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*Vermont*

*Governor's Commission on Climate Change*



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## Catalog of State-Level GHG Reduction Policy Options

November 8, 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)
5	Cross Cutting Issues - Reporting, Registries, Education (CC)

**Key to Future Rankings of Options in the Tables that Follow:**

<b>Potential Emission Reductions <u>1/</u></b>	<b>Potential Cost or Cost Savings <u>1/ 2/</u></b>
<b>High (H):</b> At least 100,000 Metric Tons (MT) carbon dioxide equivalent (CO <sub>2</sub> e) per year by 2020 (~1% of emissions)	<b>High (H):</b> \$50 per Metric Ton CO <sub>2</sub> e (MTCO <sub>2</sub> e) or above
<b>Medium (M):</b> From 10,000 to 100,000 MT CO <sub>2</sub> e per year by 2020	<b>Medium (M):</b> \$5-50/MTCO <sub>2</sub> e
<b>Low (L):</b> Less than 10,000 MT CO <sub>2</sub> e per year by 2020, or 100,000 MT CO <sub>2</sub> e by 2050	<b>Low (L):</b> Less than \$5/MTCO <sub>2</sub> e
<b>Uncertain (U):</b> Not able to estimate at this time	<b>Uncertain (U):</b> Not able to estimate at this time
<p><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.</p> <p><u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.</p>	

**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
<b>RCI-1</b>	<b>ENERGY EFFICIENCY PROGRAMS, FUNDS, AND GOALS</b>					
1.1.	Utility Demand Side Management (DSM) Programs for electricity, natural gas, propane, fuel oil *					<i>Efficiency VT</i> for electricity
1.2.	Energy Efficiency Funds (e.g. Public Benefit Funds) administered by State agency, utility, or 3rd party (e.g. Energy Trust) *					A portion of VT Yankee's uprate created a fund for electricity efficiency projects
1.3.	Energy Efficiency Requirements (e.g. Utility Savings Goals or Energy Portfolio Standards) *					Has been debated by legislature, but not acted upon yet.
1.4.	Market transformation and technology development programs					
<b>RCI-2</b>	<b>APPLIANCE STANDARDS</b>					
2.1.	Expansion of State-level Appliance Efficiency Standards *					Done by legislature
2.2.	Support for Federal-level Appliance Efficiency Standards					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>RCI-3</b>	<b>BUILDINGS</b>					
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 <sup>1</sup> , green buildings)					
3.3.	Training and Education for Builders and Contractors (e.g. HVAC <sup>2</sup> sizing, duct sealing)					
3.4.	Training of Building Code and other Officials in Energy Code Enforcement					
3.5.	Building Commissioning and Recommissioning, including Energy Tracking and Benchmarking					
3.6.	Energy Management Training/Training of Building Operators					
3.7.	Reduction of Emissions from Diesel Engines Used in New Construction Developments *					Have initiated limited pilot work with VTrans
<b>RCI-4</b>	<b>EDUCATION AND OUTREACH</b>					
4.1.	Consumer education programs *					<i>Efficiency Vermont / DPS</i>

<sup>1</sup> LEED = Leadership in Energy Efficiency Design, a national building certification program.

<sup>2</sup> HVAC = Heating, Ventilation, and Air Conditioning

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
4.2.	Introduce in School Curriculum					Check with DPS Service and the Department of Education
<b>RCI-5</b>	<b>PRICING AND PURCHASING</b>					
5.1.	Green Power Purchasing *					Available from Green Mountain Power (GMP) and Connecticut Valley 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					
<b>RCI-6</b>	<b>TECHNOLOGY-SPECIFIC POLICIES</b>					
6.1.	Incentives for Renewable Energy Applications (Solar roofs, water heaters, etc.) *					Limited availability from DPS
6.2.	Clean Combined Heat and Power					
6.3.	Waste Energy Recycling (via waste heat, pressure drops, or tail gases)					
6.4.	Promotion and Tax or Other Incentives (e.g. EnergyStar, credits for solar hot water)					
6.5.	Appliance Recycling/Pick-Up Programs *					Services through Solid Waste Districts

