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THE ISSUE OF POTENTIAL IMPACTS OF GLOBAL WARMING ON RECREATION AND THE RECREATION INDUSTRY

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

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ONE HUNDRED TENTH CONGRESS
FIRST SESSION

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C O N T E N T S

THE ISSUE OF POTENTIAL IMPACTS OF GLOBAL WARMING ON RECREATION AND THE RECREATION INDUSTRY

WEDNESDAY, MAY 24, 2007

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 10:30 a.m. in room 406, Dirksen Senate Office Building, the Hon. Barbara Boxer (chairman of the committee) presiding.

Present: Senators Boxer, Lautenberg, Sanders, Klobuchar, Whitehouse.

STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. The meeting will come to order. I am very pleased to welcome the witnesses here today to discuss the impacts that global warming may have on outdoor recreation.

Outdoor recreation is one of life's greatest blessings. It is also an important economic engine for the United States. We have a very distinguished panel here, and if you give me a minute, I want to introduce some people that have come along because of their great interest in this subject.

I don't know if Senator Inhofe is coming today, but I want the word to go out if he does, I have a little global warming gift for him. He got me a global warming mug, which when you put hot water in it, the whole world melts away.

[Laughter.]

Senator BOXER. I have another really very nice gift for him. I hope he comes.

I am just looking for my papers here, and I found them, because we do have some special people. Today on our witness list we have Dr. Daniel Scott, Canada research chair, Global Change and Tourism, Department of Geography, University of Waterloo; and Michael Berry, president of the National Ski Areas Association.

Where is Tom? Tom, I missed you. Tom Campion is founder of Zumiez; Bryant Watson, Vermont Association of Snow Travelers; Betty Huskins, chair of the Southeast Tourism Policy Council, AdvantageWest; Derrick Crandall, president, American Recreation Coalition; and Barry McCahill, president, SUV Owners of America.

I wanted to point out that Mr. Campion is accompanied by members of the Action Sports Environmental Coalition. I want to introduce these people to you and ask them to stand as I read their

name. We have world class skateboarder Bob Burnquist. Bob, welcome. We have former pro-snowboarder Circe Wallace. We welcome you.

We have X–Games winner Jen O'Brien. We welcome you. We have executive director of the Action Sports Environmental Coalition Frank Scura; and we have the director of the Bob Burnquist Global Cooling Challenge, Scott Murray with us as well.

So we just want to make sure the record showed you were here. If you have anything that you want to put into the record by way of statements, I will leave the record open until the end of the day today.

So we know that outdoor recreation is something we have all had a chance to take advantage of, and we want it for future generations. We cherish the ability to spend time outside visiting our parks and forests, our oceans and beaches, and our mountain landscapes.

Senator Lautenberg, will you sit here in Senator Baucus's seat?

Senator LAUTENBERG. My pleasure, Madam Chairman.

Senator BOXER. Thank you.

Some of us like to play golf. Some of us like to swim and fish. Some of us like to ski and use snowmobiles. Many of us enjoy touring our national parks and relaxing beside our beautiful coastlines. These activities sustain us and our culture, and contribute immensely to our overall well being. They also contribute a great deal to our national economy.

Global warming can have a profound and negative impact on our outdoor recreation opportunities and businesses. We are already seeing decreases in the amount of snowpack in certain western areas of the United States. According to a 2004 study by the University of Washington, from 1950 to 1997, in some areas of Oregon, western Washington and northern California, snow packs shrank by 50 percent to 75 percent, with the dominant factor being global warming.

Decreases in snowpack in the northern Rockies during that period range between 15 percent and 30 percent, and it is clear that many glaciers are melting in our national parks, including at Glacier National Park. According to the U.S. National Assessment, a major scientific review drafted by a team of leading experts from government, universities, industry and other institutions, the length of the snow season decreased by 16 days from 1951 to 1996 in California and Nevada.

These decreases in snowpack and in the length of the snow season can directly impact activities like skiing and snowmobiling, which are key aspects of outdoor winter recreation.

Outdoor recreation is serious business as well. In 2006, national tourism-related sales amounted to $1.2 trillion—$1.2 trillion—and were responsible for over 8 million jobs. Around here, we have a lot of voices calling for more jobs. Senator Sanders has been one of our leaders on this. Here we have an industry that is responsible, Senator, for 8 million jobs.

International travel, which ranks ahead of agriculture and automobile production as a net export, accounted for $107.4 billion in sales. For California, direct spending in 2006 provided $94 billion and supported more than 900,000 jobs.

Senator would you move up and sit next to Senator Klobuchar? This is called instant seniority. Don't let it go to your head.

[Laughter.]

Senator BOXER. The Intergovernmental Panel on Climate Change has recently said that it is virtually certain that warmer temperatures will have effects on winter tourism. The IPCC's second report this year said that warming in western mountains is projected to cause decreased snowpack, and that snow and length of snow depth are very likely to crease in most of North America.

The IPCC also found that coastal communities and habitats will be increasingly stressed by climate change impacts.

Global warming is the greatest challenge of our time, and if left unchecked it will have a negative effect in many areas of our lives and businesses. Outdoor recreation is perhaps one of the first and most obvious aspects of our lives that global warming will touch, but many others will follow.

It is up to us to face this challenge squarely and act immediately to avert the worst effects of global warming. Our ability to continue to enjoy the great outdoors in the many ways we have learned to love and cherish it, and the many ways we enrich our lives beyond compare, is placed at risk by global warming. In addition, many businesses and millions of jobs in the recreation industry are threatened by global warming.

I know that we as a Nation and as a world will rise to meet this challenge, and we will be better off in every way. The window is closing and we need to act now. The reason I wanted to have this particular industry before us is they are sounding the alarm.

Once again, I want to welcome all the witnesses. I am so pleased to have so many of my colleagues from our side here today. I hope that the Republican side will come as well. In order of arrival, I would call on Senator Klobuchar for her opening remarks.

STATEMENT OF HON. AMY KLOBUCHAR, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator KLOBUCHAR. All right. It is great to be here with all of you. Thank you for coming.

Whether it is fishing, biking, hunting, bird watching, snowmobiling, skiing, outdoor sports are a big part of what Minnesota is all about. It is also a big part of our economy. Each year, Minnesotans spend more than $1.8 billion on outdoor-related recreation. I guess I would ask if I could pose a question to our Chairwoman. I will have to pose it.

Chairwoman Boxer, I have a question about Minnesota sports for you.

Senator BOXER. OK.

Senator KLOBUCHAR. How much money do you think we spend on worms every year in Minnesota?

[Laughter.]

Senator BOXER. I have to Google that information.

[Laughter.]

Senator KLOBUCHAR. It would be $50 million we spend on worms and bait. I think we might lead California on that one. But it is just an example.

Senator BOXER. I will give you that title.

[Laughter.]

Senator KLOBUCHAR. But it is a wonderful example of how the outdoors are such an important part of our economy in Minnesota. I can tell you that those that participate in all kinds of sports across our State are getting increasingly concerned about warmer winters and about climate change.

There is a couple out on Leech Lake who care about this issue because it has taken them a month longer to get their fishhouse out for ice fishing. I have heard it from high school ski coaches who are having trouble recruiting skiers to their sport because of the lack of snow. I have heard it from snowmobile clubs in Detroit Lakes, who are upset because the time period when they can use their snowmobiles is shrinking.

It is not just about winter sports. It impacts us across the board. There are hunters and anglers in Hibbing, MN who care about the issue because they have seen the changes in our wetlands and our wildlife. Some of the most prized fish, like brook trout in northern Minnesota, are coldwater fish. These fish need clear, cold, surface runoff water to thrive. Currently, models done by the University of Minnesota–Duluth predict that prize coldwater fish will disappear as the water temperature in Lake Superior continue to rise. At the moment, that lake is at record high temperatures.

If rising temperatures and lower lake levels harm fish populations and change wildlife patterns, it is going to have serious implications for recreation in Minnesota.

So I would end by saying that this is an issue that has finally moved out of the science labs and seminar rooms of our universities, and it has entered the everyday conversation of people from all walks of life. People from our State are hoping that this Congress will confront the challenge of rising temperatures with comprehensive and constructive action. Our State has done that. We passed one of the most aggressive renewable portfolio standards in the country for electricity, signed into law by our Republican Governor. I admire the courage of our State and California and Arizona and New Jersey and other States that are taking the lead on this, but States are supposed to be the laboratories of democracy. They are supposed to be courageous. But that doesn't mean that we should have inaction by the Federal Government.

So I want to thank you for being here today and being part of this important committee as we search for solutions, and we can't search for long. It is time to act.

Thank you.

Senator BOXER. Senator, thank you so much. This is the second time I have heard you talk with eloquence about——

Senator KLOBUCHAR. About worms?

Senator BOXER. About worms.

[Laughter.]

Senator BOXER. About global warming and its real impact on the quality of life of the people in your State. It really resonates because if you just think about what it would be like if the climate changed dramatically there, it just would be a very different place, a different place from the one you grew up in.

Senator KLOBUCHAR. Thank you. I appreciate that. I am going to have to leave a little early for another hearing, but I think we will

have a few questions that we will submit for the record. Thank you.

Senator BOXER. Thank you so much, Senator.

Senator Sanders.

STATEMENT OF HON. BERNARD SANDERS, U.S. SENATOR FROM THE STATE OF VERMONT

Senator SANDERS. Thank you very much, Madam Chair, for holding this hearing. I think you are exactly right in saying that global warming is the challenge of the time. If we don't get it right, the young people who are here today with us are going to see a quality of life in this country and around the world far inferior to what we enjoy today. It is incumbent upon us to address this issue.

I am just delighted that we have so many articulate guests who are going to be explaining the impact of global warming in terms of their industries and in their regions of the country. I am especially delighted to welcome Bryant Watson, who has for many years now been the executive director of the Vermont Association of Snowmobile Travelers. In the State of Vermont, snowmobiling is not only a significant industry in terms of bringing much-needed money into our rural areas, but it is an important recreational activity for tens and tens of thousands of Vermonters.

I was mentioning to somebody this morning that one of our schools in northern Vermont, the kids drive to school in their snowmobiles. They park the snowmobiles outside. It is a family-based activity and it is a very, very good thing for people in the State of Vermont and for the kind of revenue that we generate when out of staters come to the State.

As Mr. Watson will tell you, we have had some very, very rough winters in recent years. The result of those rough winters, those winters without snow, have been that people in the snowmobile industry, people in our skiing industry, have lost substantial sums of money. People are not coming to the State of Vermont to ski, to snowmobile, when there is not snow, and in recent years there have been winters without significant amounts of snow.

So when we talk about global warming, when we talk about droughts, and we talk about the loss of glaciers and permafrost, and forest fires, let us not forget what global warming is meaning not just in the future, but today for the income and the way of life of millions and millions of Americans who enjoy wintertime activities.

So I just want to thank you, Madam Chair, for holding this important hearing, and welcoming our guests here. I look forward to hearing what they have to say.

Senator BOXER. Thank you, Senator Sanders.

Senator Lautenberg.

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Thank you, Madam Chairman, for holding today's hearing. We are about 24 hours from a holiday weekend. The climate will make a huge difference in how people enjoy themselves and what kind of recreation they have. I am a tree hugger

from way back. As a matter of fact, I skied in Vermont, I don't want to say before Senator Sanders was born, but anyway——

[Laughter.]

Senator LAUTENBERG. I don't know if it was that long ago, but many years in Colorado, and I have ski-competitive kids in a serious way, and grandchildren who are now expert skiers. I belong to the Ski Association, Mr. Berry. If you look back, I started skiing in 1946, when I got out of the Army. One of the most healthful things that I did was to go skiing and take my kids skiing, and learn and teach them that the outdoors is the best gymnasium you could find.

We do go fishing, and sometimes we even catch something, but more often than not the fish gets a chance to swim again. It means so much. When we talk about a legacy that we would like to leave our children and our grandchildren and future generations, what could be better than a balanced climate structure.

Right now, we are still facing doubters who sit—and I am sorry that they are absent because I don't like to talk about them when they are not here; I like to talk about them when they are here—but the fact of the matter is there is still doubt. They are throwing up challenges to the fact that there is climate change.

Well, I know that in New Jersey, for instance, people descend on the shore and they go to bird watch—thousands and thousands of people will go. We have seen declines in species, declines in numbers of birds on the flyways. People like to hunt and fish. These activities are part of the lives of New Jerseyans, but unless we act to end global warming, the future of these destinations is in jeopardy.

Our country's average temperature was 2.2 degrees warmer last year than the average temperature throughout the 20th century, according to NOAA. These rising temperatures, as I note, cause a decrease in the patterns of flying that birds take. We have a huge bird population, but a drop in the State's overall tourism revenue is quickly noted, and unfortunately in serious decline.

One estimate shows that bird watching, hunting and fishing bring $4.1 billion every year into New Jersey alone. Not only are we seeing these changes in the spring and summer, but climate changes pose a significant threat to our winter tourism. Our ski mountains are not very high. The top is in the hundreds of feet. I think we have one place that is skyscraping high that is 1,200 feet. From the top, you can see the bottom. But we have these modest height mountains, but people love to be out there. It causes enormous changes in the economy of these communities.

Warmer temperatures in the winter, more rain, less snow, more extreme events, avalanches and landslides, which you see in the far western States. Ski areas in New Jersey, they are low altitudes, will be some of the first to experience rain instead of snow, and the change in winter weather forces tourists to stay away. It costs workers their jobs and forces ski areas to shut down.

Global warming is causing similar problems across the country. In Colorado, recent climate models show that popular ski resorts such as Aspen and Vail could lose more than 40 percent of their snowpack in the coming century. In Montana, glaciers in Glacier

National Park are melting. The park's largest glaciers are about one third of the size they were 200 years ago, one third of the size.

When it comes to impacts of global warming, this committee has heard from scientists. We have heard from businesses. We have heard from our cities and States. We are very appreciative of the leadership that our Chairman has provided. She is there challenging whatever sits as a condition that needs to be changed, that needs to be examined, and we do it vigorously. I am grateful to Senator Boxer for doing these things, and reminding us that there is more than just the budgets and things of that nature. We cannot forget nature and the human contact with nature.

Six years ago, I went down to the South Pole. I have been up to the Arctic to see what was happening with the ice melt there. I met with the National Science Foundation people. It was painful, because you could hear the ice plates shifting, and it sounded like groaning. When you see what it means for the penguin growth to be sustained and present, and recognize that they have to go further and further to find food to bring back to their young. The ice melt—we have seen these floes the size of States. Rhode Island, unfortunately, has been picked out as a place that resembles in size one of the ice floes that have seen.

So Madam Chairman, we thank you and we are all determined, as you are, to continue our fight against the loss of these precious assets that this country has.

Senator BOXER. Thank you so much, Senator.

Senator Whitehouse.

STATEMENT OF HON. SHELDON WHITEHOUSE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator WHITEHOUSE. Thank you, Madam Chair.

I just want to remark on something that Senator Lautenberg said, which I think is so important. Whether you are ice fishing in Minnesota, with worms, or snowmobiling in Vermont or bird watching in New Jersey, or surfing in California, or fishing in Narragansett Bay in Rhode Island, these opportunities for families to have experiences in the outdoors are the jewels, really, of family memory. Sometimes these are things that grandchildren do with their grandparents. When they grow up, they pass it on to their grandchildren themselves. It is the favorite fishing spot. It is the favorite skiing spot.

So there is a lot at stake here that comes in under the science. I think the point that Senator Lautenberg made along those lines is something we really have to bear in mind. I have the good fortune to be married to a marine biologist, a scientist, so I spend a lot of time in the scientific community. One of the things that I noticed, or learned early, is how small a difference can make how big a difference.

Years ago, the guy who does most of the work on Narragansett Bay on bay temperatures and so forth, we were sitting with him and talking about various things. He said that in the last I think it was 30 years, the temperature of Narragansett Bay has gone up 4 degrees. Well, I swim in all kinds of weather in the ocean. Four degrees doesn't seem to make a very big difference. So I challenge him. I said, well, 4 degrees isn't much; I can't really tell the dif-

ference between 62 degrees and 66 degrees when I am swimming; it is just cold.

He said, no, you don't understand. From an ecological point of view, that is a full ecosystem shift.

So things that might not seem to us to be so significant immediately, can have enormous consequences in the ecosystem that supports these activities.

Madam Chair, you have done a wonderful job in leading this committee, and I am very proud to be with you, and keep slugging away.

Thank you.

Senator BOXER. Thank you, Senator. Once again, I think you put it into human terms because when we talk about recreation in America, we are talking about family. We are talking about children. We are talking about joy. We are talking about health. We are talking about education, too. You don't learn everything in the classroom, as you well know.

So I think this is why we wanted to have this panel, and we are going to get to it. Senator Sanders, I was also saying we are talking about millions of good jobs that are at stake here.

The one thing I wanted to announce is that Senator Isakson and I are leading a bipartisan codel to Greenland in July. We are going to examine the ice condition there, and many colleagues already have agreed to go on this trip. We are inviting anyone in the Senate who is interested in it. I mention that because we are just going to keep doing our work, because when people say nothing is happening, nothing is wrong, we are going to go where the facts show us exactly what is happening, and that is one place, Greenland, where we are going to pick up some facts.

So now we are going to get started with Dr. Scott. It was a long time since I mentioned what everyone does on the panel, so I will reiterate: Canada research chair, Global Change and Tourism Department of Geography, University of Waterloo.

STATEMENT OF DANIEL SCOTT, CANADA RESEARCH CHAIR, GLOBAL CHANGE AND TOURISM, DEPARTMENT OF GEOGRAPHY, UNIVERSITY OF WATERLOO

Mr. SCOTT. Thank you, Senators. First of all, let me apologize for the state of my voice. I have two daughters who are under the age of 4, and it seems impossible to stay healthy these days. So hopefully my voice will get through this.

Thank you for the opportunity to testify before you today on this hearing on the implications of global warming in the recreation sector. It is an issue that I have personally worked on for about 10 years now. It is in my capacity, again, as a Canada research chair, but also as the chair of the World Meteorological Organization. They have an expert team on tourism and climate. I am the chair of that, so it is also in that capacity that I speak to you today.

In my written testimony, I tried to summarize for you the scientific literature on this issue that pertains specifically to the United States, to give you a reference for that. It is based on that scientific literature that I make my summary remarks to you this morning.

First of all, climate change is anticipated to have far-reaching consequences for the recreation sector. This is because both the supply and demand within the recreation sector are heavily influenced by weather and climate today. The impacts will be particularly significant if high-emission scenarios are realized in the coming decades.

Importantly, to emphasize, climate change represents both a risk and an opportunity for this sector. The winners and losers, if you will, will vary by market segment. They will also vary by geographic region. We are only in the early stages of trying to sort out exactly who those winners and losers will be, and which areas, which businesses will need the most assistance in the future.

Particularly at risk in this sector by mid-century are the winter recreation industries of skiing and snowmobiling, that I have done a lot of work on myself. There are known vulnerabilities to exist, and some of them have been identified already, but throughout the Southeast, the Northeast, the Midwest, Rocky Mountain, and Pacific Northwest ski areas, as well as California.

The economic losses in these industries are likely to be in the order of billions of dollars. The cultural loss of the recreation activities that define some of these regions, however, are very difficult to put a monetary value on.

The Senators have identified several other key vulnerabilities, areas where the key recreation or resources for recreation will be vulnerable and threatened. Some examples already given were the coldwater fishery, particularly at its southern margins, but also throughout the Great Lakes and Midwest States; specific places like Glacier National Park, where its very namesake and one of its principal attractions is likely to be lost; and areas such as California, Las Vegas and other areas where we have limited water resources that may actually preclude some of the climate adaptations that we are stressing such as snow-making and golf course irrigation, as two examples.

Most of the potential opportunities associated with global warming in this sector will accrue to the northern States, largely in the form of extended summer recreation seasons from a climate perspective. Consequently, there is the potential for a net northward shift in recreation spending, as those in northern States spend their recreation dollars closer to home, taking advantage of some of those extended summer recreation seasons, and also have less demand for golf and beach trips further south during the winter months.

Because climate is changing and we are committed to some amount of further warming regardless of how successful we are on mitigation, adaptation will be necessary to minimize damages and capitalize on any opportunities that may present themselves. This is already happening at the individual business and community level in an ad hoc manner. A few example are a few years ago, I was contacted by a California investment company looking to buy a Colorado ski resort, and they wanted advice in a climate change context. I personally know of banks both in Europe and here in North America who are already adapting their lending practices to ski areas.

Some communities, as was identified, Aspen and recreational organizations as one example, the Wildlife Society, are also beginning to do their own research to figure out what their options are in terms of adapting to a warmer world.

There is tremendous adaptive capacity in the recreation sector. However, we need to develop much better information to provide businesses and communities with as much lead time as possible to adapt to climate change in an economically and environmentally sustainable manner. This information, in my opinion, is needed sooner, rather than later, because although we generally think of climate change impacts as far out into the future, a number of the impacts that I highlighted for you in my written testimony will actually take place in my working career, and at most within my lifetime.

So it is not just future generations that are going to have to cope with climate change, but indeed some of the generation that you see sitting before you today.

With that, I thank you for your time.

[The prepared statement of Mr. Scott follows:]

STATEMENT OF DANIEL SCOTT, CANADA RESEARCH CHAIR, GLOBAL CHANGE AND TOURISM, DEPARTMENT OF GEOGRAPHY, UNIVERSITY OF WATERLOO

INTRODUCTION

In its Fourth Assessment Report, the United Nations Inter-governmental Panel on Climate Change (2007) indicated that some degree of climate change was inevitable in the 21st century regardless of the success of international efforts to reduce greenhouse gas emissions. As a consequence, societies around the world will need to adapt to some magnitude of climate change in the decades ahead, adjusting human systems in order to moderate potential damages or realize new opportunities. Climate change was recognized by the United States National Research Council (on behalf of the National Science Foundation) as one of eight "grand challenges" in the environmental sciences (Committee on Grand Challenges in Environmental Sciences, 2001). Of particular importance, the Council noted, is the need for improved assessment capabilities with regards to the impacts of climate change on human and natural systems.

One economic sector in which climate change is anticipated to have considerable consequences is that of outdoor recreation, because it is highly influenced by climate. Climate defines the length and quality of multi-billion dollar outdoor recreation seasons, such as skiing, snowmobiling, golf, boating, and beach use, which subsequently influence sales of related sporting equipment and also tourism related spending. Climate also affects a wide range of environmental resources that are critical to the recreation sector, such as snow conditions, wildlife productivity, and water levels, and affects various facets of recreation operations (e.g., snowmaking or irrigation needs, open fire or swimming bans). Despite the importance of weather and climate to outdoor recreation, the sensitivity of individual recreation industries to climate variability the complexities of the interactions between climate change and recreation sector have not been adequately assessed to date.

It is beyond the scope of this testimony to provide a comprehensive assessment of the implications of climate change for the recreation sector of the United States, instead illustrative examples of the implications of projected changes in climate are provided for a variety of participation land, water and snow-based outdoor recreation activities, including hunting, fishing, park visitation, golf, boating, beach use, skiing, and snowmobiling.

OUTDOOR RECREATION IN THE UNITED STATES

Demand for outdoor activities in the United States substantial and varied geographically. According to the most recent National Survey on Recreation and the Environment (NSRE, U.S. Forest Service, 2000), 97.5 percent of Americans aged 16 and over participate in some form of outdoor recreation at least once per annum. When Americans participate in outdoor recreation, they spend money and create jobs while at the same time improving their physical and mental health. A recent

assessment of the 'Active Outdoor Recreation Economy' estimated that this sector has an annual economic contribution of $730 billion and supports over 6.5 million jobs (Southwick Associates 2006). This suggests that if substantive climate change impacts (positive or negative) occur in this sector, the economic implications are not likely to be trivial.

IMPLICATIONS OF CLIMATE CHANGE FOR OUTDOOR RECREATION IN THE UNITED STATES: A REVIEW OF EMPIRICAL EVIDENCE

As in the National Survey on Recreation and the Environment (U.S. Forest Service, 2000), this discussion is organized into three sections, covering land-based, water-based, and snow and ice-based, recreation activities. Where possible, existing empirical analyses of the potential impacts of climate change on specific recreation activities are summarized; where no such investigations are available, broad-level implications are conjectured. As indicated, climate change would have both direct and indirect impacts on recreation activities—direct, through changes in climatic conditions such as temperature and precipitation, and indirect via the impacts of these climatic changes on the natural resources base. Both types of impacts are considered in the discussion below.

Land Based Activities

Land based activities constitute the largest category of outdoor recreation participation (U.S. Forest Service, 2000), and, in many cases, the positive experience of such activities is contingent upon one or more elements of the landscape (flora, fauna, and/or natural scenery) in which they occur. Despite the large numbers of Americans engaging in such activities, the relatively narrow range of atmospheric conditions in which they ideally occur, and the potential impacts of projected climate change on both atmospheric and environmental conditions, there appears to have been limited research into the likely impacts of climate change on patterns of participation. Studies addressing the potential implications of climate change for camping, hunting, viewing wildlife and natural scenery, and golf, are summarized below.

Camping

According to the National Sporting Goods Association (2005), over 55.3 million Americans aged seven or older went camping once or more in 2004, making this the second most popular of the sporting activities this agency monitors. While styles of camping may vary considerably, from large recreational vehicles with all modern conveniences, to back-country and wilderness locations with no facilities provided, most camping trips are impacted by weather conditions to a lesser or greater extent. Loomis and Crespi (1999) and Mendelsohn and Markowski (1999) concurred that at the national-level increases in temperature (from 1.5 °C to 5 °C) and precipitation (from 0 percent to 15 percent) would have a negative impact on the numbers of people participating in, and the welfare value generated by, camping. Key limitations of both of these studies are that they fail to take into consideration regional variations in seasonal activity patterns or climate change scenarios and thus provide no information on regions that may see reduced or increased camping activity. Illustrative of the regionally specific impacts on camping seasons are studies in southern Canada that are latitudinal (and climatological) equivalents to northern states in New England or the Midwest, which project an extension of the camping season in the spring and fall shoulder seasons and increases in camping related revenues (23 percent to 36 percent by the 2050s—Wall et al. 1986).

Hunting

According to the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Fish and Wildlife Service, 2002), over 13 million Americans aged 16 or older spent over 228 million days and nearly $22 billion on hunting-related activities in 2001. The Wildlife Society (2004) has examined the potential impacts of climate change for wildlife in North America and concluded that wildlife managers, including those who manage wildlife populations for recreational hunting, cannot ignore the important implications.

According to Mendelsohn and Markowski (1999), climate change (increases in temperature from 1.5 °C to 5 °C and in precipitation from 0 percent to 15 percent) is unlikely to have any significant impact on the welfare value generated by hunting activity in the U.S. over the next 50 years. While the total value of hunting within in the U.S. may indeed remain relatively unchanged under warmer, wetter conditions, considerable geographic shifts in hunting activity should be anticipated as a result of changes in the geographic distribution and relative abundance of species. Vegetation modeling studies on the impacts of climate change on terrestrial vegetation have consistently projected major shifts in vegetation types over much of the

continent (Neilson, 1998; Cramer et al., 2001), with interconnected impacts on wildlife habitat. Thomas et al. (2004, p. 147) stated that, "Despite the uncertainties. . .the overall conclusions. . .establish that anthropogenic climate warming at least ranks alongside other recognized threats to global biodiversity [and] contrary to previous projections, it is likely to be the greatest threat in many if not most regions." Indeed, a series of meta-analyses (Parmesan and Yohe, 2003; Root et al., 2003) have compiled evidence that physical and biological systems are already responding to the changing climate of the twentieth century.

Loomis and Crespi's (1999) analysis of the potential impact on waterfowl hunting suggested there would be virtually no change in hunter days in the U.S., however this analysis only considered the implications of climate change for the future availability of wetlands on the east coast of the U.S., while implications for the single most important waterfowl habitat region in North America, the prairie pothole region, were overlooked. The prairie pothole region is one of the most productive waterfowl regions in the world and although it only represents an estimated 10 percent of waterfowl breeding habitat in North America, the region produces 50–80 percent of the continents ducks annually (Batt, Anderson, Anderson, & Caswell, 1989). Some anticipated ecological impacts of climate change in this region include: fewer wetlands on average; shorter flooding duration for wetlands; greater annual variability in surface water; changes in agriculture and waterfowl food supply; and changes to water depth, salinity, temperature, plants, and aquatic food webs. A study by LeBlanc et al. (1991) estimated that the impacts of climate change would bring about a decline of 22 percent in duck productivity in North Dakota and concluded that this result could be approximated to the entire prairie pothole and parkland region of the U.S. and Canada. Had Loomis and Crespi (1999) used this region as the basis for their study, the outcome would have been significantly different.

Viewing wildlife and natural scenery

The viewing of wildlife and natural scenery is a broad category that encompasses a variety of activities in a variety of settings. In 2001, over 66 million Americans aged 16 or older spent over $38 billion on wildlife watching activities (U.S. Fish and Wildlife Service, 2002). Eagles et al. (2000) estimated that over 2.6 billion visitor days were spent in national-state parks and protected areas in the U.S. and Canada in 1996.

An ongoing study of the potential implications of climate change for national park visits illustrates that there are likely to be very different regional impacts (Hyslop and Scott 2007). Recreation activities in many of the parks in the northern U.S. are constrained by winter conditions, and with a lengthened and improved warm-weather recreation season, visitation to national-state parks in these regions are expected to increase. For example, Acadia national park was projected to have increased visitation of between 4–6 percent in the 2020s and 7–18 percent in the 2080s and Cuyahoga Valley increases of 3–8 percent in the 2020s and 6–22 percent in the 2080s. Other national parks projected to experience potentially large increases in visitation were Rocky Mountain, Yosemite, and Olympic. Conversely, some national parks in southern and desert states were projected to have reduced visitation, including Everglades, Mesa Verde, and Saguaro. Notable, the negative impact on visitation levels in these parks was not as great as the increase in other more northerly parks. Increased visitation would have benefits for park revenues and the economies of nearby communities, but could exacerbate visitor-related ecological pressures in some parks. The implications of a changed climate for park visitation in more southern regions of the U.S. remain uncertain however.

Although the direct impacts of a changed climate alone may increase visitation to some parks, the environmental changes resulting from alterations in climate may reduce the attractiveness of the landscape to the extent that visitation may be adversely impacted. Two studies have assessed the potential impacts of climate-induced environmental change in the Rocky Mountain region. Richardson and Loomis (2005) asked visitors to Rocky Mountain National Park how their visitation patterns (number and length of stays) might change under a series of hypothetical environmental change scenarios for the 2020s. Scott et al. (2007) used a similar approach in Glacier-Waterton Lakes International Peace Park, where they asked tourists to consider three hypothetical environmental change scenarios (for the 2020s, 2050s and 2080s) and indicate whether they would still visit the park and, if so, more or less frequently.

Richardson and Loomis (2005) found that the majority of respondents indicated that they would not change their visitation patterns to Rocky Mountain National Park under the three scenarios provided. The changes in visitation behavior resulted in a 10 percent to 14 percent increase in annual visitation under the first two scenarios, while the 'extreme heat' scenario caused a 9 percent decline in visita-

tion. The findings of Scott et al. (2007) in Glacier-Waterton International Peace Park for the 2020s were largely consistent with those of Richardson and Loomis (2005). Under the 2080s scenario, however, 19 percent of respondents reported that they would no longer visit the park and, of the 81 percent who would still visit, 37 percent stated they would do so less often. The loss of glaciers in the park was the most important reason cited for not intending to visit the park in the future.

Landscape change in parks is likely to be personally meaningful to many Americans and therefore presents an educational opportunity via interpretive programs. For example, while the loss of Glacier National Park's namesake would be a significant heritage loss, it could serve an important educational role to inform visitors about climate change.

Bird watching has undergone tremendous growth over the past 30 years in the U.S. Participation in birding among Americans grew 232 percent between 1983 and 2001 (Cordell and Herbert 2002) and today there are over 70 million bird watchers in the United States. Of the 51 recreational activities currently tracked through the U.S. National Survey on Recreation and the Environment, birding represents the 15th most popular activity (U.S. Department of the Interior, Fish and Wildlife Service 2001). Avitourism is a significant and growing tourism market. In 1996, over U.S. $6 billion was spent on trips associated with birding in the United States (American Birding Association 2002). The number of communities organizing birding festivals has increased from 12 in 1993 to over 200 in 2002 (Cordell and Herbert 2002) and birding travel routes are being established to attract avitourism.

Bird species can be affected by climatic changes in a number of ways, including changes in their habitat range, availability of food sources at certain times of the year, the timing and path of migrations, and nesting behaviour. Research suggests that climatic changes during the 20th century have already had a discernable impact on bird populations in North America (Price and Glick 2002) and Europe (Lemoine and Bohning-Gaese 2002). Climate change in the 21st century is projected to further impact the distribution and diversity of bird populations in North America. Price and Root (2001) argue that the number of neotropical migrant species present in the U.S. would decline under projected climate change, with the largest species losses in the Eastern Midwest (−30 percent), Great Lakes (−29 percent), Mid-Atlantic (−23 percent), and Southeast (−22 percent) regions. With an estimated one in every three of North American songbirds born in Canada's boreal forest Blancher 2002), the projected decline and retreat of the southern boreal forest due to climate change (Hogg and Hurdle 1995, Scott et al. 2002) has important implications for songbird populations. The degradation or loss of critical habitats (particularly key wetlands) could have a significant impact on birding destinations. The increased rarity of some species could however generate increased tourism, as birders travel further in search of these species.

Climate change impacts on the vegetation and hydrology of the New England and Midwest states could also impact recreation associated with fall foliage (leaf colour touring) that currently a highly popular and economically valuable activity in these regions. Fall colour sightseeing draws visitors from across the U.S. (Andrews 1999) and would be negatively affected by the projected decline in maple trees (which provide the bright red colour essential to spectacular fall landscapes) and a greater abundance of less colourful tree species. Vegetation modelling has projected the maple- beech-birch forest type that currently dominates the region would be replaced by the oak-hickory forest type under climate change conditions (Iverson and Prasad 1998). How people respond to changes in forest landscapes remains an important uncertainty in determining the vulnerability of fall tourism in this region (U.S. National Assessment-NE regional report 2000).

Golf

The golf industry is one of the largest recreation sectors in U.S. and one that is highly influenced by weather and climate. There are approximately 20,000 golf courses (World Golf Foundation, 2001) and according to the U.S. Census Bureau (2004), 27.6 million golfers (persons aged 12 or older who played one round or more) played 552 million rounds of golf in 2001. In 2000, golf accounted for $62 billion worth of goods and services in the U.S. and supported over 295,000 paid employees, of which $20.5 billion in revenues were generated directly at golf facilities, mainly through green fees (World Golf Foundation, 2002). By comparison, the golf sector is estimated to approximate the economic size of the motion picture industry in the United States ($57.8 billion) (U.S. Census Bureau, 2001).

Golf industry reports and professional journal articles, the golf industries in the United States are very aware of the importance of weather and climate to their business. According to the 2001 Golf 20/20 Industry Report, the single most important factor impacting rounds played [both positively and negatively each year] con-

tinues to be weather (World Golf Foundation, 2001). In a survey of 2,426 golf courses in the United States, 52 percent identified climate variability as the leading reason for lower than expected rounds played in 2000 and 2001, while 35 percent cited climatic variability as the primary reason for higher than expected rounds played (World Golf Foundation, 2004). By comparison, less than 10 percent of golf courses participating in the same survey identified the economy or course renovations in positively or negatively influencing rounds played. Another analysis of golf participation (1,849 golf courses) in the United States also identified variations in weather as the primary reason for positively (35 percent) and negatively (62 percent) affecting annual rounds played in 2003 over 2002 (National Golf Foundation, 2004).

