

# ENVIRONMENTAL QUALITY IN CONNECTICUT 2 0 1 1



## Annual Report Home

- ▶ Welcome
- ▶ Air
- ▶ Farm, Forest, Wetland
- ▶ Sound + Shore
- ▶ Rivers + Reservoirs
- ▶ Human Health
- ▶ Personal Impact
- ▶ About the CEQ
- ▶ Contact Us

May 2012

Welcome to *Environmental Quality in Connecticut*. This edition explores the condition of Connecticut's environment through 2011.

Later in the year, the Council on Environmental Quality will publish Part II, which will include recommendations for improving Connecticut's environment based on the data in this report.

This annual report is the fourth to be published only on the Council's website, with no printed copies available. Readers can download a printer-friendly version from the Council's website.

The Council welcomes any questions, suggestions or comments you might have.





STATE OF CONNECTICUT  
**COUNCIL ON ENVIRONMENTAL QUALITY**

Barbara C. Wagner  
*Chair*

M. Howard Beach

Janet P. Brooks

Liz Clark

Bruce R. Fernandez

Karyl Lee Hall

Richard Sherman

\_\_\_\_\_  
Karl J. Wagoner  
*Executive Director*

June 6, 2012

The Honorable Dannel P. Malloy  
Governor of Connecticut  
State Capitol  
Hartford, CT 06106

Dear Governor Malloy:

I am pleased to submit the official report on the condition of Connecticut's environment for 2011.

As you know, the core of the report is a standardized set of environmental indicators by which we measure Connecticut's progress. At first glance, the statistics for 2011 look typical of recent years. In the report's introduction, the Council takes a closer look at some of the more revealing indicators.

The destructive storms of 2011 had the effect of bringing to light some previously obscure environmental data. We learned that in nearly three-quarters of Connecticut, homes mingle extensively with wild, natural lands -- a greater portion than any other state. We also learned that residents take full advantage of their proximity to nature by watching wildlife around the home and conserving habitat much more than the average American, and spend an unusually large sum of money doing so. So we're suggesting that Connecticut might want to claim the title of the #1 Nature State.

The state's pattern of land development, present and future, will dictate the environmental policies essential to long-term improvement in the quality of Connecticut's air, water and life. These conclusions are discussed in "Connecticut: The State of Nature?"

"Activities of the Council" summarizes last year's investigations and notes that June 2011 marked the 40th anniversary of the law that established the CEQ.

Later in the year, the Council will submit Part II, which will include recommendations for improving the state's environment based on the data in front of you.

As always, the Council looks forward to providing you with any additional information or assistance that you might request.

Respectfully,

Barbara C. Wagner  
Chair

## Bottom Line

A very brief summary of 2011

### Improved or Held Steady at a Positive Level in 2011:

- Drinking Water Quality
- Bald Eagles & Piping Plovers
- Inland Wetlands
- Good Air Days
- Farmland Conservation

What these improvements have in common: *They are the results of effective regulatory programs and modest public capital investments.*

### Declined or Held Steady at a Level Insufficient to Meet Goals:

- Beach Closings
- Oxygen Levels in Long Island Sound
- Pollution in Long Island Sound
- Lobsters and Clean Shellfish Beds
- Average Level of Air Pollution
- Conservation of Forest Land (based on incomplete data)

What these deficiencies have in common: *Most will require substantial public capital investment or, in some cases, improved strategies before goals can be met.*

### Trends in Personal Impact Indicators:

- Connecticut residents used electricity more efficiently at work.
- Recycling rates remain below targets.
- Residents took the bus more often and drove less.
- Compliance rates were down.

Data for several environmental indicators were unavailable for 2011 for reasons that varied from staff shortages at DEEP to the absence of data collection systems. Nobody knows, for example, how much land in Connecticut was preserved last year, nor does anyone know how much has been permanently protected to date, because there is no system to collect such data.

## Introduction

Connecticut's environmental statistics for 2011 look typical of recent years: they portray a static state with slow or no progress on some of the biggest challenges, peppered with small improvements and minor retreats.

That's at first glance. A closer look reveals many more facts, some of which were illuminated dramatically by Tropical Storm Irene and the October 29 snowstorm.

Here are the first glances and the closer looks:

### **AIR**

**First Glance:** Slightly fewer bad days, but more pollution on the average day.

**Closer Look:** Air quality in some towns after the October storm was atrocious, apparently because of emissions from generators, wood stoves and fireplaces. Northern Connecticut probably saw particle levels over twice the standard that protects human health -- a sample of what Connecticut residents would breathe all the time if it were not for the successful air pollution controls that have been put in place on most sectors of the economy.

### **CLEAN RIVERS AND STREAMS**

**First Glance:** No change in six years.

**Closer Look:** Steady investment in upgrading cities' sewerage continues, but it might never result in rivers that are truly free of raw sewage after rainstorms. We might need a new indicator to measure subtle progress. Meanwhile, runoff from developed areas remains the largest impediment to clean waterways. Control of polluted runoff from streets, parking lots and lawns is the next challenge if the goal of clean water is to be achieved.

## LIFE IN THE SOUND

**First Glance:** Lobsters, shellfish beds, beaches, pollution and oxygen all worse in 2011.



**Closer look:** This satellite view of the Connecticut River emptying uncountable tons of sediment into Long Island Sound nearly a week after Tropical Storm Irene received widespread publication. It is a powerful reminder that beaches, oyster beds and the open water are affected greatly by the pollution that washes off the surface of Connecticut after every rain.

## FARM, FOREST, WETLAND

**First Glance:** A good year for farmland conservation, not for other lands.

**Closer Look:** Connecticut still does not know how close it is to its goal of conserving 21 percent of the state's land area. (Public Act 12-152 could eventually lead to an accurate inventory of preserved lands.)

## PERSONAL IMPACT INDICATORS

### Driving Our Cars

**First Glance:** People are driving less.

**Closer Look:** Connecticut might be in the early stages of an unprecedented shift toward less driving, if state and national data continue along current trends. Until 2007, the average resident drove more miles every year than in the previous year. Some reduction in driving is attributed to economic factors, but recent research has found that demographic factors are playing a role.

## Compliance

**First Glance:** Down.

**Closer Look:** About 1,000 violations of Connecticut's environmental laws are detected each year. Who are the culprits? The Council classified all 944 Notices of Violation (NOV) issued by the Department of Energy and Environmental Protection (DEEP) in the 2011 fiscal year and found that the majority of NOVs issued to businesses were related to the storage, distribution and use of petroleum, especially gasoline. Gas stations and convenience stores received the largest number of NOVs. Some classes of NOV recipients might surprise the readers: medical offices and landscaping companies received many. Only 7 percent of NOVs went to manufacturers with more than 20 employees, which is smaller than the number issued to homeowners and other individuals.

The indicators in this report provide many additional insights into the progress that Connecticut residents have made and the challenges they confront. Additional and previously obscure data about Connecticut's environment were brought to the fore by the storms of 2011. In fact, Connecticut might well be able to claim the title "The Nature State." Read more...

---

### Notes for This Edition

Regular readers of this report know that its core elements are the 31 indicators that describe Connecticut's environment objectively and reliably. One indicator will probably be discontinued after this year: retail sales data for ENERGY STAR appliances are no longer available state-by-state. The most recent data are from 2009.

The Council makes improvements to this report every year, and many of them have been suggested by readers. The Council greatly appreciates their advice. Additional changes proposed by readers are in the works.

## Arrowheads Explained

Above each environmental indicator on the pages that follow, readers will find an arrowhead that illustrates improvement (arrowhead up) or decline (arrowhead down) in environmental conditions. There are four variations of the arrow symbols:



The data show a positive change from the previous year. The one-year change is not always consistent with the long-term trend, which is displayed on the chart.



The data show a negative change from the previous year. The one-year change is not always consistent with the long-term trend, which is displayed on the chart.



No arrow means the data for the latest year available show a very small change, positive or negative, from the previous year. If the color is green, the indicator is unchanged at a satisfactory level; if red, unsatisfactory. If the color is orange, the lack of change is neither good nor bad.



Connecticut is not on track to meet its long-term goal. This symbol is used for those indicators that, except in the most unusual circumstances, always will show some progress. ("Preserved Land" is one example.) It would be misleading to label the one-year change as "improved" if the progress is not sufficient to get the state to its goal by the established target date.

## Connecticut: The State of Nature?

The storms of 2011 brought to light some previously obscure data that say a lot about Connecticut.

Example: Connecticut is number one in WUI, or [Wildland-Urban Interface](#), a measure of the proximity of peoples' homes to forests, wetlands and grasslands. Seventy-two percent of Connecticut's land area can be classified as WUI, a percentage matched by no other state. The WUI scale has traditionally been used to measure communities' susceptibility to forest fires, but it also helps to explain such things as the vastness of power outages caused by storms.

Whether Connecticut's extraordinary WUI classification is due more to effective conservation of green spaces in many communities or to past futility in minimizing sprawl is not the critical point. More important are the permanent quality of the developments now in place, the benefits and costs of residents' proximity to nature, the demographic and economic trends that will determine future development patterns, and pursuing policies that will prepare Connecticut against potential degradation.

Outside the central cities, Connecticut residents live among trees and appear to embrace such a lifestyle. On the average plot of ground in Connecticut, more people -- residents and non-residents together -- are watching wildlife than in nearly any other state. This makes sense, as there is much to watch: only in two other states might a birdwatcher find more species of birds per square mile.

Looking at [the data](#) even more closely, Connecticut residents appear to be almost unique in their affinity with nearby wild things. A greater percentage participate in wildlife-associated recreation than the national average and, among those participants, residents of no other state can challenge Connecticut residents' preference for watching their wildlife around the home. Connecticut is one of only five states where people spend more to watch wildlife (primarily on equipment purchases) than they spend to hunt and fish (including license fees), and by a ratio that is unmatched. (In the [federal data](#), "watching" wildlife includes maintaining wildlife habitat.)

Residents' high rate of participation in outdoor activities and conservation activities is a great positive on its own, but it should be noted that it also yields a significant economic profit to the state. A University of Connecticut [study](#) released in December of 2011 estimated that 9,000 jobs, \$1 billion of economic activity and \$30 million of net state revenue can be attributed to outdoor activities just in state parks and forests. Any study that also accounted for the economic activity generated by birdwatching, hiking and horseback-riding statewide would show much larger numbers. Six years ago, the amount spent on hunting, fishing and watching wildlife in the state was [estimated](#) to be nearly \$1 billion.



Life among the trees also carries economic costs and environmental risks. Residents pay to have power restored and the transmission system improved after each storm. Some costs, associated with environmental risks, are paid only indirectly. [Research](#) shows, for example, that invasive exotic species follow low-density housing development throughout New England. Invasive species pose the single biggest threat to Connecticut's natural ecosystems, but residents have never paid significant sums for statewide prevention and control efforts. (They do pay costs indirectly for some species' unabated spread; as an example, dense infestations of invasive vines contribute to utility line destruction during storms.) Conservation organizations, agencies and individuals have worked hard and effectively to reduce the threat of some highly destructive species, but the state has yet to mobilize against the threat of invasive species in a comprehensive way.

### **The Future State**

The pace and pattern of land development will determine the future of Connecticut's air, water and life. A sudden spurt in sprawl would yield more water pollution, more air pollution, more invasive species and a host of other negative outcomes.

A 2009 [report](#) of the U.S. Forest Service predicts large-scale conversion of Connecticut's privately-owned forest land to housing and other types of development, but that has yet to be shown. It is true that any development in Connecticut that is not redevelopment is likely to convert privately-owned forest land. However, very recent [census data](#) show more population growth in developed areas than in rural or exurban towns. What trend will dominate Connecticut's future?

Connecticut generally appears to be in a steady state, though one with an aging population and rising temperatures. What a Connecticut resident sees here today is likely to be what he or she sees here 15 years from now, barring an unforeseen boom in sprawl. As the Council has noted in previous reports, most Connecticut residents today see an environment little changed from the time they arrived, a fact especially true for people 25-years-old or younger. The exceptions are sudden and tend to be negative to the beholder, such as when a familiar forest or farm suddenly disappears, a telecommunications tower appears on a nearby hill, or a black bear destroys the backyard bird feeder.

It is difficult to foresee strong forces that will alter Connecticut's development patterns or the indicators in this report. Even a best-case scenario of vigorous economic growth built upon previously-developed properties is unlikely to move the indicators substantially. Growth that is based largely on consumption of undeveloped lands, on the other hand, would have many negative consequences, but that outcome can be avoided through good policy. With the state's environmental indicators showing only minor ups and downs, and with a fairly stable though vulnerable economy and landscape, deliberate actions will need to be taken before residents see improvements. These include the following:

**Reduce water pollution from developed areas:** This means low-impact development techniques for new development, and a long campaign of retrofitting towns and cities with "green infrastructure." The new permeable sidewalks encircling the State Capitol should be considered normal, not exceptional.

**Plan for homes and jobs near mass transit:** As documented in many places, good transportation and economic development policies can guide and stimulate development where people can live outside the automobile.

**Train municipal regulators:** Volunteer municipal commission members make thousands of regulatory decisions annually. Training of these members is a low-cost, highly effective component of the environmental protection arsenal, but training needs are chronically underserved.