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
6.6.	White Roofs, Rooftop Gardens, and Landscaping (including Shade Tree Programs)					
6.7.	Focus on specific end-uses/technologies: window AC units, lighting, water heating, plug loads, networked PC management, power supplies, motors, pumps, boilers, etc. Consumer products programs, may include incentives, retailer training, marketing and promotion, education, etc ,					
<b>RCI-7</b>	<b>NON-ENERGY EMISSIONS (HFCS, PFCS, SF6, CO2 PROCESS EMISSIONS)</b>					
7.1.	Participation in Voluntary Industry-Government Partnerships *					CVPS participates in EPA's voluntary SF6 program
7.2.	Process Changes/ Optimization					
7.3.	Leak Reduction /Capture, Recovery and Recycling of Process Gases					
7.4.	Use of Alternative Gases (other HFCs, hydrocarbon coolants/refrigerants, etc.) *					Done by the legislature in the 1990s

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>RCI-8</b>	<b>GHG EMISSIONS-SPECIFIC GOALS AND POLICIES</b>					
8.1.	Support for switching to less carbon-intensive fuels (coal and oil to natural gas or biomass)					
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					
<b>RCI-9</b>	<b>OTHER</b>					
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					
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					
9.7.	Industrial Audits					

**Table 2 - Energy Supply (ES)**

<b>Option No.</b>	<b>GHG Reduction Policy Option</b>	<b>Priority for Analysis</b>	<b>Potential GHG Emissions Reduction</b>	<b>Potential Cost or Cost Savings</b>	<b>Additional Impacts, Feasibility Considerations</b>	<b>Notes</b>
<b>ES-1</b>	<b>RENEWABLE ENERGY</b>					
1.1.	Environmental Portfolio Standard (renewables and energy efficiency) with renewable energy credit trading					Proposed by Legislature / Opposed by Governor
1.2.	Feed-in tariff for renewable energy					
1.3.	Green power renewable resources programs *					GMP & CVPS
1.4.	State purchase of electricity through green power renewable resources programs					
1.5.	Public Benefit Charge Funds					
1.6.	Financial incentives for renewable energy (e.g., payback buydown, production tax credits, etc.)					
1.7.	Renewable energy development issues (zoning, siting, etc.)					
1.8.	Energy Storage Technologies					
1.9.	Renewable energy research and development (R&D)					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
1.10.	Landfill gas recovery (see also Waste) *					2 or 3 existing generation sites
1.11.	Waste to energy (see also Waste)					
<b>ES-2</b>	<b>DISTRIBUTED GENERATION (DG)</b>					
2.1.	Incentives for combined heat and power (CHP) and clean DG					
2.2.	Removing barriers to CHP and clean 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.						
2.5.	Interconnection rules for clean, distributed generation					
2.6.	Net Metering *					Statute in place
<b>ES-3</b>	<b>ADVANCED FOSSIL FUEL MEASURES</b>					
3.1.	Incentives for advanced coal, including IGCC and carbon capture and storage (CCS)					
3.2.	Fuel Cell Development Incentives					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
3.3.	Combined H2/electricity production from fossil fuels with sequestration					
3.4.	Research and Development (R&D)					
<b>ES-4</b>	<b>NUCLEAR</b>					
4.1.	New Nuclear Capacity and Licensing					
4.2.	Nuclear Plant Relicensing					
4.3.	Nuclear Plant Upgrading *					Done at VT Yankee
<b>ES-5</b>	<b>EMISSIONS POLICIES</b>					
5.1.	Generation Performance Standards					
5.2.	GHG Cap and Trade *					RGGI
5.3.	CO2 Tax					
5.4.	GHG offset/mitigation requirements for new power plants					
5.5.	Voluntary utility CO2 targets					
<b>ES-6</b>	<b>OTHER ELECTRICITY MEASURES</b>					
6.1.	Establish an “energy efficiency utility” to maximize efficiency resources through market dynamics *					• Efficiency Vermont
6.2.	Pricing strategies (e.g., increasing block rates, real time pricing, etc.)					
6.3.	Advanced metering					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
6.4.	Integrated Resource Planning (IRP)					
<b>ES-7</b>	<b>TRANSMISSION AND DISTRIBUTION (T&amp;D)</b>					
7.1.	Renewable Energy Transmission Authority					
7.2.	Upgrade transmission system *					Ongoing
7.3.	Reduce transmission and distribution line losses					
<b>ES-8</b>	<b>OIL &amp; GAS PRODUCTION</b>					
8.1.	Reducing methane emissions from distribution (e.g., green completions, leak reduction, etc.)					
<b>ES-9</b>	<b>EDUCATION/AWARENESS</b>					
9.1.	Environmental (emissions) disclosure					
9.2.	Public education					

