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For additional copies of this report or for more information about Clean Water Fund and the Connecticut Climate Coalition, please contact: Roger Smith at (860) 232-6232 or rsmith@cleanwater.org.
In 2004, Public Act 04-252 committed Connecticut to a timeline for reducing greenhouse gas (GHG) emissions in the state: reduce emissions to 1990 levels by 2010, to 10% below that level by 2020, and by 75-85% in the long term, consistent with regional goals set out by the New England Governors and Eastern Canadian Premiers in 2001. On Feb. 15, 2005, Connecticut released its Climate Change Action Plan (CCAP), detailing how it would reach these goals. This review is intended to help judge the degree to which Connecticut is on track to meet its goals.

The CCAP contains 55 separate policies. This report limits detailed scrutiny to the most critical 14 policies, which account for 91% of the total forecasted reductions in 2010 and 93% of the total in 2020.

Were all these policies to be implemented fully, along with the numerically less significant policies in the CCAP, Connecticut would meet its reduction targets. But there are two problems. First, some of the electricity-sector policies duplicate each other, so their reduction estimates cannot be fully counted. Second, out of the 14 most important policies, only six are in current law or have been identified by the governor for immediate implementation. The other eight policies may or may not be implemented in the near future, depending on legal issues, on whether the governor and/or the legislature take further action, and on their success in carrying them out. We have thus assigned probabilities to the likelihood that each of the eight policies will be implemented in time to have their expected impacts in reaching the 2010 goal.

Based on these probabilities, and on the duplication in the electricity sector, we conclude that, absent additional efforts, by 2010 Connecticut is only likely to achieve 55% of the emissions reductions forecasted in the CCAP for that year. As a result, without further action by the executive branch or legislature, the state’s emissions will be 6.4% above 1990 levels, failing to achieve the target set by law.

A simple three-step strategy can reverse this trend and put Connecticut on track.

1. **Prioritize the 14 most important policies for near-term implementation**—First, spending on energy efficiency should be greatly expanded, by creating a systems benefit fund for fuel oil; either creating a systems benefit fund or mandating “least cost planning” for natural gas; and for electricity both restoring previous funding levels and instituting least cost planning. In addition, critical policies include restoring the Clean Energy Fund to previous spending levels; fully funding mass transit and implementing other “smart growth” policies; slicing “black carbon” emissions by retrofitting priority diesel fleets, starting with public vehicles; and taking the steps necessary to achieve the solid waste recycling goal in the CCAP.

2. **Implement promising policies that were not included in the CCAP**—this includes auctioning emissions allowances under the Regional Greenhouse Gas Initiative and using the money for energy
efficiency programs; instituting “pay as you drive” auto insurance; and analyzing some of the items in the CCAP for which numerical forecasts were not made, or which had small numerical values, to see if they deserve to be prioritized. In addition, the governor’s 2006 “Energy Vision” contains a number of promising policies for which greenhouse gas reduction estimates have not been made. Such estimates should be calculated, particularly for transportation-related items such as tax incentives for purchase of fuel-efficient vehicles, and the most valuable policies implemented.

3. Reinvigorate state climate planning—there must be an ongoing planning process through which new policies can be added to the plan and existing policies improved, including re-engagement of stakeholders and the general public.

Note: State’s mandate is to return to 1990 levels by 2010. The middle bar shows our guess as to what will be achieved in 2010, based on the current likelihood that the legislature will pass, and the governor will sign, policies that are not in the administration’s plans to date. All bars adjust for duplication between RGGI and other electric-sector policies.
Evidence from decades of scientific scrutiny has overcome skepticism that mankind can alter the climate of the earth. In 2001, the Intergovernmental Panel on Climate Change (IPCC) issued a scientific assessment, concluding, “There is new and stronger evidence that most of the warming observed over the last fifty years is attributable to human activities.” The 2500 scientists working with the IPCC strengthened this conclusion in 2007, stating that, “Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations,” with “very likely” meaning with greater than 90% confidence.2

Also in 2001, the New England Governors and Eastern Canadian Premiers pledged that each state and province in the region would work to reduce their greenhouse gas emissions to 1990 levels by 2010, to 10% below that level by 2020, and by 75–85% in the long term, to stabilize the climate. In 2004, the Connecticut General Assembly adopted these goals under Public Act 04-252 and charged state agencies with creating short- and long-range Climate Change Action Plans (CCAP) to meet these goals. Connecticut released its plan to reach the 2010 and 2020 goals on February 15, 2005. The purpose of this review, two years later, is to help judge whether we are on track.

The CCAP contains 55 separate policies addressing carbon dioxide (CO₂) and other greenhouse gases. Our present review is intended to examine what progress the state has made to date in implementing these 55 policies, to raise other policy options that the state has not yet considered to help reach the goals, and to offer ideas to help the state improve the climate plan. Each of these steps is necessary for Connecticut to remain a climate leader and reach our climate goals.

Connecticut: Small State, Global Significance
Connecticut has a history of setting national precedents with strong environmental policies. In the past few years, the “Sooty Six” law to reduce sulfur dioxide from power plants and the 2003 mercury law have prompted other states to issue similar regulations, and their successes have undercut national arguments by industry that such standards were technically infeasible. Similarly, federal action on global warming is also opposed by self-interested parties who argue that solutions either do not exist or are too costly to adopt. Internationally, other developed countries are moving ahead with binding targets under the Kyoto Protocol, named for the city where the treaty was formalized in 1997. But, the United States, the world’s largest emitter and a key drafter of the Protocol, has refused to participate. For these reasons, action in Connecticut and in the northeast are nationally and even globally significant.

In the region, the passage of Connecticut’s climate law in 2004 helped prompt Massachusetts to release its long-delayed climate plan, and lessons learned from Connecticut’s climate planning process have been applied in Maine, Vermont, and even in western states.
After the governors of Massachusetts and Rhode Island bowed to industry pressure and withdrew from a regional agreement to limit power plant carbon dioxide pollution, Governor Rell’s steadfast support helped keep the entire initiative alive. All of this activity in the northeast helped prompt a comparable 2006 commitment by California’s governor and legislature to reduce its emissions to 1990 levels by 2020 and then to stabilize emissions 80% below 1990 levels by 2050, which is similar to what is called for by Connecticut’s climate law and the 2001 New England Governors climate agreement. As a result, when other states, national governments, and the international media look for evidence of progress on global warming in the United States, they look beyond Washington to the northeast and California.

As an example of this, in 2005 Department of Environmental Protection Commissioner Gina McCarthy and representatives of the New England Climate Coalition addressed international delegates and reporters at the United Nations climate conference in Montreal. In a one-year retrospective on the Kyoto Protocol, Japan’s largest newspaper wrote a cover story on Connecticut’s global warming initiatives, representing signs of progress in the United States.

Because of increasingly alarming scientific reports on the danger of uncontrolled warming, combined with local global warming regulations in Connecticut, the northeast, and California, there are now growing calls from insurance companies, power companies, and others for national standards. In 2006, Senator Jeffords (I-VT) and Representative Waxman (D-CA) introduced federal bills that follow New England and California’s lead calling for levels of pollution reduction significant enough to avoid dangerous global warming.

**Connecticut’s Solid Foundation for Action**

Connecticut has a solid foundation for action on global warming. Even before global warming became a headline-grabbing public issue in Connecticut, the state had held a climate planning process wherein state agencies worked side-by-side with representatives from non-profits, business associations, universities, and members of the public to create a set of 55 policies that would eventually form the state climate plan. In 2004, the legislature kept the process moving by making the regional emission reduction goals into state laws and directing state agencies to produce short- and long-term plans to reach the goals.

Since this initial activity, global warming has become a much more prominent issue in Connecticut. In a 2006 poll commissioned by the Connecticut Clean Energy Fund, Connecticut residents were asked an open-ended question about their perception of the most pressing environmental problem. For the first time, global warming surpassed air and water pollution as the issue of highest concern.

This shift in public attitude is reflected in increased local citizen activity. The Connecticut Climate Coalition has become one of the largest grassroots climate networks in the country, consisting of more than 90 organizations and representing more than 500,000 Connecticut residents. As of January 2007, 35 municipalities have committed to the “20% by 2010” clean energy campaign, demonstrating a willingness to pay more to support electricity from clean, renewable sources. In the fall of 2006, the Interreligious Eco-Justice Network worked with faith communities to hold 130 showings of the movie *An Inconvenient Truth* to more than 6,000 people and held discussions about solutions being implemented at a number of congregations. Connecticut has both the policy framework and the public support it needs to create a climate for action.
Analysis of Progress to Date on the Climate Action Plan

According to the best estimates available, as of 1990, Connecticut’s greenhouse gas (GHG) emissions totaled 39.8 million tons. While projections are uncertain, the state estimates that, absent policy measures to change their course, emissions will reach 48.1 millions tons by 2010 and 56.2 million tons by 2020. While GHG emissions stem from a wide variety of sources— including electricity power plants and the use of fuels in buildings, transportation, solid waste disposal, agriculture, and land use—more than 90% of the total emissions are due to burning of fossil fuels.

