

## **Preparing for the Future: Management Trends and Strategies**

The drinking water profession's mission—protecting public health by providing adequate supplies of high-quality, affordable water—hasn't changed over the centuries. What changes constantly are the challenges water suppliers face as they grapple with fulfilling this mission. Their decisions are influenced by dozens of trends within their own profession, in the business world, and throughout society.

Helping the water supply community prepare for the future is one of AwwaRF's enduring goals. To support water utilities in their strategic planning, AwwaRF has funded two projects in which water supply leaders and futurists identified the key trends expected to shape society as a whole, business in general, and water utilities specifically. In addition to defining trends, a primary objective of these projects was to articulate strategies utilities could adopt to address these trends and better position themselves to deal with an uncertain future.

The two projects, separated by five years, shared the same name—"A Strategic Assessment of the Future of Water Utilities"—and the same principal investigator, Ed Means, now a vice-president with McGuire Malcolm Pirnie. Project 2604, funded in 1999, culminated in the 2001 publication of a paperback book titled *Watercourse: Navigating Your Utility's Future*. Project 3023, funded in 2004, also concluded with a book instead of a traditional research report. This project's findings were published in 2006 as *A Strategic Assessment of the Future of Water Utilities*; an accompanying CD provides background information.

"Someone needs to keep an eye on the road ahead," said Means. "But without an entity like AwwaRF looking into the crystal ball, the crush of business makes it difficult for managers to look at long-term trends and issues while they're wrestling today's alligators. Many utilities are managing in the moment, looking five years out, at best, in their strategic planning. This research gives utility managers a primer on where the drinking water industry is going and allows them to incorporate a long-term view into their short-term and mid-term planning."

### **Designing the Research Protocol**

**Selecting Participants.** The first step in the earlier project was to select a group of delegates to participate in a variety of activities—developing background papers

documenting utility, business, and societal trends; taking part in a workshop with noted futurists; compiling lists of trends and ranking them; creating hypothetical water utility scenarios based on these trends; and designing strategies for successfully contending with each scenario.

Delegates, who were drawn from 10 utilities that helped to fund the project and 25 other organizations, ranged from managers of public and private utilities to water association leaders and consultants. The group represented a range of views and experiences in the water and wastewater industries and included many of the drinking water community's most prominent strategic thinkers.

**Compiling Information on Trends.** The project team produced three comprehensive articles describing current trends. Lloyd Dixon of RAND detailed societal trends. Business trends were documented by Roger Patrick (then with Pricewaterhouse Coopers) and Janet Miles of WRc/D&B LLC. Alan Manning and Terry Brueck of EMA, Inc., summarized utility trends. Project delegates used this background information as a basis for their deliberations.

**Convening Workshops.** At a workshop in Denver in June 2000, delegates identified and ranked more than 60 trends according to how likely they were to continue and how dramatically they were expected to affect water utilities. Combining the most significant of these trends, the project team crafted several plausible future water utility scenarios for delegates to consider at the project's next gathering.

In September 2000, the delegates convened for an American Assembly forum in Orlando, Florida. The American Assembly process, first used by President Dwight D. Eisenhower, is a carefully planned forum for debating major issues in a particular subject area. After the debate, the opinions of the delegates are formally documented in an American Assembly statement. Delegates painstakingly review this document in a plenary session and then vote to ratify it.

At the American Assembly sponsored by this project, small groups of delegates considered the futuristic scenarios and developed specific strategies that were likely to succeed in the circumstances described. Remarkably, regardless of the scenario, the groups came up with similar strategies.

### **Identifying Major Trends in 2001**

To help water suppliers and their governing bodies envision the future, *Watercourse: Navigating Your Utility's Future* specified seven major trends that in 2001 were expected to influence the future of water utilities:

- Infrastructure replacement costs will force water utilities to raise rates.
- Water supply sources will be managed holistically, along with land use and aquatic habitats.
- New environmental regulations will complicate development of new supplies and will require more sophisticated treatment of potable water.

- Market pressures will drive water utilities to consolidate, outsource noncore functions, and adopt other forms of privatization.
- Customer expectations will rise, compelling utilities to be more responsive to customer needs.
- Recruiting and retaining quality employees will be more difficult as workers become more independent and entrepreneurial.
- Strategically applied technology will pervade the workplace.