**Table 3 - Transportation and Land Use (TLU)**

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>TLU-1</b>	<b>PASSENGER VEHICLE GHG EMISSION RATES</b>					
<b>TLU-1.1</b>	<b>VEHICLE TECHNOLOGY</b>					
1.1.1	Tailpipe GHG Emission Standards *					• VT is a Cal LEV II “Pavley” state.
1.1.2	ZEV/LEV-2 Implementation *					• VT is a Cal LEV II “Pavley” state.
1.1.3	R&D on Low-GHG Vehicle Technology (e.g., fuel cell) *					EVermont
1.1.4	Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)					
1.1.5	Plug-In Hybrids *					EVermont
<b>TLU-1.2</b>	<b>VEHICLE OPERATION</b>					
1.2.1	Enforce Speed Limits					
1.2.2	Vehicle Maintenance, Driver Training					
1.2.3	Transportation System Management					
1.2.4	Automotive Technician Training *					Vermont Center for Emissions Repair and Technician Training (VCERTT)

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>TLU-1.3</b>	<b>INCENTIVES &amp; DISINCENTIVES</b>					
1.3.1	Procurement of Efficient Fleet Vehicles *					CNWG (for government fleet)
1.3.2	Feebates (state-specific or regional)					Dismissed by legislature
1.3.3	CO2-based registration fees					
1.3.4	Tax Credits for Efficient Vehicles					
1.3.5	Vehicle Scrappage					
<b>TLU-2</b>	<b>LAND USE AND LOCATION EFFICIENCY</b>					
<b>TLU-2.1</b>	<b>GENERAL</b>					
2.1.1	Infill, Brownfield Re-development *					VT legislature ACT 183 (2005/2006)
2.1.2	Transit-Oriented Development*					VT legislature ACT 183 (2005/2006)
2.1.3	Smart Growth Planning, Modeling, Tools *					VT legislature ACT 183 (2005/2006)
2.1.4	Targeted Open Space Protection*					VT legislature ACT 183 (2005/2006)
<b>TLU-2.2</b>	<b>INCREASING LOW-GHG TRAVEL OPTIONS</b>					
2.2.1	Make full use of CMAQ funds					
2.2.2	Improve Transit Service (frequency, convenience, quality)					
2.2.3	Transit Marketing and Promotion					
2.2.4	Bike and Pedestrian Infrastructure					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
2.2.5	Expand Transit Infrastructure (rail, bus, BRT)					
2.2.6	High Occupancy Vehicle (HOV) lanes					
2.2.7	“Fix-it-First”					
2.2.8	Transit Prioritization (signal prioritization, HOV lanes)					
2.2.9	Telecommute and Live-Near-Your-Work					
2.2.10	Car sharing					
2.2.11	E-Commerce					
2.2.12	Preferential Parking					
2.2.13	Park & Ride Lots *					Limited but available
2.2.14	Ridesharing / Carpooling *					Exists
<b>TLU-2.3</b>	<b>INCENTIVES &amp; DISINCENTIVES</b>					
2.3.1	Commuter Choice/Parking Cash Out					
2.3.2	VMT Tax					
2.3.3	Pay As You Drive Insurance					
2.3.4	Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)					Legislature proposed / Governor opposed
2.3.5	Location-Efficient Mortgages					
2.3.6	Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)					
2.3.7	Parking Pricing or Supply Restrictions					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
2.3.8	Transit Repositioning					
2.3.9	Transit Pricing Incentives					
2.3.10	VMT/GHG Offset Requirements for Large Developments *					S.259 (2005-06 Leg. Session) for government projects
2.3.11	Benefits for Low GHG Vehicles (preferential parking, use of HOV lanes)					
<b>TLU-2.4</b>	<b>FUEL MEASURES</b>					
2.4.1	Low-GHG Fuel Standard (e.g., renewable)					
2.4.2	Low-GHG Fuel for State Fleets (e.g., CNG, biodiesel)					
2.4.3	Biofuel expansion (biodiesel, CNG, LPG, cellulosic ethanol)					
2.4.4	Alternative Fuel Infrastructure Development					
<b>TLU-3</b>	<b>FREIGHT</b>					
<b>TLU-3.1</b>	<b>VEHICLE TECHNOLOGY</b>					
3.1.1	Vehicle Technology Improvements (e.g., aerodynamics)					
3.1.2	R&D on Low-GHG Vehicle Technology					
3.1.3	Low-sulfur diesel *					National standard ultra-low sulfur diesel

