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**The Research Results Are In: Top 10 Megatrends Defined!**

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**ABSTRACT**

Every public utility – no matter how big or small – will face many new trends during the next several decades. Factors such as changing regulations, renewable resources, customer demands, infrastructure and finance, technology and training, and “even better practices” will challenge utilities as they try to make their organizations more adaptable to change and sustainable far into the future. Utilities that anticipate these megatrends, plan and prepare strategies to deal with them, will be a more productive and sustainable organization. This paper looks at 10 megatrends, the major trends that are shaping the future of utilities.

**KEYWORDS**

sustainability, performance, productivity, conservation, consumer, efficiency, finance, future, infrastructure, trends, monopoly, reclamation, regulations, resources, reuse, technology, training, workforce, work practices

**INTRODUCTION**

In today's world where everything is changing fast, utilities must learn how to adapt for the new future. For example, they must learn how to build an organization that can handle a growing population while balancing increased social and economic pressures. In essence, they must become sustainable. Because performance management and a community's livability are closely linked, utilities play a major role in a community's quality of life – now and in the future.

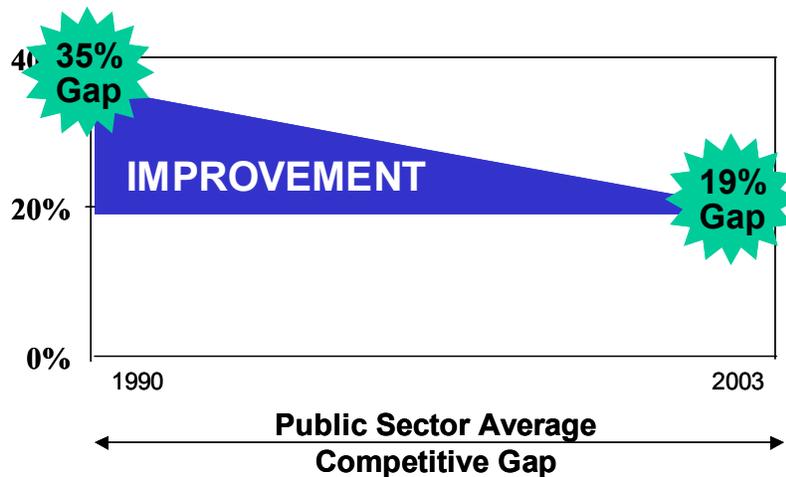
Utilities are beginning to strategically plan for long-term balanced growth and management of everything – from energy and water consumption to management of all assets including their employees, infrastructure, and equipment to productivity, partnerships, and services and service delivery. Public utilities need to examine where they've been and what they have done to get there, while at the same time, keeping an eye on the future – where they want to be, how to get there, and what pitfalls to avoid on the way. Utilities can learn from the past while planning their futures.

By creating strategies rooted in sustainability, utilities can position themselves to change to meet the future. Figuring out how to take into account views of all stakeholders, and how to strike a

balance between governance and service delivery, and the risks and opportunities of sustainability, however, is tricky. In order to help utilities become more prepared for this new future, we have outlined 10 megatrends that already are and will significantly impact them. An organization that plans ahead for the impact of the megatrends can substantially improve cost savings, increase customer goodwill and relationships, improve their overall performance, and help enhance their community's quality of life.

### Progress Toward Improving Performance and Productivity

In the early 1990s, utility productivity showed an average gap of 35 percent between public utilities and industry leaders. However, productivity in the public sector has increased drastically, reducing the average gap by about half. (See Figure 1).



**Figure 1: Public utilities have reduced the competitive gap by half.**

Overall productivity, operations productivity, and maintenance productivity have improved. The major reasons for these improvements come from:

1. Utilities being able to change their culture, dismantling their hierarchy, and working in teams
2. Utilities analyzing work practices and making substantial improvements in those practices
3. Utilities focusing on using technology as a strategy to improve productivity and enhance customer care and satisfaction

### Top 10 Megatrends Defined!

So what's in store for the future? We have identified 10 megatrends trends that utilities must address.

### **Megatrend #1—Reclamation and Reuse Will Be Mandated to Conserve Water Resources**

The real issue driving the use of reclamation and reuse is scarcity, which is driven primarily by population growth and climate. Water will become increasingly valuable, pushing the need to renew the resource.

Water reclamation and recycling is rapidly advancing as a viable method to address water scarcity issues. Some states like California and Florida are already addressing water scarcity through recycling. For example, in California, municipal wastewater recycling is expected to grow to one million acre-feet by 2010. In Florida, the total reclaimed water is already about 40% of the state's total water flow. This trend will continue to increase as communities everywhere expand or build new facilities.

### **Megatrend #2—Regulations Will Proliferate**

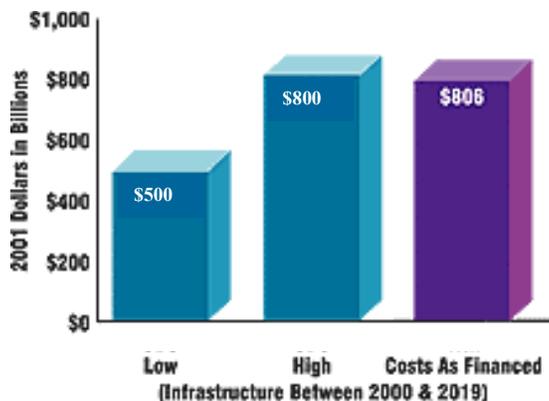
According to the first ever such report, U.S. EPA's *Draft Report on the Environment*, surface and drinking water quality have improved dramatically over the last three decades. In 2002, 94 percent of Americans were served by drinking water systems that met health standards. Still, major challenges remain in the areas of polluted runoff, landscape modification, changes to water flow, airborne pollutants, and aging infrastructure. These needs point to more regulations for utilities, including recent regulatory activity on the Ground Water Rule, Radon Rule, Sanitary Sewer Overflows and CMOM, and GASB 34. Effluent limits will continue to get tighter and tighter with increased water reclamation and reuse. Many changes that are taking place in the public utility industry are driven by growing regulations.

