



# California Energy Commission

## Process Energy

Water/  
Wastewater

Agriculture

Industrial



## Energy in Agriculture Program

Food Industry  
Energy Research Program  
Funded by: PIER

Food Processing Industry  
Resource Efficiency Program  
Funded by:  
USDOE/STAC/NASEO

Peak Load Reduction Program  
Funded by:  
SB 5X

Agricultural Water Energy  
Use Program  
Funded by: PIER



# Agricultural Peak Load Reduction Program

Reacting to 2000/01 energy crisis, State Legislature allocates emergency funds to reduce electricity peak load demand. \$327 million to CEC, of which \$90 million is targeted for Agricultural industry.

*Agricultural interests design and legislators approve following mandates:*

- \$10 million for pump test and repairs.
- \$10 million for dairy biogas to energy production.
- \$8 million for Inland Empire Municipal District biogas project.
- \$5 million to switch from natural gas powered industrial boilers to run on propane or alternative fuels.
- \$5 million for installation of remote controlled demand reduction load management technologies.
- The rest of the funds would be for installation of electricity peak load saving equipment, retroactive to six months previous to launch of program offering.



# Targets

- Crop and dairy farms, food processors, and irrigation districts.
- Water pump testing and efficiency improvements.
- Dairy farms for biogas production from dairy manure.
- Animal and food processing facilities to switch from natural gas powered boilers to propane or alternative fuels.
  
- After Fund Reduction Mandate:
  - \$6 million to crop and dairy farms
  - \$5 million to irrigation districts (including pump test and repairs)
  - \$4 million to refrigerated warehouses and food processors
  - \$12 million on biogas generation facilities
  - \$1 million to fuel switching.



# Results

- 75 MW peak load reduction:
  - 45% of savings from demand response projects.
  - \$46.40 per kW saved at irrigation districts.
  - \$200 per kW saved on farms.
  - \$250 kW saved at food processing/storage facilities.
- 2.5 MW of electricity generation from 14 new dairy farm/Inland Empire biogas energy production facilities.
  - \$2000 per kW installed.
- Over 2500 pump tests conducted, 800 pump repairs and 37 Million kW hours saved.
- Developed new pump test standards, training courses and certification program.



# Eligible Projects

- Installation of High Efficiency Electrical Equipment/Other Overall Electricity Conservation Efforts in order to reduce Peak Loads - \$250 per kW, 65% of the project cost.
- Pump Efficiency Testing and Retrofit/Repair – Paid 80% of test cost up to \$200.
- Advanced Metering and Telemetry Required for Voluntary Load Reduction Programs – \$250 per kW participating in demand response contract.
- Retrofit of Natural Gas-powered Equipment to Alternative Fuels – 65% of the project cost.



# Drawbacks/Lessons Learned

- The 2000-2001 period was an anomaly, brought on by a combination of poor design of the deregulation process as much as by illegal behavior by energy suppliers.
  - Lesson learned - The state has yet to be prepared to avoid the need for future “emergency” programs.
- Program designed based on “pet projects” from agricultural lobbying organizations.
  - Lesson learned - Market distortions occur by allowing “free rider” behavior.
- Funding 4/15/01- Start date 6/1/01. No time to create critical mass market awareness.
  - Lesson learned - created impetus to include existing DR programs available through IOU’s. It is a “difficult sale” for Ag/food ind.
- 85% of funds for project costs, no \$ for marketing and education.
  - Lesson learned - created better funded PUC 3<sup>rd</sup>. Party Ag Pump Efficiency Program currently administered by Fresno State University, CIT.



# Case Studies

- [FILTER STATION DEN DULK.pdf](#)
- [WW POND AERATOR.pdf](#)
- [MILKING SYSTEM RETROFIT.pdf](#)
- [STORAGE RESERVOIR.pdf](#)
- [BERRENDA MESA.pdf](#)
- [NORTH KERN CASE STUDY.pdf](#)
- [ORANGE COVE IRR DIST.pdf](#)
- [FAN RETROFIT SUN-MAID.pdf](#)
- [VALLEY FIG GROWERS.pdf](#)
- [PACIFIC COAST.pdf](#)
- [CAMPBELL SOUP.pdf](#)





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