NSAA
Sustainable Slopes
ANNUAL REPORT 2014
NSAA recognizes the following 30 resorts participating in the Climate Challenge. Their leadership will help pave the way for other resorts to inventory, target and reduce their carbon footprints:

Alpine Meadows
Alta Ski Area
Arapahoe Basin
Aspen Highlands
Aspen Mountain
Beaver Valley Ski Club
Boreal Mountain Resort
Buttermilk
Canyons Resort
Copper
Giants Ridge Golf & Ski Resort
Gorgoza Park
Grand Targhee
Jackson Hole Mountain Resort
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
Telluride Ski & Golf Resort

NSAA invites all ski areas to consider joining the Climate Challenge. For more information, visit www.nsaa.org and click on Environment.
The National Ski Areas Association (NSAA) is pleased to report on the sustainability efforts of ski resorts in the 2013/2014 season. In its fourteenth year, the Sustainable Slopes program continues to improve and evolve and incorporate new initiatives that 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. Upon endorsing 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 meaningful.

NSAA and Brendle Group launched a Linked In Forum called the “Ski Area Sustainability Forum” in response to ski area feedback. The forum is for ski area sustainability personnel only, and the purpose is to encourage ski area sustainability contacts to share information about their experiences, ask questions to their peers, and present information on innovative sustainability practices. A number of ski areas are participating in the Linked In Forum, but we would like to see more participation. Please contact NSAA (glink@nsaa.org) if you are a ski area that would like to be included in this important forum. NSAA would like to recognize Brendle Group’s pro bono support and management of the Linked In Forum.

The Climate Challenge had a fantastic year in 2014 as the number of participating resorts skyrocketed to 30. 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:

These ski areas are leaders in addressing climate change through taking action and making changes in their operations that will reduce their carbon footprints.

We are also pleased to report on the continued success of our Sustainable Slopes Grant Program. The program is made possible by generous donations from our sponsors, including CLIF Bar and NSAA supplier members HKD Turbo and Brendle Group. This year, two in-kind high-efficiency snowmaking system grants provided by HKD Turbo were awarded to Ober Gatlinburg Ski Area in Tennessee and Stratton in Vermont. Each ski area will receive 5 high-efficiency snowmaking guns from HKD Turbo, a total value of $40,000. Stevens Pass in Washington received an in-kind grant for sustainability consulting services with an emphasis on return on investment. Brendle Group created this new "CFO/Sustainability ROI" grant this year at a value of $5,000. In addition, a cash grant sponsored by energy bar maker CLIF Bar & Co. was awarded to Tamarack in Idaho for an erosion reduction project benefitting nearby Lake Cascade, and the development of a "FIREWISE" demonstration garden.

NSAA’s 2014 Sustainability Conferences, which took place during the Western and Eastern Winter meetings at Steamboat and Mt. Snow, were a great success. Topics included the Economics of Sustainability, Sustainability Branding and Communication, Environmental Regulatory Compliance, the Business Case for Climate Change Action and Advocacy, and Efficient Snowmaking and Sustainable Operations. These sessions were informative and well attended and helped spark increased participation in sustainability initiatives in the ski industry.

In total, NSAA’s SWAG, or Sharing Warmth Around the Globe program, has donated over 227,000 winter garments to people in several overseas countries that desperately needed something warm to wear during the cold winter months. In 2013/2014, SWAG partnered with CAP Logistics, HELP International, and Precept Ministries International and with the help of 27 resorts collected and distributed close to 14,000 pieces to individuals in Albania, Armenia, Germany, Moldova, Mongolia, Poland, Siberia, Syria, and Ukraine. Information regarding the 2014/2015 program will be distributed this August and collection will begin in October.
NSAA is excited to announce that SKI Magazine is back in the fold as the sponsor of the **Golden Eagle Awards for Environmental Excellence**. SKI founded this 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 21 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 2014 Winners

![Image of Golden Eagle recipients](image)

**Doug Allen, Alan Henceroth, Charles Santry and Maura Olivos**

**Proctor Academy**, a private school in New Hampshire, won the Golden Eagle Award in the small ski area category. Proctor invested $376,000 in upgrades, including a switch from diesel to electric powered compressors, the purchase and installation of 21 HKD SV10 Impulse Tower Guns and a Turbocristal Fan Gun, and the addition of six GE PF400 Power Flood Lights, bringing the total to 42 for the ski area. The result was a total reduction of 140 tons of CO₂e, equivalent to the annual emissions from 26.5 passenger cars.

**Arapahoe Basin** in Colorado took the top environmental honors in the medium-sized ski area category for its significant waste reduction efforts. Arapahoe Basin is a founding member of the ski industry’s Climate Challenge, and has set a goal of reducing its overall GHG emissions by 3 percent below 2009/10 baseline levels by 2020. While A-Basin has implemented energy-savings initiatives to help meet that goal, it has also demonstrated that its robust waste-reduction program made a huge difference in reducing its carbon footprint. The ski area’s composting and recycling programs have kept 115,000 pounds of waste out of landfills,
resulting in a greenhouse gas emission reduction of 57 MTCO2e (metric tons of carbon dioxide equivalent emissions), or nearly a third of the ski area’s reduction target for the Climate Challenge.

