

NATIONAL PERSPECTIVE ON MOUNTAIN RESORTS AND ECOLOGY

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Eco-efficiency is a valuable and laudable tool, and a prelude to what should come next. But it, too, fails to move us beyond the first [industrial] revolution. Our concept of eco-effectiveness leads to human industry that is regenerative rather than depletive. It involves the design of things that celebrate interdependence with other living systems. From an industrial-design perspective, it means products that work within cradle-to-cradle life cycles rather than cradle-to-grave ones.¹

INTRODUCTION

The purpose of this Paper is fourfold. First, it characterizes the United States ski industry and details the industry's relationship with its ecosystems. Second, it identifies the environmental outputs of the ski industry. Third, it highlights organizations with helpful environmental models that the ski industry could follow. Finally, this Paper suggests ways for resorts and their associations to reduce environmental impacts in the future.

The United States ski industry draws millions of visitors, and consists of resorts of all types located in most states and geographic areas, each with different types of ownership. The ski industry has evolved significantly over the last 50 years, from small "mom and pop" ski areas into a mixture of small, medium, and large resorts, and resort communities with thousands of residents. This Paper explains the current U.S. ski industry approach to environmental issues, and covers approaches advocated by the major associations of resort owners as well. The National Ski Areas Association (NSAA), the primary body representing ski resorts in the US, takes a proactive approach in leading and informing its membership on environmental issues. There are several other industry associations that have also developed codes of conduct. At the corporate level, many companies are leading the way toward better environmental performance under the rubric of corporate sustainability. Corporate sustainability is a maturing voluntary environmental movement that is having a substantial and increasing effect on how businesses can reduce their impacts on the environment, while

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1. William McDonough & Michael Braungart, *The NEXT Industrial Revolution*, ATLANTIC MONTHLY, Oct. 1998, at 82, <http://www.theatlantic.com/issues/98oct/industry.htm>.

maintaining profitability. Although these approaches are having a positive effect, future directions to increase sustainability for individual resorts and the industry must be explored.

I. BACKGROUND

A. *The Tourism Industry*

Tourism is widely acknowledged as the largest industry in the world.² In the United States, tourism ranks as the third largest retail sales industry, behind automotive dealers and food stores. The Travel Industry Association of America (TIA) reports that tourists spent \$545.1 billion in 2001, generating \$94.4 billion in tax revenue for local, state, and federal governments, and producing a \$7.7 billion trade surplus.³

B. *Ski Industry Profile*

1. Skier Visits Steady for Twenty Years

During the winter of 2000-2001, 57.3 million people skied or snowboarded for some part of a day or night in the United States.⁴ While this is a record number for the U.S. market,⁵ it represents only a slight increase over the past 20 years.⁶

YEAR	Number of skier visits (millions) ⁷
1978-79	50.1
1980-81	39.7
1985-86	51.9
1990-91	46.7
1995-96	53.9
2000-01	57.3

2. World Tourism Ass'n, *About WTO*, at <http://www.world-tourism.org/aboutwto.html> (last visited Feb. 7, 2002).

3. Travel Industry Ass'n of America, *Economic Research: Economic Impact of Travel and Tourism*, Travel Statistics and Trends, at <http://www.tia.org/Travel/EconImpact.asp> (last visited July 18, 2002).

4. Snowlink.com, *SIA Snow Sports Fact Sheet*, at <http://www.snowlink.com/newsresearch/stats/stats2000.shtml> (last visited Jan. 1, 2002).

5. Nat'l Ski Areas Ass'n (NSAA), *2000-2001 Season's National Skier/Snowboarder Visits Sets New Record*, at <http://www.nsaa.org/media/s/00.01visits.asp> (last visited Aug. 22, 2001).

6. NSAA, *Estimated U.S. Ski Industry Skier/Snowboarder Visits by Regions, 1979-2000*, at <http://www.nsaa.org> (last visited March 2, 2002).

7. *Id.*

One reason for the moderate growth in the number of visits is the growing popularity of snowboarding. By 2000, 28.3% of visitors to ski areas were snowboarders. In 1978, many of today's snowboarders were not yet born, and their sport didn't really exist. The tremendous growth in snowboarding over the last 15 years has prevented numerous ski resorts from going out of business, although many still did. In 2000 there were 7.4 million skiers, 4.3 million snowboarders, 2.3 million cross-country skiers, and 1 million snowshoers.⁸ Collectively, these 15 million participants spent \$2.2 billion on equipment.⁹ During the winter of 2000-2001 gross revenue for ski resorts in the U.S. was \$4.2 billion, and during 1999-2000 gross revenue was \$3.6 billion.¹⁰ The additional \$600 million resulted from a significant increase in skier and snowboarder visits. But comparing individual years can be misleading. Many years over the last two decades have seen decreases in both skier visits and retail equipment sales.

2. Number of Resorts Decreased by Half Over Forty Years

During 2000-2001, there were 490 ski areas and resorts open in the United States.¹¹ In contrast, there were 569 in 1990-1991, 735 in the early 1980's, and over 1000 in the 1960's.¹² This downward trend is due to several factors, including ownership consolidation, increased competition, and the decline of family owned resort businesses. Further, some smaller resorts and ski areas struggle to compete with larger resorts, who profit from consumer expectations for new and diverse terrain, upscale lodges and amenities, and superior snowmaking and lift services. Smaller resorts also have difficulty accessing capital for expansions and upgrades, magnifying the gap between them and their larger competitors.

3. Many Small Resorts, a Few Very Large Corporations

The ski resort industry is not homogeneous. Resorts vary by a multitude of factors including size, ownership structure, land ownership, location, proximity to metropolitan areas and airports, and the types of

8. Snowlink.com, *supra* note 4.

9. *Id.*

10. Personal communication with Laura Menozzi, Director of Finance, NSAA. Resort gross revenues are calculated by aggregating ticket sales, lodging, food and beverage, lessons, rentals, property operations, retail sales, and real estate sales. Ski Area Permit System, 64 Fed. Reg. 8686 (Feb. 22, 1999).

11. NSAA, *supra* note 6.

12. *Id.*

markets served.¹³ There are approximately 135 ski resorts on federally owned lands.¹⁴ Thirty-nine states have one or more ski areas or resorts, led by New York (50 resorts), Michigan (47), Wisconsin (35) and Pennsylvania (33).¹⁵ Two companies are publicly traded and own multiple resorts: Vail Resorts and Intrawest. As of March 14, 2002, the New York Stock Exchange suspended trading in American Skiing Company's common stock.¹⁶ Several companies own a number of resorts but are not publicly traded. Some of these include Booth Creek Inc., Aspen Skiing Company, Boyne USA, Inc., and Powdr Corporation.