**Invest:** The cost of regulating pollution is generally covered by the regulated parties, but who, aside from sportsmen and park patrons, are paying for the management of the state's natural resources? For the most part, nobody. Yet the upside potential is great: residents see \$38 of economic activity for each dollar the state spends on parks.

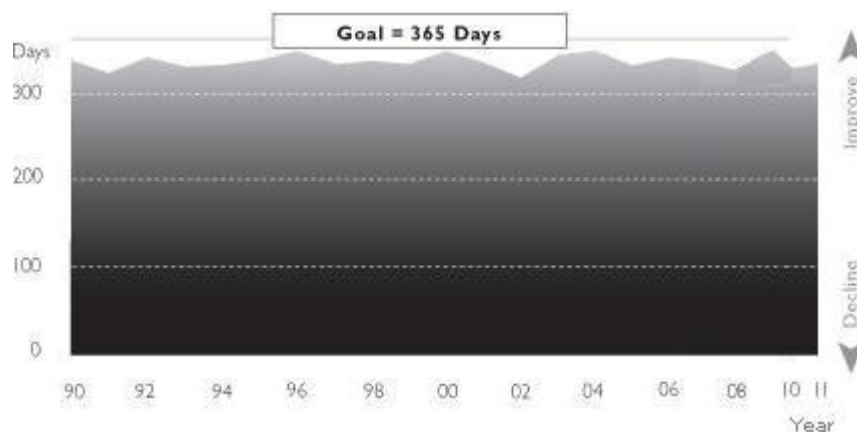
**Embrace the Nature State (and Keep Conservation Alive):** If residents enjoy living among trees, observing wildlife, and working locally to conserve land, as they evidently do, state policies should honor that choice. However, recent [reports](#) from the Connecticut Audubon Society and others express doubt that Connecticut's high level of volunteer conservation commitment will endure, as many children lack extended exposure to wild nature. Connecticut must never let a lack of knowledge and enthusiasm erode its status as the Nature State.

Connecticut's environmental indicators begin on the next page.

## Good Air Days



Every Connecticut resident breathed good air on 342 days in 2011, eight more than in 2010.



A Good Air Day is a day when every [monitoring station](#) in the state records satisfactory air quality. "Satisfactory air quality" is defined here as air that meets the specific health-based [ambient air quality standards](#) for all of the following [6 pollutants](#): sulfur dioxide, lead, carbon monoxide, particles, nitrogen dioxide and ground-level ozone.

Connecticut's goal is to have air that meets health-based standards for all pollutants. Violations of health-based air quality standards have been eliminated for all pollutants except ground-level ozone and fine particles. On 13 summer days, concentrations of ground-level ozone violated the ozone standard that protects human health. The standard for fine particles was violated on 10 days in the fall and winter, an unusually high number. One steamy July day saw the standards violated for both ozone and fine particles. Not every town experienced bad air on the same days. Danbury was the location with the most bad air days (11 days total; five bad ozone days, five bad particle days, and one day that was bad for both ozone and particles).

[Ozone](#) is created when nitrogen oxides and organic compounds in the air react in the presence of sunlight. Weather is a big factor in year-to-year fluctuations. Motor vehicles remain a major source of ozone-forming emissions despite improvements in tailpipe standards. Much ground-level ozone originates in states to the west of Connecticut.

In typical years, cities and towns in the western and coastal regions of the state see the most bad air days. In 2007 and in 2009, however, inland towns had more. The historical pattern returned in 2010 and 2011 with coastal towns having the most bad ozone days. Groton and Westport had the highest frequency in 2011 (nine days each).

[Fine particles](#), such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can form when gases emitted from power plants, industries and automobiles react in the air. Violations of the health standard occur mostly in summer and winter, rarely in spring and fall. The fall of 2011 was a notable exception, as generators, wood stoves and fireplaces put into use after the October 29 snowstorm yielded very high levels of fine particles in some cities and towns. The monitoring stations in the northern half of the state were themselves knocked out, but the extraordinarily high levels recorded in Springfield, Massachusetts -- more than twice the limit that protects human health -- undoubtedly extended into Connecticut. Most of Connecticut meets the health standard for fine particles, as that standard allows the air to exceed the numerical limit for a few days each year.

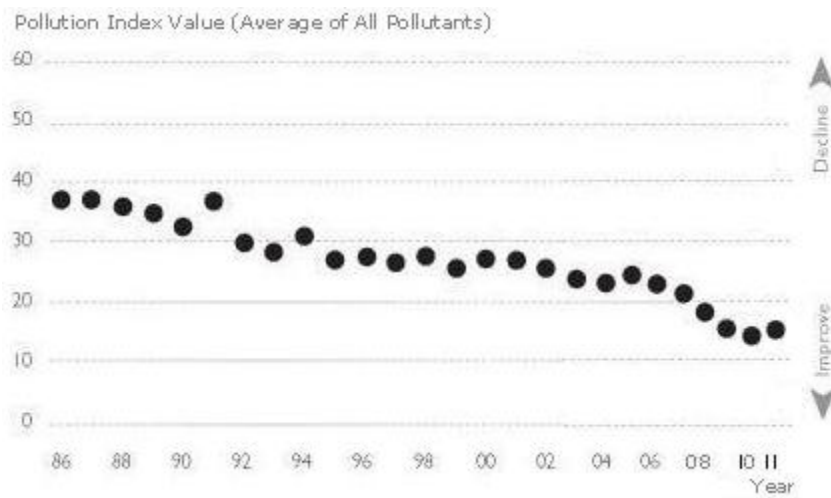
Technical Note: The federal government modified the standards for fine particles in December 2006 and for ground-level ozone in early 2008. The chart above was redrawn each time to illustrate the state's historical pattern of good air days by applying the new, stricter standards to all previous years. The federal government is again reviewing the standards for particles and ground-level ozone.

# Clearing the Air

## Average Levels of Air Pollution



Connecticut's air was slightly more polluted in 2011 than in 2010, breaking a five-year winning streak.



The chart shows the average amount of pollution in Connecticut's air for each year. [Six air pollutants](#) -- sulfur dioxide, lead, carbon monoxide, particles, nitrogen dioxide and ground-level ozone -- are [measured across the state](#) by DEEP. At the end of every year the Council expresses the average level of each pollutant on a numerical scale, where zero equals no pollution and 100 represents the "unhealthful" level of the specified pollutant. The Council then takes this annual number for each of the six pollutants and averages them to yield the single index value on this graph.

In 2011, all of the pollutants (excluding lead) increased slightly for the first time since 2005. Levels of lead in the air have dropped so low that they barely register in this indicator. In 2010, carbon monoxide was the only pollutant to increase from the previous year.

The increase in pollution in 2011 is partially ascribable to the large number of generators, wood stoves and fireplaces that were put into use following the October snowstorm. Yearly weather variations also cause fluctuations in air quality.

Technical Note: A new monitoring station was added in Litchfield in 2010. To maintain an accurate comparison among years, data from this station will not be added until there are enough years to provide a trend. At that time all the earlier years will be re-calculated.

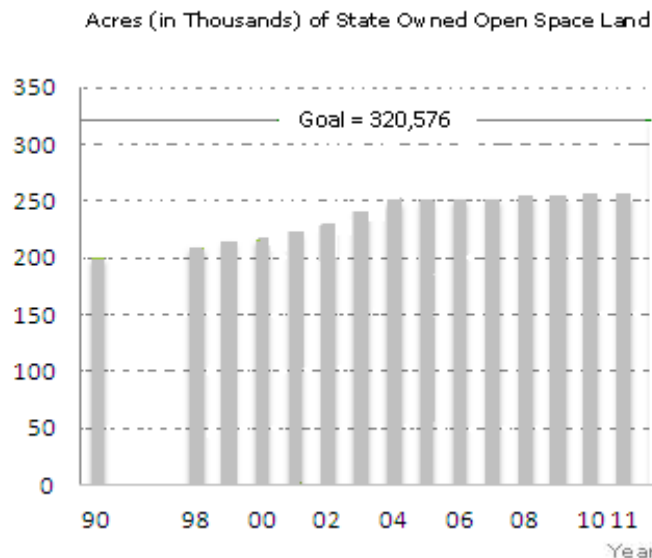
## Preserved Land



Connecticut's goal is to preserve 21% of the state's land area by 2023, but nobody knows how much land has actually been preserved.

State law ([C.G.S. 23-8\(b\)](#)) sets a goal of conserving 21 percent of Connecticut's land area. [The Green Plan](#), Connecticut's official land conservation plan, establishes 2023 as the target date. That goal includes conservation land owned by towns and cities, land trusts and other nonprofit organizations, water utilities and the state.

The same law sets a goal (10 percent of Connecticut's land area) for state ownership of land for parks, forests and wildlife areas. Records of state-owned lands are accurate, and are reported here:



In 2011, DEEP preserved about 575 acres. State grants helped municipalities and land trusts acquire an additional 1,600 acres. This pace is not nearly sufficient to reach the state's goals.

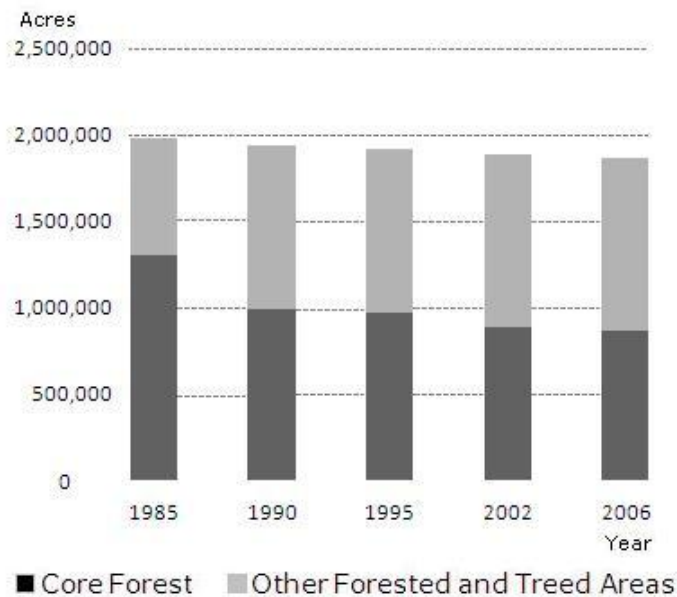
Many additional acres, probably thousands in some years, are preserved by municipalities and land trusts without state grants, but this information is not reported to the state. The Council determined that previous state estimates of the acreage owned by municipalities and nonprofit land trusts were inaccurate. Those estimates, which were reported in previous editions of *Environmental Quality in Connecticut*, are no longer included in this report.

The absence of an accurate inventory of protected land in Connecticut is a serious deficiency. DEEP has been collecting data from municipal records in a sequential fashion for 12 years; if that effort is ever completed, the earliest-collected data will be well out of date. To make land preservation more strategic and cost-effective, Connecticut needs a reliable and up-to-date registry of the state's protected lands. [Public Act 12-152](#) could eventually lead to an accurate inventory.

## Forest



After a century of growth and relative stability, Connecticut's forests -- especially the most valuable core forests -- have been shrinking for two decades.



Most of Connecticut's forests were cleared for agriculture and industry in the 19th century and then allowed to regenerate. From 1960 to 1980, the overall acreage of forest did not change much even with the rapid spread of roads, housing and commercial development. According to the [U.S. Forest Service](#), the spread of forests on abandoned farms equaled the conversion of forested land to other uses. The late 20th century brought a change; forest is now declining.

This indicator shows the total acreage of forests in Connecticut. The forests are divided into [core forests](#) and other forests. Core forests are at least 300 feet from non-forest development such as roads, buildings and farms. Forests that are fragmented or divided by roads and buildings serve some forest purposes but are not fully-functioning forest ecosystems. Fragmented forests are known to provide substandard habitat for many species of wildlife and, in many cases, less opportunity for hunting and other types of recreation.

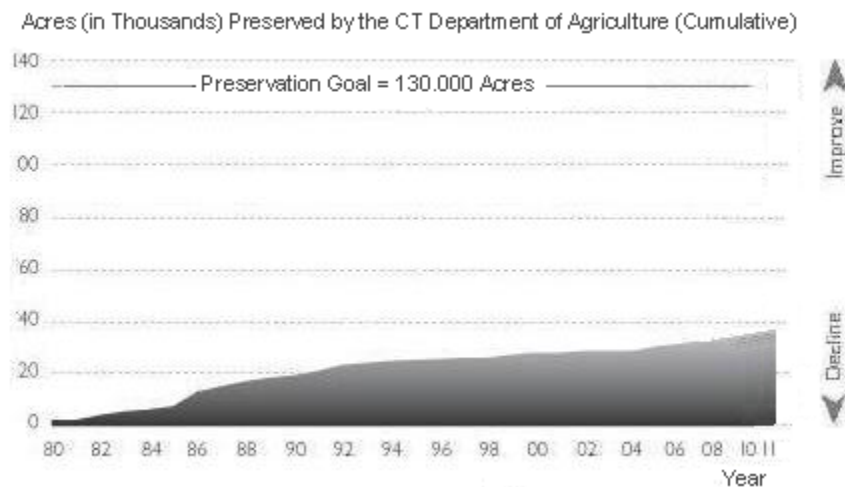
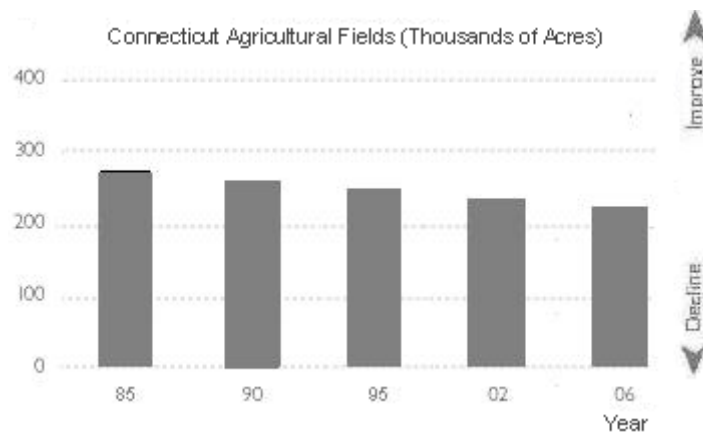
Even as the total acreage of forests might fluctuate over years or decades, the extent of core forests will always show a decline, except in rare instances where roads or developments might be abandoned and reclaimed by forests.

