



*F*inal Report and Recommendations
of the
Governor's Commission
on Climate Change

Presented to
Governor James H. Douglas

October 2007

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Table of Contents

Report of the Governor’s Commission on Climate Change	1
Appendix 1: Executive Order #07-05	11
Appendix 2: Plenary Group Recommendations & Appendices	14
Appendix 3: GCCC Deliberation Matrix	309
Appendix 4: Vermonters Quick Tips for Carbon Dioxide Reduction ...	320

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**Report of the
Governor's Commission on Climate Change
Montpelier, Vermont
October 2007**

Overview

The climate change crisis may represent the most important and comprehensive global challenge of our lifetime. At the same time, however, it is a wake-up call and can serve as an opportunity to rethink and redesign our practices, technologies, businesses, and services in a manner that can simultaneously be viable, sustainable, and inspirational. Indeed, Vermont can make an enormous difference and serve as a model for the region, nation, and world. Vermont is well-positioned to be at the leading edge of identifying and designing solutions to a pressing and complex array of local and global challenges, while at the same time building a new “green economy” that will serve the best interests of our state and its citizens. Because of our commitment to innovation, entrepreneurship, and the value of Vermont’s natural resources and working landscape, the Governor’s Commission on Climate Change is convinced that Vermont can lead the way. However, we must devise mechanisms to deploy our passion for innovation and our collective intellectual resources to advance the common good. This report recommends those mechanisms.

The time for debate over the realities of global climate change is over. Global climate change is occurring, and every Vermonter will experience its impacts on the quality of life for which Vermont is justifiably famous. Today, our ability to “keep Vermont, Vermont” is at grave risk. Accordingly, we all – individual citizens, businesses, institutions and government alike – bear a responsibility to reduce our greenhouse gas contributions to our warming planet. The reduction of carbon dioxide and other greenhouse gases (GHGs), and the activities that cause their emission, will be the major challenge facing Vermonters in the years to come. If properly seized, however, climate change action can provide an unprecedented economic development opportunity for Vermont. Concerted collaboration among Vermont’s public, private, and academic sectors, could offer the state the opportunity to secure a significant competitive advantage in the emerging “green economy.” By identifying, developing, implementing, and exporting efficient energy technologies, innovations, and renewable energy opportunities, we will help preserve Vermont’s rural character and high quality of life while dramatically reducing the State’s GHG emissions.

Background and Process

Governor James H. Douglas set ambitious goals for Vermont when he established the Governor’s Commission on Climate Change (GCCC) by Executive Order 07-05 on December 5, 2005.¹ He directed the six-member Commission to develop an accurate

¹ Appendix 1 contains the Governor’s Executive Order.

picture of Vermont's past, present, and future GHG emissions and a comprehensive set of policy recommendations for reducing Vermont's GHG emissions from all sectors, consistent with the state's need for continued economic growth and energy security. The Governor's executive order specified a target of reducing Vermont's greenhouse gas GHG emissions by 25% from 1990 levels by 2012; 50% by 2028; and, if practical, 75% by 2050. The Governor's goals were subsequently affirmed and reinforced by Vermont's General Assembly in the passage of Act No. 168 (S.259) in 2006.

Following its first meeting, the GCCC determined that it would benefit from the input and involvement of a diverse array of Vermont stakeholders. A 31-member Plenary Group (PG) was established representing a broad range of interests, backgrounds and capabilities to provide their diverse expertise and perspectives to the GCCC's efforts. The PG was asked to identify, analyze, and recommend policy options for the GCCC's consideration in its report to the Governor. The Vermont Agency of Natural Resources provided contract, logistical, and staff support to the Plenary Group. The Commission decided to employ a consensus-building process developed by the non-profit Center for Climate Strategies (CCS) that had been utilized in other state initiatives, and CCS provided both evaluative facilitation and technical analysis to the Plenary Group in formulating its recommendations.

The combined GCCC and Plenary Group met seven times from September 2006 to July 2007. During this period, four sector-based technical work groups (TWGs) consisting of PG members and additional experts also met. The TWGs identified and developed potential policy options in the areas of Energy Supply and Demand (ESD); Transportation and Land Use (TLU); Agriculture, Forestry and Waste (AFW); and Cross-Cutting Issues (CC). The options brought forward by the TWGs were discussed, evaluated, revised as necessary, and approved by the Plenary Group as policy recommendations for consideration by the GCCC. Analysis conducted by the TWGs for each approved policy recommendation included (among other items and to the extent possible) quantification of expected GHG emission reductions and net present value of expected costs or savings. The GCCC also requested quantification of anticipated up-front outlays necessary for the initial years of implementation. The full Plenary Group report is attached as Appendix 2 and is incorporated by reference.

