

*The Center for the New West*

*Water and the West – Meeting Supply Challenges Today and Beyond*

**Introduction**

Water is the lifeblood of the American West. The ability to capture, store, transport, and treat water has allowed the West to grow and develop into arguably the Nation's most dynamic region. The creative foresight of our ancestors in developing water supply projects that bring clean and reliable water to farms, homes, and businesses provided the necessary infrastructure backbone for the economic growth and vitality of the region. The continued economic prosperity of the West will, in large part, depend upon the wisdom and ability of policy makers to find new and creative ways to meet the water supply needs of growing urban centers while protecting traditional uses of the resource, respecting the needs of the environment, and recognizing the fiscal realities of the current era.

For these reasons the Center for the New West has embarked on a quest to examine the challenges posed by the future water supply needs of the region and develop policy recommendations for meeting those needs. The Center's January 2006 conference in Las Vegas was the initial step in this process. Bringing together government leaders, professional water resource managers, financial experts, and engineering professionals, the Center began what will surely be a lengthy conversation on this complex and, at times, vexing topic. This paper attempts to summarize that conversation and sketch a road map for future discussions.

## **The Challenge – Growth, Drought, and Aging Infrastructure**

Massive population growth, drought, and the competing demands of growing cities, agriculture, and the environment are putting unprecedented stress on the West's water resources. Most experts, including the Department of the Interior, agree that the region is facing a water supply crisis of potentially immense proportions as our population continues to grow and few new sources of water are developed. Throughout the West, urban areas are struggling to meet the demands of exploding populations despite the fact that water supplies have remained the same or even decreased over the last ten to fifteen years. Water conservation and the emergence of water recycling as a tool for meeting non-potable demands have stretched available supplies further and further. But in many cases, the savings resulting from conservation and recycling do not even begin to make up for water supply losses attributable to environmental restoration programs that have forced the dedication of huge amounts of available water to environmentally sensitive areas such as California's Bay – Delta ecosystem. Desalination of both seawater and brackish groundwater is increasingly being looked at as a viable future source of water supplies.

At the same time, much of the water related infrastructure that the region has relied upon for nearly a century is suffering the infirmities of old age and badly in need of updating and repair. Recent surveys by both the U.S. Environmental Protection Agency and the American Water Works Association estimate that drinking water agencies in the United States will need to spend \$300 billion over the next twenty years to install,

upgrade, and replace drinking water infrastructure. Western drinking water utilities can be expected to confront a proportionate share of those costs.

### **Where Will the Money Come From?**

The need for new water supply and treatment facilities including desalination projects and the rehabilitation of aging infrastructure comes at a time when the Federal government is stepping back from its traditional role as a major, if not dominant, partner in the financing and building of water related infrastructure in the West. The day of large direct grants flowing from Uncle Sam to local water agencies and utilities appears to be coming to a close. The construction budgets of the Bureau of Reclamation and the Army Corps of Engineers as well as the EPA's Safe Drinking Water Revolving Fund are continue to be scaled back as the Administration and Congress focuses the Nation's financial resources on other priorities. This raises the parallel questions of: 1) How will this funding gap be filled and by whom; and, 2) what role can and should the Federal government play in aiding the development of necessary infrastructure.

The development of new, creative financial tools and new kinds of public-private partnerships to assist water agencies and utilities in meeting infrastructure requirements while limiting direct outlays by the Federal government may be the single most important challenge that the Center for the New West can address as it goes forward. A number of innovative financial tools that address this need have been suggested including:

- The establishment of a Federal government revolving loan program to provide low interest, Treasury-based loans to water agencies;

- The establishment of a program to provide Federal government credit support for tax-exempt bonds; and,
- The allocation of tradable tax credits to water agencies and municipalities or the utilization of tax credit bonds similar to the Clean Renewable Energy Bonds recently authorized by Congress to encourage private sector investment in renewable energy projects being developed by public power agencies.

Each of these financing tools would provide needed assistance to the targeted recipients but at varying degrees of cost to the Federal Treasury. Likewise, each has its own set of advantages and disadvantages that would need to be thoroughly vetted before deciding which, if any, of these tools may be viable both economically and politically.

Public-private partnerships also offer the prospect of enhanced private sector investment in the West's water systems. Unlike the situation in many other countries the out-right privatization of municipal water systems has not taken hold in the United States for a number of reasons. The biggest impediment to system privatizations may be the ability of public water agencies and municipalities to utilize tax-exempt bonds to finance system improvements. Short of system wide privatizations there are a number of ways that the private sector can contribute to the development of needed infrastructure. These include design-build options and finance-lease back strategies for building new facilities. In addition, contracting out the operation of facilities and systems to the private sector appears to be a growing trend. The Federal government, rather than being an impediment to these arrangements, can and must foster an environment in which public-private

partnerships can thrive. Two specific recommendations in this area would include changes in Federal law to permit private developers of water related infrastructure to utilize tax exempt financing as well as the leveraged leasing of system assets.

### **Water Supply and Electricity Generation – Linked at the Hip**

Another topic that deserves significant attention is the linkage between water supply and electrical generation. Simply put, it requires massive amounts of electricity to transport and treat water. As one commentator has noted, “moving water isn’t easy or cheap.” According to the 2005 Integrated Energy Policy Report produced by the California Energy Commission, water related consumption amounts to nineteen percent of the total energy consumed in the State. This has the potential to grow as additional seawater desalination facilities come on line. The flip side of the same coin is the fact that it also requires huge amounts of water to produce electricity. While renewable energy sources hold some promise in reducing water usage, for the foreseeable future the bulk of power plants will utilize fossil fuels that require significant amounts of water. Even clean coal and nuclear options for generating electricity drink up large amounts of water.

