


<p align="center">CALIFORNIA ENERGY EFFICIENCY STRATEGIC PLANNING</p>	<p align="center">INDUSTRIAL</p>	
<p align="center">Last Revised: 12/3/07</p>	<p align="center"><i>Meeting Minutes</i></p>	<p align="center">Created By: Brian Liu & Joanne Medvitz</p>

Meeting Name	Industrial Energy Efficiency Strategic Planning Workshop- Water/Wastewater		
Meeting Date	November 29, 2007		
Meeting Time	1:00PM – 3:30PM, PST		
Venue	San Ramon Valley Conference Center (Pacific Gas & Electric)	City	San Ramon
Attendees	See Attendee List		

Meeting Notes

1. Introduction Presentation (Aimee)
2. Presentation (East Bay Municipal Utility District)
 - a. East Bay Municipal Utility District (EBMUD) uses a very efficient gravity fed water reservoir system.
 - b. EBMUD has the resources to capture water from rain or snow.
 - i. Impacts to water deliveries are anticipated to be modest if there is no change in total rainfall.
 - ii. Any significant changes in snow pack or runoff timing would have a serious impact on water supply.
 - c. Flood Control/Storage
 - i. A shift in runoff patterns may require more early spring releases for flood control.
 - ii. Power generation and carryover storage may be affected.
 - d. EBMUD has adapted to climate change by becoming more energy efficient.
 - e. A diverse renewable energy plan has been adopted to reduce EBMUD’s carbon footprint
 - f. Self-Service Legislation 2007
 - i. SB-1017 (Perata) - delivery EBMUD’s power over PG&E power lines
 - ii. EBMUD is now looking to the senate and the governor for approval of amendments
 - g. Briones Hydropower Project has allow EBMUD to capture 1 MW of energy from water released at the Briones plant

- h. Water conservation has reduced embedded energy needed and minimized greenhouse gas emissions.
 - i. Resource Recovery (R2) Renewable Power has doubled renewable energy production.
 - i. R2 has offset fossil fuel-based energy demand and generated enough energy to power the equivalent of 2,500 homes per day.
 - ii. Average energy production since R2 inception doubled the percentage of plant demanded from 2001 – 2006.
 - j. EBMUD has made efforts to track and reduce greenhouse gas (GHG) emissions.
 - i. Supported GHG reducing legislation and tracking of emissions through California climate action registry.
 - k. EBMUD is focusing in the following areas:
 - i. Expanding biogas power generation stations and R2 with Organics Recycling Project.
 - ii. Developing full-scale biodiesel, gasification of biosolids, and in-conduit generation.
 - l. Questions
 - i. Is there a companion plan regarding other energy uses?
 - 1. EBMUD is making strides to be more efficient with electricity, such as asking employees not to use heaters under their desk and buying green cars for company use.
3. Group Discussion
- a. What would the participants like this plan achieve?
 - i. Need a holistic approach across electricity/gas savings- DR, CHP, etc
 - ii. More grant money
 - iii. Performance contracting rules are too restrictive for municipalities
 - iv. Water and wastewater treatment facilities need to make reduction of energy as high of a priority as possible. Currently, there is no capital investment in EE.
 - v. Greenhouse gas emissions have to decrease significantly to 1990-levels. On the regulatory side, climate change and energy efficiency programs need to be connected
 - vi. Need statewide energy policies that encourage source switching
 - vii. Local water projects should receive state-wide energy benefits.
 - viii. Increase the flexibility of incentive programs.
4. Breakout Discussion
- a. How can energy efficiency help achieve permitting and quality requirements?
 - i. The primary driver in waste water treatment is water quality.

- ii. There are currently no drivers to improve the efficiency, but there are substantial risks (real and perceived) to changing current operations to improve energy efficiency- an operator could lose their license if quality is not maintained.
 - iii. Permits will put the company out of business but if they are not energy efficient but the business runs, nothing is “wrong”
 - iv. The use of energy and the quality of water are directly proportional.
 - 1. Monitoring/sampling could improve through better controls for energy efficiency.
 - v. Develop a white paper that brings together the issues.
 - 1. Bring in the stakeholders to develop a comprehensive solution.
 - 2. This solution must be presented to the water treatment facilities as regulation and political perception are the only things that drive change.
 - vi. While there are opportunities to increase energy efficiency through changing pumps and systems, reducing water consumption is very important.
 - vii. Capacity concerns are driving substantial rehab, which can create opportunities for energy efficiency
 - viii. There are several pathways to accomplish the same treatment goals have very different energy use requirements. Factors that influence these choices include:
 - 1. Land available
 - 2. Cost
 - 3. Management Style
 - 4. Expectations of the customers vis a vis “green”
 - 5. Awareness
 - ix. Support is needed to provide access to the latest research in order to think outside the box. For example, how to permit water recycling projects?
 - x. Permitting need to be more flexibility-- example grease disposal programs
 - xi. Non-equipment maintenance and testing guidelines are not standardized and are often not present
 - xii. Interruption of operations (e.g. EBMUD) done to save energy affect the water quality and maintenance because it prevents steady state functionality.
 - xiii. EnergyStar ratings on equipment and for the entire facility are positives to governing boards and PR.
5. How does energy efficiency help you deal with resource constraints? (e.g. water, budget, financing)
- a. Design for a new building can be based on energy efficiency and also utilize demand response.