Technical Note: The definition and measurement of core forests is done by the [Center for Land Use Education and Research](#) (CLEAR) at the University of Connecticut as part of the [Connecticut's Changing Landscape Project](#) (CCL). The Council finds these data, derived from CLEAR's analysis of satellite imagery, to be the most accurate data available. Satellite data is examined by CLEAR every few years; this indicator includes the most recent data available (2006).

# Farmland



In 2011, Connecticut preserved 1,975 acres of farmland -- the best year for preservation since 1993, and close to the 2,000-acre annual rate needed to reach the state's goal.



The top chart shows the acreage of land being farmed in Connecticut. The bottom chart shows the cumulative acreage preserved by the Connecticut Department of Agriculture.



To preserve land for future agricultural use, the Connecticut Department of Agriculture [purchases the development rights](#) to farmland from volunteer sellers. This keeps the land in private ownership with severe restrictions on future nonagricultural development. Over 1,300 acres were preserved each year from 2008 through 2010. In 2011, 16 farms participated, preserving 1,975 acres. Funds are mostly from state bonding and the [Community Investment Act](#).

Connecticut's farmland preservation goal is based on the amount of land needed for food production. [Mathematical projections](#) of the current preservation rate show the goal being reached in the 22nd century, but in reality there will not be that acreage of agricultural land remaining in the state by the end of the current century if the recent rate of loss continues. Preservation of at least 2,000 acres annually should result in success.

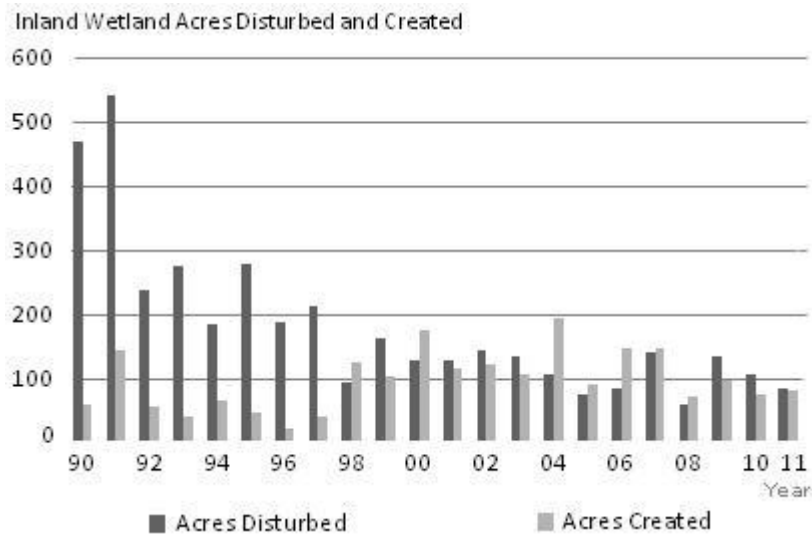
This indicator does not show agricultural land acquired for preservation by municipalities and nonprofit organizations. Several towns purchased farms in recent years with no state assistance, and those acres are not reported or recorded at the state level. Along with a central registry of preserved open space, Connecticut needs a registry of preserved farmland to help state agencies and other organizations preserve land strategically.

Technical Note: Until 2008, the uppermost chart showed the total acreage of land in Connecticut farms as counted, using survey data, by the [U.S. Department of Agriculture](#) (USDA). The Council has found a superior data source in the University of Connecticut's Center for Land Use Education and Research ([CLEAR](#)). CLEAR staff analyzes satellite imagery to measure the actual area of fields, pastures, orchards and vineyards. In contrast, the USDA data counted all land in farms, even that which was not used for agriculture. CLEAR analyzes new satellite imagery every few years; the most recent imagery is from 2006.

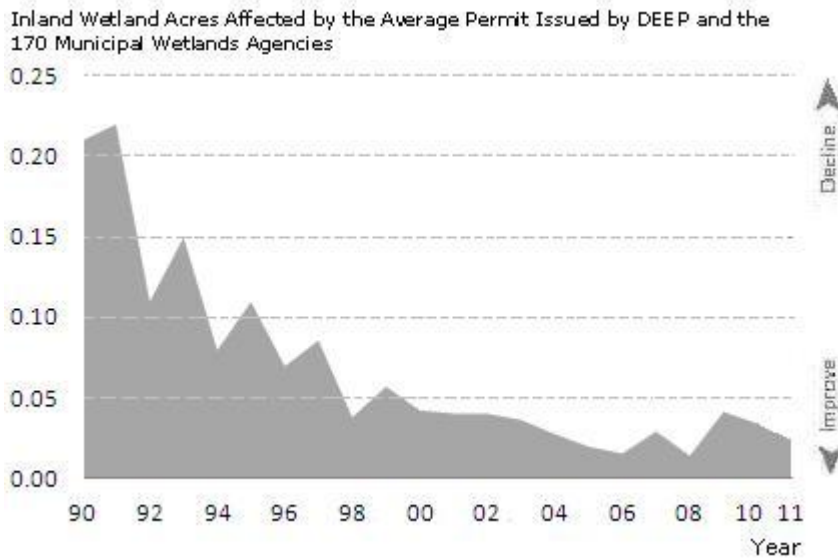
# Inland Wetlands



Towns and cities permitted disturbance of about 70 acres of wetlands, the fewest in four years.



Local commissions reduced the wetlands disturbance caused by the average permit.



The top graph shows the acreage of wetlands disturbed by development. "Disturbed" wetlands are those affected directly by human activity, which can range from total destruction (when the wetlands are filled and built upon) to conversion from one type to another (when, for example, a shallow swamp is dredged to create a pond). There is no specific goal for wetlands conservation.

The top graph also shows the acres of wetlands created or otherwise enhanced by humans. No attempt is made here to evaluate the success of the created wetlands or their value relative to the natural wetlands that might have been altered. In fact, the "created" category includes so many diverse activities that the number has no real meaning. The Council intends to drop the "acres created" category in next year's report. (Readers are invited to comment on this proposal.)

The lower graph shows the area of inland wetlands affected by the *average* permit issued by municipalities. Use of the average permit shows trends irrespective of the changes in the number of applications that are caused by economic trends.

In 2010 and 2011, more than 25 percent of municipalities failed to report their data to DEEP as required by state law.

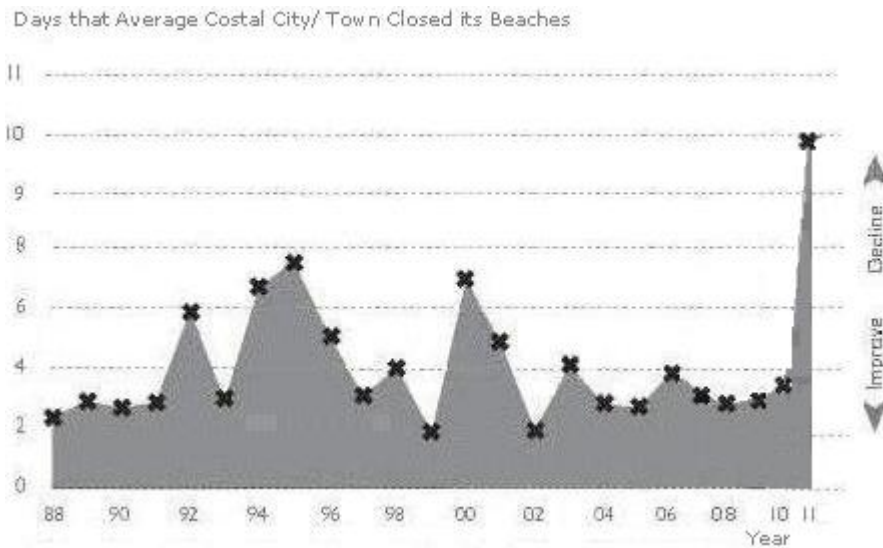
[Inland wetlands](#) are estimated to cover about 450,000 acres, or 15 percent of Connecticut's surface. More than 95 percent of the development activity in and around wetlands is regulated by municipalities with minimal oversight or supervision by the DEEP. In October 2008 the Council published [Swamped](#), a special report that analyzed performance of the state's inland wetlands program, including training. State law requires every municipal wetlands agency to have at least one member or staff person complete DEEP's comprehensive wetlands [training](#) program, but many municipalities do not comply with this requirement. A thorough statistical analysis found that cities and towns that possessed at least one trained member or staff person allowed less wetlands disturbance than cities and towns that were not in compliance with the training requirement.

Technical Notes: The results for 2010 and 2011 should be considered preliminary due to the high percentage of non-reporting towns. The Council adjusts the reported data to account for the non-reporting towns, but inaccuracies are inevitable. (The Council is confident that the statistical adjustment is reasonable, because *Swamped* also examined differences in performance between towns that report to the DEEP and towns that do not report, and confirmed that non-reporting towns are similar to reporting towns in the average amount of wetlands destruction they permit.) Also, for 2011, two 100-acre projects were not included in the totals: one involved invasive species removal from a Manchester wetland, and the other was a drawdown of a pond in Bethlehem. Both were of a scale that distorted typical wetlands activity data.

## No Swimming at the Beach



Heavy rain caused the average coastal city and town to close its beaches many more days than usual.



The Council adds up the number of days that each coastal city and town closed one or more of its public beaches, and calculates an average for all the cities and towns with beaches. The cities and towns in the western half of the state usually have a higher frequency of closings.

Yearly variations generally are products of rainfall patterns and unusual incidents such as sewer-line ruptures. The storms of 2011 (most notably Tropical Storm Irene) resulted in many closings, as many beaches were awash in contaminated runoff, raw sewage and debris.

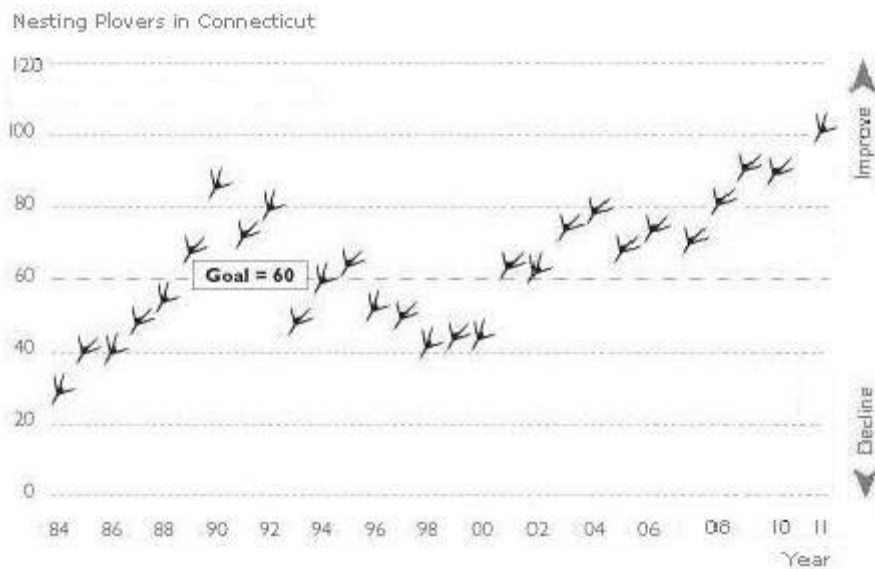
In typical years about half of beach closings are due to tests showing elevated levels of bacteria. Polluted surface runoff or sewage overflows after rainstorms are the most common sources of the bacteria. Most other closings are precautionary, as health officials must assume that heavy rains will wash polluted runoff and/or overflow from combined sanitary/storm sewers.

Connecticut's [goal](#) is to eliminate beach closings caused by discharges of untreated or poorly treated sewage, a common cause of elevated bacteria levels.

## Piping Plovers on the Beach

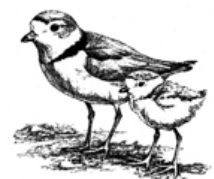


A record year, as more than 100 of these threatened shorebirds nested on coastal beaches from Westport to Stonington.



[Piping Plovers](#) are small shorebirds that nest on sandy, sparsely-vegetated beaches. Human intrusion, storm tides and predators frequently destroy nests. Fifty-two pairs nested in 2011, nine more than in 2010. Storms and tides destroyed quite a few of their nests.

