses regulatory permitting, licensing, siting, other development barriers.
1.12.	Support for Biomass Energy					Adopt a statewide objective, regulatory process, and regional resource assessment (including competing uses). Includes cogeneration/district heating.

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1.13.	Support for Existing Hydroelectricity					Examine strategies for extending or repowering existing hydro-electric facilities
1.14.	Support for Distributed PV development				E.g., state and educational buildings	Incentives would be contingent on building efficiency measures.
1.15.	Support for Geothermal energy					
ES-2	DISTRIBUTED GENERATION (DG)					
2.1.	Incentives for eligible combined heat and power (CHP) and Distributed Generation					Eligible is defined as in VSA 2005/61. 802 text. (Consider reduced T&D losses in analysis.)
2.2.	Removing barriers to eligible CHP and DG (including utility contracting barriers, financing, information, private wires, etc.)					
2.3.	Incentives to recycle waste energy (e.g., waste heat and/or pressure recovery)					
2.4.	Interconnection rules for eligible distributed generation*					Through Rules 4.500 and 5.300 of PSB
2.5.	Support for district energy					Incentives, permitting, project development assistance

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ES-3	ADVANCED FOSSIL FUEL MEASURES					
3.1.	Incentives for advanced coal, including IGCC and carbon capture and storage (CCS)					
3.2.	Incentives for Fuel Cell Research Development and Commercialization					
3.3.	Combined H2/electricity production from fossil fuels with sequestration					
3.4.	Research and Development (R&D) for advanced fossil measures					
ES-4	NUCLEAR					
4.1.	New Nuclear Capacity and Licensing					
4.2.	Nuclear Plant Relicensing or Re-contracting					
4.3.	Nuclear Plant Upgrading *					Done at VT Yankee
ES-5	EMISSIONS POLICIES					
5.1.	Generation Performance Standards					
5.2.	GHG Cap and Trade *					Consider in context of whole-economy Cap and Trade, extending beyond RGGI-covered sectors.

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5.3.	CO2 Tax					Consider in context of whole-economy CO2 tax See Colorado's REM
5.4.	GHG offset/mitigation requirements for new power plants					
5.5.	Voluntary utility CO2 targets					
ES-6	OTHER ELECTRICITY MEASURES					
6.1.	Innovative rate design					Pricing strategies (e.g., increasing block rates, real time pricing, time of use, etc.) Including advanced meter reading and smart meters.
6.2.	Advanced metering					
6.3.	Integrated Resource Planning (IRP) *					Currently required by Vermont statute.
6.4.	Performance Based Utility Regulation*					Measures to decouple utility financial performance and load growth
6.5.	Encouraging Long-term contracts with low-emission resources					
ES-7	TRANSMISSION AND DISTRIBUTION (T&D)					
7.1.	Support infrastructure to support distributed renewable Energy					E.g., transmission requirements for renewables
7.2.	Upgrade transmission system *					Ongoing

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
7.3.	Reduce transmission and distribution line losses					
7.4.	Efficiency and renewable spending (supplemental to other initiatives) targeted to T&D constrained areas					
ES-8	OIL & GAS PRODUCTION					
8.1.	Reducing methane emissions from distribution (e.g., green completions, leak reduction, etc.)					
ES-9	EDUCATION/AWARENESS					
9.1.	Environmental (emissions) disclosure					
9.2.	Public education					