

Kirkwood Meadows Public Utility District

Planning Committee

REGULAR MEETING AGENDA

NOTICE IS HEREBY GIVEN that the Planning Committee of the Kirkwood Meadows Public Utility District has called a Regular Meeting of the Committee to be held on **Friday, May 10, 2019 at 9:00 A.M.** at the Kirkwood Meadows Public Utility District Community Services Building, 33540 Loop Road, Kirkwood, California 95646.

The Agenda for this Regular Meeting is:

- 1) **Housing – Alternative Model.** Update.
- 2) **Propane – Greenhouse Gas Offset Component.** Update.
 - a) **Heat Pumps.** Update.
- 3) **Carbon Offsets for Propane.** Discussion. **Pgs. 2-8**
- 4) **Highway 88 Winter Closure Letter.** Discussion and possible action. **Pg. 9**
- 5) Future Topics
- 6) Next Meeting/Staff Recommendation: June 7, 9:00 AM.

Dated: May 3, 2019

Kirkwood Meadows PUD

The Kirkwood Meadows Public Utility District is an equal opportunity provider and employer.

In compliance with the Americans with Disabilities Act, if you are a disabled person and you need a disability-related modification or accommodation to participate in this meeting, please contact the District at (209) 258-4444, by email to igillies@kmpud.com. Requests must be made as early as possible, and at least two business days before the meeting.

The future of skiing in California

Winter in the Sierra is becoming more erratic. Climate models show warmer temperatures and less snow cover. Are ski resorts doomed?

By Porter Fox | April 25, 2019 | San Francisco Chronicle

Skiers know what a good day on Squaw Valley's KT-22 chairlift looks like: crystalline powder piled up on lift towers; frosted ski hats in the lift line; Jeffrey pines sagging under the weight of new snow.

It's days like this that inspire thousands of passionate skiers to brave gridlock traffic on Interstate 80 and stand in line for hours to get first tracks on a wide-open powder bowl. They do it because there is something transcendent about floating down a sheer mountain face on a soft blanket of crystals. The high alpine scene is so pristine, so stunningly barren and enticing at once, it is like a living snow globe where it is always winter and the snow is always deep. But North America is not a snow globe. As the real globe warms, one trend is clear: Winter is shrinking and snow is melting. In the past 50 years, the frozen mantle that caps the Northern Hemisphere in the dark months has lost a million square miles of spring snowpack. Winter warming has tripled in the U.S. West since 1970; [the length of winter is projected to decline](#) at ski areas across the country, in some locations by more than 50% by 2050 and by 80% by 2090.

"I've stopped trusting weather forecasts and predictions and don't hang as much emotional energy on how much snow we are going to get until I see how it plays out," says Jeremy Benson, an 18-year Tahoe skier and author of the backcountry guidebook "Backcountry Ski & Snowboard Routes: California." "Now you just have to really appreciate when it is good because it is not a sure thing."

Coastal ranges like the Sierra and Cascades, where winter temperatures hover close to the freezing point, are most at risk. California has warmed [nearly 2 degrees](#) since 1950 — significantly more than the global average — and temperatures in the state could rise by nearly 9 degrees by 2100 if emissions continue on their current track, according to a recent [report](#) from the governor's Office of Planning and Research.

In the Sierra Nevada, the outlook is grim.

Warmer temperatures around Lake Tahoe have already [pushed the snow line uphill](#) 1,200 to 1,500 vertical feet since 1970. Spring arrives at the lake nearly three weeks earlier now, in mid- to late March. If we continue emitting greenhouse gases at our current rate, snow season in the Sierra could shorten

by more than two months, climatologists say, and disappear altogether at lower elevations by the end of the century. Which is to say, the mountains circling Lake Tahoe could be brown in December and the base of most ski resorts would get rain all winter instead of snow.

Just this year, the state declared the end of a seven-year drought that brought four extremely dry winters to Sierra ski resorts, including the dismal 2014-15 season that left Squaw Valley with a single ribbon of snow on its lower slopes for much of the season. While the terrific snow this season seems like a good sign, climate scientists say that low snow years will become more common every decade.

“This winter we were very fortunate to see regular snowfall and accumulation, but this should be the norm, not the exception,” says Mario Molina, executive director of [Protect Our Winters](#), an environmental advocacy nonprofit in Boulder, Colo. “The overall trend is concerning not only for the future of snow sports, but for those who recreate in the streams and rivers that rely on snowmelt and for public lands that are threatened by an increase in the duration and intensity of the fire season.”