The 55 policies contained in the Climate Action Plan would be a large number to examine in this report. However, our analysis indicates that more than 90% of the projected cuts in emissions are attributable to only 14 of the proposed policies—those which each contribute more than 1% of the total reductions projected for 2020 (although the impacts of some items were not estimated in the plan). These items account for 91% of the estimate for 2010, and 93% of the estimate for 2020. We therefore concentrate on these 14 recommended actions (abbreviated to R.A.), four of which relate to the transportation sector; four to energy use by the residential, commercial, and industrial sectors; two to solid waste, forests, and agriculture; and four to electricity generation, as shown in Figure 1.

According to the estimates in the plan, all 55 items would yield total reductions in emissions of 10.5 million tons in 2010, leading to actual emissions 5.3% below 1990 levels if all were fully implemented.

Figure 1: The 14 policies in the Climate Change Action Plan that each account for more than 1% of the total projected emissions reductions. Reductions expressed in millions of tons of carbon dioxide (CO₂) equivalent.
For the year 2020, the actions would cut emissions by 24.6 million tons, leading to emissions 20.7% below 1990 levels.

Achieving these reductions would be a significant accomplishment for Connecticut. However, it will take consistent strong leadership by the executive and legislative branches of government, along with the state’s citizens, to reach these goals. Our evaluation of the plan’s implementation indicates that some of the most important policies are on track to accomplish their projected emissions, but some are not. Prompt action by policymakers will be necessary to achieve the goals, especially since 2010 is not very far in the future.

**Double Counting in the Electricity Sector**

Connecticut is part of the Regional Greenhouse Gas Initiative (RGGI), which sets an overall cap or limit on carbon dioxide (\(\text{CO}_2\)) emissions from electricity power plants. That cap would hold \(\text{CO}_2\) emissions constant at approximately 2002-2004 levels from 2009 through 2014, and then reduce emissions to 10% below those levels by 2018. The RGGI cap not only sets a ceiling on emissions from power plants; it also, in effect, sets a floor. It is likely that emissions from electricity generation will not drop below the cap, because the state will issue permits or allowances equal to the cap amount, and generators will find it less expensive to purchase permits and emit \(\text{CO}_2\) than to cut emissions below the cap.\(^5\)

If this proves correct, then other policies that reduce emissions from the electricity sector—including electric efficiency measures and mandatory generation of renewable power—help the state to meet the cap, but will not cause further reductions beyond those required by the RGGI cap. Thus, to the extent that the plan includes numerical reductions from such measures along with those from RGGI, the plan is double counting the reductions that are likely to be achieved. In the 14 priority items above, this includes: Policy 30, which encourages clean combined heat and power (CHP) projects; Policy 31, which encourages the restoration of the conservation and load management fund; Policy 46, which sets a renewable portfolio standard; and Policy 51, which recommends restoring full funding to the Clean Energy Fund. These four policies represent 23.1% of the total estimated reductions in 2010, and 22.9% of the total estimated reductions in 2020. Since these are large fractions of the total planned emission cuts, the potential double counting with RGGI is a serious problem for the plan.

The Connecticut Clean Energy Options in the electricity sector from Table 1 is different because it relates to voluntary purchases of clean, renewable electricity by consumers. Under the RGGI Model Rule, states have the option of reducing their cap level by the number of tons of \(\text{CO}_2\) eliminated due to such voluntary purchases. Therefore, including this measure in the CCAP does not yield double counting, as long as Connecticut chooses the option to cut its cap level.

The extent of double-counting in electricity emphasizes the fact that Connecticut’s CCAP, like other northeastern state plans, has an over-reliance on savings in the electricity sector. Adjusting for the double-counting helps make clear the need for greater savings in other sectors, particularly transportation, which is the sector with the largest and fastest-growing emissions.

One additional issue is that estimated emissions reductions from the Connecticut Clean Energy Options, the Renewable Portfolio Standard, and the government clean energy purchase use different assumptions for the amount of carbon dioxide they would displace.
Prioritizing the Connecticut Climate Change Action Plan

Examining Fourteen Critical Policies

Below we assess the progress made since 2005 on each of the 14 critical policies listed above, monitor trends, and make recommendations to maximize the benefit of the policies.

TRANSPORTATION SECTOR

1. R.A. 1: California LEV II Standards for Light-Duty Vehicles

DESCRIPTION
California has historically devised tailpipe emission limits far more stringent than Federal standards. The latest iteration of the standards, LEV II, reduces the health-harming pollutants non-methane organic gas, nitrogen oxides (NOx), and carbon monoxide. The standard also provides for the greater adoption of: Partial Zero-Emission vehicles (PZEV) that have near-zero evaporative emissions (those that occur when the car is not running); and Advanced-Technology PZEVs with these attributes that also use technology such as a hybrid electric motor. Connecticut’s 2004 Clean Cars law provided for the adoption of these more stringent regulations.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
- By 2010: 0.04 MMT CO₂e
- By 2020: 0.47 MMT CO₂e

IMPLEMENTATION STATUS
The legislature adopted the California LEV II standard in 2004 and the Department of Environmental Protection adopted the rule in December 2004.

CONCLUSION
Connecticut has fully adopted these regulations, which are set to take effect in model year 2008 and will achieve the modest greenhouse reductions associated with the use of cleaner cars.

2. R.A. 4: Greenhouse Gas (GHG) Tailpipe Standards

DESCRIPTION
Connecticut’s 2004 Clean Cars law authorized the State Department of Environmental Protection to adopt future California regulations. The tailpipe greenhouse gas standard (also known as “Pavley”) called for carbon dioxide reductions of 34% for new cars and a 25% reduction for new light trucks by 2016. The standards go into effect in model year 2009.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
- By 2010: 0.05 MMT CO₂e
- By 2020: 2.63 MMT CO₂e

CONCLUSION
The Connecticut DEP adopted the tailpipe greenhouse gas standards in 2005. Automakers are currently suing over the authority of states to regulate greenhouse gases from cars, and the outcome of this lawsuit will determine if Connecticut will be able to fully implement this recommendation and achieve the estimated greenhouse gas reductions.
3. R.A. 7: Transit, Smart Growth, and Vehicle Miles Traveled (VMT) Reduction Package

DESCRIPTION
This policy recommends reducing growth in VMTs by 3% by the year 2020 through increased ridership, new transit investments, and coordination of agency services to promote smart growth. Also, redirecting new development to appropriate locations, road pricing pilot projects, and incentives for reducing miles traveled are recommended.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
- By 2010: 0.22 MMT CO₂e
- By 2020: 0.49 MMT CO₂e

IMPLEMENTATION STATUS
A number of positive steps have been taken to support smart growth, transit, and transit oriented development, and to reduce reliance on the single-occupancy vehicle.

The 2006 Roadmap for Connecticut's Economic Future implements the New Haven-Hartford Springfield commuter rail by 2010; implements bus rapid transit between New Britain and Hartford; and funds rehabilitation of 342 new rail cars for the New Haven line, to be delivered by 2013. It also authorizes the purchase of coaches, expanded service, and station upgrades for several rail routes and stations, to be implemented by the Connecticut Department of Transportation.

In addition, smart growth initiatives were approved to better coordinate new development, land use, transportation, jobs, and housing. Legislation was passed to coordinate state and regional transportation planning with economic and land use planning and increase interagency cooperation. The legislature approved a pilot build-out analysis to measure transportation need, economic development, and the environment in one of the state's regions.

The $2.3 billion investment of resources for transit improvements over the last two years represents a significant commitment on the part of the state of Connecticut. The emphasis on better coordinating economic and physical development policies with transit is encouraging. Still, many of the policies of the last years are inadequately funded and others will take years to implement. The Connecticut Department of Transportation is under-staffed and ill equipped. In the mean time, automobile traffic is expected to increase 130% in the next fifteen years.6

ACTION NEEDED
Transit ridership: Connecticut's bus system has been neglected, with average hours of service less than half the hours needed in some urban areas. Routes have been eliminated or reduced to accommodate budget constraints. In 2006, the state was unable to access $1.6 million in federal capital funds because it failed to commit its required 20% match.7

Because the state's investment level is essentially fixed, the bus system cannot accommodate greater demand, and eliminating services takes us further from our goal of promoting mass transit. Connecticut must commit more than $40 million in new capital and operating funds to meet current and projected bus ridership goals.