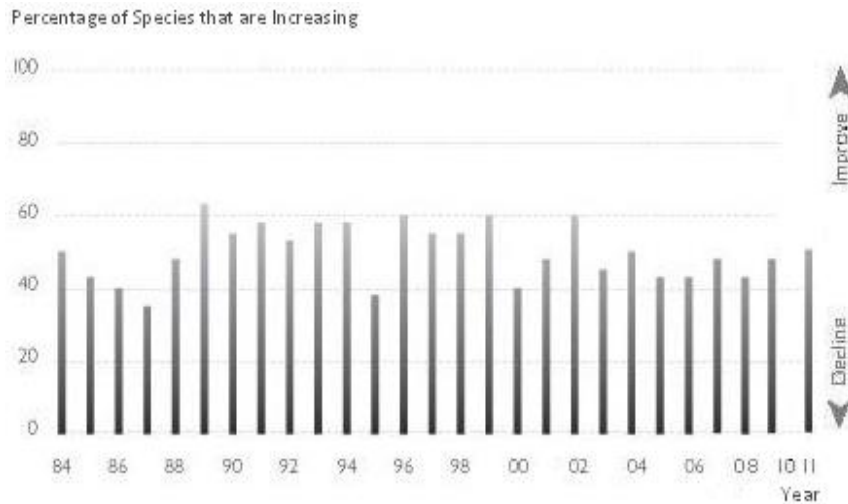
Although the number of plovers on Connecticut's beaches now exceeds the goal that was set in the 1980's, it continues in "[threatened](#)" status at the state and national level. Nesting adults are counted and in most cases protected every spring by the U.S. Fish and Wildlife Service, DEEP and volunteers working with the Connecticut Audubon Society, The Nature Conservancy, Audubon Connecticut, and local organizations such as the Friends of Milford Point and Stratford Great Meadows National Wildlife Refuge. The protections afforded these plovers also benefit other nesting species, including American Oystercatchers and [Least Terns](#), which are also a threatened species in Connecticut. Since protection and monitoring efforts began in 1984, nesting success has improved, resulting in more returning adults in subsequent years. Yearly variations can occur when adult birds move from one state to another.



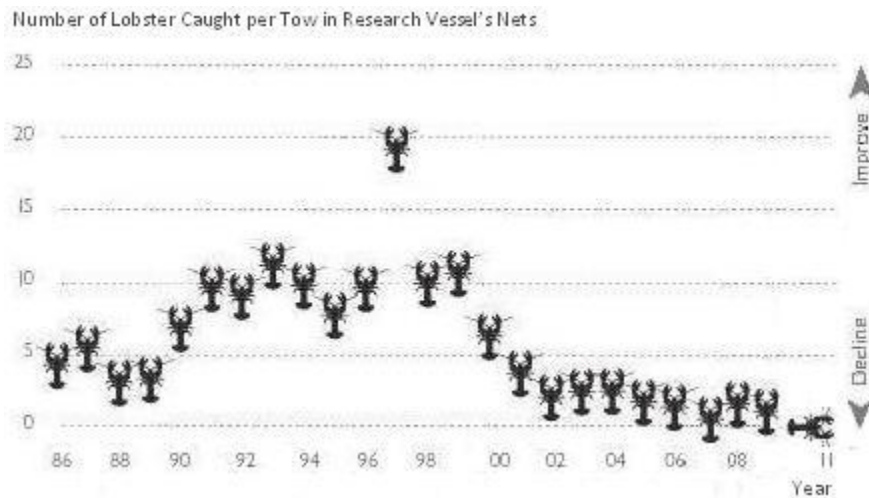
# Life in Long Island Sound



About half of the fish species in Long Island Sound are increasing.



The lobster population of Long Island Sound has failed to recover.



DEEP [surveys](#) marine fish, squid and lobster populations every spring and fall by towing nets from a research vessel. Data for 2010 are absent because repairs to the research vessel *John Dempsey* precluded the fall Long Island Sound trawl survey.

The top graph shows general trends in the collective populations of lobster, squid and 38 species of fish. The number displayed for any year is the percentage of these 40 species that were above their long-term average populations. In 2005 through 2009, fewer than half of these species were as common as they were in the 1980s and 1990s. The surveys of 2011 showed modest improvement. Half of the species were as common as in prior years. The species selected for this analysis reflect a bias in favor of "managed" species that have high commercial and recreational value. A separate analysis (not shown) of the geometric mean of the weight of all the fish taken per tow (regardless of species) was the lowest since 2003. This measure may better reflect the overall health of the Sound as a habitat. The Council is considering adding this measure in future years.

Scientists are unsure of the reasons behind the declines and fluctuations of recent years. One possible explanation for the decline of some prey species is the population growth of striped bass and other predators. Over recent years, some colder-water species such as windowpane flounder and little skate have declined as warmer-water species such as scup and summer flounder have increased along with the average yearly [temperature](#) of the Sound. The illustration at the bottom of this page lists some-warm water species that are on the increase with some cold-water species that are decreasing.

The fall 2011 trawl results for lobster were the lowest ever recorded. It is the nadir in a [well-documented](#), decade-long decline in the lobster population that also is evident in a dramatic drop in commercial lobster landings during the same period (not shown). [Researchers](#) are focusing on a combination of four possible causes for the dramatic downturn in lobster populations since 1999: disease, changes in water quality, changes in climatic conditions and human impacts to the Sound. Research to date suggests that a trend toward warmer water temperatures is an important factor in the decline of lobsters.

#### Declined through 2011

Windowpane Flounder  
(shown)  
Little Skate



#### Increased through 2011

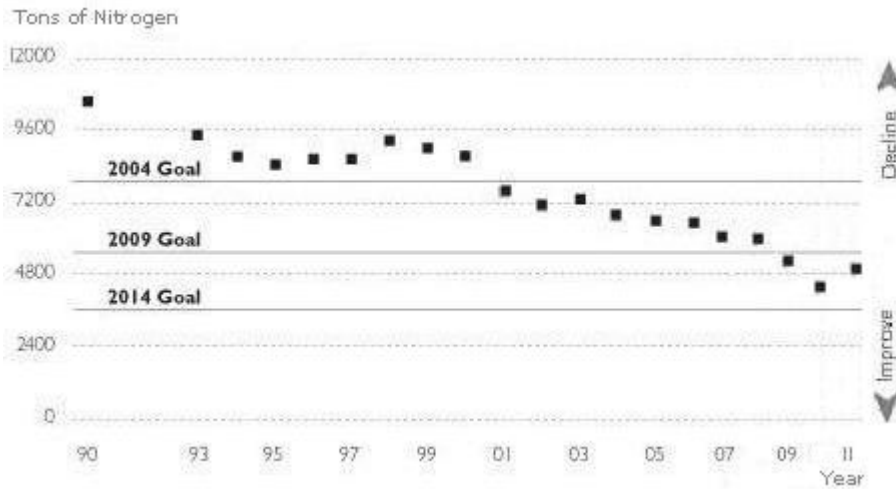
Scup  
Atlantic Moonfish (shown)  
Summer Flounder



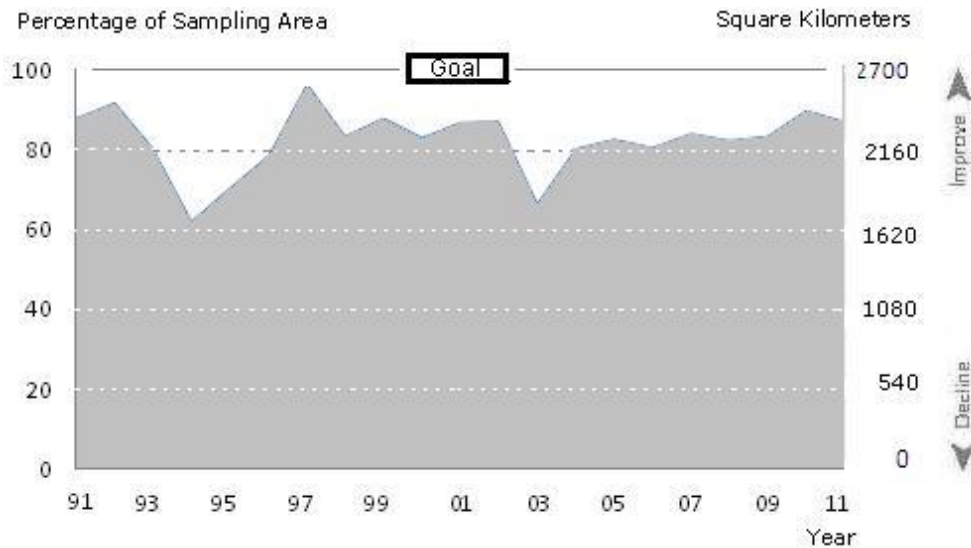
## Pollution in Long Island Sound



The amount of nitrogen dumped into Long Island Sound and its tributaries increased slightly in 2011.

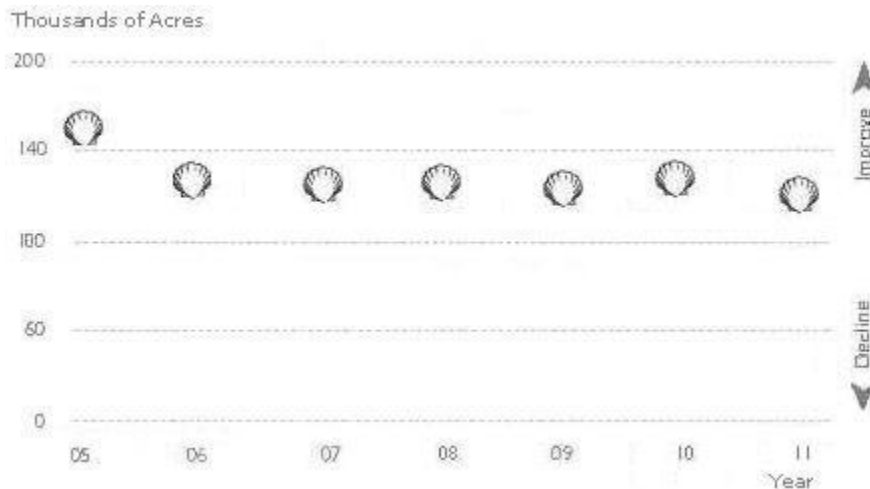


The area of the Sound with adequate levels of oxygen declined slightly from 2010.





The area of shellfish beds unconditionally approved for harvesting declined in 2011.



Hypoxia is a condition in the water when oxygen levels are too low to fully support desirable forms of life, including fish and lobsters. Hypoxia occurs when the nitrogen in pollution stimulates excessive growth of aquatic plants, which die and get consumed by oxygen-using bacteria. Connecticut's goal is to "eliminate the adverse impacts of hypoxia resulting from human activities." Hypoxia occurs predominantly in the western portions of the Sound. Weather greatly influences hypoxia, making year-to-year changes less important than long-term trends.

To reduce the nitrogen inputs that cause hypoxia, Connecticut and New York adopted a [comprehensive management plan](#) in 1994, and built upon that plan with an expanded agreement in 2002.

The top graph tracks the amount of nitrogen discharged to the Sound and to major rivers by 79 sewage treatment plants, two large coastal industrial facilities, and a small group of industrial sources in the Naugatuck River watershed. Connecticut's investments in nitrogen-removal technology from many of those plants have been successful.

Large uncontrolled quantities of nitrogen enter Long Island Sound when rainfall carries fertilizer from residents' [lawns](#) along with the pollutants that have accumulated on [pavement](#). Overall, Connecticut's share of the total nitrogen pollution in Long Island Sound is about one-third, and New York's is two-thirds. In 2001, the federal Environmental Protection Agency approved the New York and Connecticut joint plan for implementing a [Total Maximum Daily Load](#) (TMDL). The TMDL is the maximum amount of pollutants that can be discharged while still allowing water quality standards to be attained.

The Connecticut Department of Agriculture's Bureau of Aquaculture and Laboratory Services [monitors](#) shellfish beds and classifies them according to their potential for the harvesting of healthful, uncontaminated shellfish. The third graph above shows the acreage of shellfish beds that are approved for harvesting because they are generally unaffected by pollution. (Even areas that are approved may be closed as a precaution following exceptional rainfalls of three or more inches.) Aquaculture experts have suggested that the annually increasing volume of runoff from lawns and pavement is flowing further into the Sound, resulting in the shrinkage of the shellfish beds that are fully approved.

The decline in approved shellfish beds is not attributed to the storms of 2011; it preceded them with the reclassification of areas in accord with the bacterial standards model of the [National Shellfish Sanitation Program](#). The model allows designation, without sampling, based on dilution calculations in areas where there is recreational or commercial activity.

