



## East Bay Municipal Utility District

The first installation of Derceto® Aquadapt® software in North America has produced significant savings in energy costs, improved pump efficiency, and measurably improved turnover of stored water.

East Bay Municipal Utility District (EBMUD), a regional utility in the San Francisco Bay region, is recognized within the US water industry as a leader in energy management programs. Following years of in-house operational improvements to reduce escalating energy costs EBMUD looked to Derceto to further optimize their water transmission system. The results of Derceto's Aquadapt software implementation speak for themselves.

### The Results

Aquadapt software has reduced EBMUD's electricity costs by 13% annually since its installation in August 2004. This equates to over \$360,000 savings per year for EBMUD.

Up to 70% of these savings were achieved by moving distribution pumping to lower cost tariff periods. However the Aquadapt system's pump schedules didn't just move the time when energy was used, it also increased pumping efficiency by solving the challenging problem of operating a single pump or a series of pumps at or close to their best efficiency points on the pump curve. On average during the first year of operation 6.1% less energy was used to pump the same volume of water as compared to operation prior to implementation of Aquadapt software, generating up to 30% of the dollar savings. The Aquadapt system was also configured

to meet EBMUD's rigorous water quality policies.

Derceto accomplishes this in three ways: by varying operating setpoints to accommodate the different seasonal demands; deep cycling of reservoirs to assist with water turnover, and using synchronized pumping in cascade systems (where fresh water is sent to terminal tanks by bypassing intermediate tanks). Of these operational policies, prior to implementation of Aquadapt software, cascade pumping was hardest to achieve. Since Derceto's installation of the software EBMUD has succeeded in doubling policy compliance without sacrificing energy savings. ▶



◀ An added challenge in this application is that the EBMUD water distribution subsystem assigned for Aquadapt software control is not isolated, there are bulk transfers both in and out of the subsystem. As Aquadapt software currently does not control EBMUD's entire system it is required to adapt constantly to operations outside its control. A few months after installation of the software EBMUD needed to support an outlying system during a shut-down. This required a 50% increase in production in the Aquadapt-controlled area. This change to operations was taken in stride by the Aquadapt software, without disruptions, as the software is robust enough to adapt to operational changes and expansions without major reconfiguration.

### Energy Efficient Operations and EWQMS

EBMUD's decision to implement Aquadapt software followed in-house development and implementation of numerous energy efficiency techniques, including a custom designed pump scheduling add-on to their Scada system. By utilizing this system EBMUD had already moved almost all of the distribution pumping away from peak electricity tariffs, reducing their energy costs by an estimated \$500,000 per year across their entire system.

Spiraling energy costs started diminishing these savings, leading EBMUD to search for a comprehensive Energy and Water Quality Management System (EWQMS). In 2004 Derceto was chosen to deliver a system that would optimize pump schedules while maintaining stable operations and water

quality. Even though existing operations already had the majority of distribution pumping outside of peak tariffs, Derceto's Aquadapt software has still substantially reduced EBMUD's energy costs by moving even more pumping from part peak to off-peak tariffs, containing still further the peak electricity demand charges, and improving pump operating efficiencies. And these savings have been achieved with the Aquadapt software controlling only one third of their system!

### System Breakdown

- 220 MGD water consumption per day
- 341 MGD Peak consumption
- \$8 million in water distribution pumping per year (for the entire system, based on 2004 figures)
- 6 Water treatment plants
- 3900 miles of water mains
- 135 Pumping plants
- 180 Treated water reservoirs
- Over 215 pressure zones

### Derceto Aquadapt Controls

- 20% of the system's water demands, equalling 35% of their pumping costs
- 20 Pumping plants
- 29 Reservoirs
- 66 Pumps
- 4 Interconnections with other water distribution subsystems
- 4 Rate control valves

### About Derceto

Derceto is the leading provider of energy management software for water utilities worldwide. Our award-winning Aquadapt software integrates with existing management systems to help utilities make operating decisions that reduce energy consumption – typically one of their highest costs after personnel. Aquadapt also contributes to improved water quality and greater consistency of operations. By applying our smart water software, deep industry knowledge and an outstanding commitment to support, Derceto makes it happen – delivering energy savings of 10-20 percent, along with significant gains in operational efficiency and water quality.



For more information please visit:  
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