**Steamboat Ski and Resort** in Colorado won the Golden Eagle Award in the large resort category for making sustainability a cornerstone of its most significant on-mountain improvement project in nearly a decade. In constructing its $5 million Four Points on-mountain restaurant, located at 9,716 feet with panoramic views, Steamboat incorporated LEED principles throughout, from low-flow fixtures to low-energy insulated windows, composting, automatic CO2 sensors in the HVAC system, and LED and fluorescent indoor light fixtures. For the addition of night skiing, the resort installed state-of-the-art Ultra-Tech™ Lighting, which limits light pollution and saves energy. In upgrading its snowmaking on the Heavenly Daze trail, Steamboat installed a new main line that in conjunction with HKD tower guns cut energy consumption by 30 percent and also reduced water usage. The resort’s new Prinoth Beast and Bison grooming machines decrease fuel consumption and increase efficiencies. Meanwhile, the resort continued its Healthy Forest focus by removing 23 acres of dead lodge pole pines, utilizing a helicopter to limit the ground footprint while also reducing soil erosion and sedimentation in streams.

**Maura Olivos** received the first ever “Hero of Sustainability” Award from SKI Magazine. Through Olivos's leadership, the Alta Environmental Center has improved sustainability practices at the ski area, enabled research and collaboration with partners, and helped spread the word of sustainability to guests. Alta's General Manager Onno Wieringa stated “through her persistent efforts, Maura has raised the bar on bringing environmental care into Alta’s operations and serving as a valuable model for all departments of the ski area.”

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 over a decade. We have our partners, stakeholders and innovators to thank for our collective successes.

Geraldine Link
Director of Public Policy
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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
12. Product Re-use

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

To see the Charter and its Principles in their entirety, visit the NSAA web site at WWW.NSAA.ORG
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, such as the Climate Challenge, 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 100 of the endorsing ski areas contributed to the information presented in this report by submitting Sustainable Slopes Grant Applications, Climate Challenge Applications and Renewals, Golden Eagle Award Applications and completing the Economic Analysis Survey.
2.0 SUSTAINABLE SLOPES GRANTS

2.1 BACKGROUND

NSAA began a modest grant program in 2009 as a partnership between NSAA and industry stakeholders. 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 Ober Gatlinburg, Tennessee; Stevens Pass, Washington; Stratton, Vermont (participant in the Climate Challenge); and Tamarack Mountain Resort, Idaho.

2.2 SNOWMAKING AND ON–SITE AUDIT GRANTS

NSAA supplier member HKD Turbo made two in-kind snowmaking grants. 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. The two in-kind grants of 5 SV-10 high efficiency snowmaking guns have a total value of $40,000 and were awarded to Ober Gatlinburg, Tennessee and Stratton, Vermont. HKD Turbo’s contribution to the Sustainable Slopes program continues to serve as a model for other supplier members of NSAA looking to support the industry in improving its sustainability. HKD would like to encourage more ski areas to apply for snowmaking grants in the future!

Here is how Ober Gatlinburg and Stratton intend to use the high efficiency snowmaking guns and the expected savings that will result.
Ober Gatlinburg, Tennessee
Snowmaking Grant Awardee

Ober Gatlinburg has a great need for Low-Energy snowmaking equipment. Due to our southern location and low elevation (3,300 ft) we rely 98% on snowmaking to open and operate our slopes. Ober currently has a mixture of snow gun technologies. In the past few years, we have purchased 32 low energy HKD guns to supplement the older guns which consist of 45 Ratnik Snow Giants, 30 SMI Polecats, 8 Omichrons, and even a Larchmont and 2 Bob Ash guns. We rely heavily on Ratnik air/water guns to sustain our snowmaking, and with the grant will be able to move away from using the air/water guns to more efficient ones. Our current snowmaking system has a water capacity of 3,800 gpm and an air capacity of 23,000 cfm. We have permanent electric air compressors on property and we rent diesel compressors to supplement the system for the winter. Our large demand for air is due to the inefficiency of many of our guns, as well as the need to make snow in marginal temperatures due to our elevation and location in Tennessee. The in-kind grant will be used to replace 5 inefficient Ratnik air/water guns on a portion of the Lower Bear slope. Half of this slope is a regular ski run while the other half is the home of our terrain park which we added 4 seasons ago. Currently, we struggle providing an adequate base for the jibs and jumps. The portion of the slope is 630 ft long and 76 ft wide, and we hope to maintain a consistent 3 ft base. By replacing the Snow Giants with HKD SV-10, we will be able to ensure adequate snow depth at a reduced cost. In addition to this, we would be able to divert air to other portions of the mountain, decreasing the amount of time and energy necessary to open the whole mountain.

Stratton, Vermont
Snowmaking Grant Awardee

Stratton has set a goal to be diesel-free by 2017. According to calculations done by Efficiency Vermont, in coordination with our Snowmaking Team, we have determined that we need to replace the 3737 Ratnik Snow Giant assuming 500 cfm for the Ratnik and 80 cfm for the SV10 at 26wbF guns with a high-efficiency equivalent, to meet this goal. The associated reduction in air needs from this replacement will allow us to eliminate the need for our rented diesel air compressors. Stratton’s system is currently still reliant on diesel and electric compression. Our system has 11,600 gallon/min water pumping capacity, 28,000 cubic feet per minute electric air capacity and 11,2000 cubic feet per minute diesel capacity. We have in the neighborhood of 1,000 guns mountain wide in our current fleet, of which over 75% are currently low-energy tower guns. Because these guns would help us achieve our diesel elimination goal, they will not
be assigned to one trail specifically. They will be utilized to best replace the high consumption land guns that are currently requiring our additional rented diesel generation.

With the in-kind grant, Stratton’s calculated savings are 25,500kwh and 400 gallons of diesel saved annually. These calculations completed by Efficiency Vermont assume replacement of Ratnik Snow Giants, 1/3 acre coverage per gun at 3’ coverage depth and snow production that follows our historic water pumping by month.

