

Sustainable Slopes

ANNUAL REPORT 2015





NSAA recognizes the following 35 resorts for participating in the **Climate Challenge**. Their leadership paves the way for other resorts to inventory, target and reduce their carbon footprints:

NSAA invites all ski areas to consider joining the Climate Challenge. For more information, visit www.nsaa.org and click on Environment.

- Alpine Meadows
- Alta Ski Area
- Arapahoe Basin
- Aspen Highlands
- Aspen Mountain
- Beaver Valley Ski Club
- Boreal Mountain Resort
- Buttermilk
- Canyons Resort
- Copper
- Crystal Mountain
- Deer Valley
- Giants Ridge Golf & Ski Resort
- Gorgoza Park
- Grand Targhee
- Hunter Mountain
- Jackson Hole Mountain Resort
- Jiminy Peak
- June Mountain
- Killington Resort
- Las Vegas Ski & Snowboard Resort
- Mammoth
- Mt. Hood Meadows Ski Resort
- Mt. Bachelor
- Park City Mountain Resort
- Pico Mountain
- Snowbird
- Snowmass
- Soda Springs
- Squaw Valley
- Steamboat
- Stratton
- Sugarbush Resort
- Taos Ski Valley
- Telluride Ski & Golf Resort

2015 HIGHLIGHTS

The National Ski Areas Association (NSAA) is pleased to report on the sustainability efforts of ski resorts in the 2014/2015 season. In its fifteenth year, the Sustainable Slopes program continues to thrive, adapting to incorporate new initiatives and evolving to reflect emerging trends.

In total, more than 190 resorts have endorsed the Environmental Charter over the past twelve years, representing over 75 percent of the ski resorts nationally by skier visits. Through their endorsement of the Charter, these resorts have identified an environmental contact person, assessed their policies and operations against the Environmental Principles in the Charter, and have taken steps toward improved environmental performance. Given variances in size, technical expertise, financial resources, and geographic location, resorts are at different points with respect to their environmental programs and implementation of the Environmental Principles but all are making efforts that are relevant to their customers and meaningful to the industry as a whole.

The **Climate Challenge** had a great year in 2015 as the number of participating resorts increased to 30, with four additional resorts joining for the season ahead and one former Challenger returning to the program. The Climate Challenge program is designed to give technical support and recognition to ski areas that are developing carbon inventories, setting goals for carbon reduction, and measuring success in reducing their overall carbon footprint. In-depth results of the Climate Challenge are included in Chapter 3 of this Report. NSAA would like to take this opportunity to recognize the resorts participating in the Climate Challenge: **Alpine Meadows, Alta Ski Area, Arapahoe Basin, Aspen Highlands, Aspen Mountain, Beaver Valley Ski Club, Boreal Mountain Resort, Buttermilk, Canyons Resort, Copper, Crystal Mountain Michigan, Deer Valley, Giants Ridge Ski & Golf, Gorgoza Park, Grand Targhee, Hunter Mountain, Jackson Hole Mountain Resort, Jiminy Peak, June Mountain, Killington Resort, Las Vegas Ski & Snowboard Resort, Mammoth, Mount Hood Meadows Ski Resort, Mt. Bachelor, Park City Mountain Resort, Pico Mountain, Soda Springs, Snowbird, Snowmass, Steamboat, Stratton, Squaw Valley, Sugarbush Resort, Taos Ski Valley, and Telluride Ski & Golf Resort.** These ski areas are leading the ski industry by addressing climate change head on - taking action and making changes in their operations that will reduce their impacts on the climate, while advocating for climate change policies at the local, state and national levels.

This fall, NSAA, SIA and Protect our Winters (POW) collaborated together to advocate for action on climate change by delivering two important letters. The first letter, to President Obama, urged the U.S. to take strong action in the upcoming United Nations Climate Conference in Paris. The letter was endorsed by 53 ski areas, 90 snowsports brands, 50 professional athletes and 11 snow sports trade associations. The second letter was a statement supporting the adoption of groundbreaking power plant standards to reduce carbon emissions from the largest source of carbon emissions in the U.S. The statement applauded White House/EPA action on the power plant rule and stressed its importance in increasing incentives for renewable energy and efficiency and helping address the impacts of climate change – warmer, shorter winters, drought and wildfires.

We are also pleased to report on the continued success of our Sustainable Slopes Grant Program. This year, **Sugarbush Resort** received a cash grant for a 4-stream waste receptacle to start implementation of a program to increase its diversion rate for recyclables, food scraps, liquids and trash. The grant will help the ski area meet its goal of reaching a 50 percent diversion rate (diversion rate = waste kept out of a landfill) in three years, and in turn reach its Climate Challenge goal of reducing GHG emissions by 5 percent. **Arapahoe Basin** received a cash grant for installation of Freeaire Refrigeration economizers in the ski area's walk-in coolers. The Freeaire system monitors temperatures inside and out, cycling clean, cold outside air through the cooler whenever possible, reducing refrigeration-related energy use by 50 percent. The grant will provide a significant boost in helping A-Basin meet its Climate Challenge goal of reducing GHG emissions by 3 percent below the 2009/10 baseline levels by 2020. These cash grants, with a total value of \$10,000, were made possible by generous donations from Colorado-based **Ripple Resort Media** and **CLIF® Bar**, based in California.

Massachusetts-based **HKD Snowmakers** awarded a high-efficiency snowmaking grant to **Alpine Meadows** in California. The ski area will receive 5 high-efficiency snowmaking guns from HKD Snowmakers, a total value of \$23,000. **Alta Ski Area** received an in-kind grant for Climate Adaptation consulting services. **Brendle Group**, a Colorado-based sustainability engineering firm, is providing the services with a value of \$5,000, to help the ski area assess and respond to potential vulnerabilities and risks due to a changing climate, with a specific focus on impacts to the ski area's water supply.

NSAA hosted important climate change and water resources sessions at our Winter Conferences and at our San Francisco National Convention. These educational sessions focused on climate modeling and the need to have a water management plan in place to maximize use of water resources for the future. The sessions featured water experts Becky Fedak and Judy Dorsey from Brendle Group, Bill Baum, General Counsel for Winter Park Resort, and Steven Moore, from the California State Water Resources Control Board. These informative sessions were well attended and will help resorts focus on climate adaptation and water resources for the future.

In total, the **SWAG** program, or Sharing Warmth Around the Globe, has donated over 237,500 winter garments to people in several overseas countries that desperately needed something warm to wear during the cold winter months. In 2014/2015, SWAG partnered with HELP International and Precept Ministries International and with the help of 25 resorts collected and distributed more than 10,500 pieces to individuals in Albania, Armenia, Germany, Moldova, Mongolia, Poland, Siberia, Syria, and Ukraine. Information regarding the 2015/2016 will be distributed this August and collection will begin in October. NSAA also partnered with International Medical Relief (IMR) to provide much needed warm and waterproof coats to the people of Nepal affected by earthquakes in April that killed an estimated 8700 people and left tens of thousands of people in need of assistance. Cheryl Jensen, Executive Director of Sharing Warmth Around the Globe (SWAG), began a donation campaign with IMR to bring tents and sleeping bags to Nepal to provide shelter in May. Additionally, 14 resorts donated approximately 2,800 jackets that were delivered to Nepal in June.

SKI Magazine announced three winners of the **Golden Eagle Awards for Environmental Excellence** in 2015. *SKI* founded the program in 1993 to encourage sustainability and to recognize resorts for their commitment to the environment, and ski areas have come a long way in the past 22 years. Three Golden Eagle Awards are given to a small (up to 200,000 visits), medium (200-500,000 visits) and large resort (over 500,000 visits) with a deserving environmental program or project.

Golden Eagle 2015 Winners

Shawnee Peak Ski Area in Maine won the Golden Eagle Award in the small ski area category.



Shawnee Peak has invested significantly in efficient snowmaking, resulting in measurable reductions in energy use. Today the ski's area's *entire fleet* is composed of low-energy snow guns. As a result of recent improvements, the ski area has achieved a significant reduction in demand charges from its utility provider, a 55 percent reduction in diesel consumption, and a sizeable reduction in its CO₂ emissions. Read more about Shawnee Peak at www.shawneepeak.com.

Mt. Hood Meadows in Oregon took the top environmental honors in the medium-sized ski area category for its carbon emission reduction results. As a



founding member of the industry's "Climate Challenge," the ski area has taken significant steps over the past four years to meet its goal of achieving a 6 percent reduction in greenhouse gas emissions by 2020 using a 2011 baseline. Mt. Hood's focus on reduced electrical consumption, fuel consumption, and waste sent to the landfill have produced exemplary results, including a power use reduction of 76,035 kWh and a waste

disposal reduction of 141,277 pounds. For more information about Mt. Hood Meadows' environmental initiatives, visit www.skihood.com.

Winter Park Resort in Colorado won the Golden Eagle Award in the large resort category for the sustainable construction of its new Lunch Rock Restaurant. Features include a roof line that



matches the nearby topography; a compact, simple structure for the building itself; the use of natural materials such as wood and rock; and color schemes that match the nearby landscape. Recycled material including mountain pine beetle and Wyoming snow fence wood was used extensively on the interior for siding, furniture, cabinets, signs, and doors. Employees of Winter Park made the tables and chairs in their shop

using pine beetle kill wood, and made the light fixtures in their shop as well. There is also a state-of-the-art interpretive display, providing guests with current information on the resort, the local USFS district, and the importance of clean water. Find out more about Winter Park's sustainability programs at www.winterparkresort.com.



Brent Giles received the Hero of Sustainability award because he leverages his company-level impacts to an entire industry and beyond. As the chief sustainability officer for Powdr, Giles has been instrumental in Powdr Green, the sustainability program that drives all of Powdr's ski areas towards reducing their environmental impact. He has led a variety of energy saving and carbon cutting initiatives, and then consistently challenged and tested those efforts to see if Powdr could do better. The result has been a whopping 62 percent reduction in carbon emissions in the last fiscal year.

Giles has helped Powdr put their money where their mouth is on the topic of climate change—investing \$7 million on energy savings initiatives that are now reaping their rewards: \$2 million annually in reduced energy costs. Walking the talk has provided Giles a key ingredient for scaling positive impact—credibility to challenge others across the ski industry and across ski communities. As a founding member and key technical advisor in the formation of the NSAA Climate Challenge program, he has been an inspirational voice and a trusted peer mentor to other ski areas working on measuring and reducing their contributions to climate change. Brent Giles is a true hero of sustainability for the ski industry and beyond. For more information about environmental initiatives at Powdr Corp., visit www.powdr.com/green/.

On behalf of ski areas across the country, NSAA would like to express our appreciation for all of the individuals, organizations, and agencies outside the industry that have supported Sustainable Slopes for the past fifteen years. We have come a long way, and we have our partners, stakeholders and innovators to thank for our collective successes.

Geraldine Link
Director of Public Policy
September 2015

1.0 SUSTAINABLE SLOPES ENVIRONMENTAL CHARTER

1.1 HISTORY AND PURPOSE OF THE CHARTER

Every year, millions of people visit ski areas across North America to enjoy snow sports and to experience the natural beauty of the mountain environment. These visitors place a high priority on environmental concerns. In order to continue to offer quality recreational experiences that complement the natural and aesthetic qualities that draw these visitors to the mountains, the National Ski Area Association (NSAA) and its member resorts have committed to improving environmental performance in ski area operations and management. This commitment is detailed in the Sustainable Slopes Environmental Charter for Ski Areas adopted in June 2000 and revised in 2006.