As one of the first populations to witness visible signs of climate change, skiers in California are asking what their hometown hills are doing to prepare for the Great Melt — and what they will look like in 20 to 80 years.

“We are having some years where you can’t even go backcountry skiing because there is so little snow that it is not even an option,” Benson says. “And (we’re seeing) that it’s happening frequently in the last decade.”

Some effects of climate change — like a predicted increase in extreme winter storms, though a decrease in overall winter storms — appear misleading to casual observers. A lot also depends on how nations and industries reduce emissions. High emission scenarios spell disaster for skiing, not to mention human civilization. Low emissions models paint a surprisingly cool and snowy forecast for many of the world’s mountain ranges — meaning our grandchildren could get to ski the same Sierra cement that we do today.

Plenty also depends on how ski resorts adapt to warmer temperatures and thinning snowpacks — by expanding snowmaking, launching four-season activities and diversifying their business to make up for low snow years. Some have been proactive; others have simply stuck their heads in the snow and claimed immunity from rising temperatures.

One thing is certain in any scenario: Skiing in 2050 is going to look a lot different than it does today. And with greenhouse gas emissions ramping up instead of down, no signs of meaningful climate legislation in the U.S. and much of the ski industry intent on avoiding the hard-hitting advocacy needed

to maintain their slopes — a good number of California’s hometown hills may not be around to see the end, or even middle, of this century.

Making snow to make ends meet: Depending on nature’s simplest hydrogen-bonded crystal to make your bottom line is a tricky business. Most resorts require a 100-day season to stay profitable, including the prized Christmas and spring break periods during which resorts make a sizable chunk of their annual revenue. To hedge against uncooperative winter weather, many have taken matters into their own hands.

In 1952, Grossinger’s Catskill Resort Hotel, in New York, became the first resort in the world to make snow. Bernard Vonnegut (brother of novelist Kurt) pioneered seeding snow in clouds with silver iodide in 1946 — a technique that Vail and other Colorado resorts continue today.

More than 90% of ski resorts in the U.S. now rely on man-made snow to open on time and stay open into spring. Most resorts in the Northeast, Midwest and Southeast have been dependent on it to stay profitable since the 1990s.

Without snowmaking, nearly all of the resorts in the Northeast would see their season shrink from 120 to 65 days, a [2013 study](#) from the University of Waterloo in Ontario found. Warm winters would have already spelled the end of most low-elevation, coastal and southern ski hills.

The ski industry in California sees 7.5 million skier visits in an average snow year, generates \$1.6 billion in economic value and supports 24,000 jobs. In low snow years, that number shrinks by 1.3 million skiers and \$99 million in lost revenue, according to a [2012 study commissioned by Protect Our Winters](#). During the recent drought, resort executives in the state saw the threat climate change poses up close.

“Last year it didn’t get really good until March, so there was this constant effort to make skiing enjoyable up until March 1,” says Michael Reitzell, president of resort trade group Ski California. “You want to try to give guests an understanding of what their season will look like, and that’s where snowmaking and efficient grooming comes in.”

In the past eight years, Squaw Valley has invested \$9 million in new snowmaking equipment, including snow guns capable of independently adjusting to weather conditions by the minute. Heavenly recently added 200 high-efficiency snow guns, 20,000 feet of piping and four pump houses to cover more than 70% of its slopes with man-made snow. Sugar Bowl promises to spend more than \$8 million on snowmaking in the next three years.

Even with man-made snow, though, some resorts in California are going to have a hard time staying open for the next 80 years if emissions continue to

rise at their current rate, climatologist Daniel Scott says. Scott directs the University of Waterloo's Interdisciplinary Centre on Climate Change in Ontario — one of the first institutions to investigate the relationship between climate change and skiing in the 1980s. His 2013 study, "[Managing for Climate Change in the Alpine Ski Sector](#)," predicted that more than half of the 103 ski resorts in the U.S. Northeast would have to close by the 2040s due to lack of snow. Of the 350 ski areas Scott analyzed across the U.S. in an upcoming study, California's resorts were among the most vulnerable.

"You have that maritime influence in California, which can be a double-edged sword," Scott says. "It can bring you lots of snow or lots of rain. Even if you are engaged in snowmaking, the rain can wash away some of the investment that you just put on the hill."