Most transit capital expenditures in recent years have been for commuter rail services. Currently, the state's rail system accommodates 36.3 million riders each year4 and all the state's rail lines have experienced significantly increased ridership rates between 2005 and 2007. To accommodate and incent ridership, we need to ensure that the entire system is in good repair, including platforms, bridges, parking
lots, and coaches. The state can encourage the reduction in VMTs by providing incentives to its employees and to public- and private-sector employers to encourage transit use, ride-sharing, flex-scheduling, and telecommuting. State economic development investments should be contingent on access to alternative commutes.

Transportation investments: In 2006, the Transportation Strategy Board reconvened to review and revise the strategies adopted in 2003. Its report is due for submission to the legislature in January 2007. The political will to investigate congestion mitigation pricing, electronic user fees, and other highway user fees is growing. The Transportation Strategy Board (TSB) recommends the state commission an extensive analysis of tolling as a means of managing transportation demand and raising revenues to support future transit and highway needs.

Expand bicycle and pedestrian infrastructure: The TSB also recommends providing bicycle racks on buses and trains; providing bike storage, parking, and routes to transportation centers; and funding Safe Routes to School Programs.

The TSB and the Connecticut Green and Growing Plan (Executive Order 15) recommend establishing a coordinated, interagency program to promote smart growth in Connecticut to:

- Coordinate activity between state agencies and provide technical support for planning for growth.
- Establish an outreach program to regional and local planning organizations to enact smart growth.
- Redirect at least 25% of new development to growth-appropriate locations, as indicated by the PCD.

A major revision of the statutes governing local, regional, and state plans of conservation and development was adopted in 2005 (P.A. 05-205). It establishes six growth management principles that local and regional plans should follow, and specifies that plans should identify areas where it is feasible and prudent to have compact, transit accessible, pedestrian-oriented, mixed-use development patterns and land reuse. The Secretary of the Office of Policy and Management (OPM) must recommend boundaries for priority areas for state funding, subject to legislative approval.

In 2006, an Office of Responsible Growth (by Executive Order) was created within OPM, charged with coordinating transportation, land use, and economic development priorities. The development of residential, commercial, and employment centers within walking distance to public transportation facilities and services was established as a state goal, and sources of state funding for such development were identified.

CONCLUSION
Groups working on smart growth, such as 1000 Friends of Connecticut, commend legislative leadership and Governor Rell for their commitment to these efforts. Still, Connecticut lacks clear direction, tangible targets, and measurable goals for many of our transportation issues. The Transportation Strategy Board has no prioritization of projects, and includes major new highway projects as well as transit and transit-oriented development. To meet our goals to reduce GHG emissions through smart growth, the state needs to coordinate its economic development strategy and transit strategy with the Connecticut...
Conservation and Development Policies Plan 2005-2010. In addition, the state must give real incentives to cities, towns, and employers to adopt wise land use and development practices and adopt alternative transportation modes.

4. R.A. 9: Clean Diesel and Black Carbon

DESCRIPTION
Black carbon soot from diesel engines is a potent global warming pollutant, with an estimated impact, pound for pound, of as much as 700 times that of carbon dioxide. The state climate plan calls for aggressive phase-in of new diesel pollution control technologies to reduce emissions by 90% from existing diesel vehicles. The climate plan cites a penetration rate of 25% in 2010 and 75% by 2020 for existing vehicles. No pollution reductions are counted from the federal diesel rule, which mandates that 2007 model year and later on-road diesel engines be 90% cleaner than today’s vehicles.

To meet these targets, the climate plan suggests investigation of installing “Best Available Control Technologies” for construction vehicles on state-funded projects, all Department of Transportation vehicles including dump trucks, snow removal vehicles, and Bradley Airport diesel ground vehicles; and the retrofit or retirement of pre-2007 school and Connecticut Transit buses. It also suggests additional regulations to retrofit other in-state trucks and inter-city buses, and to promote anti-idling for locomotive and marine engines.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
• By 2010: .8MMT CO$_2$e
• By 2020: 2.4MMT CO$_2$e

IMPLEMENTATION STATUS
Connecticut has made little progress to date retrofitting existing diesel vehicles. The Department of Transportation required the use of cleaner on-road diesel fuel and diesel oxidation catalysts for the Quinnipiac Bridge state construction project, but that pilot project has yet to become the standard for state construction projects. While Federal Environmental Protection Agency grants and pollution enforcement settlements have provided for the retrofit of 501 school buses, out of a fleet of approximately 3400 that can be retrofitted. Legislation to mandate pollution reductions from school buses, transit buses, and state-funded construction equipment did not pass in 2006.\(^9\)

CONCLUSION
Securing funding to reduce pollution from state diesel fleets must become a priority at the state legislature
Clearing the Air in New York State

On November 2, 2006, New York’s Governor George E. Pataki signed into law a clean diesel bill that addresses diesel pollution from all state vehicles and construction equipment. The law, which enjoyed broad bi-partisan support in the New York Legislature, requires all state-owned heavy duty vehicles and those under contract with the state to install retrofit technologies to reduce tailpipe emissions, as much as is technically feasible, by 2010. It also requires heavy-duty off-road equipment to use ultra-low sulfur diesel fuel, which is standard for all other diesel vehicles, by early February 2007.

According to the American Lung Association of New York State, the New York City metropolitan area leads the nation in total deaths, cancer deaths, and heart attacks associated with diesel emissions. The EPA considers Fairfield and New Haven Counties in Connecticut part of the New York area that fails to meet Federal standards for fine particle pollution. Healthcare experts hail the new law as key to improving public health and reducing healthcare costs. Said Peter M. Iwanowicz, Vice President of the American Lung Association of New York, “Since diesel exhaust has been linked to premature death, lung cancer, asthma attacks, and many other health ailments, this new law will improve public health and reduce health care costs for all.”

The American Lung Association of New York State is the leading organization working to prevent lung disease and promote lung health through advocacy, research, and education.
RESIDENTIAL, COMMERCIAL, INDUSTRIAL SECTOR

5. R.A. 30: Clean Combined Heat and Power

DESCRIPTION
The Climate Change Action Plan (CCAP) includes a provision to encourage combined heat and power (CHP), which means using a single fuel and facility to produce both electricity and steam. Electricity generation creates waste heat, which can be used to produce steam for industrial processes and space heating. But, because steam cannot be transported over long distances, the electricity must be generated “on-site” or near where the steam would be used. Thus the term “distributed generation” of electricity, rather than generation at a central, isolated power plant.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
• By 2010: 0.53MMT CO$_2$e
• By 2020: 1.4MMT CO$_2$e

The CCAP estimates that this provision would constitute 0.5 million tons of CO$_2$ cuts in 2010 (5.0% of the total projected cuts) and 1.4 million tons (5.7% of the total projected reductions) in 2020 pollution reductions. It calls for accomplishing this by reducing barriers to implementing CHP projects—such as permitting and interconnection problems, and standby power rates—and by giving incentives for such projects.

However, almost all of the reductions are “indirect.” By producing electricity on site, the need for generation at power plants is reduced and emissions are cut from such plants. As discussed earlier, RGGI sets a fixed cap on power plant emissions. Generation from combined heat and power projects is an important method by which CO$_2$ emissions from power plants can be reduced, helping the state to meet the RGGI cap. But, because of RGGI’s fixed cap, it appears that counting both CHP’s indirect savings and
RGGI in the plan results in double counting of the likely reductions.

Nevertheless, the state has made major progress in implementing Policy 30, Clean Combined Heat and Power. In 2005, the state passed HB 7501, which became Public Act 05-01: An Act Concerning Energy Independence. The act requires the electric companies and competitive suppliers to acquire 1% of their supply from distributed resources starting in 2007, with the requirement rising to 4% by 2010. This public act is a third tier, or Class III, item in the state’s renewable energy portfolio standard.

In implementing the law, the Department of Public Utility Control (DPUC) has instituted and is planning to institute several specific measures, including supporting and providing incentives for combined heat and power. It is difficult to know what results these incentives and removal of obstacles will yield; it is possible the numerical goals set in the CCAP can be achieved.

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Increasing Energy Efficiency in Vermont: Town by Town

There is a tremendous amount of untapped potential for energy efficiency throughout New England. Inspired by similar programs in other Vermont towns, Manchester launched a creative campaign in October of 2005 to encourage residents and businesses to replace incandescent light bulbs with ENERGY STAR® qualified compact fluorescent (CFL) bulbs. Local response was very enthusiastic, with many businesses and homes replacing all of their incandescent light bulbs with CFL bulbs. Participants changed a total of 42,000 bulbs! Collectively, they will save $281,000 annually and $1.7 million over the lifetime of the bulbs they changed. And, more than 8,000 tons of carbon dioxide emissions will be eliminated—the equivalent of removing 1,412 cars from Vermont’s roads.

