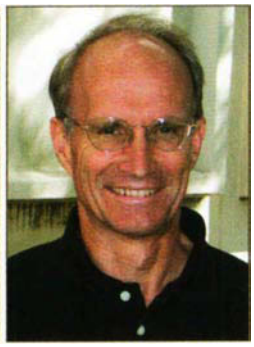

Research and extension reduce impact of California energy crunch

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In the last year, Californians have become painfully aware that the state does not have enough electrical generating capacity. California has built few new power plants in the last 10 years while its increasing population and booming economy have increased consumption. This fact, added to the market destabilization that emanated from California's 1996 deregulation law, led to rolling blackouts and skyrocketing prices last winter and spring. There were gloomy predictions of a summer with random loss of essential services, traffic snarls, and nonfunctioning elevators and air conditioners.

Although the news media focused on urban effects of California's energy crunch, these events were also of critical concern to agricultural producers and processors, who last year used nearly 14% of the state's electricity. The California Energy Commission estimates that between mid-2000 and mid-2001 electricity costs increased an average of 21% for agricultural producers and as much as 50% for agricultural processors.

Processors of agricultural products are among those most at risk from the impact of rolling blackouts. A brief loss of power may lead to hours of downtime because, for example, cooling plants must restore aseptic conditions before resuming operations. Others at high risk are dairies, poultry farms and greenhouses. News articles in this issue describe impacts of increased energy costs and interrupted energy supply on agricultural operations, as well as some of the Agriculture and Natural Resources (ANR) programs that address these issues (pages 6 to 9).

Preliminary calculations by researchers at the UC Agricultural Issues Center suggest that an increase of 20% in the cost of energy would lead to an increase in average farm costs of 3% to 5%. That would represent a 13% to 22% loss of net income for an average farm, if product prices remain unchanged. In fact, farm prices will adjust somewhat, so the consequences would be borne by farmers, consumers and other in the food chain. Each dollar spent on food in the United States includes 20 cents of farm product, 3.5 cents of post-farm energy cost, and 12 cents of other energy-related costs (such as packaging, transportation). These researchers estimate that for each dollar spent on food, between 10 and 15 cents represent the cost of energy. A 20% increase in the price of energy inputs may imply about a 2.5% increase in the final retail price of food if all increased costs were to be transferred to the final consumer.

At UC, energy research gained emphasis during the 1973 energy crisis and has continued ever since. In long-term research projects, ANR scientists have developed more efficient production and conservation methods, and an array of technologies to supplement or replace external energy supplies. Faced with the threat of high prices for energy and rolling blackouts this spring, researchers and extension educators tapped this body of research to provide growers, packers and processors with timely suggestions.

"Perishables Handling," the newsletter of ANR's postharvest technology workgroup, devoted a recent issue to ways that packers and shippers of perishable horticultural products can reduce energy use and adjust their operations to limit the impact of a rolling blackout. ANR irrigation specialists have provided information to reduce pumping costs by using deficit irrigation at times when reduced water availability has minimal effects on productivity; futhermore, Central Coast vegetable growers saved up to 25% in water pumping, fertilizer and herbicide costs by using subsurface drip-irrigation technologies. Dairy advisors have been working to help the dairy industry adopt new variable-frequency drive milking and vacuum pump systems that can save up to 30% in milking energy costs.

The floriculture and nursery workgroup has been educating producers on how to prepare for power outages and maximize heating and cooling efficiency. Members of the conservation tillage workgroup have been adapting minimum tillage techniques — well established in the Midwest — to California's intensive field and horticultural cropping systems (see page 44). These technologies have the potential to reduce energy use as well as improve soil organic content and structure. And members of ANR's waste management workgroup are not only investigating ways to generate methane from animal and plant residues (see page 8), but are also continuing to develop strategies to use dairy and other wastes to replace artificial nitrogen fertilizers.

In these and many other ways, ANR's long-term research and extension efforts are paying off. California has been temporarily spared the anticipated summer of rolling blackouts and energy price hikes by relatively cool weather, conservation, and the state's efforts to restabilize markets with longer term energy contracts. ANR's research to advance energy efficiency for agriculture will continue to be critical as growers, shippers and processors provide the state's agricultural bounty in an environment of unpredictable energy supplies and costs.