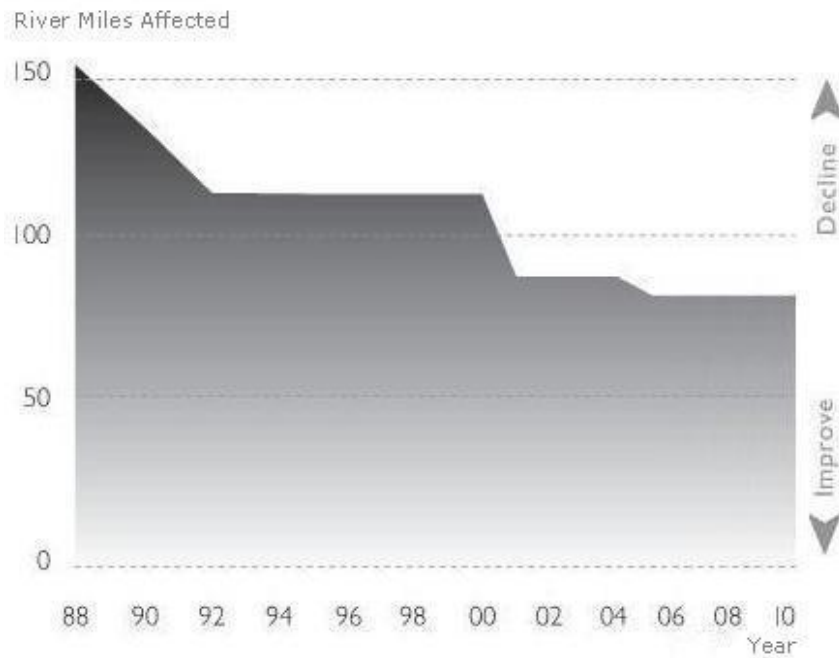
Technical Notes: The middle chart above shows the area of Long Island Sound that had adequate oxygen levels throughout the year. The sampling area (2700 square kilometers) does not include the whole Sound (3400 square kilometers). The areas not sampled are shallow waters (less than two meters deep) near shore, which generally do not experience hypoxia; embayments; the eastern end of the Sound, which is not expected to experience hypoxia; and an area in the far western end, which probably becomes hypoxic in most years.

Hypoxia was redefined by DEEP in 2011. Areas of the Sound are now considered hypoxic where a liter of water contains less than 3.0 mg of dissolved oxygen. This is the criterion that was used prior to 2004. From 2004 through 2010, DEEP used 3.5 mg/l as the determining level. The threshold was returned to the 3.0 level in 2011 to be consistent with the definitions used by New York and the Long Island Sound Study. For this year's report, data for all previous years were recalculated to show the area of the Sound having adequate oxygen under the current definition (that is, at least 3.0 mg/l).

## No Swimming in the River

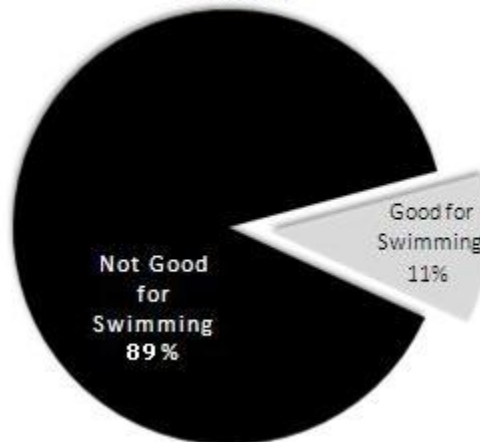


About 80 miles of rivers receive overflows of raw sewage during storms.



Throughout the state, only 11% of rivers and streams are classified as being clean enough for swimming and other water contact sports.

Percentage of Rivers and Streams Suitable for Swimming



**Top Chart:** In fourteen Connecticut cities and towns, sanitary sewers were built in combination with storm sewers. During storms, these systems carry more water than their treatment facilities can handle, and a combination of storm water and untreated sewage overflows directly into the rivers and Long Island Sound. Several of these combined sewer systems have been completely or partly separated since 1990, reducing the impact of untreated sewage on rivers. The improvement in 2001 can be attributed to the completion of projects in the towns of Waterbury and Naugatuck. In 2005, the Jewett City project was completed, eliminating overflows of raw sewage into the Quinebaug River.

Connecticut's goal is to eliminate the effects of raw sewage discharges from combined sewer systems. Progress is slow because of the extraordinary [expense](#) of separating the sewers.

The **pie chart** illustrates the percentage of the state's rivers that fully support recreation. This is an estimate based on sampling and statistical analysis by the Department of Energy and Environmental Protection (DEEP). Most streams are not monitored directly. The current figure of 11 percent is from the [Integrated Water Quality Report](#) submitted by the DEEP to the federal government on May 31, 2011. The [2008 edition](#) of that report estimated the percentage to be 15.

### **There's Water in the River**

*(Better 40 Years Late Than Never)*

June 23, 1970: *"The Water Resources Commission, with the advice of the Board of Fisheries and Game, should be authorized to establish and regulate minimum stream flows...Flows must be tailored to fit the hydrological and ecological character of each stream as established by the minimum demands of aquatic life. Authority should include the power to augment flow from storage..."*

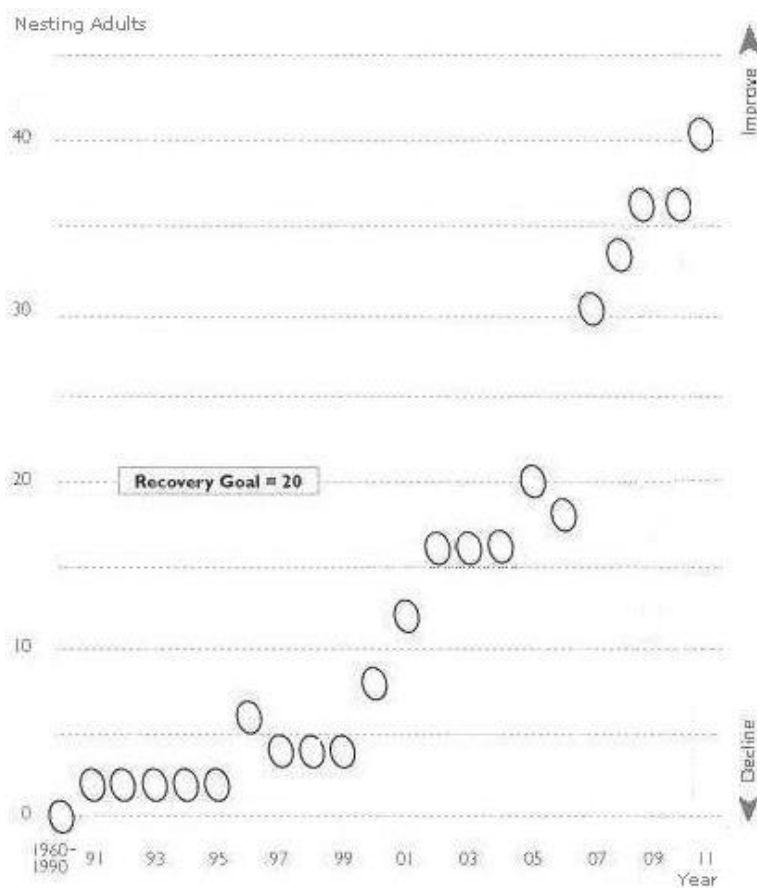
Governor's Committee on Environmental Policy, Recommendation #48

December 12, 2011: The Department of Energy and Environmental Protection obtains final approval for proposed [Stream Flow Standards and Regulations](#), specific to the hydrological and ecological character of each stream and requiring release from storage under certain conditions to augment flow.

# Bald Eagles



Bald eagles have come back to Connecticut, even to cities. The chemical pollutants that interfered with their reproduction have since been controlled, and large trees along fish-rich rivers offer good nesting sites.



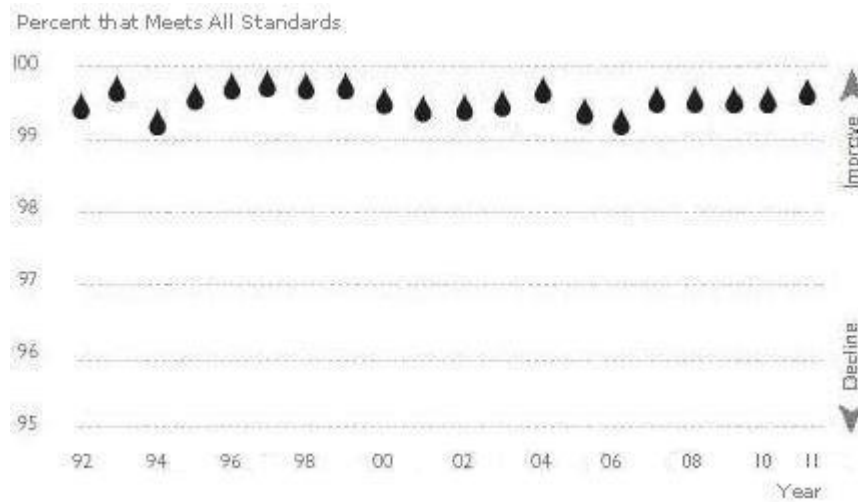
[Bald eagles](#) stopped breeding in Connecticut in the 1950s. The species declined throughout the lower 48 states and was declared endangered in 1967. A variety of environmental conditions harmed the eagle, including the widespread use of certain chemicals ([chlorinated hydrocarbons](#)) that accumulated in its prey (mostly fish). When those chemicals were banned and polluted waterways were improved, the bald eagle was able to reproduce again. Young eagles were reintroduced into nearby states in the 1980s, and a pair found their way to Connecticut in 1991 and successfully raised a family in 1992. Many more pairs have since found acceptable nesting habitat on land protected by government and private landowners including utility companies. DEEP monitors the eagles with the assistance of the Bald Eagle Study Group and other volunteers.

The federal government [removed the bald eagle from its list](#) of threatened and endangered species in 2007. In 2010, Connecticut changed the eagle's in-state status from endangered to [threatened](#). The Northern States Bald Eagle [Recovery Plan](#) established a goal for Connecticut of 20 breeding birds (10 nests), which was reached for the first time in 2005. The population of bald eagles is included as an indicator because the eagle is representative of species, especially predators, that share similar habitat requirements: large areas of relatively undisturbed land near rivers or lakes where the birds can find adequate supplies of fish and other prey that are – very importantly – only minimally contaminated.

# Drinking Water



Most water companies delivered water that met health standards in 2011.

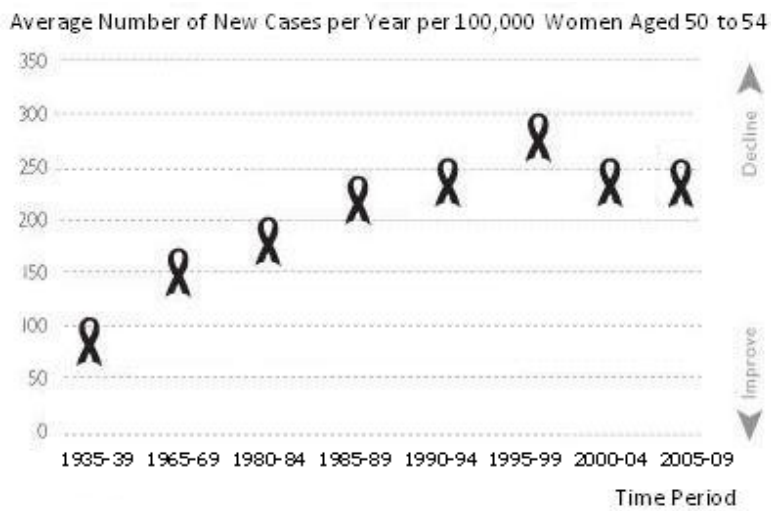


Every public water utility submits monthly [quality reports](#) to the Department of Public Health. This indicator shows the percentage of monthly reports that demonstrate full compliance, after weighting the reports to account for the number of people served by each utility. Though long-term problems occur, they are rare in large systems, with the exception of the downturn in 2005 and 2006 caused by a few short-term problems in larger systems. This indicator would show greater fluctuations if the larger systems failed to deliver good water. The most commonly encountered contaminants include bacteria and byproducts of disinfection, with an assortment of other chemicals and radioactive substances.

## Breast Cancer in Connecticut



Connecticut has the highest incidence of breast cancer among the 50 states, but has seen improvement since a peak in the late 1990s.



Of every 100,000 women in the state aged 50 to 54, a fair number will discover each year that they have breast cancer. That number is depicted in this graph. (The Council presents data on this one age group, rather than on the entire female population, to control factors such as changes in the average age of the larger population; age 50 to 54 was selected as a representative age group and is used in each year's report.) To minimize year-to-year fluctuations, groups of years are averaged together. (In other words, each data point on the graph shows the number of new cases in a

single year, but that year is actually the average of five years.) While some breast cancers are linked to genetic factors, most are associated with non-genetic factors including diet, reproductive history, lifestyle and external agents.

### Breast Cancer as an Environmental Indicator

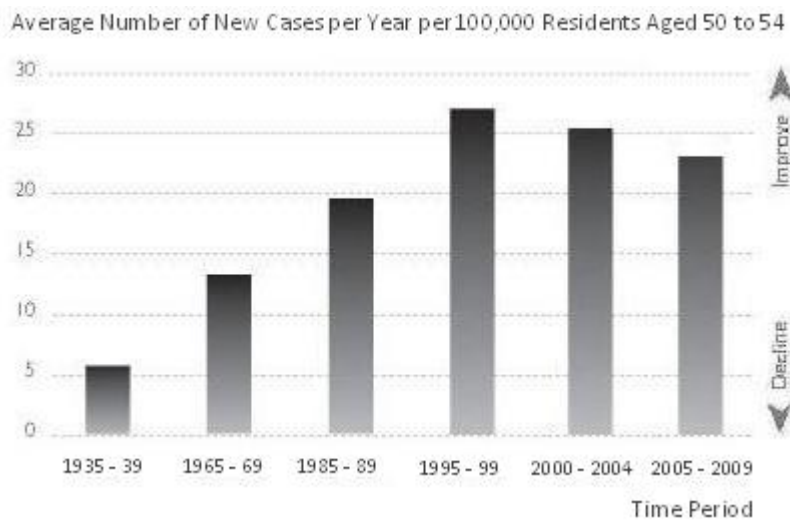
There are numerous studies connecting certain chemicals and other [environmental factors](#) to breast cancer. These factors, if significant, do not appear to be as important statistically as a woman's own reproductive history, but it is important to note that breast cancer rates vary greatly in different parts of the country. Among the 50 states, Connecticut has the highest incidence of breast cancer; this assessment is based on average incidence rates from 2004 through 2008, the latest years for which 50-state data are available. (Source: North American Association of Central Cancer Registries as reported by the [American Cancer Society](#).)