1.2 OVERVIEW OF THE ENVIRONMENTAL CHARTER

The Environmental Charter promotes sound environmental stewardship and, more importantly, offers a comprehensive set of 21 Environmental Principles that enable ski area operators to make sustainable use of natural resources. The Principles are the key to the Environmental Charter and address the following topics:

1. Planning, Design, and Construction
2. Water Use for Snowmaking
3. Water Use in Facilities
4. Water Use for Landscaping and Summer Activities
5. Water Quality Management
6. Wastewater Management
7. Energy Use for Facilities
8. Energy Use for Snowmaking
9. Energy Use for Lifts
10. Energy Use for Vehicle Fleets
11. Waste Reduction

To see the Charter and its Principles in their entirety, visit the NSAA web site at WWW.NSAA.ORG

Understanding that ski areas have some unavoidable impacts, the Principles encourage ski areas to adopt the “avoid, minimize, mitigate” approach to natural resource management.

12. Product Re-use
13. Recycling
14. Potentially Hazardous Wastes
15. Fish and Wildlife Management
16. Forest and Vegetative Management
17. Wetlands and Riparian Areas
18. Air Quality
19. Visual Quality
20. Transportation
21. Education and Outreach

For each of the 21 Environmental Principles, the Charter identifies a range of "Options for Getting There" that resorts can implement to achieve the Principles. These "Options for Getting There" serve as a menu of realistic actions ski areas can and are taking, all or in part as their resources allow, to continually improve their operations. The "Options for Getting There" are detailed for each of the 21 Principles in the Charter document available at www.nsaa.org.

Because not all resorts have the same concerns and resources, the Charter is designed to allow resorts to use the Principles as a framework and then choose the "Options for Getting There" that make the most sense given their individual circumstances and capacities. We hope that each resort continues to take the challenge to achieve the greatest possible results individually for greater conservation collectively.

It is important to note that the Charter's Principles are voluntary, and in adopting them, resorts have committed to going beyond regulatory compliance in those areas where improvements make environmental sense and are economically feasible. Ski areas already should be meeting all applicable federal, state, and local environmental requirements. The Principles are the means by which the industry can collectively *improve environmental performance*. There are many incentives for going beyond compliance, including reduced environmental impacts, increased monetary savings, reduced regulatory liability, and increased positive public image. Good environmental practices are good business, and quite simply are expected by resort customers, the Partnering Organizations of the Charter, and other key stakeholders.

1.3 THE FUTURE

NSAA will continue the Sustainable Slopes Grant Program into the future with an emphasis on direct assistance and on-the-ground improvement. We will also continue with the Climate Challenge, and look for ways for the two programs to be complementary. The Grant Program has and will continue to spark innovation among resorts and allow resorts with fewer resources to take on sustainability projects that might not otherwise happen. It also is a great vehicle for funding Climate Challenge resorts' projects that help them meet their carbon reduction targets. An ongoing goal is to increase participation in the Grant Program as well as the Climate Challenge.

As Sustainable Slopes matures, the nature of its goals continually changes to meet the needs and expectations of member resorts and Partnering Organizations. NSAA hopes to create sources of new momentum for the program and to recognize ever higher levels of performance while continuing to encourage broad participation and efforts across the industry.

1.4 ENDORSING RESORTS

On an individual basis, ski areas take their stewardship role seriously and continue to take innovative steps each year to address environmental challenges. The Charter represents a collective step toward meeting these challenges. To date, over 190 ski areas have endorsed the Charter and are committed to implementing its Principles. For a list of endorsing resorts sorted by resort name or State/Province location, visit the NSAA website at www.nsaa.org. Over 65 of the endorsing ski areas contributed to the information presented in this report by submitting Sustainable Slopes Grant Applications, Climate Challenge Applications and Renewals, and Golden Eagle Award Applications.

2.0 SUSTAINABLE SLOPES GRANTS

The purpose of the Sustainable Slopes Grant Program is to spark innovation and increase resorts' progress in implementing the Environmental Principles of the Charter.



2.1 BACKGROUND

NSAA began a modest grant program in 2009 as a partnership between NSAA and industry stakeholders. In total, the program has directed over \$400,000 to 36 resort sustainability projects! The purpose of the Grant Program is to spark innovation and increase resorts' progress in implementing the Environmental Principles of the Charter by putting money on the ground. This year, four member ski areas received Sustainable Slopes grants. Grant recipients included **Alpine Meadows**, California, **Alta Ski Area**, Utah, **Arapahoe Basin**, Colorado and **Sugarbush**, Vermont. *All four of these ski areas are participants in the Climate Challenge!* NSAA is excited to see the Challengers taking advantage of this grant program in pursuing their Climate Challenge goals of reducing carbon emissions.

2.2 SNOWMAKING AND CLIMATE ADAPTATION GRANTS

NSAA supplier member **HKD Snowmakers** made an in-kind snowmaking grant. HKD is a long-standing family business based in Natick, Massachusetts and has installed its energy efficient HKD air/water technology at more than 420 ski areas around the world. **HKD Snowmakers** awarded the high-efficiency snowmaking grant to **Alpine Meadows** in California. The ski area will receive 5 high-efficiency snowmaking guns from HKD Snowmakers, a total value of \$23,000. "We at HKD are excited to assist Alpine Meadows in meeting their goals for the industry's Climate Challenge through the use of our energy efficient Impulse snowmaking equipment," says HKD Snowmakers President, Charles Santry.



Alpine Meadows, California Snowmaking Grant Awardee

Alpine Meadows' snowmaking system covers 120 acres of terrain with water pumping capacity of 3,000 gpm and a compressed air capacity of 23,000 cfm, with an average snow depth of 18". The system primarily uses traditional air/water snow guns that are less energy efficient, though in the



past few years some low-energy fan and stick guns have been incorporated to the overall system. There are 57 total snow guns in the Alpine Snowmaking fleet, 54% which are high-energy users and 46% low-energy. The low energy guns typically provide the needed coverage in a few days of operations. The high energy guns are 10x's less efficient thus they are run all season long to achieve the necessary snow coverage. With this grant, Alpine

Meadows will install these guns at the run outs of Weasel, Tiegel and Subway runs to replace the high energy guns. Installation of more efficient guns decreases overall system run time, saving electricity and reducing CO2 emissions.

**Alta Ski Area Climate Adaptation Grant Recipient**

Alta Ski Area received an in-kind grant for Climate Adaptation consulting services. **Brendle Group**, a Colorado-based sustainability engineering firm, will provide the services with a value of \$5,000, to help the ski area assess and respond to potential vulnerabilities and risks due to a changing climate, with a specific focus on impacts to the ski area's water supply. "Alta was a clear winner for this year's grant based on their pioneering work as a founding member of NSAA's Climate Challenge, research expertise of their Snow Science Department, unique position in the headwaters of Salt Lake City's water supply watershed, and willingness to lead by example in preparing the ski industry for a changing climate," said Brendle Group President, Judy Dorsey.



2.3 CASH GRANT CRITERIA

Funding for the cash grant program this year came from generous sponsorships from California-based **CLIF Bar & Co.** and Colorado-based **Ripple Resort Media.** Grant funds may be used to support design or implementation of measures, including capital costs, related to sustainability across any of the Principles. Only future or on-going projects are eligible for funding. For a copy of the grant application, see www.nsaa.org.

In order to be eligible for a grant, applicants are required to be ski area members of NSAA that have endorsed the Sustainable Slopes program. The following selection criteria are applied.

Does the initiative:

- Demonstrate innovation in improving sustainability?
- Raise environmental awareness?
- Promote concrete environmental actions?
- Promote the education goals of Keep Winter Cool?
- Have a high likelihood of success (the necessary expertise and experience to achieve stated goals)?
- Have the ability to be replicated by others in the ski industry?
- Involve other partners, sponsors or underwriters?
- Rely on this grant money for implementation?
- Help meet any goals set for the Climate Challenge?

2.4 2015 CASH GRANT AWARD WINNERS

Sugarbush Resort received a cash grant for a 4-stream waste receptacle to start implementation of a program to increase its diversion rate for recyclables, food scraps, liquids and trash. The grant will help the ski area meet its goal of reaching a 50 percent diversion rate (diversion rate = waste kept out of a landfill) in three years, and in turn reach its Climate Challenge goal of reducing its GHG emissions by 5%. **Arapahoe Basin** received a cash grant for installation of Freeaire Refrigeration economizers in the ski area's walk-in coolers. The Freeaire system monitors temperatures inside and out, cycling clean, cold outside air through the cooler whenever possible, reducing refrigeration-related energy use by 50 %. The grant will help bring A-Basin substantially closer to meeting its Climate Challenge goal of reducing GHG emissions by 3 percent below the 2009/10 baseline levels by 2020.

These cash grants, with a total value of \$10,000, were made possible by generous donations from Colorado-based **Ripple Resort Media** and **CLIF® Bar**, based in California. "Ripple Resort Media supports sustainability in the ski industry and applauds the efforts of resorts to improve their environmental performance," says President, Matt Jay. CLIF Bar has contributed to the Sustainable Slopes grant program for six years running. "As a company focused on maintaining climate neutral business operations, we are pleased to support ski area projects making a positive impact on climate," says Lauren Hatfield, Director of Marketing at Clif Bar & Company.

Past winners of the Sustainable Slopes grants include Alta Ski Area, Utah; Arapahoe Basin, Colo.; Beaver Valley Ski Club, Ontario; Canyons, Utah; Burke Mountain, Vermont; Copper Mountain, Colo.; Crested Butte, Colo.; Giants Ridge, Minn.; Grand Targhee, Wyo.; Greek Peak, New York; Mt. Abram, Maine; Mt. Ashland, Oregon; Mt. Hood Meadows, Oregon; Oak Mountain, New York; Ober Gatlinburg, Tennessee; Spirit Mountain, Minnesota; Stevens Pass, Wash.; Stratton, Vermont; Sugarbush Resort, Vermont; Tamarack, Idaho; and Telluride Ski & Golf, Colo.

3.0 THE CLIMATE CHALLENGE PROGRAM

Acknowledgements

The National Ski Areas Association (NSAA) would like to thank the following organizations for their support and individuals for their contributions in developing the Climate Challenge.

- Jon Bishop, Jackson Hole Mountain Resort
- Tom Easley, Rocky Mountain Climate Organization
- Brent Giles, Park City Mountain Resort
- Alan Henceroth, Arapahoe Basin
- John Loomis, Northstar-at-Tahoe
- Sha Miklas, Arapahoe Basin
- Maura Olivos, Alta Ski Area
- Geraldine Link, National Ski Areas Association
- Judy Dorsey, Brendle Group



3.1 INTRODUCTION

This year marked the 4th year of the **Climate Challenge**, a voluntary program designed to recognize ski areas that are committed to reducing their impact on the climate. Challengers do this by inventorying and reporting on their carbon footprints, setting goals for carbon reduction, implementing at least one on-site carbon reduction strategy per year, and engaging in climate change advocacy efforts.



Overall, Challengers reported a total of 191,400 metric tons of carbon dioxide equivalent (MTCO₂e) emissions across all resorts in the 2014 reporting year. In 2014, resorts implemented on-site projects that reduced emissions 1,700 MTCO₂e while purchasing Renewable Energy Credits or carbon offsets equivalent to 41,192 tons. The cumulative impact of on-site projects (which accrue annual reductions for the life of the project) and 2014 REC purchases totals 454,201 metric tons reduction in 2014, or 23 percent of total 2014 emissions.

The table below provides an overview of the progress ski areas have been making towards reducing greenhouse gas emissions during the four years of the Climate Challenge.