Blair Hamilton, Director of Efficiency Vermont, says, “The effort continues in Manchester. Retailers there have gone on to sell even more light bulbs, and the town is considering adding a renewable energy offset budget to counterbalance the carbon that Manchester generates in its municipal operations. The success of the Manchester Challenge has inspired many of Vermont’s communities to launch their own energy efficiency campaigns.”

Efficiency Vermont helps Vermonters reduce energy costs, strengthen the economy, and protect Vermont’s environment.

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6. R.A. 31: Restore Conservation and Load Management Fund

DESCRIPTION

In 2003, the legislature reduced funding for electric efficiency measures, cutting ratepayer funded efficiency programs by one-third. The Climate Change Action Plan (CCAP) calls for restoring the funding, raising it from $50 million to $87 million. The CCAP estimates that the additional funding would yield 2.7% of the total emissions reductions in the plan as of 2010 and 2.5% in 2020. However, even if the funds are restored in 2007 or later, a portion of several years’ worth of efficiency investments will have been lost since the CCAP was released in 2005, substantially reducing the gains anticipated by 2010. In addition, as with combined heat and power, the savings that do take place are likely to constitute double counting with the RGGI cap.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS

- By 2010: .28MMT CO₂e
- By 2020: .61MMT CO₂e
CONCLUSION
Restoring the conservation and load management funds requires legislative action, which has not yet taken place, even several years after completion of the CCAP and after several budget surpluses. But, with rising electricity costs, there appears to be strong support for a restoration, from both the legislature and the administration. The governor’s “Energy Visions for a Cleaner, Greener State,” released in late 2006, specifically states, “I will restore the money taken from the Energy Efficiency Fund in 2003.”

7. R.A. 32: Create Oil Conservation Fund

DESCRIPTION
A substantial percentage of residential homes are heated by fuel oil, as are a smaller percentage of commercial and industrial buildings. Yet, there are no efficiency programs in the state dedicated to serving the needs of fuel oil consumers.

The state estimates that a 3% surcharge on fuel oil sales—parallel to that proposed for natural gas, and to the rate on electricity sales before it was reduced—would generate $20 million per year for energy efficiency programs, resulting in a cumulative cut in oil consumption of 11.6% in 2010 and 22.7% in 2020. That would be a remarkable gain in efficiency and a reduction of our dependence on oil. It would yield reductions in CO₂ emissions of 1.02 million tons in 2010 and 1.89 million in 2020, which equates to 9.7% and 7.7% of the projected total cuts in GHG emissions from all policies. In addition, there are both health and economic “co-benefits” of the policy, as emissions of other air pollutants would be cut and the state would import less fuel.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
- By 2010: 1.02MMT CO₂e
- By 2020: 1.89MMT CO₂e

CONCLUSION
As with the proposed natural gas fund, little progress has been made in implementing this recommendation. Environment Northeast and sponsoring legislators introduced a bill into the 2005 legislature to create this policy, but the bill did not make it out of committee. At present, leaders in the legislative and the executive branches are not pressing for the policy to be raised. The governor’s “Energy Vision” fails to include this key energy policy.

8. R.A. 33: Create Natural Gas Conservation Fund

DESCRIPTION
This policy proposes that the state establish a surcharge of 3% on natural gas consumption, yielding $30 million available for energy efficiency programs to reduce natural gas in buildings and equipment. It also proposes that a “fuel-blind” efficiency program look at all means of reducing energy consumption in a building, whether it is electricity, natural gas, or fuel oil. This is one of the most important items in the CCAP, projected to account for 13.7% of total GHG reductions in 2010 and 8.4% in 2020.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
- By 2010: 1.44MMT CO₂e
- By 2020: 2.07MMT CO₂e

At present, the state’s natural gas utilities have raised their spending on efficiency from $900,000 (solely for low income customers) to about $3 million for 2007. However, this is only a small fraction of the $30 million called for in the CCAP, and would yield correspondingly small savings in emissions. Progress has not been made in mandating higher spending levels, either through administrative processes or through legislation. In fact, the Energy Independence Act of 2005 includes language that the Act “cannot be construed to require the Department of Public Utility Control (DPUC) to establish a conservation charge” to support natural gas efficiency programs. The governor’s “Energy Vision” does not contain a recommendation to establish a fixed charge on gas bills to invest in efficiency, so we must assume that implementing such a funding mechanism is not a priority of the current administration.
Since the writing of the Climate Change Action Plan (CCAP), other means of funding have been suggested for efficiency programs related to electricity, natural gas, and fuel oil use. Perhaps these methods, discussed below, can be implemented in tandem with those in the CCAP, or they may supersede the CCAP policies.

**Allowance Sales Proceeds from the Regional Greenhouse Gas Initiative**

Under RGGI, Connecticut has a “budget” or cap of 10.695 million tons of CO₂ emissions annually for power plants larger than 25 MW of power each. Connecticut must create an emissions permit, or allowance, for each ton of emissions. Under RGGI, the state is required to charge electricity generators for at least 25% of the allowances, presumably with the sales price set through an auction. It is up to the state whether to charge generators for all or a portion of the other 75% of the allowances, or to give them to the generators at no cost. The money obtained from sales could be used to subsidize energy efficiency programs, renewable energy development, other “strategic energy purposes,” or to provide consumer rebates.

The amount permit sales would yield depends greatly on what the market price of an allowance will be starting in 2009. Forecasts by the state governments yield estimates ranging from $2 to $11 a ton, varying by assumptions made about a variety of factors, including how much fossil-fuel power “leaks” into the RGGI region from outside and the eventual cost of natural gas.

At a moderate price of $5 a ton, for example, Connecticut’s 10.7 million allowances would yield about $53 million per year—enough to increase the $87 million efficiency fund of a few years ago by 60%, or to double the current $50 million funding level. At the top end of the likely market price for allowances, they would yield $118 million a year, enough to greatly expand efficiency programs in the state.

Other northeast states have either decided or are moving toward deciding that the allowances should be sold and the proceeds used to benefit consumers:

- The State of Vermont has passed legislation requiring that 100% of its RGGI allowances will be sold to generators and used for consumer benefits.
- In New York, the Department of Environmental Conservation (DEC) has recently issued a preliminary statement of its proposal that 100% of New York’s allowances be auctioned. Incoming New York Governor Eliot Spitzer has, in his previous position as Attorney General, stated his strong support for 100% auctioning of the allowances.
- New Jersey officials have also indicated they are leaning toward auctioning all or a high fraction of the allowances.
- In Massachusetts, Governor Deval Patrick recently issued an order to have the state re-join RGGI, and strongly stated his intention to sell 100% of the emissions allowances. Further, a bill filed in the current legislative session by the co-chairs of the Environment Committee would also require 100% auctioning of the allowances.

Both the DEC and Governor Spitzer articulated conclusions that have now been widely reached by economic analysts and by public decision makers throughout the country. In the environment of a deregulated electricity industry, electricity prices will rise due to a cap-and-trade program, and all generators will benefit from these increased prices—obtaining, on average, revenues greatly exceeding their cost of compliance with the program. The price
changes to consumers will take place without regard to whether allowances are auctioned or given away at no cost.

**CONCLUSION**

Connecticut should not miss the opportunity to greatly increase the funds available for energy efficiency programs and possibly for renewable energy development. The Department of Environmental Protection and the Department of Public Utility Control should propose—and Governor Rell should adopt—regulations to implement a 100% auction of the RGGI allowances.

**Require Electric and Gas Utilities to Procure All Cost-Effective Efficiency**

Instead of providing a fixed amount of funding for energy efficiency, the state could treat efficiency and greater generation capacity equally for the purpose of meeting energy demand. Public Act 05-1 requires gas utilities to provide resource plans that include demand-side management, but to date they have done so only to a limited degree. One criterion for such planning could be to implement all efficiency measures where the cost of saving electricity or gas is less than or equal to the cost of providing more electricity or gas, on a per unit basis.

Environment Northeast, supported by Clean Water Action and the Connecticut Public Interest Research Group (ConnPIRG) recently made proposals for such a change in planning practices, and has presented data in support of the large savings that would result. For example, the current price for purchasing electricity supply on the ISO New England system is about $80 per megawatt hour (MWh), while the cost to reduce use in the residential sector, for the state’s existing efficiency programs, is $30 per lifetime MWh. At less than half the cost of new supply, it is obvious that efficiency leads to significant savings. And in the commercial and industrial sectors, savings are even greater, as efficiency programs cost only $12 per megawatt hour saved.23

It makes more energy sense that the first investment should always be in cost-effective energy efficiency rather than in new supply. Comprehensive energy plans should be mandated by the state, with programs to reduce the cost to consumers and reduce environmental impact.