**Stevens Pass, Washington**  
**ROI Grant Recipient**

**Brendle Group**, NSAA’s sustainability engineering firm, based in Fort Collins, Colorado, donated an in-kind grant of sustainability services with an emphasis on return on investment (ROI) valued at $5,000. This year’s recipient of Brendle Group’s grant was **Stevens Pass** in Washington. Stevens Pass is a leader on sustainability, and Brendle Group will help identify even more opportunities for efficiency and cost savings at the resort this year.
2.3 CASH GRANT CRITERIA

Funding for the cash grant program this year came from a generous sponsorship from energy bar maker CLIF Bar. 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 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 CASH GRANT AWARD WINNERS 2014

This year, one cash grant was awarded to Tamarack Mountain Resort in Idaho. NSAA would like to thank and recognize the generous donation from program sponsor, CLIF Bar. Cash grants are a great vehicle for implementing sustainability projects at U.S. ski areas and help highlight innovation at ski areas.

Tamarack Mountain Resort, Idaho
Erosion/“FIREWISE” Project
Grant Amount: $ 5,000

Tamarack Mountain Resort received a cash grant for an erosion reduction project to benefit nearby Lake Cascade. With funding from the grant program, Tamarack will revegetate three ski runs with native seed blends and plant a 1,000 square foot “FIREWISE” Garden to educate guests about the importance of defensible landscaping to prevent fires and resulting erosion. NSAA looks forward to hearing back on the progress of the “FIREWISE” garden, as it is a project that can easily be replicated by other ski areas.
3.0 THE CLIMATE CHALLENGE PROGRAM

ACKNOWLEDGMENTS

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
- Seth Jansen, Brendle Group
NSAA also would like to thank the following ski areas for undertaking the Challenge, for their efforts in completing the Challenge, and for their continued support for improving the program. Below is a list of Challengers and when they joined, including new Challengers for 2014.

2011

- Arapahoe Basin
- Alta
- Canyons
- Jackson Hole
- Jiminy Peak
- Mount Hood Meadows
- Park City
- Telluride

2012

- Boreal
- Copper Mountain
- Gorgoza Park
- Killington
- Soda Springs
- Sugarbush

2013

- Giants Ridge
- Grand Targhee Resort

2014

- Aspen Snowmass
- June Mountain
- Mammoth
- Snowbird
- Squaw Valley
- Steamboat
- Stratton
3.1 INTRODUCTION

The Climate Challenge is a 3-year old voluntary program designed to recognize ski areas that are committed to developing greenhouse gas (GHG) inventories, setting goals for carbon reduction, implementing at least one on-site reduction strategy per year, and reporting success in reducing their overall carbon footprint.

Overall, Challengers reported about 106,000 MTCO2e of emissions in the 2013 reporting year. That results in an average of 6,252 MTCO2e per ski area. In addition, Challengers implemented on-site projects that reduced emissions 1,015 MTCO2e in 2013.

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

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ski Areas</td>
<td>8</td>
<td>18</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Average Emissions per Ski Area*</td>
<td>8,558</td>
<td>6,361</td>
<td>6,252</td>
<td></td>
</tr>
<tr>
<td>On-Site Emission Reductions*</td>
<td>295</td>
<td>1,067</td>
<td>1,015</td>
<td>2,377</td>
</tr>
</tbody>
</table>

* Measured in metric tons of CO2e

Each year the Challenge program seeks to build upon its successes to improve the operations of participants and the program, in addition to adding new members. To this end, the program will be welcoming 11 new members in 2014, and adding a new requirement that each ski area advocate for legislation or regulation to address climate change.
3.2 WHY THE CLIMATE CHALLENGE?

The consequences of climate change to the ski industry require continued leadership and bold steps throughout the industry. The Challenge provides a framework for participants to engage in a multi-year process to challenge themselves to reduce emissions at their ski area while supporting like-minded ski areas in a collaborative effort to reduce emissions industry-wide.

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

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.
3.3 CHALLENGE ELEMENTS

Ski areas participating in the Challenge commit to a four-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 2013, 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 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. Potential 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 will not be 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.

REPORT

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

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

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 have undergone a third-party review to ensure they are eligible and reasonable with respect to the program’s standards and expectations.

3.4 ENcouraged elements

In addition to those strategies that directly reduce GHG emissions, 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 will be 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. This also is an opportunity to link a resort’s efforts with similar planning that may be taking place in its community.

- Purchase of renewable energy credits or offsets – many resorts invest in renewable energy credits or carbon offsets to support the reduction of GHG emissions.
3.5 CHALLENGE RESULTS

The following sections present the outcomes of the Inventory – Target – Reduce 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 from the grid varies widely. In other words, these ski areas are all unique; however, they all have committed to reducing their GHG emissions.

Overall, the Challengers reported about 106,000 MTCO2e of emissions in the 2013 reporting year. By 2020, when all of the targets established by Challengers have been completed, Challengers have committed to reducing emissions by at least 44,500 MTCO2e – about 44 percent of 2013 emissions. This reduction includes any REC purchases the Challengers may be planning to achieve their targets.

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

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<td>2,377</td>
</tr>
<tr>
<td>Renewable Energy Credits Purchased</td>
<td>9,833</td>
<td>40,255</td>
<td>45,046</td>
<td>95,134</td>
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* Measured in metric tons of CO2e
INVENTORY
(calendar year 2013)
<table>
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<th>Scope 1 and 2 (required)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5,085</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
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</tr>
<tr>
<td></td>
<td>288</td>
</tr>
<tr>
<td>Total</td>
<td>5,374</td>
</tr>
</tbody>
</table>

TARGET
Alta will reduce emissions 20 percent below 2011 emissions by 2020.

REDUCE
Alta continued upgrading exterior lighting to LED, installed a new 95% efficient boiler, and continued to upgrade windows in an older building to a 0.3 u-factor.