It is clear that the North American golf industry attributes a considerable share of its economic success to weather and climate, yet surprisingly very few studies have attempted to assess the empirical relationship between weather and climate and the golf sector. The lack of research examining the impact of weather and climate on the golf industry was acknowledged by the World Golf Foundation (2001) in its 2001 20/20 Golf Industry Report. The report recommended that more analysis of rounds played and weather [and climate] was needed. The need for research into the potential impacts of climate change on the golf sector has also been acknowledged by the European golf industry. Drawing on the input of over 250 stakeholders, including course mangers, union leaders and professional organizations, the Golf Course Advisory Panel at the Royal and Ancient Golf Course of St. Andrews (Scotland) identified climate change as one of six strategic issues facing the golf industry over the next 20 years (Royal and Ancient Golf Club of St. Andrews, 2000).

Loomis and Crespi (1999) attempted to project golf participation in the United States under climate change scenario. Although they do not describe how rounds played were converted into golf days, they projected that under the arbitrary climate change scenario they used (+2. °C/4.5 °F; +7 percent precipitation), the U.S. golf industry would benefit from a 14 percent increase in golf days in the 2050s. The methodology used in this study was limited in that a single climate change scenario was applied to the entire country and as such it did not take into account climate change uncertainty by examining a range of future climates and ignored the regional differences of projected climate change in the U.S. More importantly, the study did not distinguish local and state-level golf from out-of-state tourism-based participation (e.g., golf tourism to states like Florida and Arizona from regions where golf courses are closed in winter). The model therefore projected increased participation in northern states as temperature increased, but did not subtract the diminished flow of golf tourists to states that are currently golf destinations in the winter months.

Illustrative of the regionally specific impacts on golfing are studies in southern Canada that are latitudinal (and climatological) equivalent to northern New England or Midwest states. Scott and Jones (2005) examined the influence of weather conditions and climate change on the season length and the number of rounds played in southern Ontario (Canada). The model projected that as early as the 2020s the average golf season could be one to seven weeks longer and with much improved shoulder seasons annual rounds played could increase 6 percent to 14 percent. The model results for the 2050s projected an increase in rounds played of 8 percent to 24 percent. The increase in rounds played occurs largely because of more conducive weather conditions that extend the golf season up to 16 weeks in the 2080s. Similar magnitude of impacts would be anticipated in Michigan and upstate New York and other nearby states.

To assess the full potential impact of climate change on the golf industry the implications for a full range of golf course operations in regions across the U.S. is needed. A warmer climate would lead to greater demand for turf grass irrigation in all regions. With increased competition for water in the future, climate change is anticipated to exacerbate the challenge of water supply for the industry. This is particularly the case in some of the top golf destinations in the U.S. that are projected to have acute water supply challenges in the coming decades even if climate change does not occur. Another important issue for golf operations is the potential impact of climate change on grass maintenance issues, such as turf grass selection, turf diseases and insect pests. Pests that currently have only one life cycle in northern states could adapt to new climate regimes and have two life cycles. Perhaps more importantly, there is the potential for turf grass diseases and pests currently limited to more southerly latitudes to expand into northern states and require new management interventions in the future. Future analysis of these operational issues is essential to provide insight into the potential ability of golf courses to take advantage of the opportunities projected climate change would bring.

Water Based Activities

Boating

According to the U.S. Census Bureau (2004), in 2001 Americans owned over 17 million recreational boats and made over $28.5 billion of retail expenditures on this activity. In the same year, over 4,000 U.S. marinas supported close to 25,000 employees and reported revenues in excess of $3 billion. Nearly one-third of all registered boaters in the U.S. reside in one of the eight Great Lakes states and over 1,800 marinas exist in Minnesota, Wisconsin and Michigan alone (Lindeberg and Albercook, 2000; Sousounis and Albercook, 2000). The potential implications of climate change for boating in the Great Lakes region are, therefore, of special importance from both an economic and a social perspective.

Nevertheless, despite the size of the boating industry and the number of participants involved, the impacts of climate change on boating appear not to have been addressed empirically other than in one study conducted on a national-level dataset from 1990 (Mendelsohn & Markowski, 1999). According to the analyses conducted by these authors, climate change is likely to have a positive impact on boating activity, with increases in value ranging from $1.1 billion (for a 1.5 °C increase in temperature, and increases in precipitation from 0 to 15 percent) to $13.1 billion (for a 5 °C increase in temperature, and increases in precipitation from 0 to 15 percent). However, these figures do not include consideration of the likely negative impacts of declining water levels on the Great Lakes and reservoir lakes in the western U.S. and thus, may overestimate this positive impact at the regional and local level. For example, as a result of recent drought in western states, the Colorado River Outfitters Association experienced a 40 percent decline in business, with an estimated impact of $50 million (Associated Press 2002) and water levels in the Lake Mead, the largest western U.S. reservoir with 10 million visitors annually, dropped nearly 30-meter since 1999. Each six-metre reduction in water level costs $6 million for adapting infrastructure (Allen et al. 2003).

Fishing

According to the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Fish and Wildlife Service, 2002), over 34 million Americans aged 16 or older spent over 557 million days and $36 billion on fishing-related activities in 2001. The majority of anglers (83 percent) fished in freshwater (including the Great Lakes), compared to 27 percent in saltwater. The American Sportfishing Association (2001) estimates the value of freshwater sport fishing and the associated tourism market to exceed U.S. $11 billion in North America.

A limited number of studies that have investigated the potential impacts of climate change on recreational fishing in North America. Wall (1998) provided an overview of the implications of global climate change for tourism and recreation in wetland areas, including those for fishing. For marine wetlands, he listed inundation, erosion and saltwater intrusion as three key negative impacts of rising sea levels, whereas for inland wetlands, declining water levels and loss of wetland species were noted. Such changes have important implications for water supply and equality, as well as the distributions of vegetation, wildlife (and, hence, wildlife viewing and hunting), and fish (and fishing). Wall identified the most threatened coastal and inland wetland areas as the coastal wetlands of Louisiana, and the Great Lakes, respectively.

A number of cold-water fish species are particularly sought by anglers. Studies of the potential impact of changes in water temperatures for selected cold-water species have projected negative impacts throughout the United States, including the lower Great Lakes. The U.S. Environmental Protection Agency (1995) quantified the potential economic impact of the projected losses of 50 percent to −100 percent loss in cold-water fish habitat in the Great Lakes and New England states. Their analyses suggested annual economic damages to the U.S. sportfishing industry of $320 million by the 2050s. This study also found that when alternative modelling assumptions were used, the estimated damages increased substantially, suggesting the need for further research to narrow the range of uncertainty.

A study of the impact of climate change on the recreational trout fishery in the southern Appalachian Mountains of North Carolina found that the decrease in thermal habitat for trout (82 percent of streams would no longer support brook trout) would result in an annual economic loss of $61–584 million (1995 dollars) (Ahn et al. 2000). Similar research on the thermal habitat for salmonid species in the Rocky Mountain region of the United States found that the projected 4 °C summer warming in the region would reduce habitat area by an estimated 62 percent (Keleher and Rahel 1996). In contrast, smallmouth bass, a popular warm-water sport fish species, was projected by Casselman (2002) to increase substantially in the eastern

Lake Ontario area (a 1 °C warming = 2.5 times increase in abundance, 2 °C warming = 6 times increase).

The cumulative impact and regional vulnerability of the North American sportfishing industry to climate change has not been completed, nor has there been a rigorous analysis of the potential adaptation strategies (e.g., lake stocking strategies, angler choice of species).

Beach Recreation

Coastal zones are among the most highly valued recreational areas and are primary resources for the economy of communities that exploit the sea, sun and sand for recreation. Climate change has important implications for coastal areas both through the redistribution of climate resources for beach use and the possible inundation of recreation beaches by sea level rise. An early study of beach nourishment as an adaptation strategy to preserve major recreational beaches throughout the United States estimated the cost at $14.5 billion for a 50cm sea level rise and $26.7 billion for a 1 metre sea level rise (Smith and Tirpak 1990). A regional study in Florida by the U.S. EPA (1999) reported that a 60cm sea level rise would erode beaches in parts of south Florida 30 to 60 metres unless beach nourishment efforts were expanded. The cumulative cost of sand replenishment to protect Florida's coast from a 50cm rise in sea level by 2100 is estimated at $1.7 to $8.8 billion (EPA 2003).

Diving

The reefs of the Florida Keys support a large diving and fishing industry. These activities generated an estimated $4.4 billion in revenues in a four-county area of south Florida (Johns et al. 2001). Like reef systems around the world, the reefs across this region have been under considerable human-induced stress (overfishing, pollution). Coral reefs in parts of the Caribbean and Gulf of Mexico have suffered an 80 percent decline in cover over the past 30 years (Gardner et al. 2003). Recent coral bleaching events caused by high water temperatures and scenarios for future water temperatures in the region project an imperiled future for coral reefs and related recreational diving in the region.

Snow and Ice Based Activities

Skiing

Snow-based recreation in the United States, encompassing downhill (alpine) skiing and snowboarding, cross-country (nordic) skiing, and snowshoeing, was recently estimated to contribute an estimated $66 billion to the U.S. economy and support approximately 556,000 jobs (Southwick Associates 2006). Just over 8 percent of the U.S. population (15.5 million people) participate in these forms of snow-based recreation.

The ski industry has been repeatedly identified as being particularly vulnerable to climate change and studies on the ski industry in the U.S. (Lipski and McBoyle 1991; Hayhoe et al. 2004; Casola et al. 2005, Reuer 2006) have each projected negative impacts, though to varying degrees and over different time horizons. While not all ski industry executives share his view, Patrick O'Donnell, the Chief Executive Officer of Aspen Skiing Company, recently referred to climate change as "the most pressing issue facing the ski industry today" (Erickson 2005).

Considering only changes in natural snow conditions, the ski season in the Sierra Nevada of California was projected to 3–6 weeks (2050s) and 7–15 weeks (2080s) (Hayhoe et al. 2004).

Reuer (2006) modelled potential changes in snow pack in Rocky Mountain States in the latter decades of this century, specifically the depth of snow on April 1, and projected reductions ranging from 26 percent in Teton County (Wyoming) to over 80 percent in Salt Lake County (Utah), San Miguel County (Colorado) and Taos County (New Mexico). It is not clear how such changes in the spring snow pack would translate into changes in the ski season length, so statements related to this study that the 'ski industry in the Rockies could be shut down by 2050' must be considered speculation at this time. Furthermore, these U.S. studies have a very critical limitation, in that the widespread climate adaptation of snowmaking has not been accounted for. Consequently, these studies of the impact of climate change on ski operations have likely overestimated future damages.

Studies by Scott et al. (2003, 2006, 2007a, 2007b) were the first to couple a snowmaking module using climatic thresholds and operational decision rules derived from interviews with ski area managers into a physical snow model.. Their studies found that the incorporation of snowmaking substantially lowered the vulnerability of ski areas in eastern North America through the middle of the 21st century. In a recently completed study of 14 clusters of ski areas in the U.S. Northeast (Scott et al. 2007), even with the assumption of advanced snowmaking systems in

place, the climate change scenarios consistently projected a trend toward shorter ski seasons.

Under the lower emission scenario for 2010–2039, only three study areas were projected to lose less than 10 percent of the ski season, while 10 study areas lost 10–17 percent and only the Connecticut location lost more than 20 percent. In 2040–2069, ski season losses were not substantially higher, with only the Connecticut location projected to lose greater than 25 percent of its ski season. The level of climate change impact increased in the 2080s where half of the study areas were projected to lose 25 percent or more of their ski season. The higher emission scenario had a much greater impact on the length of ski seasons in the region, especially in 2040–2069 and beyond. In 2040–2069, eight of the study areas were projected to lose 25 percent or more of their ski season. By 2070–2099 all 14 of the study areas had lost at least 25 percent of the ski season and half of the study areas lost 45 percent or more.

In order to limit ski season losses to the levels described above, snowmaking requirements were projected to increase throughout the Northeast. Under the lower emission scenario for 2010–2039, snowmaking requirements would increase by at least 25 percent at half of the study areas. In 2070–2099, climate change had distinctly different impacts on snowmaking requirements. Five of the study areas were projected to require at least 50 percent more snowmaking and increases of 25 to 49 percent were projected for an additional four locations. The remaining five study areas were projected to make the same amount or less machine-made snow in 2070–2099 than 2040–2069 due to the inability to make snow in unsuitably warm temperatures during the early and latter part of the current ski season.

The higher emission scenario again had a much greater impact on snowmaking requirements. In 2010–2039, nine of the study areas were projected to require at least 25 percent more machine-made snow. In 2070–2099, three study areas were projected to require over a 100 percent increase in machine-made snow and four other locations require at 50 to 99 percent more machine-made snow. Snowmaking was projected to decline relative to 2040–69 in five locations (West Pennsylvania, East Pennsylvania, Southeast New York, West New York, and Connecticut) where warm temperature made it unfeasible during parts of the winter months.

The large increases in snowmaking requirements under climate change also raised important questions about the sustainability of this critical adaptation strategy in certain locations. Communities and environmental organizations have expressed concern about the environmental impact of water withdrawals associated with snowmaking. Under the higher emission scenario, where a 50–100 percent increase in snowmaking was modelled at several locations, water conflicts may be heightened and access to water may be a critical constraint for future snowmaking. The economic costs of increased snowmaking (energy and water costs) were not factored into this assessment because the detailed economic information required is not publicly available, and this remains a critical uncertainty for the future profitability of ski areas in the region.

Based on this analysis, it would appear that it is not the Northeast ski industry that is at risk to climate change but rather individual ski businesses and communities that rely on ski tourism. The probable consequence of climate change will be a continuation of the historic contraction and consolidation of the ski industry in the region. It will be the relative advantages of local climatic resources and the adaptive capacity of individual ski areas that will determine the 'survivors' in an era of climate change. Although projected climate change would contribute to the demise of ski businesses in some parts of Northeast, it could advantage some of the ski operations that remain. Assuming that skier demand declines only to the level observed in the climate change analogue winter of 2001–02 (approximately 10 percent fewer skier visits), then ski businesses in Vermont, Northeast New Hampshire, Northeast New York, and West Maine would be in a position to gain market share (through diminished competition) and potentially offset revenue losses due to reduced ski seasons and higher snowmaking costs.

Large corporate ski conglomerates like Intrawest, the American Skiing Company, Boyne USA Resorts and Booth Creek Resorts may be less vulnerable to the impacts of climate change than single ski operations because they generally have more diversified business operations (real estate, warm-weather tourism resorts and four-season activities), are better capitalized (so that they can make substantial investments in snowmaking systems) and, perhaps most importantly, are regionally diversified (which reduces their business risk to poor snow conditions in one location).

Snowmobiling

According to the International Snowmobile Manufacturers Association (ISMA, 2004), there are approximately 1.77 million registered snowmobiles in the United

States. ISMA estimates the economic impact of snowmobiling is equal U.S. $20 billion per annum in the U.S.; over 85,000 full time jobs are generated by the snowmobile industry in North America, including those in manufacturing, dealerships and tourism related businesses (ISMA, 2004).

Due to the long, linear nature of snowmobile trails, snowmaking is rarely a viable adaptation option and the snowmobile industry relies almost exclusively on natural snowfall. As such, several studies have found that snowmobiling is more vulnerable to the negative impacts of climate change than is downhill skiing. A recent study of snowmobiling seasons in 15 study areas in the Northeast (Scott et al. 2007) found that the climate change scenarios consistently projected a trend toward shorter snowmobile seasons throughout the Northeast and a northward shift in the southern margin of snowmobiling activity. As early as 2010–2039, four of the 15 study areas are projected to lose more than 50 percent of their snowmobiling season under the lower emission scenario and six locations under the higher emission scenario. The majority of the 15 locations examined in this study were projected to have marginal or non-existent snowmobile seasons in 2040–2069 under both lower and higher emission scenarios. Consequently, the loss of snowmobiling activity and related tourism would appear unavoidable in the following locations if the climate change scenarios projected for 2040–2069 were realized: Western New York, North-central Pennsylvania, Southeast New York, South-central Pennsylvania, East Pennsylvania, West Massachusetts, South New Hampshire, and Northeast New York.

The implication of a substantial decline in nearby opportunities for snowmobile participation remains an important uncertainty. If participation remains unchanged or declines only slightly, the few locations that are projected to continue to have sufficient natural snow for snowmobiling later into the 21st century (North-central New York, North Vermont, South Vermont, North New Hampshire, Northeast Maine, and Northwest Maine) may be in a position to market their area to winter recreation enthusiasts and potentially benefit from a change in the competitive relationships between winter recreation destinations. Further research is needed to understand the influence of distance costs and destination loyalty on changes in snowmobile patterns as well as the environmental implications of a greater concentration of snowmobile activity on the remaining trails with reliable snow conditions.

Given the projected reductions to an already short snowmobile season in much of Northeast, it is possible that snowmobilers may choose to discontinue the use of their snowmobile and adopt another type of recreational vehicle that is not limited by snow conditions (i.e., all-terrain vehicles [ATVs]) or perhaps a completely different form of recreation. Growing ATV and declining snowmobile sales in the U.S. over the last five years may provide evidence to suggest that the transition is already underway in some regions (Suthey Holler Associates 2003). If a large number of snowmobilers in the region adopt this climate adaptation strategy there would be important implications for land managers and communities, including recreational planning and infrastructure development, to minimize the environmental impacts of trail use by ATVs. Under such a scenario, communities that developed recreational trail networks for ATVs might gain a competitive advantage over communities that continue to cater to snowmobiles.

CONCLUSIONS

Although the aforementioned examples of potential climate change impacts discussed are no means exhaustive, it is clear that climate change has far-reaching consequences for U.S. recreation and the recreation businesses and industries. Importantly, it must be emphasized that climate change will have both negative and positive impacts on recreation sector in the U.S. creating both threats and opportunities for both participants and recreation providers. There will be 'winners and losers' at the business and community level, and each will need to adapt to climate change but in different ways (e.g., adapting to employment and economic losses versus congestion and development pressures). As the tourism and recreation section of the IPCC (2001) North American chapter (section 15.2.6) concluded, until systematic regional and industry level assessments are conducted a definitive statement of the net economic or social impacts for this sector will not be possible. At the community level, the magnitude of the impact of climate change will depend upon the importance of the recreation industries in the regional economy, the characteristics of climate change and its affect on the natural environment, the adaptive response of recreationists, the capacity of recreation businesses adapt to climate change, and how the impacts of climate change interact with other long-term influencing variables in the recreation sector (globalization and economic fluctuations, fuel prices, aging populations in industrialized countries, increasing travel safety and health concerns, increased environmental and cultural awareness, advances in

information and transportation technology, environmental limitations—water supply and pollution—and so on).

Finally, because climate change is already entering into decisionmaking in the recreation sector it is in the best interest of the recreation industry and applicable government agencies (federal, state and local levels) to engage in collaborative research to determine the potential implications of climate change issue, in order to best prepare recreation businesses and communities to minimize the risks and capitalize upon the opportunities likely to be brought about by climate change in an economically and environmentally sustainable manner.

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RESPONSES BY DANIEL SCOTT TO ADDITIONAL QUESTIONS FROM SENATOR BOXER

Question 1. Dr. Scott Glacier National Park in Montana once had 150 named glaciers. Now, it has 26. A U.S. Geological Survey study estimates that all of the park's glaciers could disappear by 2030.

Are you familiar with this study? If we do not reduce greenhouse gas emissions, could global warming have the same devastating impacts on winter recreation in other areas during this century?

Response. Yes, I am familiar with this study in Glacier National Park. In terms of glacial retreat, similar trends are being observed in other areas of the Rocky Mountains and similar projections of future large-scale melting of glaciers are projected throughout the Rocky Mountains in the United States and southern Canada (see the report of the IPCC 2007—"The Physical Science Basis"). This may have important impact for landscape aesthetics and the number of people who visit Glacier

National Park and other parks where glaciers are projected to retreat substantially (see surveying of tourists in Waterton and Banff National Parks in the southern Canadian Rockies—Scott et al. 2007).

With respect to the implications of climate change for winter recreation and tourism, large impacts are projected for snow-based winter sports, such as skiing and snowmobiling, in the United States. The ski industry has been repeatedly identified as being particularly vulnerable to climate change and studies on the ski industry in the United States, with several recent studies (California—Hayhoe et al. 2004; Pacific Northwest—Casola et al. 2005, Rocky Mountains—Reuer 2006, Aspen Colorado—Aspen Global Change Institute 2006, New England—Scott 2007) projecting negative impacts, though to varying degrees and over different time horizons. Information on the impact on snowmobiling is currently more limited, but the available research suggests that snowmobiling is more vulnerable to the negative impacts of climate change than is downhill skiing because snowmaking is not a viable adaptation strategy. A recent study of snowmobiling seasons in 15 study areas in the Northeast (Scott 2007) found that the climate change scenarios consistently projected a trend toward shorter snowmobile seasons throughout the Northeast and a northward shift in the southern margin of snowmobiling activity. The majority of the 15 locations examined in this study were projected to have marginal or non-existent snowmobile seasons in 2040–2069 under both lower and higher emission scenarios.

Question 2. Dr. Scott, describe the potential impacts from global warming without reducing greenhouse gas emission, on the frequency and intensity of fires and outbreaks of pests as well as water availability in the forests of the western United States during this century?

Please also describe the potential impacts that these factors could have on residences, businesses, and public safety, as well as on resorts and outdoor recreation.

Response. There are a number of studies on these topics done by experts in each respective field of climate change impact assessment (wildfires, pests and vegetation disturbance regimes, water resources). Research results from the USDA Forest Service Pacific Northwest (PNW) Research Station in 2004 suggest an increased fire risk throughout most of the region. The combination of drought stress, which weakens trees to pest disturbance, and improved climatic conditions for certain insect pests, allowing some to expand their range or have more than one annual breeding cycle, are anticipated to lead to an increase in large outbreaks in much of Western United States. The magnitude of the impact of climate change varies by individual pest species and by region. Thus, expert sources such as 'Climate Change Impacts on the United States' (2000) and the IPCC 4th Assessment Report—"Impacts, Adaptation and Vulnerability" (2007) should be consulted for further information on specific regions of interest. Increased wildfire and pest disturbance are anticipated to have negative impact on the recreation sector through adverse impacts on landscape aesthetics and in severe cases increased risk to recreation infrastructure and public safely.

There are also many credible studies of the implications of climate change for water resources in the Western United States (for summaries see: 'Climate Change Impacts on the United States' 2000 and the IPCC 4th Assessment Report—"Impacts, Adaptation and Vulnerability" 2007). The reduced availability of water resources due to population-economic growth and climate change are projected to have many impacts for the recreation sector, including the future viability of some forms of recreation (e.g., golf course irrigation in desert regions like Las Vegas). The affects of reduced water resources on recreation can already be seen in the region. For example, as a result of recent drought in western states, the Colorado River Outfitters Association experienced a 40 percent decline in business, with an estimated impact of $50 million (Associated Press 2002) and water levels in the Lake Mead, the largest western U.S. reservoir with 10 million visitors annually, dropped nearly 30-meter since 1999. Each six-metre reduction in water level costs $6 million for adapting infrastructure (Allen et al. 2003).

Question 3. Dr. Scott, the Sierra Nevada snowpack provides California with water storage and winter sports opportunities. The State of California has said that by 2064 this snowpack could decrease by up to 47 percent, and by the end of the century it could decrease by up to 90

What impact would such diminished water supplies have on the outdoor recreation industry, both winter and summer, particularly with anticipated drinking water and agricultural water needs?

Response. As studies have indicated, if such declines in the snow pack were realized the impacts on various sectors of the California economy would indeed be significant. I will limit my remarks to my area of expertise, the recreation-tourism sec-

tor. The impact of such a decline in the natural snow pack would have a very negative impact on the skiing industry. Initially, more snowmaking would be required, driving up operating costs and prices to consumers. Importantly, as other sectors will be requiring additional water resources, snowmaking may not be an option for some ski operators that cannot acquire adequate water rights. Without snowmaking, many ski areas are likely to be put out of business under high-emission climate change scenarios for mid-21st century. The impacts on summer recreation will not be as dramatic, but some negative impacts are likely where limited water supplies limit the capacity of recreation use in some high visitation areas, such as parks, or for activities that require certain water volumes or temperatures in lakes and streams, such as rafting or fishing.

Question 4. Dr. Scott, can you describe the potential impacts of climate change on southern California's summer outdoor recreation season in the middle and late part of this century if we do not reduce greenhouse gas emissions?

Response. Very little research has been done on this question and it remains an important area for future study given the economic importance of this sector in southern California. Generally speaking the climate resources for tourism in southern California would deteriorate under high-emission scenarios as the following figure from one of my studies suggests (Scott et al. 2004). The decline in the 'tourism climate index' in the Los Angeles area is the result of increased heat stress in the summer months (see notable decline in June-July-August-Sept in the British HadCM3 scenario). The decline in climatic suitability for general tourism activities also suggests the climatic conditions for many general recreation activities, like camping, golfing, hiking would decline in the peak summer months as well due to excessive heat.

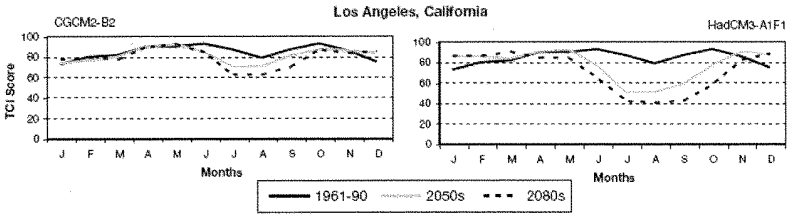

Fig. 9. Projected monthly change in TCI rating under climate change

Question 5. Dr. Scott, what impact could climate change have on snowmobilers across the United States, including the Northeast, Midwest, and western states by the middle and late pan of this century if we do not reduce greenhouse gas emissions?

Response. A recent study I conducted of snowmobiling seasons in 15 study areas in the Northeast (Scott 2007) found that the climate change scenarios consistently projected a trend toward shorter snowmobile seasons throughout the Northeast and a northward shift in the southern margin of snowmobiling activity. The majority of the 15 locations examined in this study were projected to have marginal or non-existent snowmobile seasons in 2040–2069 under both lower and higher emission scenarios. Consequently, the loss of snowmobiling activity and related tourism would appear largely unavoidable in the following locations if the climate change scenarios projected for 2040–2069 were realized: Western New York, North-central Pennsylvania, Southeast New York, South-central Pennsylvania, East Pennsylvania, West Massachusetts, South New Hampshire, and Northeast New York. I have provided further details about the anticipated regional impacts on these two multi-billion dollar industries in my written testimony.

No studies specific to the Midwest are available, however a study of the potential impact of climate change on snowmobiling in southern Canada found that under the high emission scenario for the 2050s, a reliable snowmobiling season would be essentially eliminated from Canada's non-mountainous regions (McBoyle et al. 2007). Given the Midwest is more southerly in latitude than the study areas in the Canadian study, the anticipated impacts would be of a similar magnitude, if not more severe or sooner.

Question 6. Dr. Scott, if we do not reduce greenhouse gas emissions, what impact could climate change have on New England's fall tourist season, particularly on recreational opportunities involving fall foliage?

Response. Climate change is anticipated to negatively impact tourism associated with the viewing of fall foliage (leaf colors) (Bloomfield and Hamburg 1997, Union

of Concerned Scientists 2007) due to the northward shift in the range of species with colourful leaves, such as maple and aspen (see modeling by Iverson and Prasad 1998).

Question 7. Dr. Scott, what impact could climate change have on bird watching and hunting, including migratory birds, in the middle and late part of this century if we fail to reduce greenhouse gas emissions?

Response. The 'The Birdwatcher's Guide to Global Warming' (Price and Glick 2002) outlines the concerns of the bird watching community about the potential impact of climate change on their recreation. Bird species can be affected by climatic changes in a number of ways, including changes in their habitat range, availability of food sources at certain times of the year, the timing and path of migrations, and nesting behaviour. Research suggests that climatic changes during the 20th century have already had a discernable impact on bird populations in North America (Price and Glick 2002) and Europe (Lemoine and Bohning-Gaese 2002). Climate change in the 21st century is projected to further impact the distribution and diversity of bird populations in North America. Price and Root (2001) argue that the number of neotropical migrant species present in the United States would decline under projected climate change, with the largest species losses in the Eastern Midwest (−30 percent), Great Lakes (−29 percent), Mid-Atlantic (−23 percent), and Southeast (−22 percent) regions. With an estimated one in every three of North American songbirds born in Canada's boreal forest Blancher 2002), the projected decline and retreat of the southern boreal forest due to climate change (Hogg and Hurdle 1995, Scott et al. 2002) has important implications for songbird populations. The degradation or loss of critical habitats (particularly key wetlands) could have a significant impact on birding destinations. The increased rarity of some species could however generate increased tourism, as birders travel further in search of these species. There are also negative impact projected for many duck populations that are important resources for hunters in the Midwest and elsewhere (LeBlanc et al. 1991, Wildlife Society 2004).

Question 8. Dr. Scott, what impact of climate change have on the recreational industry of the Southwestern United States in the middle and late pan of this century if we do not reduce greenhouse gas emissions?

Response. There is little research available on the potential impact of climate change to the recreation sector in this region of the United States. However, probably the two most important potential impacts of climate change for the recreation sector will be to increase temperature extremes and exacerbate existing water supply problems. Increased temperatures may further restrict participation in certain recreation activities during parts of the year, due to heat stress risks and may bring high water users, like golf courses, into conflict with other water uses. However, further research is needed if we are to understand the potential magnitude of impacts.

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Senator BOXER. Thank you very much, sir.

Tom Campion, founder of Zumiez, we welcome you.

STATEMENT OF TOM CAMPION, FOUNDER, ZUMIEZ, INC.

Mr. CAMPION. Chairman Boxer, thank you for inviting me to come to talk today.

Good morning, Senators. My name is Tom Campion and I am the founder and chairman of Zumiez, Inc. We are a chain of more than 250 action sports retail stores located in 24 States. Ten of these States are represented by members of your Senate committee, including California, New York, New Jersey, Minnesota, Montana, Idaho, Wyoming and Oklahoma.

Over the last 29 years, we have built an incredible business in serving the teenage surf, skateboard, and snowboard lifestyles, the action sports market. We are one of the largest retailers in the United States for snowboard hard goods and winter-related apparel.

The growth in this segment of retail has contributed to our having yearly comparable stores sales gains in 28 of our 29 years in existence. We currently employ over 3,000 people in the United States and expect to grow our employee base by about 20 percent

a year. Our long-term success has allowed the company to go public in 2005 and our business plan includes expanding to 800 stores nationwide over the next 10 years.

I am here today to speak about the impacts of global warming on the outdoor recreation industry, which is the winter component of my action sports business. Enclosed, Senators, with my written comments, is a list showing over 7,000 retail store locations in the United States that carry winter-related outdoor products.

While my comments speak specifically to outdoor recreation specialty retailers, global warming will affect all clothing retailers in major parts of the United States. Senators, I have been in the clothing business for over 37 years. It has been my experience that weather is the single biggest influence on the purchase of clothes, larger even, in my 37 years in retail, than the state of the economy.

Weather is a very powerful motivator. When it gets cold, you buy a jacket. You purchase gloves and a knit hat. When it turns warm, you buy a T-shirt and shorts. Without changes in weather or seasons, customers would shop more sporadically and respond more to fashion cycles, and often it can be very disruptive to retailers.

This past winter, we saw unseasonably warm weather in the Midwest and the Northeast United States, where Zumiez has over 70 stores. This season, the sales of winter apparel and winter-related hard goods were down dramatically. The lack of sales resulted in lower employment levels in the region and lower payment of State sales taxes. The shortened winter season reduced consumer demand for winter products, and led to the backing-up of seasonal inventories and the necessity of early markdowns of these products.

I will give you one small example. Zumiez has 40 stores between New York and New Jersey. Senator Lautenberg, we have 12 stores currently in New Jersey and plan to add about 12 more in our business plan. Our comparable store sales just in snow-related hard goods, (snowboards and bindings and snow-related soft goods, which would be the jackets, pants, base layers), in the same stores were over 20 percent less than comparable store sales the year before. These figures were even more significant because the drop occurred during the heavily-weighted Christmas gift-giving season.

But when winter did arrive in late January, our profits margins by then were seriously eroded because customers expect in January and on to buy heavily marked-down products this deep into the season.

Clothing taxes are heavily weighted on the sales in the fourth quarter of the year, which is Christmas and the bulk of the winter shopping season. When winters are warmer or come late, margins erode. Merchandise backs up, employment levels suffer, and States lose an historic resource for their State budgets.

Just in New York State alone in the last 2 months of 2005, Zumiez, with our 28 stores, in the last 2 months paid over $200,000 in city, county and State sales taxes on our winter-related hard goods and soft goods. If you consider the over 7,000 retail store locations across the country carrying winter-related products, you can understand the contribution of our business sector to the economy, and can imagine the potential economic effect of warmer winters across the country.

But the economic effects of global warming on retail sales will go far beyond just the stores that specialize in sales of outdoor apparel. One example would be the ski resort industry. The skiing season's length and the quality of downhill skiing and snowboarding will be strongly affected in the coming years. Revenues in ski areas will likely decline due to lack of snow, and some areas such as your Sierra Nevadas, it could be completely lost to the sport.

Senators for almost 30 years, I built my business based in large part on supplying the winter needs for my market for where I am now in the United States. I am really successful at what I do, enough to grow to 250 stores. I have overcome every business challenge in the last 30 years. But if I am going to execute the business plan I have told the public markets, and grow to 800 stores—and personally our company could add 7,000 employees to the economy of the United States—I need your help. We need to acknowledge that global warming is here, and that it is bigger than any one business sector can handle and deal with on its own. As a country, we need to start dealing with global warming now.

Thank you very much.

[The prepared statement of Mr. Campion follows:]

STATEMENT OF TOM CAMPION, FOUNDER, ZUMIEZ, INC.

Good morning. My name is Tom Campion. I'm the founder and chairman of Zumiez Inc., a chain of more than 250 action sports retail stores that are located in 24 states. Ten of these states are represented by members of your Senate committee, including California, New York, New Jersey, Minnesota, Montana, Idaho, Wyoming and Oklahoma. Over the last 29 years we have built up an incredible business in serving teenage surf, skateboard and snowboard lifestyles: the Action Sports market. We are one of the largest retailers in the United States for snowboard hard goods and winter-related apparel. The growth in this segment of retail has contributed to our having yearly comparable store sales gains for 28 of our 29 years in business. We currently employ over 3,000 people and expect to grow our employee base by 20 percent a year. Our long-term success allowed the company to go public with a stock offering in 2005, and our business plan includes expanding to 800 stores nationwide over the next ten years. To learn more about Zumiez, I would refer you to our public SEC filings.

WEATHER AND CLOTHING PURCHASES

I'm here today to speak to the impacts of global warming on the outdoor recreation industry, the winter component of my action sports business. Enclosed with my written comments is a list showing 7,000 retail locations in the United States that carry winter-related outdoor recreation products.

While my comments speak specifically to outdoor recreation specialty retailers, global warming will affect all clothing retailers in major parts of the United States. I've been in the clothing business for 37 years, and in my experience weather is the single biggest influence on purchases of clothes—larger even than the health of the economy. Weather is a very powerful motivator: when it gets cold you buy a jacket, you purchase gloves, a knit hat, and other items. When the weather turns warmer you buy a pair of shorts and a T-shirt. Without changes in weather customers shop more sporadically and in response to fashion cycles which can be very disruptive.

CLOTHING SALES DOWN DRAMATICALLY LAST WINTER

This past winter saw unseasonably warm weather in the Midwest and the Northeast United States, where Zumiez has over 70 stores. This season the sales of winter apparel and winter-related hard goods were down dramatically. The lack of sales resulted in lower employment levels in the region, and lower payments for state sales taxes. The shortened winter season reduced consumer demand for winter products and led to a backing-up of seasonal inventories and the necessity for early markdowns of products.

Let me give you one small example from this last winter season: Zumiez has 40 stores between New York and New Jersey. There was no snow—or even significant cold weather—until late January 2007. Our comparable store sales in snow-related hard goods (snowboards, snowboard boots, bindings, gloves, goggles, and snow accessories) were down approximately 20 percent from the previous year. Snow-related soft goods (jackets, pants, base layer, etc.) in the same stores were more than 20 percent lower in comparables than the same categories company-wide. These sales figures are even more significant because the drops occurred during the heavily-weighted Christmas gift-giving season. Though winter did arrive in late January, our profit margins by then were eroded because customers expect to buy heavily marked-down products this deep into the season.