	2011	2012	2013	2014
Number of Ski Areas Participating	8	18	19	30
On-Site Emission Reductions* (annual)	295	1,067	947	1,700
On-Site Emission Reductions* (cumulative)	295	1,362	2,309	4,009
Renewable Energy Credits Purchased*	9,833	40,255	45,046	41,192

* Measured in metric tons of CO₂e

Each year the Climate Challenge program seeks to build upon its successes to improve the operations of existing participants while adding new members. To this end, the program will be welcoming 4 new members in 2015, adding a returning member, and continuing to work on establishing benchmarking metrics for the participants based on historical data and ski area operational characteristics. The ski areas joining the Climate Challenge for the 2014-2015 season are Crystal Mountain (MI), Deer Valley, Hunter Mountain, Jiminy Peak (returning) and Taos Ski Valley.

3.2 WHY THE CLIMATE CHALLENGE?

Climate change presents challenges to the ski industry that require proactive planning and action and bold leadership. The Climate Challenge provides a framework for participants to engage in a multi-year process that enables them to plan and implement actions that will reduce emissions, share those successes industry wide, and collaborate with others in the industry to leverage the collective power of working together on climate issues.



A 2010 NSAA survey showed that only 10% of responding ski areas had completed a GHG inventory – though 80% were very interested in addressing climate issues.

GOALS OF THE CLIMATE CHALLENGE

- **Higher standard:** The program will raise the standard for ski areas wishing to take their sustainability performance to the next level.
- **Long-term:** The program will be multi-year, seeking to compound the benefits of actions taken by participants over many years and to grow the number of participants from year to year.
- **Cost-efficient:** The program will leverage the investment of participants and sponsorships to deliver more value to participants than their individual investments.
- **Credible:** Quantification of GHG inventories, targets, and reduction measures will be developed in alignment with a credible protocol, using boundaries consistent with industry approaches.
- **Transparent:** The approach taken by the program will be transparent to participating ski areas and the public.
- **Fair:** The program will be fair, facilitating participation for ski areas of all sizes, regions, and focuses.
- **Easy:** The program will provide participating ski areas with guidance and tools to make participation as simple as possible.
- **Well-recognized:** The program will provide recognition for participating ski areas and for high performance.

3.3 CHALLENGE ELEMENTS

Ski areas participating in the Challenge commit to a five-step process each year.



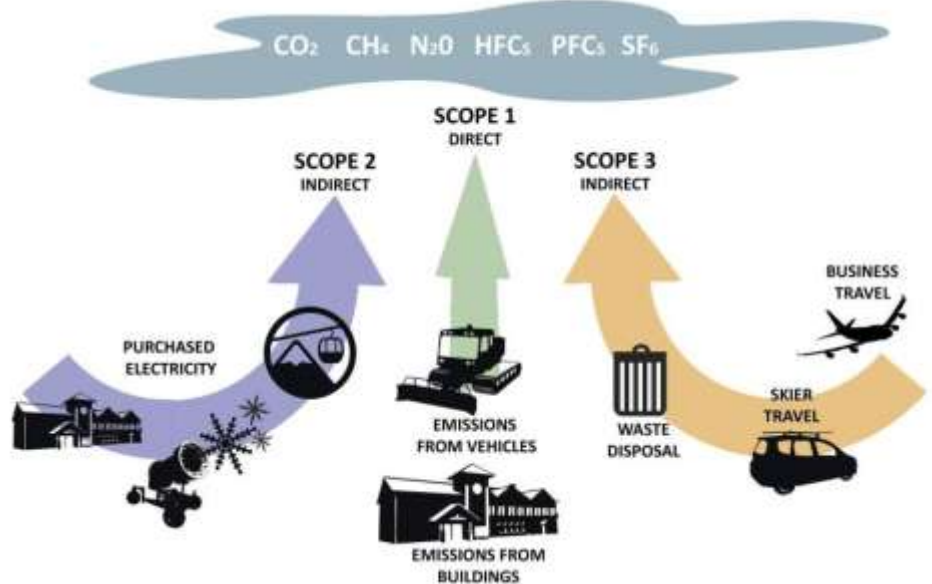
INVENTORY

In order to understand the impact of their operations, Challengers inventory GHG emissions for ski area operations. Inventories are required to include direct emissions at the ski area (Scope 1) and indirect emissions from purchasing energy, such as electricity (Scope 2).

Other emissions, such as those from waste disposal or business travel, can be included at the discretion of the Challenger. The Challenger can choose to inventory emissions for the fiscal or calendar year.

For 2014, Challengers prepared inventories using a tool that follows the guidelines of The Climate Registry’s General Reporting Protocol:

www.theclimateregistry.org/downloads/GRP.pdf



TARGET



With an understanding of the emissions generated by their operations, Challengers prepare a target (or goal) for reducing emissions. The structure of the target is flexible: the Challenger can select which emissions to reduce, how much they will be reduced, and over what time period the target will be achieved. Regardless of the structure of the target, Challengers define a target that will reduce GHG emissions relative to an established baseline GHG inventory for ski area operations.

Targets are the means for measuring Challenger progress and hopefully will become useful planning tools as Challengers make operational decisions in years to come.

THE LANGUAGE OF CARBON

Carbon Dioxide (CO₂): The major heat-trapping gas whose concentration is being increased by human activities. It also serves as the yardstick for all other GHGs. The major source of CO₂ emissions is fossil fuel combustion. Carbon dioxide emissions also result from clearing forests and burning biomass. Atmospheric concentrations of CO₂ have been increasing at a rate of about 0.5 percent a year, and are now more than 30 percent above pre-industrial levels.

CO₂e: Carbon dioxide equivalent, a measure that is used to express the concentration of all heat trapping gases in terms of CO₂.

MTCO₂e: A metric ton of CO₂e. A metric ton is equivalent to 1.102 short tons or 2,204 pounds.

REDUCE

Challengers commit to take one measurable step to reducing their GHG emissions each year in order to progress toward their target. Examples of reduction projects include increased energy efficiency in buildings, lifts, and snowmaking; switching to more efficient fleet vehicles; increasing diversion of solid waste to reuse; recycling or composting; or installing a renewable energy system on site.

The Climate Challenge views purchasing a renewable energy credit (REC) or a carbon offset as a means of contractually demonstrating an emission reduction. These instruments may be used by Challengers to achieve targets but are not recognized for the Reduce component of the Challenge. In other words, at least one reduction project must occur on site in each Challenge year.

Outsourcing or divesting emission sources is not allowed as a reduction strategy for those participating in the Challenge. For example, outsourcing a restaurant to a concessionaire during the Challenge will not be considered a reduction in emissions from a baseline that includes the restaurant.

ADVOCATE

Advocacy is a core component to the Challenge's overall goal. The advocacy element of the Challenge helps communicate important efforts made by the ski industry to leaders and legislators on a national level, and supports regional or national legislation or regulation targeting climate issues. Members are required to endorse at least two energy/climate change advocacy letters including sending correspondence from the resort to their Congressional delegation on the resorts' efforts and the ski industry's efforts on the Climate Challenge.

Additional advocacy options include engaging in climate advocacy at the state level, writing an editorial or letter to the editor about climate change, or attending a climate-related event with the NSAA.

REPORT

Having completed the first four activities in the Challenge, Challengers report a summary of their results to the Climate Challenge program and the public. The summary includes the following elements:

- Total GHG emissions in MTCO₂e
- Stated reduction target
- A narrative description of reduction activities
- Documentation of advocacy requirements

Challengers are asked to be complete and accurate in reporting to the Challenge. The goals of the Challenge are larger than a single ski area and are best served when all participating ski areas make their best effort. To this end, all submitted inventories, targets, and reduction activities are reviewed by a third-party to ensure they are eligible and reasonable with respect to the program's standards and expectations.

3.4 ENCOURAGED ELEMENTS

In addition to the four program requirements, Challengers are encouraged to undertake a number of activities to reduce emissions in indirect ways that may not be reflected in their inventories but may still have a significant impact on global emissions. These activities are recognized and supported by the Climate Challenge. Some examples of these indirect activities are described here:

- Skier transportation programs – many ski areas are investing in infrastructure, providing incentives, and educating their skiers and riders to reduce single-occupant vehicle travel to ski areas.
- Skier education/communications – the ski industry's visibility to millions of skiers and boarders every year provides tremendous opportunity to lead by example.
- Comprehensive reduction planning – developing a comprehensive climate action plan and integrating it into capital planning and budgeting activities can help to elevate the consideration of GHG reduction activities.
- Purchase of renewable energy credits or offsets – many resorts invest in renewable energy credits or carbon offsets to support the reduction of emissions.

3.5 CHALLENGE RESULTS

The following sections present the outcomes of the Inventory – Target – Reduce – Advocate process for this year’s Climate Challengers. The Challengers represent a variety of ski area sizes, regions, and operational characteristics. In addition, the carbon intensity of the electricity they purchase varies widely. In other words, ski areas are all unique; however, they all have committed to reducing their GHG impact.



During 2014, the Climate Challenge worked with all participating ski areas to begin the process of determining the best metrics to use for benchmarking a ski area’s GHG inventory. Benchmarking is important because it can be used by ski areas to determine their relative climate change impact against other ski areas that share similar characteristics such as size, climate, and operations. This year, the Climate Challenge began collecting a variety of information that can be used as metrics such as ski area acreage, acres of maintained trails, acres with snowmaking equipment, total number of days open, amongst others. The results of this effort will be available only to Climate Challenge participants.

Overall, Challengers reported a total of 191,400 MTCO₂e of emissions across all resorts in the 2014 reporting year. In 2014, resorts implemented on-site projects that reduced emissions 1,700 MTCO₂e while purchasing RECs equivalent to 41,192 tons. The cumulative impact of on-site projects since 2011 (which accrue annual reductions for the life of the project) and 2014 REC purchases totals 454,201 metric tons reduction.

The table below provides an overview of the progress ski areas have been making

SUSTAINABLE SLOPES CLIMATE CHALLENGE PROGRAM

towards reducing greenhouse gas emissions during the four years of the Climate Challenge.

	2011	2012	2013	2014
Number of Ski Areas Participating	8	18	19	30
On-Site Emission Reductions* (annual)	295	1,067	947	1,700
On-Site Emission Reductions* (cumulative)	295	1,362	2,309	4,009
Renewable Energy Credits Purchased*	9,833	40,255	45,046	41,192

* Measured in metric tons of CO₂e

Challengers were also tasked with advocating for climate change or energy policies during the 2014/15 season. They accomplished this requirement in a variety of ways, which included:

- Sending direct correspondence to their Congressional delegation regarding climate change legislation
- Endorsing industry climate change initiatives such as the Business for Innovative Climate and Energy Policy’s climate declaration
- Endorsing the U.S. EPA’s Clean Power Program
- Endorsing federal carbon tax legislation
- Endorsing a letter to President Obama to take strong action in the upcoming Paris UN Climate Conference
- Writing letters to the editor to local and regional newspaper about climate change and the Climate Challenge program

The remainder of this section provides the results for individual participating ski resorts in alphabetical order.



Alta Ski Area – Utah

INVENTORY (calendar year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	5,156	Alta will reduce emissions 20 percent below 2011 emissions by 2020.
Scope 3 (solid waste)	266	
Total	5,422	

REDUCE

Alta upgraded interior lighting to LED, added a digital control automation system to their Cat shop, and upgraded their snowmaking pump to a VFD.

Arapahoe Basin – Colorado



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	3,784	Arapahoe Basin Ski Area will reduce emissions by 3 percent under 08-09 levels by 2020 and will reduce its building-related emissions by 10 percent per square foot by 2020.
Scope 3 (solid waste)	100	
Total	3,884	

REDUCE

This season Arapahoe Basin installed a waste-oil burning furnace in their Lift and Vehicle Maintenance facility.