The Commission and its larger, advisory Plenary Group considered hundreds of policy options – some of them innovative, some of them obvious, and many of them already underway or on the drawing boards of Vermont's officials, businesses, and educators. Ultimately, 38 policy recommendations were forwarded by the Plenary Group to the GCCC for its consideration. To assist in reviewing the Plenary Group's recommendations, the Commission developed a matrix reflecting High, Medium, and Low rankings against a number of attributes, including GHG reduction benefits, potential for cultural change, upfront cost, long-term cost, challenges to implementation, and collateral benefits and/or damages. (This matrix, which was applied to each of the policy recommendations, is attached as Appendix 3.)

Recommendations

The Governor's and General Assembly's GHG emission reduction goals represent a challenge for Vermont; they reflect the most aggressive climate action targets of any U.S. state. While attainment of the state's ambitious goals requires the implementation of all of the 38 Plenary Group options, the Commission recognizes that several of them need more analysis, assessment and refinement by state agencies and other appropriate entities before implementation can occur. We recommend that this additional work begin immediately and have, we believe, provided a framework for that to happen. Through its deliberations, the Commission identified the following six overarching recommendations and we urge the Governor to focus the state's efforts on them first.

1. Building on Vermont's Energy Efficiency Leadership and Renewable Energy Potential

The Commission strongly urges the Governor and the Legislature to explore together ways to continue and expand the state's nationally recognized demand-side management (DSM) practices for electricity and natural gas. Vermont has had an unparalleled history of investment in DSM and energy efficiency through electric and gas utilities for more than a decade. As a result, today Vermont has the most aggressive efficiency program in the nation. These efforts have not only reduced air pollution, but paid economic dividends to Vermont businesses and residents. Integrating Efficiency Vermont into the new green economy web makes prudent sense.

The Commission also supports, through a combination of incentives and/or mandates, expanding the role of renewable energy in Vermont and in the regional power mix. If Vermont were to lead in the innovative development of renewable power for community use, the state could build a significant competitive advantage in the green economy.

In particular, we urge the Governor to:

- Cost-effectively enhance energy efficiency by developing mechanisms to extend Vermont's existing and highly effective DSM efforts to include additional fuels beyond electricity and natural gas, especially heating oil used in residential, commercial, and industrial establishments.
- Explore viable mechanisms and insure the necessary research to stimulate investment in strategically located renewable energy facilities, such as wind turbines, with a focus on the needs of local communities.

2. Keeping Our Farms, Farms and Our Forests, Forests

Central to curbing the state's greenhouse gas emissions is the conservation of Vermont's significant existing "Green Bank" – our working landscape, our abundant forests, our maintenance of open land. Indeed, Vermont's most precious and effective mechanism for countering climate change is our forested

landscape, which represents nearly 80% of the state's land area and provides us all with a rich array of collateral services, such as clean water, stable and fertile soils, and a vibrant recreation and tourism industry, that benefits both the culture and economy of our state. Our forests ecosystems, the durable wood products derived from them, and the working landscape afford a tremendous opportunity to sequester carbon from the atmosphere, which holds the promise of economic benefit, such as offsets under a potential future carbon cap-and-trade system, while simultaneously protecting the Earth's atmosphere and Vermont's rural quality of life. It is imperative that the state develop and follow prudent ways to sustain the health of our forests and protect open space and agricultural land, by strengthening local farm and forest economies and encouraging development of our town centers. Programs that promote the production, storage, processing, and distribution of locally-grown food and wood products can reduce transportation and manufacturing emissions as well as contribute to local economic sustainability.

The Commission urges the Governor to:

- Promote the establishment and support of creative and effective multi-layered marketing programs including a "virtual marketplace" for local food and forest products and markets.
- Protect working farms and forests by pursuing strategies to reduce the rate at which existing crop, pasture, and forest lands are converted to developed uses.

3. Reducing Emissions in a Renewed Transportation System Within and Between Vibrant Town Centers

Future development along the lines of Vermont's historic settlement pattern of compact town centers surrounded by open countryside will also provide multiple benefits. Not only would it be consistent with Vermont's traditional character, it would reduce travel demand and create a more transit-oriented pattern of growth. In the long run, this will help bend the upward curve of Vehicle Miles Traveled (VMT), which is the most significant source of greenhouse gas production in Vermont.