Clothing taxes are heavily weighted on sales in the 4th quarter of the year, which is Christmas and the bulk of the winter shopping season. When winters are warmer or come late, margins erode, merchandise backs up, employment levels suffer and states lose an historically solid resource for their state budgets.

Just in New York state in the last 2 months of 2006, Zumiez stores paid over $200,000 in city, county, and state sales taxes on snow-related hard goods and soft goods. If you then consider that over 7,000 retail store locations carry winter-related products nationwide, you can understand the contribution of our business sector to the economy, and can imagine the potential economic effect of warmer winters across the country.

IMPACTS TO SKI RESORTS

But the economic effects of global warming on retail sales will go far beyond just the stores that specialize in the sales of outdoor apparel. It will dramatically affect many retailers of winter sports, products and business, as well as traditional businesses. One example is the ski resort industry. The skiing season's length and the quality of downhill skiing and snowboarding will be strongly affected in the coming years. Revenues in ski areas will likely decline due to a lack of snow, and some areas (such as in the Sierra Nevada) may be completely lost to the sport.

IMPACTS TO SPORTS EQUIPMENT EXPORTS

The trend towards warmer winter weather and the negative effects on snowfall and accumulation are also being seen in Europe and Asia. Snowfalls in Europe were down significantly this season, with very negative effects on the downhill skiing industry. Europe had the warmest December since records began in 1879. The Organization for Economic Cooperation and Development warned that many low-level resorts could soon be unviable, and predicted warmer temperatures in the future. Already, some banks are refusing to offer loans to resorts that are located at elevations under 5,000 feet (1,500 metres) due to fears for future snow cover. Germany is threatened the most, followed by some Austrian and Italian resorts. This in turn had negative economic consequences for the United States because American manufacturers export winter sports equipment to Europe and Asia.

IMPACTS TO BUSINESS CYCLES

The negative economic effects of global warming on winter apparel and sports equipment suppliers would mean fewer jobs in the future in these businesses. The lower revenues would mean that these businesses would purchase fewer materials, goods, and support services from other companies. These direct and indirect effects would result in a decrease in household income for many families, and would induce additional negative impacts as these households decrease their purchases from local businesses. The local economic impacts could be quite severe in an area that depends heavily on the health of a winter sports resort or business. Local land values could fall, and government costs and revenues could be greatly affected.

IMPACTS TO ECOSYSTEMS AND NATURAL PROCESSES

The climate changes that will come to pass from global warming will ultimately affect the income, wealth, environment, and quality of life both overall and for particular groups of people. Changing ecosystems will affect the numbers and distribution of many plants and animals. Some of these changes will be subtle, but others may be dramatic, as in the retreat of cold-adapted species and the expansion of the range of various pests that do not tolerate cold or freezing conditions. Reductions in snowpack would have very negative consequences in the Pacific Northwest, where river flows, public water supplies and salmon habitat are all strongly dependent on the contribution of snowmelt. Reduced river flows would also affect river sports (boating, fishing, etc.)

Throughout the West, warmer dryer conditions would increase the occurrence fires and increase the difficulties of controlling such fires. Diminished water and higher fire seasons might also lead to more limited access to summer recreational opportunities and impacts to camping and hiking equipment and clothing purchases.

I've included some additional materials with my comments that provide some figures on the winter sports industry and business, and that show the economic contribution of these businesses to all regions of the United States. A few references are also provided to some of the literature about global warming and its effects.

Climate change poses a serious challenge to social and economic development in all countries. I'd like to recommend that the United States take a positive and leadership role in responding to and addressing global warming. Ten bills have been introduced in Congress to initiate this greater response. While the particular mix of measures varies between the bills, the reduction of CO_2 contributions and the overall reduction of atmospheric CO_2 must be our objectives. The analysis by the World Resources Institute indicate that at this point, the measures in S. 309, the Sanders-Boxer bill in the Senate and the corresponding H. 1590 in the House, would best accomplish these objectives.

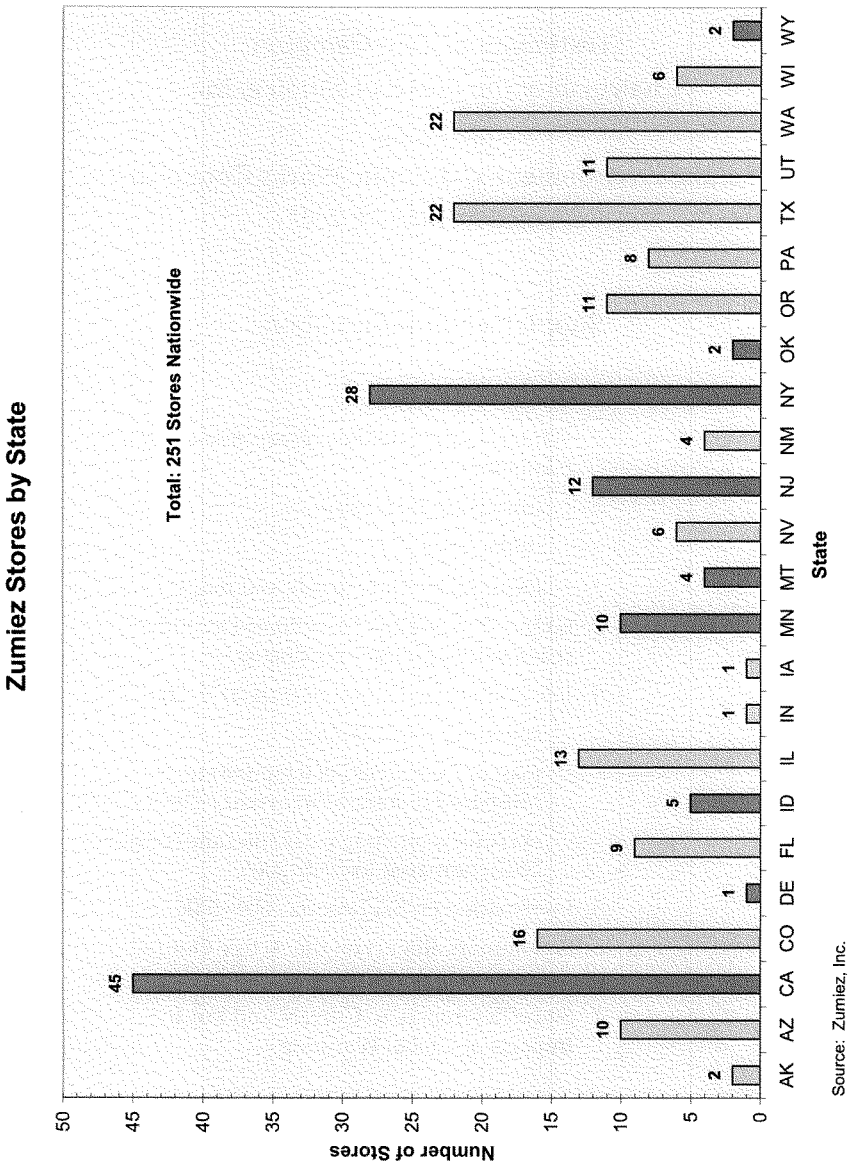
Senators, for almost 30 years I've built up my business, based in large part on supplying the needs of the winter season in the United States. I've been very successful—enough to expand to 250 stores. I've overcome every business challenge to date. But if I'm going to execute my business plan to grow to 800 stores and employ an additional 7,000 people, I need your help. We need to acknowledge that global warming is here and that it is bigger than any one business sector can handle on its own. As a country we need to start dealing with global warming now.

Testimony of Tom Campion
Chairman of the Board of Zumiez, Inc.

before the
Senate Environment and Public Works Committee
Thursday May 24, 2007

Supplemental Information

1. Zumiez stores by state
2. Winter Sports retailers, resorts and other businesses
   - number of businesses
   - dollar sales
   - locations by state (totals and map)
3. Graph showing the November-December seasonality of winter product sales
4. Information on Winter Season 2006–2007
   - summary information
   - map of December 2006 temperatures compared to long-term average (1971–2000)
   - ski resorts opening early/on time/late 2006–2007 compared to 2005–2006
5. Information on Ski Resorts 2004–2006
6. A Summary Report on the Active Outdoor Recreation Economy
7. Some References to Current and Future Impacts of Global Warming



Source: Zumiez, Inc.

Retailers, Resorts & Other Companies

that purchase Snow Sport products from
suppliers & manufacturers

U.S. Winter Sports Stores and Companies*	**Number**
Specialty & Chain Retail Storefronts that sell skis and/or snowboards	5,000
Other Specialty & Chain Stores that sell apparel or accessories related to winter sports	2,000
Ski Areas / Resorts includes private and mixed-use areas	1,000
Miscellaneous includes: corporate buyers, guides, distributors, government agencies, military, schools, department stores, race teams, heli-ski operators, *etc.*	500
Total U.S. Winter Sports Stores and Companies	**8,500**

*Companies that purchase winter sports products to sell at retail, to rent, or to use for promotional or professional purposes

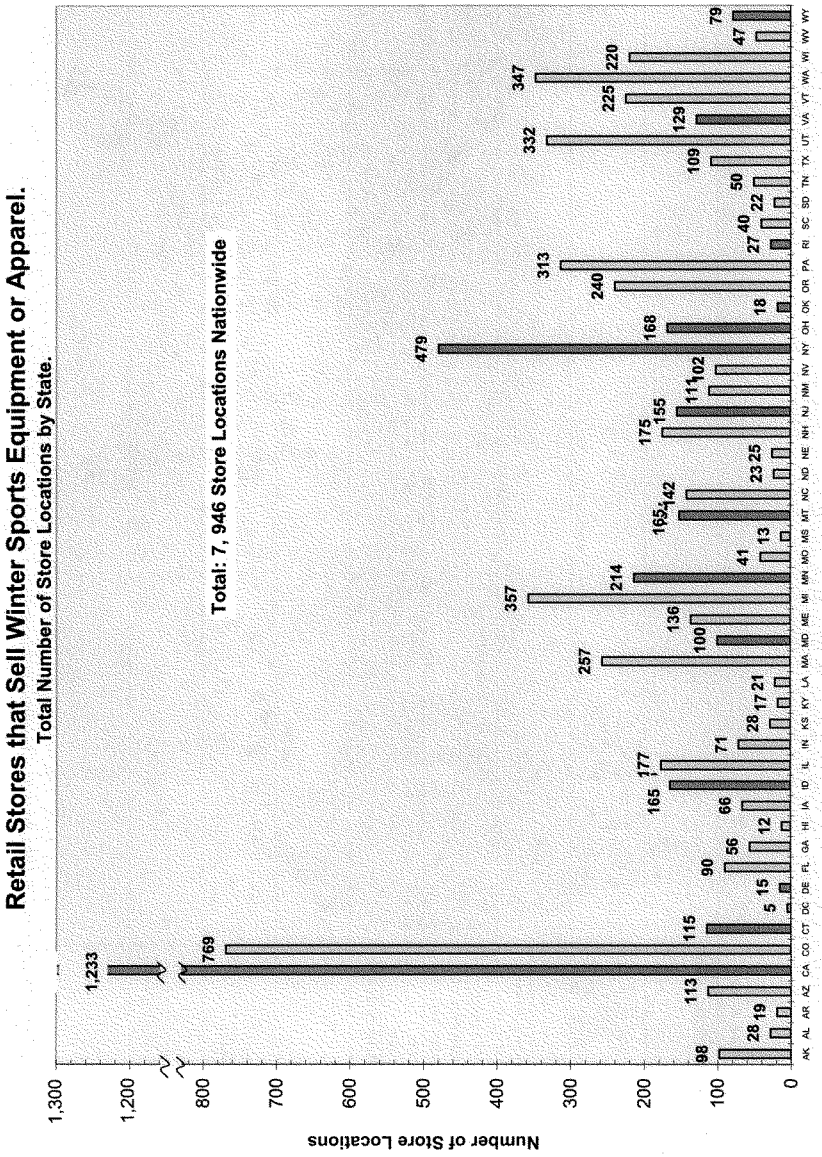
Source: Estimates from the SnowSports Industries America (SIA) Retail Database

Dollar Sales in Snow Sports Products

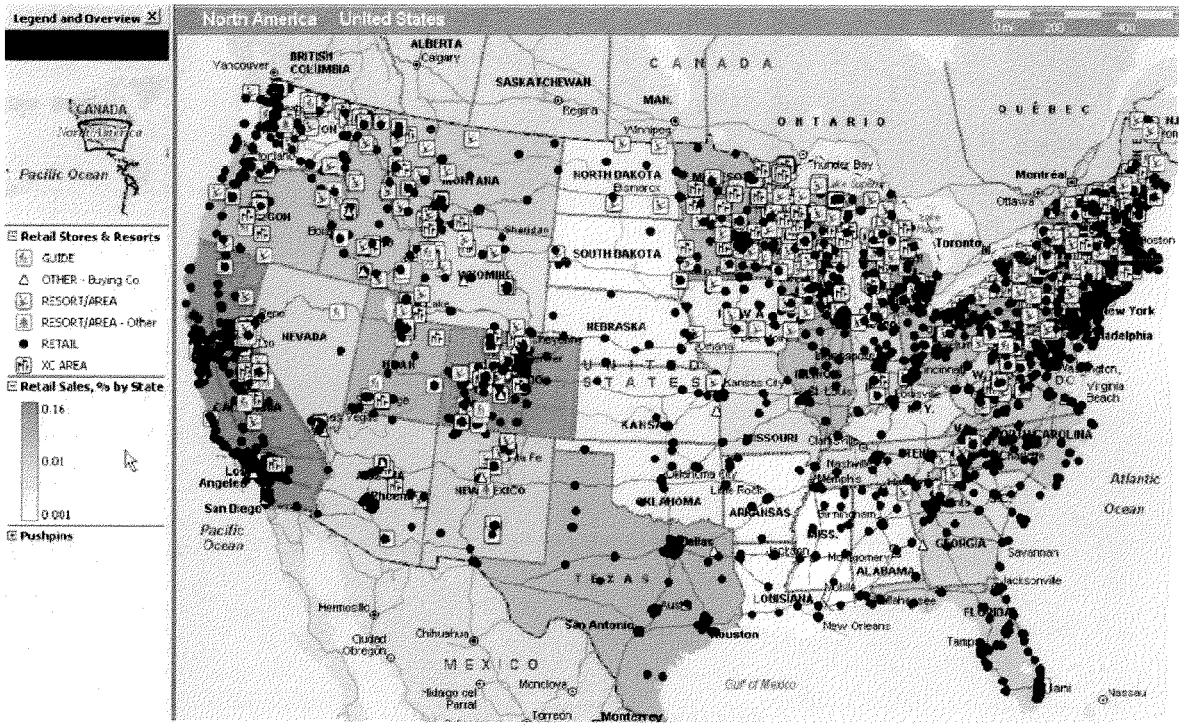
Sales in Specialty and Chain Stores
August 2005 – March 2006

Channel of Distribution	Equipment	Apparel	Accessories	All Snow Sports Products
Specialty	$618,013,037	$604,023,546	$576,765,466	$1,798,802,048
Chain	$146,534,004	$223,554,825	$168,754,582	$538,843,412
Total	**$764,547,041**	**$827,578,371**	**$745,520,048**	**$2,337,645,460**
Percent of Total Dollar Sales	*33%*	*35%*	*32%*	

Source: SnowSports Industries America (SIA) Retail Audit


Retail Stores that Sell Winter Sports Equipment or Apparel.
Total Number of Store Locations by State.
Total: 7, 946 Store Locations Nationwide
Number of Store Locations
State
Source: SnowSports Industries America (SIA) Retail & Resorts Data

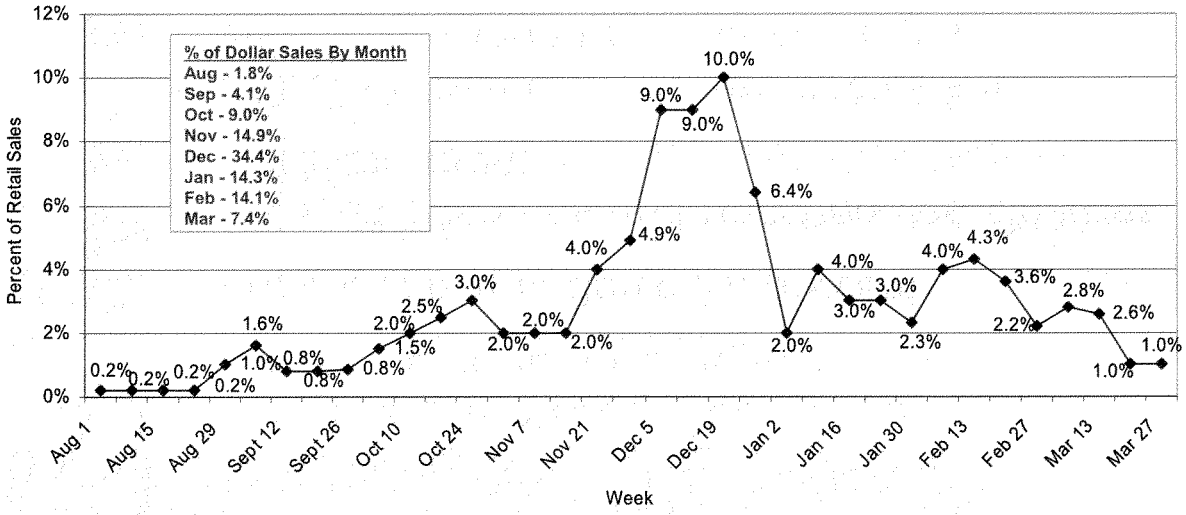
Winter Sports Retail Stores and Resorts



Source: SnowSports Industries America (SIA) Retail Database

Seasonal Sales of Snow Sports Products

Percent of Dollar Sales in Specialty and Chain Stores By Week*
August 2005 – March 2006



*The day represents the Monday of the week and the percent sales is for the following seven days.
Source: Estimates by Leisure Trends Group Retail Tracking Audit

Summary Observations on the 2006-2007 Winter Season

- Warm temperatures & below-average snowfall in 4 out of 5 regions
- Annual snowfall down 22 percent
- Delayed openings and unscheduled closures were common
- 2/3 of ski resorts reported declines in visitation, though revenues remained relatively solid

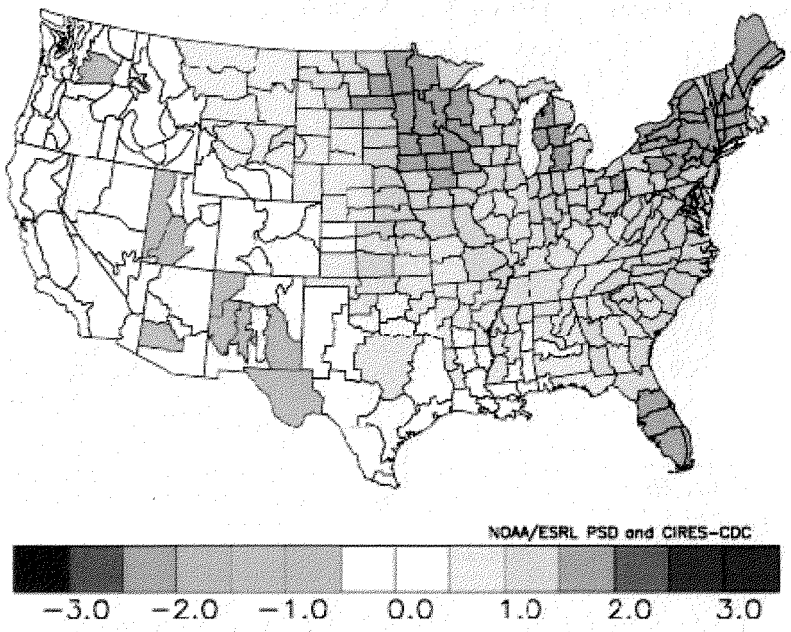
2006-2007 skier visits are extrapolated from 178 reporting resorts

These resorts account for 42.0 million visits

Source: **The State of the Industry Report, 2007. The National Ski Areas Association**

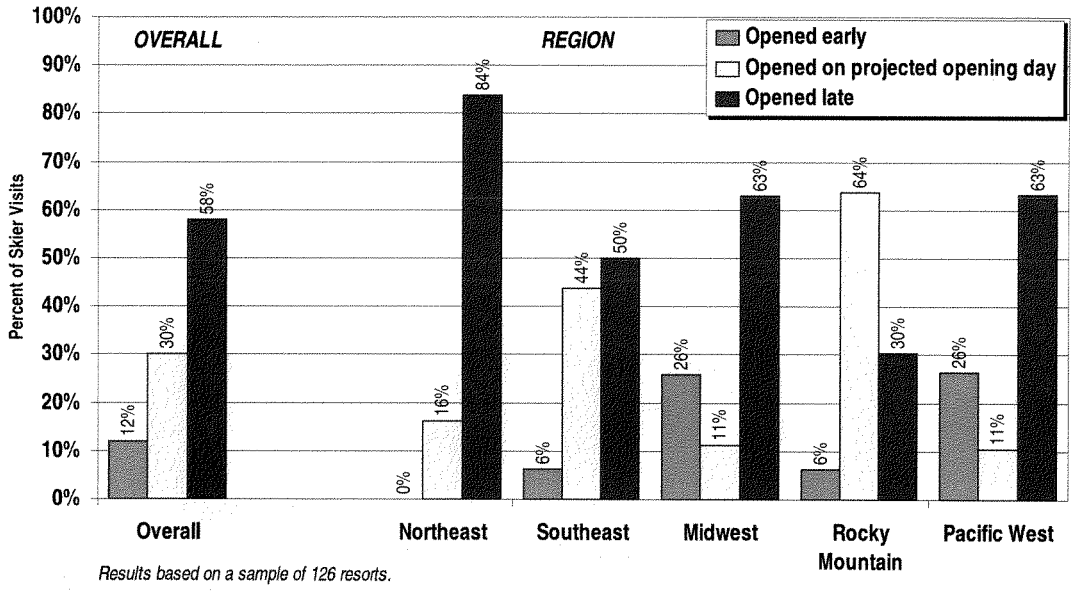
Standardized Temperature Anomalies

Dec. 2006 *vs.* Long-term Average (1971-2000)



Source: **The State of the Industry Report, 2007. The National Ski Areas Association**

Percent of Resorts Opening Early/On-time/Late
(relative to projected opening date)
2006-2007 *vs.* 2005-2006



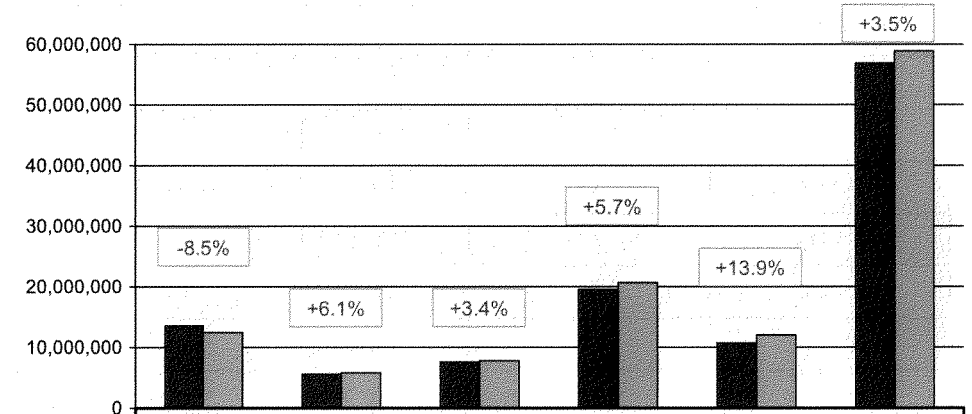
Results based on a sample of 126 resorts.

Source: **The State of the Industry Report, 2007. The National Ski Areas Association**

PRELIMINARY

Skier Visits

by Region, Aug. 2004 – March 2005 and Aug. 2005 – March 2006



	Northeast	Southeast	Midwest	Rocky Mountain	Pacific West	Total US
2004 - 2005	13,660,522	5,503,915	7,532,897	19,606,365	10,578,599	56,882,298
2005 - 2006	12,505,055	5,839,233	7,786,901	20,717,139	12,048,642	58,896,971

Regions:

Northeast: CT, MA, ME, NH, NY, VT, RI.
Southeast: AL, GA, KY, MD, NC, NJ, PA, TN, VA, WV.
Midwest: IA, IL, IN, MI, MN, MO, ND, NE, OH, SD, WI.
Rocky Mountain: CO, ID, MT, NM, UT, WY.
Pacific West:: AK, AZ, CA, NV, OR, WA.

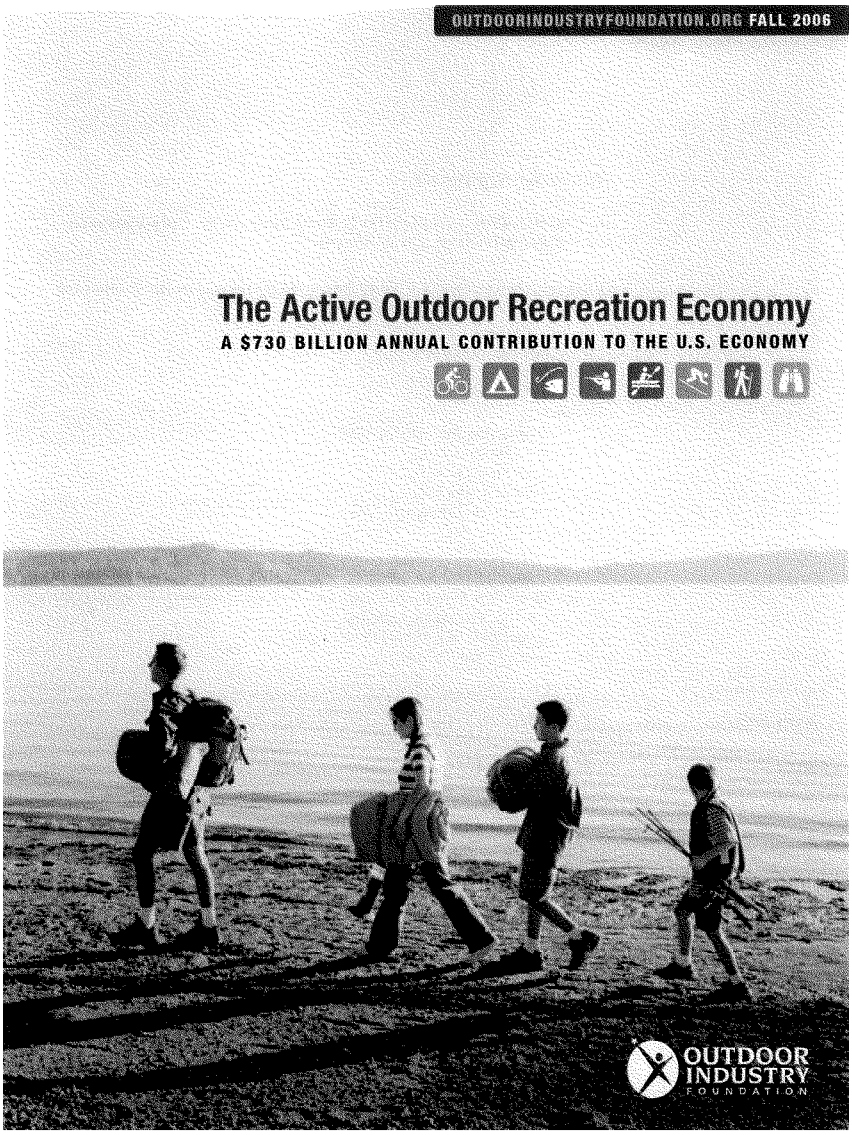
Source: NSAA Kottke National End of Season Survey 2005 – 2006

Skier Visits

Top 10 States in 2005 – 2006

Rank	State	Estimated Skier Visits (millions)	Operating Ski Areas	Average Visits Per Resort
1	Colorado	12.5	27	462,714
2	California	7.4	30	264,951
3	Utah	4.2	14	299,100
4	Vermont	4.1	21	194,447
5	New York	3.7	48	77,452
6	Pennsylvania	3.1	32	96,748
7	Michigan	2.4	39	60,880
8	Washington	2.1	15	136,862
9	New Hampshire	2.0	25	78,878
10	Wisconsin	1.9	32	60,556

Source: NSAA Kottke National End of Season Survey 2005 – 2006


OUTDOORINDUSTRYFOUNDATION.ORG FALL 2006
The Active Outdoor Recreation Economy
A $730 BILLION ANNUAL CONTRIBUTION TO THE U.S. ECONOMY
OUTDOOR
INDUSTRY
FOUNDATION

Acknowledgments

The economic analysis was conducted by Southwick Associates, Inc. The consumer survey was developed and executed by Harris Interactive®.

Outdoor Industry Foundation® (OIF) would like to thank the following organizations who lent their expertise and support in developing this project:

Outdoor Industry Association (OIA)
Adventure Travel Trade Association (ATTA)
America Outdoors
American Sportfishing Association (ASA)
Bikes Belong
International Mountain Bicycling Association (IMBA)
National Ski Areas Association (NSAA)
Recreation Vehicle Industry Association (RVIA)
Snowsports Industries America (SIA)
Sporting Goods Manufacturers Association (SGMA)
Travel Industry of America (TIA)

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Recreational Equipment, Inc. (REI)
Timberland

Portions of the study are based on the following published reports:

American Sportfishing Association – "Sportfishing in America: Values of Our Traditional Pastime," 2002
International Association of Fish and Wildlife Agencies – "The Economic Importance of Hunting in America," 2002
U.S. Fish and Wildlife Service – "2001 National and State Economic Impacts of Wildlife Viewing," Published 2003

This report was made possible through the financial support of REI, OIA, and Outdoor Retailer.

OUTDOOR INDUSTRY FOUNDATION

OUTDOOR INDUSTRY FOUNDATION® IS A 501(c)3 NON-PROFIT DEDICATED TO ENCOURAGING PARTICIPATION IN ACTIVE OUTDOOR RECREATION AND HEALTHIER LIFESTYLES.

What Is the Active Outdoor Recreation Economy?

IT'S A $730 BILLION ANNUAL CONTRIBUTION TO THE U.S. ECONOMY

More than three out of every four Americans participate in active outdoor recreation each year. Americans spend money, create jobs, and support local communities when they get outdoors. Simple, healthy outdoor activities such as hiking, biking, camping, or wildlife viewing generate enormous economic power and fuel a far-reaching ripple effect that touches many of the nation's major economic sectors.

THE RECREATION ECONOMY:

- **Contributes $730 billion annually to the U.S. economy**
- **Supports nearly 6.5 million jobs across the U.S.**
- **Generates $88 billion in annual state and national tax revenue**
- **Provides sustainable growth in rural communities**
- **Generates $289 billion annually in retail sales and services across the U.S.**
- **Touches over 8 percent of America's personal consumption expenditures—more than 1 in every 12 dollars circulating in the economy**

Many people don't realize that having fun and staying healthy in the outdoors is essential to the continued growth of our economy. In order to thrive, however, this burgeoning, often overlooked industry needs to be recognized, stimulated, and supported. In this report, we explain how we determined the impact of the Active Outdoor Recreation Economy, how it interacts with the national economy, and how it affects all Americans. A technical report, published online at **www.outdoorindustryfoundation.org**, provides more detailed numbers and information on our methodology and findings.

WHAT DOES ACTIVE OUTDOOR RECREATION INCLUDE?

BICYCLING
- Paved-road bicycling
- Off-road bicycling

CAMPING
- RV camping at a campsite
- Tent camping at a campsite
- Rustic lodging

FISHING
- Recreational fly
- Recreational non-fly

HUNTING
- Shotgun
- Rifle
- Bow

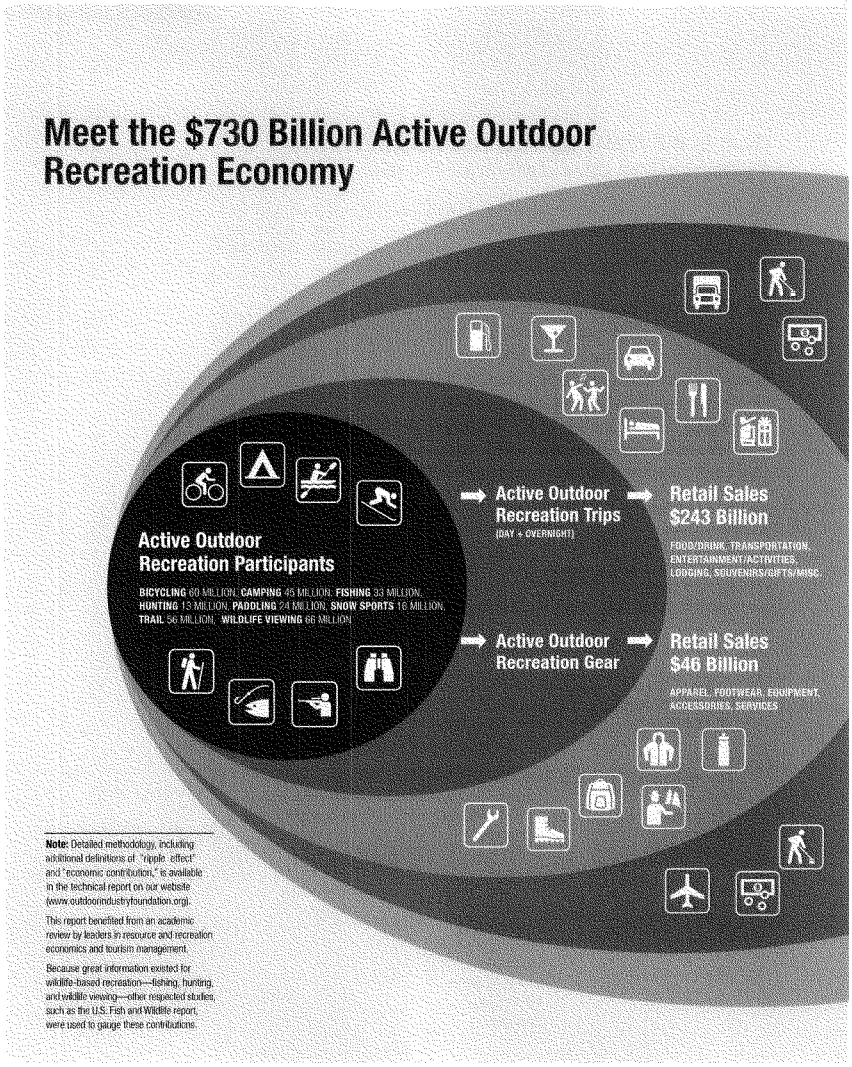
PADDLING
- Kayaking (recreational, sea, whitewater)
- Rafting
- Canoeing

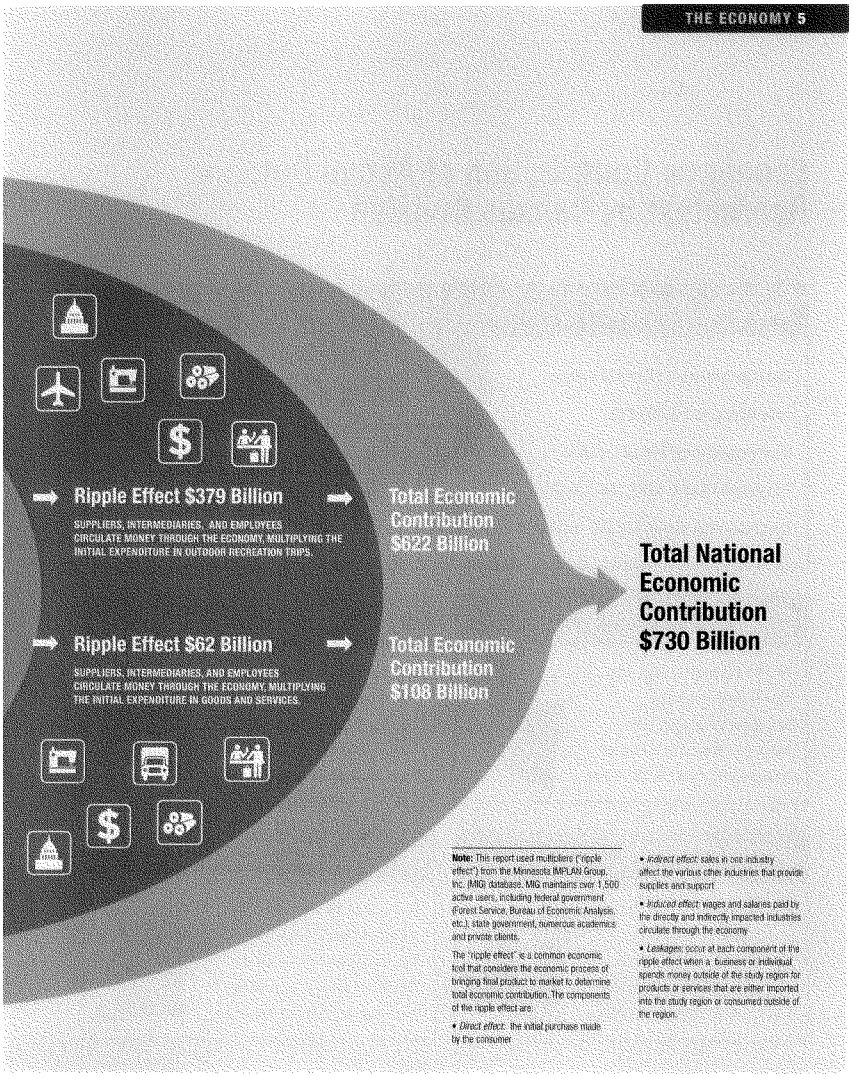
SNOW SPORTS
- Downhill skiing, including telemark
- Snowboarding
- Cross-country or Nordic skiing
- Snowshoeing

TRAIL
- Trail running on an unpaved trail
- Day hiking on an unpaved trail
- Backpacking
- Rock climbing (natural rock or ice)

WILDLIFE VIEWING
- Bird watching
- Other wildlife watching

Note: The Active Outdoor Recreation Economy Report does not take into account non-market benefits, the increased value of land associated with recreation opportunities or economic benefits from environmental consequences of reserving land for recreation opportunities.