OTHER PROGRESS

In addition to yearly sustainability projects, Arapahoe Basin is constantly striving to reduce greenhouse gas emissions in any way the resort can. There are a number of programs the resort undertakes at the mountain to further this goal through education, policy, and planning.

One such program is the carpooling initiative for both employees and guests. Arapahoe Basin is privileged to have service to and from the mountain by the Summit Stage, a free bus system that links most ski areas and major destinations within Summit County. Guests are encouraged to ride the bus or carpool with a number of incentives, including significantly discounted lift tickets and reserved parking spaces in prime locations closest to chairlifts and base lodge. Employees are also encouraged to ride the bus or car pool every day of the year; however, carpooling is made mandatory for employees on weekends during the spring months. In addition to the free bus and encouraging employees to bring three or more people per car, the Basin also runs shuttles from employee housing and a few other central locations on these days. These efforts save on parking stresses, as well as limiting the number of cars on the road, gallons of gas burned, and any associated emissions.

Another step Arapahoe Basin is taking to further its sustainability message and goals in partnership with a number of local nonprofits and conservation groups. Arapahoe Basin's Employee Environmental Fund benefits two conservation groups, Friends of the Eagle's Nest Wilderness and the Continental Divide Land Trust, with more than \$2,000 donated each year. Employees have the option to donate \$1 or more from each paycheck, which The Basin

SUSTAINABLE SLOPES CLIMATE CHALLENGE PROGRAM

matches and splits between the two groups. The resort also works very closely with its local conservation center, High Country Conservation, which provides the community with sustainability solutions from composting tips and energy audits to sustainability curriculums in local schools. Every spring Arapahoe Basin hosts the Save Our Snow event as a fundraiser benefitting the conservation center. The event brings many of the resort’s partners and local companies together to highlight sustainability, and between the sale of raffle tickets and a portion of each lift ticket, raises quite a bit of money to help with their programs. The 2014 event, which was held in conjunction with the New Belgium Brewing scavenger hunt, raised more than \$7,300.

Arapahoe Basin has also integrated sustainability into all of its training and orientation materials and built environmental awareness into every department’s daily activities. There is a no-idling policy in place for all company vehicles, as well as for guests. There are even sustainability purchasing guidelines that empower purchasers to make responsible decisions, even at the cost of the company. All of these efforts and more combine to make Arapahoe Basin as sustainable as it can be despite the often resource and energy intensive nature of the business. Arapahoe Basin acknowledges its imperfections yet, feels that every effort, no matter how small, is a step in the right direction. Arapahoe Basin is committed to walking lighter on the planet, even in our ski (and snowboard) boots!

Aspen Skiing Company - Colorado



INVENTORY (calendar year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	24,916	Aspen Skiing Company will reduce absolute emissions by 25 percent from 2000 baseline by 2020.
Scope 3 (solid waste)	19	
Total	24,935	

REDUCE
Aspen upgraded snowmaking equipment at all four ski areas, and hired their first energy manager.

Beaver Valley Ski Club – Ontario, Canada



INVENTORY (calendar year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	689	Beaver Valley Ski Club will reduce emissions by 6 percent under 2012 levels by 2020.
Scope 3 (solid waste)	10	
Total	699	

REDUCE

Beaver Valley replaced the roof on the Alpine Centre and added R-value 20 rolled fiberglass installation.

OTHER PROGRESS

In the past eight years, Beaver Valley Ski club has implemented many sustainability related initiatives that have contributed to reducing the club's carbon emissions as well as awareness and education. From eco-efficient washrooms to staff sustainability workshops, the small club of 95 skiable acres and 775 member families works hard to serve as a local leader in climate change reduction. Waste management efforts, including the introduction of an organics program, have reduced carbon emissions by 43.2MTCO₂e diverting 86,400lbs of garbage from going to the landfill. This is a 6% reduction of the resorts total Greenhouse gas emissions. Additional programs include river research and rehabilitation, sustainable forest management, collaborations with sustainable business programs at local universities, and continuous adoption of more efficient technology. Beaver Valley Ski club is proud to be the first Canadian resort to participate in the Climate Challenge.

Boreal Mountain Resort & Soda Springs – California



INVENTORY (calendar year 2014) Scope 1 and 2 (required) Scope 3 Total	MTCO ₂ e	TARGET
	1,302	Boreal & Soda Springs will reduce emissions by 450 MTCO ₂ e by 2014.
	Not reported	
	1,302	

REDUCE

Boreal replaced windows at Soda Springs Lodge, insulated and weatherized lift shacks and lodge doors, Woodward HVAC management system, began using washable dishes, and began making bio diesel from kitchen waste oil to use on ski lifts.

OTHER PROGRESS

Boreal Mountain Resort, with its parent company POWDR Resorts, has worked to reduce carbon emissions and implement energy saving strategies & procedures over the past 8 seasons. Boreal upgraded its snowmaking system to a 100% automatic, low-energy system, which saves 280 tons of carbon emissions per year. The resort has replaced lighting systems to reduce kilowatt hours by 50% per year, upgraded to a new LED freeway sign to save over 93% of carbon from entering the atmosphere each season, and replaced windows and doors across the resort to save on heating energy. Boreal is also taking on site vegetable oil from the cafeteria, processing it into 100% bio diesel, and using it to run chairlifts during operations. This new project aims to save 186 hours of lift electricity usage each season.

Additionally, Boreal has purchased energy credits through Renewable Choice Energy to offset 100% of the grid supplied electricity consumed at Boreal Mountain and Soda Springs Winter Resort. The renewable energy credits total nearly 15 million kWh, which is equivalent to removing 1,573 passenger vehicles from the road for a year. Renewable energy is used at Boreal to power snowmaking, lodge electricity, plus all chairlifts and nightlights. Boreal also makes environmentally friendly purchases including new construction materials and operating supplies. Through the Protect Your Playground initiative, Boreal is encouraging community involvement in environmental stewardship with several very exciting projects.



Copper Mountain – Colorado

INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	22,425	Copper Mountain will reduce emissions by 12,000 MTCO ₂ e by 2015.
Scope 3 (solid waste)	990	
Total	23,415	

REDUCE

Copper Mountain increased recycling programs, implemented LED lighting projects, and began composting.

OTHER PROGRESS

Copper Mountain continues to operate two Windspire Vertical Axis Wind Turbines, a solar voltaic array and a solar thermal array resulting in over 12,000 kWh of generated power in the past year. Copper Mountain has continued its dedication on recycling across the resort and composting in specific resort food and beverage locations. We have increased our recycling and composting efficiency by implementing new procedures. Due to these efforts over the past season the resort has recycled over 173 tons and has nearly doubled our amount of composting to 64 tons. Copper continues to operate 10 filtered water bottle filling stations across the resort avoiding the production on 177,000 12oz plastic bottles and sells inexpensive durable, collapsible, and reusable water bottles available near the stations. Copper was successful in diverting 236 tons of waste from landfills this past season. Throughout this process Copper has placed guest educational signage emphasizing the power of reusing products and reducing consumption. The Copper Environmental Foundation (a non-profit 501c3) is a program dedicated to the environmental sustainability of Copper, Frisco and the surrounding areas. The Copper Environmental Foundation (CEF) was started in November 2007 by Copper employees, with a long-term goal to support environmental initiatives in Summit County and the surrounding area. Over the past years the Environmental Foundation supported such organizations like Friends of the Dillon Ranger District, Summit County Pre-School, Summit School District, Keystone Science School, Girl Scouts and High Country Conservation Center.

Grand Targhee Resort – Wyoming



INVENTORY (calendar year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	2,449	Grand Targhee Resort (GTR) will reduce emissions by 2 percent under 2014 levels by 2020.
Scope 3 (solid waste)	93	
Total	2,542	

REDUCE

Grand Targhee installed 24 motion sensor lights.

OTHER PROGRESS

MOUNTAIN OPERATIONS SUSTAINABLE INITIATIVES

Ski Patrol

Assigned recycling boss for each season to manage recycling at all patrol work stations. No disposable cups at work stations. “Clown Car Challenge” – keeping track of car pools with at least 3 patrollers per car, see who does the most = reward. Hike instead of burning gasoline – Keeping track of how many times a patroller opts to use leg power over option of using snowmobile tow, reward for the most.

Lift Maintenance

Installed timers on lift terminal and lift house heaters and lights. Turned off heaters for the season at some lift terminals. Department Car pools daily.

Vehicle Maintenance

Recycle all steel waste along with normal recycling. Waste motor oil goes to local business to fuel heaters. Sump waste water and used filters removed by contracted disposal company. Mountain spills beyond 5 gallons in snow or dirt cleaned up as best as possible and brought to sump. Use of synthetic fluids = less fluid changes = less waste.

Human Resources

Operation paperless! 33% of our employees are paperless and do not receive pay statements.

Marketing & Reservations

Print in black and white and as little as possible. Recycle all paper waste. Turn off lights and computers, and turn down heat at end of day. Collect \$1 donations on new reservations for POW. Total collected YTD: \$1600.

Ski & Snowboard School

Developed building checklists for each facility detailing heat, lights and computer turndowns/off each night. Electricity data is not currently available but Grand Targhee was diligent in managing electrical use. Encouraged bus riding with staff resulting in a high number of staff that used bus nearly daily.

Facilities

Install Motion Sensor lights throughout resort base public areas. Converting 11 urinals in men's bathrooms to low flow: ½ gallon per flush. Shut down plaza boilers completely during warm/dry periods. Turn off furnaces to outlets with doors/windows open during warm/dry periods. Tracking expense vs. revenue of current recycling program for 2014-2015 ski season. Lighting upgrade to one test facility; Fall River energy incentive.

Resort Shuttle

Ridership continues to increase with 13/14 riders – 18,861 riders in 2013/2014

Jackson Hole Mountain Resort – Wyoming



INVENTORY (calendar year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	6,554	By 2015, Jackson Hole Mountain Resort (JHMR) will reduce its GHG emissions (from propane/natural gas, gasoline/diesel, and electricity consumption) per guest visit by 10 percent below 2009 baseline levels.
Scope 3 (solid waste)	NR	
Total	6,554	

REDUCE

JHMR modified a Chevy 3500 Duramax to run on waste vegetable oil, installed lighting retrofits in retail and office areas, and purchased RECs to offset lift electricity consumption.

OTHER PROGRESS

JHMR participated in “SHIFT.” An opportunity to engage with local community members in various discussions exploring the intersection of conservation with nature, culture, and adventure. SHIFT is an annual festival that celebrates the future of conservation with Food, film, speakers, workshops, and outdoor adventure.

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Killington & Pico Mountain – Vermont



INVENTORY (fiscal year 2014) Scope 1 and 2 (required)	MTCO ₂ e	TARGET
		Scope 3 (solid waste)
Total	215	
	23,542	

REDUCE

Killington/Pico installed air curtains at main entries to save energy and maintain building temperatures, purchased electricity generated from methane at a local dairy, and employed an LED lighting migration project.

OTHER PROGRESS

In 2014, Killington Resort teamed up with Green Mountain Power to introduce the use of Cow Power to run the K-1 Express Gondola. In 2014, Killington nearly doubled the commitment to this innovative, alternative energy by enrolling its new Peak Lodge energy use into the program. Participation in Cow Power has created a personal connection between the Resort and the local dairy farm industry as Killington works towards reducing its impact on the environment. Additionally, the Resort has empowered its community - from skiers and snowboarders, to business owners, homeowners, students and employees - to help the future of outdoor spaces. Often times the most inspired ideas come from these devoted individuals and now they have the opportunity to earn a Protect Your Playground grant. Through Protect Our Playground, Killington supplies selected community members the tools and resources to turn their innovative, environmentally focused concepts into a reality. Killington Resort and Pico Mountain continue to strive to be more energy efficient, reduce their carbon footprint and empower sustainable energy suppliers and its community to collaborate and make a systemic, lasting contribution to the environment.