Explaining the implications of these trends in the book's first chapter, Means wrote: "The world's water resources are limited, and their management must be integrated with other environmental concerns. Compliance with new water quality regulations will require advanced treatment processes that are sophisticated and expensive. Aging distribution systems threaten to undermine the quality of water leaving the treatment plant unless huge sums of money are allotted to replace or upgrade them. Financial resources are also limited, and utilities both public and private must operate with cutting-edge business practices if they are to remain viable, effective entities. . . . Technology will play a more prominent role in all utility functions, generating enormous volumes of data that will have to be crunched and interpreted in order to improve decision-making. Customer expectations are expanding, and utilities must get better at understanding and responding to customer needs. As workers continue to become more independent, mobile, and entrepreneurial, creative incentives will be crucial for recruiting and retaining high-quality employees."

### **Synthesizing Project Results**

*Watercourse* presents the project's findings through three fictional case studies that illustrate how utilities might address the trends most likely to shape their future. The case studies are allegorical in nature—intended to be sufficiently generic to apply to all water utilities. Proposed strategies are likewise general and would have to be tailored to fit local needs.

Each case study ends with questions designed to help managers and governing boards frame their own utility's response to the trends and challenges considered in the text. Simple charts and graphs explained by brief narratives also appear after each story to emphasize the specific trends illustrated.

### **Outlining Strategies to Deal With Future Challenges**

The first allegory in *Watercourse* depicts Alex A. Daptable facing an infrastructure crisis in a northeastern city that is losing population. Alex addresses this predicament by developing a comprehensive proposal to rehabilitate Rustville's aging distribution system. In addition to detailing the rehabilitation plan, the proposal explains why distribution system upgrades are necessary, recommends strategies for financing the improvements, and delineates a community outreach program designed to gain public support for the plan. The utility also pinpoints ways to reduce its operating costs as well as the cost of capital.

In the second allegory, Carla Cutting-Edge leads an effort to ensure water reliability in a drought-prone region with multiple competing water uses. Carla tackles this challenge by creating a Citizens Advisory Group to help devise formal strategies to guide the community of Oasis in managing its water resources and to build coalitions and consensus.

Tom Traditional, the utility manager in the third allegory, wrestles with a serious water quality breach that has caused an outbreak of waterborne disease. To protect the community of Placidville from future outbreaks, Tom ratifies crucial risk-management steps (such as alerting health officials to potential problems and warning consumers immediately when a problem becomes apparent), designates various crisis contingency plans (including reimbursing customers for the cost of emergency supplies of bottled water), and identifies tactics for rebuilding public confidence in his utility.

### **Revisiting the Future**

In updating this research five years later, Means used the same basic project design, and 35 water professionals from across the country participated. The earlier articles on trends were updated and combined in a single document that served as background material for delegates at another American Assembly. However, Means described this gathering as a workshop that was less formal than the one organized for the original project. "In the first project, everyone had to vote on the final statement of trends," Means said. "In the second, we took everyone's input and got broad consensus on a statement of trends and strategies, but we didn't require a vote on the final document."

At the workshop, experts delivered presentations on significant topics. Carol Howe (with the Australian research organization CSIRO at the time) described total water management. Jeff Rosen (with Clancy Environmental Consultants) talked about technology. George Raftelis (Raftelis Financial Consultants) reviewed financial considerations. Mike Dettinger (USGS) discussed climate change and water supply. And Roger Patrick (a co-principal investigator for the project and owner of Competitive Advantage Consulting, Ltd.) summed up customer expectations.

"Through facilitated sessions, we identified 19 consolidated trends, though the book focuses on the top 10," Means said. "The project drew lines among these seemingly disconnected trends, spelling out interrelationships and providing both context and potential solutions. The two projects nested quite nicely."

### **Identifying Major Trends in 2006**

This time around, the top 10 trends were associated with the following topics:

- Energy,
- Drinking water industry employment and workforce issues,
- The political environment,
- Population and demographic changes,

- Regulations,
- Total water management,
- Customer expectations,
- Information technology,
- Utility finances, and
- Information security.

## Comparing the Two Studies

Six of the top ten topics—employment and workforce issues, regulations, total water management, customer expectations, information technology (IT), and utility finances—echoed trends identified in the earlier project. They shared center stage with four newly recognized topics: energy, the political environment, population and demographic changes, and information security.

Asked about the most significant differences and similarities among the trends emphasized in the two projects, Means highlighted five topics—workforce issues, total water management, information technology and security, climate change, and privatization.

