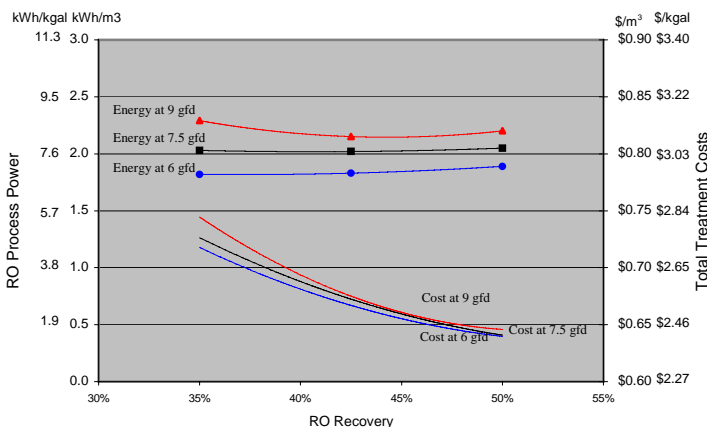


# Affordable Desalination Breaking the Energy Barrier January 26, 2006

**San Leandro, CA (December 1, 2005)** – The Affordable Desalination Collaboration (ADC) has completed the first of three tests and has already broken the 7.6 kWh/kgal (2.0 kWh/m<sup>3</sup>) energy barrier. Located at the U.S. Navy’s Seawater Desalination Test Facility in Port Hueneme, the ADC has built a demonstration plant that utilizes a unique combination of proven technologies and equipment to create an ultra-efficient seawater reverse osmosis (SWRO) system.

This first test included operating the plant at 9 conditions, varying the RO recovery and permeate membrane flux from 35%-50% and 6-9 gfd respectively. Then Carollo Engineers performed a net present value financial analysis for each point to determine the most affordable operating condition. This financial analysis took a conceptual look at the 20 year life cycle for a 50 mgd SWRO plant and included overall treatment costs such as intake and distribution power, chemicals, maintenance, replacement, labor, capital costs and interest on capital. The graph below shows that the most affordable operating point was at 6 gfd and 50% recovery where the RO process would consume approximately 7.15 kWh/kgal (1.89 kWh/m<sup>3</sup>) and the total cost to desalinate seawater is projected to be \$2.47/kgal. This represents a 35% reduction in energy below what experts have been projecting for Southern California. Treatment costs do not include land, depreciation, distribution improvements or intake capital costs and they assume co-location with an existing power plant or other existing intake system. The complete data and analyses are available on our web site at [www.affordabledesal.com](http://www.affordabledesal.com).

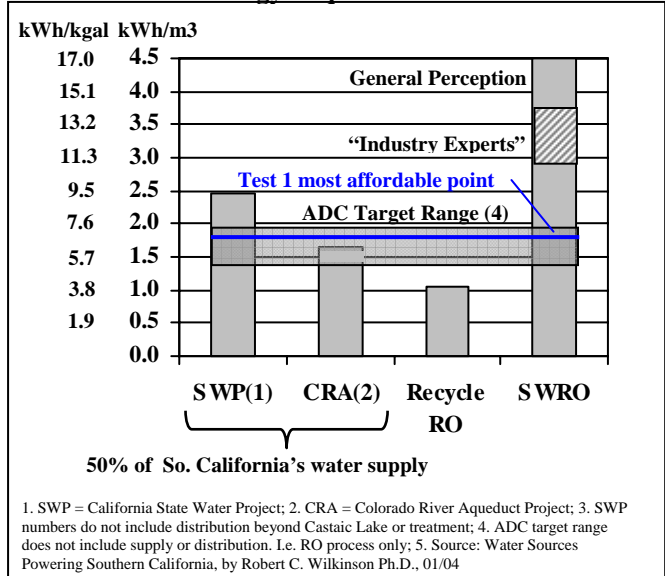
ADC Test I Results for SW30HR-380 Membranes



Test 1 included operating with the FilmTec SW30HR-380 “classic” membranes. For the second test we have installed the new FilmTec SW30XLE-400i “low energy” membranes. During an initial 2-3 week “break-in” period we operated at 43% recovery and 7.5 gfd and the RO process consumed 6.51 kWh/kgal (1.72 kWh/m<sup>3</sup>). This

represents a 15% improvement over the “classic” membranes in test 1 at the same operating points. At 6 gfd with these new low energy membranes, the ADC system will approach the 5.68 kWh/kgal (1.5 kWh/m<sup>3</sup>) mark. “This would be a phenomenal achievement and represent a new base line far below historical levels for the energy consumption of seawater desalination systems,” says John MacHarg Managing Director of the ADC.

## Various Energy Requirements and the ADC



The ADC is a non-profit organization comprised of the following group of leading companies, state and government agencies.

- Avista Technologies, Inc.
- California Department of Water Resources
- California Energy Commission
- Carollo Engineers
- City of Santa Cruz Water Department
- David Brown Union Pump Comp.-subsidiary of Textron
- Eden Equipment Company, Inc.
- Energy Recovery, Inc.
- FilmTec Corporation
- Marin Municipal Water District
- Municipal Water District of Orange County
- Naval Facilities Engineering Service Center
- Pentair Water Treatment-CodeLine Division
- Piedmont Pacific Corporation
- Poseidon Resources
- Rolled Alloys
- San Diego County Water Authority
- U.S. Bureau of Reclamation
- U.S. Desalination Coalition
- Young Engineering & Manufacturing, Inc.
- WaterEye
- West Basin Municipal Water District

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