The rate of new cases showed improvement in 2000 through 2004 (using the average of the five years) and has held steady for the period of 2005 through 2009 (the most recent years for which Connecticut data are available).

## Non-Hodgkin's Lymphoma



The reasons for the steep increase in this cancer during the 20th century are not well understood, but exposures to specific pollutants and chemicals are potential factors. Since 1999, the picture has improved.



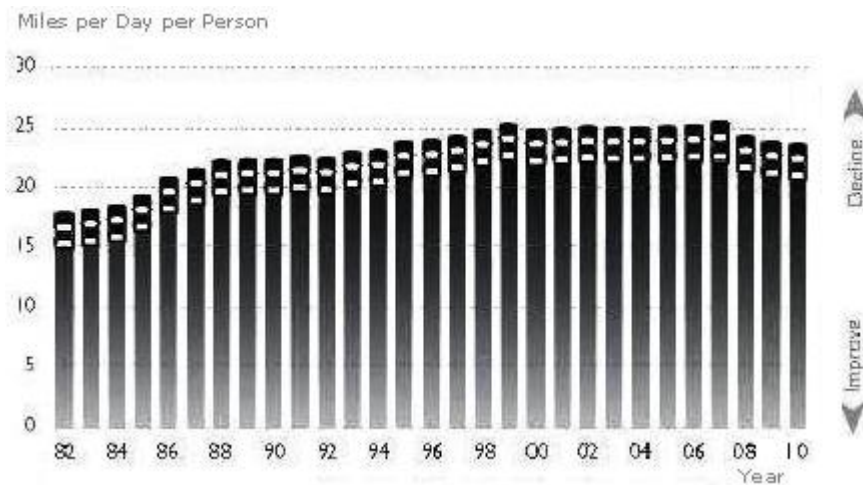
[Non-Hodgkin's lymphoma](#) is a cancer of the lymphatic system. It begins in the lymphoid tissue which contains lymphocytes, white blood cells that help the body fight infections. Lymphocytes travel throughout the body and can carry abnormal lymphocytes, spreading the cancer. The data for this indicator are from the Department of Public Health's [Tumor Registry](#), which records all known cancer cases in the state. (Please see the note on the previous page, under Breast Cancer in Connecticut, about the use of the 50 to 54 age group.) Non-Hodgkin's lymphoma has increased markedly since recordkeeping began. The reasons are not well understood, though the rise of Acquired Immune Deficiency Syndrome (AIDS) since the 1980s accounts for some cases. Several [studies](#) also cite environmental factors, including exposure to diesel exhaust and certain fertilizers, pesticides and chemicals. In 2000 through 2004 and again in 2005 through 2009 (the most recent years for which data are available), the annual rate of new cases showed improvement.



## Driving Our Cars



Nearly every year for 25 years, the average Connecticut resident drove more miles than he or she did in the previous year. That trend shifted into reverse in 2008.



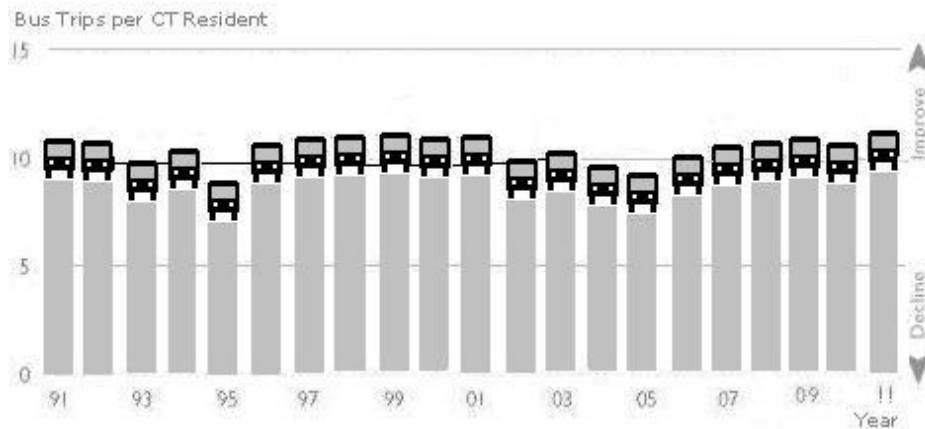
Driving a car, truck or sport utility vehicle is one of the most environmentally harmful activities a Connecticut resident will engage in personally. Impacts are direct (air pollution, oil leakage, etc.) and indirect (causing demand for new roads). The Department of Transportation estimates the total miles driven each year in Connecticut. Every year from 2000 through 2007, the average Connecticut resident drove more miles than in previous years. The reasons for the decades of increasing auto use are complex and include the fact that most new development was accessible only by private vehicle. A decline in miles driven began in 2008 and has continued to 2010 (the latest year for which data are available). The Connecticut trend lags slightly the [national trend](#) of auto use, which showed a dramatic drop in 2007. The national trend towards less driving is being led by the 16 to 34 year-old segment of the population.

\*Personal Impact indicators illustrate trends in behavior or practices that can be expected to influence the condition of tomorrow's air, water, land and wildlife.

## Taking the Bus



The average Connecticut resident took the bus slightly more often in 2011.



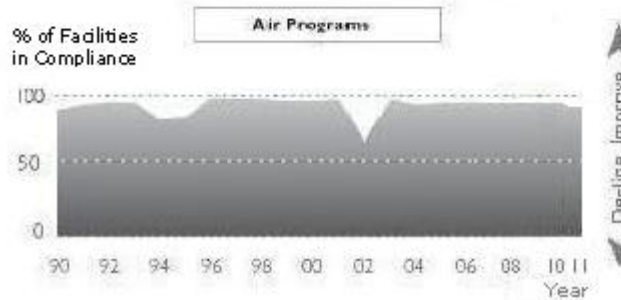
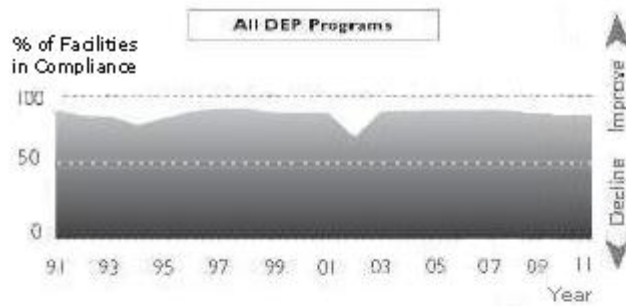
The number of local and commuter bus trips taken by the average resident has changed very little over the last 20 years. [Riding a bus](#) is just one way to avoid the negative environmental consequences of driving a car. Ridership data are collected by the Department of Transportation. Ridership rose about 6 percent in 2006, perhaps in response to high gasoline prices. Since then there have been slight fluctuations. In 2011, per capita ridership was the highest since 2001.

\* Personal impact indicators illustrate trends in behavior or practices that can be expected to influence the condition of tomorrow's air, water, land and wildlife.

# Compliance



Compliance with environmental regulations declined for the third year in a row.



Who is breaking Connecticut's environmental laws? To find out, the Council classified all 944 Notices of Violation (NOVs)\*\* issued by DEEP during fiscal year 2011. The conclusions are summarized in a [staff memo](#), and the types of violators are characterized in a series of [charts](#). The Council does not have data on the public's perceptions of who the violators are, but it senses from everyday conversations that people suppose them to be factories, utilities, waste disposal facilities and perhaps pesticide applicators -- a perception that does not match the data. The vast majority of businesses where violations were found were small companies, and most violations were related to the storage, transport or distribution of petroleum. The largest group, by far, were gas stations and convenience stores. Only seven percent of NOVs were issued to manufacturers with more than 20 employees -- fewer than the number that went to individual citizens.

This indicator shows the approximate percentage of inspections performed by DEEP\*\*\* that found the inspected facilities in full compliance with pertinent environmental laws and regulations. (Monitoring data self-reported by permit holders are not included here.) In 2010 and 2011, DEEP stepped up enforcement activity in its underground (petroleum) storage tank program and issued many more Notices of Violation (NOVs) than in previous years.

The overall compliance rate rarely has been better than 90 percent. Generally, compliance with air quality regulations is higher than with waste and water regulations. The average compliance rate for all programs declined from 90 percent in 2008 to 89 percent in 2009, 86 percent in 2010 and 83 percent in 2011. (The sharp downturn of 2002 was due to a surge in NOVs in a single air program, Stage II Vapor Recovery at gas stations.)

The number of inspections (not shown) declined between 1997 and 2007, increased in 2008 and declined again in 2009 through 2011 to its lowest number in 15 years. Any relationship between the number of inspections and rate of compliance is uncertain. The relative stability of the compliance rate in the face of ever-diminishing staff resources might be regarded as a success for the DEEP. However, the failure of the state-- government, businesses and residents together -- to advance affirmatively toward the goal of full compliance is apparent.

\*Personal Impact indicators illustrate trends in behavior or practices that can be expected to influence the condition of tomorrow's air, water, land and wildlife.

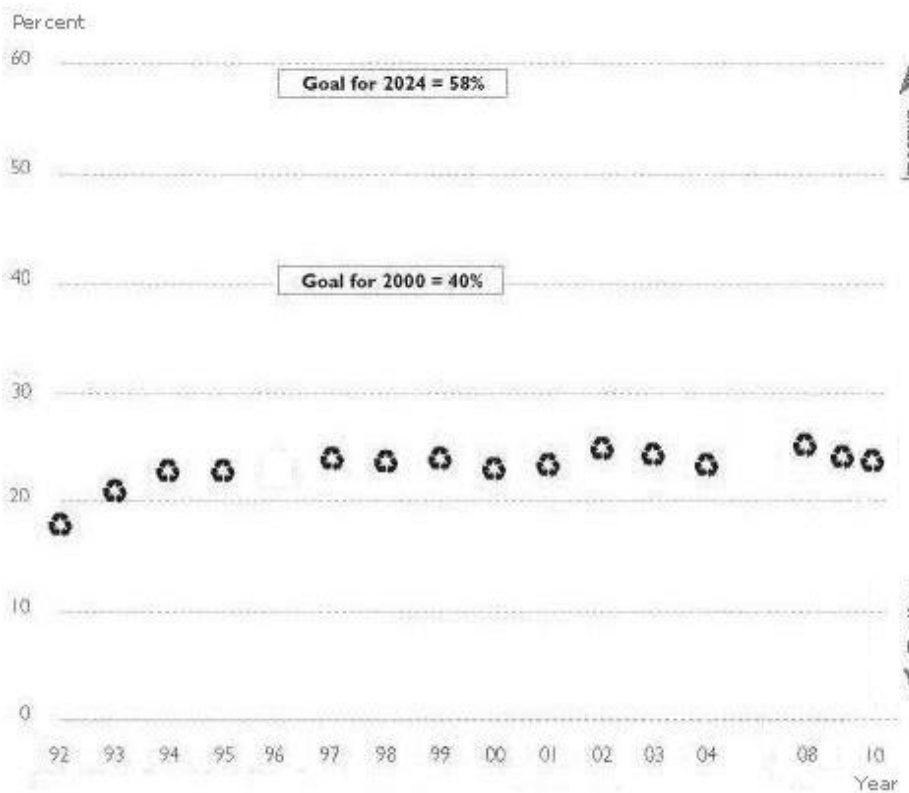
\*\*Notices of Violation (NOVs) are informal enforcement tools, generally issued whenever DEEP detects one or more violations at a facility. They carry no financial penalty. The recipient has 30 days to respond. They can be issued for relatively minor or major violations; in cases of the latter type, the recipient might also receive an order, which might carry a financial penalty. NOVs typically outnumber orders by a factor of five or more in any year. NOVs are good indicators of trends in violations because almost all violations found through inspections result in NOVs.

\*\*\*Some inspections of compliance with air quality regulations are conducted by the Department of Consumer Protection pursuant to an agreement with DEEP; these inspections also are used in calculating compliance rates.

# Recycling



Some municipalities and regional waste authorities have reported greater participation in recycling programs since adopting [single-stream](#) recycling. However, notable progress towards the statewide goal remains elusive.



The General Assembly established a goal of reducing and recycling 40 percent of Connecticut's municipal solid waste stream by the year 2000 ([Sec.22a-220\(f\)](#)). That goal was never met, and the consequences have been enormous. Hundreds of thousands of tons of waste were shipped out of Connecticut in many years, putting thousands of diesel trucks on the highways for trips of many hundred miles. One consequence of this needless truck traffic is the yearly addition of 300,000 or more pounds of diesel pollutants into the air. Another consequence is financial: one ton that is recycled instead of burned or

landfilled can save a municipality, hauler or resident from \$40 to \$93, according to a 2010 [report](#) of the Legislative Program Review and Investigations Committee.

