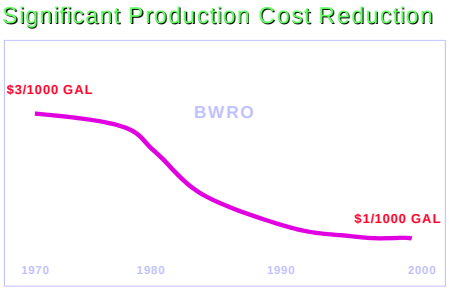
HOW MUCH DOES DESALTED WATER COST?

The growing demand for fresh water in many areas of the nation, due to drought, water shortages, population increases and the desire for higher quality water, has spurred unprecedented interest in the process of desalting seawater or brackish (less salty than seawater, but not fresh) water to increase the reliability of water supplies. Long used on ships, island resorts and in water-short countries, the practice of using desalting technology to produce large-scale domestic supplies is only a few decades old in the United States.

Currently, more than 1,200 desalting plants are operating in the United States, producing over 300 million gallons per day. Worldwide capacity is over 6.0 billion gallons per day. All but a few of the US plants desalt brackish water. There is still significant opportunity to increase the number of brackish water desalting facilities in the United States. In coastal areas, as locally available sources of fresh and brackish water are depleted, there will be more large-scale seawater desalting plants built, most likely in California and Florida. The first large-scale seawater desalting plant in the US (25 mgd) will be operating near Tampa Bay in Florida in 2003.

The most common objection to using desalted water to help meet the nation's growing municipal water needs is that the process is too expensive. This is no longer the case. Due to developments in technology and improvements in desalting processes, the cost of desalting water has decreased dramatically over the past 30 years.

Cost comparisons are often made to existing water supplies. Actually, since desalted water represents a new source of supply, comparisons should be made to the cost of developing other new sources, such as surface water impoundments, remote well fields, and long distance pipelines.



Cost Factors

The price comparison of desalting includes capital costs and operating and maintenance costs. Costs can vary considerably from one desalting site to another based on a number of factors. In general the amount of salt to be removed greatly affects the cost of desalting. The more salts to be removed, the more expensive the desalting process. The capacity of the desalting plant also impacts costs, with larger plants generally being more economical. Energy is the most significant factor, amounting to about 20-50 percent of the operating cost, depending on the technology used, and fuel pricing. Other factors include the amount and type of pre-treatment required, treatment process selected, reliability, disposal of the removed salts (concentrate), regulatory issues, land costs and conveyance of the water to and from the plant.

Cost Ranges

Water quantity is measured in a myriad of different units – acre-feet, cubic feet and million gallons, among others. Discussing desalting costs, however, in terms of dollars per 1000 gallons is one common way to show how desalting costs compare with the costs of existing supplies. The table on the following page provides a comparison of the approximate cost of existing traditional supplies and new supplies using desalting technologies.

MEMBRANE TECHNOLOGY FACTS

Cost As a Percentage of Total Supply

In most cases, desalted water is not the sole source of a community's supply. It is usually combined with water from less expensive sources. For instance, as demonstrated in the table, if a community paying $2.50/1,000 gallons for its existing water decides to double its supply with desalted brackish water, a typical family's monthly water bill would increase by about $3. If the augmented supply comes from desalted seawater, the monthly increase would be less than $6.60.

Desalting vs. Traditional Water Development

In the US, most inexpensive traditional water resources have already been developed. The development of most new traditional supplies will be much more expensive than previous development of existing supplies. Of the potential treatment options, in many cases desalting a local resource is financially and environmentally competitive with traditional development methods such as building dams, aqueducts, canals and treatment plants to develop new water supplies.

In the last decade, desalting technology has improved significantly and costs have dropped by over 50 percent. At the same time, the cost of developing traditional water sources has escalated, as drinking water quality and environmental standards have become more stringent, and the distances from source to consumer have increased. In water-short areas, the costs for desalted water are already competitive with the development of new traditional supplies. As alternative energy sources and improved processes and equipment are developed, additional desalting cost reductions can be expected.

SUPPLY TYPE	WATER COSTS	
	To Consumer[1] $ per 1000 gallons	Total Family Cost[2] $ per month
Existing Traditional supply	$0.90-2.50	$8.40-$30.00
New Desalted Water:		
Brackish[3]	$1.50-3.00	$18.00-$36.00
Seawater[4,5]	$3.00-8.00	$36.00-$96.00
Combined supply[6]		
Traditional + brackish	$1.20-$2.75	$13.20-$33.00
Traditional + seawater	$1.10-$3.05	$13.20-$36.60

(1) Cost includes all costs to consumers for treatment and delivery.
(2) Cost is based on a family of four using 100 gallons per day per person, for a total monthly use of 12,000 gallons. Cost is based on the average of the "To Consumer" cost shown.
(3) Brackish is moderately salty-1,000-5000mg/l total dissolved solids (TDS)
(4) Seawater contains 30,000-35,000mg/l TDS
(5) Cost is for typical urban coastal community in the USA. Costs for inland communities may be higher.
(6) Combined supply costs are for the traditional supply augmented with 50% of desalted brackish water, or 10%. of desalted seawater.

This material has been prepared as an educational tool by the American Membrane Technology Association (AMTA). It is designed for dissemination to the public to further the understanding of the contribution that membrane water treatment technologies can make to improving the quality of water supplies in the US and throughout the world.

For additional information contact:

American Membrane Technology Association
611 S. Federal Hwy., Ste. A
Stuart, FL 34994
Phone: 772-463-0820
Fax: 772-463-0860
E-mail: amtaorg@aol.com