ACKNOWLEDGEMENTS

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

- Jon Bishop, Jackson Hole Mountain Resort
- Tom Easley, Rocky Mountain Climate Organization
- Brent Giles, Park City Mountain Resort
- Alan Henceroth, Arapahoe Basin
- John Loomis, Northstar-at-Tahoe
- Sha Miklas, Arapahoe Basin
- Maura Olivos, Alta Ski Area
- Geraldine Link, National Ski Areas Association
- Megan Brown, Renewable Choice Energy
- Tom Holcomb, Renewable Choice Energy
- Jay Pawlak, Renewable Choice Energy
- Judy Dorsey, Brendle Group
- Seth Jansen, Brendle Group
NSAA also would like to thank the following ski areas for undertaking the Challenge in its inaugural year, for their efforts in completing the Challenge, and for their continued support for improving the program.
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1.0 INTRODUCTION

The Climate Challenge is a 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.

Ski areas are in a unique position - vulnerable to climate change, yet with high visibility to demonstrate by example and communicate solutions to millions of visitors annually. Initiatives such as NSAA’s Keep Winter Cool initiative and Clif Bar’s Save our Snow winter road trip reflect the industry’s response to both this vulnerability and visibility.

Ski areas participating in the Climate Challenge acknowledge the opportunity to recognize and reduce their own contributions to climate change in a transparent, credible way. Challengers also will make tangible progress to reduce GHG emissions each year for the benefit of skiers and riders, ski areas, resort communities, and our planet.
1.1 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.

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

GOALS OF THE CLIMATE CHALLENGE

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

Ski areas participating in the Challenge commit to a four-step process each year:

1. **Inventory**
2. **Target**
3. **Reduce**
4. **Report**

2.1 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.

2.2 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 establish 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 (CO\textsubscript{2})**: 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 CO\textsubscript{2} emissions is fossil fuel combustion. Carbon dioxide emissions also result from clearing forests and burning biomass. Atmospheric concentrations of CO\textsubscript{2} have been increasing at a rate of about 0.5 percent a year, and are now more than 30 percent above pre-industrial levels.

**CO\textsubscript{2}e**: Carbon dioxide equivalent, a measure that is used to express the concentration of all heat trapping gases in terms of CO\textsubscript{2}.

**MTCO\textsubscript{2}e**: A metric ton of CO\textsubscript{2}e. A metric ton is equivalent to 1.102 short tons or 2,204 pounds.
2.3 **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.

2.4 **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 MTCO$_2$e
- 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.
2.5 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 include:

- **Supporting legislation** – many ski areas have supported policies that would reduce emissions regionally or nationally.

- **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 resorts efforts with similar planning that may be taking place in their community.

- **Purchase of renewable energy credits or offsets** – many resorts invest in renewable energy credits or carbon offsets, supporting the reduction of GHG emissions.
3.0 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, climates, and operational characteristics. In addition, the carbon intensity of the electricity they can purchase from the grid varies widely. In other words, these ski areas are all different; however, they all have committed to reducing their GHG emissions.

Overall, the Challengers reported about 68,500 MTCO2e of emissions in the 2011 reporting year. By 2020, when all of the targets established by Challengers have been completed, Challengers have committed to reducing emissions by at least 11,500 MTCO2e - about 17 percent of 2011 emissions. This reduction includes any REC purchases the Challengers may be planning to achieve their targets.
ALTA SKI AREA – UTAH

<table>
<thead>
<tr>
<th>INVENTORY (calendar year 2011)</th>
<th>MTCO2e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>5,947</td>
<td>Alta will reduce emissions 10 percent below 2011 emissions by 2020.</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>230</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6,177</td>
<td></td>
</tr>
</tbody>
</table>

REDUCE

Alta implemented a lighting retrofit in a number of buildings that involved replacing T12 linear fluorescent lighting fixtures with T8 fixtures.

OTHER PROGRESS

For many years Alta Ski Area has enthusiastically taken part in a range of sustainability and stewardship efforts. Over the past 2 years, coinciding with the inception of the Climate Challenge by NSAA and the ski industry, Alta has embodied the continual need to challenge, invest, and expand its own sustainability efforts. These efforts have included joining with NSAA in supporting legislation on climate change and partnering with Utah Clean Energy (www.utahcleanenergy.org) to increase awareness and opportunity for renewable energy resources. In addition, Alta has endeavored to increase education of its natural areas and sustainability issues by joining forces with non-profits like the Utah Society for Environmental Education (www.see.org) and Cottonwood Canyons foundations (www.cottonwoodcanyons.org) to create and expand environmental education projects and has worked with six universities to start an internship program that focuses on business sustainability, stewardship, resource management, and education. Most importantly, Alta continues to reduce its carbon footprint through resource conservation research, stewardship, and restoration and reforestation efforts; complete wind, water, solar, and geothermal renewable energy feasibility studies upon national forest and protected watershed lands; and continuously evaluate operations to lessen impacts on vegetation (earth’s first answer to carbon sequestration).
ARAPAHOE BASIN – COLORADO