Meet the $730 Billion Active Outdoor Recreation Economy
Active Outdoor Recreation Participants
BICYCLING 60 MILLION, CAMPING 45 MILLION, FISHING 33 MILLION, HUNTING 13 MILLION, PADDLING 24 MILLION, SNOW SPORTS 16 MILLION, TRAIL 56 MILLION, WILDLIFE VIEWING 66 MILLION
Active Outdoor Recreation Trips
(DAY + OVERNIGHT)
Retail Sales $243 Billion
FOOD/DRINK, TRANSPORTATION, ENTERTAINMENT/ACTIVITIES, LODGING, SOUVENIRS/GIFTS/MISC
Active Outdoor Recreation Gear
Retail Sales $46 Billion
APPAREL, FOOTWEAR, EQUIPMENT, ACCESSORIES, SERVICES
Note: Detailed methodology, including additional definitions of "ripple effect" and "economic contribution," is available in the technical report on our website (www.outdoorindustryfoundation.org).
This report benefited from an academic review by leaders in resource and recreation economics and tourism management.
Because great information existed for wildlife-based recreation—fishing, hunting, and wildlife viewing—other respected studies, such as the U.S. Fish and Wildlife report, were used to gauge these contributions.



Note: This report used multipliers ("ripple effect") from the Minnesota IMPLAN Group, Inc. (MIG) database. MIG maintains over 1,500 active users, including federal government (Forest Service, Bureau of Economic Analysis, etc.), state government, numerous academics and private clients.

The "ripple effect" is a common economic tool that considers the economic process of bringing final product to market to determine total economic contribution. The components of the ripple effect are:

- *Direct effect:* the initial purchase made by the consumer
- *Indirect effect:* sales in one industry affect the various other industries that provide supplies and support
- *Induced effect:* wages and salaries paid by the directly and indirectly impacted industries circulate through the economy
- *Leakages:* occur at each component of the ripple effect when a business or individual spends money outside of the study region for products or services that are either imported into the study region or consumed outside of the region.

Economic Contribution of Active Outdoor Recreation by Census Division

NATIONAL TOTALS

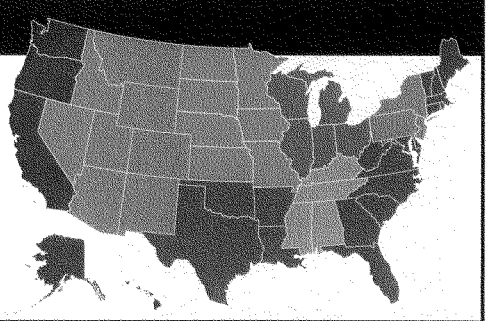
Total Contribution: $730,979 million

Jobs Generated: 6,435,270

Gear Retail Sales: $46,185 million

Trip-related Sales: $243,244 million

Taxes (federal, state): $87,867 million



DIVISION 1: NEW ENGLAND TOTALS

CT, ME, MA, NH, RI, VT

Total Contribution: $22,941 million

Jobs Generated: 271,196

Gear Retail Sales: $2,211 million

Trip-related Sales: $17,696 million

Taxes (federal, state): $3,369 million

DIVISION 2: MIDDLE ATLANTIC TOTALS

NY, NJ, PA

Total Contribution: $38,300 million

Jobs Generated: 357,258

Gear Retail Sales: $5,198 million

Trip-related Sales: $22,951 million

Taxes (federal, state): $4,499 million

DIVISION 3: EAST NORTH CENTRAL TOTALS

IN, IL, MI, OH, WI

Total Contribution: $61,953 million

Jobs Generated: 691,507

Gear Retail Sales: $7,007 million

Trip-related Sales: $34,665 million

Taxes (federal, state): $7,151 million

DIVISION 4: WEST NORTH CENTRAL TOTALS

IA, KS, MN, MO, NE, ND, SD

Total Contribution: $23,836 million

Jobs Generated: 272,654

Gear Retail Sales: $3,405 million

Trip-related Sales: $12,771 million

Taxes (federal, state): $2,609 million

BY REGION 7

DIVISION 5: SOUTH ATLANTIC TOTALS
DE, DC, FL, GA, MD, NC, SC, VA, WV

Total Contribution: $67,595 million
Jobs Generated: 794,841
Gear Retail Sales: $8,243 million
Trip-related Sales: $43,143 million
Taxes (federal, state): $8,294 million

DIVISION 6: EAST SOUTH CENTRAL TOTALS
AL, KY, MS, TN

Total Contribution: $18,790 million
Jobs Generated: 215,126
Gear Retail Sales: $2,636 million
Trip-related Sales: $10,875 million
Taxes (federal, state): $2,545 million

DIVISION 7: WEST SOUTH CENTRAL TOTALS
AR, LA, OK, TX

Total Contribution: $38,465 million
Jobs Generated: 379,933
Gear Retail Sales: $4,787 million
Trip-related Sales: $19,077 million
Taxes (federal, state): $3,782 million

DIVISION 8: MOUNTAIN TOTALS
AZ, CO, ID, NM, MT, UT, NV, WY

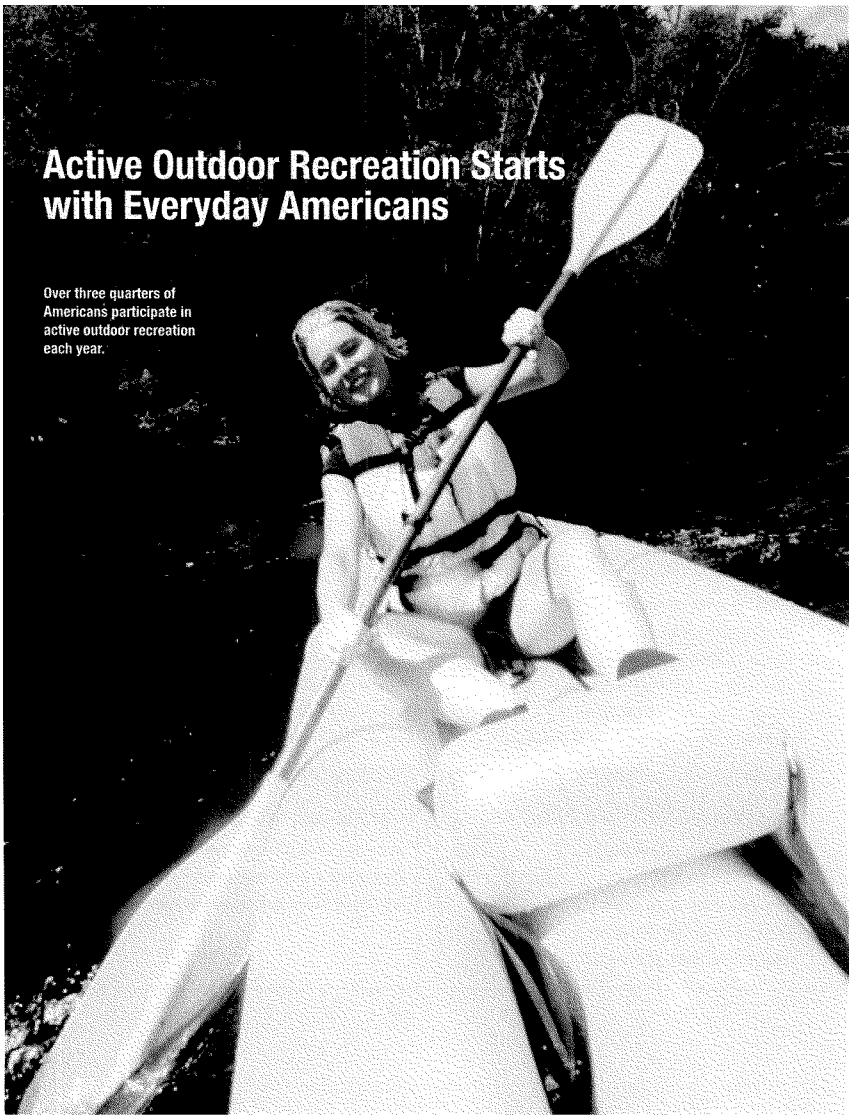
Total Contribution: $61,496 million
Jobs Generated: 617,186
Gear Retail Sales: $4,790 million
Trip-related Sales: $34,940 million
Taxes (federal, state): $8,906 million

DIVISION 9: PACIFIC TOTALS
AK, CA, HI, OR, WA

Total Contribution: $81,696 million
Jobs Generated: 762,247
Gear Retail Sales: $5,036 million
Trip-related Sales: $46,081 million
Taxes (federal, state): $9,369 million

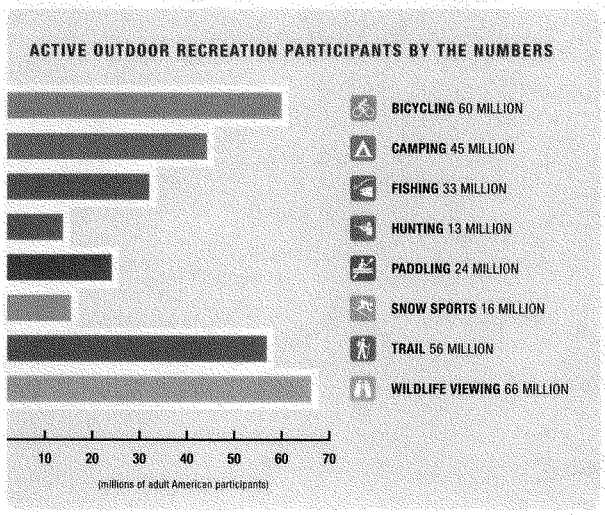
ACTIVE OUTDOOR RECREATION TOTALS BY CENSUS DIVISION AND ACTIVITY CATEGORY

To review a comprehensive breakdown of totals by census division and activity category, please see page 19 of this report or visit www.outdoorindustryfoundation.org.


Active Outdoor Recreation Starts with Everyday Americans
Over three quarters of Americans participate in active outdoor recreation each year.

Who Drives the Recreation Economy?

The Active Outdoor Recreation Economy begins with millions of Americans who come from all walks of life and geographical regions across the country. More than three out of every four Americans engage in healthy outdoor activities, ranging from bird watching to ice climbing, hiking to bass fishing. When Americans get out and participate in these activities, they aren't just having fun and staying fit, they're also pumping billions of dollars into the economy.



FAST FACTS

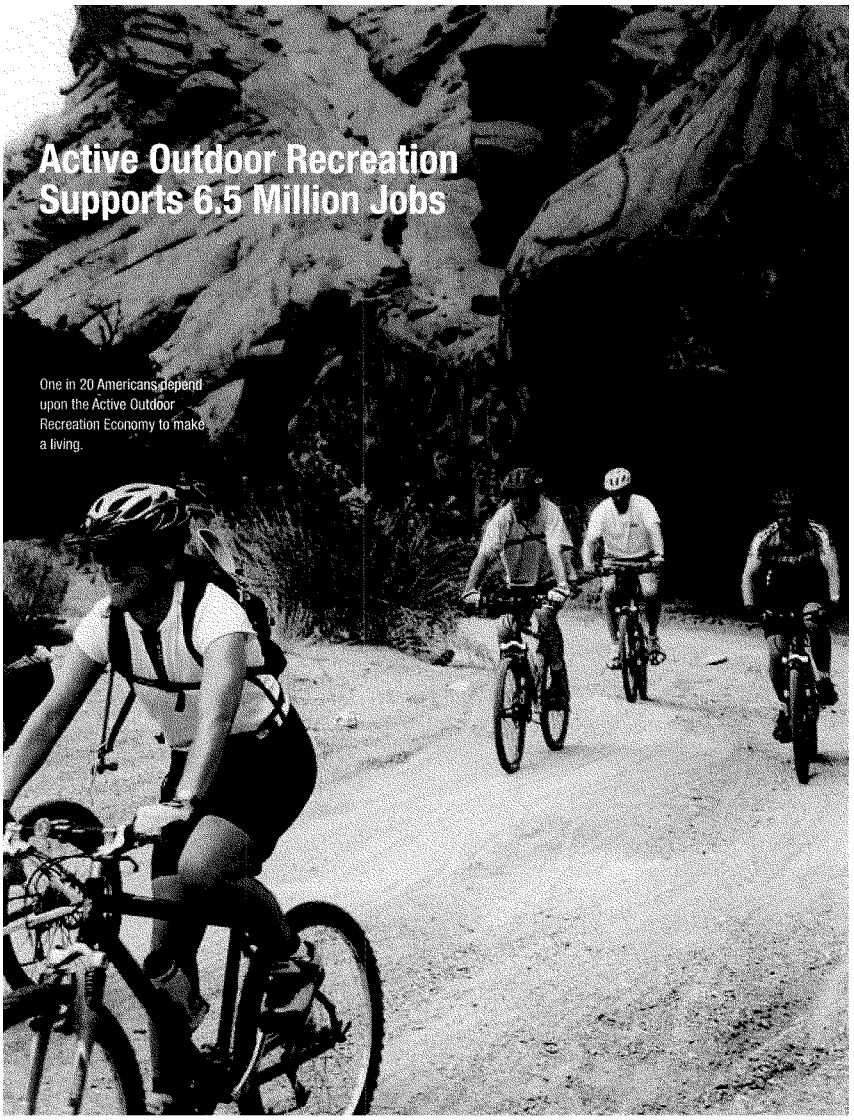
- ★ **More Americans camp than play basketball.**[1]
- ★ **The number of Americans who participate in bicycling is double the population of Canada.**
- ★ **More Americans paddle (kayak, canoe, raft) than play soccer.**[2]
- ★ **The number of Americans who recreate in the snow each year is greater than the combined populations of Ireland, Costa Rica, New Zealand, and Mongolia.**
- ★ **The number of New Englanders who participate in trail-based recreation annually is greater than the combined attendance for all 81 Boston Red Sox home games.**[3]
- ★ **The number of annual participants in snow-based recreation is more than double the combined annual attendance for NASCAR's two premier series.**[4]

[1] Sporting Goods Manufacturing Association (SGMA) estimates 32 million Americans 6+ played basketball in 2005.

[2] SGMA estimates 17 million Americans 6+ played soccer in 2005.

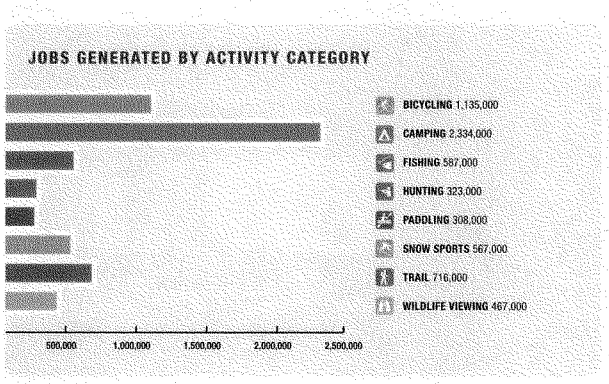
[3] http://www.justmarketing.com/index.asp?pid=series, 2005

[4] NASCAR's premier series—the 2005 Busch Grand National Series and NEXTEL Cup Series; http://www.justmarketing.com/index.asp?pid=series


Active Outdoor Recreation
Supports 6.5 Million Jobs
One in 20 Americans depend upon the Active Outdoor Recreation Economy to make a living.

The Active Outdoor Recreation Economy Employs America

Nearly 6.5 million Americans are working thanks to the Active Outdoor Recreation Economy. That's one out of 20 workers in the U.S. These are not just stereotypical seasonal jobs such as cleaning campgrounds or operating ski lifts. Instead, the economy supports a wide range of careers with diverse skills. These sustainable jobs are not confined to any single economic sector and they, in turn, support larger industries—manufacturing, leisure and hospitality, transportation, and wholesale and retail trade. In short, the Active Outdoor Recreation Economy is one of America's most important employers.



FAST FACTS

★ **More Americans owe their jobs to bicycle-based recreation than there are people employed as lawyers.[5]**

★ **More Americans owe their jobs to snow-based recreation than there are physicians and surgeons.[6]**

★ **The Active Outdoor Recreation Economy employs five times more Americans than Wal-Mart, the world's largest private employer.[7]**

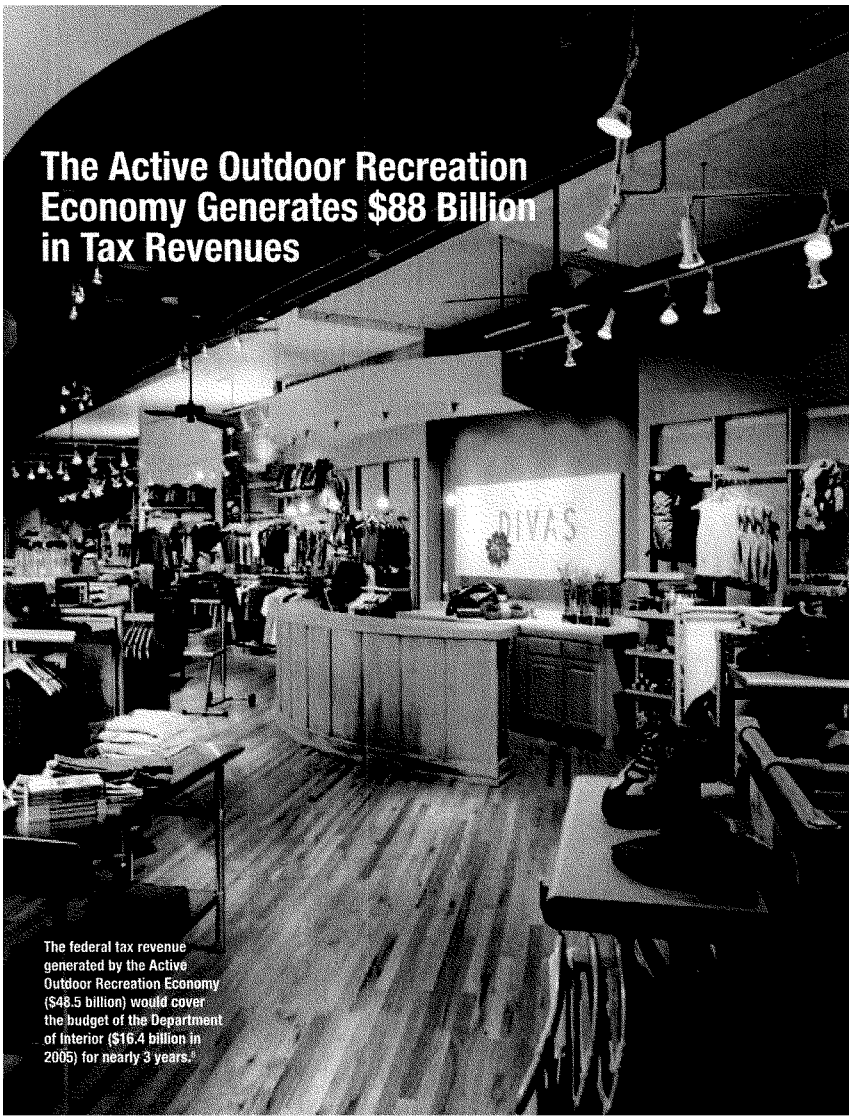
★ **Camp-based recreation in the U.S. could employ the entire population of Utah.**

Note: The jobs figures in the Report are termed "average annual employment" by the economic model. The jobs figures represent an average job for the industry impacted and do not represent full-time equivalent jobs.

[5] U.S. Department of Labor, Bureau of Labor Statistics, http://www.bls.gov/oes/2004/may/oes_00AL.htm

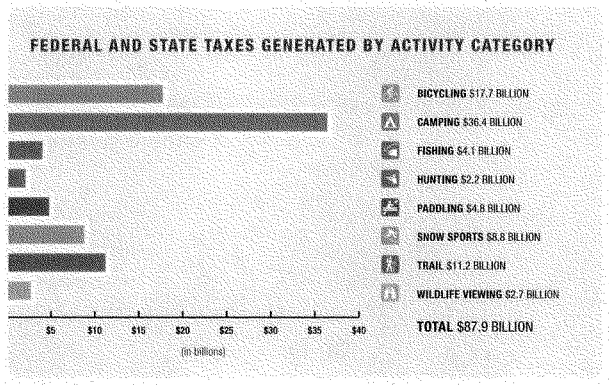
[6] ibid

[7] Wal-Mart Annual Report


The Active Outdoor Recreation Economy Generates $88 Billion in Tax Revenues
DIVAS
The federal tax revenue generated by the Active Outdoor Recreation Economy ($48.5 billion) would cover the budget of the Department of Interior ($16.4 billion in 2005) for nearly 3 years.

$88 Billion Coming Back to America: Tax Receipts

The cash spent by Americans in pursuit of active outdoor recreation benefits all Americans, generating $88 billion in state and federal taxes (sales tax and income tax). This tax influx, in turn, supports government programs that empower and develop communities.



Jump-starting Rural Economic Development

The jobs, tax revenues, and business created by the Active Outdoor Recreation Economy are the lifeblood of rural communities that rely on recreation tourism to enjoy a high quality of life.

According to the US Department of Agriculture, rural tourism and recreational development:
- Spikes employment growth rates
- Buoys earnings and income levels
- Lowers local poverty rates
- Shepherds improvements in local educational attainment and health[9]

Mining, logging, oil and gas, and agriculture are the traditional backbone of many rural economies. Today, the sustainable Active Outdoor Recreation Economy has joined that list as communities seek to create a balanced and stable base for long-term economic and community development.

CASE STUDY

FRUITA, CO

Eleven years ago, businessman Troy Rarick took a big chance and opened a bike shop in the struggling town of Fruita, Colorado. Over the Edge Sports was one of the few businesses in the mostly vacant downtown. But the shop encouraged the community to build mountain bike trails and organize an annual Fruita Fat Tire Festival. In the 10 years since, Fruita has earned a reputation as a world-class mountain biking destination that pumps $1.5 million a year into the local economy, according to the Bureau of Land Management. And Fruita's sales tax revenues have increased by 51 percent in the last 5 years, including an 80 percent increase in sales tax revenues from restaurants.[10]

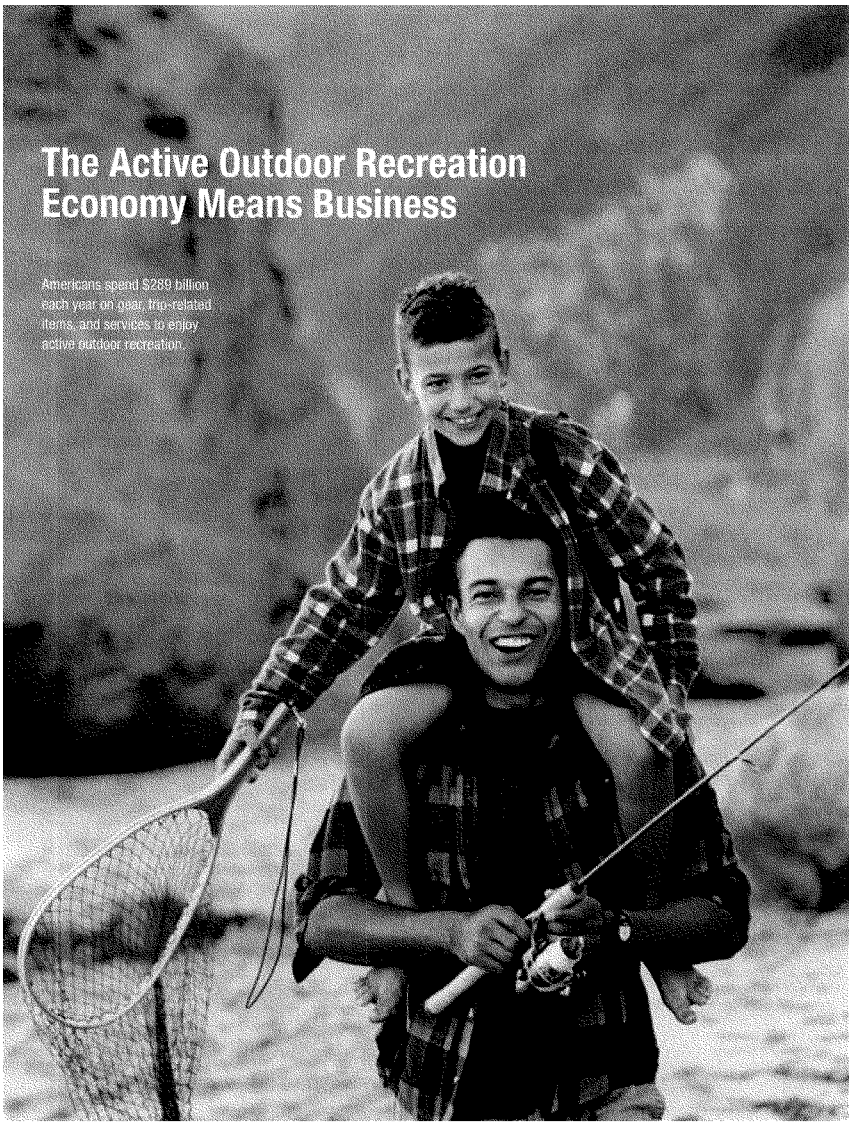
MOAB, UT

In 1990, Western Spirit Cycling, based in Moab, Utah, consisted of two employees who ran three trips a year. In 2006, the company employed 35 people and ran hundreds of trips in states throughout the country, spending cash in hotels, grocery stores, restaurants, and bike shops in small towns across the U.S.

[8] Department of the Interior, http://www.doi.gov/facts.html

[9] U.S. Department of Agriculture, Economic Research Service, August 2005, "Recreation, Tourism, and Rural Well-Being," Richard J. Reeder, and Dennis M. Brown

[10] Bureau of Land Management North Fruita Desert Management Plan-November 2004.


The Active Outdoor Recreation Economy Means Business
Americans spend $289 billion each year on gear, trip-related items, and services to enjoy active outdoor recreation.

Ringing Up $289 Billion in Retail Sales

The most obvious boost the Active Outdoor Recreation Economy gives to the nation comes at the cash register. Participants spend their money on both gear and trips.

- Quality gear is key to a fulfilling outdoor experience, and Americans spend $46 billion each year on their equipment, apparel, footwear, accessories, and services.
- Americans want to spend money on active outdoor excursions, and they spend $243 billion on trips ranging from a summer camping vacation to an afternoon family bike ride.

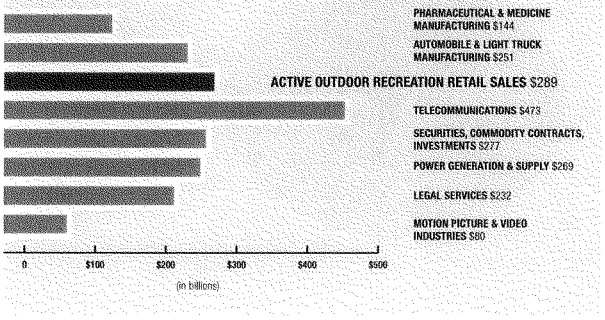
That adds up to a whopping $289 billion spent annually on active outdoor recreation gear and trips, a bigger direct expenditures contribution to the U.S. economy than that of the securities, commodity contracts, and investments industry ($277 billion).[11]

An Overlooked Economic Giant

The Active Outdoor Recreation Economy is big business. It ranks alongside and even dwarfs other major economic sectors in the U.S., such as telecommunications, hospitals and motion pictures and videos.

HOW ACTIVE OUTDOOR RECREATION STACKS UP[12]

Sales comparison to U.S. economic sectors.



CASE STUDY

Cuyahoga Valley National Park, OH

Do you think most visitors come to National Parks and National Forests for extended destination vacations? Think again. There were 273 million visits to National Parks in 2005, but only 13.8 million overnight stays.[13] Over half of recreation visits to National Forests are day trips.[14]

- Ohio's Cuyahoga Valley National Park welcomed almost 2.9 million recreation visits in 2003, yet less than five percent were overnight trips.[15]
- The 2.7 million day trippers spent over $44 million during their visits.
- Day trips stimulated 80 percent of the total visitor spending to Cuyahoga, supporting 1,296 local jobs.

Note: The following expenditures were not included: outdoor-lifestyle-inspired purchases made by non-participants, the portion of a purchase that would have been made even if the respondent did not participate, purchases by minors, purchases by foreigners for U.S. products (goods and services) and purchases by foreigners during outdoor trips in the U.S., U.S. resident travel abroad, and large durable purchases such as boats and RVs. (See technical report for more details.)

[11] Bureau of Economic Analysis, Industry Economic Accounts, http://www.bea.gov/bea/dn2.htm

[12] ibid

[13] National Park Service http://www2.nature.nps.gov/stats/

[14] Stynes, Daniel and White, Eric. Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005

[15] National Park Service http://www2.nature.nps.gov/stats/

BUSINESS 16

The Ripple Effect Multiplies the Contribution of Sales

CASE STUDY ★

METHOW VALLEY, WA

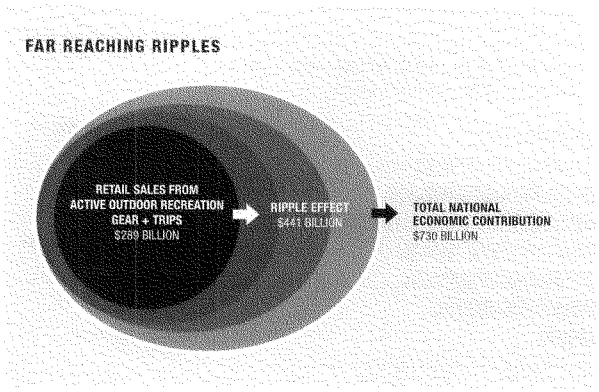
The Methow Valley trail system in north-central Washington includes nearly 125 miles of groomed paths for cross-country skiing, off-road bicycling, and horseback riding, attracting visitors from across Washington state and beyond.[16]

- Trail user (local, resident, non-local) expenditures average $1,469 per party, per trip.
- Nearly $4.5 million in direct expenditures are made annually to the Methow Valley economy by trail users.
- The ripple effect creates an additional $4.1 million economic contribution to the local economy.

No economy exists in a vacuum. The $289 billion Americans spend on active outdoor recreation gear and trips circulates further through the economy, creating a virtuous cycle, known as the "multiplier" or "ripple" effect, which adds up to another $441 billion to create the $730 billion Active Outdoor Recreation Economy. This dynamic economy is a sum total of economic interactions that benefit all of America's major economic sectors.

Think of a kayak slicing through the water. The kayak creates ripples in the water that move further away as they dissipate. Likewise, when a patron goes to an outdoor store and buys a kayak, the economic contribution is not limited to the money the consumer gives to the retail store. The purchase creates ripples that affect the suppliers of materials for the boat, the boat manufacturer, and the shipping company that transported the kayak.

Additionally, the outdoor store employee and the employees of the suppliers and manufacturers spend their paychecks on goods and services. This further economic contribution accumulates each time it passes through a different set of hands, yet is smaller at each touch point as the ripples grow smaller but continue to be felt.



Note: A conservative 10% of "secondary" trip expenditures were included for non wildlife-based active outdoor recreation trips. Active outdoor recreation expenditures were made on the trip but the purpose of the trip was not primarily for recreation. However, expenditures would not have occurred unless recreation opportunities existed.

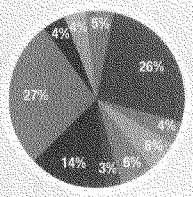
[16] Methow Valley Sport Trails Association, prepared by Resource Dimensions; "Economic Impacts of MVTSA Trails and Land Resources in the Methow Valley," July 2005)

Beyond the Outdoor Industry

The Active Outdoor Recreation Economy reaches far beyond the outdoor industry, making major direct contributions to all the building-block sectors of the American economy, including manufacturing, transportation, and real estate.

AN ESSENTIAL COMPONENT OF THE AMERICAN ECONOMY[17]

Active outdoor recreation spreads $730 billion to all U.S. economic sectors



- **MANUFACTURING** 26.2%
- **TRANSPORTATION & WAREHOUSING** 4.1%
- **RETAIL TRADE** 6.4%
- **REAL ESTATE & RENTAL** 6%
- **ARTS, ENTERTAINMENT & RECREATION** 3.2%
- **ACCOMMODATIONS & FOOD SERVICES** 13.6%
- **FINANCE & INSURANCE** 4.9%
- **PROFESSIONAL – SCIENTIFIC & TECHNICAL SERVICES** 4.2%
- **INFORMATION** 4.2%
- **ALL OTHER SECTORS** 27.2%

And $730 Billion Is Just the Beginning

This report took a conservative approach in defining expenditures related to active outdoor recreation. Many participants make additional big-ticket purchases that add to the national economy which were not included in this report.

- Over $30 billion of boat and other big-ticket sales from wildlife-based recreation were not added into this calculation of the Active Outdoor Recreation Economy.
- Only a small portion of the over $14 billion in recreation vehicle sales were included in this report.[18]
- Participants buy and lease land ($12 billion from wildlife based recreation alone), cabins, and second homes. This study does not take those property sales into account.

When you add in these big-ticket items and purchases for fishing, hunting and wildlife viewing, the Active Outdoor Recreation Economy pumps $900 billion into the U.S. economy each year.

