



Connecticut Climate Change  
Action Plan 2005

**EXECUTIVE SUMMARY**



# Connecticut Climate Change

## EXECUTIVE SUMMARY

In accordance with the provisions of Public Act 04-252 (AAC Climate Change), the Governor's Steering Committee on Climate Change (GSC) has successfully completed development of a *Connecticut Climate Change Action Plan 2005*. This plan represents a major milestone in the drive to reduce greenhouse gas (GHG) emissions and achieve the regional goals set by the New England Governors/Eastern Canadian Premiers (NEG/ECP).

In creating this plan, the GSC relied to a large extent on the ideas and input it received from a stakeholder process that consisted of a diverse group of entities representing government, industry, nongovernmental organizations, academia and the public. Together, these dedicated stakeholders participated in a yearlong process of identifying measures to address climate change in Connecticut. During their extensive deliberation process, each proposed measure was discussed, researched, analyzed and debated until participants reached consensus. At the end of this stakeholder process, in January 2004, they delivered a report to the GSC. This report, entitled, *Connecticut Climate Change Stakeholder Dialogue: Recommendations to the Governor's Steering Committee (Stakeholders Report)*, became the starting point for this action plan.

The completion of this comprehensive plan is a major accomplishment. Yet GSC members recognize, as they have from the outset, that it does not represent an end in itself. Instead, the plan must be used as a firm foundation for future efforts. Such future efforts, including progress on the implementation of this plan and new initiatives, can be tracked through [www.ctclimatechange.com](http://www.ctclimatechange.com). This web site is updated regularly to provide the most recent information on Connecticut's climate change initiatives.

The GSC's primary objective in developing this action plan was to create a document that could be used to inform policy-makers, implementing agencies, organizations, institutions and the public. This broad and deep approach achieves several complementary objectives:

- It addresses budgetary concerns about new programs and ideas;
- It integrates planning elements for federal and state mandates to assure state commitments are completed; and
- It establishes solid links among state agencies under a working structure that provides for staff flexibility on projects and overall steering by agency heads.

Completing this plan required not only an update on progress achieved, but a strong focus on metrics and accountability by staff and agency heads. The GSC employed advanced

technical analysis methods to evaluate proposed policy actions for reducing GHG emissions, including:

- Calculation of the GHG benefits and costs;
- Determination of additional benefits and costs;
- Quantification of any additional benefits and costs using existing and newly developed analytical measures; and
- Assessment of the total GHG reductions to determine if the regional GHG targets agreed upon by the NEG/ECP were being met or exceeded.

Using a new desktop modeling tool developed under the direction of the U.S. Environmental Protection Agency, three of the 55 recommended actions or RA's (RA2: GHG Feebate Program and RA32 and RA33: Creating Heating Oil and Natural Gas Conservation Funds) were analyzed extensively to identify local economic effects and ancillary or co-benefits (e.g., health impacts and economy-wide benefits). As the first state to utilize this new tool, Connecticut was able to identify benefits previously not quantified. For example, the state's energy efficiency program, overseen by the Energy Conservation Management Board, was known to achieve a \$3 to \$1 direct return on investment based on electricity savings. By using the new EPA tool, an additional \$4 to \$1 payback in terms of reduced health costs and public health benefits was identified as a result of reductions in criteria air pollutants.

This in-depth analysis enabled the committee to dispel perceptions that the proposed actions would compete with other core priorities and to craft a comprehensive legislative agenda that would meet or exceed the GHG reduction targets. In 2004, the following bills and executive orders were passed:

- P.A. 04-84 An Act Concerning Clean Cars – California emissions standards adopted
- P.A. 04-231 An Act Concerning Clean and Alternative Fuel Vehicles – Promotes hybrids through tax incentives
- P.A. 04-85 An Act Concerning Energy Efficiency – Sets efficiency standards for products and appliances
- P.A. 04-252 An Act Concerning Climate Change – Requires mandatory reporting of GHG emissions, creation of registry, ongoing planning and implementation action plan effort, development of environmentally preferable purchasing for state goods and services
- P.A. 04-222 An Act Concerning Preservation of the Family Farm and Long Island Sound – Promotes the purchase of Connecticut-grown foods by the state and creates “Connecticut Farm Fresh” program
- Governor's Executive Order No. 32 – Requires the state to purchase renewable energy in increasing amounts, leading to 100% clean energy by 2050.

While other states have begun to take similar steps to reduce GHG emissions, Connecticut is the first state to address climate change in such a significant and comprehensive manner. The plan contains 55 recommended actions that focus on five main topic areas: **1) transportation and land use; 2) residential, commercial and**

**industrial; 4) agriculture, forestry and waste; 4) electricity generation; and 5) education and outreach.** These topic areas were selected in order to broadly address climate change from all sectors and achieve the greatest outcome. Recommendations will require administrative and legislative actions, voluntary and mandatory measures, and state and regional actions.

Thirty-eight recommendations have been designated by the Governor's Steering Committee and the governor for immediate implementation, and are noted as such in this summary. Examples of recommended actions include:

- **Transportation:** Raising emission standards for new cars; reducing black carbon from diesel engines through the use of low sulfur diesel, engine improvements and tailpipe controls; investing in a hydrogen infrastructure and R&D program.
- **Residential, Commercial, Industrial:** Upgrading building codes and using energy efficient materials and design concepts in the construction of new state buildings and schools (LEED standard); promoting the purchase of environmentally preferable products and services by state agencies; testing biodiesel for heating.
- **Agriculture, Forestry, Waste:** Adopting actions to increase recycling and source reductions to 40%; encouraging consumers to buy local produce; supporting landfill-gas-to-energy projects.
- **Electricity:** Increasing the amount of renewable energy supplied to the electricity grid; implementing a program for Connecticut ratepayers to choose to purchase electricity derived from clean energy; state government purchase of clean energy.
- **Education:** Increasing awareness among the general public, policy-makers, community leaders, and others of climate change issues and solutions; integrating into curricula and outreach programming.

These 38 measures result in projected reductions of 3.64 million metric tons carbon dioxide equivalent (MMTCO<sub>2</sub>e) in 2010 and 6.88 MMTCO<sub>2</sub>e in 2020. It is estimated that reductions of 5.74 MMTCO<sub>2</sub>e in 2010 and 17.99 MMTCO<sub>2</sub>e in 2020 are needed to meet the statutory goals. Thus, only 63.4 percent of the 2010 statutory goal and 38.2 percent of the 2020 statutory goal are achieved in 2020 by just the 38 measures.

Given these results, it is clear that reductions from the remaining 17 measures are crucial for Connecticut to meet its reductions targets. The 17 measures result in additional projected reductions of 5.02 MMTCO<sub>2</sub>e in 2010 (87.4 percent of goal) and 12.44 MMTCO<sub>2</sub>e in 2020 (69.2 percent of goal).

The remaining 17 items are undergoing further analysis, including the identification of appropriate implementation pathways for follow up in 2005 and beyond. Aggressive implementation of the 38 measures already underway, combined with the start up of new recommended actions in 2005, will ensure Connecticut's success in meeting the reduction

goals identified by the NEG/ECP and reflected in state law: to reduce its GHG emissions to 1990 levels by 2010 and to 10 percent below 1990 levels by 2020, eventually reaching the long-term reduction goal of 75 percent.

Implementation of this comprehensive plan represents a significant and on-going challenge. To successfully meet this challenge, the GSC began to reach out during the drafting process to establish working relationships with groups whose active support would be needed to achieve its goals. These key groups included not only environmental and business advocates, but colleges and universities, faith-based groups and municipalities. In addition, working committees at both the agency head and staff level were established to develop, implement and track progress on each recommended action. These working groups have been and will continue to be invaluable as we move toward implementation of additional recommendations.

Through the successful implementation of this plan, Connecticut has an opportunity to provide state residents a healthier environment, a more stable climate and a stronger economy.

**Table ES.1**  
**Connecticut Climate Change Action Plan 2005**  
**List of Recommendations**

**Transportation Sector**

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1. California LEV II standards\*
  2. Greenhouse gas (GHG) feebate program \*\*
  3. Fleet vehicle incentives and initiatives\*
  4. Tailpipe GHG standards \*\*
  5. Public education initiative\*
  6. Hydrogen infrastructure research and demonstration program \*\*
  7. Transit, smart growth, and vehicle miles traveled (VMT) reduction package\*
  8. Multistate intermodal freight initiative\*
  9. Clean diesel and black carbon\*
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**Residential, Commercial, Industrial Sector**

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10. Appliance standards\*
  11. Appliance-swapping program\*
  12. Heat pump water heater replacement program\*
  13. Bulk purchasing of appliances\*
  14. Upgrade residential and commercial building energy codes\*
  15. Promote energy efficient and energy improvement mortgages \*\*
  16. Revise Energy Conservation Loan Program \*\*
  17. Weatherization Assistance program\*
  18. Energy Star Homes program\*
  19. High-performance buildings: schools and other State-funded buildings\*
  20. High-performance buildings: privately funded projects \*\*
  21. Shared savings program for government agencies\*
  22. Training of building operators\*
  23. Green campus initiative\*
  24. Energy benchmarking, measurement, and tracking program for municipal buildings\*
  25. Pilot fuel-switching projects\*
  26. Remove barriers to third-party load-management techniques\*
  27. State procurement of environmentally preferable services and products\*
  28. Review of New England Regional Demand Response Initiative (NEDRI) recommendations\*
  29. Promote voluntary programs and actions\*
  30. Encourage clean combined heat and power \*\*
  31. Restore conservation and load management fund \*\*
  32. Create Heating oil conservation fund \*\*
  33. Create Natural gas conservation fund \*\*
  34. Identify measures to reduce high-global warming-potential gases \*\*
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**Agriculture, Forestry, Waste Sectors**