**“Decouple” Electric Utility Profits from Sales Volume**

Environment Northeast, Clean Water Action, and ConnPIRG recommend changing the current system for regulating revenues of electric utilities, whereby fixed costs utilities are recovered based on the amount of energy sold to the customer. This system creates a strong incentive for utilities to increase their profits by maximizing their sales—which contradicts the state’s goal of minimizing costs and environmental damage. In order to remove this disincentive to conservation, electric distribution companies should recover their costs based on their actual expenses, and break the link between profits and sales.
**Agriculture, Forestry, Waste Sector**

**9. R.A. 40: Forest and Agricultural Land Preservation**

**DESCRIPTION**
The goal of this recommendation is to protect Connecticut forest and farms, to preserve their ability to “sequester” carbon dioxide, and to avoid greenhouse gas emissions produced when land is converted to development. The policy calls for an end to the development of existing forests and agricultural lands.

**ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS**
- By 2010: .28MMT CO$_2$e
- By 2020: .28MMT CO$_2$e

**CONCLUSION**
A number of programs are helping Connecticut protect these lands. Most significantly, the 2005 Public Act 05-228, An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing, and Historic Preservation, created a substantial land preservation fund with an ongoing and reliable source of funding. The state has worked to protect lands through the Recreation and Natural Heritage Trust Program and various programs dedicated to purchasing the development rights to lands or conservation easements. These programs should bring Connecticut close to meeting its climate plan goals.

**10. R.A. 43: Increase Recycling and Source Reduction to 40%**

**DESCRIPTION**
The state climate plan recommends increasing the recycling rate to 40% by the year 2010 and maintaining this recycling rate through 2020. This dramatic increase makes recycling one of the most significant short-term climate policies and among the top ten in reaching the 2020 climate goals.

**ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS**
- By 2010: .91MMT CO$_2$e
- By 2020: .97MMT CO$_2$e

The 2003 Department of Environmental Protection (DEP) analysis for the Climate Plan estimated that the state was recycling about 23% of its waste. This earlier analysis has been superseded by the 2006 amendments to the DEP Solid Waste Management Plan, which indicates that Connecticut diversion...
(recycling, composting, source reduction) rates for Municipal Solid Waste have remained relatively static in recent years and are estimated to be 30% in fiscal year 2005. The DEP Solid Waste Management Plan recommends increasing the diversion rate to 58% by fiscal year 2024, but does not give interim targets or years consistent with the climate plan for 2010 or 2020.

In terms of avoiding greenhouse gas emissions, not all waste is equally important. The clean air association of the northeast states, NESCAUM, created a Connecticut Greenhouse Gas Inventory. It does not count direct CO$_2$ emissions from incineration or decomposition of paper, wood, food, or other organics as “anthropogenic,” as these sources are assumed to be harvested sustainably with no net lifetime greenhouse gas emissions. The inventory does list the combustion of petroleum-derived products, including plastic and synthetic rubber, as contributors to global warming. Even for sources such as paper, there are significant greenhouse gas benefits from recycling or source reduction over incineration or landfiling, as recycling displaces the use of fossil fuel energy needed to transform virgin materials into usable products.

The EPA lists estimates for greenhouse gas emissions avoided per ton of different types of recycled materials. Aluminum cans are the most effective, followed by steel cans, plastics #1 and #2, and then by phonebooks and other papers. Nationally, the largest waste sources, in order by greatest to least volume, are: corrugated cardboard, yard trimmings, food, newspaper, glass, plastics, lumber, magazines, office paper and tires. Organics are also very significant for Connecticut. These materials constitute more than 65%, by weight, of Municipal Solid Waste.

**IMPLEMENTATION STATUS**

The DEP Solid Waste Management Plan calls for a near doubling of business-as-usual waste diversion rates over the next two decades. Accomplishing this ambitious goal will require numerous legislative and regulatory changes, including active enforcement and new funding streams, the increased involvement of municipalities, and cooperation from businesses and the public.

The most significant policies in terms of ultimate climate benefits appear to be increasing plastics recycling by adding plastics #1 and #2 to legally mandated recyclables, expanding the bottle bill to include plastic water bottles, funding stronger recycling programs by increasing the bottle deposit to ten cents, and capturing the unclaimed bottle and can deposits.

Capturing construction and demolition waste also appears significant. The plan estimates only 7% of Connecticut construction and demolition waste is reported recycled, with most landfilled out of state. Source reduction or recycling has significant climate benefits over landfiling.

Also, the large portion of “organics,” including food scraps, that are currently incinerated could be separated from the waste stream and either composted or utilized as a Class I clean energy source, displacing fossil fuel use. Paper is still the single biggest component of the Connecticut municipal solid waste stream. Much more effort should go into collecting and recycling paper to recover energy lost when paper is combusted.

**CONCLUSION**

The state is not yet on track towards meeting the recycling goals in the state climate plan. The updates to the Solid Waste Management Plan were delayed until early 2007, so no progress has been made towards reaching the ambitious goal of 40% recycling by 2010. Efforts to increase the scope of the bottle bill, increase the bottle deposit amount, and reclaim unreturned bottle deposits from distributors have repeatedly failed at the state legislature.

With a renewed sense of urgency and commitment to moving beyond a “throw-away culture,” the DEP and legislature could bring Connecticut’s recycling, composting, and source reduction to levels already achieved in other states. This would exceed the climate plan’s 2020 emissions reductions, if not the short-term goal.
**ELECTRICITY SECTOR**

**11. R.A. 46: Renewable Portfolio Standard**

**DESCRIPTION**
This policy would increase Class I of the state Renewable Portfolio Standard (RPS) from 7% by 2010 to 20% by 2020.

**ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS**
- By 2010: 1.3MMT CO\textsubscript{2}e
- By 2020: 3.2MMT CO\textsubscript{2}e (double counting with RGGI)

**GHG REDUCTIONS TO DATE**
None.

**IMPLEMENTATION STATUS**
In her 2006 energy plan, Governor Rell announced her support for increasing the Class I Renewable Portfolio Standard (RPS) to 20% by 2020. The current RPS is supporting new renewable energy projects and the DPUC is looking for ways to increase the amount of projects built and capture price stability benefits through long-term procurement by utilities.

**CONCLUSION**
Legislation will be needed to extend the RPS from 7% in 2010 to 20% by 2020. The RPS is the key mechanism in enabling Connecticut to diversify its electricity fuel mix and is essential towards meeting the greenhouse gas reduction goals of the Regional Greenhouse Gas Initiative. It is important that the legislature not dilute the impact of the RPS by changing definitions, or by increasing support for Class II energy sources—including trash incineration or hydropower projects that already exist. These sources are already economically competitive, have limited ability to expand to meet future energy needs and, therefore, will not lead to significant new CO\textsubscript{2} reductions and do not deserve additional ratepayer support.
12. R.A. 49: Clean Energy Options

DESCRIPTION
The Connecticut Clean Energy Options is a voluntary program for consumers to purchase Renewable Energy Certificates (RECs) supporting the development of clean energy sources including wind, small hydropower, and clean biomass. Recommended Action 49 calculates avoided emissions by 2010 based on 120,000 households (3-4% of energy supplied) joining the program, or a smaller number of businesses, institutions, or town governments. To promote this program, environmental non-profits have promoted the Connecticut Clean Energy Options to their members; Smart Power, Clean Water Fund, and the Inter-religious Eco-Justice Network created the “20% by 2010” clean energy campaign for towns; and the Connecticut Clean Energy Fund has provided local solar installations as incentives for town governments that support clean energy and encourage their residents to sign up for clean energy.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
- By 2010: .43MMT CO$_2$e
- By 2020: .81MMT CO$_2$e

Figure 2 shows target goals for the recommended action on Clean Energy Options.

### Figure 2: Short-term, medium-term, and long-term (CCAP 2010) targets for R.A. 49

<table>
<thead>
<tr>
<th>Goal Timeline</th>
<th>Who Established</th>
<th>When</th>
<th>Sign-Ups</th>
<th>Status</th>
<th>GWh Equivalent</th>
<th>% of CCAP goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>DPUC</td>
<td>31 Mar. 2007</td>
<td>8,000</td>
<td>Already achieved</td>
<td>67.2</td>
<td>7%</td>
</tr>
<tr>
<td>Medium</td>
<td>CCEF</td>
<td>31 Dec. 2007</td>
<td>20,000</td>
<td>On target</td>
<td>168</td>
<td>17%</td>
</tr>
<tr>
<td>Long</td>
<td>CCAP</td>
<td>31 Dec. 2010</td>
<td>120,000</td>
<td>Behind schedule</td>
<td>1008</td>
<td>100%</td>
</tr>
</tbody>
</table>
IMPLEMENTATION STATUS
The Clean Energy Options program began in April 2005, and as of December 2006 stands at approximately 10,000 households, accounting for approximately 84 gigawatt-hours of electricity per year. Some large businesses and universities have also made significant purchases of Renewable Energy Certificates. More than 35 towns have committed to the “20% by 2010” clean energy campaign, committing town, school, and other government buildings to purchase RECs to cover their electricity usage.28

CONCLUSION
Based on the number of Connecticut Clean Energy Options sign-ups, and excluding other voluntary town or business clean energy purchases, this policy is approximately 8% towards reaching the climate plan's 2010 goal, but on track towards meeting the Connecticut Clean Energy Fund's next interim goal of 20,000 households joining the program by the end of 2007.