At the same time, Vermont must invest more in its transportation infrastructure, including highways, railroads and park-and-ride facilities, so that the development of public transportation can be accelerated. Vermont should also encourage the purchase of fuel-efficient, low-emission vehicles through financial incentive programs. In order to take these steps, Vermont should consider ways of enhancing transportation revenues through non-traditional means that will not be affected by VMT reductions. The Commission is not recommending a specific approach to funding but, rather, making it clear that greater investment will be necessary to counter the increasing contribution of single-occupant vehicles (SOV) to the problem of climate change.

In particular, we urge the Governor to:

- Evaluate a number of potential new revenue enhancing options that simultaneously serve as incentives for reduced travel or low emitting vehicles, such as “feebates” for low mileage vehicles, a percentage-based sales tax on gas in place of the existing per-gallon approach, and restructuring of the current distribution of transportation funds;
- Develop and begin implementing a long-term plan to efficiently and effectively expand and improve inter-city bus and rail service, including both passenger and freight transport and inter-modal connectivity, such as bicycle, pedestrian, shuttle services, etc.;
- Promote planning efforts that adopt and embrace the concept of town centers

4. Educating and Engaging Vermonters About Climate Change

The Commission hopes that the Governor, state government, the state’s institutions of higher learning, its businesses and, most importantly, its residents recognize the costs of not doing enough to address climate change. All parties must come to the table, and perhaps the most effective way to do so is to dedicate government resources – many of them already in place – to foster a vigorous, proactive, public/private partnership. Indeed, the Agency of Natural Resources is creating a “Center for Climate Change and Waste Reduction” (as part of an overall reorganization) to deploy state resources in concert with those of the state’s major intellectual and economic institutions. The Commission also believes strongly that we need to empower Vermonters to do everything that they can individually in pursuit of climate action. Accordingly, we have included in Appendix 4 a list of several actions that Vermonters can undertake today.

While engagement of all citizens in efforts to counter climate change is critical, the Commission recognizes that there is the potential for enormous, systemic, and long-term cultural, cross-generational change in our awareness and behavior through the efforts of our formalized K-12 public and private school systems. The Commission applauds the extraordinary work and dedication of Vermont’s school teachers, who help shape the minds, behaviors, and values of our children - the next generation of community and civic leaders and decision makers. We note also that much of the success in our statewide recycling efforts can be attributed to the positive behaviors shaped in our schools, which in turn were translated into improved behaviors in households. Indeed, our formal education system can play a substantial role in shaping a sustainable and desirable future for Vermont through the content and delivery of its educational programs.

In particular, we urge the Governor to:

- Insure the implementation of a new Center for Climate Change and Waste Reduction within the Agency of Natural Resources and, furthermore, to charge that Center to (a) serve as a visible and accessible clearinghouse of

information about measures to reduce greenhouse gas emissions; (b) insure that incentives are in place that promote good environmental behavior and that any disincentives are minimized; and (c) examine and understand the “unintended” environmental consequences of existing and proposed government policies.

- Work jointly with the Vermont Department of Education to insure that all future teachers licensed in Vermont possess a fundamental level of environmental literacy and stewardship and have the capacity to teach with and about nature. In addition to promoting good environmental stewardship among students and their families, the Commission believes the incorporation of ecological thinking in the teaching of math and science, in particular, will also enhance the scientific understanding and capacity of our citizenship, and our competitiveness in pursuing the “green economy.”

5. Leading by Example

In the course of its efforts, the Commission became acutely aware that existing separate and distinct “stovepipe” approaches to public policy issues are clearly inadequate for addressing an issue like climate change, which profoundly and comprehensively impacts all sectors, individuals, and interests. Accordingly, the GCCC believes that Vermont must comprehensively integrate its efforts to address climate change, just as climate change comprehensively threatens the state’s traditional character and its extraordinary quality of life.

State government – itself long characterized by “stovepiped” executive branch agencies – should set the standard in moving to a more integrated approach. Its leadership by example will encourage others to approach climate change in a similarly comprehensive and more integrated fashion.

In particular, we urge the Governor to insure Vermont state government leads by example by:

- Creating a climate change cabinet that will coordinate climate change efforts across all agencies and initiate the review and accountability process with respect to the further analysis and development of the 38 recommendations of the plenary group;
- Completing the transformation of the fleet of government vehicles into a model of fuel efficiency by purchasing hybrid vehicles or other highly efficient modes of transportation as appropriate to its needs and uses, and challenging other major institutions and enterprises in Vermont to follow the government lead.
- Developing an internal carbon offset program within state government specific to functions, such as air travel, which may not be possible to eliminate or dramatically alter by behavior changes, and using the

proceeds from such offsets for the purposes of supporting renewable energy or carbon sequestration initiatives in Vermont.