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35. Install centralized manure digesters \*\*
  36. Reduce nonfarm fertilizer use\*
  37. Buy local produce\*
  38. Forest management and forest carbon offsets\*
  39. Urban tree planting program\*
  40. Forest and agricultural land preservation\*
  41. Promote use of durable wood products over other construction materials\*
  42. Support economically viable landfill gas-to-energy projects\*
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- 43. Increase recycling, source reduction to 40 percent\*
  - 44. Voluntary carbon offset program \*\*
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### **Electricity Generation Sector**

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- 45. Renewable energy strategy (RES) \*\*
  - 46. Renewable portfolio standard (RPS) \*\*
  - 47. Government green power purchase\*
  - 48. Production tax credit\*
  - 49. Clean Energy Choice (Green power option)\*
  - 50. Renewable Energy Certificates (Green tags)\*
  - 51. Restore Clean Energy Fund \*\*
  - 52. Energy efficiency and combined heat and power \*\*
  - 53. Regional cap-and-trade program\*
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### **Education and Outreach**

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- 54. Public Education Initiative\*
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### **Greenhouse Gas Reporting**

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- 55. Emissions Inventory and Registry\*

**\* Action item has been designated by the Governor and Governor's Steering Committee for immediate implementation**

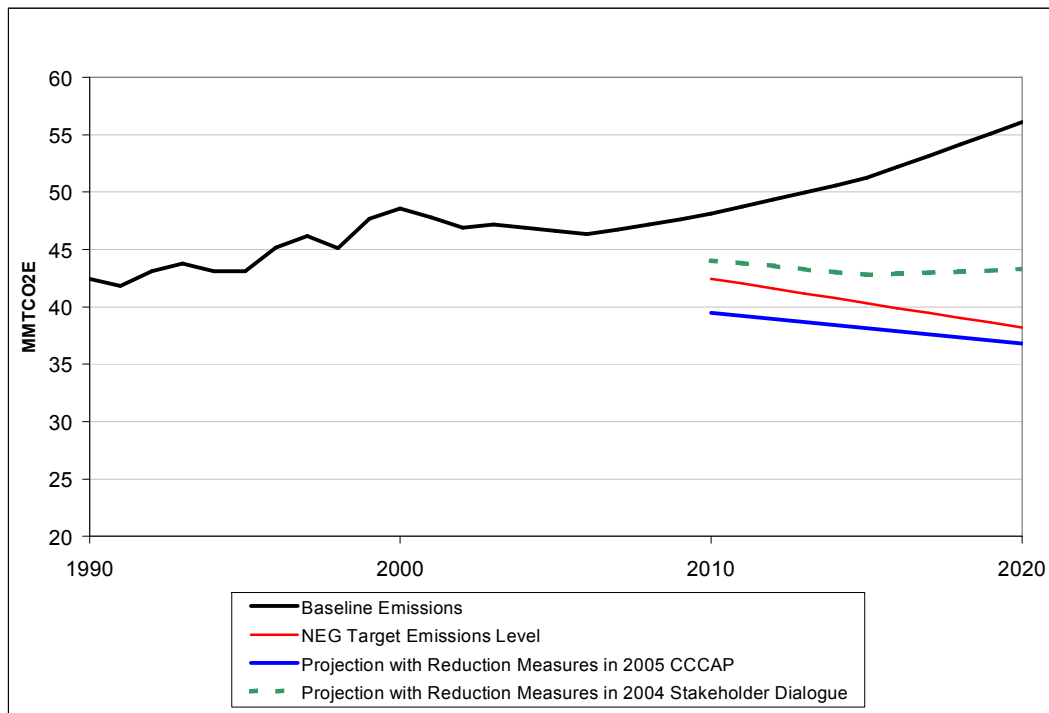
**\*\* Action item has been designated by the Governor and Governor's Steering Committee for further analysis, identification of appropriate implementation pathway, and implementation following 2005**

## PROGRESS TOWARD MEETING STATUTORY (NEG/ECP) TARGETS

When the Connecticut Climate Change Stakeholder Dialogue was released in January 2004, the projected GHG emission reductions were not on target to meet the NEG/ECP goals of 1990 emission levels by 2010 and 10% below 1990 levels by 2020. Based on the Recommended Actions quantified for the Stakeholder Dialogue, it appeared that Connecticut was on a path to achieve 70.9% of the necessary reductions in 2010 and 71.3% of the necessary reductions in 2020.

New analyses conducted in 2004 now show that Connecticut can be on a path to meet and exceed the NEG/ECP targets (see graph below). These analyses were based on new information, realistic assumptions and correction of prior analyses and resulted in total net gains of 4.59 MMTCO<sub>2e</sub> of reductions in 2010 and 6.50 MMTCO<sub>2e</sub> in 2020.

**Figure ES.1**  
**Baseline, Target, and Estimated Progress with Recommendations Graph 1990-2020**



A progress table summarizing the new total projected reductions by sector follows. The new and revised analyses completed in 2004 include:

- Cap and Trade: 0.95 MMTCO<sub>2e</sub> in 2010 and 2.26 MMTCO<sub>2e</sub> in 2020
- Restore the CCEF: 0.31 MMTCO<sub>2e</sub> in 2010 and 0.41 MMTCO<sub>2e</sub> in 2020
- Feebate Program: 0.04 MMTCO<sub>2e</sub> in 2010 and 0.11 MMTCO<sub>2e</sub> in 2020
- GHG Tailpipe Standards: 0.05 MMTCO<sub>2e</sub> in 2010 and 2.63 MMTCO<sub>2e</sub> in 2020
- Heating Oil Conservation Fund: 1.02 MMTCO<sub>2e</sub> in 2010 and 1.89 MMTCO<sub>2e</sub> in 2020

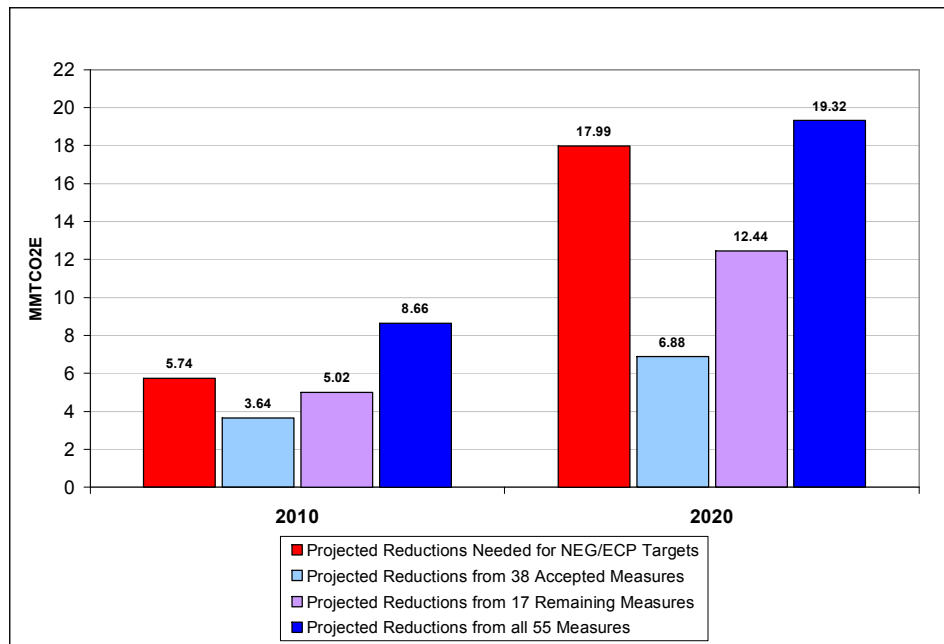


- Natural Gas Conservation Fund: 1.44 MMTCO<sub>2</sub>e in 2010 and 2.07 MMTCO<sub>2</sub>e in 2020
- Renewable Portfolio Standards: 1.30 MMTCO<sub>2</sub>e in 2010 and 3.20 MMTCO<sub>2</sub>e in 2020

**Table ES.2**  
**Summary of Connecticut GHG Reductions with Recommendations**  
 (without black carbon)  
**MMTCO<sub>2</sub>e**

	<b>2010</b>	<b>2020</b>
<b>Future Baseline</b> (CCAP projections from fuel use)	48.14	56.15
<b>NEG/ECP Targets</b> (1990 in 2010, 10% below in 2020)	42.40	38.16
<b>Reductions Needed to Meet NEG/ECP Targets</b>	5.74	17.99
<b>Projected Reductions By Sector</b>		
Transportation	0.35	3.84
Residential, Commercial, Industrial	4.03	7.29
Agriculture, Forestry, Waste	1.21	1.30
Electricity	3.07	6.89
<b>2005 CCCAP Total Reductions</b>	<b>8.66</b>	<b>19.32</b>
2003 CT Stakeholder Report Total Reductions	4.07	12.82
<b>Total NEW or REVISED Reductions</b>	<b>4.59</b>	<b>6.50</b>

