



FACT SHEET

Global Warming Threatens New England's Ski Industry

Since the early 1900s many parts of New England have developed a tourist economy centered on nature and the outdoors. Recent warming trends associated with global climate change and predictions for greater impacts in the coming decades are placing some of our favorite recreational areas at considerable risk. Winter sports are especially vulnerable to this warming. New England's century long skiing tradition may be at the center of this new climatic assault.

Because of the strong relationship between winter skiing conditions, the number of customers, and subsequent successes or failures in the ski industry, predicted changes in climate may be costly for the New England region. The connection between weather and skiing is no secret. Now it is apparent that a changing climate, brought about mainly as a result of pollution from the burning of coal, oil and gas for electricity and transportation may have severe repercussions for New England's winter tourism economy.

New Study Links Climate and Ski Economy

- ❖ A new analysis* of the past 19 years of weather data for Vermont and New Hampshire showed an average of 700,000 fewer visits in the years with the worst snow conditions.
- ❖ The three snowiest, longest, and coldest winters occurred in 2001, 1996, and 1994. The three least snowy, shortest, and warmest winters took place in 1995, 1992, and 1991.
- ❖ Vermont and New Hampshire have the most ski-dependent economies in New England. Together, the two states receive approximately 6 million ski visits annually.
- ❖ In New Hampshire, where skiing is the "Official State Sport," the industry generated \$566 million in visitor spending in 2000. This spending is critical to the state government's budget, as it accounted for nearly \$58 million in tax revenue.
- ❖ In addition to this influx of money, the skiing industry also provided important individual household income by creating 10.2% of the jobs in the state during the winter months.

The Close Link: Weather and Skiing's Success

- ❖ Three heavily skier-dependent states (Vermont, New Hampshire, and Maine) host 50 of the 80 ski resorts now operating in New England.
- ❖ Not only ski resorts are affected. A whole network of lodging, dining, and service-based businesses also thrive and depend upon the winter recreation community.
- ❖ Total ski visits for the U.S. are approximately 50 million each year, so if the New England trends play out elsewhere economic losses could be severe in other regions too.

Affected Shareholders

Financial investment in the ski industry region-wide is highly significant and stakeholders have much to lose from the predicted shorter winters and a warmer, less snowy climate.

- ❖ Recent single-season improvements at Sugarbush, Vt., and Sunapee, N.H., cost owners \$28 million and \$11 million, respectively.
- ❖ Resort operators have made costly improvements to snowmaking technology to smooth out inconsistent winters. Vermont's 19 ski areas have increased the area covered by snowmaking by more than 15% in the past 12 years.
- ❖ The 18 ski areas in New Hampshire increased the number of acres covered by snowmaking by 18% during the last 10 years at a cost of \$24.2 million. Attitash, a ski resort in New Hampshire, spends about \$750,000 per year on snow making, which accounts for approximately 20% of their operating costs.

Trends in the Recent Climate

Climate trends in New England are consistent with those that have been observed throughout the use. Winters are becoming shorter and warmer, with a less reliable winter sports season.

- ❖ New England and upstate New York have seen an average increase in temperature of 0.7° F since 1895.
- ❖ Winter temperatures in Vermont, New Hampshire, and Maine have warmed by 2.2° F during the last century.
- ❖ Snowfall decreased by an average of 14.6 % from 1953 to 1994 in Vermont, New Hampshire and Maine.
- ❖ Temperature records from selected stations show significant warming over the last century:
 - 2° F in Hanover, NH
 - 0.4° F in Burlington, VT
 - 3.4° F in Lewiston, ME
 - 2° F in Amherst, MA
 - 2.4° F in Storrs, CT
- ❖ Lake-ice conditions on three major lakes in central New Hampshire, assessing as many as 115 years of data, all demonstrate a trend toward shorter ice seasons.

Last Year's Weather...and the Future

The fall of 2001 demonstrates a potentially significant and troubling climate trend relating to the ski industry.