Las Vegas Ski & Snowboard Restort – Nevada



INVENTORY (Fiscal year 2014) Scope 1 and 2 (required) Scope 3 Total	MTCO ₂ e 884 Not reported 884	TARGET Las Vegas Ski & Snowboard Resort (LVSSR) will reduce emissions by 120 MTCO ₂ e by 2015.

REDUCE

LVSSR increased battery storage capacity and added more solar panels in addition to retrofitting the lighting to LED.

OTHER PROGRESS

As good stewards of the land, Las Vegas Ski and Snowboard Resort embraces every opportunity to reduce the impact of its operation in the high alpine environment. This unwavering commitment by LVSSR and its parent company, POWDR Corporation, is to continually improve in reducing the carbon emissions produced at every stage of resort operation. LVSSR has committed to several projects to reduce impact on the environment including avoiding disposable utensils and plates and replacing these with reusable items or those made of compostable materials, in addition LVSSR successfully mitigated landfill impact by switching to waste bags made with 80 percent recycled materials as well as sorting and recycling all waste produced by operations. LVSSR also replaced outdated water heaters with efficient Energy Star appliances, replaced all light bulbs with LED light bulbs, and provided incentives to its employees to encourage ride sharing and reduce the impact of emissions on the surrounding environment. A larger project was to decrease LVSSR’s dependency on diesel generators. LVSSR installed a solar array and expanded battery storage primarily to run administrative buildings, overnight generators, and refrigerators without the use of generators. During the winter, LVSSR is able to run about 12 hours every day solely on solar energy which translates to a reduction in 428,072 pounds of CO₂ being released in to the atmosphere this winter alone. It also means that LVSSR will be able to run solely on solar energy the entire duration of the summer season.

Mammoth & June Mountain – California



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	7,817	Mammoth and June Mountain will reduce Greenhouse gas emissions per skier visit by 1 percent per year.
Scope 3 (solid waste)	0	
Total	7,817	

REDUCE

Mammoth and June Mountain implemented lighting retrofits in various locations throughout the ski area in addition to a company-wide initiative to replace all halogen bulbs, incandescent bulbs, and magnetic ballasts as they fail. They also purchased 19 low energy snowmaking guns.

OTHER PROGRESS

Mammoth and June Mountain have implemented the following programs to reduce their environmental footprint, provide environmental education, and promote habitat and resource conservation:

1. Diesel Particulate Filters have been added to 2 of our buses to help eliminate the Particulate Matter from the atmosphere.
2. MMSA implemented a significant amount of real time energy monitoring, adding meters on our snowmaking equipment along with several other meters throughout the company.
3. Idle Free Policy for all company vehicles.
4. Recycling – MMSA and JMSA recycle glass, cans, cardboard, paper, plastic, metal, used oil, batteries, bulbs, and computers.
 - a. SWAG (Sharing Warmth Around the Globe) – MMSA and JMSA donate old uniforms to SWAG to help provide warmth to countries in need.
 - b. Cell Phones for Soldiers – Employees are given the opportunity to donate and recycle any old cells phones to Military families overseas. This program helps support our Military along with keeping harmful materials out of landfills.

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c. Purchase of Recycled materials whenever possible – Paper Products have a mix of recycled materials and are shipped using earth friendly practices. Trash liners are made with recycled plastics and Chemicals are Green Seal Certified.

6. Feet First – Mammoth Mountain works in conjuncture with the Town of Mammoth Lakes to offer a free bus system to both employees and guests.

a. Employees from the surrounding towns are offered carpooling options and a bus that provides them with transportation to the Mountain. [These](#) efforts help limit the emissions associated with gas burned.

Mt Bachelor – Oregon



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	3,651	Mt Bachelor will reduce emissions by 3,000 MTCO ₂ e by 2015.
Scope 3 (solid waste)	148	
Total	3,799	

REDUCE
Mt Bachelor installed a 5.6kw solar array and education center, began using bio diesel and implemented a recycling program.

OTHER PROGRESS

Mt. Bachelor offsets 100% of its electrical use with Renewable Energy Credits (RECs) from wind power. For the 2012-2013 fiscal year, Mt. Bachelor purchased 7,418,951 kWh of wind power RECs. Since 2005, Mt. Bachelor has purchased 45,182,395 kWh of wind energy. These RECs have offset the carbon footprint of the resort by 27,316 tons; equivalent to the annual greenhouse emissions from 5,163 cars. Mt. Bachelor offers a shuttle service from the city of Bend. This service reduced more than seven million pounds of greenhouse gases annually by decreasing the number of cars going to and from the resort. Shuttles diverted 1.7 million employee and guest vehicle miles annually from the road last season.

On-mountain recycling by employees and guests diverted 49 tons of garbage from area landfills in FY13. Other actions Mt. Bachelor takes to reduce the carbon footprint include using partially

recycled paper products in all restrooms, recycling containers in food service locations, use of wax-free recycled paper for insulated cups in food service areas, as well as remodeling of kitchen facilities to incorporate the use of china vs. paper products, using bulk container food items for kids ski school lunches, bulk cardboard recycling at retail from supplier packaging, reuse of existing signs and sign materials, use environmentally friendly cleaning agents for vehicles, retrofitting of lighting to low power devices as lights are replaced, electronic distribution and completion of the job application process to reduce paper consumption, use of non-petroleum based cleaners for housekeeping, and a no idling program for vehicles.

Mt. Bachelor also installed solar panels on the Nordic lodge in the fall of 2013. These solar panels to date have generated 1.65 mWh, which offsets their electricity usage. With the amount of solar power generated annually, Mt. Bachelor believes the Nordic lodge will be powered exclusively by solar during the 2014-2015 season.



Mt. Hood Meadows – Oregon

INVENTORY (calendar year 2014) Scope 1 and 2 (required)	MTCO ₂ e	TARGET
Scope 3 (solid waste)	3,743	Mt. Hood Meadows will reduce overall emissions 6 percent below 2011 levels by 2020.
Total	159	
	3,902	

REDUCE
Mt. Hood Meadows implemented lighting retrofit in the Alpenstube, Vertical North, Lift Maintenance, and North Lodge hallway.

OTHER PROGRESS

Mt. Hood Meadows recognizes its responsibility to address environmental concerns and has taken meaningful actions to reduce GHG emissions. By 2020, Mt. Hood Meadows expects to reduce overall GHG emissions by at least 6%, compared with 2011 emissions. Mt. Hood Meadows has been recognized for their efforts and are committed to encouraging the responsible use of resources and environmental stewardship.

Beyond their own operations, Mt. Hood Meadows supports elected officials who pursue responsible climate policy action which creates opportunities to reduce the negative impacts of climate change. While it is Mt. Hood Meadows' policy to mitigate carbon emissions within its

SUSTAINABLE SLOPES CLIMATE CHALLENGE PROGRAM

operations, the company believes climate change must also be addressed through collaborative efforts and multi-stakeholder channels to be effective.

Park City Mountain Resort & Gorgoza – Utah



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	12,906	Park City Mountain Resort & Gorgoza will reduce emissions by 9,500 MTCO ₂ e by 2014.
Scope 3 (solid waste)	306	
Total	13,212	

REDUCE

Park City Mountain Resort & Gorgoza upgraded to LED lights in the underground parking garage, installed a 38kw solar array, and began recycling and composting.

Snowbird – Utah



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)		Snowbird Ski and Summer Resort will return to 2013-14 emissions levels by the year 2025 despite the addition of new facilities, lifts, and infrastructure and an expected increase in visitation.
Scope 3 (solid waste)		
Total		

REDUCE

Snowbird completed lighting upgrades in the Gate House and replaced some snow guns with more efficient models.

OTHER PROGRESS

Snowbird invested in a more robust employee transportation program to provide additional shared ride options.

SUSTAINABLE SLOPES CLIMATE CHALLENGE PROGRAM

Squaw Valley & Alpine Meadows – California



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	11,220	Squaw Valley/Alpine Meadows will reduce emissions by 10% under 2014 levels by 2020.
Scope 3 (solid waste)	0	
Total	11,220	

REDUCE

Squaw Valley | Alpine Meadows installed five new HKD SV10 high-efficiency Snowguns.

OTHER PROGRESS

Last fall, Squaw Valley/Alpine Meadows released their first Environmental & Community Report to highlight recent energy efficiency and other environmentally focused projects, but the overall goal of this piece was to start the conversation about Climate Change with guests and staff. To further educate staff, Squaw | Alpine's Environmental Department conducted over twenty presentations at new employee orientations to inform new employees on how the local waste stream works and what materials can and cannot be recycled.

They also started looking outside of day-to-day operations. The first focus was the US Alpine Skiing Nationals in 2014. They purchased 245 tons of RECs to offset the athlete's travel, shipping and operations from this week long event. These certified RECs were allocated to an Organic Waste Digestion Project at a dairy farm in Merced, CA. To continue on this path, for the 2014 IRONMAN Lake Tahoe, Squaw Valley/Alpine Meadows worked with their organizers to eliminate all bottled water at the aid stations located within Olympic Valley, equipping each aid station with a 125-gallon Water Monster tank to provide water to athletes. Unfortunately the event was canceled due to wildfires. At Winter Wondergrass Festival in March, they worked closely with the organizers to make this event as 'green' as possible through utilizing the Water Tanks and setting up Zero Waste Stations.

Another resort-wide initiative to reduce energy consumption was switching out old thermostats with new, programmable ones--this has helped several buildings and departments set and manage their heat/air settings, instead of wasting energy by failing to manually adjust each day.

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The largest capital investment in 2014 regarding the environment was our Red Dog Forest Health & Thinning Project. This project entailed removing dead and diseased timber from the Red Dog Area to help reduce the risk of wildfire by decreasing the tree density and eliminating "ladder fuels" that cause fires to reach beyond the forest floor into the treetops. Defective and diseased trees made up roughly 30-70% of this area, by thinning these trees it creates a healthier forest and combats drought, disease and invasive pests since plants no longer have to compete for resources. Upon the project's completion, 7,600,000 pounds of biomass material was generated.



Steamboat – Colorado

INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	15,736	Steamboat will reduce emissions by 5 percent under 2014 levels by 2020.
Scope 3 (solid waste)	444	
Total	16,180	

REDUCE

Steamboat installed the Christie Peak Express Maintenance Bay to be a multiple purpose facility for the lift department and ski patrol. It cuts down on gasoline use.

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Stratton - Vermont



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	9,461	Undefined
Scope 3 (solid waste)	442	
Total	9,903	

REDUCE
Undefined

Sugarbush – Vermont



INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	4,183	Sugarbush Resort will reduce emissions by 5 percent under fiscal year 2012 levels by 2015.
Scope 3 (solid waste)	222	
Total	4,405	

REDUCE
Sugarbush completed snowmaking gun upgrades as well as Mount Ellen Lodge lighting upgrades.

OTHER PROGRESS

Sugarbush is entrusted with the stewardship of lands in the beautiful Green Mountains of Vermont. The resort promotes resource conservation, recycling, habitat protection, and environmental education. Sugarbush believes it has a responsibility to the community in that Sugarbush exists within a very special environment in the Mad River Valley. It is a responsibility to contribute to the economy of the Valley and be a good civic partner in promoting activities that enrich the community and preserve its special quality and natural environment.