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
3.1.4	Black carbon control technologies (e.g., use of particulate traps, other complementary technologies)					
<b>TLU-3.2</b>	<b>VEHICLE OPERATION</b>					
3.2.1	Freight Logistics Improvements/GIS					
3.2.2	Enforce Speed Limits					
3.2.3	Improve Traffic Flow					
3.2.4	Increased Size & Weight of Trucks					
3.2.5	Increase the Number of Rest Areas					
3.2.6	Pre-clearance at Scale Houses					
3.2.7	Truck Stop Electrification					
3.2.8	Adopt & Enforce Anti-Idling rules					
<b>TLU-3.3</b>	<b>INCREASING LOW-GHG TRAVEL OPTIONS</b>					
3.3.1	Intermodal Freight Initiatives					
<b>TLU-3.4</b>	<b>INCENTIVES &amp; DISINCENTIVES</b>					
3.4.1	Procurement of Efficient Fleet Vehicles (public, private or other)					
3.4.2	Incentives to Retire or Improve Older Less Efficient Vehicles					
3.4.3	Maintenance and Driver Training					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
3.4.4	Increased Truck Tolls or Highway User Fees					
<b>TLU-4</b>	<b>INTERCITY TRAVEL: AVIATION, HIGH SPEED RAIL, BUS</b>					
4.1	High-speed Rail					
4.2	Integrated Aviation, Rail, Bus Networks					
4.3	Aircraft emissions					
4.4	Airport Ground Equipment					
<b>TLU-5</b>	<b>OFF-ROAD VEHICLES (CONSTRUCTION EQUIPMENT, OUT-BOARD MOTORS, ATVS, ETC)</b>					
5.1	Incentives for Purchase of Efficient Vehicles/Equipment					
5.2	Improved Operations, Operator Training					
5.3	Maintenance Improvements					
5.4	Increased Use of Alternative Fuels or Low Sulfur Diesel					