4. A Maturing Industry Consolidates

In the ski industry, as with many industries, consolidation occurs as the industry matures. The theory behind ski area consolidation is that economies of scale will enable the companies to increase profits. The five largest ski resort companies in the United States are Intrawest, Booth Creek, Vail, Aspen, and the American Skiing Company (ASC). These five resort companies have grown substantially in the last decade through the acquisition of multiple resorts. Intrawest owns six ski resorts: Whistler/Blackcomb, Mt. Tremblant, Stratton, Snowshoe, Mammoth, and Mountain Creek.¹⁷ Intrawest's resorts accounted for 7 million skier visits in 2000-2001.¹⁸ Booth Creek, which owns Loon Mountain, Cranmore Mountain Resort, Waterville Valley, Bear Mountain, Northstar-at-Tahoe, Sierra-at-Tahoe, and the Summit had nearly 2.5 million visits in 2000-2001.¹⁹ Vail Resorts owns four ski areas: Vail, Beaver Creek, Keystone and Breckenridge, all in Colorado. Vail's resorts accounted for nearly 5 million skier visits in 2000-2001. Aspen Skiing Company owns four resorts: Ajax, Snowmass, Buttermilk and Aspen Highlands. The Aspen resorts accounted for about 1.2 million visits in 2000-2001.²⁰ Finally, ASC owns Mount Snow/Haystack, Killington/Pico, Sunday River, Sugarloaf

13. NSAA, Sustainable Slopes: The Environmental Charter for Ski Areas, at <http://www.nsa.org/enviro/charter2k.pdf> (June 14, 2000) [hereinafter *Environmental Charter*].

14. Ski Area Permit Fee System, 64 Fed. Reg. at 8682.

15. NSAA, *supra* note 6.

16. SAM Online, *American Skiing Co. Delisted*, at http://www.saminfo.com/action.lasso?database=news2.fp3&-response=news_story.htm&-layout=par5&-sortField=anchor&-sortOrder=descending&-op=bw&archive=no&-op=bw&story_type='standard'&-maxRecords=1&-skipRecords=25&-token=25&-search (Mar. 6, 2002).

17. Copper Mountain, *Company Profile*, at http://www.coppercolorado.com/05_otherinfo/05_job_compprofile.html (last visited Feb. 9, 2002).

18. *Id.*

19. NSAA, *supra* note 6.

20. Aspen Skiing Company Sustainability Report, 2000-2001.

USA, Attitash Bear Peak, The Canyons, Steamboat Ski & Resort Corporation, and until recently, Heavenly Valley. ASC accounted for nearly 5.3 million visits during 2000-2001. Collectively, these five companies accounted for over twenty-one million skier visits, about 37% of the national total.

Despite the positive prospect of consolidation, its results vary in the ski industry. ASC has run into financial problems over the past couple of years. As a result of its recent challenges, ASC has sold Sugarbush, Vermont and Heavenly Valley.²¹ ASC's net loss grew from \$52.5 million in 2000 to \$141.6 million for the year ending July 29, 2001.²² On the other hand, the story is better at Intrawest. Intrawest's revenue grew from \$208.1 million in fiscal 1996 to \$815.3 million in 2000.²³ Intrawest's net income was up from \$12.9 to \$52 million for the same time period.²⁴

Many smaller resorts look to the Big Five resort companies for leadership and direction. On the environmental front, the Big Five can take advantage of a wide range of options for environmental improvements that smaller or individually owned areas might not be able to handle. This is because larger resorts can use their influence to negotiate with electric power providers or upstream suppliers, and attract major events and international visitors. They can cushion themselves to a certain extent from the risk of a bad snow year by owning resorts across the country. All of the Big Five companies have dedicated staff for environmental issues. Smaller resorts have much more difficulty dedicating individual staff for environmental issues; their staff generally must do several jobs and cannot focus on just the environment.

C. Evolution of Mountain Resorts

The large resorts common today did not exist 100 years ago. Over the past century, as the popularity of skiing has increased, the character of resorts has changed dramatically. Ski areas set on small hills at the bottom of alpine valleys grew upwards toward the mountain peaks. Trails were cut at higher altitudes through successive ecosystems to reach better snow. New roads were cut through valleys. Entrepreneurs saw the opportunity to make profits by building lifts and cutting more trails. They built lodges, hotels, stores, and gas stations to serve the patrons of the resorts. In

21. SAM Online, *The Harbaugh Report*, at <http://www.saminfo.com/harbaugh.htm#trends> (last visited Feb. 9, 2002).

22. *Id.*

23. *Id.*

24. *Id.*

essence, distinct, localized communities were created.²⁵ As the areas evolved the number of trails grew. Snowmaking systems and ponds, as well as on-site wastewater treatment, resulted in more complex resorts.

Ski area growth is often criticized due to its impact on the character of small towns. Many small towns near expanding ski resorts have fallen victim to sprawl patterns of development, looking like many other places across the country with the requisite fast food, service stations, restaurants and bars, etc. Sometimes ski resort expansions can displace the character of the rural mountain communities. No new ski areas will be built in 2002, so all new growth is at or near existing ski areas.

Alongside the current growth are many ski areas across the country that have not changed or have grown little, remaining nearly the same as they were thirty or forty years ago. For example, Dartmouth Skiway in New Hampshire and Mad River Glen in Vermont have not changed significantly for many years other than minor upgrades.²⁶ Their character has remained. Some areas have actually reduced in size or impact, and hundreds have just closed altogether.²⁷

Several new ski area growth plans have mountain themes, so character is not always lost. And today, many ski areas are mitigating the effects of their growth. Clear-cut trails are revegetated to reduce erosion and siltation of mountain streams. Alternatively, many trails are not clear cut, but thinned to make glades.²⁸ Glades are trails through thinned out forest. Compared to clear-cut ski trails, gladed trails have generally less impact on the ecosystem. Wetlands are identified and avoided during development. When wetland destruction occurs, new ones are created in other areas through the use of offsets, usually adding more acreage than was lost. Land swaps are becoming more prevalent between resorts and state or federal landowners to preserve habitat in return for developable land. Energy from the grid or natural gas is used to replace old, dirty diesel engines. Snowmass, Breckenridge, Keystone, and Vail all purchase wind power to help power their ski lifts.²⁹

25. See, e.g., James Briggs, Comment, *Ski Resorts and National Forests: Rethinking Forest Service Management Practices for Recreational Use*, 28 B.C. ENVTL. AFF. L. REV. 79, 101-103 (2000) (discussing protests of Vail's Phase III expansion).

26. Press Release, Dartmouth, *New Skiing Lodge Ready for Coming Ski Season* (Oct. 27, 2000), at <http://www.Dartmouth.edu/news/releases/oct00/skyway.html> (last visited March 1, 2002).

27. NEW ENGLAND LOST SKI AREA PROJECT, OAK HILL, HANOVER N.H., at <http://www.nelsap.org/nh/oakhill.html> (last visited March 1, 2002). Oak Hill in Hanover, New Hampshire is an example of this. It no longer has any lifts, and has evolved to an area for cross-country skiing. *Id.*

28. Heather Burke, *Ski Areas Place Welcome Mat Out for New Glade Trails*, at <http://outdoors.mainetoday.com/downhillskiing/burke.html> (last visited Feb. 24, 2002).

29. See NSAA, *The Green Room: Energy Use for Lifts*, at http://www.nsaa.org/mem_environmental/greenroom.asp?topic=T09 (last visited Mar. 2, 2002).