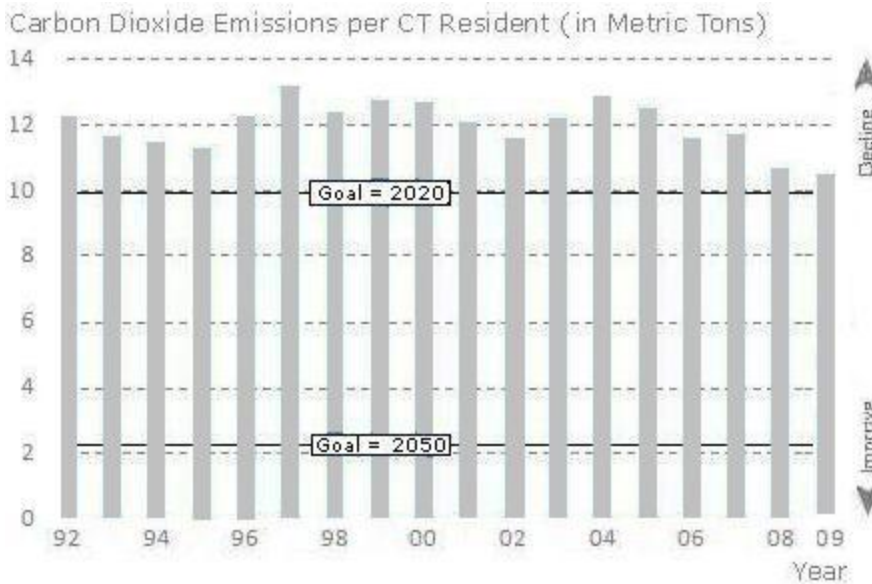
As total tonnage of waste has grown the percent that is recycled has not. In 2006, DEEP amended the [State Solid Waste Management Plan](#) to include a goal of diverting 58 percent of Connecticut's municipal solid waste stream from disposal by 2024. This would be accomplished through recycling, composting and waste reduction (such as use of lighter packaging material). If this goal is met, Connecticut will be able to manage all of its garbage without exporting it.

DEEP [reports](#) suggest that the official figures slightly underestimate actual recycling volume. The gap in the graph reflects a lack of available data is for the years between 2004 and 2008.

# Climate Changers



The average resident is causing less carbon dioxide to be put onto the atmosphere, a result of lower petroleum consumption.



Certain gases in the air function like the glass of a greenhouse: they allow the sun's energy to pass through the atmosphere to the ground, then trap the heat that radiates from the ground. These gases are often called "greenhouse gases." Worldwide, [a build-up of greenhouse gases](#) is contributing to the ongoing rise in temperature. Carbon dioxide is not the only greenhouse gas nor even the most powerful, but carbon dioxide emissions are far greater in quantity than the others. The chart shows the total emissions of carbon dioxide

emitted from burning of petroleum, natural gas and coal in Connecticut divided by the population.

A 2008 [state law](#) set two goals for reducing greenhouse gas emissions: reduce statewide emissions to 10 percent below 1990 levels by 2020 and 80 percent below 2001 levels by 2050. The chart above shows emissions per Connecticut resident, not total emissions, and therefore displays the goals after adjusting them to account for the larger population that is projected for 2020 and 2050. There are expected to be hundreds of thousands more people living in Connecticut in 2020 and 2050, so the average resident will have to work that much harder to reduce carbon dioxide emissions if the statewide goal is to be met.

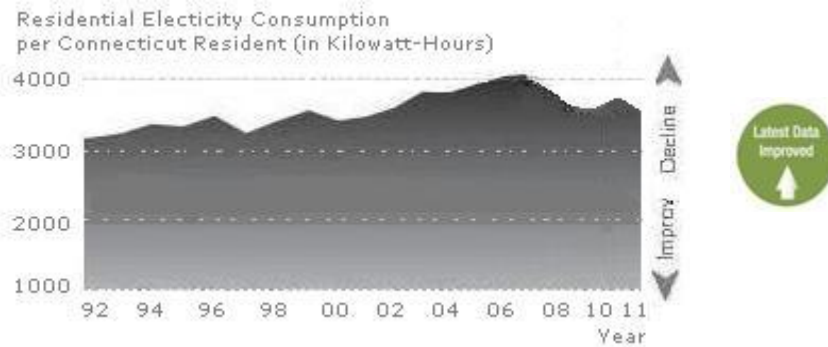
Most human-generated carbon dioxide results from the combustion of fuels in houses, businesses, power plants, and vehicles, and the last of these is the largest source. Connecticut is more energy-efficient than the nation as a whole, and the average Connecticut resident's contribution to global climate change is less than the average American's.

Technical Note: The Council has changed the data source for this indicator. In previous years, data was available for all greenhouse gases, not just carbon dioxide. However, to bring the chart more up to date, the Council switched to a source that includes carbon dioxide only. Because the other gases are emitted in small quantities, the carbon dioxide data by themselves give an accurate picture of trends in greenhouse gas emissions. The most recent data available, even for carbon dioxide alone, are from 2009.

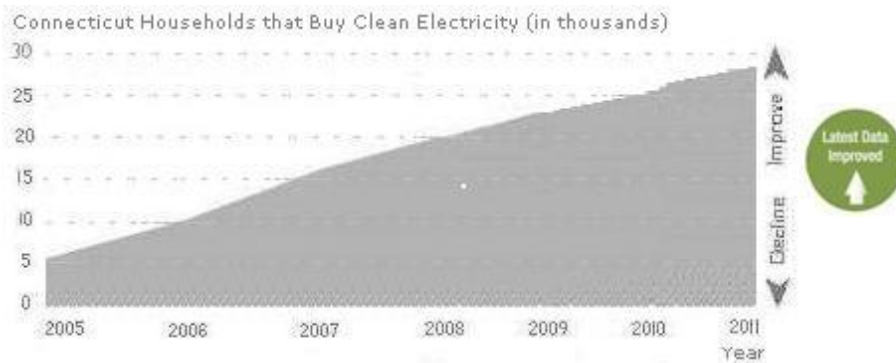
## Electricity at Home and Work

### At Home:

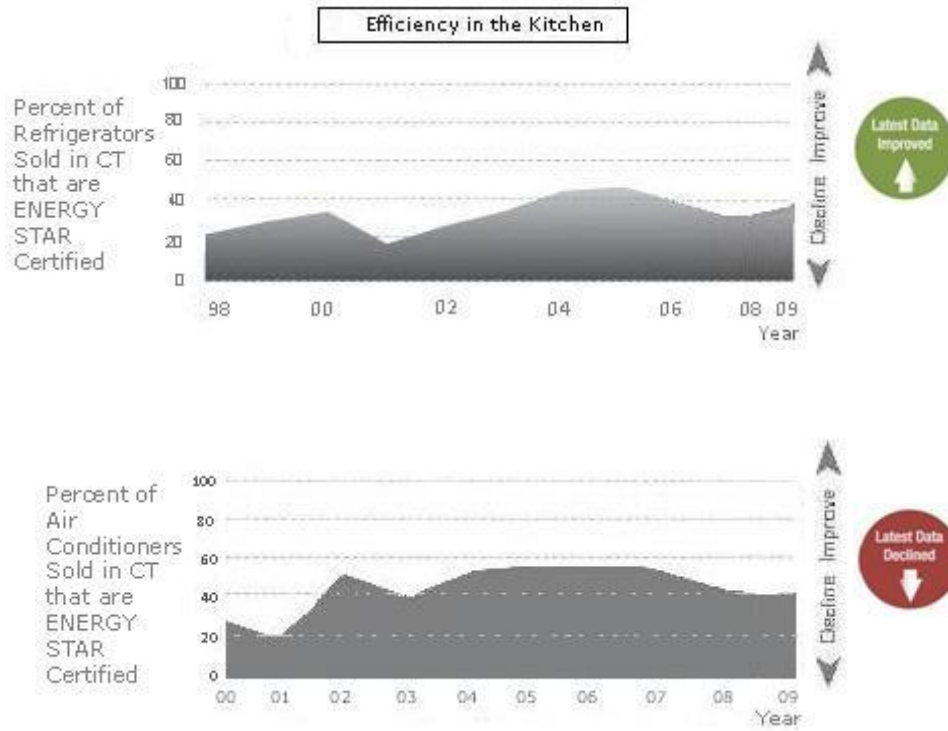
The average Connecticut resident used slightly less electricity at home in 2011.



Thousands of households have been signing up annually to buy electricity generated by renewable energy sources through the [CTCleanEnergyOptions](#) program.

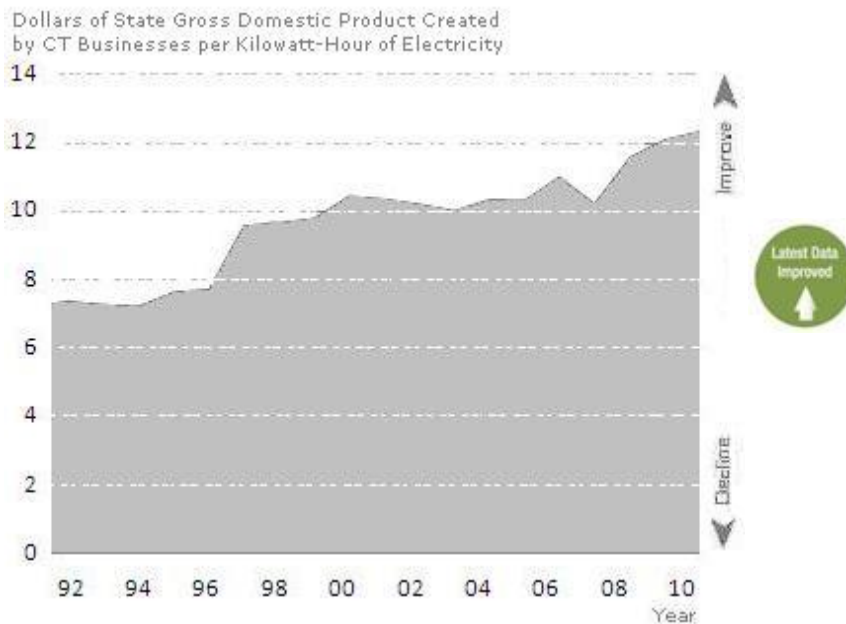


Through 2009, the majority of Connecticut households did not purchase the most efficient refrigerators or air conditioners. This trend probably has not changed, but more recent data are not available, and this indicator will be discontinued.



**At Work:**

For three years in a row, Connecticut businesses have used electricity more efficiently to produce goods and services.





**Efficiency at Home:** The average Connecticut household has been consuming less electricity since the peak usage year of 2007, despite a brief reversal in 2010. According to the [Connecticut Siting Council](#), peak demand occurs during hot, humid summer days due to air conditioner demand. The increase in summertime consumption has had significant environmental consequences. On the hottest days, Connecticut's base-load power plants are unable to meet the additional demand, and older petroleum-fueled plants are brought on line. Because they are used sporadically, many of these older plants are permitted to operate with no pollution control equipment. As a result, state residents [generate the most air pollution on the hottest summer days when air quality is already bad](#).

The vast majority of Connecticut's electricity is generated from nuclear energy and the combustion of natural gas, oil and coal. Hydropower, solar and other renewable resources are small but growing sources of electricity. Each source, renewable or not, has its own [negative environmental consequences](#). Reducing those consequences will require Connecticut households to use electricity much more efficiently. Such efficiency can be attained in part with [ENERGY STAR](#) appliances.

**Efficiency in the Kitchen:** In a typical home, the refrigerator consumes more electricity than any other appliance. (Central air conditioning uses more but is not in everyone's home.) To be labeled [ENERGY STAR](#) efficient, a full-size refrigerator must operate using at least 20 percent less energy than the federal standards for household appliances.

ENERGY STAR appliance [sales](#) figures had been collected from voluntary reports by retailers to the ENERGY STAR program. Data on sales by state are no longer available. For Connecticut, 2009 data are the most recent available. In 2009, 38 percent of refrigerators bought by Connecticut consumers were ENERGY STAR efficient, a decrease from its peak (44 percent) in 2005. Sales trends for ENERGY STAR air conditioners also dropped in 2009 to 42 percent from 44 percent in 2008. [Public surveys](#) have shown conclusively that most people are aware of the ENERGY STAR label and what it means, so reasons other than awareness must be addressed to boost ENERGY STAR labeled product sales and stem the ongoing waste of electricity in homes.

The ENERGY STAR program was created in 1992 as a joint effort of the U.S. Environmental Protection Agency and the U.S. Department of Energy to identify and label energy efficient products. By consuming less electricity, ENERGY STAR products help to reduce air pollution and greenhouse gas emissions.

The [Connecticut Energy Efficiency Fund](#) has partnered with [Top Ten USA](#) to help consumers find the most energy efficient appliances.

**Buying Cleaner Energy:** The [CTCleanEnergyOptions](#) program enables customers to sign up to purchase electricity from renewable sources that include wind and low-impact hydroelectric (water power). Participation has grown steadily though the rate of increased participation is slowing. There were 7 percent more participants in the program in 2011 than in 2010. The electricity that actually enters these houses is not necessarily from renewable sources. The consumer who elects this option is paying for the generation of renewable electricity on the regional electric grid. This reduces the amount of electricity that otherwise would be generated by nuclear, coal, oil and natural gas-fired generating plants, all of which create pollution. [CTCleanEnergyOptions](#) is a collaborative program administered by the [Clean Energy Finance and Investment Authority](#).