The targets for this program are ambitious and need more town and business purchases, along with many more individual households. If the DPUC and CCEF can provide a clean energy option with price stability benefits over the current fuel mix, interest in the program could dramatically increase, leading to a wave of sign-ups that would enable the program to meet the climate plan targets. The Connecticut Clean Energy Fund’s small-scale “Community Innovation Grants” to support creative efforts by local community groups to promote clean energy sign-ups may also spur creative new models that can be replicated.

As many customers choose clean energy as a step they can take to stop global warming, the DEP and DPUC must act to ensure that emissions reductions for the Connecticut Clean Energy Options will be treated as additional to the pollution cap set by the Regional Greenhouse Gas Initiative. The amount of clean energy demanded through this program needs to be removed from the state's emissions cap or the program will only serve to lower the costs of compliance for generators and not lead to additional emissions reductions.

13. R.A. 51: Restore the Clean Energy Fund
DESCRIPTION
The Connecticut Clean Energy Fund was established by the legislature and funded by a 1mil surcharge on ratepayer bills to support the development and commercialization of Class I renewable technologies, including solar photovoltaics, hydrogen fuel cells, wind energy, and other clean energy technologies. To balance the state budget in 2003, $8.6 million per year was diverted from the Connecticut Clean Energy Fund operating budget. The climate plan calls for the restoration of full funding of $29 million annually, reimbursement for the diverted funds, and a permanent end to the $8.6 million per year raid between 2005 and 2011.

ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS
• By 2010: .31MMT CO₂e
• By 2020: .41 MMT CO₂e

GHG REDUCTIONS TO DATE
None. The legislature has not yet ended the diversion of Connecticut Clean Energy Fund dollars. The extent of greenhouse gas reductions will depend on how the restored funds are used. Larger reductions come from the purchase of renewable energy credits targeted to displace dirtier fossil fuels such as coal. Smaller reductions would come from using more of the money to incent in-state fuel cell or solar photovoltaic installations.

IMPLEMENTATION STATUS
While the legislature has not yet restored the funds, upon restoration the Connecticut Clean Energy Fund is prepared to invest $22 million in solar, fuel cell, micro wind, and small hydropower projects for schools, municipalities, industrial, and commercial customers looking for long-term reliable clean energy at stable rates.

CONCLUSION
The state could achieve all of the estimated short- and long-term greenhouse gas reductions by immediately restoring the Connecticut Clean Energy Fund’s operating budget. Governor Rell should include restoring
the CCEF as part of her energy plan and next budget, and the legislature should approve restoring the CCEF.

**14. R.A. 53: Regional Cap and Trade Program**

**DESCRIPTION**
The single largest impact on reducing greenhouse gas (GHG) emissions in the Climate Change Action Plan (CCAP) comes from the Regional Greenhouse Gas Initiative (RGGI), expected to yield 18.9% of the total emissions reductions in 2010 and 20.9% in 2020. Connecticut is one of the seven original signers of the RGGI Memorandum of Understanding, released in December 2005, and of the Model Rule in July 2006. RGGI will come into effect in 2009, but each of the participating states must adopt its own regulations to implement the program, either through regulatory agencies or legislation or both. Connecticut, therefore, only has partial control over whether this provision of the CCAP succeeds, but the administration has indicated its intention to bring RGGI into being.

**ESTIMATED GREENHOUSE GAS (GHG) REDUCTIONS**
- By 2010: 1.98MMT CO$_2$e
- By 2020: 5.13MMT CO$_2$e

Similar to the discussion in the section on energy efficiency, it is important how RGGI is implemented, particularly how emissions allowances will be distributed. In order to provide an additional source of funding for efficiency programs, and possibly for renewable energy development and consumer rebates, all the allowances that belong to Connecticut’s RGGI “budget” should be sold to electricity generators. The DEP has indicated it is leaning in this direction; but, as of this writing, the state had not issued proposed regulations.
Connecticut’s Energy Vision for a Cleaner, Greener State

Governor Rell’s Energy Vision, released in the fall of 2006, contains 37 individual policy proposals. Many of these were not part of the Climate Change Action Plan released in 2005, but could have significant impacts on reducing GHG emissions. However, no estimates have been made for the expected reductions from any of the measures, so it is difficult to include them numerically in our present evaluation of progress made to date and what we can expect by 2010.

Nevertheless, it is worth noting that at least some of these many proposals could substantially aid in achieving the goals of the CCAP if they were implemented. For example:

- “Initiating and maintaining a statewide campaign to promote energy efficiency and promote available state resources.”
- “Extending the sales tax exemption on hybrid vehicles.” (It is currently set to expire on October 1, 2008. The state has no estimate on what impact this exemption has had to date.)
- “Exempt [hybrid vehicles that attain at least 40 miles per gallon (mpg) on the highway] from local property taxes for a period of three years.”
- “Initiating a study on the feasibility for a sales tax exemption for conventional vehicles that achieve 40 mpg or more.”

We would urge the state to establish priorities among the 37 proposals, in order to ensure that the more important of them are implemented in the near term, and to estimate the possible climate gains from each of the priority items. They could then be included in a revised forecast of the state’s greenhouse gas emissions in 2010.
Mileage-Based or Pay-As-You-Drive (PAYD) Insurance

Most drivers pay the same amount each year in auto insurance, regardless of how many miles they drive. When drivers consider the cost of driving extra miles, insurance expenses do not come into play. Some insurance companies have low-mileage discounts; for example, a small discount for traveling fewer than 5,000 miles per year. Since there are typically only one or two discount points, they only affect the behavior of those whose previous mileage was just above the break point. For example, people who drove 8,000 miles the previous year would be unlikely to reduce their driving by 3,000 miles just to receive a discount.

Since insurance is a large part of the total cost of driving, changing to a Pay-as-You-Drive (PAYD) system has great potential to yield real savings to society in gasoline and carbon dioxide emissions, while also reducing accident damages. Suppose, for example, that you pay $800 a year for insurance and that you drive 10,000 miles per year. Calculated incrementally, this is 8 cents per mile driven. In comparison, if your vehicle gets 25 miles per gallon, and gasoline costs $2.50 a gallon, you are paying 10 cents a mile for gas.

One study estimated the impacts on vehicle travel for a range of mileage-based insurance charges, ranging from one to 10 cents per mile. The corresponding reductions in travel ranged from 1.8% to 15.2% (see Figure 3), meaning that carbon dioxide emissions from travel would be reduced by about the same amount. At 8 cents per mile, driving would be cut by 12.5%, yielding a major reduction in GHG emissions.

There are a number of pay-per-mile programs in place around the country. Progressive Insurance Company, the United State’s third-largest auto insurer, has conducted pilot cents-per-mile projects in Texas and Minnesota. GMAC Insurance and OnStar made available a mileage discount program to selected consumers in four states. Consumers receive a discount from GMAC if they project their estimated annual mileage at less than 15,000 miles for the coming year, and OnStar tracks and reports the odometer readings. In Oregon, the legislature enacted a bill providing insurers with a $100 tax credit per policy if they offer cents-per-mile pricing. The state of Texas enacted legislation in 2001 allowing companies to offer mileage-based insurance; advocates had originally campaigned to require insurers to offer a cost-per-mile option.

In Rhode Island, such insurance pricing is among the “consensus priority study options” in its climate action plan. Rhode Island estimated that this insurance reform could reduce CO₂ emissions by 20,000 tons in 2010 and by 94,000 tons in 2020.

Connecticut could take several actions to move toward cents-per-mile insurance:

- Conduct a study to document the degree to which number of vehicle miles traveled correlates with number of accidents and claims for damages.
- Provide incentives, such as the tax credits provided in Oregon, to insurance companies to offer cents-per-mile insurance.
- Require insurance companies to undertake trial cents-per-mile insurance programs.
- Require insurance companies to provide a certain percentage of their policies on a cents-per-mile basis, with that percentage growing over time, and becoming available to all consumers after several years.