- b. Operational cost may not be looked at holistically as they are typically approved based on today's money instead of what is best overall.
 - c. Water efficiency and conservation will help the operations budget.
 - i. Larger operating cost savings can be achieved by coupling the amount of water sold with the rates received.
 - d. Inter-district dispute over ground water is a barrier to promoting water conservation on the user side
 - i. If users decreased amount of water usage about 30-40% the operating costs would go down and waste water companies would be able to afford energy efficiency programs
 - e. Districts are use it or lose it for their water but in a dry time is difficult and then requires more pumping, which is energy intensive
 - f. Water efficiency drives the cost effective energy efficiency.
 - g. A financing tool that shows benefit of energy efficiency equipment, providing a better rate would assist companies.
 - h. Equipment
 - i. Pump efficiency programs could help maintain efficiency
 - ii. Smaller equipment is bought as run-to-failure and will not be replaced with energy efficient equipment until it fails
 - iii. Better utilization of existing equipment
 - iv. Installing drives and more efficient equipment
 - i. Opportunities in process control, pumping, aeration (30% of wastewater side energy use)
 - j. Addressing leakage (10% average) is a bit of an issue and infiltration is a larger issue -- very uneven from one municipality to another
6. What are the external drivers that impact your ability to improve the energy efficiency of your operations?
- a. Distributed generation, CHP, and waste to energy
 - i. The infrastructure for the power system does not allow for sharing of emerging markets through distributed generation.
 - ii. Some of the co-generation is establishing a large thermal footprint.
 - iii. A plant often lacks the infrastructure to utilize wasted energy such as heat.
 - iv. Organic waste from agricultural and food processors offer an opportunity for increased input into digesters (wastewater operators have specialized skills)
 - v. Distributed generation can provide source of thermal whereas utility loses large heat.

- vi. No current incentive or market infrastructure for producing steam for surrounding area.
 - b. Social driver - energy efficiency will become a social responsibility.
 - c. Political climate and social awareness can drive an increase in energy efficiency.
 - d. Must meet demand - water and wastewater treatment facilities do not want to sacrifice permits as they must meet the need to deliver water.
 - e. Regulation is an external driver that will increase public perception of being a good corporate citizen.
 - i. Each regulatory agency is developing their own regulations and not worrying about integration.
 - f. Capital cost and development fees impact, especially in new constructions.
 - g. Incentives for exporting gas are higher than incentives for co-generation on-site.
 - h. Expansion can provide opportunities for energy efficiency if the funds are there.
 - i. Federal requirements can take more energy.
7. How can new technologies assist you in improving energy efficiency and load management?
- a. Water treatment plants can begin to using staged pumping instead of very large pumps in order to save energy. Wastewater plants can utilize control systems.
 - b. Re-evaluate a system, its design and its integration.
 - c. Load the existing pumping assets by using storage. Transform a facility from running 24 hours a day to running 18 hours a day and saving 6 hours of energy.
 - d. Develop a distributed treatment center which enables automation and optimization of a treatment system.
 - e. During development, plants could put in grey water lines as a method to capitalize on those opportunities.
 - f. Use software to optimize the operation of pumping, storage, and treatment.
 - g. Technologies linked to solar and thermal energy could recover 99% of the water
 - i. Higher recovery means less energy usage
8. What are the barriers to the ideas discussed?
- a. Additional investment to operate in an energy efficient way is the largest barrier
 - b. Certain renewables are cost prohibitive (e.g. PV, real estate, potential) due to high start up costs
 - c. An entity needs to be created for discussing the decoupling of the water district's financials from their volume
 - d. Lack of details around AB32 stops energy efficiency programs
 - e. Market is very fractured- there are many small water/wastewater districts and they are very different in configuration and operation- No standardization in operations

- f. Lack of clear path for energy efficiency
 - i. Co-generation uses biogas and natural gas causes no clear owner among utilities (in this case, SCE or SCG)
 - ii. Incentives offset costs but can balance through packages such as for fuel cells
 - g. Energy efficiency is considered an extra cost
 - i. Current energy efficiency program rebates are too small
 - ii. Money is a constraint- high first capital costs to make the initial investment to realize energy efficiency benefits
 - iii. There are long-term costs to building new structures.
 - h. Financing can help
 - i. Zero interest loans, state revolving funds are helpful and socially responsible
 - ii. Establishing revolving funds for customers to do water conservation end use
 - iii. Rebates are sometimes helpful, especially self generation incentive funds because of the cost of the projects. Higher rebates for renewables would help drive a lot more.
 - i. Urgent need for upgrade after failure analysis, only then energy efficiency upgrades are made
9. Moving forward, should water and wastewater facilities to be treated separately from the industrial sectors?
- a. Yes, it should be separated. While the morning session was about increasing profit margins and staying in business, water treatment works in the public sector and does not follow the same line of thinking.
 - b. Interest in submitting “unintended consequences” anecdotes about regulations
 - i. Look at the anecdotes to see different sides of the problem.
 - c. Post comments on what has happened and how the ideas discussed today are going to affect day to day operations.