Other issues, like water availability, will plague resorts in the Sierras as well, Scott says. Whereas most ski regions in the U.S. have little competition for winter water rights, year-round farming in California, combined with frequent drought conditions, means water use can be contentious. The resorts likely to be hardest hit by snowmaking demands are small, lower-elevation ones like Mount Shasta Ski Park, Alta Sierra, Soda Springs and Tahoe Donner.

Preparing for the worst: Despite a recent shift toward climate change mitigation, reticence to connect the effects of global warming to skiing has been pervasive throughout the skiing world. From Vail Resorts running a full-page ad in the New York Times mocking climate change in 2012 to the [National Ski Areas Association defending resort executives](#) — as well as its own — decision to fund climate deniers running for Congress, to [greenwashing throughout the industry](#), the existential threat that global warming and melting snow poses to the skiing world has often taken a back seat to short-term profits.

With global emissions continuing to ramp up, California resorts are being forced to prepare for warmer winters in different ways.

Heavenly recently received permits from the U.S. Forest Service to [widen 12 runs](#) near its base and remove "hazards" like trees and boulders on 11 other trails. With fewer trails open during warm, dry years, wider trails like 49er, Sam's Dream and Cascade will be safer and more fun for crowds. Funneling more skiers onto fewer runs could also save snowmaking costs. Vail maintains, however, that the development isn't related to forecasts of diminishing snow. "We're not preparing for less snowfall or more snowfall, we are preparing for more change," says Mike Goar, vice president and chief operating officer of Vail's Tahoe Region. "Weather variability has always been a factor in the ski industry, and we've gotten pretty good at adapting our business to it in order

to provide guests an exceptional experience, no matter what kind of winter we're having. That said, we are seeing a higher variability in conditions — especially in the early season.”

Several resorts are committing to four-season recreation with activities and programming that draw visitors to the mountains year-round.

Lift-serviced downhill mountain biking has been a logical crossover for many ski resorts throughout the U.S. Big Bear Mountain Resort's Snow Summit Bike Park, with more than 100 miles of trails, has been a huge success — replacing ski trails and ticket sales with thousands of riders on winding single track and wooden scaffolding. Squaw recently established a via ferrata — an equipped mountain climbing route — on the Tram Face. The resort is also planning a mountain coaster similar to the one Heavenly installed in 2016.

Add microbrew festivals, zip lines, climbing walls and outdoor movie series, and the “green season” at California's ski resorts is helping to offset thin white seasons.

“It is truly about having a year-round experience at the resort,” Ski California's Reitzell says. “So if we can't turn things around, at least in the time that we need to from a climate solution standpoint ... Hey, mountain biking is really fun, too.”

Forcing change, nationally: Three hours southeast of Lake Tahoe, the old Southern Pacific Railroad town of Luning, Nevada, says more about the future of skiing in California than any bike park or chair lift. Set on a moonscape framing Highway 95 is a 50-megawatt solar array that provides power to a quarter of Liberty Utilities customers, including its largest private customer, Squaw Valley.

The entire Olympic Valley ran on coal-fired power for years, but soon, Squaw will purchase electricity from the Luning solar array. (The resort will also pay additional premiums to help expand the utility's renewable energy sources.) Squaw is simultaneously working with Liberty and Tesla to build a battery “microgrid” to store electricity when demand is low and discharge the power when demand is high or in the event of a power outage. The changes will result in a 49% reduction in the resort's carbon footprint, the equivalent of the power usage of 959 homes.

With several reports, including **one last year** from the Intergovernmental Panel on Climate Change, concluding that humans have just a decade to reduce emissions drastically and avoid the most dangerous effects of climate change, efforts like Squaw's might be the only hope for real snow and winter. That is why many skiers are calling for the ski industry to advocate as well as adapt.

“Right now, there is effectively no political price to be paid by policymakers who deny climate science or who fail to lead on the problem,” says Auden Schendler, a Protect Our Winters board member and senior vice president for sustainability at Aspen Skiing Company. “The best group to create that pain, and therefore force action, is American business ... and the ski industry is full of high-profile companies with large followings that could do that.”

While advocacy among ski resorts is seriously lagging, many resorts are doing their part on a smaller scale. Boreal Mountain in Soda Springs recently installed 715 solar panels on the roof of its indoor sports facility, that the resort says will save \$1.5 million in energy costs over the next 30 years. A few miles away, Soda Springs Mountain Resort now uses 100% recycled water for all of its snowmaking efforts. Heavenly, Northstar and Kirkwood, as part of Vail Resorts, are now on board with the company’s truly epic “Epic Promise” — to eliminate all emissions and waste sent to landfills by 2030.