**Workforce Issues.** Means views the focus on employment and workforce issues—especially the impending retirement of the baby boomers—as one of the most important outcomes of the two studies. "As more workers retire and move into fixed-income positions, there is likely to be more resistance to rate increases," he explained. "Also, retirees have greater concerns about health issues, including water quality, and they're generally more active politically. Utilities can leverage the expertise of these people—as part-time employees or mentors, for example. They need to hang on to this segment of the workforce, especially for these alternative roles, given the demographic shifts occurring in the workplace."

**Total Water Management.** Population and regulatory trends haven't changed much since the original project, according to Means, but he sees stronger evidence of the trend toward total water management. He says water utilities are becoming more mindful of "the linkages between water and energy, water and greenhouse gas emissions, and population growth and watershed management, as well as the need to work more cooperatively with their sister agencies." He believes collaboration is necessary for more effective management of water quantity and quality and also for getting things done. "Big-picture initiatives can't usually be accomplished solely within a utility's immediate service area," Means said.

**Information Technology and Security.** Although both studies noted the ever-expanding use of IT, information security emerged as a prominent concern in the second project. "The emphasis on securing both physical and IT assets was catalyzed by 9/11 but will continue," Means observed. "Early in 2007 the U.S. Environmental Protection Agency issued guidelines for utility security, and these will make life more complicated—and expensive—for utilities down the road."

**Climate Change.** Climate change claimed a "more front and center" position in the second study, according to Means. "With the Democrats' ascension to leadership in 2007, some cities and states are taking things into their own hands to operate in accord with Kyoto Treaty protocols," he said. "This trend is also tied to water rates because energy comprises such a large portion of utility costs. Utilities will ultimately have to optimize their energy use in order to be more efficient and more environmentally sensitive. You can see a groundswell building in this area."

**Privatization.** Private sector trends, on the other hand, had "cooled off" by the time of the second study, Means said. "The big players, by and large, appear to be de-emphasizing the water utility market because they've recognized that returns from operating treatment plants are lower than they expected," he explained. "There will still be public-private partnerships, but the huge pressure related to privatization has diminished for U.S. utilities. In some ways this is too bad because the healthy competition made utilities more efficient, but these positive effects will linger, particularly in relation to investments in infrastructure improvements and the rate increases that will be necessary to achieve them. Water boards will likely balk at doubling or tripling rates, excluding inflation, and utilities will have to adopt best management practices—in areas such as automation, reducing labor costs, and managing assets—to demonstrate that they're efficient. Tension about external takeovers has been replaced by tension about rates."

### **Reporting Updated Results**

*A Strategic Assessment of the Future of Water Utilities* reports the findings of the second study quite straightforwardly. Information on each of the top 10 topics is presented through four bulleted lists: (1) events that caused this topic to become a force utilities need to reckon with, (2) specific trends associated with the topic, (3) implications of these trends for utilities, and (4) strategies utilities can consider for dealing with the trends.

Means says the book "provides a context and statistics for the pressures managers were feeling, the issues that were driving the controversies in their board rooms. From what seemed like random acts of conflict, the report weaves a story that allows managers to think about the bigger picture."

To illustrate his point, Means described a constellation of conflicting pressures that could bombard any utility. "Conflicts about water resources are pushing utilities toward conservation and the use of marginal sources of supply (recycled water, brackish groundwater)," Means observed. "These tensions are converging with technological advances that allow us to treat lower-quality sources less expensively than ever before and to detect lower and lower concentrations of contaminants at the same time we're tapping water sources that traditionally we would never have considered. Add to this the increasing popularity of bottled water and public fears about water quality at the same time we're trying to convince people that drinking highly treated wastewater is a good idea. Then add the ability of the Internet to quickly circulate information among activist

groups, and you can see how these groups can be effective at countering projects they oppose," he said.

"These interconnected trends are making utilities pay more attention to customers and what they want," Means continued. "Utilities need to become much more service oriented than the traditional monopoly paradigm required. People have choices now—they can buy bottled water or install home treatment systems. Trends related to the public's environmental concerns will also force utilities into a service mentality."

Summarizing the significance of the two projects he spearheaded, Means said, "We can speak with relative certainty about the population trends. Some of the other trends are more speculative in nature. But knowing the questions to ask helps utility managers and their governing boards develop strategies to leverage specific trends and protect the investments of their organizations and communities."