**Figure ES.2**  
**GHG Reductions Needed to Achieve Targets by 38 Accepted and 17 Remaining Recommended Actions**



**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<b>Transportation and Land Use</b>	
<p><b>1. California LEV II Standards</b>            The California Low Emission Vehicle II (LEV II) program establishes strict emission standards for all new cars sold in California as well as for any other state that adopts the program. These standards address non-methane organic gas (NMOG), oxides of nitrogen (NO<sub>x</sub>), and carbon monoxide (CO).</p>	<p><b>Progress - Implemented</b>            DEP adopted regulations in December 2004 that require compliant vehicles commencing with the 2008 model year.</p> <p><b>Expected Greenhouse Gas (GHG) Reduction</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.04 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.47 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            Baseline LEV II vehicles are currently being sold at the same price as their non-LEV II certified counterparts, and manufacturers' costs for compliance are less than \$100 per vehicle. A consumer premium of approximately \$3,000 currently exists for hybrid vehicles. California Air Resources Board (CARB) has estimated the following incremental costs for advanced technology partial zero-emission vehicles (AT-PZEVs):</p> <ul style="list-style-type: none"> <li>• Stage I (2003-2005) \$3,300</li> <li>• Stage II (2006-2008) \$1,500</li> <li>• Stage III (2009-2011) \$700.</li> </ul> <p><b>Estimated Co-Benefits</b>            Adoption of LEV II standards in Connecticut is calculated to reduce toxic pollutants (acetaldehyde, 1,3-butadiene, formaldehyde, and benzene) by 104 tons in 2020.</p>
<p><b>2. GHG Feebate Program</b>            Under a feebate system, purchasers of high CO<sub>2</sub>-emitting vehicles would pay a fee, whereas purchasers of low-CO<sub>2</sub>-emitting vehicles would receive a rebate. The cutoff threshold can be designed to be revenue neutral so that total fees are equal to total rebates. The levels of fees and rebates for vehicles should be designed to maximize influence on consumer demand for low-emission vehicles.</p> <p>A feebate system could be implemented regionally to strengthen the market signal to vehicle manufacturers and prevent adverse economic impacts in the State.</p>	<p><b>Progress - In Process</b>            Further analysis has been done to quantify co-benefits using the REMI regional economic analysis model. Positive economy-wide benefits have been determined. Implementation actions are pending.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.036 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.109 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b></p> <ul style="list-style-type: none"> <li>• 2010 = -\$166.70 \$/ton CO<sub>2</sub>e</li> <li>• 2020 = -\$171.50 \$/ton CO<sub>2</sub>e</li> </ul> <p><b>Estimated Co-Benefits</b>            Positive economy-wide benefits including jobs, output, gross state product, and disposable personal income.</p> <p>(see write-up for summary)</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p><b>3. Fleet Vehicle Incentives and Initiatives</b>            Establish incentives and initiatives to encourage acquisition of low-GHG vehicles in public, private, and State fleets.</p> <p>Partner with other northeastern states, local governments, and private fleets to develop bulk-purchasing proposals for low-GHG vehicles.</p>	<p><b>Progress – In Progress</b>            The State presently leases hybrid vehicles as a portion of its daily fleet. DAS has released a new RFP for Alternative fuel and gasoline-hybrid electric light duty vehicles.</p> <p>Legislation passed to give tax exemption for purchase of any hybrid rated at 40 mpg or greater and extends exemption for alternative fuel vehicles and equipment (An Act Concerning Clean and Alternative Fuel Vehicles, PA 04-231)</p> <p><b>Expected GHG Reductions</b>            Reflected in GHG tailpipe standards below.</p> <p><b>Expected Costs per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            These actions will result in the reduction of criteria and hazardous pollutants and potential operating cost savings for the State and consumers.</p>
<p><b>4. Tailpipe GHG Standards</b>            Amend LEV II regulations to include GHG standards.</p> <p>Under these standards, new motor vehicles will be required to emit 30 percent fewer GHGs than would have been emitted without the program. The program establishes two fleet average standards for GHG emissions: one for cars, light trucks, and small sport utility vehicles (SUVs) and another for heavier trucks and large SUVs. The standards will be phased in between the years 2009 and 2016.</p>	<p><b>Progress - Action Pending</b>            CT DEP plans to adopt regulations in 2005.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.05 MMTCO<sub>2</sub>e</li> <li>• 2020 = 2.63 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b></p> <ul style="list-style-type: none"> <li>• 2010 = -\$136 \$/ton CO<sub>2</sub>e</li> <li>• 2020 = -\$99 \$/ton CO<sub>2</sub>e</li> </ul> <p><b>Estimated Co-Benefits</b>            The overall effect of the regulation will be an increase in personal income and, as a result, an increase in employment and sales activity.</p>
<p><b>5. Public Education Initiative on Transportation</b>            Raise public awareness about the benefits of low-GHG vehicles, including the available incentives and potential maintenance options.</p>	<p><b>Progress - In Process</b>            Low-GHG vehicles are now available through state contract. The DAS has been making state and municipal purchasers aware of this and of the environmental benefits of low GHG vehicles at the CT \$hops event held by DAS in 2004 and through other methods.</p> <p><b>Expected GHG Reductions</b>            These are reflected in GHG tailpipe standards above.</p> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p><b>6. Hydrogen Infrastructure Research and Development (R&amp;D) Program</b>            Support research on low-GHG vehicle technology, such as fuel cells, and assess how best to facilitate the development of alternative fuel infrastructure and refueling networks through measures such as pilot projects, R&amp;D, and incentives.</p>	<p><b>Progress – Action Pending</b>            Further macroeconomic studies are to be conducted through REMI regional economic analysis modeling.</p> <p><b>Expected GHG Reductions</b>            This effort will not result in any GHG benefits by 2020 (potential long-term benefits of up to 22 MMTCO<sub>2e</sub> in Connecticut). Long-term GHG reductions assume the availability of low-emissions hydrogen (i.e., hydrogen produced from gasification of fossil fuels), together with carbon capture and sequestration, achieving roughly 90% improvement in GHG emissions, or renewable energy sources.</p> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            Significant job creation potential.</p>
<p><b>7. Transit, Smart Growth and Vehicle Miles Traveled (VMT) Reduction Package</b>            Increase availability of low-GHG travel choices in Connecticut, such as transit (rail and bus), vanpools, walking, and biking. Provide complementary land-use policies and incentives to improve the attractiveness of low-GHG travel choices.</p> <p>Implement a package of transit improvements and land-use policies and incentives to achieve a 3% reduction in VMT below the 2020 baseline. The package consists of six complementary elements:</p> <ol style="list-style-type: none"> <li>1. Double transit ridership by 2020.</li> <li>2. Consider potential funding mechanisms for new transit investments, such as road pricing and the Connecticut Transportation Strategy Board’s fuel tax recommendation.</li> <li>3. Establish a coordinated interagency program to promote smart growth in Connecticut using regulatory, financial, and planning tools.</li> <li>4. Redirect at least 25% of new development (forecast population and employment) to growth-appropriate locations, as indicated by the State Plan of Conservation and Development.</li> <li>5. Study a potential road-pricing pilot project, prepare a feasibility design study by 2006, and implement the pilot project if it is shown to be effective. Study the potential impact on equity and sprawl and consider broader implementation of road pricing in the long term.</li> <li>6. Consider complementary VMT reduction incentives, such as commuter choices, location-efficient mortgages, and mileage-based insurance.</li> </ol>	<p><b>Progress - In Process / Action Pending</b>            Work continuing on design and implementation of New Britain – Hartford Bus Rapid Transit (BRT); studies are concluding on Hartford East BRT and New Haven-Hartford-Springfield Rail. About \$100 million committed for the project at this time. The total project cost is \$338 million.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.22 MMTCO<sub>2e</sub></li> <li>• 2020 = 0.49 MMTCO<sub>2e</sub></li> </ul> <p><b>Expected Cost per Ton GHG</b>            Annualized smart growth and transit costs over 17 years yield a marginal cost of \$602/MTCO<sub>2</sub> in 2020. This assumes a 7% discount rate. When other savings from avoided costs are included (infrastructure cost savings, health costs savings, and consumer fuel cost savings) the marginal cost is calculated to be \$280/MTCO<sub>2</sub> in 2020.</p> <p><b>Estimated Total Costs</b>            Estimated annual transit capital and operating costs are \$295 million. Estimated annual savings from avoided infrastructure costs, avoided health care costs, and avoided household expenditures are \$158 million. Total costs minus savings are estimated to be \$137 million per year.</p> <p><b>Estimated Co-Benefits</b>            Benefits of this program include reducing criteria and hazardous pollutants, increasing travel choices, helping to relieve traffic congestion, bolstering economic development and urban revitalization, reducing water pollution from runoff, and minimizing habitat fragmentation.</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p><b>8. Multistate Intermodal Freight Initiative</b>            Develop infrastructure plan for providing alternatives to freight trucks, including enhanced freight rail infrastructure and intermodal transfer facilities (rail-to-truck and rail-to-barge). Such alternatives use less energy than freight trucks and thus offer a low-GHG alternative for goods delivery.</p>	<p><b>Progress - In Process</b>            Continuing work with I-95 Corridor Coalition Freight Initiative. The Transportation Strategy Board demonstration project at Bridgeport Harbor has been implemented. This project received \$5 million in funding for improvements to Bridgeport Harbor facilities to enhance the ability of handling barge freight and determine if waterborne freight can garner an increased market share. CT DEP to raise the issue of regional freight coordination at the next NEG-ECP meeting.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.00 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.14 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            This effort would reduce traffic congestion, wear-and-tear on the State's infrastructure, and air pollution as well as provide more efficient delivery of goods and redundancy in freight networks for economic and physical security.</p>
<p><b>9. Clean Diesel and Black Carbon (BC)</b>            Scientists have identified BC, a component of diesel particulate matter (PM), as having a large and fast-acting warming impact on the atmosphere. Diesel engines emit roughly half of the BC in the United States. This program would provide incentives to accelerate the use of ultra-low sulfur diesel and to accelerate adoption of engine improvements and tailpipe control technology to reduce emissions of BC.</p>	<p><b>Progress - In Process</b>            DEP pilot programs using ultra-low sulfur diesel school buses (completed in Norwich, being expanded to New Haven, Hartford, Bridgeport). DOT and DEP are collaborating on a program to promote diesel retrofits and the use of clean fuels on off-road construction equipment (Q bridge project). 181 buses in New Haven are being retrofitted with diesel oxidation catalysts and Spiracle crankcase controls. These buses are now being fueled with ultra-low sulfur diesel fuel that is dosed with a fuel-borne catalyst to further reduce emissions.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.8 MMTCO<sub>2</sub>e</li> <li>• 2020 = 2.4 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            A range of cost estimates for vehicle conversion, retrofit and replacement were aggregated and are equivalent to \$6 to \$13/MTCO<sub>2</sub>e in 2020. Health care cost savings due to reductions in PM emissions were not quantified. Costs were annualized over 17 years using a 7% discount rate.</p> <p><b>Estimated Total Costs</b></p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p>Estimated annual capital and operating costs range from \$13 million to \$30 million. Estimated savings from avoided health care costs due to reduced exposure to particulate matter are not included.</p> <p><b>Estimated Co-Benefits</b>  Health benefits due to reductions in PM emissions are not included in the cost estimate above.</p>
<b>Residential, Commercial, and Industrial</b>	
<p><b>10. Appliance Standards</b>  For appliances not covered under federal standards, the State can set minimum levels of efficiency for specific appliances.</p> <p>Eight appliances identified: dry-type transformers, commercial refrigerators and freezers, exit signs, traffic signals, torchière lamps, large packaged A/C units greater than 20 tons, unit heaters, and commercial clothes washers.</p>	<p><b>Progress - In Process</b>  Legislation enacted to require DPUC, in consultation with OPM, to establish regulations for energy efficiency standards for a variety of heating, cooling and other types of products (Public Act 04-85). The DPUC, in consultation with OPM is currently conducting an administrative proceeding to adopt regulations regarding the certification of designated products, procedures for testing the energy efficiency of products, and the manner in which an annual list of qualified products will be published and maintained (DPUC Docket #04-10-18).</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.104 MMTCO<sub>2</sub>e indirect, &lt;0.001 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.205 MMTCO<sub>2</sub>e indirect, &lt;0.001 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b>  The cost is estimated to be -\$89/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b>  Reduced hydrofluorocarbon (HFC) and chlorofluorocarbon (CFC) emissions due to leaks from commercial refrigerators, freezers, and A/Cs; and reduced water consumption by commercial clothes washers.</p>
<p><b>11. Appliance-Swapping Program</b>  This program would encourage consumers to discard old appliances and replace them with new, more efficient appliances through a “pay-as-you-save” program. Appliances covered in the program include Energy Star tumble clothes washers, Energy Star refrigerators, Energy Star room A/C (6500 BTU), and Energy Star dishwashers.</p>	<p><b>Progress - In Process</b>  The DPUC forwarded this item to the Energy Conservation Management Board (ECMB) for its review and consideration for possible inclusion in its draft 2005 C&amp;LM budget plan (7/04). The ECMB conducted a preliminary review of this item, and has provided initial commentary to the DPUC (10/04). The DPUC is currently conducting an administrative proceeding to approve the 2005 C&amp;LM budget, and it intends to further examine the feasibility of including this item in the 2005 C&amp;LM budget plan (DPUC Docket #04-11-01).</p> <p><b>Expected GHG Reductions</b></p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<ul style="list-style-type: none"> <li>• 2010 = 0.016 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> <li>• 2020 = 0.020 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> </ul> <p><b>Expected Cost per Ton GHG</b>  The cost is estimated to be –\$78/MMTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b>  Co-benefits of this program include small reductions in HFC and CFC emissions leaked into the atmosphere from refrigerators and A/C units.</p>
<p><b>12. Heat Pump Water Heater (HPWH) Replacement Program</b>  Replace inefficient electric water heaters with new HPWH technology through a pay-as-you-save program.</p>	<p><b>Progress - In Process</b>  The DPUC forwarded this item to the Energy Conservation Management Board (ECMB) for its review and consideration for possible inclusion in its draft 2005 C&amp;LM budget plan (7/04). The ECMB conducted a preliminary review of this item, and has provided initial commentary to the DPUC (10/04). The DPUC is currently conducting an administrative proceeding to approve the 2005 C&amp;LM budget, and it intends to further examine the feasibility of including this item in the 2005 C&amp;LM budget plan (DPUC Docket #04-11-01).</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.011 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> <li>• 2020 = 0.013 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> </ul> <p><b>Expected Cost per Ton GHG</b>  The cost is estimated to be –\$121/MMTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b>  This appliance also can dehumidify the space in which it is located.</p>
<p><b>13. Bulk Purchasing of Appliances</b>  Bulk procurement can reduce the cost of energy efficient appliances or renewable technologies.</p>	<p><b>Progress - In Process</b>  The DPUC forwarded this item to the Energy Conservation Management Board (ECMB) for its review and consideration for possible inclusion in its draft 2005 C&amp;LM budget plan (7/04). The ECMB conducted a preliminary review of this item, and has provided initial commentary to the DPUC (10/04). The DPUC is currently conducting an administrative proceeding to approve the 2005 C&amp;LM budget, and it intends to further examine the feasibility of including this item in the 2005 C&amp;LM budget plan (DPUC Docket #04-11-01).</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 (residential) = 0.012 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> <li>• 2020 (residential) = 0.018 MMTCO<sub>2</sub>e indirect</li> </ul>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p>(direct not applicable)</p> <ul style="list-style-type: none"> <li>• 2010 (commercial) = 0.011 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> <li>• 2020 (commercial) = 0.028 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> </ul> <p><b>Expected Cost per Ton GHG</b> The cost is estimated to be -\$187/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>14. Mandate Upgrades to Residential and Commercial Building Energy Codes</b> Require buildings to meet the most recent energy code efficiency and performance standards established by the International Code Council (ICC), and require the automatic adoption of updated revisions within 18 months from availability for residential and commercial buildings.</p>	<p><b>Progress - Implemented</b> New regulations were passed resulting in updated building energy codes, effective September 2004.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.009 MMTCO<sub>2</sub>e indirect, 0.048 MMTCO<sub>2</sub>e direct (residential only)</li> <li>• 2020 = 0.036 MMTCO<sub>2</sub>e indirect, 0.176 MMTCO<sub>2</sub>e direct (residential only)</li> </ul> <p><b>Expected Cost per Ton GHG</b> The cost is estimated to be -\$172/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>15. Promote Energy-Efficient and Energy-Improvement Mortgages</b> Energy-efficient mortgages (EEMs) allow purchasers to borrow a larger mortgage when purchasing an Energy Star home. Energy-improvement mortgages (EIMs) allow owners to borrow money for energy efficiency (EE) improvements on their homes, or to upgrade the energy efficiency of a home before purchasing.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.001 MMTCO<sub>2</sub>e indirect, 0.004 MMTCO<sub>2</sub>e direct (only EIMs)</li> <li>• 2020 = 0.002 MMTCO<sub>2</sub>e indirect, 0.012 MMTCO<sub>2</sub>e direct (only EIMs)</li> </ul> <p><b>Expected Cost per Ton GHG</b> The cost is estimated to be -\$32/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits include educating residential consumers about energy efficiency.</p>
<p><b>16. Revise the Energy Conservation Loan Program (ECL)</b> The current ECL provides low-interest loans for EE improvements.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions</b> GHG emission reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b> Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>17. Weatherization Assistance Program (WAP)</b> Weatherization programs help homeowners improve</p>	<p><b>Progress - Action Pending</b> Potential funding sources have not been identified.</p>