FAST FACTS

★ **Americans spent 88 times more on bicycle-based recreation in one year than the total box office draw for *Titanic*, the top grossing movie of all time.**[18]

★ **The Great Allegheny Passage, connecting Pittsburgh to the C&O Canal towpath leading to Washington, D.C., generated $7 million in direct spending in 2002. Bolstered by the growth of trail-related businesses, the Passage will stimulate an estimated $12 to $15 million in direct spending in 2007.**[20]

★ **Studies estimate that physically inactive individuals have 24 percent higher health-care costs than active individuals.**[21]

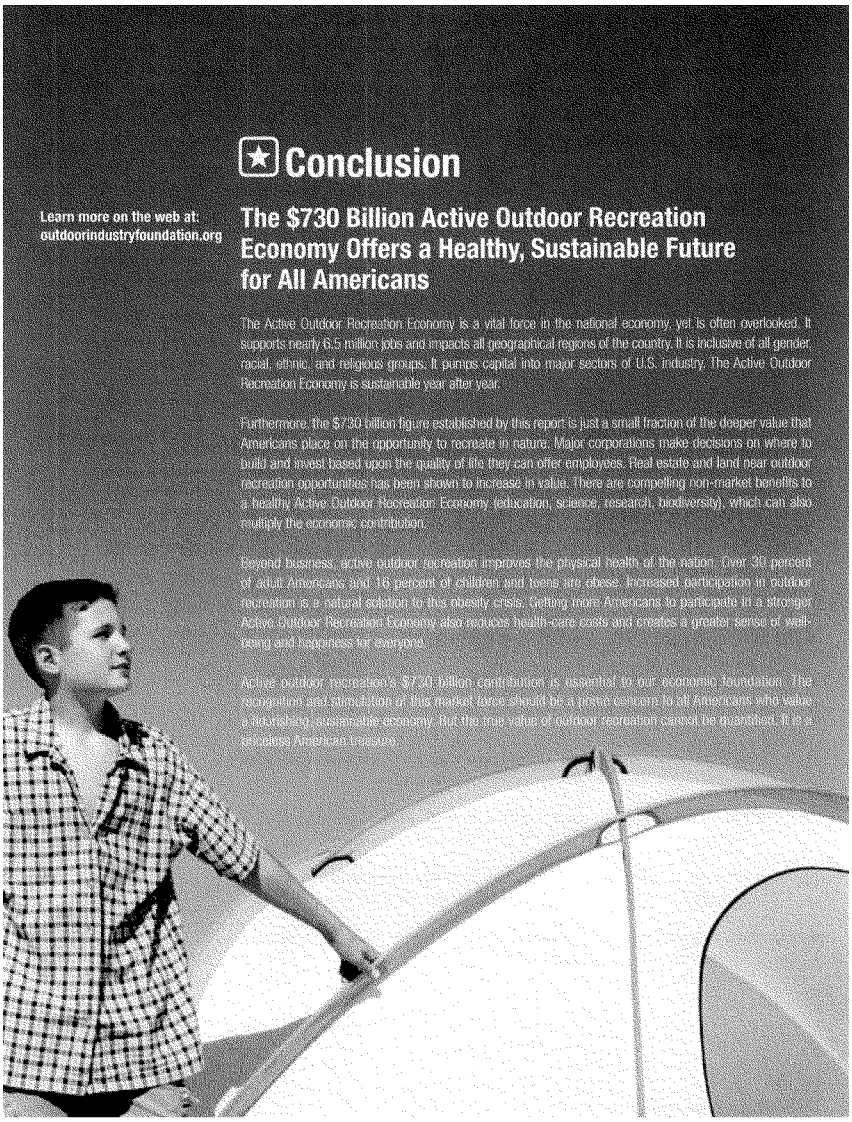
[17] Bureau of Economic Analysis, Industry Economic Accounts, http://www.bea.gov/bea/dn2.htm

[18] Recreational Vehicle Industry Association-http://rvia.org/Media/ShipmentsData.htm

[19] http://movies.go.com/boxoffice?cat=2005

[20] Farber Ph.d. Stephen, "2002 User Survey for The Pennsylvania Allegheny Trail Alliance," University Center for Social and Urban Research, University of Pittsburgh; Allegheny Trail Alliance

[21] www.cdc.gov


Conclusion
Learn more on the web at:
outdoorindustryfoundation.org
The $730 Billion Active Outdoor Recreation Economy Offers a Healthy, Sustainable Future for All Americans
The Active Outdoor Recreation Economy is a vital force in the national economy, yet is often overlooked. It supports nearly 6.5 million jobs and impacts all geographical regions of the country. It is inclusive of all gender, racial, ethnic, and religious groups. It pumps capital into major sectors of U.S. industry. The Active Outdoor Recreation Economy is sustainable year after year.
Furthermore, the $730 billion figure established by this report is just a small fraction of the deeper value that Americans place on the opportunity to recreate in nature. Major corporations make decisions on where to build and invest based upon the quality of life they can offer employees. Real estate and land near outdoor recreation opportunities has been shown to increase in value. There are compelling non-market benefits to a healthy Active Outdoor Recreation Economy (education, science, research, biodiversity), which can also multiply the economic contribution.
Beyond business, active outdoor recreation improves the physical health of the nation. Over 30 percent of adult Americans and 16 percent of children and teens are obese. Increased participation in outdoor recreation is a natural solution to this obesity crisis, getting more Americans to participate in a stronger Active Outdoor Recreation Economy also reduces health-care costs and creates a greater sense of well-being and happiness for everyone.
Active outdoor recreation's $730 billion contribution is essential to our economic foundation. The recognition and stimulation of this market force should be a prime concern to all Americans who value a nourishing, sustainable economy. But the true value of outdoor recreation cannot be quantified. It is a priceless American treasure.

APPENDIX 19

ACTIVE OUTDOOR RECREATION TOTALS BY CENSUS DIVISION AND ACTIVITY CATEGORY

Data sources are the organizations listed in the acknowledgements above and in the footnotes below. An illustration of the census divisions is on the next page.

	CENSUS D1	D2	D3	D4	D5	D6	D7	D8	D9	NATIONAL
Sports-Based Recreation	# Participants (thousands)	2,496	8,161	11,329	42,351	10,715	1,592	6,491	4,078	10,313	99,837
	% Population Participating	23%	26%	33%	28%	25%	20%	26%	27%	28%	27%
	Gear Retail Sales* (millions)	$331	$877	$873	$310	$1,370	$219	$621	$429	$1,399	$6,230
	Trip Related Sales* (millions)	$2,814	$3,097	$11,208	$1,781	$8,272	$3,084	$3,941	$3,715	$9,024	$46,938
	Jobs Supported	40,121	44,298	190,972	31,615	134,881	43,828	66,290	59,939	135,422	1,135,268
	Taxes - Federal and State (millions)	$955	$623	$2,162	$359	$1,623	$310	$766	$1,007	$1,862	$17,701
	Total Economic Contribution (millions)	$3,372	$4,757	$17,024	$2,704	$11,337	$3,895	$6,884	$6,233	$15,001	$132,827
Cross-Based Recreation	# Participants (thousands)	1,674	4,910	8,687	3,441	7,258	1,374	4,203	4,934	8,479	46,161
	% Population Participating	17%	16%	25%	23%	17%	18%	17%	33%	24%	21%
	Gear Retail Sales* (millions)	$362	$901	$1,660	$606	$1,345	$290	$966	$864	$1,652	$8,676
	Trip Related Sales* (millions)	$6,646	$9,281	$14,687	$6,171	$19,967	$4,122	$9,454	$13,992	$16,303	$100,614
	Jobs Supported	89,384	119,512	258,363	102,475	298,727	58,549	151,838	214,870	234,468	2,333,638
	Taxes - Federal and State (millions)	$1,236	$1,681	$2,926	$1,164	$3,573	$1,207	$1,755	$3,611	$3,224	$36,387
	Total Economic Contribution (millions)	$7,513	$12,834	$23,031	$8,765	$24,940	$5,204	$15,767	$22,345	$25,972	$273,037
Fishing ^	# Participants (thousands)	1,860	3,500	6,040	4,320	8,160	3,020	4,730	3,280	4,480	32,900
	% Population Participating	17%	11%	18%	28%	20%	22%	19%	23%	12%	16%
	Gear Retail Sales* (millions)	$271	$509	$845	$646	$1,478	$439	$749	$587	$803	$6,416
	Trip Related Sales* (millions)	$757	$1,119	$1,660	$1,426	$3,222	$1,013	$1,659	$1,862	$2,574	$16,205
	Jobs Supported	17,195	26,912	50,294	39,887	92,667	30,638	47,627	46,319	62,080	586,312
	Taxes - Federal and State (millions)	$140	$238	$388	$305	$659	$201	$333	$306	$529	$4,050
	Total Economic Contribution (millions)	$1,768	$3,073	$5,066	$4,003	$8,841	$2,852	$4,801	$4,454	$6,576	$61,429
Hunting ** ^	# Participants (thousands)	450	1,820	2,460	2,100	1,970	1,440	2,190	1,340	850	12,800
	% Population Participating	4%	6%	7%	14%	5%	11%	9%	10%	2%	6%
	Gear Retail Sales* (millions)	$159	$773	$1,072	$761	$686	$791	$1,101	$752	$592	$6,686
	Trip Related Sales* (millions)	$271	$401	$595	$511	$1,155	$363	$595	$667	$922	$5,528
	Jobs Supported	7,234	17,702	32,151	25,227	36,067	22,627	31,249	28,830	25,830	322,570
	Taxes - Federal and State (millions)	$46	$148	$231	$169	$266	$146	$211	$174	$200	$2,186
	Total Economic Contribution (millions)	$731	$2,174	$3,293	$2,431	$3,821	$2,315	$3,282	$2,605	$2,761	$34,090
Wildlife-Based Recreation	# Participants (thousands)	1,886	3,359	4,607	1,462	4,410	702	1,837	1,586	4,246	23,596
	% Population Participating	14%	11%	13%	10%	10%	9%	7%	11%	12%	11%
	Gear Retail Sales* (millions)	$101	$356	$433	$181	$563	$105	$168	$175	$585	$2,666
	Trip Related Sales* (millions)	$631	$1,591	$1,781	$505	$1,767	$616	$712	$886	$3,324	$11,778
	Jobs Supported	9,331	22,844	34,999	10,383	32,457	9,571	12,761	14,976	50,805	308,469
	Taxes - Federal and State (millions)	$129	$321	$396	$116	$391	$197	$148	$252	$699	$4,810
	Total Economic Contribution (millions)	$784	$2,453	$3,120	$889	$2,728	$851	$1,327	$1,557	$5,628	$36,091
Power-Based Recreation	# Participants (thousands)	1,473	2,160	2,274	1,175	2,141	224	776	1,858	3,505	15,587
	% Population Participating	13%	7%	7%	8%	5%	3%	3%	13%	10%	8%
	Gear Retail Sales* (millions)	$206	$461	$295	$213	$518	$48	$132	$490	$765	$3,125
	Trip Related Sales* (millions)	$4,091	$3,047	$1,672	$714	$1,590	$110	$0	$6,501	$5,685	$23,412
	Jobs Supported	54,801	41,172	31,085	14,021	29,485	2,080	1,914	101,115	83,815	568,629
	Taxes - Federal and State (millions)	$758	$579	$362	$159	$365	$43	$22	$1,699	$1,153	$8,835
	Total Economic Contribution (millions)	$4,606	$4,421	$2,771	$1,199	$2,478	$185	$199	$10,515	$9,284	$68,296
Trail-Based Recreation	# Participants (thousands)	3,048	6,648	8,122	3,407	9,642	1,746	5,250	5,433	12,538	55,834
	% Population Participating	28%	22%	23%	23%	23%	23%	21%	36%	35%	26%
	Gear Retail Sales* (millions)	$184	$401	$281	$209	$517	$133	$474	$361	$780	$3,340
	Trip Related Sales* (millions)	$2,085	$3,792	$2,136	$869	$5,486	$1,003	$1,792	$6,367	$6,726	$30,177
	Jobs Supported	26,686	49,218	38,206	16,292	63,978	15,073	32,916	96,450	97,523	715,861
	Taxes - Federal and State (millions)	$397	$892	$433	$185	$1,011	$311	$380	$1,621	$1,341	$11,159
	Total Economic Contribution (millions)	$2,411	$5,285	$3,406	$1,394	$7,058	$1,340	$3,418	$10,030	$10,802	$83,733
Wildlife Viewing ** ^	# Participants (thousands)	4,990	9,580	12,500	6,930	12,900	5,090	6,150	6,870	10,500	66,100
	% Population Participating	45%	31%	37%	46%	32%	37%	25%	48%	29%	30%
	Gear Retail Sales* (millions)	$597	$1,120	$1,223	$479	$1,566	$613	$576	$1,132	$1,538	$8,845
	Trip Related Sales* (millions)	$421	$823	$925	$794	$1,794	$564	$924	$1,036	$1,433	$8,591
	Jobs Supported	24,445	35,600	55,436	32,744	86,578	32,760	35,318	64,687	72,304	466,525
	Taxes - Federal and State (millions)	$108	$217	$263	$150	$416	$130	$167	$236	$361	$2,740
	Total Economic Contribution (millions)	$1,756	$3,303	$4,242	$2,451	$6,392	$2,138	$2,787	$3,757	$5,652	$43,476

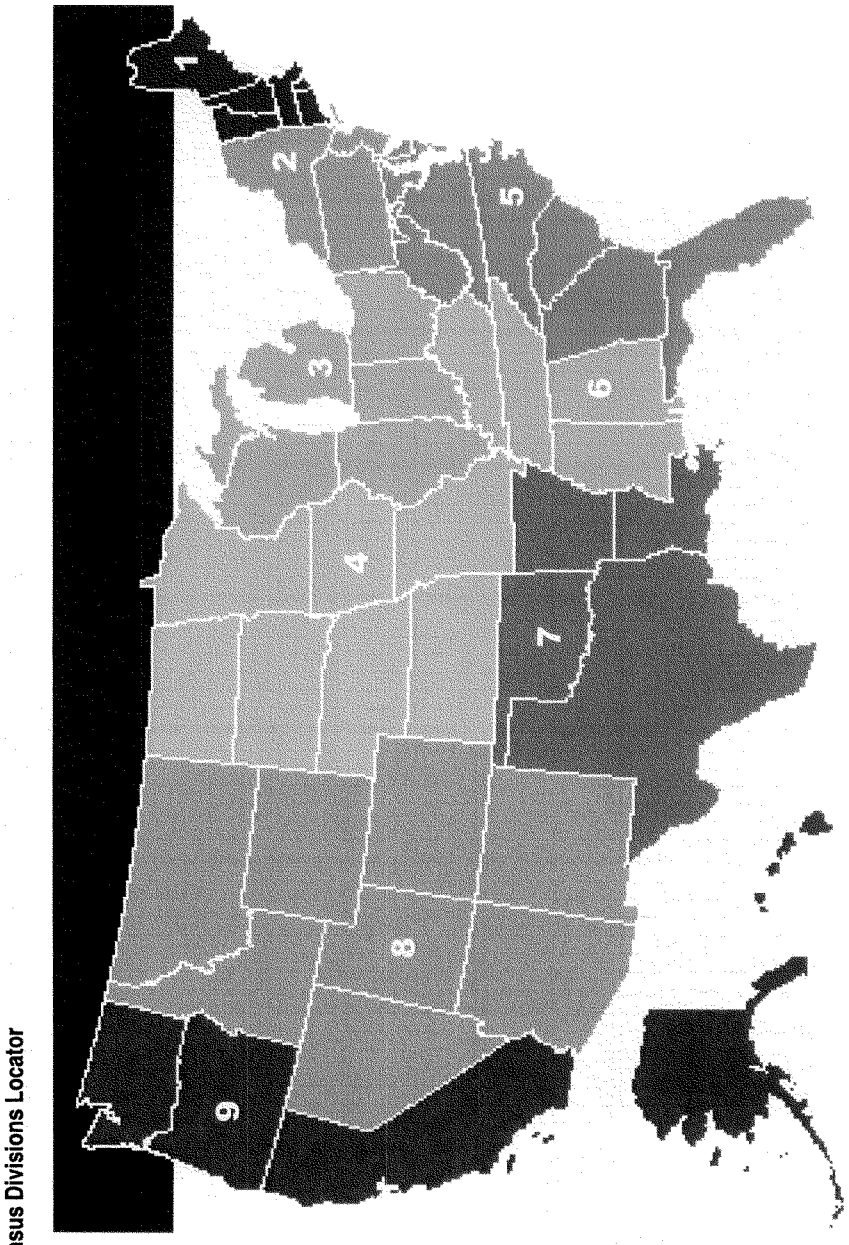
* Sample sizes are detailed in the technical report.

** Source: American Sportfishing Association – "Sportfishing in America: Values of Our Traditional Pastime," 2002

*** Source: International Association of Fish and Wildlife Agencies – "The Economic Importance of Hunting in America," 2002

**** U.S. Fish and Wildlife Service – "2001 National and State Economic Impacts of Wildlife Viewing," Published 2003

^ Wildlife-based recreation activities (fishing, hunting, wildlife viewing) were derived from above sources which contain a greater level of details (including state information). Assumptions were made to align the methodologies of the wildlife-based studies with the Active Outdoor Recreation survey (other 5 activity categories). See technical report for details. Wildlife-based participation based on 16+ participation. Other 5 activity categories based on 18+. Wildlife-based participant populations used to derive incidence is the 2001 16+ population adjusted for each census division by the growth in national population from 2000 to 2005. Crossover participation data does not exist for wildlife viewing as defined by the USFW and the 5 Active Outdoor Recreation categories. Census division figures will not add to national figures due to larger national multipliers (greater leakages to smaller geographic regions). D.C. wildlife figures are not included in the census trip expenditures but are included in the national figure.


Census Divisions Locator
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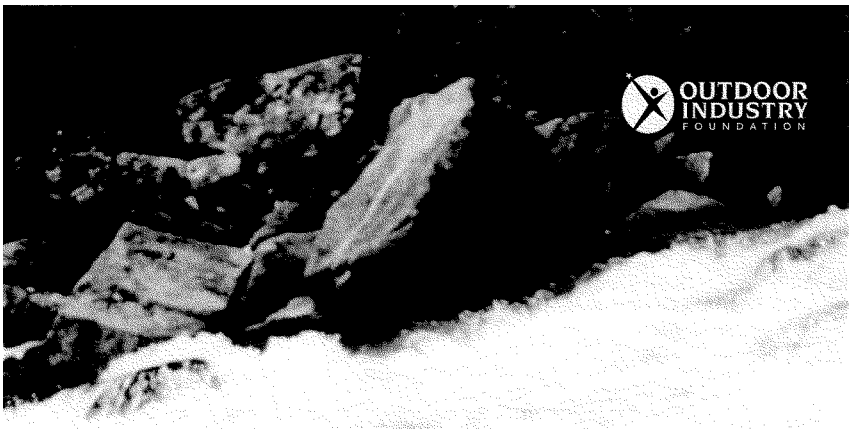
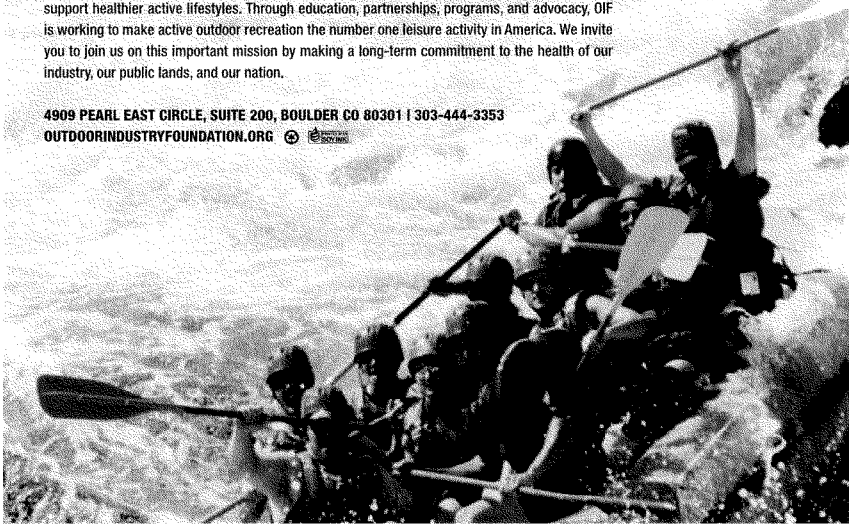


SOUTHWICK ASSOCIATES, INC. OF FERNANDINA BEACH, FLORIDA, specializes in quantifying the economics of fish, wildlife, and outdoor-related activities. Founded in 1990, SA helps government agencies and industry understand the issues impacting people's use of outdoor resources and the related retail and economic trends. www.southwickassociates.com

OUTDOOR INDUSTRY FOUNDATION (OIF) is a non-profit foundation established by Outdoor Industry Association. OIF's charter is to increase participation in outdoor recreation and to encourage and support healthier active lifestyles. Through education, partnerships, programs, and advocacy, OIF is working to make active outdoor recreation the number one leisure activity in America. We invite you to join us on this important mission by making a long-term commitment to the health of our industry, our public lands, and our nation.

4909 PEARL EAST CIRCLE, SUITE 200, BOULDER CO 80301 | 303-444-3353
OUTDOORINDUSTRYFOUNDATION.ORG



Some References to Current and Future Impacts of Global Warming

Outdoor recreation and tourism are sensitive to changes in temperature, rainfall, snowfall, and storm events, and are thus sensitive to climatic variability and change. Tourism businesses, which usually are location-specific, have a higher potential than the tourists themselves (who have a wider variety of options) to be affected by climate change.

Shifts in temperature and precipitation patterns could lead to shifts in a variety of outdoor tourism and recreation opportunities, such as skiing, fishing and hunting. The effects of climate change on tourism in any particular area depend in part on whether the tourist activity is summer- or winter-oriented and, for the latter, the elevation of the area and the impact of climate on alternative activities and destinations.

Some Sports and Business Impacts:

- Global Warming Poses Risks to Pacific Northwest Snowpack, Ski Resorts

  Global warming in the coming decades may cause the disappearance of large areas of the low-elevation snowpack in the Cascade Range of the Pacific Northwest, with significant impacts on ski resorts in the region. Current global climate models predict more frequent winter rain events and earlier snow melt in the spring, which would also affect planning for irrigation and flood control. Snowpack is one of the critically important factors for recharging groundwater, since it melts slowly and more of it infiltrates rather than running off as rainfall does. Similar results would almost certainly be seen in the Sierra Nevada range of California, too. Research by Oregon State University. *Journal of Hydrometeorology* (accepted for publication).

- Lower Snowfalls and Increased Climate Instability in the Alps—Impacts to Resorts, Manufacturers, Retailers, Guide Services

  The past winter season in Europe in was warm and mild. A prediction has been made by the Organisation for Economic Co-operation and Development (OECD) that there will be reduced snowfalls and snow cover in Europe in the future, and consequently increasing losses in winter tourism in Europe and increased exposure of settlements and infrastructure to natural hazards. This comes from a two-year study in Europe that made the first systematic international analysis of the snow-reliability of Alpine ski areas under climate change for five countries in the region (France, Switzerland, Austria, Italy and Germany). The implications of this assessment extend beyond the European Alps to other mountain systems which may face similar climate and contextual challenges, for example in North America, Australia and New Zealand. *See* "Concern over Europe 'snow crisis.'" BBC News Report, Dec. 16, 2006; "Climate Change in the European Alps: Adapting Winter Tourism and Natural Hazards Management." OECD publication, Jan. 2007.

Some Ecosystem and Public Land Impacts:

- Less Snowpack, Diminished Water in California

  Observations of earlier snow melt and a decrease in late spring and summer river flow rates show that California is getting warmer. Recent winter river flows have increased and spring river flows have decreased, showing that the snow in the Sierras is melting faster and causing a shift in the timing of mountain runoff. California is not able to capture that increased wintertime runoff because the state's reservoirs during that time of year (winter months) are typically as full as they are allowed to be. There is a trend of less water when it's needed and more water at the wrong time. "Global Warming Affects California Water." Lawrence Livermore National Laboratory *Newsline*, July 2004.

- Changing climatic conditions are already affecting some parks.

  Montana's Glacier National Park has only 27 glaciers today, down from an estimated 150 glaciers that existed there in 1850. The largest glaciers in the park are, on average, only 28 percent of their previous size. Retreat of mountain glaciers has already begun in other parts of North America and in other regions of the world as well. *Our Changing Planet: The U.S. Climate Change Science Program for Fiscal Year 2006*. A Supplement to the President's Fiscal Year 2006 Budget. *Climate Change 2001: Impacts, Adaptation and Vulnerability*. Cambridge University Press.

- Climate change is transforming Alaska's landscape.

  Lakes and wetlands in the Kenai Peninsula of south-central Alaska are drying at a significant rate. The shift seems to be driven by climate change, and could endanger waterfowl habitats and hasten the spread of wildfires. A significant landscape shift from wetlands to woodland and forest in the Kenai Peninsula Lowlands is documented, the trend fitting within a global picture of drying wetlands in northern latitudes, with similar changes already appearing in lower latitudes. National Research Council of Canada and *Canadian Journal of Forest Research*, **35**: 1931–1941 (2005).

- Certain fish species are becoming less abundant worldwide.

  Fish populations and other aquatic resources are likely to be affected by warmer water temperatures, changes in seasonal flow regimes, total flows, lake levels, and water quality. These changes will affect the health of aquatic ecosystems, with impacts on productivity, species diversity, and species distribution. Intergovernmental Panel on Climate Change (IPCC), 2001: *Climate Change 2001: Impacts, Adaptation, and Vulnerability*. Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

- The composition of most current ecosystems is likely to change.

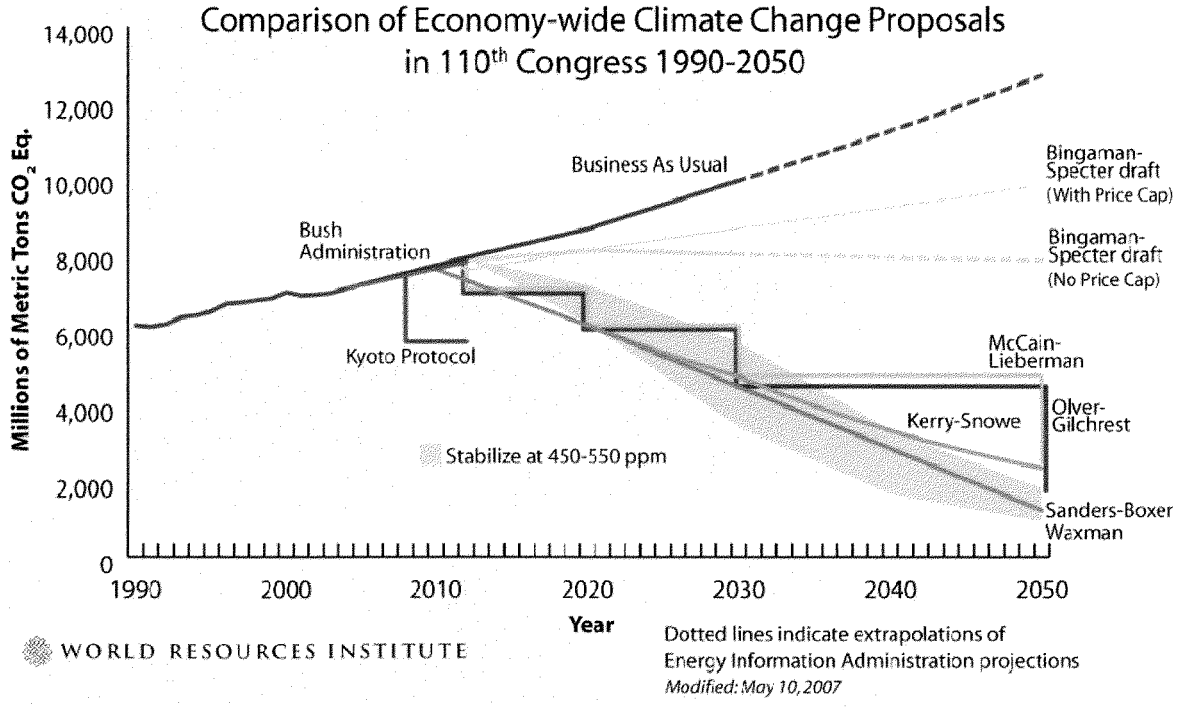
  The habitats of many species will move pole-ward or to higher elevations from their current locations. The risk of extinction will increase for many species that are already vulnerable. IPCC, 2002. Technical Paper. *Climate Change and Biodiversity*.

- *See also* web sites on climate change:

  at the U.S. Environmental Protection Agency
  (http://www.epa.gov/climatechange/index.html)

  at Environment Canada
  (http://www.ec.gc.ca/default.asp?lang=En&n=6EE576BE-1)

- The Intergovernmental Panel on Climate Change (IPCC) will release its Fourth Assessment Report in four volumes over the course of 2007. The completion of this report will be the culmination of six years of work.



On April 26, 2007 the Canadian Minister of the Environment, the Honorable John Baird, unveiled an action plan that will regulate major industrial sectors in Canada to tackle climate change and clean up the air. This announcement is one of the main features of the Canadian government's environmental agenda.

Senator BOXER. Thank you, Mr. Campion, for your very eloquent testimony, and also just giving us the numbers to back it up. We appreciate it.

Betty Huskins, chair of the Southeast Tourism Policy Council. Welcome.

STATEMENT OF BETTY HUSKINS, CHAIR, SOUTHEAST TOURISM POLICY COUNCIL, ADVANTAGEWEST

Ms. HUSKINS. Thank you. I appreciate your, Senator Boxer, inviting me to be here today. I would also like to thank you for your leadership in this arena.

I come to you today wearing several hats. First of all, I am the chairman of the Southeast Tourism Policy Council, which is an arm of the Southeast Tourism Society, which represents tourism businesses and organizations in 11 southern States, of which in all of those, tourism is either the first or second largest industry in those States.

Second, I am the senior vice president for a regional economic development group in the mountains of North Carolina, called AdvantageWest. We were established by the North Carolina General Assembly.

Last, but not least, I come to you as a business owner in the tourism industry. My husband and I are fortunate enough to own a lodge and restaurant that his family built in 1937, adjacent to a 90-foot waterfalls, Linville Falls, and within walking distance to America's first wilderness area in eastern America.

So I wear several hats to be able to talk to you about how it really is affecting things on the ground level. First, I will tell you a little story. We never get hurricanes in the mountains of North Carolina. As a rule, that is a coastal issue that we worry about our friends on the coast. But in 2005, due to the flooding, we received 19 inches of rain in 24 hours. The Blue Ridge Parkway was washed away in five different locations, and it was closed for almost 2 years to make those repairs.

So it was very difficult as a small business owner to be able to live through that, and be able to hold onto your business. We were fortunate enough to do that, but many of our friends were not, so a lot of businesses were closed in North Carolina.

At Southeast Tourism Society, we are very concerned about the tourism product. We have been so concerned about it that in 2004 we held our first Federal Summit in Louisville, KY. We brought together the private sector tourism people. We brought together the Federal land managers for the Federal lands in the Southeast, and we spent 3 days discussing ways that we could collaborate and work better together.

I am proud to tell you that that summit resulted in a memorandum of understanding between us and 12 Federal agencies, to have that discussion. We continue to do that on a regular basis. We are meeting quarterly with our Federal partners.

Now, in North Carolina, my home where I work and live, we boast two of the most visited parks in the Nation: the Great Smoky Mountains National Park and the Blue Ridge Parkway. It contributes about $7.5 billion annually to our economy, and Senator Sanders, it provides about 95,000 jobs in our State. It consistently ranks

at the top of the reasons of why people come to the State of North Carolina.

My personal experience as an economic developer I would like to share with you. As you know, North Carolina led the Nation in the loss of manufacturing jobs 2 years in a row. Most of that was in furniture and textiles, and I am glad to say that we are back. We are coming back with a strong economy now. In my region, the natural resources and an asset-based economic development strategy has sustained us during that time that we were losing all those manufacturing jobs. We have been able to hold on to our quality of life.

It is interesting to me now to see that we are working with entrepreneurs that are coming there because we have created skills from that furniture industry as boat builders. The boat building companies are coming to North Carolina. We have announced three of those in the last year. They are looking for those skills that we had in the furniture industry.

We are working with entrepreneurs that are building the better bicycles, doing innovative products with kayaks, and also one company that is doing what we would call a high end tailgating product that they are putting out on the market right now.

So all of those things are related to outdoor recreation, and they are critically important to those communities that I work with that are gateway communities next to Federal and public lands. So this industry, along with technology and advanced manufacturing, is helping us create a new economy and a strong quality of life, and it is critically important to us.

Now having said all that, we believe that probably the most important aspect is that Americans really need the outdoors. Their health probably depends on it. I know I am preaching to the choir because I have heard all of you speak today. I don't know if you have read "The Last Child in the Woods: Saving Our Children from Nature Deficit Disorder." You probably all have. But if you haven't, I would say that you might be shocked to hear quotes like, "I like to play indoors because that is where all the electrical outlets are." You also might find it shocking to know that a survey taken in 2002 by the Science Journal found that more children knew the characters in the Pokemon game than could identify an otter, a beetle, or an oak tree. That is pretty amazing.

But we believe that the knowledge of nature is the best weapon for our young people to learn about stewardship of Mother Earth. So we need families traveling together to national parks, camping, fishing, exploring nature. We really cannot simulate that experience inside the home.

So in conclusion, let me say like it or not, change is a part of life, and we know that the environmental change in global warming has the potential to profoundly affect us both economically and personally. At the Southeast Tourism Society, we stand ready to collaborate with you and our Federal partners to develop ways that we can blunt the impact of environmental change, and protect our natural resources. We believe we have to all work together and make the hard decisions and take personal responsibility.

Thank you very much.

[The prepared statement of Ms. Huskins follows:]

STATEMENT OF BETTY HUSKINS, CHAIR, SOUTHEAST TOURISM POLICY COUNCIL, ADVANTAGEWEST

INTRODUCTION

Good morning! Thank you Madam Chairman for inviting me to testify before this esteemed body. I come to you wearing several hats. First, I am representing the Southeast Tourism Policy Council, an arm of the Southeast Tourism Society which is a non-profit, 501(c)6, membership organization that covers 11 Southern States. The organization is dedicated to the development of industry organizations & professionals and the promotion of tourism within and to STS member states by sharing resources, fostering cooperation, networking, providing continuing education, cooperative marketing, consumer outreach, advice & consultation, governmental affairs and other programs. Membership includes State Travel Offices, Convention & Visitors' Bureaus & other Destination Marketing Organizations, attractions, advertising, lodging, media, educational institutions, product suppliers, travel writers and other related industry segments.

Second, I come to you as the Senior Vice President of a regional economic development organization, AdvantageWest Economic Development Group, created by the North Carolina General Assembly to serve twenty three mountain counties in North Carolina. I work in rural, gateway communities every day as part of my job.

Last, but not least I am a small business owner. My husband and I own and operate The Linville Falls Lodge adjacent to the first wilderness area in Eastern America, the Linville Gorge and less than a mile off the Blue Ridge Parkway, America's most visited Scenic Highway. Our business has been in his family since 1937.

STS appreciates your invitation to appear before the Environmental and Public Works Committee to discuss the issue of the potential impacts of global warming on recreation and the recreation industry and I want to thank you for your service in this body. It is no simple task to assume the responsibility of debating public policy regarding global warming and it affects on our society and the generations that come after us. As a tourism professional, I have witnessed the impact environmental changes are having on the travel and tourism industry as a whole. The Blue Ridge Parkway was closed almost 2 years after the flooding caused by the hurricanes of 2005. We were fortunate to weather that disaster at our small business. However, many of our friends were not so fortunate.

The tourism industry knows that fundamental policy issues must be addressed in order to sustain many of the very products, such as our publicly owned lands to remain appealing and available for future generations.

As tourism professionals, we recognize the impact environmental changes are having on the travel and tourism industry as a whole. In fact, in 2004 STS brought together private sector tourism marketers and public sector federal land managers to find common ground on ways that our natural, historical and cultural treasures could be preserved for future generations. As such, it represented a milestone in the changing tourism environment. The summit proposed to explore the magnitude of the travel and tourism industry and to develop a better understanding of the economic and social roles played by public land managing agencies at the Federal and State levels. Such a Summit was long overdue, and it was essential that the private tourism industry and public lands agencies engage one another in positive dialogue and comprehensive strategies to develop, market, and use public lands in sustainable ways that will not impair resource values.

The policies that guide the operation of the tourism industry and the policies that guide the use and development of public lands deserve thoughtful attention and the travel and tourism industry in the southeast is aggressively pursuing public private partnerships to insure protection of our treasured natural, cultural and historical resources for future generations.

