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Running many sprinklers at once can increase pumping costs and reduce the effectiveness of irrigation by causing runoff.

REDUCING IRRIGATION PUMP COSTS

BY BRIAN WHITLARK | AGRONOMIST, WEST REGION

Along with rising costs for irrigation water, many golf courses are also facing increasing energy costs associated with operating their pump stations. Irrigating during periods of peak electrical pricing, or operating pumps inefficiently can greatly increase those costs. Fortunately, some relatively simple adjustments to the irrigation schedule and pump operation can help to greatly reduce costs. It may take some work to identify these opportunities, but the savings can be more than worthwhile.

At the Desert Mountain Club in Scottsdale, Arizona, golfers enjoy six golf courses in the Sonoran Desert. Eleven pump stations are used to deliver water to all six courses and move water from one lake to another. The energy costs associated with pumping water at Desert Mountain exceeded $740,000 per year prior to 2006. Energy costs were increasing each year and there was a large incentive to reduce energy use and save money.

In 2006, the leadership at Desert Mountain met with representatives from the

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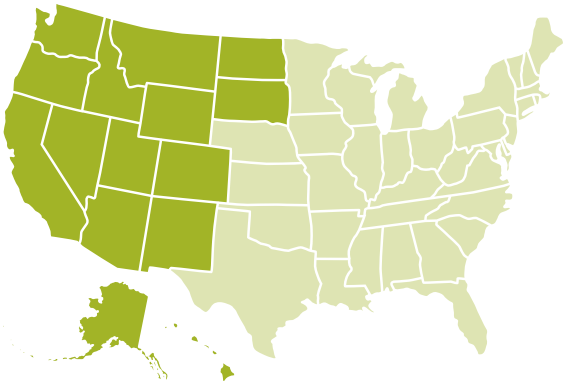
utility provider to discuss ideas for reducing energy consumption and overall costs. The utility provider suggested an audit to evaluate the efficiency of the pump stations. They also identified when energy use reached its peak for the month. The energy provider set billing rates based on peak energy use during the billing cycle, so controlling peak use levels could have a significant impact on costs. Desert Mountain had been running two or three transfer pumps to fill lakes at night in addition to the pumping requirements associated with watering each golf course. Furthermore, each course was running their pumps near peak capacity to shorten the irrigation window. This strategy resulted in high peak demand and the billing reflected it.

Desert Mountain modified its practices by only using one pump to fill the lakes rather than three, reducing annual energy use. The management team also lowered the maximum flow of the pump stations on the six golf courses to further reduce costs. For example, prior to the change a pump station delivering 550,000 gallons per night would run for seven and a half hours when set at 2,100 gallons per minute. The pump station would run at peak flow for only three hours, followed by inconsistent flow during the remaining four and a half hours with three pumps automatically turning on and off. This led to inefficient operation of the pumps which increased costs. After reducing the maximum flow to 1,350 gallons per minute, the run time increased to nine hours, but the period of peak flow extended to six and a half hours, improving efficiency and reducing costs.

The facility also utilized a mobile interface for the agronomic staff to use in the field while running individual sprinklers. The mobile interface is connected to the central irrigation computer which manages flow and run times. Consequently, if a superintendent wants to run sprinklers on several holes at one time, the computer governs the total flow and minimizes the risk of raising the peak energy use level.

In addition to implementing more efficient energy use practices, Desert Mountain also upgraded some of the transfer pumps to variable flow drives (VFDs). This change has reduced energy consumption and made the facility eligible for significant rebates from the utility provider.

Desert Mountain has saved $80,000 annually by upgrading pumps, reducing the number of pumps running at one time and lowering the pump flow rates. Furthermore, the superintendents have noticed improvements in moisture consistency across the golf courses. Running fewer sprinklers at once improves irrigation coverage by reducing the risk of runoff. Now there are fewer wet and dry areas and turf quality has improved.



WEST REGION AGRONOMISTS:

Brian Whitlark, Agronomist, bwhitlark@usga.org

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