<table>
<thead>
<tr>
<th>INVENTORY (fiscal year 2011)</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>3,710</td>
<td>Arapahoe Basin will reduce electricity use in base area buildings by 5 percent from the 2010/11 season to the 2011/12 season.</td>
</tr>
<tr>
<td>Scope 3</td>
<td>Not reported</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,710</td>
<td></td>
</tr>
</tbody>
</table>

**REDUCE**

Arapahoe Basin implemented a lighting retrofit project in base area buildings and most on-mountain facilities. All T12 linear fluorescents were replaced with T8 fixtures and all incandescent, compact fluorescent, and halogen bulbs were replaced with light emitting diode (LED) bulbs. In all, the resort replaced over 500 light bulbs and will save approximately 45,000 kWh of electricity.

**OTHER PROGRESS**

Arapahoe Basin is creating a culture where sustainability is top of mind. Through policy and education, the resort is helping staff and guests understand the “how?” and “why?” of sustainability. Its goals are attainable and its initiatives are functional. Arapahoe Basin strives to be a leader on the environmental front and hopes to be a role model for what is possible.
**CANYONS RESORT - UTAH**

### INVENTORY (calendar year 2011) | MTCO\textsubscript{2}e | TARGET
--- | --- | ---
Scope 1 and 2 (required) | 17,126 | Canyons Resort will reduce emissions by 15 percent below 2011 levels by 2017.
Scope 3 (solid waste) | 2,068 |  
Total | 19,194 |  

**REDUCE**

Canyons Resort added a variable frequency drive and cooling tower to a snowmaking pump house to increase efficiency.

**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. A sustainable resort supports a sustainable community.
JACKSON HOLE MOUNTAIN RESORT - WYOMING

INVENTORY (calendar year 2011)  |  MTCo2e  |  TARGET
--- | --- | ---
Scope 1 and 2 (required)  |  7,204  |  By 2015, Jackson Hole Mountain Resort (JHMR) will reduce its GHG emissions (from propane/natural gas, gasoline/diesel, and electricity consumption) per guest visit by 10 percent below 2009 baseline levels.
Scope 3 (solid waste)  |  164  |  
Total  |  7,368  |  

REDUCE

JHMR enhanced its waste vegetable oil (WVO) filtration system and converted a diesel Ford Excursion and a Chevy 3500 Duramax delivery truck to burn WVO. WVO also is added to on-site fuel for other vehicles.

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. In addition, 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.
JIMINY PEAK MOUNTAIN RESORT - MASSACHUSETTS

<table>
<thead>
<tr>
<th>INVENTORY (fiscal year 2011)</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>4,268</td>
<td>Jiminy Peak Mountain Resort will reduce emissions by 7 percent below 2011 levels by 2020.</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4,429</td>
<td></td>
</tr>
</tbody>
</table>

REDUCE

Jiminy Peak implemented lighting retrofits in the Country Inn, Crane Lodge, Thatcher Building, and Doc Maynard buildings and installed 40 new energy efficient snowmaking guns.

OTHER PROGRESS

For over a decade Jiminy Peak Mountain Resort has been measuring annual use of electricity, fuels, and water and production of solid wastes and establishing reduction strategies that have translated to successfully reducing resort impacts on the environment. Jiminy Peak’s larger successes are well known and well documented. The resort’s conservation measures currently account for an approximately 12 percent resort-wide decrease in power purchased from the local utility annually. The largest single impact to date was the 2007 commissioning and operation of a 1.5-megawatt (MW) wind turbine constructed on the mountain. In combination with other energy conservation measures, the wind turbine has reduced the amount of power Jiminy purchases from the local electric utility by over 50 percent annually. Today, almost 5 years later, guest interest in the turbine has not waned. Organized turbine tours are conducted throughout the summer months for the public and school groups and anyone can hike up to see the turbine any time during the summer. An LED digital sign hangs in the Welcome Center showing how much energy the turbine has produced to date, providing a constant reminder that the electricity used at the resort is generated at the resort.

In addition, this year the resort replaced 30-year-old oil fired boilers (space heating) in the Country Inn with high efficiency propane boilers and installed a co-generation
unit instead of a replacement boiler. While the co-
generation unit provides both commercial and domestic
hot water, it also generates 75 kW of electricity with no
additional costs or emissions. Jiminy Peak Mountain
Resort is a leader in both energy conservation and
renewable energy.
Mt. Hood Meadows - Oregon

<table>
<thead>
<tr>
<th>INVENTORY (calendar year 2011)</th>
<th>MT CO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>4,673</td>
<td></td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>284</td>
<td>4,957</td>
</tr>
<tr>
<td>Total</td>
<td>4,957</td>
<td></td>
</tr>
</tbody>
</table>

Mt. Hood Meadows will endeavor to reduce overall emissions 3 percent or more below 2011 levels by 2020.