Fundamental policy issues must be addressed in order for the tourism industry to sustain itself and for our publicly owned lands to remain appealing and available for future generations. Tourism is hugely important to our region's economy and to our quality of life. We recognize the need to address environmental change and degradation on our industry's future ability to provide economic stimulus to so many of our rural communities.

As recreationists, we understand our environmental responsibility to be stewards of the treasured resources in our region. In fact, recreationists were at the vanguard of calling for environmental legislation in the 60's and '70s, which is the primary rationale behind many of the regulatory goals that are framed in "fishable and swimmable waters" and Class 1 viewsheds in national parks. Protecting both the recognition of tourism as a vital component of federal land management policies and our natural resources is why we favor, common sense proposals to balance the needs

of tourists and the environment, for example, lowered emissions from our cars and trucks and other recreational products.

That said, Americans love the outdoors and benefit from time in the outdoors—both the magnificence of significant parklands like the Great Smokies and small wonders like urban green space—and we can't take actions which shut people up in their homes, unable to enjoy and benefit from the public lands and waters that are their birthright.

There is nothing wrong with driving to the beach, a national park or a ski area. And there is nothing wrong with camping and boating and riding horses and ATVs—activities that require an ability to carry and tow sizeable items. As we encourage changes to reduce emissions, let's not create other problems—including health problems or crises for rural communities dependent on recreation and tourism.

In our smaller rural settings and gateway communities, recreation is the primary economic generator.

In fact, the recreation economy:

- Contributes $730 billion annually to the U.S. economy
- Supports nearly 6.5 million jobs across the United States
- Generates $88 billion in annual state and national tax revenue
- Provides sustainable growth in rural communities
- Generates $289 billion annually in retail sales and services across the United States
- Touches over 8 percent of America's personal consumption expenditures—more than 1 in every $12 circulating in the economy

In my home state of North Carolina, spectacular recreation sites, from Mt. Mitchell to the Outer Banks, bring tourism dollars from out-of-state outdoor recreation participants. In the small village of Linville falls where I live and operate a business, we depend on it for our livelihood. In North Carolina alone, outdoor recreation contributes more than $7.5 billion annually to North Carolina's economy and supports 95,000 jobs across the state. The bottom line for us is simple. Outdoor recreation creates sustainable long-term economic growth and community development for many small businesses.

I would like to share another perspective with you regarding the economic importance of outdoor recreation I have seen recently in the mountains of North Carolina. As you know, North Carolina led the nation for two years in the loss of manufacturing jobs. Those jobs were primarily in textiles and furniture. We have been on a long road of recovery. However, the mountain region in particular, has sustained itself because of their bountiful natural resources and our people's ability to focus on an asset-based economic development strategy. It has been interesting to see the boat manufacturers moving to our region to fill the gap created by the loss of furniture manufacturers. They have come for many reasons, but certainly the skills of fine furniture makers in our labor force have been very instrumental in luring them to North Carolina. In addition, we at AdvantageWest find ourselves now working with entrepreneurs manufacturing new bicycle products, better kayaks, innovative campers, and high-end tailgating equipment. All of these products focused on the great outdoors.

Outdoor recreation is vital to the local economies of rural America. White House recognition of tourism as an important tool in rural economic development came on January 22, 1990, when the President ordered implementation of the Report on Rural Economic Development for the 90s. This report explains that opportunities for economic development for rural America will be found primarily in off-farm employment opportunities, especially in industries such as tourism, retirement living, and commercial recreation, which all serve to bring additional income to rural communities. In remarks on October 28, 1991, the President state: "More and more rural communities are making tourism a part of the economic development option for the nineties. And the U.S. Travel and Tourism Administration, along with other government agencies, is working to put small-town America on the tourist map. As part of that initiative, federal agencies will provide leadership for educational outreach programs in rural tourism development."

But outdoor recreation encompasses far more than economic development. Perhaps one of the most significant observations with regards to the benefits of outdoor recreation is the important role it can play in improving the overall health of Americans. There is a profound connection with outdoor recreation to a healthy lifestyle. Obesity has been declared epidemic. Connecting the benefits of outdoor recreation and the positive effects it can have on obesity offers a possible solution for this crisis affecting so many Americans.

Now, more than ever, we need to be promoting outdoor recreation and its benefits, particularly to our youth. There is growing evidence that today's children are gravi-

tating away from outdoor experiences and towards a virtual indoor reality. This disconnect from nature has serious long-term implications for the cognitive, physical, social and emotional well-being our nation's children. Richard Louv's recent book "Last Child in the Woods—Saving our Children from Nature-Deficit Disorder" analyzes the societal problems that have arisen in the last generation of youth, who have lost contact with nature. Louv quoted a fifth-grader who claimed, "I like to play indoors better cause that's where all the electrical outlets are."

We must find smarter solutions to the global warming issues, but we cannot replace the value of a family spending time together in their RV in a national park, or a grandparent's right to pull the family boat to the lake to teach their grandchildren the excitement of catching a fish. We cannot simulate those priceless experiences through video games from inside our homes without becoming unhealthy and uninspired.

Kids need to know about nature. It nurtures, educates and instills them with a sense of stewardship for the environment. A survey reported in 2002 in The Journal of Science found that more children knew the characters in the electronic game Pokemon than could identify an otter, beetle or oak tree. Nationwide, the science literacy of citizens—both young and old—has eroded. The implications of this oversight represent the most critical global challenge, one that our country cannot afford to overlook. The promotion of outdoor recreation offers a significant alternative approach towards educating our young people about the importance of stewardship.

Knowledge of nature is their best weapon if young people are to ultimately make good decisions about personal health, climate change and land-use management. They need to touch flowers and know why some plants cannot survive without insect pollinators, to walk in a forest and understand how many millions of years were required to create petroleum from dead plants.

So important is this issue that the American Recreation Coalition and the National Forest Foundation convened a series of Recreation Forums in earlier this year designed to provide organizations and individual's opportunities to:

- identify unmet needs and challenges facing recreation on public lands; and
- provide examples of successful and innovative efforts to provide the nation with outstanding outdoor recreation experiences on public lands, and especially national forests; and
- express ideas and offer suggestions for enhancing the ability of public lands to meet the recreation needs of—and the resulting benefits to—the American public.

CONCLUDING REMARKS

Like it or not, inevitably change is a part of life. As we grapple with changes to our environment, changes in our economy, and changes to the way our children play and learn, we must recognize the critical role that tourism plays in addressing each of these challenges. The impact of environmental change and global warming has the potential to profoundly affect our businesses and our communities. Recognizing this is why the tourism industry has already begun to reach out to our federal partners to collaborate on ways we can blunt the impact of environmental change and protect our natural resources of decades to come.

Through the STPC and a memorandum of understanding with 12 federal agencies, we have already begun to partner with the federal management, we stand ready to work with Congress to identify and implement policies that will ensure our environment, our communities, and our economy are not only protected, but thrive.

In conclusion, we believe we must all work together, across party lines and across economic and environmental barriers to do the right thing for us, our children and our grandchildren. We must make the hard decisions. However, as you move forward developing national policies in this regard we would urge you to keep the delicate balance we have discussed today in the forefront so as not to have "unintended consequences" that develop from over-reaching federal regulations.

Senator BOXER. Thank you, Ms. Huskins, for that message of unity, which we welcome in this committee.

Mr. Watson, the Vermont Association of Snow Travelers.

STATEMENT OF BRYANT M. WATSON, EXECUTIVE DIRECTOR, VERMONT ASSOCIATION OF SNOW TRAVELERS, INC.

Mr. WATSON. Madam Chairman, distinguished members of this committee, it is a great honor and pleasure to be here today. I do represent the Vermont Association of Snow Travelers, more com-

monly referred to as VAST. The Vermont Association of Snow Travelers was established in 1967, therefore we are in our 40th year, 40 years old. We are very proud of that. We have grown from a single club in 1967 to 140 clubs today.

In 1970, the State of Vermont started operating what they called the Statewide Snowmobile Trails Program, or SSTP. They operated this program through 1977. Then in 1977, they decided that they didn't want to be in the snowmobile trail business, and put out an RFP for businesses and/or organizations to respond to and come up with a proposal to operate the Statewide Snowmobile Trails Program for them. VAST did this, and in 1977 we took over the responsibility for the Statewide Snowmobile Trails System in Vermont.

At that time, there was a total of 77 miles of snowmobile trails in the State of Vermont. Today, we have 4,750 miles of groomed corridor trails, and in what we classify as secondary trails, we have an additional 2,500 miles of trails. These trails run from the Massachusetts border in the south to the Canadian border in the north, and from the New Hampshire border in the east to the New York border in the west, and everywhere in between. We are the only true statewide snowmobile trail system in that regard.

Vermont is a Mecca for outdoor recreation, especially winter recreation—downhill skiing, cross country skiing, dogsledding, ice fishing, hunting, and of course, my favorite sport, snowmobiling. Snowmobiling, in Vermont, is a way of life, and as many as 46,000 participants snowmobile on an annual basis and take advantage of our trail system.

As many as 20,000 of those who recreate in Vermont are nonresidents. They come to us from Connecticut, Massachusetts, New York, Maine, and many of the States throughout the area. These people not only bring with them lots of money when they come to Vermont to visit, but a lot of them buy second homes, and a lot of them buy homes and become residents of the State of Vermont and run their businesses from them, because of the quality of life that we provide within the State of Vermont.

These snowmobilers, up to 46,000 of them, based on a 2001 economic impact study that we completed, provide a $500 million a year economic impact for the State of Vermont. Recreation in general brings in $2.5 billion to the State of Vermont's economy on an annual basis.

I fear for that impact on winter recreation. The winters of late have come very late. We normally would see snow in December, espeically in early January and throughout January, which normally would be our coldest month. That has not taken place in the last half decade. We are seeing more and more rain in December, rain in January, very warm temperatures, and then in February we get our very cold weather. So when you look at the winter recreation time period, basically 4 months, December, January, February and March, we are cutting that time period in half when we can bring in this $2.5 billion for recreation.

It is a very serious problem. Because of that, a lot of people are not continuing to snowmobile. They are saying, well, it is really not worth it this year, so I am not going to register my snowmobile. I am not going to buy my trail pass. I am not going to go out there

because I only have a couple of weeks or 6 weeks at the most to be able to enjoy the sport.

It is not only Vermont where we see this happening. Snowmobiling is a $21 billion a year industry across the United States. We see this happening in Minnesota. We see it happening in Wisconsin and Michigan, New York, New Hampshire, Maine, any of the States that have snowmobile trail systems. They are seeing the same types of winter events.

We are also finding that the events that we have over the last couple of years, especially in February. These February snowstorms have had have been large Nor'easters. They have come in and they have dumped a lot of snow, but they have also done a lot of damage, that has created millions of dollars of damage, especially to forest lands. It has decimated a lot of our softwood forests and maple forests in the State of Vermont.

So there are in fact economic impacts created by climate change. Job losses, dealerships with the State of Vermont are giving up their dealerships because of falling sales. The sales are down because of the short winters. People are not buying the new snowmobiles. The mom and pop stores, the hotels, the motels, the restaurants and many more, especially in the Northeast Kingdom of Vermont, where snowmobiling is the only form of winter recreation that brings in millions of dollars a year to those businesses in the northeast.

So we really need to look at climate change. I commend Senator Sanders and those of you who have signed on and introduced S. 309. This bill amends the existing Clean Air Act and would establish new benchmarks to help control the effects of global warming. Our Nation needs to become energy self-sufficient. We must immediately start working toward that goal and give incentives to those who would develop clean energy supplies, such as E–85 ethanol, biodiesel, hydrogen fuel cell technology, solar, wind, tidal current energy, renewable wood energy, and for my part, after spending 7 years of my life as the manager of Member Services for Vermont Electric Cooperative, I believe we need to pursue nuclear energy as well.

If the United States does not have an energy supply that is cheap, plentiful and clean, we will continue to lose industry and jobs to countries that have an abundant supply of energy to fuel their commerce and industry.

Thank you.

[The prepared statement of Mr. Watson follows:]

STATEMENT OF BRYANT M. WATSON, EXECUTIVE DIRECTOR, VERMONT ASSOCIATION OF SNOW TRAVELERS, INC.

Good morning Senators, my name is Bryant Watson and I am the Executive Director of the Vermont Association of Snow Travelers, Inc. (VAST), located in Berlin, Vermont. It is indeed a pleasure, privilege, and honor to come before you today to address the issue of "Climate Change and its Impact on Recreation."

Vermont is a Mecca for winter recreation: downhill skiing; cross country skiing; dog sledding; ice fishing; hunting and of course I can't forget my favorite recreation, snowmobiling.

There are 24 states, throughout the United States, that operate snowmobile trail programs. VAST is very unique; it is the only private not-for-profit organization, in the United States that is charged with the development, management, and maintenance of its state snowmobile trail system. In the remaining 23 states, state agen-

cies are responsible for the development and maintenance of their snowmobile trail programs.

VAST was established in November of 1967. We will celebrate our 40th anniversary this fall. In 1977 VAST entered into a cooperative agreement with the Vermont Agency of Natural Resources, Department of Forests, Parks and Recreation. This agreement transferred responsibility for Vermont's Statewide Snowmobile Trail Program (SSTP) to VAST. At the time the agreement was signed there were only 77-miles of snowmobile trails that were classified as a part of the Statewide Snowmobile Trail System (SSTS). Today, the SSTS consists of more than 4,750-miles of groomed corridor snowmobile trails. Local clubs and contractors groom and maintain these trails under contract on behalf of VAST. An additional 2,500-miles of secondary snowmobile trails exist, and local snowmobile clubs maintain these trails. This system of snowmobile trails allows Vermont snowmobilers to snowmobile from the Massachusetts border in the south to the Canadian border in the north. It also allows them to snowmobile from the New Hampshire border in the east, to the New York border in the west. This makes the Vermont SSTS the only true statewide snowmobile trail system in the nation.

Snowmobiling is a way of life in Vermont. Each year as many as 46,000 individuals take to the snowmobile trail system in Vermont. Many of these snowmobilers come to Vermont from other states and countries, and some years as many as 20,000. They not only spend great amounts of money while they are in Vermont, but many of them buy second homes and/or move their formal residence to Vermont due to snowmobiling and Vermont's quality of life.

The latest economic impact study, conducted in 2001, indicates that snowmobiling contributes more than $500,000,000 annually to Vermont's economy, second only to downhill skiing in the category of winter recreation. Vermont is a very small state and it relies on recreation and tourism to fuel a major portion of its economic engine. Recreation as a whole contributes more than $2,500,000,000 to Vermont's economy, annually. However, the time frame in which these funds can be generated is very short; especially, the time frame for winter recreation.

The legal snowmobile season in Vermont starts on December 16 and the official ending date is April 15. In 4 short months, VAST generates more than $500,000,000 for Vermont's economy. In recent years this has become a great challenge. Winter has not arrived in Vermont at its normal time! When we should be seeing lots of snow and temperatures well below freezing, we have seen rain and temperatures above freezing. It takes plenty of snow and cold weather to enable the opening of Vermont's SSTS and the ski trails at Vermont's ski areas, that offer superb downhill skiing to tens of thousands of visitors each year. Much of the income generated from snowmobiling and downhill skiing is created during holiday periods. Christmas and New Years are very important, as are the weeks surrounding Martin Luther King, Jr.'s birth date; President's Day and St. Patrick's Day; Easter is a bonus for both forms of recreation. We must be able to offer snowmobiling and downhill skiing during the above periods. If we cannot, the season is normally lost and the state's economy feels the pinch.

This past winter is a perfect example. December and the first half of January were well above normal, both in temperature as well as precipitation in the form of rain. The second half of January was cold, but we did not have much or any natural snow in most locations in Vermont. The first part of February delivered normal temperatures, but not much snow. Then came the "Valentine's Day Blizzard!" It delivered more than 36-inches of snow statewide and finally allowed for all of the SSTS to open. Prior to that time, only ten percent of the SSTS had been open. Then came another blizzard on St. Patrick's Day; this storm left more than 24-inches of snow over most of Vermont. The day before the close of the season, April 14, much of the state got more than 18-inches of wet, heavy snow.

An observation that I have made is that winter storms now seem to come later in the season and they are much more intense than in the past. Several of this year's storms were strong Nor-easters and created losses for many private and public landowners, hundreds of acres of forestland were devastated by the heavy snow and strong northeast winds, causing millions of dollars of damage.

Based on the above, both the snowmobile industry and the downhill ski industry missed the first half of winter and have suffered significant financial losses. VAST must generate between four and five million dollars in revenue in order to have a successful snowmobile season. The majority of income supporting the SSTS is derived from the sale of trail passes. These trail passes are similar to season or day ski passes that are purchased and allow the buyer to use downhill ski areas. The VAST trail pass enables Vermont snowmobilers to legally ride Vermont's SSTS. The sale of trail passes were down nearly 40 percent this last winter. This leaves VAST

with a huge dilemma, how do we cope with the changing climate and survive for the future?

One way that VAST is currently pursuing the future is with the development and management of four-season recreational trails; this is being accomplished with the assistance of Senator Sanders and the United States Congress. VAST is in the process of converting an old abandoned 96-mile long rail bed into a four-season recreational trail. Senator Sanders was instrumental in working with VAST and Congress to obtain a federal high priority grant for this project. VAST has been designated, by the Vermont Legislature, as the Developer and Manager of this project. We have signed a long-term lease with the Vermont Agency of Transportation for the use of this state owned treasure. The trail, when completed, will become one of the longest rail trails in the nation and it will span the width of Vermont, starting in the east near the Connecticut River in St. Johnsbury and ending in Swanton to the west, at Lake Champlain. Currently, we are developing the final plans that will allow this dream to become a reality. Once completed, the trail will draw thousands annually to Vermont, throughout the four seasons; the trail will enable them to enjoy the majestic, pastoral beauty that is Vermont.

Thank you for this opportunity.

Senator BOXER. Thank you very much, sir.

Our next speak is Derrick Crandall, president of the American Recreation Coalition. Welcome, sir.

STATEMENT OF DERRICK A. CRANDALL, PRESIDENT, AMERICAN RECREATION COALITION

Mr. CRANDALL. Thank you, Madam Chairman. I have to say that the members of this committee have made my job very easy. The first four pages of my testimony said less well than you said the importance of recreation in America today. I certainly relate to each one of the members here. As a member of a family that was rooted in Ashaway, RI, that took Zane Grey out fishing with line and twine years ago, as a brother-in-law of the person that runs Greenland Geographics and does a lot of remote sensing, and as the husband of a graduate of UVM, and as somebody born in New Jersey and spent a lot of time enjoying the outdoors of New Jersey, I am delighted to hear the testimony that you have given to the importance of recreation in America.

I would like to simply say that recreationists have been at the vanguard of environmental protection for generations. In fact, during my days up in New Hampshire with acid rain in the 1960s and 1970s, the recreation community took the lead in talking about the impact on the forests, on the fishing, and the other kinds of things, and helped to bring about a recognition of the importance of limiting the emissions of Midwest and other electrical generation centers that were causing a decline in the fisheries of the Nation.

It is for that reason that the recreation community can and should continue to be a leader in responding to the challenges that you are now addressing with global climate change.

There certainly are scientific reasons to argue about what the specifics are, but the urgency of acting is certainly clear. There is no reason to delay until all the facts are there. I am proud to say that the recreation industry continues to be a leader.

I would like to simply outline a couple of the things that are being done. One of the areas that we are especially proud of is within the national parks of this Nation, an especially important area. Concessioners like Xanterra are leading the way with an ability to keep out of the trash area 5 million pounds every year through recycling and reuse, through even taking the grease from

the restaurants and recycling that into biodiesel and using that in buses, and finding alternative ways to move people within our parks, tremendous successes.

That is not the only example. Concessioners are leading the way. In fact, fixed recreation sites are asking today: can we, should we, and will we do more? The answer is absolutely yes. We need to find those ways. We need to find the right solutions, and the recreation industry intends to be a leader in all this.

I would also like to compliment, and I know we have somebody here who knows a lot about the X–Games. I just want to talk about the importance of what the Walt Disney Company has done. Of course, Walt Disney owns ESPN, and through the Environmentality Program has brought a revolutionary new kind of perspective to look at how the impact of the X–Games can be modified through use of green power and a variety of other kinds of ways. They are still fun. They are still great, but in fact now the environmental impact of the X–Games has been modified directly.

So I come to you today with both a message of hope and opportunity, and also just some concerns that we need to express. Betty Huskins mentioned the work of Richard Louv, the author of "Last Child in the Woods." He has been here in Washington on Monday and Tuesday. I am sorry that the Senator from Minnesota isn't here. I was with her colleague, the wonderful gentleman who represents the Eighth District of Minnesota, Jim Oberstar, the leader of our Scenic Byways Program.

Incidentally, I would like to compliment this committee. You have been leaders in the National Scenic Byways Program, and in fact you are helping because by slowing down the travels in this Nation, the travels are more efficient. A car moving at 40 to 50 miles an hour on a scenic byway, you see more, but you are also getting more miles to the gallon, and that contributes in its own way.

But I guess the point is that Richard Louv was addressing the scenic byways community up in Baltimore, and then came down and was paired with an announcement of More Kids in the Woods, a grant program that the Forest Service has just kicked off. He talks about bookend issues, global climate change, and the decrease in outdoor participation by America's youth. Both are issues we need to take action on immediately.

The fact of the matter is that America's youth need to know intimately the kinds of experiences that we have shared in the outdoors to have a passionate commitment to environmental protection. I think we can and we should be doing that.

As we turn to where we can go in terms of responding to greenhouse gas emissions, there are two areas. The first is fixed sites where people go to recreate. About 75 percent of recreation occurs at and along the Nation's largest waters—our ocean fronts, the major lakes, the major rivers. Those areas need to be leaders in terms of demonstrating commitments to both innovative ways to reduce consumption of energy and other kinds of things, and also looking to ensure continued emphasis on clean water.

We are also looking at other ways that we can assist. Throughout this country, from major metropolitan areas from Washington to Denver to other areas, we see an exodus of people towing recre-

ation items, whether those are snowmobiles or RVs or boats every weekend. We are working now with the Federal land managers to look at if we can't find better ways to store those recreational items closer to where people use them, and reduce the unnecessary use of energy as those vehicles are towed back and forth from where you live to where you play. We can do more in that.

We also believe that there is an opportunity to look at alternative ways to access our national parks and national forests. Very few areas of this country are served well by public transportation to be able to access that.

However, we do want to make sure that in our needed actions to address global climate change, that we don't kill the goose that lays the golden egg. We don't want to discourage healthy, active lives and the travel to see special places like national parks that unify all Americans and create those marvelous family memories. We need to remember that any fuel efficient SUV or even a motorhome gets more passenger miles per gallon than even the most efficient car with a solo driver. We need to not discourage the use of vehicles that are essential to towing and hauling the recreational products that are essential to active lifestyles.

Thank you very much.

[The prepared statement of Mr. Crandall follows:]

STATEMENT OF DERRICK A. CRANDALL, PRESIDENT,
AMERICAN RECREATION COALITION

Madame Chair and Distinguished Members, the American Recreation Coalition (ARC) appreciates the opportunity to appear before this body today to discuss an extraordinarily important issue: the potential consequences of global climate change on recreation and the recreation industry.

I am Derrick Crandall and I am appearing on behalf of the members of the American Recreation Coalition (ARC)—more than 100 national organizations, representing virtually every segment of the nation's $400 billion outdoor recreation industry, and tens of millions of outdoor recreation enthusiasts.

Our organization has played an active role in federal recreation policy since its creation in 1979. We were centrally involved in the creation and operations of the President's Commission on Americans Outdoors in the mid-1980's and the National Recreation Lakes Study Commission, which submitted its report in 1999 to the Congress and the President. Both spoke directly to the topic before this body today. We also were actively involved in the creation of the National Recreation Fee Demonstration Program and have enjoyed opportunities to work closely with this committee on such diverse programs as the National Scenic Byways Program, the Recreational Trails Program, the Wallop-Breaux program aiding fishing and boating, and programs to provide access to and safe transit across our public lands. We thank the Chairman and members of this body for the continuing interest shown in these important issues.

Outdoor recreation is a vital and positive force in our nation today. Nine in ten Americans participate in outdoor recreation today, and a major catalyst for this involvement is the marvelous shared legacy of our Great Outdoors—one in three acres of the surface of the nation managed by federal agencies and hosting well in excess of a billion recreation visits annually. ARC monitors participation in outdoor recreation closely through annual national surveys. A summary sheet on participation is attached.

The benefits accruing from recreation participation are significant, and the appreciation for these benefits is growing. The economic significance of outdoor recreation is obvious in communities across the nation, and especially those communities proximate to federally-managed lands and waters. From boat dealers to campground operators, from RV manufacturers to ski rental shops, from retailers selling outdoors goods to guides and outfitters, tens of thousands of businesses and millions of Americans are supported by $400 billion in annual expenditures on recreation by American families. And increasingly, America's recreational opportunities are a key factor in luring international visitors to enjoy the world's best systems of parks and forests, refuges and other public sites. It is especially noteworthy that two major seg-

ments of the recreation industry—RV and recreational boats—are solid US manufacturing businesses employing tens of thousands of skilled workers.

But the public recognizes that recreation contributes far more significantly to our nation in ways beyond jobs. Recreation is understood as a valuable means to encourage the physical activity we need to maintain our health. With two in three Americans failing to get the minimum level of physical activity recommended by the Surgeon General—just 30 minutes daily of moderate movement like walking—and obesity now responsible for medical costs greater than those linked to tobacco, opportunities to combine exercise with fun are an obvious priority. Studies now document that increasing recreation participation can be among the most cost effective strategies for reducing public health costs.

And the benefits arising from recreation don't stop there. Recreation can be a very effective means for increasing parent-child communications as well as a tool to deter violent crime and substance abuse. Outdoor settings and recreational activities have proven valuable as alternative educational programs, especially for disruptive youth and those with learning styles poorly suited to traditional classrooms. Earlier this week, a California author and journalist, Richard Louv, was in town to speak to two very important audiences: the National Scenic Byways Conference and a large gathering at the U.S. Department of Agriculture. Louv's book, Last Child in the Woods, has added to our lexicon with a new term: Nature Deficit Disorder. And he presents credible evidence that nature-robbed kids are much more prone to Attention Deficit Disorder and prescribed medicines like Ridalin with uncertain long-term consequences. Concerns expressed by Louv and others have motivated the recreation community to pursue strategies like the California Children's Outdoor Bill of Rights—which expressed a commitment to helping all children splash in clean water and hike through healthy forests (details appended).

RECREATION AND THE ENVIRONMENTAL PROTECTION

The recreation community has been a solid and active proponent of environmental protection for decades. Recreationists understandably care about waters that are too polluted to use for swimming and boating, and about national park vistas impaired by pollutants. This is why recreationists were leaders in arguing for action on acid rain in the 1960's. It is why recreationists and the recreation industry today support education and communications programs championing responsible use of the outdoors—programs like Leave No Trace and Tread Lightly! It is why national park concessioners have an incredible track record of initiatives to serve park visitors well while operating in an environmentally-friendly way.

One of the leading park concessioners is Xanterra. Xanterra uses renewable wind power and on-site large-scale renewable solar photovoltaic systems to reduce in-park air emissions and greenhouse gas emissions. Each year, Xanterra recycles, composts, and diverts from the local park landfill more than five million pounds of solid waste. Xanterra also recycles grease on-site into biodiesel for use in fleet vehicles and boilers, and uses hybrid vehicles, countless electric vehicles, and numerous alternative fuel vehicles throughout all of its operations.

Other concessioners are making similar strides. Buses now help visitors enjoy Yosemite Valley without reliance on personal vehicles—and the buses are powered by alternative fuels to reduce emissions. Boat fleets rented at Lake Mead by Forever Resorts use new-technology engines, again dramatically reducing emissions.

Other recreation companies are taking initiatives, as well. The Walt Disney Company has adopted a far-ranging strategy labeled Eco-Action Through Action Sports. Key to the effort is the X Games Environmentality" (XGE) Mission. Disney has committed its ESPN X Games to environmental stewardship in all facets of event planning, from waste reduction to recycling, from use of environmentally friendly products to use of renewable resources and reducing emissions through "green power" use at the X Games events. It further uses the ESPN X Games to encourage employees and spectators alike to proactively support its Environmentality creed.

RECREATION AND GLOBAL CLIMATE CHANGE

The recreation community is concerned about the potential of global climate change on recreation opportunities. Fears of an inability to provide skiers with snow, or the danger of coastal erosion and more violent weather in areas which draw large numbers of Americans for recreation—75 percent of all recreation occurs at or near the shores of our oceans, large lakes and major rivers—clearly concern us. And for that reason, the recreation industry seeks to be a vital part of public policy discussions and action on global climate change.

Can, should and is the recreation community taking actions to reduce greenhouse gas emissions linked to recreation: the answer to all three questions is YES. And

we feel that together, government, industry and individuals can achieve important goals that are good for the environment—and make economic sense, too.

Our efforts are in two fields. The first is at recreation sites. We know that there are practical steps that can and should be taken to reduce our environmental impact. We also know that the small business nature of the recreation industry makes and active technical assistance initiative by the Environmental Protection Agency, by the U.S. Department of energy and others vital to assist recreation businesses identify and adopt best practices.

The second issue is transportation-related actions. Mobility is one of the core underpinnings of recreation choices in America. Few of us live where we choose to play. And all of us benefit from the ability to travel from the regions in which we live to see and experience the priceless legacy of the outdoors—the one-third of the nation belonging to every American and managed by agencies including the National Park Service, the Forest Service, the U.S. Fish and Wildlife Service, the Bureau fo Land Management and the U.S. Army Corps of Engineers—special places that draw more than a billion visits annually. We strongly encourage public policies that continue and enhance the connection of the public to these places. That is why we support enthusiastically the National Park Service Centennial Initiative. Visits to these places yields mental and physical health benefits, memories which bond families and friends and unify us as Americans.

It is for that reason that we call upon the Congress to insure that actions to respond to global climate concerns do not serve to imprison Americans indoors.

It is important to understand that actions that reduce greenhouse gas emissions and promote mobility can be undertaken. In fact, we applaud this committee for its role in creating and nurturing the National Scenic Byways Program. Byways deliver great benefits to the public by slowing travelers down and making trails and fishing spots more accessible and more findable. Just the very fact that travel on byways is typically at 40 to 50 miles per hour is a contribution to emissions reduction, since it increases the efficiency of cars, SUVs and trucks markedly over that attained when traveling at Interstate speeds—or worse yet, in congested traffic on Interstates.

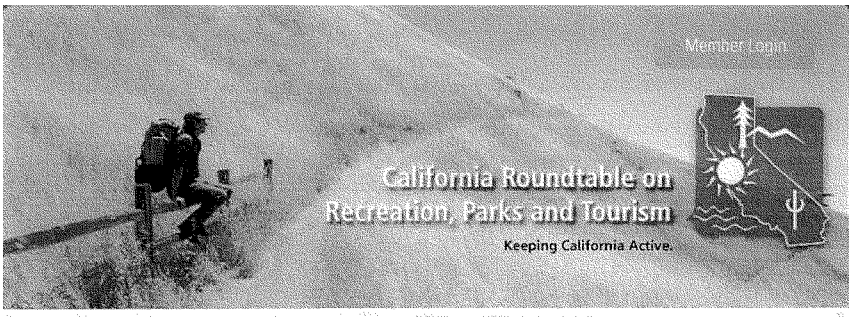
Concerns about greenhouse gas emissions has also spurred the recreation community to open a dialogue with federal recreation site managers, gateway communities and others about ways to reduce consumption of motor fuels in another important way. Millions of Americans tow or carry large recreational items from home to recreation site—often every week. This movement reduces vehicle efficiency significantly. We are seeking to protect the ability of Americans to camp, to boat, to use off-highway vehicles—but to leave these units nearby actual places of use. This could have a dramatic benefit on fuel efficiency and safety—and actually save American families money.

We also favor alternative transportation to personal vehicles for access to recreation sites. There are a handful of national parks and national forests that facilitate movement from urban residential areas to public recreation sites, including the Santa Monica Mountains National Recreation Area near Los Angeles and the Wasatch-Cache National Forest near Salt Lake City. We need efforts to make such access much more common.

We also ask help in overcoming an increasingly common complaint from recreationists: that easy access to free tire inflation stations has declined precipitously, despite that fact that properly inflated tires have been demonstrated repeatedly to be the easiest and most economic way to increase vehicle fleet efficiency.

In closing, we ask the Congress to be wary of the danger of actions that would discourage healthy active lives and travel to see special places like national parks. The reality is that a reasonably fuel-efficient SUV—or even a large motorhome—gets more passenger miles per gallon when occupied by a family than does even the most fuel efficient car available today when occupied solely by a driver. And the benefits to the nation are large. We know that towing and carrying capacity are key ingredients for purchases of vehicles by many American families, and we ask your help in protecting the ability of Americans to purchase vehicles that meet these needs.

Thank you for attention to this important issue.



California Children's Outdoor Bill of Rights

With recent concerns about youth detachment from outdoor activities, lack of physical exercise and increased health risks, the California Roundtable on Recreation, Parks and Tourism adopted the California Children's Outdoor Bill of Rights for the purpose of recommending a fundamental list of experiences that every child in California would benefit from experiencing, before entering high school.

Numerous studies document that children who do these things are healthier, do better in school, have better social skills and self-image, and lead more fulfilled lives.

Mission
To encourage California's children to participate in outdoor recreational activities and discover their heritage.

Objective
That every child in California, by the completion of their 14th year, have the opportunity to experience each of the activities listed within the California Children's Outdoor Bill of Rights.

Every child should have the opportunity to:

1. Discover California's Past
2. Splash in the water
3. Play in a safe place
4. Camp under the stars
5. Explore nature
6. Learn to swim
7. Play on a team
8. Follow a trail
9. Catch a fish
10. Celebrate their heritage

Additional Information
Children Outdoor Bill of Rights Document (PDF, 412kb, 21pgs)

Children Outdoor Bill of Rights Document (PDF, 7,537KB, 11pgs)

High Res Logo
(ZIP, Tiff, CMYK 2.24 mb)

COBR Banner
(pdf, 430kb)

Outdoor Recreation Activities Participated In Past Year: Trend Data

% who have participated in during past year; activities ranked by 2003 data

	1994	1995	1996	1997	1998	1999	2000	2001	2003
	%	%	%	%	%	%	%	%	%
Walking for fitness/recreation	NA	45	39	42	47	42	57	49	46
Driving for pleasure	40	36	33	34	39	35	41	36	43
Swimming	35	31	28	31	33	40	39	40	41
Picnicking	33	29	24	26	30	32	36	36	38
Fishing	26	24	22	20	22	28	26	28	28
Bicycling	21	20	16	19	19	22	23	23	22
Running/jogging	19	16	13	12	16	16	18	21	19
Campground camping	16	16	12	12	15	21	17	18	18
Hiking	18	18	12	15	17	15	19	22	18
Outdoor photography	15	15	10	13	15	12	17	17	17
Bird watching	14	11	8	11	10	11	16	18	16
Wildlife viewing	18	15	10	14	16	15	16	20	16
Visiting cultural sites	NA	NA	12	14	18	16	16	17	15
Golf	11	12	11	11	12	12	13	12	13
Motor boating	10	9	5	8	9	11	9	12	10
Back packing	13	12	8	7	10	10	9	10	9
Canoeing/kayaking	6	5	4	5	5	7	5	7	8
Hunting	8	7	7	5	7	8	8	8	8
RV camping	8	8	6	7	7	9	9	9	8
Wilderness camping	NA	NA	NA	NA	NA	NA	8	8	7
Horseback riding	6	5	5	4	4	6	5	6	6
Motorcycling	7	5	6	4	4	6	5	6	6
Off road vehicle driving	5	5	5	5	7	7	7	7	6
Target shooting	8	6	5	4	5	7	6	6	6
Tennis	9	9	7	8	5	6	8	8	6
Mountain biking	5	5	4	4	4	6	5	5	5
Personal water craft (e.g. jet skis)	NA	NA	NA	3	5	5	5	6	5
Downhill skiing	6	6	5	5	5	4	4	5	4
Water-skiing	6	6	3	4	4	6	4	6	4
In-line skating	NA	4	4	5	6	5	5	6	3
Rock climbing	4	4	3	3	4	3	4	4	3
Rowing	3	2	1	2	1	1	2	2	3
Sailing	4	3	3	3	2	3	2	4	3
Snorkeling/Scuba diving	4	3	3	3	3	4	3	4	3
Cross-country skiing	2	3	2	2	2	1	2	2	2
Snowboarding	NA	NA	NA	NA	1	3	2	3	2
Snowmobiling	2	3	2	1	2	2	2	2	2

(NA) denotes not asked

Senator BOXER. Thank you, sir, very much. Very good words. I think what has really been interesting about this hearing is, I don't know if people realize the majority invites and the minority invites. I think you are all speaking with one voice, which is really great for our committee. We need that to happen more often, I think.