**Table 4 - Agriculture, Forestry, Waste/Resource Management (AFW)**

<b>Option No.</b>	<b>GHG Reduction Policy Option</b>	<b>Priority for Analysis</b>	<b>Potential GHG Emissions Reduction</b>	<b>Potential Cost or Cost Savings</b>	<b>Additional Impacts, Feasibility Considerations</b>	<b>Notes</b>
<b>AFW-1</b>	<b>AGRICULTURE – PRODUCTION OF FUELS AND ELECTRICITY</b>					
1.1.	Manure Digesters/Other Waste Energy Utilization *					CVPS “Cow Power” & other smaller projects
1.2.	Biodiesel Production (incentives for feedstocks and production plants)					Being looked at by Vermont Biofuels Assoc.
1.3.	Biomass Feedstocks for Electricity or Steam Production *					
1.4.	Ethanol Production					
<b>AFW-2</b>	<b>AGRICULTURE – FERTILIZER AND MANURE MANAGEMENT</b>					
2.1.	Nutrient Management (improve efficiency of fertilizer use) *					Agency of Agriculture programs
2.2.	Manure Management (improve application methods) *					Agency of Agriculture programs
2.3.	Manure Composting *					Agency of Agriculture programs
2.4.	Change Feedstocks (optimize nitrogen for N <sub>2</sub> O reduction)					
2.5.	Reduce Non-Farm (Residential and Commercial) Fertilizer Use					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>AFW-3</b>	<b>AGRICULTURE – SOIL CARBON MANAGEMENT</b>					
3.1.	Conservation Tillage/No-Till (carbon sequestration and reduced energy use)					
3.2.	Reduce Summer Fallow (increase soil C content, reduce N2O emissions)					
3.3.	Increase Winter Cover Crops (increase soil C content, increase soil N content)					
3.4.	Improve Water and Nutrient Use (to minimize soil C loss)					
3.5.	Rotational Grazing/Improve Grazing Crops and/or Management					
<b>AFW-4</b>	<b>AGRICULTURE – LAND USE CHANGE</b>					
4.4.	Convert Land to Grassland or Forest					
4.5.	Preserve Open Space/Agricultural Land					
4.6.	Promote “No Net Loss” of Agricultural Land					
<b>AFW-5</b>	<b>AGRICULTURE – FARMING PRACTICES</b>					
5.1.	Convert Diesel Farm Equipment to LNG/CNG or Hybrid Technology					
5.2.	Organic Farming *					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
5.3.	Programs to Support Local Farming/Buy Local *					
<b>AFW-6</b>	<b>FORESTRY – BIOMASS PROTECTION AND MANAGEMENT</b>					
6.1.	Forest Protection – Reduced Clearing And Conversion to Nonforest Cover					
6.2.	Increase Maintenance of Urban and Residential Trees					
6.3.	Afforestation and/or Restoration of Nonforested Lands					
6.4.	Reforestation/Restoration of Managed Stands					
6.5.	Increased Stocking of Poorly Stocked Lands					
6.6.	Age Extension of Managed Stands					
6.7.	Thinning and Density Management of Managed Stands					
6.8.	Fertilization and Waste Recycling					
6.9.	Expand Short Rotation Woody Crops (for fiber and energy)					
6.10.	Expanded Use of Genetically Preferred Species					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
6.11.	Modified Biomass Removal Practices (reduced decay and energy use)					
6.12.	Fire Management and Risk Reduction Programs					
6.13.	Ecosystem Health Risk Reduction Programs (pest/disease, invasive species) *					Agency of Natural Resources
6.14.	Drought Management Programs (tree selection, placement, protection) *					Agency of Natural Resources
6.15.	Flood and Riparian Management Programs (tree selection, placement, protection) *					Agency of Natural Resources
6.16.	Watershed Management Programs (stand retention, enhancement and management) *					Agency of Natural Resources
6.17.	Habitat Management Programs (stand retention, enhancement and management) *					Agency of Natural Resources
<b>AFW-7</b>	<b>FORESTRY - WOOD PRODUCTS AND WASTE</b>					
7.1.	Improved Mill Waste Recovery					
7.2.	Improved Logging Residue Recovery					

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.	Expanded Use of Wood Products for Building Materials					
7.4.	Expanded Use of State and Locally-Grown Wood Products					
<b>AFW-8</b>	<b>FORESTRY – ENERGY PRODUCTION</b>					
8.1.	Expanded Use of Forest Biomass Feedstocks for Electricity (fuel switching)					
8.2.	Expanded Use of Forest Biomass Feedstocks for Residential, Commercial/Institutional, or Industrial Heating *					Schools, etc.
8.3.	Improved Efficiency of Wood Burning Stoves and Direct Heat					
8.4.	Improved Energy Capture from Wood Waste Combustion					
8.5.	Expanded Landfill Methane Recapture (wood products waste)					
8.6.	Improved Commercialization of Biomass Gasification and Combined Cycle *					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>AFW-9</b>	<b>WASTE MANAGEMENT – WASTE MANAGEMENT STRATEGIES</b>					
9.1.	Advanced Recycling and Composting					
9.2.	Advanced Municipal Solid Waste Management Practices (e.g., bioreactors)					
9.3.	Source Reduction Strategies					
9.4.	Resource Management Contracting					
9.5.	Manure Digesters					
<b>AFW-10</b>	<b>WASTE MANAGEMENT – LANDFILL GAS STRATEGIES</b>					
10.1.	Flare Landfill Methane at non-NSPS (smaller) sites *					
10.2.	Methane and Biogas Energy Programs *					
10.3.	Convert Landfill Methane to Electric Power, Space Heat, or LNG *					
<b>AFW-11</b>	<b>WASTE MANAGEMENT – WASTEWATER ACTIVITIES</b>					
11.1.	Energy Efficiency Improvements *					<i>Efficiency Vermont-funded turbine at Essex Junction wastewater treatment facility</i>
11.2.	Lower Waste Processing Needs (lower water consumption, waste production) *					Lower water consumption component of water supply plans
11.3.	Install Digesters and Turbines					
11.4.	Install Fuel Cells					