OTHER PROGRESS
The following are additional annual GHG reduction efforts that may or may not be directly reflected in the resort’s GHG Inventory:

- Native Tree Planting (4000 limber pines planted)
- Native Plant Community Restoration (over 300 volunteers)
- Recycling – achieved a 51% diversion rate for recycling
  - Styrofoam, rubber, batteries, mixed metals, electronics, ski gear (skis, poles, goggles, helmets and ski boots)
  - Co-Mingled Materials - paper, plastics 1-7, aluminum, steel, cardboard, newspapers, and magazines
- Idle Free Policy
- Employee Environmental Professional Development and Education (newspapers, training, orientations, Green Team, meetings, and reports)
- Low Water Use Fixtures - waterless urinals, low flow toilets and shower heads, and automatic faucets
- Clothing and Office Furniture Donations
- Reuse of Office Furniture and Other Supplies
INVENTORY  
(fiscal year 2013)  

<table>
<thead>
<tr>
<th>Scope 1 and 2 (required)</th>
<th>MTCO₂ₑ</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 3 (solid waste)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,268</td>
<td></td>
</tr>
</tbody>
</table>

Arapahoe Basin – Colorado

REduce
Arapahoe Basin renovated the 6th Alley Bar & Grill, effectively rebuilding the south end of the A-Frame lodge. Additionally, Arapahoe Basin continued to focus on the resort’s waste reduction efforts.

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 our chairlifts and base lodge. Employees are also encouraged to ride the bus or carpool 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 is 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 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!
INVENTORY
(calender year 2013)
Scope 1 and 2
(required)
Scope 3 (solid
waste)
Total
MTCO₂e
549
13
562
TARGET
Beaver Valley Ski Club will reduce emissions by 6 percent under 2011/12 levels by 2020.

OTHER PROGRESS
In the past seven 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 91 skiable acres and 775 member families works hard to serve as a local leader in climate change reduction. Waste management efforts since 2008, 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 9% 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.

REDUCE
Planted fifteen 8-10 inch mixed conifers and 132 one year old seedlings in a native forest plantation.
INVENTORY
(calendar year 2013)
Scope 1 and 2
(required)
Scope 3
Total

<table>
<thead>
<tr>
<th></th>
<th>MTCO2e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2</td>
<td>1,296</td>
<td>Boreal &amp; Soda Springs will reduce emissions by 1300 MTCO2e by 2014.</td>
</tr>
<tr>
<td>Not reported</td>
<td>1,296</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,296</td>
<td></td>
</tr>
</tbody>
</table>

REDUCE
Replaced windows at Soda Springs Lodge, and insulated and weatherized lift shacks and lodge doors.

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 in its maintenance shop, 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.
INVENTORY

<table>
<thead>
<tr>
<th>(calendar year 2013)</th>
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<tbody>
<tr>
<td>Scope 1 and 2</td>
<td>MTCO$_2$e</td>
</tr>
<tr>
<td>(required)</td>
<td>16,692</td>
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<tr>
<td>Scope 3 (solid waste)</td>
<td>637</td>
</tr>
<tr>
<td>Total</td>
<td>17,329</td>
</tr>
</tbody>
</table>

TARGET

Canyons Resort will reduce emissions by 15 percent below 2011 levels by 2017.

OTHER PROGRESS

Canyons Resort is committed to a sustainable resort and a sustainable community. It continues to purchase wind power through the Rocky Mountain Power Blue Sky program and participates in the utility’s power incentive programs. Canyons Resort also sponsors Park City’s local conservation organization, Recycle Utah, through board representation and annual financial support. The resort recently has organized a Sustainability Task Force that focuses on improving resort environmental initiatives, such as education, on-mountain and hotel recycling, energy conservation, resort clean up days, Bike to Work Week, and a re-purposing program of items throughout the resort.

In addition, Canyons Resort continues to support and be partners with a number of non-profit organizations throughout the community - such as Summit Land Conservancy, Mountain Trails Foundation, and Snyderville Recreation - that advocate preservation of open lands, protection of watersheds, and public trail access.

REDUCE

Increased composting programs on mountain.
INVENTORY
(fiscal year 2013)
Scope 1 and 2
(required)
Scope 3 (solid waste)
Total
MTCO₂e
17,818
414
18,232
TARGET
Copper Mountain will reduce emissions by 12,000 MTCO₂e by 2014.

REDUCE
Copper Mountain increased recycling programs and implemented LED lighting projects.

OTHER PROGRESS
Copper Mountain' has installed two Windspire Vertical Axis Wind Turbines, a solar voltaic array and a solar thermal array resulting in over 14,000 kWh's of generated power in the past two years; the energy reduction saved is equivalent to saving 23 barrels of oil. Copper Mountain has continued its dedication on recycling across the resort and composting in specific resort food and beverage locations. Additionally, Copper installed 10 filtered water bottle filling stations across the resort and now sells inexpensive durable, collapsible, and reusable water bottles available near the stations. Due to these efforts over the past season, the resort has recycled over 187 tons and composted over 34 tons, diverting a total of 221 tons of waste from local landfills. 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

<table>
<thead>
<tr>
<th>INVENTORY (calendar year 2013)</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>2,170</td>
<td></td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>87</td>
<td></td>
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<tr>
<td>Total</td>
<td>2,257</td>
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</tr>
</tbody>
</table>

**REDUCE**
Grand Targhee increased educational signage promoting “powering down” in lodging rooms and administrative offices.

**OTHER PROGRESS**

GTR has a host of additional programs to reduce greenhouse gas emissions and its environmental footprint:

- GTR’s Skier Transportation Program. The GTR shuttle ridership increased from 4,231 shuttle riders during the 2011/12 to had 14,438 riders in the 2012/2013 season.