Today, a common development model is to create a mountain village at the base of the resort.³⁰ Since the ski area and developer have control, they can make efforts to ensure a small town character. Villages can be walkable, energy efficient and compact. Some argue that modern ski resort development represents better growth than much of what occurred over past decades of resort development. A model of exemplary ski resort development is Whistler-Blackcomb in British Columbia. East-West Partners developed the areas for Intrawest Corporation. The Urban Land Institute awarded East-West Partners the "large-scale recreational" 2000 development award.³¹ Jurors commenting on the development stated:

Blackcomb is the result of a community and its government reaching consensus on a vision to create a world-class, four-season recreational destination and then partnering with a private interest that shared that vision to bring it into being. Blackcomb now sets the standard for the current generation of year-round ski resorts.³²

While Blackcomb illustrates "smart growth," and is being repeated across the continent, the opportunity to improve with less controversy still exists. At Blackcomb, the developers, government and community collectively planned their own future.

II. WHERE IS THE SKI INDUSTRY TODAY?

If there has ever been an industry that relies on the environment, especially cold weather, it is the ski industry. Climate change and rising global temperatures have tremendous adverse implications for the ski industry. Therefore, ski resorts and the ski industry should maximize their efforts to reduce environmental impacts resulting from operations. Although the aggregate environmental impacts of ski resorts are not large enough to have a major effect on climate change, action by an industry so closely associated with the outdoors can serve as a powerful example.

Battles over environmental issues have existed in the ski industry for decades.³³ Many battles have been waged over water withdrawals for

30. See, e.g., Northstar at Tahoe, *Completing the Vision at Northstar: Northstar Village*, heart of the vision, at <http://www.northstarvillage.com/mynstar.cfm> (last visited May 15, 2002).

31. Urban Land Institute, *Case Studies, Awards for Excellence 2000 Winners 1* (2002), at http://research.uli.org/DK/CaStd/re_CaStd_Awds4Excellfst.html (last visited Feb. 9, 2002).

32. *Id.*

33. See James Briggs, *Ski Resorts and National Forests: Rethinking Forest Service Management Practices for Recreational Use*, 28 B.C. ENVTL. AFF. L. REV. 79 (2000).

snowmaking, wetland impacts, and construction on federal lands.³⁴ Environmental groups across the country exist for the sole purpose of fighting ski area growth, and there have been innumerable lawsuits over a wide variety of environmental impacts resulting from ski resort operation and development.³⁵ In 1996, the Supreme Court declined to hear a water issues case involving Loon Mountain, New Hampshire.³⁶ In Vail, Two Elk restaurant, some chairlifts, and ski patrol huts were burned by the Earth Liberation Front, who opposed Vail's Phase III expansion (now known as Blue Sky Basin) into areas characterized as lynx habitat.³⁷ This resulted in millions of dollars in losses to Vail Associates.³⁸ In retrospect, the fires at Vail may have been a turning point for the ski industry. Even though environmental awareness existed at ski resorts for years, the fires unified the industry's environmental activism.

A. Sustainable Slopes

In 1999, the NSAA conducted an open process with stakeholders from all over the country to develop a charter for environmentally responsible ski area planning, design, construction, and public outreach.³⁹ Stakeholders from state and federal governments, environmental groups, industry, communities and counties took part in creating the charter. The charter is now known as "Sustainable Slopes," and can be considered an industry code of conduct.⁴⁰ It is one of the first of its kind for an entire industry.

Sustainable Slopes includes a set of twenty-one principles designed for ski areas to follow.⁴¹ Also included in the charter are 177 "options for getting there" which are ideas on what ski areas can do to satisfy the principles.⁴² Sustainable Slopes is intended to work as follows: ski areas "endorse" Sustainable Slopes, implement the principles, report to NSAA annually, then NSAA will summarize the data in an annual report.⁴³

34. *Id.*

35. See Green Nature, *To Ski or Not to Ski: Environmental Issues at Western Ski Resorts*, at <http://www.greennature.com/article> (last visited March 1, 2002).

36. *Loon Mountain Recreation Corp. v. Dubois*, 521 U.S. 1119 (1996) (cert. denied).

37. Steve Lipsher & Kristen Go, *Group Claims it Set Vail Blazes: Earth Liberation Front Takes Credit*, DENVER POST, Oct. 22, 1988, at B1.

38. *Id.*

39. *Environmental Charter*, *supra* note 13, at 1-2.

40. For general information see NSAA, *Sustainable Slopes*, at <http://www.nsaa.org/environ/index.asp>.

41. NSAA, *Sustainable Slopes Annual Report 2001*, p. 1-1, at <http://www.nsaa.org/environ/082401ssarfinal.pdf> (June 1, 2001) [hereinafter *Annual Report*].

42. *Id.* at 1-3,4.

43. NSAA, *Fact Sheet*, <http://www.nsaa.org/environ/Facts.pdf> (last visited Feb. 2, 2002) [hereinafter *Fact Sheet*].

Initially, it was recognized that the compiled data would be more qualitative than quantitative as ski resorts moved toward full implementation of the twenty-one principles.⁴⁴

Sustainable Slopes is groundbreaking work because of the breadth of its content. Most, if not all major areas of environmental concern are addressed. The challenge for Sustainable Slopes lies in its implementation. It is a voluntary program, so ski resorts opt-in with non-binding obligations. If resorts do not employ suggested actions or do not report annually, there are no consequences. Independent of fulfilling the twenty-one principles, resorts remain able to use the program logo for marketing and advertising.⁴⁵ Also, since reporting data is aggregated, there is not a way to differentiate top performers from non-top performers. Unfortunately, proving this point is Squaw Valley, California, where the state has taken legal action. "The California Water Quality Board . . . asked the California Attorney General's office in May 2001 to investigate alleged environmental damage resulting from construction of ski lifts, poorly designed ski runs, and runoff from parking lots."⁴⁶ Despite this indication that Squaw Valley is not implementing Sustainable Slopes principles, they remain an endorser of the charter.⁴⁷ At the same time, the Aspen Skiing Company, which is clearly a leader environmentally, is also an endorser.⁴⁸ Without examining all of the underlying data, one cannot differentiate among Sustainable Slopes endorsers, despite variance in their environmental practices.

B. Codes of Conduct

Though Sustainable Slopes is unique in its breadth, it is not alone as an industry code of conduct.

Several trade associations have developed initiatives for their members to provide a basis and framework for improving environmental performance. While the origins, purpose, elements and impact of these initiatives differ, the creation and existence of the programs signals an emerging new role for associations as

44. *Annual Report*, *supra* note 41 at 1-1.

45. *Fact Sheet*, *supra* note 43 (stating that participants are recognized by use of a logo, but that adherence to the principles is voluntary).

46. Camille Hayes, *Water Board Votes to Clean up Squaw Valley Ski Resort*, RENO GAZETTE J., Nov. 14, 2001, at <http://www.rgj.com/news/stories/html/2001/11/14/1793.php>.

47. NSAA, *Ski Areas Endorsing the Environmental Charter*, http://www.nsaa.org/mem_environ/areas2.asp (last visited Mar. 3, 2002).

