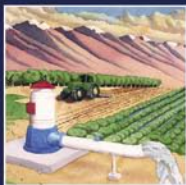


# Education



## Agricultural Pumping Efficiency Program

Helping California...



**Put More  
Power Through  
the Pump!**

# Education

An important component of the Agricultural Pumping Efficiency Program (the Program) is education. This brochure explains the Program's educational message and tells how you can take advantage of the various means of education provided by the Program.

## What is the Program?

The Agricultural Pumping Efficiency Program is an educational and incentive rebate program designed to improve water pumping efficiency and promote energy conservation. The Program has four components:

1. Technical Assistance
2. Subsidized Pump Efficiency Tests
3. Incentive Rebates for pump retrofit or repair
4. Education

*The educational message has four parts:*

1. Know how to specify an efficient pump
2. Know how to maintain an efficient pump
3. Know how much water has to be pumped
4. Know how much water has been pumped

The educational message is designed as much to introduce basic concepts as well as indicate what types of questions you need to ask your pump dealer, irrigation system consultant, and utility representative. This brochure identifies the key concepts introduced by the educational component of the Program and explains how you can participate.

## Where Can I Get More Information?

Log on to [www.pumpefficiency.org](http://www.pumpefficiency.org) or call the Program using the following toll-free numbers:

- Main Office  
Central/Southern California - (800) 845-6038
- Northern California - (866) 333-8938
- Central Coast - (866) 473-0847

Please feel free to contact us if you have any questions.

# 1. Know How to Specify an Efficient Pump

This part of the educational message explains the basics of pump operation and what you need to know in order to install an efficient pumping plant. Key concepts are: an introduction to the pump performance curve; pumping plant efficiency; the pump operating condition (combination of water flow and pressure produced by the pump); different types of pumps; and identifying the normal operating condition. Variable frequency drives are demonstrated and discussed.

# 2. Know How to Maintain an Efficient Pump

Maintenance is essential for both efficiency and reliability. Normal maintenance items are identified. An important aspect of maintenance is the pump efficiency test. In this part of the education message, the measurements and calculations reported in a pump test are explained. Most importantly, you are shown how the results of the test can help you judge when to retrofit/repair a pump.

# 3. Know How Much Water Has to be Pumped

The emphasis is on irrigation systems. The Program looks at the individual irrigation rather than seasonal irrigation scheduling. Each irrigation should have a purpose – put a specific amount of water in a specific volume of soil, as uniformly as possible. Here you will be introduced to simple techniques for planning an irrigation and then judging how efficient the irrigation was.



## 4. Know How Much Water Has Been Pumped

You need to measure water to manage water. Different types of flow meters will be identified and discussed. Just as important as the meter itself is the installation. There are certain requirements that must be met in order to provide accurate measurements.

### How Does the Program Deliver Its Message?



The Program maintains on-line resources that can provide valuable information on water and energy savings.

✓ [www.pumpefficiency.org](http://www.pumpefficiency.org)

The Program web site provides summaries of all program components, a calendar of upcoming events, application forms, phone numbers, contact information, and a knowledge base. Here you can type in a word or phrase and a list of technical papers will be presented that pertain to that word or phrase. For example, you may type in “irrigation efficiency.” Several papers will be presented that define irrigation efficiency, tell how it can be measured in the field, and how you can improve your efficiency.

✓ [www.waterright.org](http://www.waterright.org)

This interactive web site provides the tools to develop site-specific, seasonal irrigation schedules. The site also contains educational material and reference data on water and energy management including CIMIS crop water use data.



- **Written materials** - The Program distributes several types of written materials, including brochures like this one, providing summary discussions of the pump efficiency test, flow meters, and how to plan individual irrigations. A comprehensive book covering all aspects of the Program is also available.
- **On-Site seminars with Pumping Mobile Education Centers (PMEC)** - The Program brings its education message to you in the field using two Pumping Mobile Education Centers. These are enclosed trailers with self-contained pumping plants. They are used to introduce the basic concepts of pump performance and how to specify and maintain an efficient pump. Education specialists travel around the state and present educational seminars of various lengths and on different subjects.



- **Educational seminars are also given at pump demonstration facilities at both California State University, Fresno and California State University, Chico** – These demonstration and calibration facilities are adjacent to fields so that they can be used to demonstrate irrigation efficiency concepts as well as pumping efficiency.