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**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p>insulation, air leakage control, heating and cooling efficiency measures.</p>	<p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.003 MMTCO<sub>2</sub>e indirect, 0.003 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.003 MMTCO<sub>2</sub>e indirect, 0.003 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b>                      The cost is estimated to be \$241/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b>                      Co-benefits have not been estimated.</p>
<p><b>18. Energy Star Homes Program</b>                      This program provides rebates for the purchase of newly constructed homes meeting higher efficiency standards established by the U.S. EPA and DOE Energy Star Program.</p>	<p><b>Progress - In Process</b>                      The DPUC forwarded this item to the Energy Conservation Management Board (ECMB) for its review and consideration for possible inclusion in its draft 2005 C&amp;LM budget plan (7/04). The ECMB conducted a preliminary review of this item, and has provided initial commentary to the DPUC (10/04). The DPUC is currently conducting an administrative proceeding to approve the 2005 C&amp;LM budget, and it intends to further examine the feasibility of including this item in the 2005 C&amp;LM budget plan (DPUC Docket #04-11-01)</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.008 MMTCO<sub>2</sub>e indirect, 0.009 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.021 MMTCO<sub>2</sub>e indirect, 0.023 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b>                      The cost is estimated to be -\$3/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b>                      Co-benefits have not been estimated.</p>
<p><b>19. High-Performance Schools and State-Funded Buildings</b>                      State-funded construction and renovation should meet higher EE and performance standards.</p> <p>New construction and major renovations of all building projects that receive some State funding (State facilities, local schools, etc.) must meet Leadership in Energy and Environmental Design (LEED) standard and receive U.S. Green Buildings Council (USGBC) certification.</p> <p>Small construction and renovation projects that use State funding should also be required to meet a high-performance building standard.</p>	<p><b>Progress - In Process</b>                      Various new buildings in the CT State University system have been built to LEED standards (dormitories at ECSU, WCSU, SCSU). New science lab at WCSU being built to LEED Silver standards.</p> <p>OPM held a public education seminar on high performance schools, and is planning another event for 2005, in conjunction with the Rebuild America program of the U.S. Department of Energy.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.011 MMTCO<sub>2</sub>e indirect, 0.006 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.038 MMTCO<sub>2</sub>e indirect, 0.020 MMTCO<sub>2</sub>e direct</li> </ul>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p><b>Expected Cost per Ton GHG</b> The cost is estimated to be \$419/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits include promoting sustainable site planning, safeguarding water and water efficiency, materials and resources conservation, and improving indoor environmental quality. In addition to the environmental benefits, there are economic, health, safety, and community benefits.</p>
<p><b>20. High-Performance Buildings: Privately Funded Projects</b> Provide incentives for privately financed new construction and renovations to meet higher EE performance standards.</p>	<p><b>Progress - In Process</b> Through a grant from US DOE's Rebuild America program and funding provided by the State's electric utilities through the C&amp;LM fund, privately owned commercial buildings in SW CT are being benchmarked. A subset of these buildings will undergo retro-commissioning, (the process of evaluating the building's systems to ensure that the building is operating as was originally intended when designed and built). The project will also include training facility managers, providing education, and development of case studies and other tools to permit easy replication of the project in other regions of the state.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.012 MMTCO<sub>2</sub>e indirect, 0.007 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.034 MMTCO<sub>2</sub>e indirect, 0.018 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b> The cost is estimated to be \$308/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits include promoting sustainable site planning, safeguarding water and water efficiency, conserving materials and resources, and improving indoor environmental quality. In addition to environmental benefits, there are economic, health, safety, and community benefits.</p>
<p><b>21. Shared Savings Program for Government Agencies</b> This program allows a State agency to keep a portion of the energy savings realized when it makes EE improvements to a building. The benchmarking program allows an agency to identify buildings performing below the average.</p>	<p><b>Progress - In Process</b> Executive Order 32 was issued revising the existing shared energy savings program to facilitate with its implementation and to require a portion of cost savings to be allocated to renewable/clean power purchasing by state agencies.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.098 MMTCO<sub>2</sub>e indirect, 0.026 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.160 MMTCO<sub>2</sub>e indirect, 0.039 MMTCO<sub>2</sub>e direct</li> </ul>