Mr. Berry, we welcome you. Just to remind everyone, you are from the National Ski Areas Association.

STATEMENT OF MICHAEL BERRY, PRESIDENT, NATIONAL SKI AREAS ASSOCIATION

Mr. BERRY. Absolutely. Thank you, Chairman Boxer. Thank you, Senators. Thank you for this opportunity to testify on behalf of the 326 member ski areas of the National Ski Areas Association. Ski areas across the country are concerned about the issue of global warming and its potential impacts on winter recreation, mountain ecosystems, our livelihoods and our way of life.

I cannot think of a sector that will be more directly and profoundly impacted by climate change than the ski business. We in fact are the canary in the cage. As you have heard today, you have referenced time and time again the issue of the ski industry.

The success of our operations depends on the weather. We are a weather-dependent industry. For this reason, we have made tremendous efforts to raise awareness on the issue of global warming and put solutions in place to solve it.

In 2002, the National Ski Areas Association adopted a climate change policy. Our climate change policy was cutting edge in 2002 and unprecedented among businesses in the recreation industry. In summary, our climate change policy adopts a reduce, educate and advocate approach to fighting global warming. The policy calls for ski resorts around the country to reduce their own greenhouse gas emissions, educate our guests and the public about the potential threat of climate change in winter recreation, and advocate the need for policymakers to act now and act aggressively in curbing emissions.

Ski areas have taken tremendous steps to reduce our own greenhouse gas emissions. There are now 59 resorts in the United States purchasing renewable energy credits, or green energy, for their facilities and lifts. Of these 59 resorts, 28 are 100 percent green powered. The green power purchase of these 28 resorts results in avoidance of over 427 million pounds of CO_2.

Additionally, resorts are providing their customers with opportunities to purchase green tags to offset their carbon impacts when traveling to and from the resorts, or in fact to sign up for green energy in their homes. Resorts are also generating renewable energy onsite through micro-hydro projects and solar projects, and the first wind turbine will go online at a ski area in August 2007 at Jiminy Peak Mountain Resort in Massachusetts.

Resorts are also using green building techniques, retrofitting existing facilities to save energy, using alternative fuels such as biodiesel in resort vehicle fleets and providing and promoting car pooling or mass transit use by guests and employees.

As an industry, we are a relatively small source of greenhouse gas emissions. However, we recognize that we will need to help other industries to help turn this issue around. Ski areas have edu-

cated their guests and the public on the issue of global warming through an outreach campaign called Keep Winter Cool. NSAA's partners in the Keep Winter Cool campaign are the Natural Resources Defense Council and Clif Bar. Together, we have reached out to millions of people who ski and snowboard to make changes in their lives to fight climate change.

We have enlisted famous athletes like Picabo Street and Shaun White to help us inspire snow sports participants to take action now to fight global warming. I invite the members of the committee to visit our Website, www.keepwintercool.org for more detailed information.

Ski areas have advocated swift action on the part of policymakers to address the issue of climate change, both at the Federal and State level. During the 109th Congress, 71 ski areas in 21 States endorsed the McCain–Lieberman Climate Stewardship Act. During the 110th Congress, 35 resorts so far have endorsed the US–CAP approach to fighting global warming. Ski areas have also supported the adoption of renewable portfolio standards and cleaner fuels and cleaner vehicle emission requirements in a number of States.

Ski areas are aware of the many studies and models that project the impact of global warming on snowpack. As an industry, we have tracked the average number of days that our member resorts are open across five regions in the country. Over a 16-year period, our data shows a declining trend in the number of days open nationally and in several regions as well. More specifically, the data shows a decline of over one day nationally per season over the past 16 years, and a decline of 1.2 days in the Northeastern part of the United States.

As you are also aware, there have been four recently published reports that specifically predict the economic harm to the American ski industry as a result of climate change. Two were authored in mountain communities in the western United States: Climate Change in Aspen: An Assessment of Impacts and Potential Responses by the Aspen Global Change Institute; and Save Our Snow: Climate Change in Park City by the Stratus Consulting Group.

There are plenty of good reasons for ski resorts to be concerned about climate change and its potential impact on winter recreation. If as scientific models suggest, warming continues, we will experience a decreased snowpack, warmer nights, shorter seasons, and all of these changes could profoundly affect our industry. Fewer operating days would obviously impact our bottom line. Warmer nights would impact our ability to make snow, and snow making has become the norm in the industry with over 88 percent of our members making snow.

For snow sports, the ski and snowboard industry in the United States at the resort level is a $5 billion industry. It employs 165,000 people. When you add in development, the equipment and apparel side of the industry, and all of the other businesses that rely on winter tourism, we have a significant and profound impact on the economy where we exist. In fact, we are particularly crucial in the rural economies across the country.

There are ski areas in 37 States. Fifteen members of the committee have ski areas in their States, including the great State of Rhode Island. The ski industry views climate change as a long-term problem. However, we need to act now to solve this problem. While we have significant concerns over the potential impact of climate change on our operations, we are also optimistic about the future. We believe in technology. We know that solutions exist to address this problem, and trust that policymakers will act decisively in putting those solutions in place.

The only other alternative we can ask is that Congress move Christmas to February, and since we know that that won't happen, we respectfully request swift and aggressive measures to address this important issue.

Thank you for your consideration.

[The prepared statement of Mr. Berry follows:]

STATEMENT OF MICHAEL BERRY, PRESIDENT, NATIONAL SKI AREAS ASSOCIATION

Thank you for the opportunity to testify today on behalf of the 326-member ski areas of the National Ski Areas Association. Ski areas across the country are concerned about the issue of global warming and its potential impacts on winter recreation, mountain ecosystems, our bottom line and our way of life. I cannot think of a business that will be more directly and profoundly impacted by global warming than the ski business. The success of our operations depends on the weather. For this reason, we have made tremendous efforts to raise awareness of the issue of global warming and put solutions in place to solve it.

2002 CLIMATE CHANGE POLICY

In 2002, the National Ski Areas Association adopted a climate change policy. At that time, climate change was the elephant under the carpet that needed to be addressed and addressed directly. Our climate change policy was cutting edge in 2002 and unprecedented among businesses in the recreation industry. In summary, our climate change policy adopts a "REDUCE, EDUCATE, ADVOCATE" approach to fighting global warming. The policy calls for ski resorts to reduce their own greenhouse gas emissions (GHGs), educate our guests and the public about the potential threat of climate change to winter recreation, and advocate the need for policy makers to act now and act aggressively in curbing GHG emissions.

Ski areas have taken tremendous steps to reduce our own GHG emissions. There are now fifty-nine (59) resorts purchasing renewable energy credits or green energy for their facilities and lifts. Of these 59 resorts, 28 are 100 percent green powered. The green power purchases of these 28 resorts result in the avoidance of 427,596,000 pounds of carbon dioxide (CO_2). This is the equivalent of planting nearly 17 million trees or avoiding more than 169,000 round-trip flights between New York and San Francisco. Additionally, resorts are providing their customers the opportunity to purchase "green tags" to offset their emissions and "ski pollution free" or sign up for green energy in their homes. Resorts are also generating renewable energy on site through micro-hydro and solar projects, and the first wind turbine will go on line at a ski area in August of 2007 at Jiminy Peak Mountain Resort in Massachusetts. Resorts are also using green building techniques, retrofitting existing facilities to save energy, using alternative fuels such as biodiesel in resort vehicle fleets, and providing or promoting car pooling or mass transit use by guests and employees. We are a relatively small source of greenhouse gas emissions, however, and recognize that we will need the help of other industries to turn this problem around.

Ski areas have educated their guests and the public on the issue of global warming through an outreach campaign called "Keep Winter Cool." NSAA's partners in the Keep Winter Cool campaign are the Natural Resources Defense Council (NRDC) and Clif Bar, the energy bar maker in California. Together, we have reached out to millions of people who ski and snowboard to make changes in their lives to fight global warming. We have enlisted famous athletes like Picabo Street from the great State of Idaho and Shaun White from the great State of California to help us inspire snowsports participants to take action now to fight global warming. I invite the members of the Committee to visit our website, *www.keepwintercool.org* for more information.

Ski areas have advocated swift action on the part of policymakers to address the issue of climate change, both that the federal and state level. During the 109th Congress, 71 ski areas in 21 states endorsed the McCain/Lieberman Climate Stewardship Act. During the 110th Congress, thirty resorts have endorsed the US-CAP approach to fighting global warming. Ski areas have also supported the adoption of renewable portfolio standards (RPS) and cleaner fuels and cleaner vehicle emissions requirements in a number of states.

SCIENCE AND DATA

Ski areas are aware of the many studies and models that project the impact of global warming on snowpack. As an industry, we have tracked the average number of days that our member resorts are open across five regions of the country. Over a 16-year period, our data shows a declining trend in the number of days open nationally and in several regions. More specifically, the data shows a decline of 0.8 days nationally per season over the past 16 years; a decline of 1.2 days per season in the Northeast; and a decline of 0.7 days in the Rocky Mountains. One hundred and thirty-four (134) of our member ski areas operate on U.S. Forest Service land. These resorts have witnessed declining recreation budgets and increased spending on forest fires in the past 10 years. Former U.S. Forest Service Chief Dale Bosworth stated upon retiring from the agency earlier this year that climate change is "undeniable" and that it has "huge social, economic and ecological implications."

We are also aware of four recently published reports that specifically predict economic harm to the American ski industry as a result of climate change. They are: Less Snow, Less Water: Climate Disruption in the West, by Stephen Saunders and Maureen Maxwell of the Rocky Mountain Climate Organization; Climate Change: Modeling a Warmer Rockies and Assessing the Implications, by Gregory Zimmerman, Caitlin O'Brady, and Bryan Hurlbutt of Colorado College; Climate Change and Aspen: An Assessment of Impacts and Potential Responses, by the Aspen Global Change Institute; and Save Our Snow: Climate Change in Park City by Stratus Consulting Group.

OPERATIONAL IMPACTS

There are plenty of good reasons for ski resorts to be concerned about climate change and its potential impacts on winter recreation. Scientific models suggest that as warming continues, we could experience decreased snowpack, warmer nights, and shorter seasons. All of these changes could profoundly affect our industry. Fewer operating days would obviously impact our bottom line. Warmer nights would impact our ability to make snow. Snowmaking has become the norm in our industry. Eighty-eight (88) percent of our members make snow. We start making snow in October to meet pent up demand for early season skiing and snowboarding. It is crucial that we have sufficient snow cover for the holidays, as they account for 30 percent of our revenues. This season, it was impossible for many resorts to make snow due to warmer temperatures at night—even in December and January. Warmer nights also significantly drive up the costs associated with snowmaking. Finally, spring rain can wash away our base at a critical time of year for skiing and snowboarding and shorten our season.

ECONOMIC IMPACTS

The mountain resort industry is a $5 billion industry that employs 165,000 people. When you add in real estate, the equipment and apparel side of the industry, and all of the other businesses that rely on winter tourism to stay afloat, we have profound economic impacts. The ski industry's economic health is particularly crucial for a number of rural economies across the country. There are ski areas in 34 states. Fifteen members of this Committee have ski areas in their states.

LOOKING TO THE FUTURE

The ski industry views climate change as a long-term problem. However, we need to act now to solve this problem and turn things around. While we have significant concerns over the potential impact of climate change on our operations, we are also optimistic about the future. We believe in technology. We know that solutions exist to address this problem, and trust that policymakers will act quickly and decisively in putting solutions in place. The only other alternative for us is to ask Congress to move Christmas to February. Knowing that will never happen, we respectfully request swift and aggressive measures to address this important issue.

Thank you for your consideration of these remarks and the opportunity to address the committee today.

Senator BOXER. Well, that said it all, didn't it, Mr. Berry?

Our final speaker to testify is Barry McCahill, president of the SUV Owners of America.

STATEMENT OF BARRY W. MCCAHILL, PRESIDENT, SUV OWNERS OF AMERICA

Mr. MCCAHILL. Thank you, Chairman Boxer and Senators. Thank you for including us.

SUVOA is an independent, nonprofit organization looking out for the needs not only of those who enjoy the great outdoors, but also those who need the power and utility of full-sized vehicles that they can use to haul, tow and carry more people. Our intent is not to market SUVs, and we are independent of the car companies.

We are not a one-size-fits-all society. Light trucks fill an important economic and social niche. Those who own these vehicles are very concerned about the environment. They want improved fuel economy and less dependence on imported oil, as much if not more than many others.

Most own them because they meet their family, business or lifestyle needs. They don't buy them as a fashion statement. Many are also persuaded by the better crash performance of larger vehicles. Based on the National Highway Traffic Safety Administration, data SUVs are 5 to 7 percent safer than passenger cars. Senator Lautenberg has been very involved in highway safety. I worked at the National Highway Traffic Safety Administration for an entire career, and he has been a leader in highway safety so he knows what I am speaking about.

Tens of millions also use their light trucks to tow camp trailers, snowmobiles, or boats. Last summer while camping, a reporter with a major news organization called me and asked if SUV owners should feel guilty about what he referred to as "gas guzzling vehicles" that some would say nobody needs. I looked around the campground and I saw lots of motorhomes, SUVs and pickups. Near them were families cooking breakfast over open fires, a father and son headed to the lake to fish. Some of the families included grandparents who were passing along an important tradition.

What I saw is something I think we need more of in this country—families together outdoors, having fun, and creating memories. Importantly, they would not be doing so without vehicles that get them, their campers, and their gear to campsites. This lifestyle, along with boating, horse shows and many other forms of outdoor recreation could disappear if fuel economy mandates are pushed to the extreme, or become a luxury that only the wealthy could afford.

Today, just 1 percent of cars have the capacity to tow a small trailer or fishing boat. Indeed, SUVs and minivans came on the scene as car substitutes because Americans demanded vehicles that could carry a family comfortably and safely and haul and tow for recreational purposes. Loss of towing capacity and reduced safety were never envisioned when the CAFE program was conceived in 1976, but that is what happened.

But its most strategic shortcoming is that it was conceived to reduce our reliance on foreign oil, and since we have more than doubled the percentage of our oil imports. So a fundamental question

is, are we willing to bet our strategic interests again solely on CAFE.

The question is always raised, why can't somebody make a light truck or SUV that gets 35 miles to the gallon. Gasoline has been $5 to $6 a gallon in Europe for years, and yet the fastest growing vehicle segment in Europe is SUVs. In the United States, we have had sustained high gas prices and light trucks are still selling strong.

The marketplace is begging for an ultra-high mileage, full-size vehicle that meets the utility niche. Since market pressures have not already created such a vehicle, any legislation encouraging its arrival must anticipate any potential tradeoffs and explain them up front to the American people.

We need to work innovatively to solve our strategic and environmental challenges in ways that hold more promise and preserve the varied transportation needs of the American people. Chairman Boxer, I commend you for your remarks last month at the National Press Club when you said cars and trucks must move toward green and renewable fuels such as environmentally clean biofuels. I would add clean diesel to that list.

There is a "build it and they will come" energy opportunity in this country. SUV, pickup and RV owners would like to be able to burn alternative fuels that are more fuel efficient. The problem is lack of availability and no infrastructure to make these fuels viable economically. I urge this committee to be a catalyst for making infrastructure incentives and other consumer incentives a key part of the path forward.

Historically, our Nation has accomplished great things when the times demanded it. Now is such a time. Decisions must be grounded in technical feasibility, shared responsibility, and respect for individual preferences, rather than a simple "nobody needs it" attitude. Lifestyle preferences that include outdoor recreation should be valued as traditions worth protecting. As Senator Sanders said, finally, we must get it right this time. There will be no second chance if policies of expediency are allowed to rule the day, and a decade from now the only results are way of life detriments and no environmental or energy security improvements.

Ultimately, what we are talking about from a vehicle standpoint are the vehicles that our grandchildren will all be driving. We won't be driving them, but our grandchildren probably will, so it is really, really important I think that we get it right and we work together collectively on a path forward.

Thank you very much, Madam Chairman.

[The prepared statement of Mr. McCahill follows:]

STATEMENT OF BARRY W. MCCAHILL, PRESIDENT, SUV OWNERS OF AMERICA

Good morning, Chairman Boxer, Senator Inhofe and members of the Committee. Thank you for including the views of SUV, van, minivan and pickup truck owners in the hearing today. All of which are referred to and regulated as "light trucks."

SUVOA is an independent, non-profit organization looking out for the needs of not only those who enjoy the great outdoors, but also those who need the power and utility of full-size vehicles that can haul, tow and carry more people. Our purpose is not to market light trucks. Instead, we advocate for vehicle choice, and work to educate consumers honestly about such topics as safety, fuel economy, emissions and vehicle utility.

Personal transportation is a multi-faceted proposition. We are not a one-size-fits-all society and light trucks fill an important economic and social niche. Those who own these vehicles want improved fuel economy and less dependence on imported oil as much as anyone. Let me be clear. As an SUV owner who lives in a state where these vehicles are very popular, I can assure you that owners want better fuel economy.

Most own them because they meet their family, business or lifestyle needs, and a smaller vehicle would force them to give up important attributes they need and value. Most do not buy them to make a fashion statement.

After four decades of a federal emphasis on making safety a purchase priority, many also are persuaded by the better crash performance of larger vehicles. Based on 10 years of data from the National Highway Traffic Safety Administration (NHTSA) found that SUVs are 5–7 times safer than passenger cars. I have attached our study as Attachment A.

Moreover, numerous experts have studied the effect of gas mileage standards that resulted in down-sized cars and light trucks and found that safety has suffered because smaller vehicles simply do not provide the same protection to their occupants that larger ones do.

One group, the Insurance Institute for Highway Safety (IIHS), tracks the safety of a variety of vehicles using NHTSA and insurance company claims data. IIHS data clearly show that since 1978, the overall rates of driver and occupant deaths per million registered vehicles have declined across the board. However, declines in death rates have been largest for SUV occupants, showing that larger vehicles are safer than smaller ones. A chart comparing fatal crash risk across vehicle groups can be found as Attachment B.

Tens of millions also use their light trucks both as family transportation during the week and as the vehicle that tows a trailer or boat on weekends and vacations. Most people buy their vehicles for "peak use." That is, if they need a vehicle to tow a boat or horse trailer, they buy a vehicle capable of doing that—and then use that vehicle for other transportation needs such as commuting and family errands.

I am one of them. I hold a U.S. Coast Guard Master license and have owned boats all my life. I also own a motor home that my wife and I use for camping and to connect with our children, grandchildren and friends around the country.

Last summer, while camping, a reporter with a major news organization called me. He wanted to know if SUV owners should feel guilty for owning what he referred to as "gas-guzzling vehicles that some would say nobody needs."

It was early morning and as I looked around the beautiful campground, Ponderosa State Park in McCall, Idaho, I saw lots of motor homes, SUVs and pickups. Near them were families cooking breakfast over open fires. A father and son headed to Payette Lake to fish. Some of the families included grandparents who were passing along an important tradition.

What a profound disconnect from the question the reporter asked. I saw no guilt, nor should there be any. What I saw is what we need more of in this country—families together outdoors having fun and creating memories.

Importantly, they would not be doing so without vehicles that can get them, their trailers' fifth wheels and all their other gear to the campsites. This lifestyle, along with boating, horse shows and many other forms of outdoor recreation, could disappear if fuel economy mandates are pushed to the extreme—or at minimum a luxury that only the wealthy could continue to enjoy.

As part of my formal statement, I am including a photograph of a restored 1951 Ford sedan hitched to a camping trailer. Tom Nelson, an Idaho RV dealer, owns this rig and keeps it at his dealership as a reminder of the days back in the 1950s when RVing was just beginning. And cars could still tow a trailer.

Today, just one percent of cars have the capacity to tow a small trailer or fishing boat. Why? Because of Federal fuel economy mandates.

Indeed SUVs and minivans came on the scene as car substitutes because Americans demanded vehicles that could carry a family comfortably and safely, and haul and tow for recreational purposes after ever more stringent CAFE standards had regulated family station wagons off the market. Fortunately Congress was wise enough to recognize that light trucks do a lot more work than passenger cars and therefore should be subject to less stringent fuel economy standards.

SUVOA recently compiled a towing guide to help consumers match 2007 tow vehicles to popular RVs, boats, and other recreational equipment that need to be towed. The guide also provides safety tips, illustrations and links to other towing-related Websites. In compiling the guide, we learned that there is a real need for consumer education about towing because many people today try to tow things that exceed motor vehicle and RV dealer recommendations for safe towing.

According to the RV Safety and Education Foundation, 49 percent of travel trailers are towed in excess of the vehicle's recommended maximum capacity. Our SUVOA press release on lost towing capacity, containing a link to the towing guide on our Website is in Attachment C of my testimony.

Loss of towing capacity was not envisioned when the Corporate Average Fuel Economy or CAFE program was conceived in 1976. But it happened because in the rush to "do something" about oil dependence, the down range consequences were not well thought out. Fuel economy trumped all other considerations.

Let's hope history does not repeat itself. But it could. The CAFE levels many now want to require would have profound lifestyle consequences for our vehicle fleet—cars, light trucks and even large RVs and on-road trucks. Moreover, it's highly unlikely to get us where we need to be with energy independence. In 1975, we imported 35 percent of our oil from foreign sources. Today, we import more than 70 percent of our oil.

I've been involved with CAFE for nearly three decades. I retired in 1996 after a career at NHTSA, the agency that manages the program. So, I'm familiar with the history of the CAFE program. It manipulates the supply of vehicles while ignoring consumer wants and needs. Thousands of lives have been lost because of unintended safety consequences from CAFE-induced vehicle downsizing. Whole forests have been decimated to print enough paper to explain its complexities.

But its most strategic shortcoming is that it creates expectations that do not pan out. Conceived to reduce our reliance on foreign oil, as I mentioned earlier, we have since doubled the percentage of oil imports. CAFE did not do what it was intended to do.

The perfect analogy of CAFE's unintended consequences is in this month's issue of Consumer Reports. The article, "Washers and Dryers—Dirty Laundry" is about the Federal Government's new efficiency standards for washing machines that saves energy but weakens the washers to the point they don't do what they're supposed to. According to Consumer Reports:

"Not so long ago you could count on most washers to get your clothes very clean. Not anymore. Our latest tests found huge performance differences among machines. Some left our stain-soaked swatches nearly as dirty as they were before washing. For best results you'll have to spend $900 or more. What happened? As of January, the U.S. Department of Energy has required washers to use 21 percent less energy, a goal we wholeheartedly support. But our tests have found that traditional top-loaders, those with the familiar center-post agitators, are having a tough time wringing out those savings without sacrificing cleaning ability, the main reason you buy a washer."

Among the reasons we are here today is precisely because CAFE has failed to deliver and the nation needs a new strategy. Are we willing to bet our strategic interested on CAFE again, or is it time to try something else?

So why can't somebody just make a light truck that gets 35 miles per gallon? As complex as all of this is it really boils down to one simple concept: Gasoline has been $5 and $6 a gallon in Europe for years and yet the fastest growing vehicle segment in Europe is SUVs. In the United States we have had sustained high gas prices and light trucks are still selling strong. The marketplace is begging for an ultra-high-mileage full-sized vehicle that meets the utility niche. Since market pressures have not already resulted in such a vehicle(s), legislation forcing its arrival surely must come with negative tradeoffs consumers would not accept if they knew. As a matter of basic fairness and sound policy, potential tradeoffs need to be anticipated and explained up front to the American people.

Moreover, why not try a better approach? Why not work innovatively to solve our strategic energy challenges in ways that hold more promise and preserve the varied transportation needs of the American people?

Chairman Boxer, I commend you for your remarks last month at the National Press Club where you said that "cars and trucks must move toward, green, renewable fuels such as environmentally clean biofuels. . . ." I would add clean diesel to the list.

There is a "build it and they will come" energy opportunity in this country today. SUV, minivan pickup truck and RV owners would like to be able to burn alternative fuels that are more efficient. The problem is lack of availability and no infrastructure to make these fuels viable economically. I urge this Committee to be the catalyst for making infrastructure incentives a key part of a path forward.

Historically our nation has accomplished great things when the times demanded it. Now is such a time. Energy and environmental decisions must be grounded in technical feasibility rather than unrealistic thinking; shared responsibility rather than some carrying the burden for all; and respect for individual preferences rather than a "nobody needs" attitude.

Lifestyle preferences that include outdoor recreation should be valued as traditions worth protecting.

Finally, we must get it right this time. There will be no second chance if policies of expediency are allowed to rule the day and a decade from now the only results are way of life detriments and no environmental or energy security improvements.

Thank you and I would be pleased to answer any questions.

ATTACHMENT A

ANALYSIS: SUVs 5-7 PERCENT SAFER THAN PASSENGER CARS

Fatalities in SUV-Passenger Car Crashes Trending Downward

Contact: Ron DeFore
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WASHINGTON, DC -- In anticipation of the release of the National Highway Traffic Safety Administration's (NHTSA) "Early Assessment" of 2006 traffic crashes, SUV Owners of America, released today an expert analysis of 1997-2005 data for vehicle performance in all kinds of crashes. It found that SUVs are 5-7 percent safer than passenger cars in reducing fatality risk. This is particularly important for consumers that may be downsizing to cut fuel costs – a dangerous tradeoff.

SUVOA President Barry McCahill said, "The public is being told by some that small cars are now as safe as larger cars and SUVs, and can do all the same things. But, 99 percent of cars can no longer tow a boat or camp trailer, and small cars are not as safe as larger cars and SUVs. Just as important, light trucks like minivans and SUVs can carry more passengers safely than passenger cars."

"It's also inaccurate to say that SUV drivers are causing more deaths to occupants of smaller vehicles. There has been no increase in fatalities because of the size mismatch between SUVs and cars, and in 2005 the trend even turned downward for these kinds of crashes," he added.

"People buy vehicles that meet their needs, and they like to do so with good information in hand. Our intent in augmenting the NHTSA 2006 early fatality summary is not to advocate the purchase of any vehicle type, but to provide additional perspective," he said. "We also advise consumers to read the comprehensive new data summary now available from the Insurance Institute for Highway Safety (IIHS)."

"All vehicles have become safer because of increased safety belt use, air bags, electronic stability control, improved vehicle structure and greater awareness about traffic safety. But the laws of physics that ultimately rule the road have not changed. Equipped with identical safety equipment, the larger vehicle also gets safer and always performs better in a crash than a smaller one," McCahill said.

McCahill explained that NHTSA's "Early Assessment" is based on vehicle registrations and reflects all occupant fatalities, and the effect of vehicle, roadway situation and driver

behavior. The NHTSA analysis does not measure the safety performance of just the vehicle.

"The "Early Assessment" chronicles what occurred on the road in 2006, and that's important to know. Our analysis covers nearly a decade of crash data, giving consumers additional information to help guide their vehicle purchase decisions," he said.

McCahill pointed out that NHTSA's New Car Assessment Program (NCAP) provides test results on the crash performance of individual vehicles to help guide consumer purchasing decisions. SUVOA's analysis, by a retired NHTSA engineer, considered both total occupant fatality rates and then solely driver fatality rates, the latter to get a more accurate picture of the vehicle's performance (since every vehicle has at least a driver).

He said the NHTSA analysis does not control for the fact that SUVs, because they typically hold more occupants, tend to have more occupant fatalities when a crash occurs.

These are the key findings based on vehicles that were involved in crashes:

- When the analysis considers only driver fatalities (focusing more on the vehicle's performance), and most recent years data (2003-2005) to include the contribution of the newest safety features, **SUVs are 5-7 percent safer than passenger cars.**

- **In crashes involving a light truck/van (includes SUVS) and a passenger car**, occupant fatalities in passenger cars remained fairly constant from 2001-2004, but between 2004-2005 they declined by 4.3 percent.

- For both passenger cars and SUVs there has been a substantial reduction in overall **occupant fatality rates**, and by 2005 the rates are virtually identical per 100,000 registered vehicles (13.64, passenger car / 13.84, SUVs).

- For both passenger cars and SUVs the **occupant fatality rates in rollover crashes** have decreased. The percentage reduction from 1997-2005 is 15.7 percent for passenger cars and more than 19 percent for SUVs.

- **When considering the more prevalent frontal, side and rear crashes, by 2005 SUVs had become about twice as safe as passenger cars**. In 2005, SUVs had an occupant fatality rate in these crashes that was nearly 50 percent lower than passenger cars (10.42, passenger cars / 5.56 SUVs).

A copy of the full report (with graphics) is available at **www.suvoa.com**.

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SUVOA is a non-profit consumer organization dedicated to supporting the rights and serving the interests of more than 80 million SUV, pickup, crossover and Van Owners of America. Founded in 1999, SUVOA strives to ensure balanced media reporting of light truck issues and represents our supporters by educating federal and state policymakers.

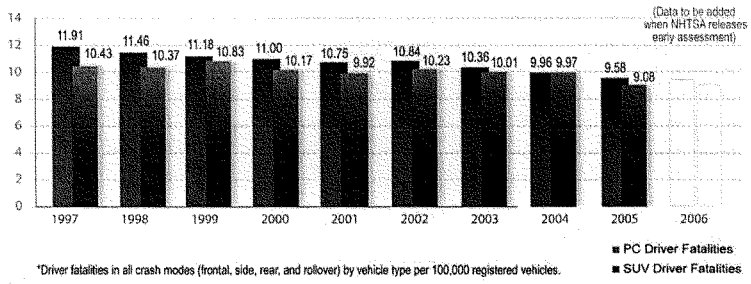
SUVOA
Standing Up for SUV, Pickup and Van Owners of America

Analysis of the National Highway Traffic Safety Administration's Early Assessment of 2006 Traffic Crashes

Key Finding (Starts on page 7 of attached report.)

As Table 5 illustrates, when analyzing only driver fatalities, SUVs are safer than passenger cars. In 2005, the driver fatality rate for SUVs was over 5% lower than for PCs (9.58-9.08)/(9.58) = 5.22%. By analyzing only driver fatalities, the effects of occupancy differences between PCs and SUVs are removed. If SUVs had, say, six occupants in every fatal crash and all were fatally injured, while PCs had only a single occupancy, the occupant fatality rate would be six times larger for the SUV, simply because there were more occupants in the vehicle. By only including driver fatalities, the effect of occupancy is removed.

Table 5 - Driver Fatality Rates* for PCs and SUVs



*Driver fatalities in all crash modes (frontal, side, rear, and rollover) by vehicle type per 100,000 registered vehicles.

Driver Fatality Rates for PCs and SUVs for 2003-2005: All Crashes**

Year	PC driver fatality rate	SUV driver fatality rate
2003	2.09	1.98
2004	2.13	2.00
2005	2.13	1.99

** Driver Fatalities per 1,000 crashes

For each year, SUVs are safer than passenger cars.

In 2003, SUVs were 5.3% safer than passenger cars in all crashes;
In 2004, SUVs were 6.1% safer than passenger cars in all crashes; and
In 2005, SUVs were 6.6% safer than passenger cars in all crashes.

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I. Occupant Safety in Passenger Cars and Sport Utility Vehicles, 1997-2005

The information available from the National Highway Traffic Safety Administration provides for an assessment of the safety of various types of motor vehicles, including passenger cars (PCs) and sport utility vehicles (SUV).

The following table presents the occupant fatality rates for these two vehicle types for the years 1997-2005. Occupant fatality rates are obtained by dividing the total number of occupant fatalities in a vehicle type during a particular year by the number of registered vehicles (registered in states for use on the nation's highways) of that type for the same year. (Note – For Tables 1,2, and 3, the data for 1997-2003 are obtained from a January 2006 NHTSA Research Note titled "Passenger Vehicle Occupant Fatality Rates by Type and Size of Vehicle" DOT HS 809 979. The data for 2004-2005 are from NHTSA's 2005 Annual Assessment of Motor Vehicle Crashes – Updated December 13, 2006.)

Table 1 – Occupant Fatality Rates* for PCs and SUVs for 1997-2005: All Crashes

Year	PC occupant fatality rate	SUV occupant fatality rate
1997	17.81	16.38
1998	16.83	16.70
1999	16.44	16.44
2000	16.20	16.20
2001	15.77	15.35
2002	15.80	15.79
2003	14.99	15.81
2004	14.32	15.07
2005	13.64	13.84

* Occupant fatalities in all crash modes (frontal, side, rear, and rollover) by vehicle type per 100,000 registered vehicles of that type

These rates indicate that, for both passenger cars and SUVs, there has been a substantial reduction in occupant fatality rates from 1997 through 2005, and that in 2005, the rates are quite similar for PCs and SUVs.

As noted, the rates in Table 1 are for all crash modes. One may characterize motor vehicle crashes in two general categories, vehicle crashes in which the tires of the vehicle remain on the road and the vehicle is struck in the front (by another vehicle, or a fixed object, such as a bridge abutment), side, or rear. These may be termed planar crashes. The second category is when the vehicle rolls over, i.e., the vehicle's tires lose contact with the road surface. These are rollover crashes.

Because vehicles in crashes follow the basic laws of physics, the various vehicle types perform differently in planar crashes and in rollover crashes. For example, since SUVs are higher off the ground and thus more susceptible to being involved in a rollover, one would expect that the rollover fatality rate (occupant fatalities in rollover crashes per 100,000 registered vehicles) to be higher in SUVs than in passenger cars.

Similarly, because passenger cars generally place seated occupants lower, i.e., closer to the roadway, in a frontal, side, or rear crash (i.e., planar crashes), occupants of these vehicles would be more likely to receive severe crash forces than SUV occupants. Accordingly, in planar crashes, one would expect the frontal/side/rear fatality rate (occupant fatalities in frontal/side/rear crashes per 100,000 registered) to be higher in PCs compared to SUVs.

Table 2 presents the occupant fatality rates in rollover crashes for 1997-2005.

Table 2 – Occupant Fatality Rates* for PCs and SUVs for 1997-2005 Rollover Crashes

Year	PC occupant fatality rate	SUV occupant fatality rate
1997	3.82	10.25
1998	3.71	10.49
1999	3.72	10.34
2000	3.56	9.96
2001	3.54	9.35
2002	3.68	9.68
2003	3.39	9.38
2004	3.27	9.32
2005	3.22	8.28

* Occupant fatalities in all rollover crashes by vehicle type per 100,000 registered vehicles of that type

These rates indicate that for both PCs and SUVs, the occupant fatality rate in rollover crashes has decreased over the 1997 through 2005 time period. For PCs, this rate has decreased by 15.7% from 1997 to 2005. For SUVs, the decrease has been over 19%.

Thus, SUVs have improved in rollover performance more than passenger cars during this time period. It is clear that in rollover crashes, SUVs have a higher occupant fatality rate than passenger cars. If the only type of crash that occurred on the nation's highways were rollover crashes, a comparison of PC occupant fatality rollover rates to the rate for SUVs would be sufficient to assess the relative safety of these two vehicle types.

However, rollover crashes represent only about 2-5% off all crashes on the nation's highways. The other crashes that represent 95-98% of all crashes are the planar (front, side, and rear) crashes discussed above. To fully represent vehicle safety, it is imperative to present occupant

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fatality rates for PCs and SUVs in these crashes. Table 3 shows occupant fatality rates in planar crashes for 1997-2005.