- GTR employees participate in the Protect Our Winters program, where GTR matches all funds raised by employees. These funds are distributed annually to local organization through a grant cycle. The Resort is extending the program to lodging guests next year.

- In 2013, the resort enrolled in the Clif Energy Bar Brigade, where it collects energy bar wrappers and send them to Terracycle to be recycled.

- Each season the resort naturalist participates in employee training. Employees receive a discount on drinks when using reusable mugs in GTR Food and Beverage outlets.

- In 2013, GTR updated its sustainability messaging in rooms, encouraging guests to recycle and participate in utility conservation. The resort also provides a Nature Center opened seven days a week with daily Naturalist tours, snowshoe rentals, hiking tours, Nature at Noon discussions, evening Cat Tours, Ski with a Naturalist, and Friday evening programs.

- Over 1000 food items were donated to Teton Valley Food Bank. Guests received lift ticket discounts for donations during opening weekend.

- In 2013, the resort recycled 10 tons of glass and 9640 pounds of cardboard.
• In 2012, old ski uniforms were donated to SWAG (Sharing Warmth Around the Globe), this included approximately: 600 Cloudveil jackets, 600 fleece jackets, and 400 vests. The resort also donated 50 mattress sets, 50 blankets, 50 pillows, 16 old reading lamps, 18 televisions.

• GTR brings light bulbs to Fall River Rural Electric Company for proper disposal.

• GTR has installed waterless urinals, low flow toilets and shower heads, and automatic faucets. In total, the resort has 100 low-flow showerheads, 40 low-flow toilets, and 3 waterless urinals.

• For the next fiscal year, May 2014-April 2015, GTR has a resort-wide goal of decreasing utility consumption by 2 percent.
Jackson Hole Mountain Resort – Wyoming

### INVENTORY (calendar year 2013)

<table>
<thead>
<tr>
<th>Scope</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>6,098</td>
<td>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.</td>
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<tr>
<td>Scope 3 (solid waste)</td>
<td>118</td>
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<tr>
<td>Total</td>
<td>6,216</td>
<td></td>
</tr>
</tbody>
</table>

### REDUCE

JHMR began composting in restaurants and installed a “free air” cooler at Casper Restaurant.

### OTHER PROGRESS

JHMR has worked with Yellowstone Teton Clean Energy Coalition to conduct effective public outreach to promote alternative fuels and has also participated as a case study for regional biodiesel workshops. JHMR assists in educating owners of other vehicle fleets in the area on meaningful ways to reduce their petroleum and emissions footprints. JHMR is a member of Linx, a member cooperative that connects existing transportation providers in Idaho, Wyoming, and Montana, and has achieved first place for 2 years in a row in the Friends of Pathways Commuter Choice Challenge program where employees take non-motorized transportation to work or play. Additionally, public outreach efforts by JHMR on environmental responsibility have gained the attention of representatives from Canada, Japan, China, Australia, and Albania through the International Visitor Leadership Program, a part of the U.S. Department of State’s premier professional exchange curriculum.
Killington & Pico Mountain – Vermont

### INVENTORY (fiscal year 2013)

<table>
<thead>
<tr>
<th>Scope 1 and 2 (required)</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 3 (solid waste)</td>
<td>23,327</td>
<td>Killington / Pico Resorts will reduce emissions by 13,000 MTCO₂e by 2014.</td>
</tr>
<tr>
<td>Total</td>
<td>23,542</td>
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</tr>
</tbody>
</table>

### 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 2013, 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 systemic, lasting contributions to the environment.
Las Vegas Ski & Snowboard Resort (LVSSR) will reduce emissions by 160 MTCO2e by 2014.

<table>
<thead>
<tr>
<th>INVENTORY (Fiscal year 2013)</th>
<th>MTCO₂ₑ</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>964</td>
<td></td>
</tr>
<tr>
<td>Scope 3</td>
<td>Not reported</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>964</td>
<td></td>
</tr>
</tbody>
</table>

**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. About 95 percent of days in Las Vegas are clear and sunny; therefore, the plan is to maximize solar generating capacity, storage capacity and electricity needed. 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 into 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.
Mt Bachelor – Oregon

<table>
<thead>
<tr>
<th>INVENTORY (fiscal year 2013)</th>
<th>MTCO$_2$e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>6,406</td>
<td>Mt Bachelor will reduce emissions by 3,700 MTCO2e by 2014.</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>Not Reported</td>
<td>6,406</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

**REDUCE**

Mt Bachelor installed a 5.6kw solar array and education center.
INVENTORY (calendar year 2013)  
Scope 1 and 2 (required)  
MTCO₂e  
3,667  
Scope 3 (solid waste)  
200  
Total  
3,867  
TARGET  
Mt. Hood Meadows will endeavor to reduce overall emissions 3 percent, or more, below 2011 by 2020.

OTHER PROGRESS

MT Hood Meadows continues to grow company culture emphasizing sustainability as one of its five Core Values. The resort has an extensive waste management system that reaches beyond typical recycling. Every month thousands of pounds of glass, cardboard, mixed paper, plastic, metal, Styrofoam, used oil, batteries, bulbs, and more are recycled. The extensive recycling program includes a spreadsheet tracking system to help employees identify what materials are accepted, under what conditions, and where they can be dropped off.