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**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p><b>Expected Cost per Ton GHG</b> Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>22. Training of Building Operators</b> Training building operators in how to maximize the efficiency of their buildings will decrease energy use if operators successfully implement the information they have been provided.</p>	<p><b>Progress - In Process</b> The DPUC forwarded this item to the Energy Conservation Management Board (ECMB) for its review and consideration for possible inclusion in its draft 2005 C&amp;LM budget plan (7/04). The ECMB conducted a preliminary review of this item, and has provided initial commentary to the DPUC (10/04). The DPUC is currently conducting an administrative proceeding to approve the 2005 C&amp;LM budget, and it intends to further examine the feasibility of including this item in the 2005 C&amp;LM budget plan (DPUC Docket #04-11-01).</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.020 MMTCO<sub>2</sub>e indirect, 0.011 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.022 MMTCO<sub>2</sub>e indirect, 0.011 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b> The cost is estimated to be -\$140/MTCO<sub>2</sub>e.</p> <p>It is estimated that the program would cost \$63,000 per year. First year cost savings are estimated to be over \$1.3 million and would accrue for 5 years.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>23. Green Campus Initiative</b> This program would promote energy efficiency and other environmental measures at all Connecticut institutions of higher education.</p>	<p><b>Progress - In Process</b> During the past year considerable activity has occurred 1) 17 Connecticut universities have signed the New England Board of Higher Education (NEBHE) pledge to support the NEG-ECP 2001 Climate Change Action Plan, 2) 3 Connecticut universities have joined the Clean Air Cool Planet's Campuses for Climate Action program and 3) The first meeting of the CT Green Campus Initiative occurred which included participation by Yale, University of Connecticut, Connecticut College, St. Joseph College, ECSU, ISE, and DEP.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.099 MMTCO<sub>2</sub>e indirect, 0.084 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.106 MMTCO<sub>2</sub>e indirect, 0.084 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b> Expected programmatic costs include \$50,000 in the</p>

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Policy Action	Status
	<p>first year for program development; \$50,000 annually for outreach, training, and rollout; \$250,000 for a GHG inventory for all Connecticut colleges and universities; and \$1,000,000 annually for administration, benchmarking, and action plan development. The cost of the energy savings measures was not estimated.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits include improving water and waste management, increasing recycling, reducing the need for hazardous waste disposal, and promoting procurement of environmentally friendly products.</p>
<p><b>24. Energy Benchmarking and Tracking Program for Municipal Buildings</b>            This program encourages measurement and tracking of energy consumption, strategic planning, and benchmarking in comparison to other buildings.</p>	<p><b>Progress - In Process</b>            Multiple buildings have been benchmarked or are scheduled to be benchmarked including: state buildings, local schools, and 8.5 million square feet of commercial office space in SW CT. The buildings occupied by DEP and DPUC are eligible to receive Energy Star status. The expected date of completion 6/05.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.046 MMTCO<sub>2</sub>e indirect, 0.073 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.086 MMTCO<sub>2</sub>e indirect, 0.104 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b>            The estimated cost of program administration and outreach to communities is \$250,000 annually. The estimated cost for benchmarking is \$0.005 per square foot. Costs were not estimated for implementing the specific energy saving measures.</p> <p><b>Estimated Co-Benefits</b>            Program benefits include energy and environmental education at public schools.</p>
<p><b>25. Pilot Fuel-Switching Project</b>            This pilot project will test the use of B20 biodiesel fuel (diesel blended with 20% low/no GHG biodiesel) at a few State facilities.</p>	<p><b>Progress - In Process</b>            Funding has been provided to begin a pilot project at Eastern Connecticut State University utilizing a B20 blend (20% biodiesel blended with 80% #2 fuel oil) for space heating for a period of one year. The pilot, which will commence in 2005, will identify all regulatory steps needed for a facility to use biodiesel (i.e., permit modifications), gather data on fuel efficiency and emissions factors and monitor air emissions associated with using a B20 blend, test fuel quality, impacts on equipment (maintenance and performance satisfaction), and costs.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = (indirect not applicable), &lt;0.001 MMTCO<sub>2</sub>e direct</li> </ul>

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Policy Action	Status
	<ul style="list-style-type: none"> <li>2020 = (indirect not applicable), &lt;0.001 MMTCO<sub>2</sub>e direct</li> </ul> <p><b>Expected Cost per Ton GHG</b> The costs are estimated to be -\$22/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>26. Remove Current Barriers to Third-Party Load-Management Techniques</b> Remove barriers to allow energy service companies to manage the energy load at commercial or industrial facilities.</p> <p>Recommended changes include:</p> <ul style="list-style-type: none"> <li>integrating information and load management solutions into the local distribution company bill</li> <li>enabling demand resources to participate in the wholesale electric markets, and</li> <li>including an EE component in the alternative transitional standard offer.</li> </ul>	<p><b>Progress - In Process</b> On segments 1 &amp; 2 of this recommendation action is still pending. On segment 3: Energy Efficiency Optional Service under the Transitional Standard Offer, the DPUC intends to conduct an administrative proceeding to develop this program following the implementation of the Clean Energy Option (RA 49) in the first quarter of 2005, with the objective of having the energy efficiency program in place by the end of 2005.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>2010 = 0.018 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> <li>2020 = 0.033 MMTCO<sub>2</sub>e indirect (direct not applicable)</li> </ul> <p><b>Expected Cost per Ton GHG</b> The costs are estimated to be -\$34/MTCO<sub>2</sub>e.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>27. State Procurement of Environmentally Preferable Services and Products</b> This measure would promote procurement of environmentally preferable products and services by State agencies.</p>	<p><b>Progress – Implemented</b> A variety of EPP contracts and products are currently available to state agencies through DAS. The state's municipalities are also eligible to piggyback on these contracts. A Climate Change Showcase on EPP's at was presented at the 11/8/04 CT Shops Expo put on by DAS.</p> <p><b>Expected GHG Reductions in 2010 and 2020</b> GHG emission reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b> Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>28. Review New England Regional Demand Response Initiative (NEDRI) Recommendations</b> The State should review the recommendations from the NEDRI report. ISO NE and various state DPUCs, wires companies, and DEPs worked together to develop a series of recommendations over an 18-month period. The NEDRI report provides a good overview and identifies many measures that can be implemented at the federal and</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions in 2010 and 2020</b> GHG emissions reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b> Costs have not been estimated.</p>