Resource Conservation - In all Sugarbush Resort properties, the resort encourage guests and employees to help through recycling, purchasing goods produced with recycled content, turning out lights and electronics, and reusing towels and linens. The resort has initiated many lighting, motor and efficiency upgrades in our buildings and equipment, invested in highly efficient snowmaking technologies to maximize our snowmaking capabilities while reducing energy use

and continues to implement upgrades as new technologies become available. Sugarbush supports the Mad Bus, a free public transit system that provides winter bus service to the Mad River Valley to reduce demand for parking lots, wear and tear on our road networks, and to reduce transportation related air emissions.

In partnership with Efficiency Vermont (Vermont's energy efficiency utility that provides technical assistance and financial incentives to help Vermont households and businesses reduce their energy use and costs) since 2008, Sugarbush has implemented energy efficiency projects that have resulted in saving 1,990,142 kWh. Annually the resort recycles more than 112 tons of recyclable materials and over 2000 gallons of used motor and cooking oils, purchases 100% post-consumer recycled and sustainably sources paper and paper products whenever possible, buys eco-friendly cleaning supplies in bulk and has switched to a non-toxic parts washers for its vehicle and lift maintenance facilities.

Recycling - Sugarbush actively recycles and composts throughout the resort.

Habitat Protection - The resort strives to operate in harmony with the local wildlife with which the land is shared. This goal is reflected in a sensitive use of the Slide Brook Basin and the resort's timber management plans, water quality plans, and vegetation management plan. Sugarbush has an obligation to preserve the beauty of its natural environment and this means being responsible stewards of the land.

Environmental Education - Throughout its winter and summer program offerings Sugarbush has a variety of educational initiatives that emphasize local wildlife and conservation. These programs are available through special events provided by our partners such as the US Forest Service (USFS) and Vermont Institute of Natural Science (VINS) along with environmental curriculum woven into our summer camp programs and winter ski/ride and snowshoe programs. We host annual resort green up and commuter challenge events along with targeted invasive species control projects that engage employees in environmental efforts that demonstrate the importance of participation.

Employee Involvement - Through the Sugarbush Green Team, the resort is always looking for ways to improve resource conservation, recycling, habitat protection, and environmental education efforts. The Green Team is an employee run effort to identify and implement programs that benefit the natural, built, and human environments at Sugarbush Resort and the larger community.



Telluride Ski Resort – Colorado

INVENTORY (fiscal year 2014)	MTCO ₂ e	TARGET
Scope 1 and 2 (required)	8,381	
Scope 3	0	Telluride will reduce emissions by 5 percent below 2011 levels by 2016.
Total	8,381	

REDUCE

Telluride implemented the following projects during the 2014 fiscal year:

- 1) Three phase lighting retrofit
- 2) Replaced they air-water snowmaking system
- 3) Upgraded snowmobile and ATV fleet with 4-stroke models.
- 4) De-rated snow cats
- 5) Began process of upgrading off-road vehicle fleet.

OTHER PROGRESS

Telluride focused emissions reduction on two aspects of operations: electricity and fuel. We have begun making the switch to LED light bulbs and have invested in snowmaking technology. By replacing old air-water guns with more efficient ones, Telluride is able to create the same amount of snow with a significant reduction in energy. During the summer of 2014, modifications to the piping and distribution of water were made, utilizing gravity to pressurize the system and eliminate pumping for a portion of the snowmaking system. The second area of focus was upgrading snowmobile and other off road vehicles to 4-stroke models.

3.6 NEXT STEPS FOR THE CHALLENGE

The Climate Challenge continues to grow with new Challengers entering and participating each year. There was implementation of the new advocacy requirement for Challengers, which required outreach to their congressional delegation and advocacy on climate change and energy legislation.

As always, the Challengers continued to collect data across their organizations, implement an emission reduction project, and many engaged management and staff in setting a reduction target. Meanwhile, the Challenge program has sought to provide the best support to Challengers as they undertake these tasks. Support from the Sustainable Slopes Grant Program to individual challengers has helped reduce carbon emissions as well.

As the Challenge enters its fifth year, Challengers and the program each will continue to seek to improve and grow. For example, there are 4 new Challengers participating in 2015, and one returning member. The quality of information collected for inventories will also continue to improve, awareness of the target will increase, and reduction projects will be a more integral aspect of the planning and budgeting process for Challengers. Additionally, Brengle Group will incorporate more advanced benchmarking into the program this year. This means Challengers will have the ability to track their emissions relative to the size of their operations, as opposed to just the total amount of their emissions. These are helpful metrics for Challengers to follow over time as the ski areas grow or operations change. This has the additional benefit of allowing Challengers to benchmark their operations with other Challengers, and improve recognition for activities.

4.0 ECONOMICS OF SUSTAINABILITY

Economic Analysis of Ski Area Sustainability

New last year, NSAA included sustainability-related questions in the *NSAA Economic Analysis of United States Ski Areas* survey, with an eye toward exploring the link between investing in sustainability and a resort's bottom line. More than 75 percent of NSAA member resorts now have some kind of sustainability effort underway. While there is plenty of data available on individual capital projects and how they result in financial benefits for ski areas, from lighting retrofits to efficiencies in lift operations and snowmaking upgrades, what did not exist until last year was data on the *aggregated* benefits of comprehensive sustainability programs to the financial balance sheet of ski areas.

NSAA looked for help on this data collection and analysis effort from two long-time consultants to the ski industry – sustainability consulting firm Brendle Group and market research firm RRC Associates. In reviewing the first year's data, they found a positive correlation between sustainability and profit, and a message of lost opportunity for the shrinking pool of ski areas without sustainability programs. NSAA has permanently incorporated sustainability questions into its longstanding survey for the *Economic Analysis of United States Ski Areas*, so we can all look forward to years of forthcoming data on this important subject.

Survey Questions

Below are the questions included in the Economic Analysis survey.

Sustainability Measures. In the last 2 years, has your resort invested in any of the following sustainability efforts? (PLEASE CHECK ALL THAT APPLY; LIST CONTINUES ON NEXT PAGE)

Renewable Energy Generation: Installed renewable energy on-site (if yes, please list system(s) type (e.g., solar, wind, hydro) and size in kW):

Existing Buildings: Implemented energy retrofits in existing buildings (if yes, please estimate kWh/year energy savings):

New Construction: Implemented sustainability into new construction or major renovations

Snowmaking Efficiency: Invested in energy or water efficiency improvements in your snowmaking operations (if yes, please estimate kWh/year in energy and kGal/year in water savings):

Lift modernization: Added new lifts or replacement lifts with higher efficiency

Lift operations: Implemented energy retrofits in existing operations – heating timers and controls, waste heat recovery, etc.

Utility Energy Management: Implemented measures to improve electric power quality or reliability, manage peak load/demand costs, or change rate structures for cost-savings

Fleets and Grooming: Invested in equipment fuel efficiency or alternative fuels

Food and Beverage: Made improvements to green purchasing, waste reduction, recycling or composting programs

Marketing and Sustainable Brand: Incorporated sustainability into branding or customer communications

Accounting: Completed a greenhouse gas inventory

Other: (please specify):

HR: What is the estimated level of staffing allocated to your sustainability efforts, in full-time equivalent (FTE) across all departments? (0, <1, 1, 2 or more):

In total, 115 ski areas responded to the question in year one. In addition to collecting this information, Brendle Group compiled first costs and annual cost savings from actual representative projects implemented across ski resorts. Projects were then aggregated into program areas to show financial impacts to various aspects of ski area operations. Aggregation also allowed the team to bundle together smaller projects such as lighting upgrades—a very common practice across the ski industry—that in isolation would not register on company financials.

Additional Data

While calculating the costs and savings for direct sustainability projects such as energy or water-saving measures is generally understood and accepted, factoring in indirect costs and benefits—from sustainability-oriented marketing and messaging or human resources, for example—required a different approach. The team therefore made some key assumptions, projecting that if a ski resort implemented comprehensive sustainability programs across a majority of the 11 program areas, it could legitimately build an authentic sustainability marketing campaign to increase revenues. Increased total ski area revenues were conservatively estimated at 1 percent improvement (compared to 10 percent measured for other industries) with a cost estimate of 5 percent of incremental marketing dollars directed to sustainability in order to achieve these top-line gains. For human resources, the team evaluated the impacts of sustainability on reducing employee attrition and increasing productivity, estimating annual savings of approximately \$57,000 with no up-front implementation costs.

Assessing the Business Potential

With a look at project-level financials completed, the team then began to look at sustainability performance impacts at the scale of a whole ski area and its income statement. The Sustainability Advantage, a book written by business sustainability thought leader Bob Willard, served as a cross-reference for the team's research. Willard's book—reflecting his deep dive into the financials of companies as well as his own 34-year career as a senior executive with IBM—shows that if a typical company were to implement best practice sustainability approaches already being used by many leading-edge companies, it could improve its profit by 51 to 81 percent over three to five years while avoiding a potential 16 to 36 percent erosion of profits.

Willard's methodology includes a model he developed to calculate the savings a business could realize from its sustainability initiatives over a five-year period with a focus on seven key factors—from reduced expenses due to energy efficiency to reduced hiring and attrition expenses from

greater employee retention. By entering company financial data, the model can produce estimated savings to both a company's bottom-line costs and top-line revenue from implementing sustainability practices.

The team adjusted Willard's model to more accurately reflect the ski industry, both removing variables with little relevance to the industry and lowering default values for expected savings to estimated savings built bottom-up from the data compiled across program areas. The model was then loaded with financial performance data reported in RRC's 2011-12 *Economic Analysis of U.S. Ski Areas*, which also allowed for the team to segment and evaluate data by region and by ski area size.

The team also examined the sustainability programs and activities of all 115 ski areas participating in the *Economic Analysis* and created a sustainability "performance index score" to rate the sustainability performance of each area. The team scoured available information from NSAA and web research—from energy programs and projects to fleets, food and beverage, marketing, and human resources—to document the performance of more than 215 ski areas that together represent more than 70 percent of annual skier visits in the U.S. The sustainability performance index score was then matched to the 115 ski areas that participated in NSAA's annual *Economic Analysis* survey.

Ski areas were grouped into three performance levels based on their sustainability index score. Those with little to no active sustainability program were assigned "green circles," those with some activity "blue squares," and the highest performers "black diamonds." From here, RRC was able to analyze financial performance at the company income statement level.

Initial Year Results

Willard's sustainability advantage model—adjusted to fit the ski industry, tempered with conservative estimates of potential benefits, and loaded with industry economic performance data from 2011 to 2012—showed that ski areas could realize at least a 2 percent increase in profit in the first year after initiating a comprehensive sustainability program, with increasing profits in years two through five as the result of the accumulation of sustainability benefits. Based on ski area financial data broken out by region, some regions could see greater profit increases than that.