## How Can an Individual Participate?

There are several ways that you can participate:

- Attend an education seminar - log on to the web site to view the Events Calendar listing dates and locations of upcoming seminars - or call one of the Program offices to find out when a seminar will be presented near you. Note that seminars are free of charge.
- Use the Knowledge Base on the web site - log on to the web site and take advantage of the on-line Knowledge Base. There is a library of technical papers that you can access for different types of information.
- Call the Program for free materials - the Program publishes several pamphlets and other materials like this explaining the four parts of the educational message.

## How Can a Company or Group Participate?

The Program is actively seeking partners to present the message of pumping efficiency to California. We can be part of one of your scheduled short courses or other events. We could invite you to be part of one of our scheduled seminars. The Program message can be presented in whole or in part, and over any time frame required – from one hour to two days (we prefer at least a two-hour time block).

In addition to the four main topics discussed previously, we can also present concentrated sessions on variable frequency drives, obtaining and interpreting a pump efficiency test, seasonal irrigation scheduling, and evaluation of irrigation system performance. Call us if there is a specific topic that you are interested in.

## In Summary

**The Program has two main objectives:**

1. Get high efficiency equipment in the field.
2. Manage that equipment so that its potential efficiency is realized and maintained.

Education is a key component in achieving both of these objectives.

Please contact the Program at one of the numbers on page 2 for more information on how you or your organization can participate in this educational program.

## What Program Participants Are Saying

*The Agricultural Pumping Efficiency Program has helped hundreds of farmers across the state save money by helping them become more efficient. Here's what participants are saying about the Program.*

**Gene Grumbles, Lucky Star Farming** (*Fresno County*)

"It's a positive situation all the way around. The tests showed how to save energy and increase efficiencies for pumping. It was good to find out where we were. I've sent two or three farmers to the program."

**Steve Martin, Alpaugh Irrigation District** (*Tulare County*)

"Since all of our water is pumped groundwater, this program was important for us. We had repair work done on all of the applications we turned in. It's a very worthwhile program. I hope it continues. It's hard to say what our energy savings are yet - not until we get the PG&E bills. But from the volume of water and the efficiency of the pumps, we have seen a real increase in the volume of water each well puts out. One well has increased the amount of water pumped well over 50 percent. This will be the first year we will reap the benefits since we completed the projects."



**Bill Tarp, Triangle Farms** (*Monterey County*)

"We already have a routine pump testing program, and this program was used to supplement our program. It was a good program because it allowed us to test all at one time instead of piecemeal. When the testing is done all at one time, you can compare all of the information and determine how you can make one (pump) more efficient than the other. This program tells how the pumps are doing. It provides a snapshot. The availability of funds to do this program was very worthwhile."

**Andrew Clark, Clark Bros. Farming** (*Fresno County*)

"It's important for us to monitor the pumps, especially where we're strictly well water. The tests showed us the best wells to fire up."



## Important!

The Program may be terminated or modified without notice. The Program has a limited budget. Applications for retrofit/repair rebates or pump tests are accepted on a **first-come, first-served basis** until available funds are allocated or the ending date of the program, whichever comes first (visit [www.pumpefficiency.org](http://www.pumpefficiency.org) or call (800) 845-6038 for more information).



California consumers are not obligated to purchase any full fee service or other service not funded by this program. This program is funded by California utility ratepayers under the auspices of the California Public Utilities Commission.

Los consumidores en California no estan obligados a comprar servicios completos o adicionales que no esten cubiertos bajo este programa. Este programa esta financiado por los usuarios de servicios públicos en California bajo la jurisdiccion de la Comisión de servicios Públicos de California.

## The Center for Irrigation Technology

The Center for Irrigation Technology (CIT) developed and manages the Agricultural Pumping Efficiency Program. CIT is dedicated to advancing water and energy management practices and efficient irrigation technology. Located on the campus of California State University, Fresno, CIT functions as an independent testing laboratory, applied research facility and educational resource to both the public and private sectors. For more information, check the CIT link at [www.pumpefficiency.org](http://www.pumpefficiency.org) or call (800) 845-6038 or (559) 278-2066.



**C**enter for  
**I**rrigation  
**T**echnology

Development and management of the  
Agricultural Pumping Efficiency Program by:

## The Center for Irrigation Technology

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