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Policy Action	Status
<p>state level. In addition, the Federal Energy Regulatory Commission plans to use NEDRI as a model for other state ISOs.</p>	<p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>29. Promote Voluntary Programs and Actions</b> To promote GHG reductions in particular sectors, state government can encourage participation in voluntary programs that exist on the national level through Federal non-governmental agencies. In addition, the state may enter into direct voluntary or negotiated agreements with industries or industrial sectors. Negotiated agreements, for example, would result in agreed-upon GHG emission reductions or offsets as an alternative to compliance or enforcement actions resulting from violation of air pollution legislation (such as violations of Clean Air Act state implementation plan requirements), or as an alternative for possible regulation of GHG emissions.</p>	<p><b>Progress - In Process</b> Efforts to promote participation in existing programs have resulted in:</p> <ul style="list-style-type: none"> <li>• 16 CT towns joining the International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection program;</li> <li>• commitments from CT towns, the state, and faith communities join the 20% by 2010 Clean Energy Campaign of SmartPower and purchase over 100 GWh of electricity from clean energy by 2010;</li> <li>• the launch of the new CT Clean Energy Communities program by CCEF, SmartPower, and CCM;</li> <li>• 3 CT universities joining Clean Air-Cool Planet's Campuses for Climate Action program;</li> <li>• 30 CT towns participating in Rebuild America program;</li> <li>• EPA holding its Climate Leaders conference in CT in October 2004 (first time outside of Washington, D.C.) with DEP Acting Commissioner as a speaker and several CT companies are members.</li> <li>• Presentation and promotion of EPA Energy Star program geared to hospitals and medical offices at 2 separate fall workshops for this sector.</li> </ul> <p><b>Expected GHG Reductions in 2010 and 2020</b> GHG emission reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b> Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>
<p><b>30. Encourage Clean Combined Heat and Power (CHP)</b> CHP is the simultaneous production of electricity and heat using a single fuel. The heat produced from the electricity-generating process is captured and used to produce high- and low-level steam. The steam can be used as a heat source for both industrial and domestic purposes and in steam turbines to generate additional electricity (i.e., combined-cycle power).</p> <p>The policy consists of two elements:</p> <ol style="list-style-type: none"> <li>1. Reducing the current barriers to developing CHP projects (such as permitting and interconnection hurdles and standby power rates)</li> <li>2. Exploring further mechanisms to promote CHP,</li> </ol>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.523 MMTCO<sub>2</sub>e indirect, 0.009 MMTCO<sub>2</sub>e direct (based on 4% CHP in 2010)</li> <li>• 2020 = 1.389 MMTCO<sub>2</sub>e indirect, 0.025 MMTCO<sub>2</sub>e direct (based on 8% CHP in 2020)</li> </ul> <p><b>Expected Cost per Ton GHG</b> Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b> Co-benefits have not been estimated.</p>

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Policy Action	Status
such as a CHP portfolio standard	
<p><b>31. Restore the Conservation and Load Management Fund</b></p> <p>The Conservation and Load Management Fund is directed towards electrical efficiency measures in the residential, commercial, and industrial sectors. It is generated through a ratepayer surcharge on electricity.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.279 MMTCO<sub>2</sub>e indirect, (direct not applicable)</li> <li>• 2020 = 0.606 MMTCO<sub>2</sub>e indirect, (direct not applicable)</li> </ul> <p><b>Expected Cost per Ton GHG</b>            The cost is estimated to be -\$56/MTCO<sub>2</sub>e.</p> <p>This program requires \$37 million in 2004 and 2005 and \$27 million from 2006-2010. Funding from 2011 to 2020 would be \$87 million. These funds are to be generated from a surcharge on electricity. Cost savings would begin to accrue to residential, commercial, and industrial customers immediately and would continue to accrue for the lifetime of the measure or an estimated 15 years (e.g., measures implemented in 2020 would continue to achieve cost savings through 2035).</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>
<p><b>32. Create Heating Oil Conservation Fund</b></p> <p>Similar to a public benefits funds (eg. Conservation and Load Management Fund and the Connecticut Clean Energy Fund), the revenues for this fund could be collected from oil consumers to support EE or conservation projects in these areas.</p>	<p><b>Progress - In Process</b></p> <p>Further analysis has been done to quantify co-benefits. Significant Positive economy-wide benefits have been determined.</p> <p>Implementation actions are pending. Legislation will be necessary.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 1.02 MMTCO<sub>2</sub>e</li> <li>• 2020 = 1.89 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b></p> <ul style="list-style-type: none"> <li>• 2010 = -\$184 \$/ton CO<sub>2</sub>e</li> <li>• 2020 = -\$737 \$/ton CO<sub>2</sub>e</li> </ul> <p><b>Estimated Co-Benefits</b>            Significant economy-wide benefits have been estimated including employment, output, gross state product, real disposable personal income, and state revenues.</p> <p>Significant criteria pollutant reductions have been estimated as well that result in improved public health.</p> <p>(see write-up for summary)</p>

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**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p><b>33. Create Natural Gas Conservation Fund</b>            Similar to a public benefits funds (eg. Conservation and Load Management Fund and the Connecticut Clean Energy Fund), the revenues for this fund could be collected from oil consumers to support EE or conservation projects in these areas.</p>	<p><b>Progress - In Process</b>            Further analysis has been done to quantify co-benefits. Significant Positive economy-wide benefits have been determined.</p> <p>Implementation actions are pending. Legislation will be necessary.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 1.44 MMTCO<sub>2</sub>e</li> <li>• 2020 = 2.07 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b></p> <ul style="list-style-type: none"> <li>• 2010 = -\$360 \$/ton CO<sub>2</sub>e</li> <li>• 2020 = -\$1,450 \$/ton CO<sub>2</sub>e</li> </ul> <p><b>Estimated Co-Benefits</b>            Significant economy-wide benefits have been estimated including employment, output, gross state product, real disposable personal income, and state revenues.</p> <p>Significant criteria pollutant reductions have been estimated as well that result in improved public health.</p> <p>(see write-up for summary)</p>
<p><b>34. Identify Measures to Reduce High Global Warming Potential (GWP) Gases</b>            High-GWP gases, potent GHGs, include HFCs, SF<sub>6</sub>, and PFCs. Opportunities to reduce high GWP gases include leak reduction programs, substitution programs, and improved maintenance, among others.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions in 2010 and 2020</b>            GHG emission reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>

