



New Hampshire Citizens for a  
Responsible Energy Policy

# New Hampshire and Carbon Pollution

## FACT SHEET

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### ***Fact Sheet #1: Fall Foliage and Tourism***

Compiled by the Appalachian Mountain Club

In NH today, climate change is strongly influenced by carbon pollution and other so-called greenhouse gases. According to records by the National Climate Data Center New Hampshire's annual average temperature has increased by 1.8°F during the past century<sup>1</sup>, a trend paralleled by pollution emissions. Recent trends suggest that the frequency of severe storms and heavy rainfall events have also increased in recent years across the state and region<sup>2</sup>. Below are some specific facts on how changes in NH's climate are related to our state's spectacular **fall foliage** and the **tourism** dependent upon it.

- The bright colors of fall foliage are linked to environmental cues including soil moisture, day length, and air temperature. Because of this, weather influences the timing and brightness of fall colors.<sup>3</sup>
- Based on the last century of data, scientists predict through models that in the next century New England will experience an average increase in temperature of 3.6° – 10.8°F<sup>4</sup>.
- Warming on that scale is likely to phase out sugar maple, beech, and birch trees from NH's forests<sup>5</sup>. These species would likely be replaced by southern deciduous tree species (such as White Oak) that are better adapted to longer summers, but do not lend to brilliant fall foliage displays that we now enjoy.
- The ice storm of 1998, an example of severe weather NH has experienced with more frequency, caused 1,055,000 acres of damage to New Hampshire's forests<sup>6</sup> resulting in canopy gaps across the landscape and affecting foliage for several years.
- NH's economic base relies heavily on tourism. The total impact of visitor spending on the state's economy (direct and indirect spending and induced impacts) was over \$9.3 billion for fiscal year 2000. Direct spending equaled 7.9 percent of the Gross State Product. **During fiscal year 2000, our state saw about a quarter of its visitors in the fall season.**<sup>7</sup>

The organization that compiled this fact sheet is part of the Carbon Coalition, a non-partisan coalition of citizens and organizations across New Hampshire who have come together agreed the country needs to commit to an energy policy that includes significant reductions of carbon dioxide emissions and is founded upon energy conservation and the development of sustainable, renewable energy sources. For more information visit [www.carboncoalition.org](http://www.carboncoalition.org).

## Endnotes

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<sup>1</sup> Preparing for a Changing Climate. The New England Regional Assessment Overview. August 2001. For the U.S. Global Change Research Program.

<sup>2</sup> IBID

<sup>3</sup> From <http://www.butler.edu/herbarium/fallcolor/leaveschange.htm>

The amount and intensity of autumn color is related to weather conditions that occur before and during the time the chlorophyll in the leaves is diminishing. Temperature and moisture are the main influences.

A succession of warm, sunny days and cool (below 45 °F), but not freezing nights brings about the most spectacular color displays. During these days, lots of sugars are produced in the leaf but the cool nights and the gradual closing of veins going into the leaf prevent these sugars from moving out. These conditions will favor anthocyanin production and brilliant red autumn color. Early frost will weaken the brilliant colors by killing or severely injuring the leaves before the pigments reach their maximum development. Rainy and/or overcast days tend to decrease the intensity of autumn colors due to reduced light intensity limiting photosynthesis and the sugars available for anthocyanin production.

The amount of moisture in the soil also affects autumn colors. Soil moisture varies greatly from year to year. A late spring, or a severe summer drought can delay the onset of autumn color by a few weeks. A warm period during fall will also lower the intensity of autumn colors. A warm, wet spring, normal summer rainfall, and warm sunny fall days with cool nights produce the most brilliant summer colors.

<sup>4</sup>See article *On the Case of Climate Change* by L. R. Shea in Forest Notes, Society for the Protection of New Hampshire Forests, Autumn 2003.

<sup>5</sup> IBID

<sup>6</sup> Preparing for a Changing Climate. The New England Regional Assessment Overview. August 2001. For the U.S. Global Change Research Program.

<sup>7</sup> See <http://oz.plymouth.edu/inhs/EconomicReports/>

Direct spending are revenues taken in, employment provided and wages paid by the industries where tourists spend money directly. Indirect spending is money spend by the directly impacted industries. Induced impacts are reflected in the spending of persons who are employed by the directly impacted industries.

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