48. *Id.*

standard setters, promoters, and mentors of environmental management practices.⁴⁹

Examples of industries with codes of conduct include the Chemical Manufacturers Association, American Petroleum Institute, American Forest and Paper Association, and American Textile Manufacturers Associations.⁵⁰ In 2000, the National Environmental Education and Training Foundation (NEETF) listed common code of conduct characteristics: regulatory compliance, continuous improvement, community involvement, product stewardship, mandatory participation, and third party verification.⁵¹

Considering that membership is voluntary, and associations are constantly struggling to secure and maintain its membership base, why would an association want to place burdens on members or in some cases, expel members, because of failure to meet code requirements? . . . [I]mposing requirements runs the risk of offending members who see little value in complying with requirements. Moreover, is it worth the investment if, as some have observed, it is possible for non-members to be free riders and reap the benefits of the accomplishments that associations have made in improving the reputation of the industry? Regardless of these potential obstacles, association code programs currently boast high participation rates.⁵²

The ski industry is not included in the NEETF report, which only applies to manufacturing, but the same questions apply to the NSAA's Sustainable Slopes code of conduct. Sustainable Slopes does not include entry requirements, performance standards, or consequences for not meeting its principles or reporting. Should we care? If the ski industry leads its membership to greater environmental performance and measurable behavioral changes at the national level, why should we not care? NSAA clearly states in its annual report that Sustainable Slopes will evolve over time to become more quantitative, while developing more indicators.⁵³ Time will have to be the judge. When the second, third, and other annual reports are published, improvement trends should be carefully analyzed.

49. The Nat'l Envtl. Educ. & Training Found., *The Emerging Role of Associations as Mentors*, *National Forum on Defining Environmental Excellence* 4, at <http://www.neetf.org/pubs/index.shtml> (Mar. 28, 2000).

50. *Id.*

51. *Id.*

52. *Id.*

53. *Annual Report*, *supra* note 41, at 2-1, 1-4.

III. EXAMPLES OF LEADERSHIP AND ACTION

Aspen Skiing Company is widely recognized as a long time leader in the ski industry. Support from upper management allows Aspen staff to pursue environmentally friendly actions that are not feasible for other resorts. Such actions include a lift powered by purchased wind power, a lodge that was deconstructed (valuable pieces were auctioned off, and much of the rest composted), and a new building meeting the U.S. Green Building Council's Leadership in Energy and Environmental Design certification requirements.⁵⁴ Aspen has issued two "sustainability reports" quantifying the holistic impacts on their environment.⁵⁵

Vail is the largest ski area in the United States,⁵⁶ drawing millions of visitors every winter.⁵⁷ Vail also has a substantial summer business. It is home to 4,500 permanent residents, plus another 5,000 part-time residents of vacation properties.⁵⁸ Thousands more live in the adjacent communities. Although it has been heavily criticized in recent years for its expansion plans,⁵⁹ Vail considers its resource use and waste generation seriously.⁶⁰ Vail has a well-developed recycling program that prevented 706 tons or 34% of its total waste stream in 2000 from going to landfills.⁶¹ Vail developed the assessment tool that became the model for all ski areas to use in reporting their progress in meeting the principles for Sustainable Slopes.⁶² Along with its sister resorts, Vail is taking a leadership position in the ski industry by taking the first steps in accounting for its environmental impacts.

Apart from resort-based action, state and federal governments have also taken action to promote environmentally friendly resort operation. An example of such action occurred in January, 2002, when the EPA and the Colorado Department of Public Health and the Environment published a

54. Pollution Prevention P'ship, *Mine the Waste Stream, Not the Forest*, at <http://www.aspensnowmass.com/environment/programs/pollution.cfm> (last visited Mar. 1, 2002).

55. Colorado Vacation Guide, *Ski Vail, General Information*, at <http://www.Coloradoadventure.net/region> (last visited Mar. 1, 2002).

56. Ski Safari, *Vail/Beaver Creek—Colorado*, at <http://www.skisafari.com/resort.asp?resortID=4> (last visited Mar. 1, 2002).

57. Vail Resorts, Inc., *Resort Fast Facts*, Vail Resorts Media Center, at <http://www.vailresorts.com/mediacenter.cfm?mode=resortfastfacts> (last visited July 18, 2002).

58. Town of Vail, *Living in Vail*, Town of Vail Homepage, at <http://www.ci.vail.co.us/living.htm> (last visited Feb. 9 2002).

59. See, e.g., Colorado Wild, *Vail's Infamous "Category III" Ski Area Expansion*, at <http://www.coloradowild.org/sacc/vail.html>, (last updated Oct. 30, 2000).

60. Vail Resorts Mgmt. Co., *Environmental Commitment*, at <http://www.vail.snow/environment.asp> (last visited Mar. 2, 2002).

61. *Annual Report*, *supra* note 41, at 1-1.

62. *Id.*

pollution prevention handbook entitled "Greening Your Ski Area."⁶³ This handbook is a comprehensive guide to "practical, proven techniques and technologies to reduce the impacts of operations."⁶⁴ The three-year project, funded by the EPA, employed an expert advisory committee and focused on Aspen and Arapahoe Basin, Colorado as case study subjects.⁶⁵

IV. ESTIMATED NATIONAL ENVIRONMENTAL IMPACT OF MOUNTAIN RESORTS

A. Comparison to Other Tourism Sectors

Between 1997 and 2000, the EPA quantified nationally the "outputs" of ten sectors of the tourism and recreation industry.⁶⁶ The purpose of the analysis was to determine if the tourism industry had a significant impact on the environment nationally.⁶⁷ The methodology assumed that a tourist/recreationist started from home and traveled to a place to participate in an activity.⁶⁸ At the destination, the person participated in the activity, and may have purchased retail items, eaten at restaurants, and perhaps stayed overnight before returning home.⁶⁹ Environmental outputs to air, water, and waste were estimated, as well as energy use and greenhouse gas emissions.⁷⁰ Outputs were calculated from the activity itself, as well as outputs from transportation, restaurants, retail and lodging.⁷¹ Some highlighted results are below.

Five tourism sectors selected from EPA's study are shown here. Prior to this study, data of this type did not exist for the tourism industry or the ski industry. Table 1 lists selected tourism sectors, participants and total outputs for the sectors.⁷² The sectors are sorted by participants, skiing having the fewest and waterside activities the greatest. Greater numbers of participants (and therefore the number of visits) should create greater total

63. GREENING YOUR SKI AREA, A POLLUTION PREVENTION HANDBOOK, <http://peakstio.prairies.org/p2bande/skigreen/> (last visited Apr. 27, 2002).

64. Michael Berry, NSAA President, 2002 Memo to Ski area owners and operators.

65. GREENING YOUR SKI AREA, *supra* note 63.

66. OFFICE OF POLICY, ECONOMICS, & INNOVATION, U.S. ENVTL. PROTECTION AGENCY. METHOD TO QUANTIFY ENVIRONMENTAL INDICATORS OF SELECTED LEISURE ACTIVITIES IN THE UNITED STATES, EPA 231-R-00-001 (2000) [hereinafter EPA REPORT].

67. *Id.* at iv.

68. *See id.* at 34 (explaining that "the role of second homes or families' and friends' homes were not considered").

69. *Id.* at 22.

70. *Id.* at 38.

71. *Id.* at 38-41.