### Agriculture, Forestry, and Waste

<p><b>35. Install Centralized Manure Digesters</b>            Install anaerobic digesters to process agriculture manure into energy (e.g., heat, hot water, or electricity). This process also produces digested manure, which can contain more valuable nitrogen for crop production.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.0084 MMTCO<sub>2</sub>e indirect, 0.0087 direct MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.0255 MMTCO<sub>2</sub>e indirect, 0.0260 direct MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            The expected cost would equal \$112 to 126/MTCO<sub>2</sub>e. It is estimated that the program would cost \$2.8 million: 940,800 per digester. The group deliberated on a number of implementation approaches for the manure digester option; however,</p>
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**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p>no specific actions were suggested. Depending on the implementation approach chosen, some or all of the funding could come from the federal government, State government, or private entities.</p> <p><b>Estimated Co-Benefits</b>                      This project could provide ancillary benefits such as odor control, water quality, and improved farm economics through generating additional income. In addition, this project could support the continuation of farming in the State that can support both smart growth initiatives and the “increase purchase of locally grown food” option mentioned later.</p>
<p><b>36. Reduce Use of Non-Farm Fertilizer</b>                      A portion of nitrogen applied to the soil is subsequently emitted as N<sub>2</sub>O; therefore, a reduction in the quantity of fertilizer applied can reduce N<sub>2</sub>O emissions. The goal is to support education programs to reduce non-farm (i.e., commercial and residential) fertilizer use by 7.5% by 2010 and 15% by 2020.</p>	<p><b>Progress - In Process</b>                      The towns of Milford and Cheshire have joined Freedom Lawn program. The Organic Landcare Program (administered by Connecticut Northeast Organic Farmers Association) continues to run outreach, training, and accreditation programs for organic landcare professionals in the state. There are currently 56 accredited organic land care professionals in CT. An accreditation course was conducted in CT in 2004; AND another will in February 2005. There have been numerous presentations, articles, and displays on the organic landcare standards to groups such as the CT Chapter of the Association of Landscape Architects, organic farming groups, garden clubs, environmental organizations, and faith based communities.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.003 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.003 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>                      Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>                      These efforts can reduce nutrient loading in water bodies; increase the organic content of soil (and thus increase carbon sequestration); reduce GHG emissions and water consumption through natural lawn care methods, such as decreased mowing, and watering; and increase biodiversity.</p>
<p><b>37. Buy Locally Grown Food</b>                      Encouraging consumers to buy local produce reduces emissions associated with the transport of agricultural products. The goal is to purchase an additional 10% of CT’s farm products from local sources instead of conventional markets.</p>	<p><b>Progress - In Process</b>                      The CT Grown program of the CT Department of Agriculture continues to work to increase the purchase of locally grown foods in the state. Currently there are 19 schools and 25 farmers participating in the Farm to Schools program that purchase local produce for school cafeterias. There are presently 70 farmers’ markets in the state selling locally grown produce. In addition, a number of large institutions are currently purchasing or considering</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p>purchasing locally grown produce, including the Department of Corrections and the University of Connecticut. In 2004, the Department of Agriculture was able to hire an additional employee to work on the CT Grown program, using funds it receives from the USDA.</p> <p>In 2004, legislation was enacted to require DAS to give preference to CT grown in contracts for dairy, poultry, eggs, fruits, and vegetables (An Act Concerning Preservation of the Family Farm and Long Island Sound, PA 04-222) and to also require DOA to establish a "Connecticut Farm Fresh" promotional program.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.003 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.003 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            These efforts can provide ancillary benefits such as the reduction of air emissions from reduced food transport, economic development for Connecticut farms, and lower levels of pesticide and water pollution, depending on the type of farming practice supported.</p>
<p><b>38. Research on Connecticut Forest Management and Carbon Offsets</b></p> <p>This program will support a research program to examine Connecticut's public and private forests and determine how they could be best managed to maximize carbon sequestration and to develop markets for offsets from terrestrial carbon sinks.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions in 2010 and 2020</b>            The measures have not been quantified.</p> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>
<p><b>39. Urban Tree Planting Program</b></p> <p>Plant trees in urban areas to reduce the consumption of energy for heating and cooling buildings, thereby helping avoid fossil fuel emissions in the energy sector and increasing the carbon stock of non-forest land. The goal is to provide funding and other support to plant an additional 15,000 sufficiently sized trees by 2010, and 20,000 more by 2020.</p>	<p><b>Progress - In Process</b></p> <p>DEP has had an urban forestry grant program for CT towns in place for about 12 years, using funding from the USDA Forest Service. In 2004, a total of \$76,860 was awarded to CT towns for urban forestry programs. Of this, \$28,260 was specifically designated for urban tree planting in the towns of East Haddam, Bristol, and Norwalk.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.0008 MMTCO<sub>2</sub>e indirect, 0.00003 MMTCO<sub>2</sub>e direct</li> <li>• 2020 = 0.0019 MMTCO<sub>2</sub>e indirect, 0.00007 MMTCO<sub>2</sub>e direct</li> </ul>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p><b>Expected Cost per Ton GHG</b>                      The expected cost would equal \$9,815/MTCO<sub>2e</sub>. It is estimated that the program would cost \$500,000 per year starting in 2004, and have a potential mix of federal and State government funding.</p> <p><b>Estimated Co-Benefits</b>                      This program could lead to reductions in other air emissions. Planting programs in urban areas should have few barriers to implementation because many communities are actively pursuing tree-planting programs for reasons other than climate change, such as aesthetics.</p>
<p><b>40. Forest and Agricultural Land Preservation</b>                      This program would support the protection of forestland and agricultural land preserves and the carbon-absorption capacity of existing forest and agricultural lands, enabling continued carbon sequestration from the atmosphere. The goal is to preserve existing forest and agricultural land in CT.</p>	<p><b>Progress - In Process</b>                      To date, 23% of the Connecticut Department of Agriculture's 130,000-acre preservation goal has been met through the purchase of land development rights program. As of December 2004, a total of 29,980 acres on 211 Connecticut farms have been preserved through this program. During 2004, \$2.2 million was allocated by State Bond Commission to purchase development rights on 1,133 acres of prime farm.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.283 MMTCO<sub>2e</sub></li> <li>• 2020 = 0.283 MMTCO<sub>2e</sub></li> </ul> <p><b>Expected Cost per Ton GHG</b>                      The expected cost would equal \$137/MTCO<sub>2e</sub>. It is estimated that the program would cost \$57 million per year: \$46.6 million for the forestland preservation and \$10.5 million for the agricultural land preservation. A significant portion of the open space land preserved through State funds was conducted under a program in which the DEP provided towns and private conservation groups with matching grants, usually 50% of the land cost. If such a program were to comprise half of the DEP's efforts, the 4,700 acres could be acquired at a cost to the state of approximately \$21.4 million per year. The agricultural land preservation is assumed to come from State government funding.</p> <p><b>Estimated Co-Benefits</b>                      Ancillary benefits include promoting wildlife habitat, protecting and improving water quality, improving the "livability" of the State, supporting smart growth initiatives in the State, supporting economic development (especially in rural parts of the State) by maintaining agricultural capacity, and enabling the continued consumption of locally grown agricultural products.</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p><b>41. Promote Use of Durable Wood Products</b>            Durable wood products, such as furniture or construction lumber, sequester carbon for long periods of time, as long as the timber is produced as a result of certified sustainable harvesting practices. Wood products are also much less energy-intensive to create than materials such as steel, plastic, aluminum, and concrete. The recommendation is to support a voluntary education program to encourage the purchase of durable wood products,</p>	<p><b>Progress – In Progress</b>            DAS is using contract language to encourage proposals that include the reuse of durable wood furniture. EPP Program working on promotion of used/refurbished furniture contract.</p> <p><b>Expected GHG Reductions in 2010 and 2020</b>            The measures have not been quantified.</p> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>
<p><b>42. Support Economically Viable Landfill Gas-to-Energy Projects</b>            Landfills naturally create methane gas (a GHG) as a by-product. Rather than being released into the air or burned off (flared), methane can be captured and used as a fuel to produce energy.</p>	<p><b>Progress - In Process</b>            The CCEF is currently identifying credible commercial LFGE projects in various sites throughout Connecticut.</p> <p><b>Expected GHG Reductions in 2010 and 2020</b>            These are included in waste and electricity sector reference cases.</p> <p><b>Expected Cost per Ton GHG</b>            Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>
<p><b>43. Increase Recycling and Source Reduction</b>            This would cover programs to reduce the amount of waste being put in landfills and/or waste-to-energy facilities, thereby reducing the amount of generated methane and CO<sub>2</sub>, and emissions associated with producing virgin materials.</p>	<p><b>Progress - Action Pending</b>            DEP has issued a Request for Proposals for the development of a statewide solid waste management plan. This plan, which should be completed by early 2006, will further identify and analyze measures to increase recycling and source reduction to 40%.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.91 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.97 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            The expected cost would equal \$4 to \$5/MTCO<sub>2</sub>e. It is estimated that the program would cost \$4.1 million per year in State funding (see appendix to Chapter 3.4).</p> <p><b>Estimated Co-Benefits</b>            Some of the potential ancillary benefits of this program include decreased raw materials acquisition (fossil fuel energy and other emissions and changes in forest carbon sequestration); decreased manufacturing (fossil fuel energy emissions) and transportation-related emissions; reduced need for new disposal facilities, avoiding land use and siting issues, waste transportation issues, other pollutants</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p>from waste combustion, generation of ash residue which requires handling, transportation, and disposal, and reduced toxicity of the waste stream. Consideration was given to the impact of GHG on resource-recovery facilities compared with disposal of waste out-of-state.</p>
<p><b>44. Voluntary Carbon Offset Program</b>  Encourage pilot efforts on carbon offsets (i.e., emissions reductions by sources not covered under specific recommendations from the stakeholders and outside the state or the country).</p>	<p><b>Progress - In Process</b>  There is at least one voluntary carbon offset program operating in CT. This program, called Reforest The Tropics, has linked a number of CT carbon dioxide emitters with reforestation projects in Costa Rica. In Connecticut, there are a number of organizations of various sectors participating in this program, including colleges and local schools, municipalities, tribal nations, and individuals.</p> <p><b>Expected GHG Reductions in 2010 and 2020</b>  GHG emissions reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b>  Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>  Co-benefits have not been estimated.</p>
<b>Electricity Generation</b>	
<p><b>45. Renewable Energy Strategy (RES)</b>  RES is a group of options designed to promote renewable energy. This recommendation includes several combined strategies that were run through the Integrated Planning Model (IPM) to inform the stakeholders in its decision-making role.</p>	<p><b>Progress - In Process</b></p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>No GHG emissions reductions are reported for this combined policy run. This scenario was run to further inform the judgment of the stakeholders in its decision-making role.</li> </ul> <p><b>Expected Total Cost</b></p> <ul style="list-style-type: none"> <li>No costs are reported for this combined policy run.</li> </ul> <p><b>Expected Cost (In-State) per Ton GHG (Region)</b></p> <ul style="list-style-type: none"> <li>No costs are reported for this combined policy run.</li> </ul> <p><b>Estimated Co-Benefits</b>  Co-benefits have not been estimated.</p>
<p><b>46. Renewable Portfolio Standard (RPS)</b>  The RPS mandates that a certain minimum percentage of annual electricity production come from renewable energy sources. Sources of qualifying renewable energy are delineated in the legislation, as are the increasing percentage requirements over time.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>2010 = 1.3 MMTCO<sub>2</sub>e</li> <li>2020 = 3.2 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>  This is calculated in Recommendation 45 based on</p>