<table>
<thead>
<tr>
<th>Cents per mile insurance charge</th>
<th>Travel reduction estimate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-1.8%</td>
</tr>
<tr>
<td>2</td>
<td>-3.5%</td>
</tr>
<tr>
<td>3</td>
<td>-5.1%</td>
</tr>
<tr>
<td>4</td>
<td>-6.7%</td>
</tr>
<tr>
<td>5</td>
<td>-8.2%</td>
</tr>
<tr>
<td>6</td>
<td>-9.7%</td>
</tr>
<tr>
<td>7</td>
<td>-11.2%</td>
</tr>
<tr>
<td>8</td>
<td>-12.5%</td>
</tr>
<tr>
<td>9</td>
<td>-13.8%</td>
</tr>
<tr>
<td>10</td>
<td>-15.2%</td>
</tr>
</tbody>
</table>

**Figure 3:** Travel Reduction Estimates Under Cents-Per-Mile Insurance (2001 Dollars)

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24 | A CLIMATE FOR ACTION
Our evaluation finds that without aggressive new action, Connecticut can expect to achieve only 55% of the emissions reductions planned for in the Climate Change Action Plan (CCAP) for the year 2010. As a result, we estimate that, based on current policies and on the likely probability of new proposals being implemented in the near future, the state’s greenhouse gas emissions in 2010 will be 6.4% above those in 1990, falling short of the state’s target of reducing emissions to 1990 levels. See Figure 4 below for more data.

**Overall Expected Impacts of Actions in the Plan**

However, there are two major problems with attaining this goal. First, as discussed earlier in this report, the savings estimated from the individual policies are overstated because of duplication between RGGI and other electric-sector measures. This duplication exists for combined heat and power (for which most of the savings are in electricity, with a smaller portion from heating fuel use), restoration of the electric conservation and load management fund, the renewable portfolio standard, and restoration of the clean energy fund.39 As a result, the expected savings in emissions from electricity generation must be downsized by 2.0 million tons of CO₂ in 2010 and 5.1 million tons in 2020.

With this adjustment, even if Connecticut were to fully implement in the near future all the actions within the CCAP that have been quantified so far, it would just barely meet the goal of reducing emissions to 1990 levels by 2010. For 2020, the state would not quite meet its goal of a further 10% reduction, as we estimate that emissions would be about 8% below 1990 levels.

Second, as described in this report under the discussions of each of the 14 most important policy options, a number of them are not in progress, are not currently being proposed by the executive branch of the state government, prospects for their legislative passage are uncertain, or they may not occur expeditiously due to legal issues or to implementation problems. In the table below, we give a percentage rating to the probability that each of the policies will be implemented fully and in time to have its forecasted impact by 2010. For some policies, including energy efficiency, the CCAP projections of savings in 2010 assume that there are several years of accumulated investments that yield the savings. This can only take place if the policies are instituted in the near term, not shortly before the 2010 deadline.

Although our ratings are somewhat optimistic, we still are forced to say that eight of the 14 policies have much less than a 100% probability of being fully in place in the near future, given their current status:

---

**Figure 4:** Change in Connecticut Greenhouse Gas Emissions for 2010 versus 1990, Based on Current Policies and Those Under Consideration by Executive and Legislative Branches

<table>
<thead>
<tr>
<th>Reductions weighted by probability of full implementation</th>
<th>1990 CO₂ Level = 2010 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>No new CCAP policies beyond those implemented or in process of implementation</td>
<td></td>
</tr>
<tr>
<td>Reducions if all CCAP policies were fully implemented</td>
<td>-10% -5% 0% +5% +10%</td>
</tr>
</tbody>
</table>

Note: State's mandate is to return to 1990 levels by 2010. The middle bar shows our guess as to what will be achieved in 2010, based on the current likelihood that the legislature will pass, and the governor will sign, policies that are not in the administration’s plans to date. All bars adjust for duplication between RGGI and other electric-sector policies.

The 55 actions in the CCAP contain estimated emissions reductions totaling 10.5 million tons in the year 2010.38 This would be sufficient to reduce the “business as usual” projection of 48.1 million tons in that year to 5% less than the actual 1990 emissions of 39.8 million tons, enabling Connecticut to meet its policy goal. If all the actions were implemented, they would yield reductions of 22.8 million tons in 2020, enabling the state to drop to 21% below 1990 emissions.
• **R.A. 1: Tailpipe emissions.** While Connecticut has issued regulations to adopt California’s standards, the automakers and the federal government are contesting them in court, so we give this a 75% probability of being implemented in a timely manner.

• **R.A. 7: Transit.** Some gains have been made, but given the scope of the problem, we give this a 50% probability of completion within the timeline.

• **R.A. 9: Diesel black carbon.** New York’s example shows the feasibility of retrofitting state vehicle fleets, but legislation to accomplish this goal must become a priority for the legislature and agencies. For now, we give it a 50% probability.

• **R.A. 32: Heating oil conservation.** The administration has not proposed this and there is currently no legislation on the table to institute an efficiency charge on heating oil sales. As a result, we give this only a 25% probability of being instituted in the near term.

• **R.A. 33: Natural gas conservation.** This also is absent from both the CCAP update report and the Governor’s Energy Vision. Legislation to mandate this directly, or to raise spending on gas efficiency through creation of a “least-cost planning system” for gas supply, does seem possible, so we give this a 50% probability of taking place.

• **R.A. 40: Forest and land.** The 2005 farmland bill created a steady revenue stream for such preservation, and the state appears to be on track for implementation, so we give this a 75% probability.

• **R.A. 43: Recycling.** Connecticut has a new solid waste plan which would boost recycling rates beyond that envisioned in the CCAP, but implementation is by no means a given, as it requires support from the legislature and municipalities. We give this a 50% probability.

• **R.A. 51: Restore the Clean Energy Fund.** Current legislative drafts include this, so we give it a 75% probability.

Somewhat optimistically, we give each of the remaining six policies a 100% probability of being implemented, because they are already in place or because of the state government’s stated intentions to implement them and to pass legislation, where necessary, to do so.

If these 14 policies were to be implemented in a timely manner, they would yield 9.6 million tons of reductions in 2010, according to the state’s forecasts. However, when they are multiplied by the probabilities stated above, their likely impact drops to 6.9 million tons, even before adjusting for duplication with RGGI.

We have not specifically evaluated the other 41 actions included in the CCAP. For purposes of discussion, we will assume that all of them attain their full forecasted emissions reductions (although the CCAP did not make estimates for some), totaling to **0.9 million tons** in 2010.

Adding together our probability-rated emissions reductions from the 14 priority measures and all the non-priority measures, and subtracting the duplicated electric-sector items, yields a total forecast of emissions reductions in 2010 of 5.8 million tons. This is only 55% of the reductions planned for in the CCAP. As a result, we estimate that with current policies, and the probabilities of new proposals succeeding, the state’s greenhouse gas emissions in 2010 will be 6.4% above those in 1990, failing to meet the state’s policy target. Worse, if none of the policies currently absent from the governor’s plans is passed via legislation, we estimate that emissions in 2010 will be 10.7% above 1990 levels. Because there is so much uncertainty concerning what policies could be adopted during the next decade, we do not attempt to make a similar estimate for the year 2020 goal.
### Table: Overall Impact of Current and Expected Policies: Million Tons of CO₂ Equivalent

<table>
<thead>
<tr>
<th>Description</th>
<th>2010 cuts in CCAP</th>
<th>2010 cuts weighted by probability of policies being implemented</th>
<th>2010 cuts with no new policies</th>
<th>2020 cuts in CCAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total for 14 actions that each are 1% or more of total planned reductions</td>
<td>9.59</td>
<td>6.87</td>
<td>5.16</td>
<td>22.77</td>
</tr>
<tr>
<td>Total for actions less than 1% each of cuts</td>
<td>0.91</td>
<td>0.91</td>
<td>0.91</td>
<td>1.83</td>
</tr>
<tr>
<td>Total of large and small actions</td>
<td>10.50</td>
<td>7.78</td>
<td>6.06</td>
<td>24.60</td>
</tr>
<tr>
<td>Duplication between RGGI and other electric-sector measures</td>
<td>1.98</td>
<td>1.98</td>
<td>1.98</td>
<td>5.13</td>
</tr>
<tr>
<td>Total reductions less duplication with RGGI</td>
<td>8.52</td>
<td>5.80</td>
<td>4.08</td>
<td>19.47</td>
</tr>
<tr>
<td>Net emissions 2010, 2020 = Business As Usual, less cuts</td>
<td>39.62</td>
<td>42.34</td>
<td>44.06</td>
<td>36.68</td>
</tr>
<tr>
<td>1990 emissions</td>
<td>39.80</td>
<td>39.80</td>
<td>39.80</td>
<td>39.80</td>
</tr>
<tr>
<td>Net 2010, 2020 emissions vs. 1990 emissions*</td>
<td>-0.18</td>
<td>2.54</td>
<td>4.26</td>
<td>-3.12</td>
</tr>
<tr>
<td>Net % change in 2010, 2020 emissions versus 1990*</td>
<td>-0.4%</td>
<td>+6.4%</td>
<td>+10.7%</td>
<td>-7.8%</td>
</tr>
<tr>
<td>Reductions as % of total included in CCAP**</td>
<td>81%</td>
<td>55%</td>
<td>39%</td>
<td></td>
</tr>
</tbody>
</table>

* Negative numbers mean emissions in 2010 or 2020 are below 1990 levels.
** Includes adjustment for duplication between RGGI and other electric-sector policies.
A Recommended Three-Step Strategy for Connecticut

Our analysis indicates that more action is needed to implement the top 14 policies in the climate plan. The governor needs to publicly support these policies and direct her agencies to move forward with implementation of policies under their jurisdiction or support these policies at the Connecticut General Assembly. The legislature needs to enact policies that require funding and for which agencies currently lack authority to implement on their own.