- ❖ Globally, this was the warmest October on record. This is the 23rd of the past 25 years that have observed above average temperatures for the month of October.
- ❖ Every region in the U.S. saw temperatures that were above average during November.
- ❖ The November temperature for the Northeast averaged 43.6°F, which is 5.3° higher than the 107 year average. This made for the third warmest November and the 11th driest.
- ❖ In 2001, Killington Ski Resort, the largest area in the east, recorded their latest date of opening in more than 15 years.
- ❖ Globally, 2001 was the 2nd warmest year in 147 years. 1998 was the warmest year and nine of the ten warmest years during the last 147 years period have occurred since 1990.
- ❖ The International Panel on Climate Change (IPCC), a group of more than 1000 leading scientists from around the world, predict global warming of 2.5 to 10.4° F in the coming century.

What Will Happen to the Ski Industry?

Although studies in New England have been limited, studies in Canada suggest that global warming could devastate the ski industry.

- ❖ An increase of 3.5-3.7° C could eliminate all skiing days in South Georgian Bay, Canada. A similar increase in temperature for resorts in Southern Quebec could decrease the number of skier days by 50-70%.
- ❖ With a doubling of CO₂, Quebec could experience a 40-70% decline in the number of skier days resulting in a loss of \$1.7 billion in revenue from this source.

History of Skiing in New England

Skiing has a long tradition in New England and is integral to the region's current economy and cultural identity.

- ❖ More than a century old in New England, the tradition of skiing has its origin with Scandinavian immigrants who settled in the mountainous areas.
- ❖ Dartmouth College's Outing Club, founded in 1909, helped promote the sport's popularity and led to the opening of other clubs and some of the region's first ski areas.
- ❖ Snow trains run by the Boston and Maine Railroad increased the sport's accessibility and allowed skiers to return to developing resort areas year after year. Today, tourism is the second largest industry in New Hampshire and Vermont.

New England's Special Climate and Topography

At first glance, New England's regional climate, topography, and location are perfectly suited to support the long-held outdoor tradition of skiing.

- ❖ Mountain ranges make up significant parts of New Hampshire, Vermont, and Maine's inland regions. Mount Washington, located in the White Mountains, is the region's highest peak, standing at an elevation of 6284 feet. Vermont's motto, "The Green Mountain State," describes a verdant, uneven range in the western half of the state, offering Mount Mansfield as its highest elevation of 4,393 feet.
- ❖ The region's major storm track pattern, commonly called the "jet stream," impacts the weather in New England. In the winter the stream generally flows to the south of New England, allowing cold air from the arctic to infiltrate the region. During summer months, a northward shift forces warmer air from the south to move north.
- ❖ Under normal conditions, areas in the White and Green Mountains and northern Adirondack Range receive totals of greater than 100 inches of snowfall per year, while 200-inch tallies are common at elevations of more than 2000 feet.

Minimizing the Consequences

Ski resorts may turn out to be some of the first victims of climate change unless we act quickly to reduce greenhouse gas emissions across the U.S. The New England region is poised to become a leader in finding solutions to global warming with the signing by all of its governors of a Climate Change Action Plan in the summer of 2001. Skiers and ski resorts should support the implementation of the plan. However, individual ski resorts are already having to change their operations to maintain profitability, and climate change will only make these efforts all the more necessary.

- ❖ Instead of simply a "ski resort," the "recreational resort destination" combines skiing with summer and fall activities such as golf, alpine slides, hiking, mountain biking, and water recreation.

- ❖ Another separate trend in the mid and late 1990s saw larger ski resort conglomerates buying a number of local resorts. Companies such as Intrawest and the American Skiing Company now own areas in Canada and on both coasts of the United States.
- ❖ Many resort areas are continuing to invest heavily in snowmaking operations by purchasing more equipment and insuring adequate water supplies to run these machines.
- ❖ The ski industry's interest in environmental issues has increased in recent years. The Sustainable Slopes Charter was created by the National Ski Areas Association in 1999 and 2000 in an attempt to define a uniform response to the issues of energy efficiency, water use, and waste production. The charter has been endorsed by ten resorts in New Hampshire and by eight in Vermont.

** Skiing with Climate Change: An Analysis of Climate Change and the Consequences for the Ski Industry in New Hampshire and Vermont.*