**Table 5 - Cross Cutting Issues (CC)**

<b>Option No.</b>	<b>GHG Reduction Policy Option</b>	<b>Priority for Analysis</b>	<b>Potential GHG Emissions Reduction</b>	<b>Potential Cost or Cost Savings</b>	<b>Additional Impacts, Feasibility Considerations</b>	<b>Notes</b>
<b>CC-1</b>	<b>INVENTORIES AND FORECASTING</b>					
1.1.	Establish & fund GHG emission inventory function *					Limited
1.2.	Establish & fund GHG emission forecasting function					
<b>CC-2</b>	<b>GHG REPORTING</b>					
2.1.	Establish or adopt a GHG emissions reporting program*					NEG/ECP & Eastern Climate Registry
2.2.	Define CO2 & non-CO2 GHGs as pollutants *					
2.3.	Provide assistance to facilities in reporting GHG emissions					
<b>CC-3</b>	<b>GHG REGISTRY</b>					
3.1.	Establish or adopt a GHG emissions reduction registry *					NEG/ECP & Eastern Climate Registry
3.2.	Provide assistance to facilities in registering GHG emissions					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
<b>CC-4</b>	<b>PUBLIC EDUCATION AND OUTREACH</b>					
4.1.	<b>State Government Education and Outreach Actions</b> The State should lead by example (i.e., walk the talk) regarding education and outreach.					
4.1.1.	Establish an education & outreach committee to educate audiences regarding climate plan policies and to oversee those relating to education. *					CNWG / State Agency Energy Plans
4.1.2.	Include state public education and higher education officials in the committee established above					
4.1.3.	Create and maintain one or more “outreach coordinator” positions specifically tasked with climate outreach and coordination among state agencies and outside entities. *					CNWG / State Agency Energy Plans
4.1.4.	Educate state employees across-the-board, and assign “point persons” to do so on an on-going basis. *					CNWG / State Agency Energy Plans

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
4.2.	<b>Target Audience: Policymakers (legislators, regulators, executive branch, agencies)</b> Implementation of climate actions hinges on policymakers' approval.					
4.2.1.	Educate policy makers on PG policy recommendations, climate change in general, scientific and technological advances, and progress toward state goals through regular briefings in order to promote acceptance and implementation of mitigation and adaptation policies.					
4.2.2.	Provide continuing outreach & assistance to Governor's office, legislature, and implementing agencies on a regular basis.					
4.3.	<b>Target Audience: Future Generations</b> Integrate climate change into educational curricula, post-secondary degree programs, and professional licensing.					
4.3.1.	Add climate change to public education performance standards for science and social studies; identify (a) gaps in climate change education, and (b) specific curricula to fill any gaps.					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
4.3.2.	Organize groups of educators to identify, assemble, and employ climate change curricula appropriate to age groups					
4.3.3.	Integrate “best practices” into public school design & construction to educate students (and parents) first-hand in their communities & colleges (i.e., walk the talk).					
4.3.4.	Integrate climate change into core college curricula.					
4.3.5.	Promote research into climate change and solutions at state universities; develop university “Centers of Excellence” on climate issues, new approaches, and technologies.					
4.3.6.	Integrate climate change into existing and/or new educational competition programs.					•

