

Sun Valley Rice

Peak Day Pricing
Means Big Savings



Peak Day Pricing brings electricity rates in line with electricity demand by combining a year-round time-of-use rate with a Demand Response component. On nine to 15 days per year, Pacific Gas and Electric Company (PG&E) declares a Peak Day Pricing Event Day. Peak Day Pricing gives customers an economic incentive to conserve electricity during peak hours on those days.



Power-Hungry Milling Process Shifted to Off-Peak Hours

Founded in 2000, the Sun Valley Rice Company is a large family-owned rice mill located in Arbuckle, in Colusa County. The company's 100+ employees annually process some 250,000 tons of rice a year, all of it locally grown in the Sacramento Valley. Nine different varieties of rice are milled, stored, packaged and delivered primarily to domestic customers like restaurants and bulk distributors. The company also exports rice to Japan, Korea, Taiwan and Jordan.

Milling rice is an energy-intensive activity involving multiple mechanical processes, and the size and productivity of the Sun Valley mill—it processes a thousand 100-pound sacks of paddy rice every hour—makes it a large consumer of energy. The plant has various machines that produce a total of over 4,000 horsepower, and the entire plant requires more than 1.8 megawatts of electricity for their day-to-day operations. The overwhelming majority of that demand is generated by the milling process, although packaging operations also contribute a small percentage.

Sun Valley Rice has maintained a long-term focus on energy efficiency, participating in various PG&E Demand Response programs since 2005 and carrying out a variety of retrofits, including high-efficiency replacement motors, retrofitted T5 lighting and motion sensors in all buildings. A 2010 mill expansion project streamlined several of the plant's operations, improving output by more than 50 percent while reducing energy consumption per sack of rice by almost 20 percent.

Rice milling—a high-energy process

The advent of Peak Day Pricing brought a new challenge for the company—finding a way to sharply reduce consumption during Peak Day Pricing Event Hours while conducting a lengthy seven-step mechanical milling and packaging process. That process begins when the paddy rice is unloaded from the trucks and graded for possible rejection.

First, the husk is removed by rubber shelling machines to bring it down to the brown rice form, in which some of the product is sold. Then seeds and foreign objects are shaken out.

The three-stage whitening process requires six banks of three motors apiece, with each bank producing 250 horsepower for a total of 1,500 hp. Whitening begins with an abrasive process using stones and screens, following by two passes of friction in which the rice grains are rubbed on a screen. Then half-kernels and “brewer’s rice,” the small chips, are removed by yet another screening process involving more than a half-dozen machines.

The next stop for the rice is the color sorters, five \$250,000 machines which remove pieces discolored by water damage or peck damage from birds. A camera automatically identifies the discolored rice and pneumatic jets pick out the kernels and eject them.

The screened white rice is then weighed and moved into finish tank storage, where it is subsequently transported into the packaging process and put in the various sizes and shapes of packages Sun Valley produces, from one metric ton down to one-pound bags.

None of these processes can be skipped or additionally streamlined to reduce energy consumption as much as the Peak Day Pricing program requires. So, Sun Valley Rice chose a different path.



Saving energy with operational rescheduling

For the entire six-month period from May through October during which Peak Day Pricing Event Days typically occur, Sun Valley Rice “overnights” its milling operations. This means they shut down during peak hours from noon-to-6 p.m. every day, not just during declared Peak Day Pricing Events from 2 p.m. to 6 p.m. on nine to 15 days a year. The company actually executes an automatic shutdown at 11 a.m. daily and resumes operations at 7 p.m., allowing a one-hour buffer around peak hours in case projects require completion. The mill still receives rice during peak hours, and continues to provide the minimal power necessary for unloading the shipments from the trucks and transporting them around the mill. Other than lighting and air conditioning, Sun Valley Rice uses virtually no power from the grid during the hot peak hours in the summer.

“Our business typically slows down during that time of year anyway, so we are able to accommodate that schedule. If we were to go over our power use targets on even one day during the month, it would change our rate for the entire month, so we are extremely focused on making sure we don’t breach that threshold.”

–MIKE ABEL, GENERAL MANAGER, SUN VALLEY RICE COMPANY



“We’ve been able to make all the operational adjustments pretty easily, and with the expansion of our mill, we’re able to operate the full 16 hours a day that aren’t peak hours. And the cost savings have been huge. The upside for our employees is that they’re not working during the heat of the day. The only downside is that it’s hard on them, because the swing shifts they have to work during the season are tough to adjust to. But they understand the need for it, and we do nice things for them during that time—sometimes we’ll cook them lunch—and show our appreciation for what they’re doing for the company.”

—MIKE ABEL, GENERAL MANAGER, SUN VALLEY RICE COMPANY

Five figure savings on energy costs

- Rice mill shifts operations to off-peak hours during summer months
- Avoiding peak hour operations saves over \$20,000 a month in energy costs
- Management supports workforce in adjusting to shift changes

During the Peak Day Pricing season, most of the company’s employees are assigned to 7 p.m.–3 a.m. and 3 a.m.–11 a.m. shifts, and if shutting down during weekday peak hours puts operation behind schedule, Sun Valley will go to 24-hour shifts on the weekends to catch up.

The company resumes their routine daytime production schedule in October, when the Peak Day Pricing season is over.

Dramatically reduced energy costs

Sun Valley Rice has seen tremendous success—and tremendous savings—from its participation in Peak Day Pricing. The company has saved \$21,132 per month in demand charges, and by reducing its annual consumption of electricity by over 1.75 million kilowatt hours, has reduced its energy costs by about \$245,000 per year. And PG&E has provided an additional \$159,000 in incentives.

“PG&E has been great to work with on this program. Whenever we’ve had questions about the processes and costs for different buildings, we’ve always been able to get those questions answered very quickly. And we’re saving more than \$20,000 a month on our energy bills, plus the rebate check we get at the end of the year. I would recommend that any company in our industry take a look at a program like this.”

—MIKE ABEL, GENERAL MANAGER, SUN VALLEY RICE COMPANY