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**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p>an extension of the current RPS to 8% in 2011 and up to 20% in 2020.</p> <p><b>Estimated Co-Benefits</b>            By virtue of reducing conventional power plant production, increased utilization of clean energy resources would yield a number of additional pollutant benefits in terms of reduced SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions. Other potential co-benefits include greater fuel diversity; fuel cost savings; and increased electric system reliability and security — as well as economic development benefits.</p>
<p><b>47. Government Clean Energy Purchase</b>            State government and universities are required to replace an increasing share of electricity with renewable energy, or to pay a premium on electricity to support investment in renewable energy generation capacity.</p>	<p><b>Progress - In Process</b>            Executive Order 32 was issued requiring state government and universities to purchase Class I Renewables - 20% by 2010, 50% in 2020, and 100% in 2050. OPM has retained a consultant to update state building load profiles to assist the state in implementing this measure. Estimated date of completion is Fall of 2005.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.08 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.21 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            This is calculated under the RES.</p> <p><b>Estimated Co-Benefits</b>            “Leading by Example,” will establish an important foundation from which other leaders in the business, community, and institutional arenas can commit to significant clean energy purchases.</p>
<p><b>48. Production Tax Credit (PTC)</b>            Create a financial incentive for qualifying renewable energy production with a per-kWh tax credit.</p> <p>Explore a PTC (\$0.018/kWh for 10 years) for new Class I renewable projects in Connecticut that are not covered by the federal renewable PTC (i.e., fuel cells, solar, landfill gas, biomass, hydrogen, and small hydro). This would be a potential mechanism to achieve RPS and promote development of in-state renewables in light of future information on the availability of and competition for biomass resources.</p>	<p><b>Progress - In Process</b>            Although not directly a Connecticut-based PTC, Public Act 03-135 requires UI and CL&amp;P to sign long-term power contracts for no less than 100 MW’s of clean energy. This act requires that power contracts for no less than a 10-year period (the length of the federal ptc is 10 years) be signed at the wholesale market price plus up to \$0.055 per kWh (the federal PTC is inflation-adjusted at a rate of \$0.015 per kWh)</p> <p>To date, DPUC has conducted a proceeding that established a procedure and process guidelines to implement the statute. In addition, The CCEF organized a kick-off meeting to prospective developers and financiers to discuss the process and issue a draft RFP for public comment (11/16).</p> <p>The need to develop a Connecticut-based PTC will in part depend upon how this act is successfully implemented.</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p><b>Expected GHG Reductions</b>            GHG emissions reductions have not been estimated.</p> <p><b>Expected Cost per Ton GHG</b>            This is calculated under the RES.</p> <p><b>Estimated Co-Benefits</b>            By virtue of reducing conventional power plant production, increased utilization of clean energy resources would yield a number of additional pollutant benefits in terms of reduced SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions. Other potential co-benefits include greater fuel diversity; fuel cost savings; and increased electric system reliability and security — as well as economic development benefits.</p>
<p><b>49. Clean Energy Option</b>            Allow ratepayers to choose electricity derived from renewable energy sources.</p>	<p><b>Progress - In Process</b>            On October 20, 2004 the DPUC issued a decision (docket #03-07-16) establishing the framework for the implementation of state's clean power (renewable energy) program. A bidding process is currently underway, and It is expected that there will be a 50% and 100% clean energy choice option available to UI and CL&amp;P customers in the first quarter of 2005.</p> <p>The CCEF, in partnership with SmartPower and CCM, have created a program called "CT Clean Energy Communities." This program is designed to compliment the clean power program and support greater market penetration to achieve the recommended targets.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.43 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.81 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Total Cost (Voluntary Market)</b></p> <ul style="list-style-type: none"> <li>• 2010 = \$14.49 million</li> <li>• 2020 = \$17.76 million</li> </ul> <p><b>Expected Cost per Ton GHG</b></p> <ul style="list-style-type: none"> <li>• In 2010 = \$33.69/MTCO<sub>2</sub>e (\$123.55/MTCe)</li> <li>• In 2020 = \$21.92/MTCO<sub>2</sub>e (\$80.39/MTCe)</li> </ul> <p><b>Estimated Co-Benefits</b>            By virtue of reducing conventional power plant production, increased utilization of clean energy resources would yield a number of additional pollutant benefits in terms of reduced SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions. Other potential co-benefits include greater fuel diversity; fuel cost savings; and increased electric system reliability and security — as well as economic development benefits.</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
<p><b>50. Renewable Energy Credits</b>                      The benefits of renewable energy— zero emissions of GHG and other pollutants—can be purchased via certificates called “green tags,” which track the generation and sale of renewable energy, even when produced outside the local utility grid.</p>	<p><b>Progress - In Process</b>                      The DPUC is conducting an administrative proceeding (Docket 04-01-13) to review the RPS Standards and Trading Programs in New York, Pennsylvania, New Jersey, Maryland, and Delaware.</p> <p><b>Expected GHG Reductions in 2010 and 2020</b>                      Non-applicable</p> <p><b>Expected Cost per Ton GHG</b>                      Costs have not been estimated.</p> <p><b>Estimated Co-Benefits</b>                      It is expected that regional REC trading will reduce compliance costs for the RPS thereby reducing costs to the ratepayers.</p>
<p><b>51. Restore the Clean Energy Fund</b>                      This fund provides incentives for new renewable electricity generation capacity and pilot projects.</p>	<p><b>Progress - Action Pending</b></p> <p><b>Expected GHG Reductions in 2010 and 2020</b></p> <ul style="list-style-type: none"> <li>• 2010 = 0.31 MMTCO<sub>2</sub>e</li> <li>• 2020 = 0.41 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b></p> <ul style="list-style-type: none"> <li>• 2010 = \$2.05-\$39.09 MTCO<sub>2</sub>e</li> <li>• 2020 = \$0.60-\$29.66 MTCO<sub>2</sub>e</li> </ul> <p><b>Estimated Co-Benefits</b>                      By virtue of reducing conventional power plant production, increased utilization of renewable resources and new distributed fuel-cell installations would yield a number of additional pollutant benefits in terms of reduced SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions. Other potential co-benefits include greater fuel diversity; fuel cost savings; and increased electric system reliability and security — as well as economic development benefits. These benefits are, of course, more likely to be concentrated in Connecticut if CCEF funds are used to promote renewable projects or fuel cell applications within the state.</p>
<p><b>52. Energy Efficiency and CHP</b>                      EE/CHP is a group of options designed to promote energy efficiency and CHP. This recommendation includes several combined strategies that were run through the Integrated Planning Model (IPM) to inform the stakeholders in its decision-making role.</p>	<p><b>Progress - In Process</b>                      Near finalization of REMI modeling. Results show a positive economic benefit to the state.</p> <p><b>Expected GHG Reductions</b></p> <ul style="list-style-type: none"> <li>• No GHG emissions reductions are reported for this combined policy run. This scenario was run to further inform the judgment of the stakeholders in its decision-making role.</li> </ul> <p><b>Expected Total Cost</b></p> <ul style="list-style-type: none"> <li>• No costs are reported for this combined policy run.</li> </ul>



**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

Policy Action	Status
	<p><b>Expected Cost (In-State) per Ton GHG (Region)</b></p> <ul style="list-style-type: none"> <li>No costs are reported for this combined policy run.</li> </ul> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>
<p><b>53. Regional Cap-and-Trade Program</b>            Cap-and-trade programs set limits on industry emissions at particular levels over particular time periods within a specified geographic area. They allow flexibility by covered entities in sources and methods of reduction, as well as trading credits between those required to comply with caps or standards and other flexibility mechanisms, such as emissions offsets.</p>	<p><b>Progress - In Process</b>            DEP continues its participation in the Regional Greenhouse Gas Initiative (RGGI) and its coordination with other states in the Northeast region. The objective is to have electricity sector modeling results and a model rule completed by April 2005. A RGGI Staff Working Group meeting is held monthly, and numerous subgroup conference calls are held each month.</p> <p><b>Expected GHG Reductions (With Leakage)</b></p> <ul style="list-style-type: none"> <li>2010 = 0.95 MMTCO<sub>2</sub>e</li> <li>2020 = 2.26 MMTCO<sub>2</sub>e</li> </ul> <p>(Without Leakage)</p> <ul style="list-style-type: none"> <li>2010 = 1.98 MMTCO<sub>2</sub>e</li> <li>2020 = 5.13 MMTCO<sub>2</sub>e</li> </ul> <p><b>Expected Cost per Ton GHG</b>            The costs will be provided as part of the modeling results.</p> <p><b>Estimated Co-Benefits</b>            Co-benefits have not been estimated.</p>

**Cross-Cutting Recommendations**

<p><b>54. Public Education Initiative</b>            Information and education is an important tool for implementing GHG plans and programs, because it alerts the public and key parties to the need for action and the availability of programs and services. The goal is to foster a broad awareness of climate change issues (including co-benefits) and impacts among CT citizens and to engage citizens in actions to reduce GHG emissions. The recommendation details education and outreach initiatives for the following target sectors: policy makers, community leaders, future generations, community-based organizations, and the general public.</p>	<p><b>Progress - In Process</b>            The Climate Change Education Committee continues to meet regularly to coordinate education and outreach in CT. Progress during 2004 includes: further development of the state's climate change web site (<a href="http://www.ctclimatechange.com">www.ctclimatechange.com</a>); numerous outreach and technical assistance events for municipalities and universities; establishment of a CT Science Center Collaborative to integrate climate science and research into the programming of the state's science centers and museums; continued research on messaging and public opinion on global warming; and continued networking and collaboration among the many organizations involved in outreach on climate change and related issues in CT.</p>
<p><b>55. Emissions Inventory and Registry</b>            Inventory, reporting, and registry systems are important tools for implementation of GHG plans because they provide a means of measuring and tracking success and</p>	<p><b>Progress - In Process</b>            DEP is working with other northeast states and NESCAUM on the Regional Greenhouse Gas Registry (RGGR) project. The goal is to develop a</p>

**Table ES.3**  
**Summary of Connecticut Climate Change Recommendations**

<b>Policy Action</b>	<b>Status</b>
of cooperating across sectors, programs, and jurisdictions.	GHG registry that can accommodate both mandatory and voluntary reporting programs. This registry is also being designed to handle the emissions and allowance tracking needs of the Regional Greenhouse Gas Initiative (RGGI). Pursuant to Public Act 04-252 (A.A.C. Climate Change), Connecticut sources will need to commence mandatory reporting of annual GHG emissions in April 2006.