Reduce

Mt. Hood Meadows completed several lighting retrofit projects involving replacing T12 linear fluorescent lighting fixtures with T8s. In addition, the resort installed four hydration stations to promote consumption of H²snow, pure mountain spring water from Mt. Hood, and reduce disposable water bottles in the waste stream.

Other Progress

At Mt. Hood Meadows, love for the mountain shows in many ways:

- Advocacy promoting climate change legislation
- The "Love Your Mountain" campaign that educates employees and guests through examples of sustainability efforts and suggestions of simple actions everyone can take
- The resort’s long-standing commitment of investing in renewable energy offsets culminating in a 100 percent offset this past year

Mt. Hood Meadows continues to pursue opportunities that advance its sustainable business practices that protect, maintain, and restore natural resources and the mountain. The resort’s Climate Challenge results will inspire even greater success of future actions as they provide the data from which the resort can measure its efforts and increase momentum.
PARK CITY MOUNTAIN RESORT - UTAH

<table>
<thead>
<tr>
<th>INVENTORY (fiscal year 2011)</th>
<th>MTCO2e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>12,725</td>
<td>Park City Mountain Resort will reduce emissions by an additional 7,000 MTCO2e by 2012.</td>
</tr>
<tr>
<td>Scope 3 (solid waste)</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13,155</td>
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</tr>
</tbody>
</table>

REDUCE

Park City Mountain Resort continued snowmaking efficiency projects, increased recycling awareness, installed a 12-kW wind turbine and a 5.7-kW solar photovoltaic array.

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 $158,000 annually and reduced power consumption by 3 million kWh. It has recycled over 165,000 pounds of cardboard and 163,000 pounds of co-mingled material, and it uses B20 biodiesel fuel in all equipment. The resort also has supported wind power by purchasing 75 million kWh of renewable energy credits.

In addition to Park City Mountain Resort’s work on its own operations, it 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 EcoZone in the base plaza and on the upper mountain designed to educate guests on its efforts and what they, as a guest, can do to help.
**Telluride Ski & Golf - Colorado**

<table>
<thead>
<tr>
<th>INVENTORY (fiscal year 2011)</th>
<th>MTCO₂e</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 and 2 (required)</td>
<td>9,478</td>
<td>Telluride will reduce emissions by 5 percent below 2011 levels by 2018.</td>
</tr>
<tr>
<td>Scope 3</td>
<td>Not reported</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9,478</td>
<td></td>
</tr>
</tbody>
</table>

**Reduce**

Telluride implemented a lighting retrofit project in its Administration and Ski School buildings and added 10 high-efficiency snowmaking guns.

**Other Progress**

Advocacy - The towns of Mountain Village and Telluride, as well as San Miguel County, have adopted Governor Bill Ritter’s Colorado Climate Action Plan 2020 Goal of reducing GHG emissions 20 percent from 2005 levels by 2020. Telluride Ski & Golf’s participation in the Climate Challenge is aligned with these carbon footprint reduction goals since portions of the ski area operate in all three jurisdictions.

Education - Telluride Ski & Golf’s Eco Adventures program offers kids activities, such as “build energy kits and wind energy models.” In addition, the Eco Adventures Nature Center has environmental programs all summer that feature native wildlife education, children’s nature activities and crafts, and interpretive hikes. In the winter, interpretive snowshoe tours are led through the Eco Adventures program.

Link to Community Planning - The Town of Mountain Village has worked with local, state, and federal governments and private sector community leaders to develop a regional GHG emissions inventory and reduction plan that establishes short- and long-term GHG reduction targets, policies, and programs to achieve these target goals. The resort’s participation in the Climate Challenge is aligned with the goals of the community in which it operates.
RECs - As a result of various partnerships over the past several years, Telluride Ski & Golf has purchased RECs to offset 808,788 kWh of power.

Sustainability – One of Telluride Ski & Golf's stated goals is to “practice responsible environmental stewardship.” Over the past several years, the resort has sponsored watershed protection through the San Juan Fens partnership by providing logistical support and access for scientific studies of high alpine fens. In addition, Mountain Operations has heated the mountain shop and the lift maintenance shop with waste oil burners over the past several years to reduce oil waste at the ski resort.
4.0 BEYOND THE FIRST YEAR: NEXT STEPS FOR THE CHALLENGE

The inaugural year of the Climate Challenge has been a learning experience for the Challengers and the program alike. Challengers collected data in the remotest corners of their organizations, engaged management and staff in setting a target, and implemented an emission reduction project. Meanwhile, the Challenge program has sought to provide the best support to Challengers as they undertake these tasks.

As the Challenge enters its second year, Challengers and the program each will seek to improve. The quality of information collected for inventories will 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, such as legislative advocacy and skier/rider education.

Hopefully, the second year of the Challenge will also see increased participation. It is only through the aggregate efforts of the ski industry and each of us individually as skiers/riders that we can have a significant impact on protecting our winter pastimes.

Until next year, keep the Climate Challenge front and center and make the daily commitment to address this issue at your ski area and as a skier and rider.