Table 3 – Occupant Fatality Rates* for PCs and SUVs for 1997-2005: Frontal, Side, Rear Crashes

Year	PC occupant fatality rate	SUV occupant fatality rate
1997	13.99	6.13
1998	13.12	6.21
1999	12.72	6.10
2000	12.64	6.24
2001	12.23	6.00
2002	12.12	6.11
2003	11.60	6.43
2004	11.05	5.75
2005	10.42	5.56

* Occupant fatalities in all planar, i.e., frontal, side and rear, crashes by vehicle type per 100,000 registered vehicles of that type

The rates in Table 3 provide for a number of conclusions. First, for PCs the occupant fatality rate in frontal, side and rear crashes has declined by 25.5% from 1997 to 2005, while for SUVs the reduction is 9.3%. It would seem reasonable that these increases in safety are due to increased belt use, introduction of air bags, including advanced air bags, into a larger portion of the on the road fleet, and overall improvement in safe vehicle designs.

An important conclusion from these rates is that in the much more prevalent frontal and side and rear crashes (i.e., in PCs for every rollover crash, there are some 50 frontal, side and rear crashes), SUVs are much safer than PCs. In 2005, SUVs had an occupant fatality rate in these planar crashes that was nearly 50% lower than the rate for PCs – that is, in these crashes, SUV occupants were about twice as safe as PC occupants.

Further, comparing the rollover rates (Table 2) to the frontal, side and rear rates (Table 3) demonstrates that for every year, the occupants of PCs had a higher fatality rate in these planar crashes than the SUV occupant fatality rate for SUVs.

As discussed, the rates shown in Tables 1-3 are occupant fatalities in PCs and SUVs divided by the number of registered vehicle years for the two vehicle types. A concern with these rates is that there are a number of non-vehicle factors that cause the crashes which resulted in these fatalities. As such, these rates do not provide a measure of only a vehicle's intrinsic safety performance, but rather the combination of the vehicle, roadway, and driver.

Consider the following. If all SUV occupants wore their safety belt and SUV drivers did not drink and drive, while no PC occupants wore their belt, and more than half of the PC drivers

were intoxicated, one would expect a much higher crash involvement risk for PCs compared to SUVs. Also, given a crash did occur, one would expect a much higher risk of fatal injury in the PC since all the occupants were unbelted, while all the SUV occupants were belted.

Additionally, if all SUVs were driven in an urban environment, while all PCs were driven in a rural environment, PC crashes would be much more severe (since the rural speeds are much higher) than SUV crashes, thus resulting in a higher fatal injury risk. Using the occupant fatality rate calculation above, these crash involvement, crash severity and crash injury risk issues would not be taken into consideration, since the calculation involves a count of fatalities and vehicle registrations only.

Thus, in calculating the occupant fatality rates, one does not obtain information on the actual safety a vehicle type, but as noted above, the combination of a vehicle's safety, the driving environment, and the driver behavior.

There are data available to remove some non-vehicle factors from the occupant fatality rates. For example, the occupant fatality totals used in Tables 1-3 above are the total occupant fatalities for each vehicle type in the various crash modes. NHTSA does provide information on the number of occupant fatalities, by vehicle type, that were killed in alcohol related crashes. These alcohol-related crashes are clearly not a measure of a vehicle safety. Rather, these crashes are a result of improper driver behavior that resulted in a crash in which there were fatalities. These alcohol fatalities should not be included in an assessment of safety be vehicle type.

It is possible to remove these alcohol related occupant fatalities from the total occupant fatality counts. Data from the National Highway Traffic Safety Administration (NHTSA's 2005 Annual Assessment of Motor Vehicle Crashes – Updated December 13, 2006 – page 76) provide the number of occupant fatalities killed in motor vehicle crashes for PCs and SUVs in 2005. These are subtracted from the total occupant fatalities for occupants of PCs and SUVs in 2005.

2005 Passenger Car Occupant Fatalities:	18,440
2005 Passenger Car Occupant Fatalities that Were Alcohol Related:	-7,000
2005 Passenger Car Occupant Fatalities that Were Not Alcohol Related:	11,440

2005 Sport Utility Vehicle Occupant Fatalities:	4,807
2005 Sport Utility Vehicle Occupant Fatalities that were Alcohol Related:	-1,886
2005 Sport Utility Vehicle Occupant Fatalities That Are Not Alcohol Related:	2,921

The number of registered vehicles for PCs and SUVs used to calculate the rates in Tables 1-3 are;

2005 Passenger Car Registered Vehicles – to 135,152,104
2005 Sport Utility Vehicle Registered Vehicles – 34,732,377.

The occupant fatality rates for 2005 are then;

Table 4 – Occupant Fatality Rates* for PCs and SUVs for 2005: All Crashes That Are Not Alcohol Related

PCs – (11,440)/(135,152,104) = 8.46

SUV – (2,981)/(34,732,377) = 8.41

* Occupant fatalities in all crash modes (frontal, side, rear, and rollover) by vehicle type per 100,000 registered vehicles of that type

For 2005, the occupant fatality rates for PCs and SUVs, in all crashes that are not alcohol related, are very similar, with SUVs (8.46-8.41)/8.46 X 100 = 0.6% lower than PCs.

This demonstrates the weaknesses of using occupant fatality rates in assessing vehicle safety. By its very nature, registration based occupant fatality rates cannot provide an objective assessment of intrinsic vehicle safety. In addition to the alcohol issue noted above, other non-vehicle factors must be addressed.

These include;

– Safety Belt Use. There may be differences in belt use between SUV and PC occupants, since the use of a safety belt reduces the risk of a fatal injury by some 50%, differential belt use rates can have substantial effects on occupant fatality totals. This difference is not addressed in occupant fatality rates based on vehicle registrations.

– Occupancy. There may be differences in the number of passengers in PCs compared to SUVs. If SUVs had a greater number of occupants than PCs, clearly more occupants would be fatally injured in the same number crashes for each vehicle type. Clearly, this is not due to the safety of the vehicle type, but rather its occupancy. This differential occupancy issue is not addressed in occupant fatality rates based vehicle registrations. One way to address this is by using only driver fatalities rather than total occupant fatalities in comparing fatality rates among vehicle types.

Table 4a shows driver fatality rate for PCs and SUVs for the years 2003 through 2005. Here again, these rates are obtained by dividing the driver fatality counts in a vehicle type during a particular year by the number of registered vehicles of that type in the same year.

By analyzing only driver fatalities, the effects of occupancy differences between PCs and SUVs are removed. If SUVs had, say, six occupants in every fatal crash and all were fatally injured, while PCs had only a single occupancy, the occupant fatality rate would be six times larger for the SUV, simply because there were more occupants in the vehicle. By only including driver fatalities, the effect of occupancy is removed.

As Table 5 illustrates, when analyzing only driver fatalities, SUVs are safer than passenger cars. In 2005, the driver fatality rate for SUVs was over 5% lower than for PCs (9.58-9.08)/(9.58) = 5.22%.

Table 5 - Driver Fatality Rates* for PCs and SUVs for 1997-2005: All Crashes

Year	PC driver fatality rate	SUV driver fatality rate
1997	11.91	10.43
1998	11.46	10.37
1999	11.18	10.83
2000	11.00	10.17
2001	10.75	9.92
2002	10.84	10.23
2003	10.36	10.01
2004	9.96	9.97
2005	9.58	9.08

* Driver fatalities in all crash modes (frontal, side, rear, and rollover) by vehicle type per 100,000 registered vehicles.

– Crash Involvement. If the drivers of SUVs are involved in more crashes per 100 SUVs than are passenger car driver, a higher occupant fatality rate for SUVs would be found compared to passenger cars simply due to the increased crashes. Again, this higher fatality rate would not be due to intrinsic vehicle safety, but due to the characteristics of SUV driver such that they are involved in more crashes per number of vehicles on the road (e.g., younger drivers in SUVs, more rural high speed driving, more night driving).

If a goal is to assess the safety of a vehicle, what this discussion tells us is that we should try to look at the fatality risk, given that a crash has taken place. Note that this is precisely what NHTSA does in its New Car Assessment Program (NCAP). Here, the agency crashes vehicles and provides a star rating based on the protection afforded test dummies in these crashes. That it, NHTSA is providing a measure of vehicle safety, given a crash occurred.

NHTSA real world crash data allow a calculation of vehicle safety, given a crash. As discussed above, the number of driver fatalities should be used as a measure of crash outcome to address the effects of occupancy. Rather than using registered vehicles, NHTSA also provides data on the number of vehicles involved in crashes. Thus, the number of crash involved vehicles can address the problem of crash involvement differences between SUVs and PCs discussed above.

These crash counts are in NHTSA's annual Traffic Safety Facts report. These reports provide the number of vehicles involved in all crashes, by vehicle type. Thus, the NHTSA data provide driver fatalities in passenger cars and SUVs and the number of passenger cars and SUVs

5. In all crashes, SUVs are safer than PCs using the measure of driver fatalities per registered vehicle. For 2005 – the last year of available data, the driver fatality rate in SUVs is over 5% lower than PCs. That is, SUVs are over 5% safer than PCs in reducing the risk of fatality.

6. In all crashes, SUVs are safer than PCs using the measure of driver fatalities per crash – a measure of safety analogous to NHTSA's NCAP Program. In 2005, SUVs are nearly 7% (6.6%) safer than PCs in reducing the risk of a fatality in a crash.

7. Utilizing NHTSA data to calculate fatality risk in terms of driver fatalities per registered vehicle or driver fatalities per crash, SUVs are 5-7% safer than PCs.

II. Occupant Fatalities in Two Vehicle Crashes Involving a Passenger Car and a Light Truck/Van*

* The light truck van category includes vans, sport utility vehicles and trucks.

An issue that has received some attention is the crash compatibility between PCs and light trucks/vans(LTV). As a general rule, LTVs are higher off the ground and are heavier than PCs. In planar crashes, these characteristics result in a lower risk of injury/fatality to LTV occupants than PC occupants when these two vehicle types collide. As such, in two vehicle crashes between a PC and a LTV, one expects higher number of fatalities in the PC than in the LTV.

While the laws of physics that govern impacts between two objects (in this case, a PC and an LTV) cannot be altered, vehicle manufacturers are taking actions to improve the crash compatibility between PCs and LTVs. The goal is to develop and introduce vehicle designs that will reduce the number of fatalities to the occupants of PCs in these two-vehicle collisions, while not increasing fatalities to occupants of LTVs.

NHTSA, in its annual assessments of motor vehicle fatalities since 2001, has presented information on the occupants killed in two vehicle crashes involving a PC and LTV. These data are presented in Table 7.

Table 7 – Occupant Fatalities in Two Vehicle Crashes Involving a Passenger Car and a Light Truck/Van

	Year				
Occupant Fatality	2001	2002	2003	2004	2005
Killed in PC	4,405	4,465	4,451	4,411	4,197
Killed in LTV	1,160	1,125	1,096	1,081	1,049
Total Occupants Killed	5,565	5,590	5,547	5,492	5,246

involved in crashes. Note the exact relationship to NCAP. NCAP provides the injury risk, given a crash. The NHTSA real world crash data provide the fatality risk, given a crash. Table 6 present the data for 2003 through 2005.

Note that these rates are different from the previously presented fatality per registered vehicle rates. Here, the rates are the number of driver fatalities in a particular vehicle type (PC or SUV) divided by the number of that vehicle type in all crashes.
Table 6 - Driver Fatality Rates** for PCs and SUVs for 2003-2005: All Crashes

Year	*PC driver fatality rate*	*SUV driver fatality rate*
2003	*2.09*	*1.98*
2004	*2.13*	*2.00*
2005	*2.13*	*1.99*

*** Driver Fatalities per 1,000 crashes*

For each year, SUVs are safer than passenger cars.

In 2003, SUVs were 5.3% safer than passenger cars in all crashes;
In 2004, SUVs were 6.1% safer than passenger cars in all crashes; and
In 2005, SUVs were 6.6% safer than passenger cars in all crashes.

There is not comprehensive (in that all the non-vehicle factors mentioned above, as well as others) data set within NHTSA that can provide an assessment of vehicle safety, by vehicle type, given a crash. The occupant fatality rates presented above necessarily include effects of vehicle's intrinsic safety, characteristics of the drivers in various vehicle types, in terms of their crash involvement frequency, alcohol and safety belt use, and the driving environment.

The principal conclusions are;

1. In rollover crashes, PCs have a lower occupant fatality rate than SUVs.

2. In planar (frontal, side, rear, and rollover), SUVs have a lower fatality rate than PCs.

3. In the much more prevalent frontal and side and rear crashes (i.e., in PCs, for every rollover crash, there are some 50 frontal, side and rear crashes), SUVs are much safer than PCs. In 2005, SUVs had an occupant fatality rate in these planar crashes that was nearly 50% lower than the rate for PCs – that is, in these crashes, SUV occupants were about twice as safe as PC occupants.

4. In all crashes (i.e., all crash modes), PCs and SUVs provide the same level of occupant safety.

Occupant fatalities in PCs remained fairly constant from 2001 through 2004. From 2004 to 2005, these fatalities declined by 214, or 4.8%. It may be that the changes made by vehicle manufacturers are beginning to make their way into the on-the-road fleet, are having an effect on the risk of a fatality to a PC occupant in these PC to LTV crashes.

Also, the fatalities to LTV occupants have not increased during this period, again with a decline between 2004 and 2005. Inasmuch as a substantial reduction of PC and LTV occupant fatalities in these PC to LTV crashes has only occurred in one year, 2004 to 2005, it is premature to make conclusions from these data. It is encouraging, however, that manufacturers appear to be making improvements in vehicle designs so as to enhance occupant protection in PC to LTV crashes.

www.SUVOA.com Washington, D.C. 20043 1.877.44.SUVOA fax 202.289.4370

ATTACHMENT B

From Insurance Institute for Highway Safety web site:

Computing driver death rates per million registered passenger vehicles allows for comparisons of fatal crash risk across vehicle groups. The computed rates reflect the influence of vehicle designs plus their patterns of use and the demographics of their drivers. Driver death rates are based on 1-3-year-old vehicles only so as to minimize the effects of vehicle aging. Rates based on fewer than 120,000 vehicle registrations are considered unreliable and are not included.

- Since 1978 the overall rates of driver and occupant deaths per million registered vehicles have declined across all passenger vehicle types. Declines in death rates have been largest for SUV occupants.

Occupant deaths per million registered passenger vehicles 1-3 years old, 1978-2005

Year	Drivers				All occupants			
	Cars	Pickups	SUVs	All passenger vehicles	Cars	Pickups	SUVs	All passenger vehicles
1978	155	237	273	169	235	346	438	256
1979	165	246	271	180	244	350	425	265
1980	167	221	287	177	248	316	494	263
1981	177	216	237	182	259	296	389	265
1982	155	188	229	159	231	263	392	236
1983	148	188	225	153	220	263	337	225
1984	147	190	143	151	218	259	218	222
1985	139	182	141	144	208	257	227	213
1986	128	172	134	133	196	239	224	202
1987	130	178	136	136	197	248	232	205
1988	134	186	121	140	206	251	198	211
1989	130	185	116	137	200	255	185	207
1990	122	179	126	131	188	245	201	197
1991	108	169	109	117	169	229	175	178
1992	102	151	88	108	160	200	151	165
1993	97	137	93	102	153	187	141	156
1994	100	134	87	104	160	178	148	161
1995	103	134	102	107	160	180	157	162
1996	107	127	98	108	168	178	150	167
1997	96	118	93	99	153	161	146	153
1998	90	119	86	94	141	158	141	144
1999	91	120	93	96	138	162	139	143
2000	83	117	81	89	127	155	135	134
2001	83	130	74	89	125	170	116	131
2002	84	123	76	88	126	162	122	131
2003	81	116	70	85	122	153	113	126
2004	76	106	64	79	114	146	100	117
2005	79	107	55	78	117	141	87	114

ATTACHMENT C

Standing Up for SUV, Pickup and Van Owners of America
www.suvoa.com

For Immediate Release
January 22, 2007

Contact: Ron DeFore
877-44-SUVOA (877-447-8862)

99% of Car Towing Capacity Lost Since 1970s

SUV Owners Group Releases New Consumer Towing Guide

Washington, DC—The shift in consumer preference to SUVs and light trucks for family transportation was driven not just by the desire for better comfort and safety—since 1970 fuel economy mandates that resulted in downsized vehicles caused 99 percent of cars to lose their ability to tow basic recreational equipment, Sport Utility Vehicle Owners of America (SUVOA) announced today.

"The gutting of car towing capacity should be a wake up call that major lifestyle consequences could loom large as the nation contemplates the next wave of energy policy changes," SUVOA President Barry W. McCahill said. "The threat is on several fronts – California's carbon dioxide law and the 10 states that have chosen to follow suit; the Supreme Court's upcoming decision on the regulation of carbon dioxide; and proposed federal legislation to increase federal fuel economy standards."

"Achieving better fuel economy and energy independence are critical national imperatives. But let's do it in a thoughtful, balanced way that ensures millions of Americans won't lose their outdoor lifestyle," he added. It is estimated that there are more than 20 million recreation and utility towables in the United States.

In the 1970s, before the federal program to regulate automotive fuel economy was enacted, some 70 percent of domestic passenger car models could tow a small fishing boat or camping trailer weighing 2,100 pounds. Today, just one percent of cars can handle that load, and many popular recreational tows weigh considerably more.

"If towing a boat or camp trailer is part of your lifestyle, or may be in the future, you need to consider carefully what vehicle you purchase. Cars and even many of the popular new crossover SUVs can't do the job," he said.

SUVOA posted a new towing guide on its web site (www.suvoa.com) complete with illustrations to help consumers match 2007 tow vehicles to popular RVs, boats and other recreational equipment that need to be towed. The guide is the first of its kind in that it also includes all 2007 passenger vehicles, safety tips and illustrations, links to other towing-related sites, and is available free to the public at www.suvoa.com.

"Regrettably, federal auto policy doesn't always consider the tradeoffs that exist among national goals. One day the focus is on new safety requirements. The next, it's on tougher emissions controls. Today, it's on both those and improving fuel economy and they are often at odds with each other," McCahill said.

"All are important. But meeting them creates performance and design conflicts and tradeoffs," he continued. "The loss of car towing capacity and reductions in safety because of vehicle downsizing are unfortunate historical evidence of what can happen."

Derrick Crandall, President and CEO of the American Recreation Coalition agreed that while fuel prices and the desire to decrease dependence on imported oil are now center stage, decisions being made today, if too extreme, could have serious consequences for outdoor recreation.

"If the poll question is, 'Do you want better fuel economy?' who doesn't?" But if you ask if they are willing to give up vehicles that can transport the whole family comfortably and safely, and pull a boat or other RV on weekends, you likely will get a very different answer," Crandall said.

"Ironically, the only vehicles left that enable people to enjoy the great outdoors—SUVs and pickups—are under attack and could also lose towing capacity. Nobody intended to kill off the station wagon that was the mainstay for family transportation and recreation. But it happened," Crandall said.

"Federal policies should encourage outdoor recreation, and a big part of it is making sure that we preserve the kinds of vehicles that can carry people, gear and the various RVs, boats and other towables that people enjoy to their favorite outdoor destinations," Crandall said.

He pointed to Centers for Disease Control and Prevention (CDCP) data showing dramatic increases over the past 20 years in obesity and diabetes, attributed mainly to eating habits and lack of exercise. The Transportation Research Board states: "...physical inactivity is a major, largely preventable threat to health."

According to Richard Coon, President of the Recreational Vehicle Industry Association (RVIA), towing ability is part of the outdoor lifestyle and must be preserved. "Even with higher fuel prices, American families are buying RVs in record numbers. Why? Because they want to stay closer to home and avoid commercial travel hassles, and have discovered the value. For about the price of one or two traditional family vacations, they can have fun adventures in their RV whenever and wherever they choose, and for many years to come. And, towed RVs are the most popular choice."

Coon said there are more than 11 million trailer boats and 5 million trailer RVs in use in the U.S. There are millions more horse, snowmobile, ATV and personal watercraft trailers. Safe towing demands attention to the vehicle manufacturer's stated towing capacity; number of occupants in the tow vehicle; total weight of what is being towed (including fuel, water, and gear); and proper hitch configuration.

The SUVOA Towing Guide points out that more consumer education on towing is needed because many towing situations dangerously exceed motor vehicle manufacturer and RV dealer recommendations. For example, according to the RV

Safety & Education Foundation, 49 percent of travel trailers are towed in excess of the tow vehicle's recommended maximum capacity, also known as gross combined weight rating.

In addition to the towing guide on www.suvoa.com, there are a number of web sites to help consumers make informed purchase decisions to meet their towing needs. Attached is a list of other web sites that provide information on safe towing.

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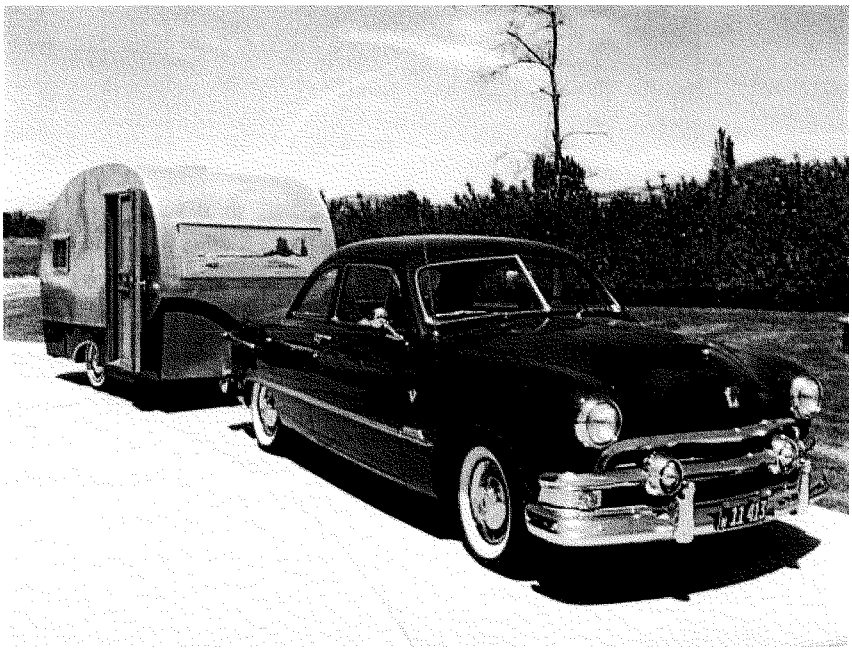

Senator BOXER. Thank you so much.

We are now into the question time. I am going to defer my questions until the end, so I am going to call on Senator Sanders to start 5-minute rounds.

Senator SANDERS. Thanks. Madam Chair, thank you very much for holding this important hearing and for all the work you are doing on raising consciousness and providing solutions on global warming.

I want to thank all of the panelists. I think this has been a very educational opportunity for those of us up here to hear what many of you from different walks of life and different regions of our country have to say about the impact of global warming in your particular areas of interest.

But let me focus my questions obviously on Bryant Watson who is the head of the Vermont Association of Snowmobilers and snowmobile travelers in the State of Vermont. Bryant has done a great job with that organization over the years.

Bryant, you mentioned the economic impact that global warming is having on our economy in the loss of tourism and the fact that fewer people are doing snowmobiling and skiing and snowboarding and so forth and so on. Focus for a moment not just on tourism, as important as that is, but what it means for our rural way of life. In the wintertime, we have thousands and thousands of families. These are husbands, wives, and kids going out snowmobiling, going on beautiful trips, just incredibly beautiful parts of our State. We welcome all of you to come to our State to see those beautiful parts. But what is happening if we are losing snow and families don't have the opportunity to get out in the wintertime?

Mr. WATSON. Thank you for the question, Senator Sanders. It means a very lot to a lot of families who live in rural Vermont, to a lot of families who do not live in rural Vermont, to a lot of families from outside of the State of Vermont who come to enjoy rural Vermont. We have seen trail passes over the last several years be down more than 40 percent over what they should be, so that means that a very big portion of that $500 million a year economic impact that snowmobiling should be bringing to the State is not being brought to the State.

When this happens, the small businesses, the mom and pop stores, the little hotels, the little motels that are in the back country of Vermont.

Senator SANDERS. Some of our most hard pressed economic areas.

Mr. WATSON. Some of our most hard pressed economic areas that have no other ability to offer jobs, are losing great amounts of jobs because of the lack of winter type tourism in those areas. Ice fishing, a lot of the lakes haven't frozen over, Lake Champlain didn't even freeze over this year, but a lot of the other lakes never froze over until February. So ice fishing was definitely set back many, many weeks from what it normally would be. So even that economic impact has not been there.

So the snowmobile dealers in the State are having a very tough time as I indicated. Many of them are giving up their dealerships because they can't afford to continue to take the number of snowmobiles that the dealers want to make them take in order to be

able to retain their dealership. That is not only in Vermont. I have talked to my counterparts in New York and Michigan and Wisconsin and Minnesota, and they all feel the same. They all see dealerships and/or mom and pop businesses going out of business because of the lack of winter recreation.

Senator SANDERS. Okay. Thanks very much.

Senator BOXER. Senator Sanders, thank you very much.

Senator Lautenberg.

Senator LAUTENBERG. Thanks again, Madam Chairman.

Mr. Berry, I made an error when I looked at the organization you represent. I belong to the National Ski Association, which is not the ski owners, although I have tried that a little bit, and was it was not a good business. It had nothing to do with whether or not people could get to the area.

When we look at the recreational areas, particularly I am especially fond of winter moments. My son is a ski instructor and ski competitor in Vail, CO. My youngest daughter was captain of the women's ski team at Colgate University and she took them to a national championship. We have skied all over. At one point in time, I have skied every area in Vermont, Mr. Watson. As they would open, I would ski them. By the way, I still do it, yes, 60 years of skiing, and sometimes skiing 35,000 or 40,000 feet in a day, bragging.

But what happens is not only is the lost revenue, and the pain to the small business people, many of whom have been in place, built their businesses closely in contact with the visitors, and present a really wholesome environment. That is the thing also, that when it is parents and kids together, and they are skiing together, and the only thing that gets you really ginned up is when your little kid passes you by on the slope. I am talking about my kids. I am talking about my 5-year old. She is the one who lives in Colorado. She is really good.

Anyway, but it is a whole cultural thing, the trip up to Vermont, and we did it for many years, at night, hearing the cry, Dad, when are we going to get there; Dad, when are we going to get there, and I keep saying, in minutes, in minutes, in minutes.

But it established a camaraderie in a family that is very hard to get in other places, whether it is fishing or sailing or boating or snowmobiling. You name it. Nothing brings families together more than outdoor recreational activities. I treasure it, and if I didn't have to work so many hours here, I would do a lot more of it with my kids who live all over.

But when we looked at what we can do about it, and I see that the ski areas, Mr. Berry, are finding ways to get green energy included, because there is an energy consumption, but there is no place that adds more to the quality of life in the country than the ski areas, than the recreational areas that the country owns, available for activities, whatever they are.

So I commend those of you in the recreational industry. The erratic weather conditions are things that are talked about here in derogatory terms, saying, well, there are cold days out there, more cold days, and the polar bears aren't really in bad shape. Well, not if you take them in a particular area, but if you take the population overall, they are declining. They are emaciated. It is terrible

to see them. Loads and loads of snow comes, and often in the Sierras, and now what happens it is gone in no time, Mr. Berry. That is the problem. There is very little retention of the snow.

So the days are shortened. The people are disappointed, and the jobs are not there. So I commend each one of you for your comments, and once again the Chairman for highlighting this very important part of America's favorite pastime, outdoor recreation.

Thank you all very much.

Senator BOXER. Senator Lautenberg, you said it so well. I really am not going to ask questions because really everything I was interested in each of you addressed, whether it was Mr. Campion giving us the hard cold facts on what has occurred already to his business challenges as a result of the warming of the climate, and to the witnesses that were invited by my Republican friends. I am really disappointed my friends didn't come here.

This was a panel was in agreement, agreement that we have to act. We have to be smart about how we act, but we absolutely have to.

I have a couple of questions I am going to submit to you, if you don't mind. I am going to hold the record open for a week and ask you to answer them, because it gets into some of the cures that we are looking at. But let me say, this was a rare experience for me as Chairman here, where we have people wearing so many different hats here, with one message to us which is be smart about this, act on this, a lot depends on it.

I also again want to thank our sports stars who are here with us, who care about this deeply. It is a passion with you. You don't want to think of a world where kids can't have the chance you had.

We are really talking about a way of life here that goes well beyond politics, and has nothing to do with politics. It brings us all together. It is rare that you can talk about a business that brings so much joy to people. It is a little different than the gas business where people pull up to the pump in California now, nearing $4 a gallon. They don't feel so happy toward the oil business, but they are sure happy when they get up there.

I agree with Mr. McCahill. We have to get them up there in fuel efficient vehicles. That is another one of our jobs that we have to do.

So I will again say for the record, what we are talking about here in America, and I am trying to figuratively grab my colleagues by the shoulders and say, listen to this. So I am going to say it again: Listen to this. In 2006, national tourism-related sales amounted to $1.2 trillion in the United States, and were responsible for over 8 million jobs. So when we are talking about climate change, it is not just an academic exercise.

It is literally life and death for a lot of people in terms of their survival. When you are talking about my State, as usual we are usually about 10 percent, we are $94 billion, and 900,000 jobs in 2006. The prediction of our snowpack is quite alarming.

So I am going to follow up particularly with Dr. Scott on some of the technical questions about your views on these predictions. But we know enough now to know that time is of the essence.

I really want to say to each and every one of you at this panel and to the athletes that are here today, this is just I hope you view

it as your first visit to Washington. Each of you I would guess without asking, and I won't ask, you know, has different political views on a lot of other issues. You probably differ on many other things, but you are brought together on this issue. I would urge you to stay together, because I think if we can make this issue of global warming a bipartisan issue, there will be nothing stopping us.

Right now, it is too polarized. We have, you know, a few bipartisan opportunities. We have the Lieberman–McCain bill. We have Kerry–Snowe. We have a few of these bills that are bipartisan. For the most part, yet, we haven't really had the breakthrough. So I guess I am asking you, not asking you now, but I am asking you to think about this when you leave. I hope this was a good experience for you. I hope you realize that in a Senate that is so busy, this is probably our last day before a break, and to have four Senators here for most of the time is very, very good. I am sorry we didn't have anybody from the other side. I am sure they had many other challenges they had to deal with today.

But let's not give up on this. Your voices are really key here. I would love to see you come back another day and bring other people from this recreation industry with you, and make it a lobby day on the Hill, however you do it, because, especially I would say to the star athletes who are here, people are very interested in meeting you, in talking with you, and hearing you. I need all the help I can get with this job that I have. I think your voices are going to really help me.

So I thank you from the bottom of my heart for coming up here today. Your testimony has been entered into the record in full. It will make a difference as we set the stage for what we consider to be major legislation. We are starting with confidence-building measures, small measures, but they are starting to add up in the way Americans are looking at their daily lives. I think it is starting to make a difference now.

Thank you for adding to that sense of urgency.

The committee stands adjourned.

[Whereupon, at 11:55 a.m., the committee adjourned.]

[Additional statement submitted for the record follows:]

STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Thank you for having this hearing today, Madam Chairman. I have to say, however, that we seem to have hearing after hearing after hearing on climate change—indeed, this is the Committee's second one this week alone—but we don't seem to actually discuss legislation. While other Committees without jurisdiction on this issue attempt to write our Nation's global warming policies, this Committee sits idly by talking about tangential issues. I believe that if we do wrestle with actual legislation, then the folly of cap-and-trade carbon legislation will become apparent.

The recreation industry's true threats come not from climate change—which has always changed and will always change—but from the so-called global warming 'solutions' being proposed by government policymakers. Misguided efforts to 'solve' global warming threaten to damage the travel and recreation industry. In short, it is a direct threat America's way of life. If we cannot fly to remote locations, and if few automobiles are capable of pulling boats, jet skies, and campers, and if RVs become a thing of the past as environmentalists would like, then minor climate fluctuations will have little impact on recreation because Americans will not have the means to recreate.

I will not belabor my views about the scientific underpinnings of global warming alarmism, other than to make a few observations. The fact that climate fluctuates—changes—is nothing new, and should not be feared. It has always changed, and un-

less the processes of the planet suddenly stopped, it always will. There is little disagreement that it warmed in the Northern Hemisphere from about 1970's until 1998, and that since that time, temperatures flattened. And there is general agreement that some human activities such as the building of cities and expanding agriculture, have contributed to this. But there remains much debate in the peer-reviewed scientific literature as to the many factors which may influence climate that is of importance to the question of whether climate fluctuations are natural or caused by humans. But regardless of that debate, a healthy functioning planet means constant changes in our climate.

There are winners and losers as climate fluctuates. A warming period could be a boon for warm weather destinations like beaches and lakes and a cooling period like we experienced from 1940-1970s could be beneficial for cold weather recreation like skiing and snowboarding. This past winter saw record snows in the Rocky Mountain region as well as an unusually cold spring in Alaska. Currently, we are seeing a Memorial Day snow advisory for the Colorado Mountains. Wyoming being buried in a May snowstorm and parts of Canada are still enduring winter. In addition, South Africa just set 54 new cold weather records with some parts seeing snow for the first time in 33 years as snow and ice continue to fall. And I am not finished. A massive snowstorm in China has closed highways and stranded motorists. And finally, winter has arrived early in Australia as the snow season is off to a promising start for the winter recreation industry.

But the most verifiable threat to the recreation and travel industry is the unintended consequences of misguided government policy and environmental activists. The chilling effect of guilt that the climate alarmists are attempting to instill in Americans for owning four wheel drive vehicles, flying in an airplane and enjoying travel is enough to harm the industry. For examples of this promotion of misguided policies and guilt, you need look no further than a proposal in April by the UK-based Institute for Public Policy Research, which called for tobacco-style health warnings on airplanes to warn passengers that the plane flight may be contributing to a global warming crisis. The group proposed posting signs on airplanes which read "flying causes climate change."

Another example of unintended consequences by climate crusaders was the recent proclamation by a UK grocery store announcing it would usher in 'carbon friendly' policies and stop importing food from faraway nations. This proposal may have been popular with wealthy Western environmentalists, but the idea did not sit so well with poor African farmers. As a February 21, 2007 BBC article details:

"Kenyan farmers, whose lifelong carbon emissions are negligible compared with their counterparts in the West, are fast becoming the victims of a green campaign that could threaten their livelihoods. A recent bold statement by UK supermarket Tesco ushering in 'carbon friendly' measures—such as restricting the imports of air freighted goods by half and the introduction of 'carbon counting' labeling—has had environmentalists dancing in the fresh produce aisles, but has left African horticulturists confused and concerned."

The BBC article continues:

"Half of this produce goes to the UK's supermarkets, generating at least £100m per year for this developing country. The dependence on the UK market cannot be underestimated, says Stephen Mbithi Mwikya, chief executive of FPEAK. For Kenya, horticulture is the country's second biggest foreign exchange earner after tourism. 'This announcement from Tesco is devastating', says Mr Mbithi."

The recent announcement by travel guru Mark Ellingham, the author of the Rough Guide travel book series, that he was now recanting his promotion of worldwide travel is another blow to the travel and recreation industry. Ellingham now says that our addiction to 'binge flying' is killing the planet.

This kind of alarmism should concern the travel and recreation industry, not natural climate fluctuations which mankind has no control over.

There is even more proof showing that the dangers facing travel and recreation are coming from climate hysteria. The Associated Press on May 16, 2007 reported that ecotourism—the type of travel you would expect environmentalists to endorse—is no more Earth friendly than regular travel due to the long plane flights necessary to bring vacationers to exotic locales. The Norwegian Environment Minister Helen Bjoernoey is now warning about long distance travel.

"Long distance travel—especially air travel—is a challenge to all of us. We know that it has serious impacts on the climate," Bjoernoey said.

I cannot think of a more devastating sentiment to the industry than that. Reduce air travel because of unfounded fears of climate doom. That is the authentic threat not only to the travel industry, but the developing world which depends so much on tourism to improve the life its residents. Clearly, the unfounded fears of a man-

made climate catastrophe and the proposed solutions represent the gravest threats to the industry.

Thank you.

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