From rightsizing can liners and envelopes to low flush toilets and no flush urinals, Mt. Hood employs sustainable efforts companywide. Additional resort efforts include:

- Sourcing recyclable, BPA free thermal paper
- Energy efficient lighting upgrades including a lighting trail run for a potential LED slope lighting project
- Idling awareness program

REDUCE
Employee culture shift toward increasing sustainability
INVENTORY (fiscal year 2013)

<table>
<thead>
<tr>
<th>Scope 1 and 2 (required)</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13,130</td>
<td>Park City Mountain Resort &amp; Gorgoza will reduce emissions by 9,500 MTCO₂e by 2014.</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13,450</td>
<td></td>
</tr>
</tbody>
</table>

OTHER PROGRESS

Park City Mountain Resort has completed over 30 carbon reduction and energy saving projects at a cost of over $1.4 million since fiscal year 2005. The resort reduced electricity costs by over $160,000 annually and reduced power consumption by over 3 million kWh. The resort has recycled over 271,000 pounds of cardboard and 311,000 pounds of co-mingled material, and it uses B20 biodiesel fuel in all equipment. The resort also has supported wind power by purchasing 92 million kWh of renewable energy credits. Just in the last year, Park City Mountain Resort has installed new solar arrays in two highly visible mountain locations, with a generation capacity of nearly 40,000 watts, and replaced lighting fixtures in its underground parking garages with more environmentally friendly equipment, saving 370,000 kWh per year. These initiatives come on the heels of installation of a wind turbine and solar arrays on one of the resort’s peaks that generate up to 17.7 kw. In addition, PARK CITY MOUNTAIN RESORT has advocated for energy efficiency, clean energy, and reduced carbon emissions by signing on to letters of support or generally providing support for 13 federal, state, or local legislative initiatives, and 4 utility or industry initiatives with these aims. The resort also has an Environmental Kiosk on the upper mountain designed to educate guests on its efforts and what they, as a guest, can do to practice their own best sustainability practices at home.
### INVENTORY

<table>
<thead>
<tr>
<th>INVENTORY (fiscal year 2013)</th>
<th>MTCO\textsubscript{2}e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>3,014</td>
<td>Sugarbush Resort will reduce emissions by 5 percent under fiscal year 2012 levels by 2015.</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>218</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,232</td>
<td></td>
</tr>
</tbody>
</table>

### REDUCE

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

### 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 composes 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 2013)

<table>
<thead>
<tr>
<th>Scope</th>
<th>MTCO₂ₑ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2 (required)</td>
<td>Not reported</td>
</tr>
<tr>
<td>3</td>
<td>Not reported</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Not reported</td>
</tr>
</tbody>
</table>

**TARGET**

Telluride will reduce emissions by 5 percent below 2011 levels by 2018.

**REDUCE**

Telluride implemented the following projects during the 2013 fiscal year:

1) The Vehicle Maintenance department has replaced low MPG vehicles with more fuel efficient vehicles to decrease gasoline usage.

2) Snow cats have been equipped with idle sensors to control extended idle times and conserve fuel.

3) Snow cats have been governed to set maximum RPMs during operation to limit fuel consumption.

4) Snowmaking capital projects include improving efficiency of system by installing new air/water lines and 75 new low energy snow guns.

5) New water distribution lines have been installed to allow lower mountain system to operate on gravity vs. pumping to eliminate need for electric power to distribute water.
3.6 NEXT STEPS FOR THE CHALLENGE

The third year of the Climate Challenge has been a continued learning experience for the Challengers and the program alike. Challengers collected data across their organizations, implemented 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.

As the Challenge enters its fourth year, Challengers and the program each will seek to improve. For example, there will be a new requirement for Challengers to meet in 2014, which will be to advocate for legislative action to address climate change. 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. Meanwhile, the Challenge will consider improvements to tools, identify ways for Challengers to benchmark their operations with other Challengers, and improve recognition for activities.

Additionally, there will be 11 new Challengers participating in 2014, bringing the total number of participating Challengers to 30. This will be a big boost to the Challenge program as it continues to bring together the ski industry and individual skiers/riders to aggregate efforts to protect winter pastimes.

Until next year, keep the Climate Challenge front and center and make the daily commitment to be mindful as operators and skiers and riders.
4.0 ECONOMICS OF SUSTAINABILITY

Economic Analysis of Ski Area Sustainability

New this year, NSAA has 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 this year is 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):

In total, 115 ski areas responded to the question. 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

The team organized dozens of different sustainability project types into 11 ski area operational program areas (figure 1). The top six of these 11 program areas for both cost-effectiveness and implementation rate by ski resorts are shown in figure 2.

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.

**Figure 1. Major Ski Area Sustainability Program Types**

- Renewable Energy Generation
- Energy Efficiency in Existing Buildings
- New Construction–Green Building
- Snowmaking Efficiency
- Utility Energy Management
- Fleets and Grooming
- Food and Beverage: Green Purchasing, Waste Reduction, and Recycling
- Lift Operations
- Greenhouse Gas Reporting and Triple Bottom Line Accounting
- Sustainability Marketing and Communications
- Human Resources
<table>
<thead>
<tr>
<th>Program Area &amp; Project Type</th>
<th>Average Implementation Cost ($)</th>
<th>Average Annual Dollar Savings ($/yr)</th>
<th>Simple Payback (yrs)</th>
<th>% of resorts implementing in last 2 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency—Buildings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehensive Energy-Efficiency Upgrades</td>
<td>$102,047</td>
<td>$26,374</td>
<td>3.9</td>
<td>32.1%</td>
</tr>
<tr>
<td>Snowmaking Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy-Efficient Guns</td>
<td>$549,600</td>
<td>$137,400</td>
<td>4</td>
<td>30.4%</td>
</tr>
<tr>
<td>Utility Energy Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Load Management, Rate</td>
<td>$26,400</td>
<td>$11,350</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigeration and Waste</td>
<td>$70,200</td>
<td>$9,689</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td>Sustainability Marketing &amp; Communications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainable Branding—</td>
<td>$49,250</td>
<td>$228,670</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Human Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee Retention</td>
<td>$0</td>
<td>$57,278</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>$797,497</td>
<td>$470,761</td>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>
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 (see figure 3). 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.