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
4.3.7.	Work with science centers, zoos, and museums to include a climate science focus appropriate to their core mission					•
4.3.8.	Introduce core competencies on climate change into professional licensing programs (e.g., energy efficiency in building design and construction, use of recycled materials, etc.)					
4.4.	<b>Target Audience: Community Leaders &amp; Community-Based Organizations</b> (e.g., institutions, municipalities, service clubs, social & affinity groups, NGOs, etc.) Recognize leadership; share success stories & role models; expand involvement and participation; within civic society.					
4.4.1.	Educate community planning and zoning officials about climate change, impacts, and opportunities.					
4.4.2.	Identify individual community leaders who are acting effectively on climate change; showcase and share their successes.					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Additional Impacts, Feasibility Considerations	Notes
4.4.3.	Identify individual community leaders who are not yet acting on climate change and make a special effort to educate and encourage them to act.					
4.4.4.	Engage associations and attend their periodic meetings to reach out on climate change, impacts, sector-specific mitigation actions, and adaptation opportunities.					
4.4.5.	Identify, assist, and leverage community-based organizations that have expertise or interest in climate-related issues					
4.4.6.	Work with community-based organizations to identify & build upon climate issues related to their core mission					
4.4.7.	Develop & coordinate a network of community-based organizations acting on climate change so they can link up, organize joint events, etc.					

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4.4.8.	Support and facilitate outreach and education within community-based organization regarding climate change issues and actions					
4.4.9.	Develop and provide concrete information on co-benefits to entities to use in boosting their climate efforts					
4.4.10.	Organize & host events that focus on leading by example, sharing “how-to,” illuminating financial risks and opportunities, co-benefits, etc.					
4.4.11.	Encourage municipal leaders to join ICLEI’s <sup>3</sup> Cities for Climate Protection program and/or the Mayors Climate Protection Agreement <sup>4</sup> *					Burlington / Montpelier / Brattleboro are ICLEI. Also, I-91 Corridor Initiative.
4.5.	<b>Target Audience: General Public</b> Increase awareness and engage in climate actions in personal and professional lives.					
4.5.1.	Educate broadcasters, reporters, editorial boards, etc. about climate change, the risks it imposes, and solutions.					Limited, on general air quality issues (i.e., AQI)

<sup>3</sup> ICLEI is the International Council for Local Environmental Initiatives. See [www.iclei.org](http://www.iclei.org).

<sup>4</sup> See <http://www.ci.seattle.wa.us/mayor/climate/>.

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4.5.2.	Work with state broadcasters and print media associations to develop & run climate change public service announcements.					
4.5.3.	Conduct public polling to benchmark strength and depth of climate understanding.					
4.5.4.	Keep a high profile on climate change issues and actions through regular public mention by Governor and other public leaders *					CNWG & GCCC
4.5.5.	Develop and use a state-based “brand” on climate awareness and action *					10% Challenge
4.5.6.	Develop & maintain a state climate change website for the public including a clearinghouse of climate change information and resources.					<a href="http://www.anr.state.vt.us/air/Planning/htm/ClimateChange.htm">http://www.anr.state.vt.us/air/Planning/htm/ClimateChange.htm</a>
4.5.7.	Work with existing company outreach efforts to customers to enhance awareness of climate change issues & opportunities					

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4.5.8.	Undertake a concerted planning effort to identify and address climate adaptation issues & needs in the state					
4.5.9.	Work to educate consumers – and home designers, builders, and contractors – to ensure that they are aware of the different choices they have for space heating and cooling (e.g., evaporative vs. refrigerative) and the impacts of those choices.					
4.6.	<b>Target Audience: Industrial &amp; Economic Sectors</b> Sector-specific climate change education and outreach.					
4.6.1.	Residential, Commercial, & Industrial					
4.6.2.	Transportation & Land Use					
4.6.3.	Energy Supply and Use					
4.6.4.	Agriculture & Forestry					

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<b>CC-5</b>	<b>ADAPTATION</b>					
5.1.	Develop a State adaptation plan *					State Forest Management Plan, Department of Public Safety (Hazards Inventory and Risk Assessment) and others have some awareness of climate change
<b>CC-6</b>	<b>GHG REDUCTION GOALS AND TARGETS</b>					
6.1.	Establish goals or targets for statewide GHG emission reductions *					GCCC Executive Order & NEG/ECP effort
<b>CC-7</b>	<b>STATE GHG EMISSIONS</b>					
7.1.	Lead by example by establishing targets for reductions in State GHG emissions *					CNWG
7.2.	Create a multi-agency body to oversee on-going state climate efforts. *					CNWG
7.3.	Disaggregate the State's own GHG emissions to the agency level and require annual agency-specific reports on GHG reduction progress. *					State Agency Energy Plans