6. The Vermont Climate Collaborative: A Signature Partnership of Vermont's Government, Academic, and Private Sectors

While scientific understanding of atmospheric and climatic processes is substantial, the Commission recognizes that many aspects of the new and evolving "climate change science" are in their infancy. For example, our understanding of our energy future, the ever-evolving carbon economy, and mechanisms to thoughtfully manage our landscape to effectively sequester carbon are just beginning to be understood. As such, our outlook will be pessimistic unless we can ensure and promote new research and outreach efforts to advance and effectively implement the many good ideas put forward in this and the Plenary Group report. Bold and effective solutions will require strategic partnerships and the development and advancement of new ecologically based and economically viable technologies, businesses, and services. Indeed, we need to insure the best science is put into a context of the long-term welfare of humanity.

Central to seizing the opportunity before us is *a strategic partnership among the State of Vermont, including its agencies, departments, the General Assembly, and the Office of Governor; the University of Vermont, among the nation's leading centers of environmental education and research, and Vermont's other premier academic and research institutions; and the private business and non-governmental sectors*. Through this new, unprecedented collaborative model of integration, the Commission envisions the bold development and implementation of new approaches to building elements of a Vermont "Green Economy" that will support continued high quality of life for Vermonters and lead to a sustainable and desirable future. We believe this partnership should be jointly led by the Governor on behalf of the State, the President of The University of Vermont on behalf of higher education in Vermont, and leaders from the business and non-governmental private sectors.

We envision the Vermont Climate Collaborative as a strategic partnership to conduct and intensify capacity for essential research, innovation, and technology transfer in environmental and sustainable technologies that can spawn new, environmentally sound economic opportunities. The Commission views the partnership as the core element of a Vermont "brain trust," comprised of environmental scientists and policy makers from the academic, public, and private sectors, who would insure coordination of efforts and the development of cross-cutting initiatives to address climate change.

Specifically, the Commission believes the partnership should:

- Ensure that the most critical climate change research and outreach for Vermont is conducted, emphasizing pressing issues such as defining our energy future, developing a comprehensive biomass plan, understanding

our carbon footprint and the rapidly evolving carbon economy, and managing Vermont's critically important "Green Bank" to maximize benefits for our natural resources and our people

- Pursue the potential of the "green economy" as an opportunity to explore new economic models and paradigms and encourage innovation as well as creating new, job-creating enterprises devoted to environmental technologies and new markets.
- Ensure objective analysis of environmental issues, including environmental education, economic development, and environmental protection.
- Ensure that the collective resources of the State are coordinated and effectively deployed to address research and implementation of energy efficiency and conservation initiatives, including matching federal grants with public and private funds already committed to environmental initiatives.

Conclusion

The Governor's Commission on Climate Change believes that Vermonters must be proactive and innovative in order to safeguard our precious natural resources and protect our cherished way of life.

Much of our success in addressing climate change, meeting the Governor's and Legislature's greenhouse gas reduction targets, and positioning the state to benefit most from cleaner, greener economic opportunities rests on our ability to overcome our natural resistance to change and to greet the new economy in a way that redefines yet retains the historical relationship between Vermonters and their working landscape.

Vermonters have an exceptional opportunity during this time of global climate crisis. The state's communities – residential, business, non-profit, academic, regulatory and governmental – are small and well enough interconnected to make working together toward dramatically reducing the State's carbon footprint not only possible, but imminently achievable. Because of these attributes, Vermont can establish model approaches that will echo across the country for decades to come. To do so, however, we must exploit all areas of applied and direct research into climate action, creating a "Green Economy" and making Vermont a center of its activity. We need to harness the almost ceaseless potential of Vermont's residents to develop and implement more sustainable – and rewarding – practices and technologies, embracing a culture that encourages innovation in the way we heat our homes, travel, manufacture our products, do our work, process our waste, and otherwise live our lives.

Vermont is poised to make a genuine energy-related paradigm shift – both in sources and uses of energy – borne out of the necessity to confront the growing reality of global climate change. Making this shift may not be easy, especially in the short run, but it is

certainly not optional; global warming risks all that we as Vermonters hold dear and the costs of inaction – to our “Green Bank” – will be even greater. By taking pro-active steps now, Vermont can harness the challenge of climate change, turning its challenges into an engine of economic innovation, to the ultimate benefit of our economy, our landscape, and the well being of our citizens.

Appendices