Most experts agree that the linkage between water and electricity requires far greater attention in the planning of prospective water and power projects by Federal and State governments. Both levels of government need to be involved in the development of mechanisms that will encourage the conservation of both water and electricity and the development of new technologies to treat water and generate electricity. Two options that deserve serious consideration are the creation of a system of tax credits to further

encourage conservation efforts and R&D tax credits aimed specifically at the water and electricity sectors.

### **The Promise of Desalination**

Professional water resource managers throughout the West largely agree that the answer, in part, to averting future water supply crises and ensuring that clean water is available to families, farms, and businesses lies in desalinating seawater and brackish surface and groundwater and making that water available for municipal and industrial uses. Consider for a moment some of the benefits of seawater desalination:

- Renewable Supply of “New” Water
- Regional Security Through Supply Redundancy
- Drought Proof Supply
- Source of High Quality Water
- No Water Rights or Third Party Agreements are Needed

Some would say that we stand at the threshold of a new era of water supply that will be characterized by the development of many new seawater and brackish groundwater desalination projects. This is due to a confluence of three factors. The water supply crises outlined earlier; the recognized benefits of desalination just described; and, the “new” economics of desalination brought on by the tremendous advances in the area of membrane technology and the cost savings associated with locating desalination facilities next to coastal power plants. These scientific advances over the past decade have reduced the cost of desalinating an acre foot of seawater from \$2,000 in 1990 to under \$900 today. The combination of these three factors has resulted

in a paradigm shift that has sparked efforts by water utilities across the region and the Nation to plan for the development of desalination projects and facilities.

Whether or not these projects and others like them get built in time to address the Nation's mounting water supply crises is largely dependent on whether the Federal government makes a commitment to invest in this new infrastructure as it has previously in all manner of other important water related infrastructure including potable water treatment, irrigation, flood control, and wastewater treatment. Policy makers and water resource managers have differing ideas about the form that investment should take. The U.S. Desalination Coalition, an national advocacy group made up of water agencies, utilities, and private firms involved in building desalination facilities supports the establishment of a competitive, performance based grant program that would reduce energy costs during the initial years of a project's operation. Others believe that the Federal investment should be limited to research and development funding aimed at reducing energy costs. Finally, some in the industry and in government believe that the answer may lie in creating tax credit bonds along the lines discussed earlier in this document.

Desalination projects face a daunting array of regulatory hurdles. In fact, all too often the State and Federal governments send very mixed messages on the subject of desalination. One the one hand desalination is encouraged as a means of meeting future water supply needs while, at the same time, both levels of government have conspired to place unnecessary and often duplicative regulatory burdens on the permitting of new projects. Better coordination of the permitting process is desperately needed.

## **The Potential of Regionalized Water Planning**

Among the most encouraging options for developing sustainable water supplies for the West is exemplified by the agreement reached among the Colorado River Seven Basin States to cooperatively manage Colorado River supplies and plan for future water supply needs. The agreement, developed jointly by those states and provided to the Secretary of the Interior early in 2006, recommends interim operations to minimize shortages in the Lower Basin and avoid the risk of curtailment in the Upper Basin by combining conservation, efficient operations, and development of alternatives to bring new water to the Colorado River community.

The decision of the Seven Basin States to work together to develop alternatives to provide new water to the Colorado River community signals a new perspective on water management that crosses political boundaries and creates the potential to cooperate to develop and regionally manage the water cycle. Smaller water management agencies already are coordinating to implement regional approaches to reuse, water banking, and conveyance, with the potential to add other technical options to the regional management toolbox.

This regionalized approach can address multiple of the West's water supply issues by combining creative water supply options and optimizing their implementation across hydrologically related geographies. Combining and optimizing the use of tools available for water management (including conservation, reuse, storage, banking, brackish

groundwater and seawater desalination, regional conveyance, and others), coupled with innovative financial tools can reduce the infrastructure funding shortfall by reducing redundancy and can implement the long-term water supply solutions that are needed to support continued Western growth and prosperity.

## **Conclusion**

If The Center for the New West's initial water conference demonstrated anything, it is that addressing the long-term water supply challenges of the American West is going to require fresh thinking and creative policymaking. Finding 21<sup>st</sup> century solutions to the age-old challenge of providing safe and reliable drinking water to people, farms, and businesses will test the creativity of the private sector and government policymakers.

Here is what we know:

- Population growth, drought, and competition for scarce water supplies have brought the West to the brink of a water supply crisis;
- The cost of building and rehabilitating the infrastructure required to meet future water supply needs is huge -- \$300 billion over the next twenty years;
- The Federal government cannot be counted upon to cover the bulk of those costs;
- But, the Federal government can foster an atmosphere that encourages greater private investment in water related infrastructure;
- Large amounts of electricity are needed to treat and transport water and large amounts of water are needed to produce electricity;

- Desalination of seawater and brackish groundwater is a long-term, reliable source for new drinking water that needs to be encouraged rather than hindered.
- Regionalization of water planning and management in the West has been initiated by forward-looking water managers. The combination of technical solutions and innovative financial tools across political boundaries and among water management agencies can be key to create sustainable water supply solutions for the West.

Thus, we have begun our conversation. Now we must bring greater focus to some of the areas that most demand the development of new policy initiatives to meet our future needs. At the top of this list must be an examination of the various project-funding alternatives to direct government grants. Second, a more exhaustive look at the energy-water linkage is warranted. Finally, we must consider how the Federal government can reduce the regulatory hurdles to new water projects including desalination facilities.

In the coming months, The Center for the New West will decide how to proceed to address these and other related topics. The Center would welcome input from all interested parties as it undertakes this task. Please feel free to contact the Center's Executive Director Elizabeth Criner at [elizabeth@veritasadvisor.com](mailto:elizabeth@veritasadvisor.com).

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