<table>
<thead>
<tr>
<th>Figure 3. Willard’s Seven Sustainability Advantage Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase revenue</td>
</tr>
<tr>
<td>• Reduce energy expenses</td>
</tr>
<tr>
<td>• Reduce waste expenses</td>
</tr>
<tr>
<td>• Reduce materials and water expenses</td>
</tr>
<tr>
<td>• Increase employee productivity</td>
</tr>
<tr>
<td>• Reduce hiring and attrition expenses</td>
</tr>
<tr>
<td>• Reduce strategic and operational risks</td>
</tr>
</tbody>
</table>

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 the program areas included in figure 2. 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 (figure 4). 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” (figures 5, 6). From here, RRC was able to analyze financial performance at the company income statement level.

**Figure 4. About the Performance Index**

Each ski area was given a score of 0 to 3.5 based on its performance across eight criteria:

- Endorsement of Sustainable Slopes
- Consistent year-to-year reporting of performance to NSAA
- Participation in the Climate Challenge or public reporting of greenhouse gas emissions
- Advocacy for sustainability policy at state or federal levels
- Sustainability in marketing/communications
- General sustainability project implementation
- Implementation of an on-site renewable energy project
- Recipient of a Gold and/or Silver Eagle Award
The 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 (figure 6). 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 are 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 (figure 7).

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.

To explore these longer term effects and to cross-check the Willard findings, RRC took Brendle Group’s economic results from figure 2 and ran them against the balance sheet for the average overall ski area surveyed (figure 7 “Overall” column) to compare pre- and post-sustainability financial performance. The results corroborate Willard’s top-down estimates with bottom-up industry data showing that the ROI for sustainability when aggregating across several program areas is large enough to register at the income statement level, showing a 1.8 percent per year improvement in operating profit after projects are capitalized in year one. The exact investment profile from year to year would vary based on the mix of sustainability projects identified and their linkages to capital improvement plans and budget cycles.

Beyond the financial results, what’s also telling overall about the 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.
Figure 7. Summary of Income Statements and Operating Profit by Ski Area Sustainability Performance Category (Units: x $1,000)

<table>
<thead>
<tr>
<th></th>
<th>Overall (Green, Blue, Black Combined)</th>
<th>Green Circle</th>
<th>Blue Square</th>
<th>Black Diamond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Fixed Assets</td>
<td>$51,673</td>
<td>$16,719</td>
<td>$58,001</td>
<td>$92,916</td>
</tr>
<tr>
<td>Total Gross Revenue</td>
<td>$22,940</td>
<td>$7,275</td>
<td>$27,762</td>
<td>$38,644</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>$17,637</td>
<td>$5,891</td>
<td>$20,666</td>
<td>$30,233</td>
</tr>
<tr>
<td>Operating Profit (Loss)</td>
<td>$5,303</td>
<td>$1,384</td>
<td>$7,096</td>
<td>$8,411</td>
</tr>
<tr>
<td>Depreciation</td>
<td>$2,542</td>
<td>$742</td>
<td>$2,965</td>
<td>$4,531</td>
</tr>
<tr>
<td>Amortization</td>
<td>$116</td>
<td>$66</td>
<td>$130</td>
<td>$169</td>
</tr>
<tr>
<td>Operating Leases</td>
<td>$599</td>
<td>$167</td>
<td>$1,068</td>
<td>$562</td>
</tr>
<tr>
<td>Interest</td>
<td>$731</td>
<td>$154</td>
<td>$704</td>
<td>$1,597</td>
</tr>
<tr>
<td>Profit (Loss) Before Tax</td>
<td>$1,315</td>
<td>$256</td>
<td>$2,229</td>
<td>$1,553</td>
</tr>
<tr>
<td>Number of Ski Areas</td>
<td>115</td>
<td>43</td>
<td>42</td>
<td>30</td>
</tr>
<tr>
<td>Operating Profit as a % of Total Gross Revenue</td>
<td>23.1%</td>
<td>19%</td>
<td>25.6%</td>
<td>21.8%</td>
</tr>
<tr>
<td>Profit Before Taxes as a % of Total Gross Revenue</td>
<td>5.7%</td>
<td>3.5%</td>
<td>8%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Looking to the Future

The results of this study show significant promise on correlating sustainability and improved financial performance across the ski industry, and helping ski areas benefit from both. With data from future years, NSAA can examine sustainability benefits even further, 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*. 
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.

**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 will work 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 will also work 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 Turbo**

Snow Economics, Inc. 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 derserving resorts.**
PARTNERING ORGANIZATIONS

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*

*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*
NSAA Announces 2014 Sustainable Slopes Grant Winners

Funds Target Sustainability Projects and Improve Snowmaking and Energy Efficiency at U.S. Ski Areas.

LAKEWOOD, Colo. – May 1, 2014 – The National Ski Areas Association (NSAA) today named four member ski areas as the recipients of its annual Sustainable Slopes Grant program. Grant recipients include Ober Gatlinburg, Tennessee; Stevens Pass, Washington; Stratton, Vermont; and Tamarack Mountain Resort, Idaho.

Tamarack Mountain Resort received a cash grant for an erosion reduction project to benefit nearby Lake Cascade. With funding from the grant program, Tamarack will revegetate three ski runs with native seed blends and plant a 1,000 square foot “FIREWISE” Garden to educate guests about the importance of defensible landscaping to prevent fires and resulting erosion. This cash grant was made possible by a generous donation from CLIF Bar based in California. “We are thrilled to support Tamarack’s efforts to improve water quality and educate the public through the unique “FIREWISE” Garden project” says CLIF Bar’s Ryan Mayo.