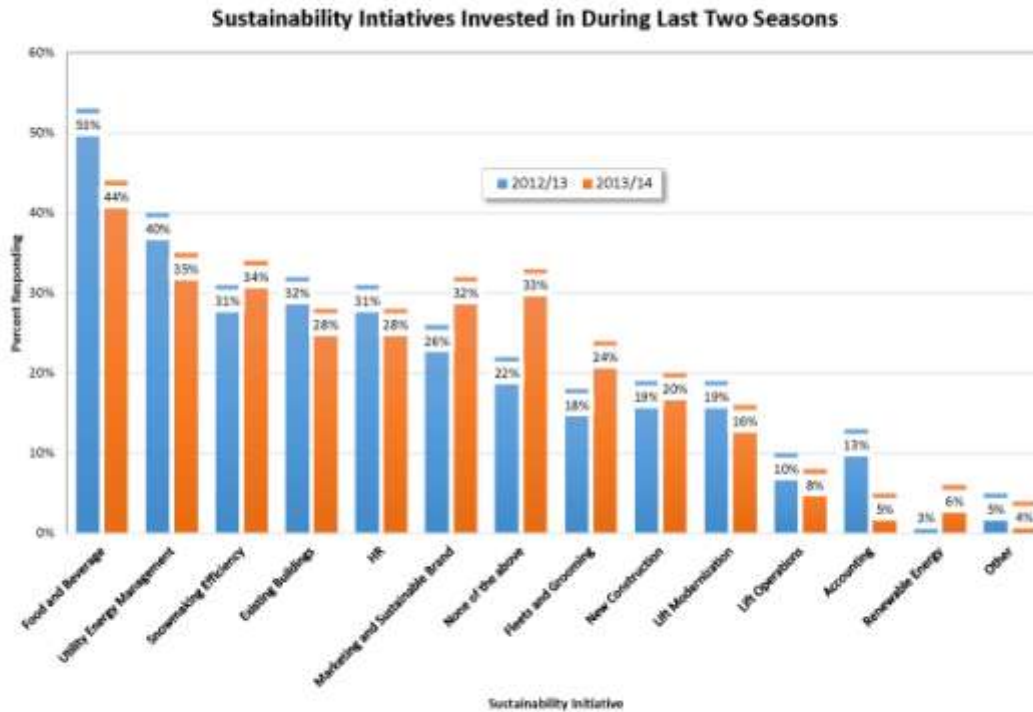
When comparing the 2011-12 financial performance data to the sustainability performance index of ski areas (green circles, blue squares, black diamonds), the findings were somewhat mixed likely

due to a range of other financial factors, as well as ski area size and geography. One trend, however, did emerge: Overall, those ski areas rated as “blue squares” in the sustainability performance index—or those with active sustainability but not leading-edge sustainability programs—had the highest operating profit at 25.6 percent, followed by “black diamond” at 21.8 percent. The areas rated as “green circles” realized the lowest operating profit at 19 percent, compared to an overall average across all three levels of 23.1 percent.

Why did the “black diamond” sustainability performers not exceed the “blue squares” in financial performance? There may be several factors at play. First, because the study only included one year of financial data, it’s possible that the highest performers are taking on more ambitious projects that won’t result in near-term outcomes but could have long-term benefits. Second, leading-edge sustainability performers are likely more inclined to look past short-term financial returns when picking high-profile, legacy sustainability projects. Third, the black diamond group comprises much larger ski areas with an average of \$38.6 million in revenue and \$8.4 million in operating profit, affording them a greater financial base from which to invest in sustainability projects. See <http://www.nsa.org/environment/sustainable-slopes/> for detailed information on year one results from this study.

2014/2015 Results

During the 2014/15 season, NSAA again collected data on investment in sustainability through the *Economic Analysis*. 108 resorts responded to the survey in year two of data collection.



The numbers show clearly that many ski areas have been investing in sustainability efforts. Briefly, as the chart above reflects, the most common improvements in the past two seasons at ski areas are related to food & beverage (44 percent of responding areas indicate they have made improvement in this department), utility energy management (35 percent), snowmaking efficiency (34 percent), marketing/sustainable brand (32 percent), improvement to existing buildings (28 percent), HR (28 percent), and fleets/grooming (24 percent). On the other hand, 33 percent of ski areas did not make any improvements in the past two seasons.

Also in 2014/15, Brendle Group awarded Stevens Pass Ski Area with the Chief Financial Officer’s Sustainability Return on Investment Grant, which provided the resort with in-kind

consulting services focused on analyzing and validating the financial impact of the resort's sustainability efforts. The results of the Stevens Pass project were reported in the Convention 2015 Issue of the *NSAA Journal* ("Skiing and Sustainability: A Perfect Pair"), along with similar findings from Alta Ski Areas and Taos Ski Valley that demonstrate how investments into sustainability are paying off in myriad ways.

Looking to the Future

Beyond the financial results, what's telling about the overall results is that more than 75 percent of all ski areas have some form of sustainability program in place—a statistic that doesn't bode well for the fewer than 25 percent of ski areas that are sustainability laggards. Simple and effective changes could lead these ski areas to significant financial, risk reduction, brand image, and other benefits.

The results of this study also show significant promise on correlating sustainability and improved financial performance across the ski industry, and helping ski areas benefit from both. NSAA plans to conduct an in-depth analysis of the data, such as that done in year one, every three to five years to gauge progress. With more data available down the road, NSAA can examine sustainability benefits to a greater extent, as well as to dig deeper into the expense side of the equation, including energy and snowmaking cost differences. NSAA will continue to report on the economics of sustainability data collected in future years through the *Economic Analysis* and this *Sustainable Slopes Annual Report*.

5.0 CONTRIBUTIONS OF PARTNERING ORGANIZATIONS

NSAA would like to thank and recognize our partners in Sustainable Slopes – old and new – for their contributions to this important program.



Audubon International

Audubon International is a not-for-profit 501(c)(3) environmental education organization dedicated to providing people with the education and assistance they need to practice responsible management of land, water, wildlife, and other natural resources, thus leading to more sustainable communities. To meet this mission, the organization provides training, services, and a set of award-winning environmental education and certification programs for individuals, organizations, properties, new developments, and entire communities. The organization has been in existence for over 25 years and has helped over 3,000 facilities and communities across the world work toward certification. AI presently administers four distinct programs, the Audubon Cooperative Sanctuary Program (ACSP), the Signature Program, the Green Lodging Program, and the Sustainable Communities Program. The most widely known program (and largest by membership) is the ACSP. The ACSP is an education and certification program that helps organizations and businesses protect our environment while enhancing their bottom line. The "plan-do-check-act" approach of the program offers information and guidance to implement an environmental management plan that improves efficiency, conserves resources, and promotes conservation efforts. AI awards certification to publicly recognize and reward the environmental achievements and leadership of ACSP members. The ACSP for Golf Courses is a widely recognized and highly-regarded education and certification program that helps protect our environment and preserve the natural heritage of the game of golf. The ACSP and other AI programs serve as valuable resources by facilitating the conservation and restoration of wildlife habitat, enhancing environmental health, improving economic efficiency by reducing operating costs, minimizing potentially harmful impacts of management operations, and providing facilities and communities with valuable communications and marketing tools.

NSAA is thrilled to have AI as a Partnering Organization in Sustainable Slopes. NSAA looks forward to working with AI to achieve our common goal of advancing sustainable natural resource management on ski area and resort properties.

NSAA and the endorsing resorts are fortunate to have outside organizations playing a key role in Sustainable Slopes.



Brendle Group

Brendle Group is an environmentally focused engineering consulting firm that leads by example, inspiring and empowering people to make thoughtful choices about the resources they use and helping them create realistic road maps for sustainability. Founded in Fort Collins, Colorado in 1996, Brendle Group serves clients nationwide, leveraging the strength of what its clients do well with their sincere desire to do more for people, profit, and planet. Brendle Group has consulted on NSAA’s Sustainable Slopes program for over a decade.

In its 15 years of business, Brendle Group has completed hundreds of projects and assessments for a wide range of clients. Brendle Group has developed sustainability management systems and plans for governments and businesses, measured systematic and site-specific greenhouse gas emissions and developed climate action plans, helped clients reduce their energy and water use, and contributed to leading-edge sustainable design projects. Brendle’s clients range from federal and state government agencies to cities, counties, multi-stakeholder groups, non-profit organizations, industry associations and businesses. We're known for our ability to form strategic partnerships and collaborations to tackle projects of any size, working with clients nationwide.



CLIF Bar & Co.

Based in Berkeley, Calif., **CLIF Bar & Co.** is a leading maker of all-natural and organic energy and nutrition foods committed to sustainability from the field to the final product. The company has received local, state, and national awards for its environmental efforts, including multiple initiatives to combat and educate the public about global warming. Learn more at <http://www.CLIFbar.com/environment>. CLIF Bar has partnered with NSAA in Keep Winter Cool since 2004, sponsors the Grant Program and helps judge the Golden Eagle Awards.



Forest Stewardship Council

The **Forest Stewardship Council** is a third-party certifier of forest products. FSC certifies responsibly managed forests so that consumers can have confidence that wood and paper products carrying the FSC logo come from well-managed forests. In addition to building materials, FSC certifies the types of paper products that the ski areas depend on, from trail maps and brochures to paper plates. In furtherance of achieving the goals identified for ski areas in the Sustainable Slopes Charter, NSAA is partnering with the Forest Stewardship Council to advance sustainable practices at ski areas.

FSC works with the Sustainable Slopes program incorporate information on the benefits of using FSC-certified products as means of fulfilling the Principles of the Sustainable Slopes Charter. FSC also works with NSAA to educate ski areas about FSC-certified products.

Both NSAA and FSC are committed to working together to improve the environmental sustainability of resort operations. We both recognize that the long-term sustainability of natural resources is essential to maintaining the quality of the recreation experience for resort visitors.



HKD Snowmakers

HKD Snowmakers is a long-standing family run business founded in 1991 by Herman K. Dupre and his son-in-law, Charles N. Santry. The company is based in Natick, Massachusetts, U.S.A. Since inception, Snow Economics, Inc. has installed snowmaking products at more than 420 ski areas around the world. All of the products developed and manufactured by Snow Economics, Inc. utilize energy efficient HKD air / water technology. Some of the countries where HKD Technology is in operation are the U.S.A., Canada, Korea, Japan, China, Austria, Switzerland, France, Italy, Germany, Spain, Sweden, Norway and New Zealand.

Although Snow Economics, Inc. was incorporated more than 15 years ago, HKD Technology was conceived some 20 years prior by Herman K. Dupre. Mr. Dupre, founder of Seven Springs Resort in Western Pennsylvania and inventor of the patented HKD Tower system spent

numerous years developing and refining his technology in its practical application, on the mountain. With the HKD Tower System in place, Seven Springs has the unprecedented ability to make snow at the rate of 30,000 gallons per minute using only 26,000 cubic feet per minute of compressed air. With these capacities, the resort is able to blanket 400 skiable acres of terrain with 12 inches of snow in approximately 48 hours. HKD has sponsored the Sustainable Slopes Grant program since 2010 through the donation of 30 SV-10 high efficiency snowmaking guns to deserving resorts.



Ripple Resort Media

Colorado-based **Ripple Resort Media** has brought together premier resorts in North America with their patented MapLinks map and advertising display system. MapLinks provides resort guests with a convenient map of the resort while they ride the chairlift and at the same

time engages these consumers in a captive environment with relevant and targeted advertising. Ripple's focus on partnerships with premier mountain destinations coupled with national reach, a creative media platform and logistical capabilities have provided a winning formula for resorts, consumers and progressive brands. The newest sponsor to the Sustainable Slopes Grant program, Ripple Resort Media supports sustainability in the ski industry and applauds the efforts of resorts to improve their environmental performance.

NSAA would also like to recognize the Partnering Organizations that have helped us advance the Sustainable Slopes Program at some time over the past decade. These Partnering Organizations include:

Board of Teton County Commissioners

Bonneville Environmental Foundation

Colorado Department of Public Health & Environment

Conservation Law Foundation

Leave No Trace, Inc.

The Mountain Institute

National Fish and Wildlife Foundation

National Park Service

NRDC

New York State Department of Environmental Conservation

Trust for Public Land

U.S. Department of Energy

U.S. Environmental Protection Agency

U.S. Forest Service

Wildlife Habitat Council

APPENDIX A: 2015 GRANT WINNERSNATIONAL
SKI AREAS
ASSOCIATION**NSAA Announces 2015 Sustainable Slopes Grant Winners
Funds Target Sustainability Projects and Improve Snowmaking
and Climate Adaption at U.S. Ski Areas**

LAKEWOOD, Colo., April 29, 2015—The National Ski Areas Association (NSAA) today named four member ski areas as the recipients of its annual Sustainable Slopes Grant Program: Sugarbush Resort, Vt., Arapahoe Basin, Colo., Alpine Meadows Ski Resort, Calif., and Alta Ski Area, Utah.