72. *Id.* at 42-44.

numbers. The premise holds in this example, until snowmaking water use is included. Tremendous amounts of water are used for snowmaking. It is very important to note that it is not all consumptive use, because most of the water returns to a drainage basin after melting. Calculating the amount of returned water has been, and continues to be, a point of great debate. Further study on consumptive use for snowmaking water is needed.

Table 1: Recreational participants and total waste generation, Water Use, Energy Use, and CO₂ equivalents.

	Participants	Total water use (gallons) ⁷³	Total waste generation (tons)	Total energy use (Btu's)	Greenhouse gas generation (tons of co2 equivalents)
Ski areas	9.5 million	52 billion/ 3 billion	130,000	9.1 E+12	6 million
Fishing	35 million	7.3 billion	499,000	9.7 E+12	26 million
Amusements	54 million	15 billion	700,000	2.3 E+13	25 million
Casinos	60 million	13.5 billion	337,000	1.3 E+13	33 million
Waterside activities	132 million	53 billion	3.2 million	6.3E+13	137 million

Table 2 calculates the eco-efficiency for each sector's resource use or waste generation. Eco-efficiency means "doing more with less."⁷⁴ It is now considered by industries across the globe to be the strategy of choice for change.⁷⁵ Table 2 weighs total numbers against the number of participants in each sector.⁷⁶ By comparing sectors, areas of inefficiency become readily apparent, and thus provide indication of where action or investments should be focused.

73. In Tables 1 and 2, ski area water use has two numbers. The first includes snowmaking and the second does not.

74. McDonough & Braungart, *supra* note 1.

75. See The World Bus. Council for Sust. Dev., United Nations Development Program, Eco-Efficiency and Cleaner Production, *Charting the Course to Sustainability*, at <http://www.iisd.ca/linkages/consume/unep.html> (last visited March 1, 2002).

76. EPA REPORT, *supra* note 66, at 42-44 (author's calculations).

Examining the efficacy of the sectors for water use, it is not surprising that fishing is the most efficient. However, it is surprising that the efficiency of casinos and amusements follow closely. The amount of water that gamblers and amusement park visitors use for retail, lodging, and restaurants would logically be more than anglers. Unfortunately, the answer is not apparent from EPA's report. Ski areas are substantially less efficient than casinos and fishing, but more efficient than waterside activities. Again, if snowmaking water use is added, ski areas are the least efficient, by a substantial margin. Notably absent from this analysis is the effect on local ecosystems. No matter how efficient casino hotels in the desert are, for example, they will use tremendous amounts of water. Those effects will be dramatically different from hotels in areas with fifty or more inches of rainfall annually. Geographic effects must be studied further.

Table 2: Eco-efficiency of water use, waste generation, energy use and CO₂ equivalents.

	Water eco-efficiency gallons/ person/year	Waste eco-efficiency pounds/person/ year	Energy eco-efficiency Btu/person/ year	Greenhouse gas eco-efficiency pounds/person/ year
Ski areas	5474 / 316	27	957,895	1,263
Fishing	209	29	277,143	1,486
Amusements	278	26	425,926	926
Casinos	225	11	216,667	1,100
Waterside activities	402	48	477,273	2,076

Waste eco-efficiency values show that ski areas are roughly in the middle of these selected sectors. Casinos are very efficient with eleven lbs/person/year. Waterside activities are more than four times less efficient at 48 lbs/person/year. Waterside activities may be intensive in food and retail purchases that generate a lot of waste.⁷⁷ The data shows that ski areas

77. *Id.* at 55.

are among the most efficient of the sectors in EPA's report for waste generation.⁷⁸

For energy use, ski areas are the least efficient of the five selected sectors. This makes sense due to the intensive energy use for lifts and snowmaking. However, conventions, golfing and historical visiting are all inefficient relative to other sectors. Greenhouse gas emissions combine energy use and transportation and are calculated in terms of carbon dioxide equivalents. At about 1200 lbs/person/year, ski areas fall in the middle of the selected sectors. Carbon dioxide equivalents are largely dependent on transportation for each sector. Waterside activities and fishing are driving-intensive, and the eco-efficiency indicators reflect this.⁷⁹

Future studies should expand the range of indicators included. Indicators relevant to the ski industry include habitat, forest and vegetation, conservation areas, wetlands, species, and hazardous waste. Simple inventories of these resources to provide a baseline would be beneficial to the overall picture of the industry footprint. Subsequently, tracking gains or losses to these resources and then eco-efficiency would be possible.

B. NSAA Aggregate Figures for Energy, Water, and Waste

NSAA completed its first annual report on Sustainable Slopes in June, 2001. During the 2000-2001 season, 170 resorts endorsed the charter and aimed to implement its twenty-one principles.⁸⁰ For the first report, eighty-eight resorts replied, representing 71% of nationwide skier visits.⁸¹ NSAA chose three environmental indicators to report quantified aggregate data: water conservation and use, energy conservation and use, and waste reduction, recycling, and disposal. Results from NSAA's report⁸² are as follows:

Water Use	3.3 to 6.9 billion gallons per year
Water Conservation	48 to 154 million gallons per year
Waste Generation	16.6 thousand to 23.1 thousand tons per year
Waste Recycling	1.0 to 4.2 percent
Energy Use	317 to 479 million kWh per year
Energy Conservation	9 to 38 million kWh per year

78. *Id.*

79. *Id.* at 54.

80. *Annual Report*, *supra* note 41.

81. *Id.* at i, 1-3.

82. *Id.* at 2-48.

NSAA's data are substantially lower than the EPA model estimates.⁸³ There is no practical explanation for the divergence. NSAA data comes from eighty-eight resorts during a year with fifty-seven million skier visits, while EPA's estimate was for a year with fifty-four million skier visits.⁸⁴ The NSAA data also only accounts for seventy-one percent of the fifty-seven million skier visits, therefore it should be lower than EPA's estimate, but not by the amount we see. This divergence points to the need for more research to develop a better, more consistent and widely accepted baseline.

C. *The Sustainability Movement*

A widely accepted definition of "sustainable" comes from the Brundtland Commission's 1987 report to the World Commission on Environment and Development (WCED): sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs."⁸⁵ Recently, the concept of sustainable development has received attention for being vague and often misunderstood. However, the importance of sustainability does not stem from universal acceptance of a definition. The availability of resources is important to anyone interested in improving and encouraging measures impacting sustainable development. There are four levels of sustainability organizations relevant to the ski industry: international organizations, federal agencies, non-governmental organizations, and finally, specific programs that offer technical assistance, examples, partnership, or frameworks for action.

1. International Organizations

United Nations (UN) Environmental Program

This program provides leadership and encourages "partnership in caring for the environment by inspiring, informing and enabling nations and peoples to improve their quality of life without compromising that of the future generations."⁸⁶

83. *Id.*

84. EPA REPORT, *supra* note 66.

85. WORLD COMM'N ON ENVTL. DEV., OUR COMMON FUTURE 8 (1997).

86. United Nations Env'tl. Programme, *Mission Statement*, at <http://www.unep.org/about.asp> (last visited Feb. 7, 2002).