Two in-kind high-efficiency snowmaking system grants provided by Massachusetts-based HKD Snowmakers were awarded to Ober Gatlinburg Ski Area in Tennessee and Stratton, Vermont. Each ski area will receive 5 high-efficiency snowmaking guns from HKD Snowmakers, a total value of $40,000. “HKD views sustainability as a high priority for the ski industry and we look forward to working with Ober Gatlinburg and Stratton to achieve immediate energy savings through the application of our equipment,” says HKD Snowmakers President, Charles Santry.
Stevens Pass received an in-kind grant for sustainability consulting services with emphasis on return on investment. Brendle Group, a Colorado-based sustainability engineering firm, will provide the services with a value of $5,000. “Stevens Pass has been a leader on sustainability for years, and Brendle Group looks forward to working with them to identify even more opportunities for efficiency and cost savings at the resort” says Judy Dorsey, Brendle Group principal and founder.

“These grants are a great vehicle for implementing sustainability projects at U.S. ski areas and in particular those projects that reduce ski area carbon emissions and address climate change," says NSAA President Michael Berry. 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; Spirit Mountain, Minnesota; Stevens Pass, Wash.; Stratton, Vermont; Sugarbush Resort, Vermont; and Telluride Ski & Golf, Colo.

Each of the winning programs will be highlighted in the 2014 Sustainable Slopes Annual Report, to be published in September, 2014. 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.

###
Environmental Awards Recognize Three Ski Areas and New ‘Hero of Sustainability’

SAVANNAH, Georgia, May 1, 2014 -- SKI Magazine has honored three ski areas—Steamboat, Colo., Arapahoe Basin, Colo., and Proctor Academy, N.H.—with the 2014 Golden Eagle Awards for Environmental Excellence. Additionally, SKI named Maura Olivos of Alta Ski Area in Utah as the inaugural “Hero of Sustainability” honoree for 2014.

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, we wanted to encourage sustainability and recognize resorts for their commitment and proven results to environmental programs,” said Andy Bigford, SKI’s publisher and the general manager 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 collective focus on addressing climate change.”

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). For 2014, SKI also launched the Hero of Sustainability Award, designed to honor an individual making a difference. Here is a closer look at the recipients of the awards.
Proctor Academy, a private school in New Hampshire, won the Golden Eagle Award in the small ski area category. Proctor has adopted a school-wide Environmental Mission Statement, which includes purchasing all of its electricity from renewable energy sources. The Academy aggressively applied its mission to the operation of its competition-oriented Proctor Ski Area, which includes alpine, Nordic jumping, and cross-country trails. Proctor invested $376,000 in upgrades, including a switch from diesel to electric powered compressors, the purchase and installation of 21 HKD SV10 Impulse Tower Guns and a Turbocristal Fan Gun, and the addition of six additional GE PF400 Power Flood Lights, bringing the total to 42. The result was a total reduction of 140 tons of CO2e, equivalent to the annual emissions from 26.5 passenger cars.

Arapahoe Basin in Colorado took the top environmental honors in the medium-sized ski area category for its significant waste reduction efforts. Arapahoe Basin is a founding member of the ski industry’s Climate Challenge, and has set a goal of reducing its overall GHG emissions by 3 percent below 2009/10 baseline levels by 2020. While A-Basin has implemented significant energy-savings initiatives to help meet that goal, it has also demonstrated that its robust waste-reduction program made a huge difference in reducing its carbon footprint. As a direct result of the ski area’s composting and recycling programs, A-Basin has kept 115,000 pounds of waste out of landfills, resulting in a greenhouse gas emission reduction of 57 MTCO2e (metric tons of carbon dioxide equivalent emissions), or nearly a third of the ski area’s reduction target for the Climate Challenge.

Steamboat Ski and Resort in Colorado won the Golden Eagle Award in the large resort category for making sustainability a cornerstone of its most significant on-mountain improvement project in nearly a decade. In constructing its $5 million Four Points on-mountain restaurant, located at 9,716 feet with panoramic views, Steamboat incorporated LEED principles throughout, from low-flow fixtures to low-energy insulated windows, composting, automatic CO2 sensors in the HVAC system, and LED and fluorescent indoor light fixtures. For the addition of night skiing, the resort installed state-of-the-art Ultra-Tech™ Lighting, which limits light pollution and saves energy. In upgrading its snowmaking on the Heavenly Daze trail, Steamboat installed a new main line that in conjunction with HKD tower guns cut energy consumption by 30 percent and also reduced water usage. The resort’s new Prinroth Beast and Bison grooming machines decrease fuel consumption and increase efficiencies. Meanwhile, the resort continued its Healthy Forest focus by removing 23 acres of dead lodge pole pines, utilizing a helicopter to limit the ground footprint while also reducing soil erosion and sedimentation in streams.
Maura Olivos: The Alta Environmental Center in Utah was created in 2008 to build on the ski area’s 70-year heritage of conservation. Through Olivos's leadership, the Center has improved sustainability practices at the ski area, enabled research and collaboration with partners, and helped spread the word of sustainability to guests. Alta’s General Manager Onno Wieringa stated “through her persistent efforts, Maura has raised the bar on bringing environmental care into Alta’s operations and serving as a valuable model for all departments of the ski area.” SKI’s Andy Bigford added, “We wanted to put a face on the amazing behind-the-scenes sustainability efforts that take place at ski areas, and Maura is the true embodiment. She’s the face of Alta’s Environmental Center, inspiring everyone to make changes toward sustainability big and small.”

Established in 1993, the Golden Eagle Awards are sponsored by SKI Magazine. Judges for this year’s awards include: Andy Bigford and Greg Ditrinco, 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).