The ski community is a powerful demographic — 14.7 million strong, more than half of whom attended college and earn more than \$75,000 a year, according to the [Snowsports Industries America 2018 Participation Study](#). By harnessing that power and influence, as well as the estimated \$887 billion in consumer spending in the outdoor industry at large, skiers could make a significant impact in the fight to slow climate change — both by supporting resorts and lawmakers that are fighting climate change and leveraging their influence, businesses and money to get others to do the same

There are, of course, other, much greater reasons to slow climate change than the pleasure of cruising groomers. Snow is the world’s water tower, providing up to 50% of the planet’s fresh water supply and drinking water for 2 billion people. Melt water in the Colorado River alone feeds seven states and 40 million people and provides roughly a third of all the water for Southern California’s cities.

Low snowfall is also the first domino in a long line of natural catastrophes downstream — like the infestation of mountain pine beetles in water-starved trees that has ravaged 23 million acres of forest in the West since 2000. In California, low snowpack has been cited as a primary cause of the recent rise in wildfires as well.

If the Great Melt continues unabated, California will face more pressing problems than a lackluster ski season, and that powder day at Squaw will be just a distant memory of colder, snowier winters past.

“The technology that we need for an energy transition is there,” Scott says. “We know how to do it. At this point, it’s purely a political and economic question.”

CORRECTION: An earlier version of this article incorrectly stated that Squaw Valley Resort receives more visitors in summer than in winter. The Chronicle regrets the error.

MORE INFORMATION

1 million square miles of spring snowpack in the frozen mantle that caps the Northern Hemisphere in the dark months has been lost in the past 50 years alone.

50% PROJECTED reduction by 2050 in the length of winter at some ski areas in the United States.

1,200 to 1,500 vertical feet rise uphill in the snow line at Lake Tahoe due to warmer temperatures since 1970.

10.8°F (6°C) degrees of warming under a higher emissions scenario in the Sierra Nevada could eliminate the snow season altogether at lower elevations by the end of the century, climatologists say.

February 22, 2016

Mr. Dan McElhinney, P.E.
Caltrans Acting District 10 Director
CALIFORNIA DEPARTMENT OF TRANSPORTATION
1976 East Dr. Martin Luther King Jr. Blvd.
Stockton, CA 95205

Re: **Highway 88 2018-2019 Winter Operations and Road Closures for Carson Spur and Carson Pass**

Dear Mr. McElhinney:

I would like to first take the opportunity to acknowledge and complement the job Caltrans has done this winter with keeping SR88 clear and sanded during a very challenging winter. With storms arriving during peak travel periods, with few breaks between storms. Caltrans crew were notably out there day and night doing their best to keep up. However, as someone who drives to Kirkwood daily from Pioneer and manages Staff who travels from South Lake Tahoe and Gardnerville areas, the Carson Spur and Carson Pass were notably closed more frequently this winter than in the past with similar challenging winters.

Understandably every winter SR88 needs to be closed from time to time for adverse weather conditions, avalanche control for everyone's safety. However, when this occurs it severely impacts the residents and guests in the Kirkwood Community along with our daily operations of the Kirkwood Meadows Public Utility District to provide fire and emergency medical services along with receiving required propane diesel fuel delivery to support our community.

Further, we also understand Caltrans employee and public safety is paramount on SR88 and offer any assistance possible to help support the Caltrans Winter snow removal operations. We are more than happy to reach out to our local representatives to solicit support for the financial needs of District 10 to hire more snow removal operators to support your operations. Further, please be aware have a full-time certified mechanic and Snow Removal Vehicle Shop with miscellaneous parts that could support District 10 if needed in an emergency.

Finally, we appreciate the updates to the Quickmap App this year and look forward to continuing good communication from Caltrans District 10 in the future. Please let us know if we can assist you in anyway.

Sincerely,

Erik M. Christeson
General Manager

cc: Terry Woodrow, Alpine County Board of Supervisors
Jeff Brown, Amador County Board of Supervisors, District 3
Tom Fortune, Vice President and General Manager Kirkwood Mountain Resort
Chief Rick Ansel, Kirkwood Volunteer Fire Department
Chief Walter White, Amador Fire Protection District
Chief Terry Hughes, Eastern Alpine County Fire