**Efficiency at work:** The bottom graph shows trends in the efficiency with which Connecticut's economy uses electricity to produce goods and services. Connecticut's businesses generally have been producing more goods and services with less electricity. [State Gross Domestic Product](#) (GDP) represents the total value of goods and services produced within the state in a single year. Payment to employees constitutes about 60 percent of the GDP. In 2010 (the most recent data available), the Bureau of Economic Analysis put Connecticut's GDP at \$237 billion (current dollars). From 2009 to 2010 the GDP grew twice as fast as electricity consumption by Connecticut's industrial and commercial sectors. Preliminary data for 2011 suggest that there was no change in efficiency. The long-term positive trend demonstrates that with advances in energy efficient technology it is possible for Connecticut's economy to continue growing while using electricity more efficiently.

## Activities of the CEQ in 2011

June saw the 40th anniversary of the legislation that created the Council on Environmental Quality (CEQ). The Council's first meeting was held in the fall of 1971. [Previous reports](#) looked back at some of those early events. In the more recent past, the Council's 41st year was one of its busiest and most productive.

### **Research and Reports**

The Council published *Environmental Quality in Connecticut* in April 2011, identifying "[Routes to Progress](#)" that would move some of Connecticut's environmental indicators in a positive direction.

The Council is required to recommend legislation for "identifying the deficiencies of existing programs and activities." The Council [published those](#) in January 2012.

From time to time the Council asks staff to prepare updates to previous reports. Examples from 2011 include a staff [memo](#) on environmental regulation and the growth of small businesses and a [memo](#) on the benefits to Connecticut of a new federal initiative to reduce mercury pollution.

### **Review of State Projects and Programs**

In December 2010, the Council received complaints and inquiries about a state grant for a boat launch facility that was awarded without the environmental review and public notice required by the Connecticut Environmental Policy Act (CEPA). After review, the Council advised the Commissioner of Energy and Environmental Protection of the applicability of CEPA. Ultimately, the Department of Energy and Environmental Protection (DEEP) declined to conduct an evaluation. The Council's conclusion is summarized in a 2011 [letter](#) to one of the citizens who contacted the Council.

Council research in 2010 found that one of the most polluting power plants in the state is located in Hartford and is generally only used on the hottest days of the year when air quality is already at its worst. In December 2011, DEEP published notice of its intent to renew the air pollution permit for the plant. Seeing several problems in the draft permit as well as opportunities to improve and perhaps phase out use of the plant, the Council submitted detailed [comments](#). As of press time, the permit renewal is still pending.

The Council continued to improve the [\*Environmental Monitor\*](#) to accommodate changes in CEPA, most recently to add public notices in cases where agencies decide not to complete an environmental impact evaluation after it has conducted a public scoping process.

### **Citizen Complaints**

As noted in reports of the past two years, citizens of Haddam have spoken repeatedly to the Council about contamination of land and groundwater that has existed in their community for more than 25 years. Among many issues, the apparent lack of remedial action by one company was of particular note, as the company had been required by the DEEP to investigate the contamination and prepare a clean-up plan. The Council decided to follow this case in detail in order to learn more about the adequacy of existing laws and programs. In April 2010, the Council wrote to DEEP recommending enforcement action against the company in question. DEEP began legal action against the company in late 2010. As of May 2012, there has been some study by the landowner as well as additional legal and bureaucratic action but, to date, no remediation.

Along with many other parties, the Council participated throughout 2011 in DEEP's ongoing effort to transform remediation laws and programs. The Council's close attention to the Haddam case has yielded several insights into problems that need to be fixed.

Aside from remediation, the following are a sample of the many other complaints investigated in 2011:

- Dumping on a state university campus.
- Lack of notice of pesticide spraying on a railroad right-of-way, as railroads are exempt from the law governing notification of abutting homeowners.
- Pesticides and other contaminants in the wells of many homes in one neighborhood.
- Apparent misinformation in an application for a proposed large drinking water well, with no effective consequences for providing wrong or misleading information.
- Several matters relating to the siting of telecommunications towers, including the need to consider their effect on bird migration corridors, preserved natural areas and coastal areas.
- Pollution from outdoor wood furnaces, both legal and illegal.

The Council researched all of the complaints it received and offered recommendations to the relevant state agencies, where warranted. Some problems, such as illegal tree removal on private property, will require legislative action to correct.

## **The Word from Mansfield**

The Council periodically holds public forums in different parts of the state to learn what environmental topics are most on residents' minds. The information presented at these forums has been extremely useful to the Council.

In July 2011, the Council heard from many citizens and municipal officials in Mansfield. They spoke about numerous environmental problems, many involving the actions and responsibilities of state agencies. Others suggested interesting directions for the future of the state and its environment. The Council investigated all of them and responded to each speaker. Many investigations led to actions by state agencies and/or recommendations for legislation. Read a [complete summary](#) of the speakers and the issues they raised.

## **Advice From the Public**

In November of 2011, the Council released its required recommendations for corrective legislation in draft form, and invited the public to weigh in. Citizens and organizations spoke to the Council at a public forum held in the Legislative Office Building in Hartford, and many others submitted written comments. Read a [complete summary](#). Their insights, technical advice and opinions proved a big help to the Council in preparing its [final recommendations](#), which were submitted to Governor Dannel P. Malloy and the General Assembly in January 2012.

---

In addition to the dozens who spoke at the public forums, the Council heard from organizations at regular monthly meetings. These included DEEP, the University of Connecticut, North Stamford Concerned Citizens for the Environment, Citizens for Clean Groundwater, Rivers Alliance of Connecticut, Sierra Club, and others.

Many people across the state expressed their concerns during 2011. The Council worked to address them all, and truly appreciates the efforts people made to bring environmental problems to light. The Council looks forward to helping citizens and agencies solve the challenges of 2012 and beyond.



The release of this edition of *Environmental Quality in Connecticut* marks 41 years of CEQ service.

## Council Duties

The duties of the Council on Environmental Quality are described in [Sections 22a-11 through 22a-13 of the Connecticut General Statutes](#).

The Council is a nine-member board that works independently of the Department of Energy and Environmental Protection (except for administrative functions). The Chairman and four other members are appointed by the Governor, two members by the President Pro Tempore of the Senate and two by the Speaker of the House. The Council's primary responsibilities include:

1. Submittal to the Governor of an annual report on the status of Connecticut's environment, including progress toward goals of the statewide environmental plan, with recommendations for remedying deficiencies of state programs.
2. Review of state agencies' construction projects.
3. Investigation of citizens' complaints and allegations of violations of environmental laws.

In addition, under the [Connecticut Environmental Policy Act](#) (CEPA) and its attendant regulations, the Council on Environmental Quality reviews Environmental Impact Evaluations that state agencies develop for major projects. The Council publishes the [Environmental Monitor](#), the official publication for scoping notices and environmental impact evaluations for state projects under CEPA. The *Environmental Monitor* also is the official publication for notice of intent by state agencies to sell or transfer state lands.

## CEQ Members

### **Barbara C. Wagner (Chair)**

Resident of Glastonbury. Attorney with law office in Glastonbury, specializing in commercial and residential real estate. Executive Director, Wind Hill Community Farm, Glastonbury. Member, Glastonbury Town Council, 2000-2010. Co-Founder and Board Member of Town Center Initiative, addressing walkability issues in Glastonbury's center. Board of Trustees, Diamond Lake Land Trust. Former member, State Open Space and Watershed Land Acquisition Board.

### **M. Howard Beach**

Resident of Simsbury. Conservation & Zoning Compliance Officer / Planning Analyst, Town of Simsbury. Member, Simsbury Conservation / Inland Wetlands Commission from 1980 to 2004, Chairman from 1994 to 2004. Member, Board of Directors, The Farmington River Watershed Association, 2004 to 2006. Life Member and past Board Member, Simsbury Land Conservation Trust. Founding Member, Farmington Valley Biodiversity Project. Member, Town of Simsbury Open Space Committee, 1999 to 2004. Member, CT Developers Council. Member, Government Affairs Committee, Simsbury Chamber of Commerce. In 2004, completed a Masters Degree in Environmental Law at Vermont Law School.

### **Janet P. Brooks**

Resident of Middletown. Attorney with law office in East Berlin with a practice in environmental, administrative and land use law. Member of the Connecticut Bar Association Planning & Zoning Section and Environment Section. Co-author of *Connecticut Environmental Protection Act*, Volume 15 of the Connecticut Practice Series published by Thomson West. Formerly Assistant Attorney General in the Environment Department of the Connecticut Attorney General's (AG's) Office for 18 years enforcing the state's environmental laws running the gamut from noise, odor, water pollution, air pollution, pesticides to habitat protection and preservation of land. While at the AG's Office, coordinated the wetlands appeal practice and developed the legal training for wetlands commissioners for DEEP's annual training. Recipient of 1984 German Marshall Fund grant to study the effect of citizen participation on hazardous waste clean-ups in four European countries. Based on those experiences, authored a chapter published in *America's Future in Toxic Waste Management: Lessons from Europe*. Staff Attorney for five years at the Connecticut Fund for the Environment, Inc., representing citizens groups in administrative and court proceedings. Began practice of law assisting the Middletown City Attorney in the city's opposition to the utility company's burning of PCB waste oil within the city boundaries.

### **Liz Clark**

Resident of West Hartford.

**Bruce R. Fernandez**

Resident of Farmington. Retired after 18 years owning and managing a software business serving insurance companies and independent agencies. Prior to that, was a consulting engineer specializing in energy efficient power plants and paper mills, Vice-President of Operations of a small utility serving Bronxville, NY and a jet engine design/test engineer. Masters degrees in Engineering and Management. Served in United States Army Corps of Engineers as small unit commander; served in Vietnam and ten years in Army Reserves. Member, Board of Directors, Farmington Land Trust.

**Karyl Lee Hall**

Resident of Branford. Attorney with the Connecticut Legal Rights Project. Formerly, with Murtha Cullina, the Connecticut Fund for the Environment and Connecticut Legal Services. Co-Chair, Branford Conservation Commission. Co-chair, Scenic Roads Advisory Committee for Routes 146 and 77. Member, Advisory Board, Branford Land Trust. Vice President, Citizens for Branford's Environment, 2002-2009. Connecticut Bar Association Pro Bono Service Award, 2003. Former Co-chair, State Implementation Plan [for Air Management] Revision Advisory Committee.

**Richard Sherman**

Resident of Chaplin. Architectural designer and construction manager of earth sheltered, passive solar and energy efficient residences. Former CEQ Representative to the Route 6 Advisory Committee (during previous term on CEQ). Charter Member, Transit Alliance of Eastern CT, and Citizens for a Sensible Six. Former Organizer, the Progress and Equity Partnership. Member of CEPA Working Group, League of Conservation Voters of CT. Former President, Northeast Chapter of ACLU-CT Board of Directors. Member of Peoples Action for Clean Energy (PACE) and Northeast Sustainable Energy Association (NESEA). Former Chair, Mansfield Transportation Advisory Committee. Former President, Mansfield Commonground. Member, Mansfield Planning and Zoning Design Review Panel. Former Chair, Mansfield Democratic Town Committee. Host and producer of the radio show, "A Distant Shore" on WHUS (91.7 FM, Storrs). Former Public Affairs Director of WHUS. Stopover host, American Tour d'Sol solar electric car race.

**Norman VanCor**

(member through April 2012)

Resident of Harwinton. Owner of Buy Safe Home Inspection, LLC, and Mizzentop Antiquities. Served in United States Marine Corp in Vietnam. Awarded the Navy Cross, Vietnamese Cross of Gallantry and other decorations. One of first ten inductees to CT Veterans Hall of Fame. Former Director, Yankee Energy in sales, marketing, government relations, communications. Founding member and President Emeritus, Quinnipiac River Watershed Association. Former member Rivers Advisory Committee. Former Chairman, Southington Conservation Commission. Former host of radio program on environmental topics. Former President, Southington Water Works. Former member, Board of Directors of Operation Fuel. Active Pheresis donor at American Red Cross with over 37 gallons of whole blood and platelet donations. Former Volunteer Hunter Safety Instructor for the DEEP Conservation Education Program. Certified Master Gardener.

## Acknowledgments

The Council appreciates the assistance of the many people in the Departments of Agriculture, Energy and Environmental Protection, Transportation and Public Health and the Connecticut Siting Council who provided data. Researchers at the Center for Landuse Education and Research (CLEAR) at the University of Connecticut provided very valuable data.

The Council especially thanks the many citizens, businesses, and organizations who offered information and viewpoints to the Council throughout the year.

The Council also appreciates the work of its Executive Director, Karl Wagener, and Environmental Analyst Peter Hearn in drafting this report for review by the Council and preparing the final version for publication.

The Council notes the valuable contributions of Eric Walsh, an intern from the University of Connecticut Law School, and Avery Yoshimine, an intern from the University of Connecticut; their research contributed greatly to this report.

## Contact the CEQ

We would like to hear from you. Does this report give you the information on Connecticut's environment that you need? Is there something missing?

**Mail:**

79 Elm Street  
Hartford, CT 06106

**Phone:**

860-424-4000  
(messages can be left 24 hours a day)

**Fax:**

860-424-4070

**E-mail:**

karl.wagener@ct.gov