UN Commission on Sustainable Development

The commission

promote[s] dialogue and build[s] partnerships for sustainable development with governments, the international community and the major groups identified in Agenda 21 as key actors outside the central government who have a major role to play in the transition towards sustainable development including women, youth, indigenous peoples, non-governmental organizations, local authorities, workers and trade unions, business and industry, the scientific community, and farmers.⁸⁷

World Business Council on Sustainable Development (WBCSD)

The mission of the WBCSD is “[t]o provide business leadership as a catalyst for change toward sustainable development, and to promote the role of eco-efficiency, innovation and corporate social responsibility.”⁸⁸

Objectives and strategic directions for the WBCSD include:

- **Business leadership:**
To be the leading business advocate on issues connected with sustainable development.
- **Policy development:**
To participate in policy development in order to create a framework that allows business to contribute effectively to sustainable development.
- **Best practice:**
To demonstrate business progress in environmental and resource management and corporate social responsibility and to share leading-edge practices among our members.
- **Global outreach:**
To contribute to a sustainable future for developing nations and nations in transition.⁸⁹

87. United Nations Sust. Dev., *Mandate of the Commission on Sustainable Development*, at <http://www.un.org/esa/sustdev/csdback.htm> (Mar. 26, 2001). Agenda 21 is “a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment.” United Nations Sust. Dev., *Agenda 21*, at www.un.org/esa/sustdev/agenda21.htm (last visited Mar. 25, 2001).

88. World Bus. Council for Sust. Dev., *About Us*, at <http://www.wbcsd.ch/aboutus/index.htm> (last visited Feb. 7, 2002).

89. *Id.*

World Tourism Organization (WTO)

The Sustainable Development of Tourism program works closely with members and other international organizations to ensure that new tourism development is properly planned and managed to protect the natural and cultural environments.⁹⁰ WTO members are embracing the message encouraging low-impact sustainable tourism development rather than uncontrolled mass tourism in recent years. They understand that governments, in partnership with the private sector, have a responsibility to keep the environment in good condition for future generations and for the future success of the tourism sector.

2. Federal Agency Programs

*The Environmental Protection Agency (EPA)*⁹¹

Commuter Choice Leadership Initiative. The Commuter Choice Leadership Initiative is an EPA and Department of Transportation (DOT) partnership program that encourages employers to sign a voluntary agreement to offer their employees outstanding commuter benefits (e.g. significant level of tax-free transit passes, vanpool benefits, telecommuting).⁹²

Design for the Environment. EPA's Design for the Environment program helps businesses incorporate environmental considerations into the design of products, processes, and technical and management systems.⁹³

Diesel Retrofit. The Voluntary Diesel Retrofit Program is building a market for clean diesel engines by working with state, local and industry partners to create demonstration projects around the country. This program results in substantial emission reductions on today's diesel truck fleet, providing immediate air quality benefits.⁹⁴

Energy Star. Energy Star provides "businesses and consumers [with] energy efficient solutions helping to save money while protecting the

90. World Tourism Ass'n, *About WTO*, at <http://www.world-tourism.org/aboutwto.html> (last visited Feb. 7, 2002).

91. EPA's TRAQ, *Commuter Choice, Commuter Choice Benefits Everyone*, at <http://www.epa.gov/opptintr/dfe/about/about.htm> (last visited Feb. 7, 2002).

92. See EPA Office of Air and Radiation & Office of Transportation and Air Quality, *Commuter Choice: Helping Individuals and Communities*, at <http://www.epa.gov/opptintr/dfe/about/about.htm> (last modified Sept. 1, 2000).

93. EPA Office of Pollution Prevention and Toxics, *About DfE*, at <http://www.epa.gov/opptintr/dfe/about/about.htm> (last updated Oct. 10, 2001).

94. EPA Office of Air and Radiation & Office of Transportation and Air Quality, *Voluntary Diesel Retrofit Program*, at <http://www.epa.gov/otaq/retrofit/> (last updated Dec. 10, 2002).

environment for future generations.”⁹⁵ By choosing Energy Star in our homes and places of employment, every person can help protect the environment.

Improving Air Quality through Land Use Activities. “The way land is developed and how residences, jobs, shopping, recreation and other destinations are situated within an urban area have an impact on the length and number of auto trips people must take, which in turn affects pollution.”⁹⁶ EPA’s voluntary land use effort includes guidance on how to credit environmentally beneficial land use measures in a State Implementation Plan or through the conformity determination process.⁹⁷ It also provides for ongoing research to explore the interaction between land use and vehicular emissions in different urban designs such as transit oriented or mixed-use development designs.⁹⁸

It All Adds Up to Cleaner Air. This is an EPA and DOT public education partnership effort designed to increase the understanding of the public regarding the impact of travel choices on air quality, traffic congestion, and public health.⁹⁹

National Environmental Performance Track. EPA’s newest and most comprehensive partnership program was launched in 2000 and now counts 281 members.¹⁰⁰ It is the first multi-media partnership program encouraging companies to continuously reduce their facilities’ total effect on the environment.¹⁰¹

Project XL. XL, which stands for “eXcellence and Leadership,” tests innovative ways of redesigning EPA’s current regulatory and policy-setting processes.¹⁰² Project XL encourages cleaner, cheaper, and smarter ways to attain environmental results superior to those achieved under current regulations and policies, in conjunction with greater accountability to stakeholders.¹⁰³

95. Energy Star Homepage, at <http://www.energystar.gov> (last visited Feb. 2, 2002).

96. EPA Office of Air and Radiation, *Improving Air Quality Through Land Use Activities*, available at <http://www.epa.gov/otaq/traq> (last visited Feb. 7, 2002).

97. *Id.*

98. *Id.*

99. EPA & Dep’t of Trans., *It All Adds Up to Cleaner Air*, at <http://www.epa.gov/oms/transp/traqpedo/italldadd/iaauca.htm> (last visited Feb. 7, 2002).

100. EPA, *National Environmental Performance Track*, at <http://www.epa.gov/performance/track/> (last modified Feb. 5, 2002).

101. *Id.*

102. EPA, *What is Project XL?*, at <http://www.epa.gov/projectxl/file2.htm> (last updated Dec. 2, 1999).

103. *Id.*

WasteWise. WasteWise encourages business, government, and institutional partners to reduce municipal solid waste through waste prevention, recycling, and buying/manufacturing products with recycled content, benefiting their bottom lines and the environment.¹⁰⁴

Water Alliances for Voluntary Efficiency (WAVE). EPA's WAVE program helps businesses reduce water use and water-related energy use. WAVE's efforts focus on improving water efficiency in the lodging industry, office buildings, and educational institutions.¹⁰⁵

U.S. Department of Energy (DOE)

"[O]ne of the core missions [of DOE] is to make sure the nation has ample supplies of clean, affordable energy."¹⁰⁶ As communities grow and development decisions are made, the attendant impacts on transportation patterns, building efficiency, and industrial productivity affect the nation's economic and environmental health.¹⁰⁷ "DOE's research and development programs are producing cutting-edge technologies that can play an integral role in your community's sustainable development efforts—for example, technologies that make buildings 50% more energy-efficient, that help industries prevent pollution, and that produce electric power from clean, renewable resources."¹⁰⁸ The following are a small sample of DOE programs that promote sustainability: Green Buildings, Land Use Planning, Measuring Progress, Community Energy, Green Development, Transportation, Sustainable Business Financing, Rural Issues, Resource Efficiency, Air, Water, and Materials.¹⁰⁹ Each of these programs has a website and resources that are available to a wide range of interested parties.

