

US EPA ARCHIVE DOCUMENT

# Water/Energy Nexus: Program Opportunities and Policy Challenges for Wastewater Facilities

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# Sanitation Agencies are key partners in meeting state policy goals

- Protecting and enhancing the quality of state waters
- Helping to meet organics diversion goals through co-digestion
- Increasing water recycling & re-use (associated energy load)
- Producing distributed renewable energy

# Energy Efficiency and Demand Response

- ❑ Wastewater/Sanitation agencies receive incentives from Investor Owned Utilities for EE projects
- ❑ “Custom Projects” or Savings by Design
- ❑ Improve plant efficiency and lower operating costs
- ❑ Increase ability to participate in Demand Response programs (big payback)



# Integrated Demand Side Management

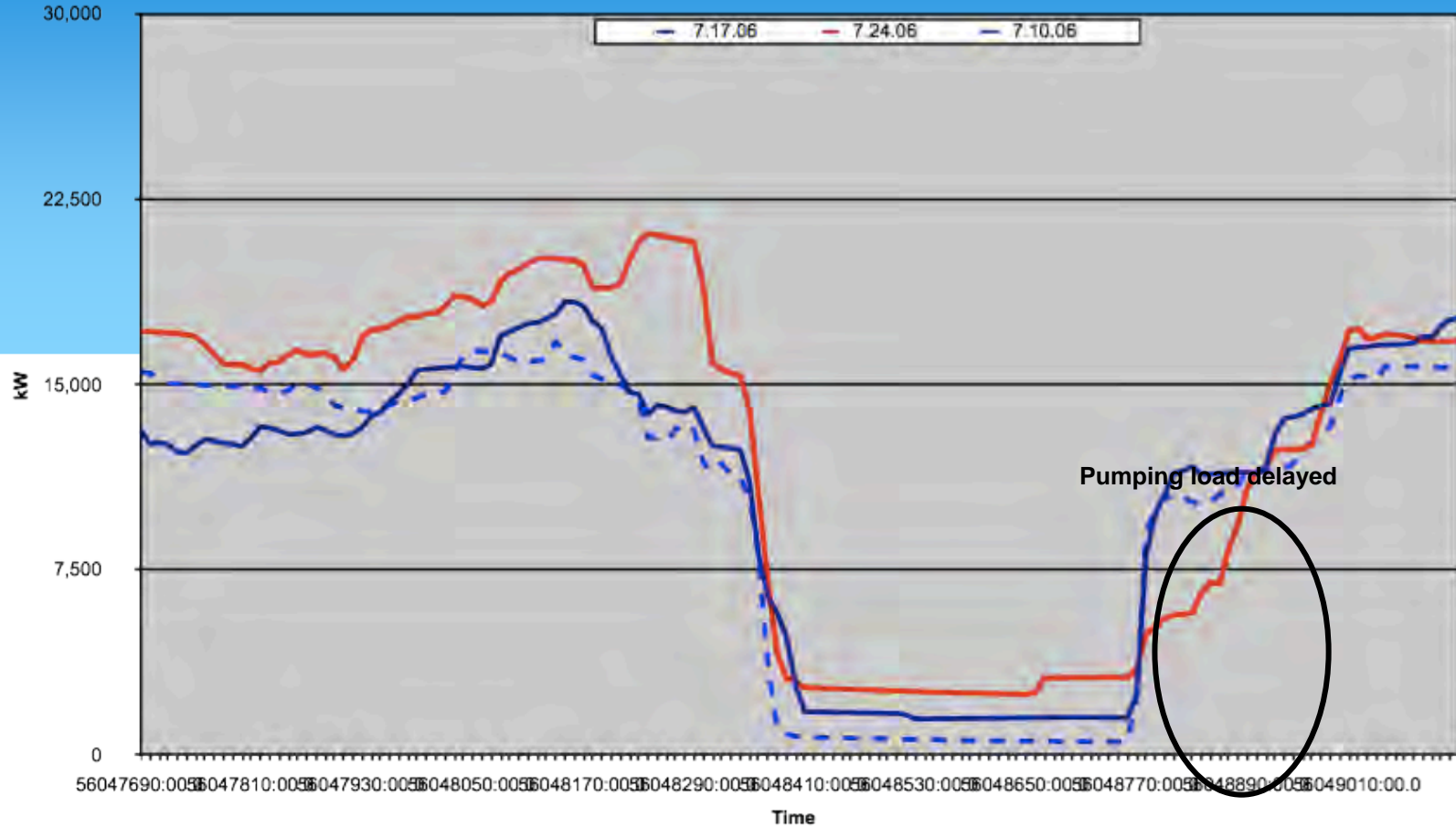
- ❑ Energy Efficiency, Demand Response and Distributed Generation
- ❑ Continuous Energy Improvement and Integrated Demand Side Management
- ❑ Understanding energy use = \$\$\$
- ❑ Demand Response participation is tied to on-site power generation
- ❑ WWTPs can participate more in DR because of ability to self-power

# Why Water/ Sanitation Districts for IDSM?



- Large aggregate demand
  - Multiple sites
- Opportunities for diverse efficiency measures
- Good DR performers
- DG and Storage
- Key: SCADA systems
- Conclusion: water districts are “naturals” for integrated DSM solutions
- --SoCalEdison

# Demand Response Illustrative Example



# Types of Demand Response

## Utility Type

**Interruptible**  
(short notice)

Base Interruptible Program  
AP-I (pumping controls)  
(incentives)

**Price Based**  
(day ahead)

SAI (Critical Peak Pricing)  
Demand Bidding  
Real Time Pricing  
(variable rates or credits)

## 3<sup>rd</sup> Party Type

### **Aggregation**

Flexible Solutions  
Several Choices  
Participation Based  
Payments  
Technology Solutions



# Status of On-site Generation

- Northern CA: solid: EBMUD as exemplary facility
- Central and Southern CA: Uncertain due to decreased limits on criteria air pollutants from Biogas Powered Engines
- Interagency Wastewater Biogas Working Group summit last February

# New Opportunities for On-Site Generation

- SB 1122 implementation: create a mechanism to sell excess power from wastewater biogas to IOUs
- Creates a 110MW RE-MAT set-aside for power from anaerobic digestion (either wastewater, municipal organics or co-digestion)
- RES-BCT: Allows for local govt to self-generate and “wheel” to multiple points of use without penalty.
  - Size limit: 5MW of generation capacity per location (not system-wide)

# Possible Loss of On-site Generation?

- ❑ **Possible outcome from SCAQMD Rule 1110.2 compliance:**
  - ❑ loss of on-site power = need for power purchase from grid = power constraints during peak periods
  - ❑ possible rate increases for wastewater customers
  - ❑ AND potential need for grid improvements to serve large loads at WWTPs



# Opportunities for new technologies



- “Clean Burn” engines using H<sub>2</sub>
- Switch engines to turbines or micro-turbines
- Will these technologies be proven and cost effective in time?
  
- Switch to producing CNG/LNG for Transportation Fuel: incentive under Low Carbon Fuel Standard
- Certainty?

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