Sugarbush Resort received a cash grant for a 4-stream waste receptacle to start implementation of a program to increase its diversion rate for recyclables, food scraps, liquids, and trash. The grant will help the ski area meet its goal of reaching a 50 percent diversion rate (diversion rate = waste kept out of a landfill) in three years, and in turn reach its Climate Challenge goal of reducing its GHG emissions by 5 percent.

Arapahoe Basin received a cash grant for installation of Freeaire Refrigeration economizers in the ski area's walk-in coolers. The Freeaire system monitors temperatures inside and out, cycling clean, cold outside air through the cooler whenever possible, reducing refrigeration-related energy use by 50 percent. The grant will help bring A-Basin substantially closer to meeting its Climate Challenge goal of reducing GHG emissions by 3 percent below the 2009-10 baseline levels by 2020.

These cash grants, with a total value of \$10,000, were made possible by generous donations from Colorado-based **Ripple Resort Media** and **CLIF® Bar**, based in California. "Ripple Resort Media supports sustainability in the ski industry and applauds the efforts of resorts to improve their environmental performance," said Matt Jay, the company's president. CLIF Bar has contributed to the Sustainable Slopes grant program for six years running. Lauren Hatfield,

director of marketing at Clif Bar & Company, said, “As a company focused on maintaining climate neutral business operations, we are pleased to support ski area projects making a positive impact on climate.”

Massachusetts-based **HKD Snowmakers** awarded a high-efficiency snowmaking grant to **Alpine Meadows**. The ski area will receive five high-efficiency snowmaking guns from HKD Snowmakers, a total value of \$23,000. “We at HKD are excited to assist Alpine Meadows in meeting their goals for the industry’s Climate Challenge through the use of our energy-efficient Impulse snowmaking equipment,” said Charles Santry, HKD Snowmakers president.

Alta Ski Area received an in-kind grant for Climate Adaption consulting services. **Brendle Group**, a Colorado-based sustainability engineering firm, will provide the services with a value of \$5,000 to help the ski area assess and respond to potential vulnerabilities and risks due to a changing climate. “Alta was a clear winner for this year’s grant based on their pioneering work as a founding member of NSAA’s Climate Challenge, research expertise of their snow science department, unique position in the headwaters of Salt Lake City’s water supply watershed, and willingness to lead by example in preparing the ski industry for a changing climate,” said Brendle Group president, Judy Dorsey.

Past winners of the Sustainable Slopes grants include Alta Ski Area, Utah; Arapahoe Basin, Colo.; Beaver Valley Ski Club, Ontario; Canyons, Utah; Burke Mountain, Vt.; Copper Mountain, Colo.; Crested Butte, Colo.; Giants Ridge, Minn.; Grand Targhee, Wyo.; Greek Peak, New York; Mt. Abram, Maine; Mt. Ashland, Ore; Mt. Hood Meadows, Ore.; Oak Mountain, New York; Ober Gatlinburg, Tenn.; Spirit Mountain, Minn.; Stevens Pass, Wash.; Stratton, Vt.; Sugarbush Resort, Vt.; Tamarack, Idaho; and Telluride Ski & Golf, Colo.

Each of the winning programs will be highlighted in the 2015 *Sustainable Slopes Annual Report*, to be published in September 2015. For more information on NSAA’s Sustainable Slopes Grant program or to learn more about environmental initiatives and projects, visit the Environment section of nsaa.org.

The National Ski Areas Association, located in Lakewood, Colo., is a trade association formed in 1962 for ski area owners and operators nationwide.

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APPENDIX B: 2015 GOLDEN EAGLE AWARD WINNERS



NATIONAL
SKI AREAS
ASSOCIATION



FOR IMMEDIATE RELEASE

**Winter Park, Mt. Hood Meadows, Shawnee Peak
Win *SKI Magazine* Golden Eagle Awards for Environmental
Excellence**

Powdr Corp.'s Brent Giles Wins 'Hero of Sustainability' Honor

SAN FRANCISCO, Calif., May 4, 2015—*SKI* Magazine has honored three ski areas—Winter Park Resort, Colo., Mt. Hood Meadows Ski Resort, Ore., and Shawnee Peak Ski Area, Maine—with the 2015 Golden Eagle Awards for Environmental Excellence. Additionally, *SKI* named Brent Giles of Powdr Corp. as this year's "Hero of Sustainability" honoree for 2015.

The Golden Eagle Awards, overseen in a partnership between *SKI* and the National Ski Areas Association, are the ski industry's most prestigious honor for recognizing resort environmental programs and projects.

"When *SKI* founded this program in 1993, our goal was to recognize resorts that were actively addressing environmental issues, hoping to encourage other resorts to do the same and also to help publicize templates for similar projects across the industry," said Allen Crolius, *SKI*'s publisher and vice president of Active Interest Media's Mountain Group. "It's gratifying to see how far the industry has come in 20 years, particularly with today's vital focus on addressing climate change."

APPENDIX B: 2015 GOLDEN EAGLE AWARD WINNERS

The resort awards are divided into three categories: small (fewer than 200,000 annual skier/boarder visits), medium (200,000 to 500,000 visits) and large (more than 500,000 visits). In 2014, *SKI* also launched the Hero of Sustainability Award, designed to honor an individual making a difference.

Shawnee Peak Ski Area in Maine won the Golden Eagle Award in the small ski area category. Shawnee Peak has invested significantly in efficient snowmaking, resulting in measurable reductions in energy use. Today the ski's area's *entire fleet* is composed of low-energy snow guns. Recent improvements include the addition of 10 low-e HKD tower guns and two Techno-Alpin fan guns, switching from a system that generated 100 percent of its compressed air capacity from diesel compressors to one that generates 50 percent from diesel, using different nozzles in the snow guns to reduce the amount of air consumed, and the addition of three fan guns. Finally, through a partnership with Energy Maine, Shawnee Peak has replaced the remaining 25 percent of its snow guns with energy efficient, low-e guns that use 30 percent less air. As a result of these

improvements, the ski area has achieved a significant reduction in demand charges from its utility provider, a 55 percent reduction in diesel consumption, and a sizeable reduction in its CO₂ emissions. Read more about Shawnee Peak at www.shawneepeak.com.

Mt. Hood Meadows in Oregon took the top environmental honors in the medium-sized ski area category for its carbon emission reduction results. As a founding member of the industry's "Climate Challenge," the ski area has taken significant steps over the past four years to meet its goal of achieving a 6 percent reduction in greenhouse gas emissions by 2020 using a 2011 baseline. Mt. Hood's focus on reduced electrical consumption, fuel consumption, and waste sent to the landfill have produced exemplary results, including a power use reduction of 76,035 kWh and a waste disposal reduction of 141,277 lbs. Some of the ski area's most innovative initiatives include its table-to-farm composting program, which diverts guest plate and kitchen food waste to a local commercial compost facility that sells the compost to local farms and retail consumers, and its snow harvesting program, which collects snow from base area parking lots to spread on the slopes to reduce the need for snowmaking. For more information about Mt. Hood Meadows' environmental initiatives, visit www.skihood.com.

Winter Park Resort in Colorado won the Golden Eagle Award in the large resort category for the sustainable construction of its new Lunch Rock Restaurant. The exterior of this impressive building, which is 16,600 square feet and has seating for 400, was designed to meet the specs in the US Forest Service's Built Environment Image guide. Features include a roof line that matches the nearby topography; a compact, simple structure for the building itself; the use of natural materials such as wood and rock; and color schemes that match the nearby landscape. Construction disturbance to the area was minimized by utilizing an existing building site. Recycled material including mountain pine beetle and Wyoming snow fence wood was used extensively on the interior for siding, furniture, cabinets, signs, and doors. Employees of Winter Park made the tables and chairs in their shop using pine beetle kill wood, and made the light fixtures in their shop as well. CFL and LED electrical fixtures and bulbs were used throughout the building along with low-flow water fixtures. The electrical and gas usage is monitored and controlled remotely to reduce energy use. There is also a state-of-the-art interpretive display, providing guests with current information on the resort, the local USFS district, and the importance of clean water. Lunch Rock Restaurant embraces the history of the Mary Jane area while adhering to the principles of responsible building in a fragile, high-alpine environment. Find out more about Winter Park's sustainability programs at www.winterparkresort.com.

Brent Giles is a Hero of Sustainability because he leverages his company-level impacts to an entire industry and beyond. As the chief sustainability officer for Powdr, Giles has been instrumental in Powdr Green, the sustainability program that drives all of Powdr's ski areas towards reducing their environmental impact. He has led a variety of energy saving and carbon cutting initiatives, and then consistently challenged and tested those efforts to see if Powdr could do better. The result has been a whopping 62% reduction in carbon emissions in the last fiscal year. Giles has helped Powdr put their money where their mouth is on the topic of climate change—investing \$7 million on energy savings initiatives that are now reaping their rewards: \$2 million annually in reduced energy costs.

Walking the talk has provided Giles a key ingredient for scaling positive impact—credibility to challenge others across the ski industry and across ski communities. As a founding member and key technical advisor in the formation of the NSAA Climate Challenge program, he has been an inspirational voice and a trusted peer mentor to other ski areas working on measuring and reducing their contributions to climate change. What's most impressive about Giles is his ability to inform and motivate all levels of the ski industry, from the boiler room to the board

room. His style of leadership is to be modest, grounded and credible, yet persuasive, passionate, and inspirational. Brent Giles is a true hero of sustainability for the ski industry and beyond. For more information about environmental initiatives at Powdr Corp., visit ww.powdr.com/green/.

About the GEAs

Established in 1993, the Golden Eagle Awards for Environmental Excellence recognize the environmental achievements of ski areas. The awards are sponsored by *SKI* Magazine. Judges for this year's awards include: Andy Hawk and Greg Dittrincio, *SKI* Magazine; Tiffany Beal, International Mountain Bicycling Association; Judy Dorsey, Brendle Group; Ryan Mayo, CLIF Bar & Company; Geraldine Link, NSAA; Don Dressler, USDA–Forest Service; and Kirk Mills, Colorado Department of Public Health & Environment (CDPHE).

About SKI

SKI Magazine (www.skimag.com), located in Boulder, Colo., is the world's oldest and largest ski publication. It is part of Active Interest Media's Mountain Group, which also includes *Skiing*, Warren Miller Entertainment and NASTAR. AIM (www.aimmedia.com) is a leading publisher of enthusiast publications across all platforms, and a producer of consumer shows. The company's five publishing groups—the Equine Network, the Home Buyer Group, the Healthy Living Group, the Marine Group and the Outdoor Group—reach more than 20 million readers in 85 countries around the world. AIM's titles include *Backpacker*, *Yoga Journal*, *Vegetarian Times*, *SAIL*, *Log Home Living*, and *Old House Journal*. AIM was formed by Wind Point Partners, a private equity investment firm with offices in Chicago and Southfield, Mich., in partnership with CEO Efreem "Skip" Zimbalist III in October 2003.

About NSAA

The National Ski Areas Association (NSAA), headquartered in Lakewood, Colo., is the trade association for ski area owners and operators. Formed in 1962, NSAA today represents 332 alpine resorts that account for more than 90 percent of the skier/snowboarder visits nationwide. Additionally, it has more than 400 supplier members who provide equipment, goods, and services to the mountain resort industry.

For further information on the Golden Eagle Awards or to learn more about environmental programs at ski resorts nationwide, visit www.nsaa.org.