The U.S. Department of Agriculture (USDA), Forest Service (USFS)

The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.¹¹⁰ The Forest Service commitment

104. EPA Office of Solid Waste, *Joining the WasteWise Program*, at <http://www.epa.gov/wastewise/about/overview.htm> (last updated Jan. 3, 2002).

105. Environsense, *EPA's Water Alliances for Voluntary Efficiency (WAVE) Program*, at <http://es.epa.gov/partners/wave/wave.html> (last visited Feb. 7, 2002).

106. Center of Excellence for Sustainable Development, *Welcome to the U.S. Department of Energy's Center for Sustainable Development*, at <http://www.sustainable.doe.gov/welcome.shtml> (last visited Feb. 2, 2002).

107. *Id.*

108. *Id.*

109. *Id.*

110. U.S. Dep't of Agric. Forest Service, *Forest Serv. Mission, Vision, and Guiding Principles*, at <http://www.fs.fed.us/intro/mvgrp.html> (last visited Feb. 2, 2002).

to land stewardship and public service is the framework within which it manages natural resources.¹¹¹ Implicit in this statement is the agency's collaboration with partners and the public.¹¹² As the lead federal agency in natural resource conservation, the Forest Service provides leadership in the protection, management, and use of the nation's forest and rangeland.¹¹³ The Forest Service's ecosystem approach to management integrates ecological, economic, and social factors to maintain and enhance environmental quality to meet current and future needs.¹¹⁴

3. Non-Governmental Organizations

Coalition for Environmentally Responsible Economies (CERES)

CERES is a "U.S. coalition of environmental, investor, and advocacy groups working together for a sustainable future."¹¹⁵ CERES companies commit "to continuous environmental improvement by endorsing the CERES Principles, a ten-point code of environmental conduct."¹¹⁶ The CERES Principles are: Protection of the Biosphere, Sustainable Use of Natural Resources, Reduction and Disposal of Wastes, Energy Conservation, Risk Reduction, Safe Products and Services, Environmental Restoration, Informing the Public, Management Commitment, Audits and Reports.¹¹⁷

Business for Social Responsibility (BSR)

BSR's mission is to advance leadership in responsible business practices by helping businesses achieve commercial success in ways that respect ethical values, people, communities and the environment. BSR provides tools, training, advisory services and collaborative opportunities in person, in print and online that equip companies to implement socially responsible business practices that serve business goals.¹¹⁸

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

115. Coalition for Environmentally Responsible Economies (CERES), *Network for Change*, at <http://www.ceres.org> (last visited Feb. 7, 2002).

116. *Id.*

117. *Id.*

118. Business for Social Responsibility, *Welcome to our Redesigned BSR Website*, at <http://www.bsr.org/index.cfm> (last visited Feb. 7, 2002).

The Natural Step (TNS)

“The Natural Step Framework is a science and systems-based approach to organizational planning for sustainability. It provides a practical set of design criteria that can be used to direct social, environmental, and economic actions.”¹¹⁹ TNS Framework describes core-guiding principles for moving toward sustainability.¹²⁰ The TNS Framework has three main components: The Funnel, System Conditions, and Strategy for Action. The Funnel Mechanisms, which provide essential life-supporting resources for society’s continued existence on the planet, such as clean air, clean water, and productive topsoil, are in decline.¹²¹ The Four System Conditions state that “in a sustainable society, nature is not subject to systematically increasing: 1. concentrations of substances extracted from the earth’s crust; 2. concentrations of substances produced by society; 3. degradation by physical means; and, in that society. . . 4. human needs are met worldwide.”¹²² The Strategy for Action has a four step analytical approach: awareness, baseline mapping, clear vision, down to action.¹²³ Finally, TNS implements its analytical approach by what it terms “systems thinking.”¹²⁴ This includes setting ambitious goals, and developing realistic strategies for moving forward.¹²⁵

Rocky Mountain Institute (RMI)

“Rocky Mountain Institute is an entrepreneurial, nonprofit organization that fosters the efficient and restorative use of resources to create a more secure, prosperous, and life-sustaining world.”¹²⁶ RMI is guided by the following core principles: advanced resource productivity, systems thinking, positive action, market-oriented solutions, end-use/least-cost approach, biological insight, corporate transformation, the pursuit of interconnections and natural Capitalism.¹²⁷

119. The Natural Step Framework, at http://www.naturalstep.org/framework/framework_overview.html (last visited Feb. 7, 2002).

120. *Id.*

121. *Id.*

122. *Id.*

123. *Id.*

124. *Id.*

125. *Id.*

126. The Rocky Mountain Institute, at <http://www.rmi.org> (last visited Feb. 7, 2002).

127. *Id.*

The Urban Land Institute (ULI)

The mission of the Urban Land Institute is to provide responsible leadership in the use of land in order to enhance the total environment. ULI's strategic direction is to extend its industry leadership to: bring together the people able to influence the outcome of important issues related to land use and the built environment; communicate who we are and what we—our members and our Institute—have learned about land use to increase ULI's influence on land use policy and practice; and continue to provide relevant and current information about land use and real estate development to all our members and stakeholders.¹²⁸

The ULI Code of Ethics is composed of categories such as: respect for the land, respect for the profession, respect for the consumer, respect for the public, respect for equality of opportunity, respect for others in the land use and development profession, respect for the larger environment, respect for the future, respect for future generations and respect for personal integrity.¹²⁹

The Smart Growth Network (SGN)

In communities across the nation, there is a growing concern that current development patterns—dominated by what some call 'sprawl'—are no longer in the long-term interest of our cities, existing suburbs, small towns, rural communities, or wilderness areas. Though supportive of growth, communities are questioning the economic costs of abandoning infrastructure in the city, only to rebuild it further out. Spurring the smart growth movement are demographic shifts, a strong environmental ethic, increased fiscal concerns, and more nuanced views of growth. The result is both a new demand and a new opportunity for smart growth.¹³⁰

Smart Growth Principles include: Create a Range of Housing Opportunities and Choices; Create Walkable Neighborhoods; Encourage Community and Stakeholder Collaboration; Foster Distinctive, Attractive Places with a Strong Sense of Place; Make Development Decisions Predictable, Fair and

128. The Urban Land Institute, *Introduction*, at http://www.uli.org/DK/uli_About_fst.html (last visited Feb. 7, 2002).

129. *Id.*

130. Smart Growth Network, *About Smart Growth*, at <http://www.smartgrowth.org/about/default.asp> (last visited Feb. 2, 2002).