A simple three-step strategy can reverse this trend and put Connecticut on track to reach its goals.

1. **Fast-Track the Top 14 Climate Plan Recommendations**
   Connecticut must prioritize the 14 policies responsible for more than 90% of the climate plan’s pollution reductions. Without prioritization by emissions reduction, there is a natural tendency to act first on the policies that are easiest to implement.

2. **Revise and Strengthen Key Policies in the Plan**
   Connecticut should take advantage of new opportunities and policy ideas to go beyond the climate planning completed in 2003, as listed above. New ideas to achieve greater emissions reductions at lesser cost should be incorporated into the climate plan.

3. **Reinvigorate State Climate Planning**
   The recommended actions in Connecticut’s Climate Change Action Plan have become fossilized, remaining unchanged since they were originally formulated in 2003. The current plan forms a solid foundation, but needs to be revised to prioritize policies based on the size of the emissions reductions. There must be an ongoing process through which new policies can be added to the plan and existing policies improved. The climate plan overestimates emissions reductions from overlapping policies; therefore, even if every policy were fully enacted, the state would still just barely meet its 2010 goals. Because many policies are not likely to be implemented as originally envisioned, there must be a process to revise and improve the plan.

   Also, there is not yet systematic tracking of actual emissions or trends in each sector; without tracking, it is impossible to know if the policies are working as expected, or if factors independent of the climate plan are affecting global warming emissions. For example, unexpectedly high gasoline prices boost transit ridership and hybrid sales far beyond the estimates in the climate plan.

**Fast-Track the Top 14 Recommendations**

The state could make significant improvements by taking policy actions such as:

- Restructure electricity and natural gas supply planning to incorporate “least cost” planning principles (meaning that efficiency investments are made whenever they are less expensive than paying for new supplies) and to “decouple” utility revenues from the amount of electricity sold
- Pass legislation to restore the electricity efficiency fund and create new energy efficiency funds for natural gas and fuel oil (this overlaps with the previous item)
- Restore funding for the Connecticut Clean Energy Fund
- Use the sales value of RGGI allowances for further energy efficiency investments
- Implement pay-by-the-mile auto insurance
- Begin implementing “smart growth” policies, including the development of mass transit in a serious way (although the impacts here would largely be felt after 2010, the policies would help meet the 2020 emissions reduction goal)
- Re-examine some of the policies in the CCAP with lower estimated benefits to see if they have greater potential, such those related to “green buildings”; if they do have such potential, push those policies forward
- Estimate the gains from, and begin implementing, the most important policies in the governor’s Energy Vision that are not included in the CCAP,
particularly those related to transportation, such as tax incentives for purchase of fuel-efficient vehicles (both hybrid and conventional).

**Invigorating the Climate Plan**

To implement a vibrant climate action plan, Connecticut must:

**Regularly Review the Climate Plan**
Connecticut needs an adaptive, intelligent climate plan that drives regulatory and legislative changes. Planning and action are not mutually exclusive and both must be pursued if Connecticut is to achieve its long-term reduction goals. Some aspect of the plan should be updated at least annually, at a set time each year, to adapt to changing realities and ensure the state can meet its commitments. The Governor's Steering Committee on Climate Change may wish to consider focusing stakeholder and public involvement on a single sector at a time, and decide whether to focus on adding new policies, to expand or rethink existing policies, or to do both. There should be enough lead time built into the revision process for the public to comment on any proposed changes, and also time to modify proposals based on public feedback. Making climate planning regular and ongoing will strengthen the existing climate plan and provide a natural framework for extending planning past 2020 towards the 2050 goal.

**Re-Involve Public Stakeholders**
The groundbreaking climate planning process in 2003 put citizen ingenuity to work creating the climate plan. The governor needs to appeal again to a sense of civic duty. Knowledgeable stakeholders from each sector covered by the climate plan should re-analyze policies in the plan and expand the recommendations in each sector to ensure Connecticut has enough achievable policies to meet the state's 2010, 2020, and long-term 2050 reduction goals.

**Re-Engage the Public**
The success of the climate plan ultimately relies on broad public support. Members of the public should have an opportunity to learn of any proposed revisions to the climate plan through the climate change Web site (www.ctclimatechange.com) and via regular public forums on the plan. Citizens should be able to use the Web site and regular mail to provide written comments to suggest policies deserving of further study, and to comment on policies proposed for inclusion in the plan. There must be a transparent system for accepting, reviewing, and processing this input to avoid discouraging public participation. Members of the public will not spend their valuable time offering comment if it has no clear effect.

**Strengthen the Governor’s Steering Committee on Climate Change (GSC) so that it becomes a true coordinating body**
The GSC should consider retaining consultants or hiring dedicated staff to support the agencies charged with implementation of the climate plan. Existing staff may be stretched too thin working on implementation to enable them to also engage in planning and tracking. But without additional planning, the state is unlikely to meet its climate goals.

Also, the governor should consider making the GSC more effective by expanding membership to include other agencies touched by the climate plan, such as education, insurance, and public health and local public health representatives. GSC staff could play a crucial role in keeping the climate plan relevant by:
- Facilitating stakeholder and public meetings to revise the plan
- Helping agencies incorporate new ideas into the climate plan
- Assisting with interagency communication and coordination
- Helping agencies track and measure the results of their actions
- Tracking emissions trends in each sector
- Updating emissions reductions estimates with actual numbers based on new laws or regulations
- Tracking progress in other jurisdictions which could be adapted to Connecticut.
Conclusion

Connecticut’s climate plan is a solid foundation for action, and success at the state level is the best way Connecticut can support strong action in other states and, ultimately, at the federal level. To succeed, Connecticut must move forward with a three-step strategy of fast-tracking implementation of the top policies in the plan—moving beyond the climate plan with smarter and stronger electricity and natural gas efficiency policies and mileage-based car insurance, and continuing the state climate planning process. The state climate plan must become a living document that adapts to changing times, prioritizes policies based on emissions reductions, and continues to engage the public to identify new and better ways to achieve Connecticut’s climate goals.

The stakes are high as Connecticut’s actions have the potential to pave the way to a cleaner, less fossil-fuel dependent future for the state, and also to influence the national global warming debate. To this end, Governor Rell and the Connecticut General Assembly must lead the nation by taking action on the climate plan, and state agencies must ensure the short-, medium-, and long-range climate plans are robust enough to meet the state’s goals. To stabilize the climate, we need leadership commensurate with the problem we face. Connecticut has the ability to do our part to stop global warming and show the world how it’s done.
1. We recognize that due to the difficulty in measuring both actual emissions and reductions caused by specific policies, and the time delays in doing so, the state will not have actual data on its emissions levels in 2010 until some time later, and that data will have a substantial degree of uncertainty.


5. In other cap and trade programs, emissions have dropped below the cap level at least temporarily. Reasons for this include "banking" of credits for use in future years; technological and market changes that reduce the demand for emissions; and the cap level being too generous initially. These situations are, however, unlikely to exist under RGGI for an extended period, since it has a broad trading region, multi-year compliance periods, and covers many facilities that provide an essential output for which there is growing demand. Personal communications from Dale Bryk, NRDC, and Richard Cowart, Regulatory Assistance Project, 1/17/07.

6. Texas Transportation Institute, 2004 Urban Mobility Study.


22. Re-filing of S2516 from the 2005 Massachusetts legislative session, by Senator Pamela Resor and Representative Frank Smizik.


31. Ibid.


38. The CCAP does not contain emissions reduction estimates for all the measures that it discusses.

39. The Connecticut Clean Energy Options program does not count as duplication, because such voluntary purchases will reduce Connecticut’s RGGI cap, as long as the state chooses this option under the RGGI interstate agreement.