Cost Effective; Mix Land Uses; Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas; Provide a Variety of Transportation Choices; Strengthen and Direct Development Towards Existing Communities; Take Advantage of Compact Building Design.¹³¹

Environmental Management Systems (EMS)

“An environmental management system (EMS) is a systematic approach to dealing with the environmental aspects of an organization. It is a ‘tool’ that enables an organization of any size or type to control the impact of its activities, products or services on the natural environment.”¹³² EMS’s can be fairly simple or very detailed. Many small companies implement simple EMS’s, while many larger companies design formal, detailed, fully documented and certified EMS’s.¹³³ While most EMS’s are not certified, there are many in the United States and the world that are.¹³⁴ The internationally recognized body is ISO (International Organization for Standardization), a worldwide federation of national standards bodies.¹³⁵ ISO develops a wide range of standards, include those for total quality management (ISO 9000), and the environment (ISO 14000).¹³⁶ ISO 14001 *Environmental management systems—Specification with guidance for use* is the standard within the ISO 14000 series that specifies the requirements of an environmental management system.¹³⁷

In December 2001 there were 22,897 facilities in 98 countries were ISO certified, and 1042 in the United States.¹³⁸ ISO 14001 EMS’s have six basic elements, that follow a “plan, do, check, act” approach. These elements are: environmental policy, planning implementation and operation, checking and corrective action, management review, and continual improvement.¹³⁹ EMS’s ISO 14001 present a substantial opportunity for mountain resorts owners and operators. Sustainable Slopes is a broad enough code that if substantially implemented, it could be considered an EMS. However, the range of environmental performance in

131. *Id.*

132. Int’l Org. for Standardization’s Tech. Comm. 207, *Frequently Asked Questions*, at http://www.tc207.org/faqs/faqs_main.html (last visited Feb. 7, 2002).

133. *Id.*

134. *Id.*

135. *Id.*

136. *Id.*

137. *Id.*

138. Int’l Org. for Standardization, *The ISO Survey of ISO 9000 and ISO 14000 Certificates—Tenth Cycle*, at <http://www.iso.ch/iso/en/iso9000-14000/pdf/survey10thcycle.pdf> (last visited Feb. 7, 2002).

139. *Id.*

non-ISO EMS is great, and therefore facilities that are ISO certified may receive less scrutiny. Today, there is no ski area in the United States with ISO certification. The first one to receive it may receive substantial recognition.

4. Issue Specific Organizations

There are a tremendous number of organizations that provide policy guidance, technical assistance, or consulting services of which ski areas can take advantage. While there are thousands, some examples of these organizations include the US Green Building Council and its LEEDS programs (Leadership in Energy and Design), the Alliance to Save Energy, the Green Business Council, Sustainable Business.com, the Sustainable Business Network, and the Green Business Center.

V. DIRECTIONS FOR THE FUTURE

So, what happens now? The total environmental impact of the ski industry is less than it is in some sectors, and its resource efficiency is able to improve. The ski industry has made an admirable start down its sustainability path, and maintaining this momentum is critical. The industry needs to continue adding to its actions across the country, snowballing the environmental programs in depth, occurrence, and breadth to reduce its overall impact on the environment.

There is a significant opportunity for the ski industry to be an environmental leader in the tourism sector in the United States and worldwide. It is an impossible goal for the ski industry's environmental outputs to equal zero (meaning no net waste, no net air emissions, no water degradation, etc.). Even if they did, the world's climate will still change. A changing climate could mean that some resorts will receive a lot more snow, and others none at all, potentially for years on end. Ski resorts and NSAA have the potential to become environmental leaders for the tourism industry. Their actions could educate not only skiers, but also tourists and observers of the tourism industry. It will not be easy or fast, but the potential to create greater demand for improved environmental performance exists for this industry. They could run with it.

VI. RECOMMENDATIONS FOR ACTION

A. Leadership

- The NSAA needs to continue to expand its environmental program, with continued environmental information, training, workshops, and marketing.
- NSAA should develop an advisory council made up of stakeholders from Sustainable Slopes partners and others, and include the biggest ski area critics. This council should advise NSAA's environmental committee on strategic planning, developing priorities, and implementation of environmental programs.
- NSAA could invite environmental visionaries to national conferences to inspire and demonstrate excellence to owners and operators.
- Resorts need to improve environmental performance by creating environmental leadership jobs. They need to minimize the number of hats worn by leaders, which will be a difficult task at smaller resorts.
- These positions also need to be decoupled from public relations or planning departments. They need independence within the organization so that they carry meaningful influence.

B. The Power of the Public

- The public needs to increase demand for superior environmental performance both from NSAA as a leader and to individual resorts at local level, not through lawsuits, but through collaboration.
- Resorts respond to public demand. The public needs to demand objective, collaboratively developed data on which to judge environmental performance at individual resorts.

C. Sustainable Slopes and Meaningful Measures of Success

- In order to increase environmental action, Sustainable Slopes should be modified to create a top performance level, or "green level," beyond that of mere endorsement. The green performers should receive incentives and rewards for membership and have membership re-assessed at periodic intervals.
- Sustainable Slopes should include third party certification and consequences for not meeting certain requirements, such as reporting or attaining goals.

- Sustainable Slopes states that endorsers will strive to go “beyond compliance.”¹⁴⁰ Compliance should be added as an area to be addressed on reporting forms. Sustainable Slopes needs to quantify compliance across media and principles where applicable, then quantify the increment that goes beyond compliance.
- Sustainable Slopes needs to go beyond total values and conservation of energy, waste and water. It should develop inventories for habitat, species, forests and wetlands, and conservation quantities for those indicators.
- NSAA has the ability to protect the identities of its member resorts and still report total quantitative values for indicators, but why? Individual resort leaders directly report their quantified values. There should be no need to hide data unless there is data to hide, although confidential business information is another story, and should be protected.
- Sustainable Slopes should connect the principles with quantified environmental impacts and then use them to set priorities.
- The annual reports need to report more than the percentage of resorts implementing NSAA’s principles (i.e. a percentage of resorts installing “water efficient” equipment). The reports need to include information such as the percent of resorts achieving goals of twenty-five percent water reduction, and the total gallons of water conserved, by resort and in aggregate.

D. Getting Help

- The NSAA should seek more foundation grants exclusively for environmental projects.
- Resorts and NSAA should hire in-house staff with the duty solely of being directors of environmental programs.
- NSAA should also consider charging fees based on skier visits to resorts for Sustainable Slopes implementation.
- Resorts should fully employ Internet resources. There are thousands of Internet sites with information applicable to ski resorts.
- Resorts should develop more partnerships with states, federal agencies, and NGO’s on environmental issues.

140. *Environmental Charter*, *supra* note 13, at 7.

- Resorts should develop community partnerships for planning collective futures. These partnerships need to include the resorts' biggest critics as well as their biggest supporters.
- Resorts should seek grants from states, federal agencies, and NGO's for environmental projects or program creation. These programs could include recycling, energy efficiency, and many more.

E. Holistic Approaches

- The NSAA should provide education and information about EMS's to resorts, and encourage resorts to implement EMS's (such as ISO 14001) as the tool to achieve full implementation of Sustainable Slopes.
- The NSAA should create a "how-to" guide for greening ski areas.

F. Setting Goals

- The NSAA and individual resorts should set Big Hairy Audacious Goals (BHAD's). Zero waste. Climate neutral. Zero wetland loss on site. Zero old growth cutting.
- The industry should not be afraid to learn from its mistakes, and should not be afraid to share them. As Auden Schendler, Director of Environmental Affairs at Aspen stated, "Failure can be the next great tool in sustainable business."¹⁴¹

141. Auden Schendler. *Trouble in Paradise: The Rough Road to Sustainability in Aspen*, 8 CORP. ENVTL. STRATEGY 293 (2001).