### **Megatrend #3—Infrastructure Needs Will Be Enormous**

As a result of increasing regulations, continued growth in communities, and the evolution of consumer attitudes in terms of trust and confidence, there is a tremendous need for infrastructure investment. Aging facilities are in need of repair, while growing populations are also straining existing system capacities. Drainage management and watershed management also are becoming more critical, and the required infrastructure investments are extremely large as a result. Though investment estimates vary widely, even the lowest numbers are staggering, as coalitions within the industry try to develop a sense of urgency to act on the growing needs.

### **Megatrend #4—Financial Crisis Looming Due to Investment Required for Infrastructure**

Huge capital investments needed will result in a financial crisis for public utilities. For drinking water and wastewater combined, it is estimated that investment costs for 2000-2019 are roughly \$500-800 billion over these two decades (see [Figure 2](#)). Most public agencies are not investing at a rate that will replace the infrastructure before it fails. When you add the growth and regulation factors to this, it is clear that a major financial crisis is upon utilities and municipalities.

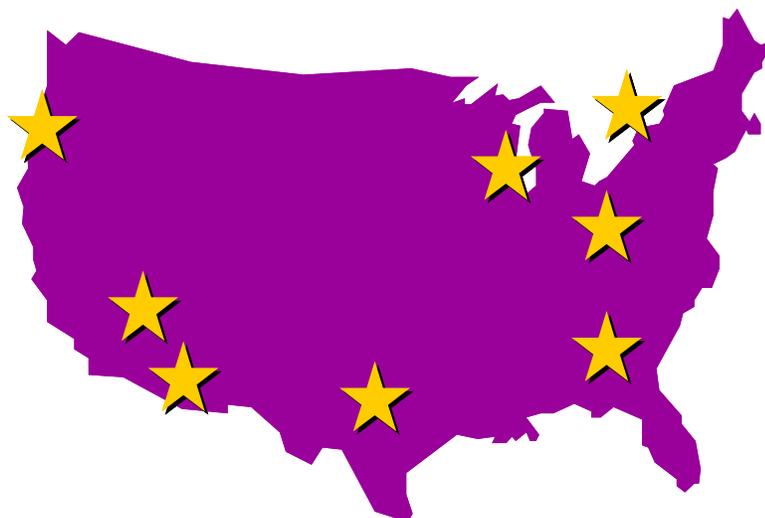


**Figure 2: Infrastructure costs range from \$500-\$800 billion.**

Since it is unlikely that federal or state funding is forthcoming, the rate increases are inevitable. The ratepayer needs to be made aware of these requirements to be prepared, for what may be in many cases, a double-digit rate hike.

**Megatrend #5—Consumers Will Dictate New Directions**

As resources are depleted, public involvement will become more prevalent. Consumer attitudes will control to what extent reclamation or reuse can happen. Public trust and confidence in public utilities peaked in the 1970s when many of the secondary plants were built. Since that time, however, trust and confidence have decreased overall due to recent disease outbreaks, which linger in customers’ minds (See Figure 3).



*Source: Global Status of Microfiltration and Ultrafiltration Membrane Technology, Watermark, October 2002*

**Figure 3: Consumer confidence continues to erode as waterborne diseases continue to outbreak**

For example, many customers do not separate water and wastewater treatment in their way of thinking, so when there is an outbreak of disease, they don’t have a clear understanding of the

cause – they only have fear of all water. Numerous studies have shown increasing consumer concerns about quality; bottled water sales continue to rise. In 2002, bottled water volume swelled to more than 6.0 billion gallons, an increase of nearly 11% over 2001. Top two reasons cited for choosing to drink tap water alternatives are first, safety/health concerns and, second, taste. The EPA-required consumer confidence reports have had a dual effect – on the one hand, consumers are happy to see that the information is being reported; on the other hand, it indicates concern about whether or not the quality is adequate.

Consumer attitudes – and the ability as an industry to develop appropriate public relations efforts – will dictate whether or not reclamation and reuse will be viable.

### **Megatrend #6—Efficiency Must Drastically Improve**

Efficiency and improved performance is a must. Because of the massive need for infrastructure investment and the subsequent tremendous increase in rates, the public will demand that either the agencies be privatized to improve efficiency, or that they change, moving away from the monopoly mindset to becoming an efficient business. As explained earlier, the average public utility has a 19 percent competitive gap compared to the private sector. This means the private sector potentially will operate, maintain, and administer a public utility at 19 percent less than the public agency can do it.

The driving force here is can public agencies that operate as monopolies change their behavior to become efficient, business-driven agencies? Many have already made great strides, but an even greater effort will be needed.

The alternative to change is allowing the private sector in and having them make the agency efficient. This megatrend for improved efficiency and performance by either public or private means is very real. Every public utility will be operated as an efficient business-driven enterprise – either from within or from without.

### **Megatrend #7—Market Opportunities Will Abound**

With the mammoth need for infrastructure expansion and replacement, and the need for funding to pay for those capital improvements, opportunities will abound. Examples include various methods of “integrating” smaller facilities with other regional facilities or forming combined service utilities so that the resources can be shared. Increased creativity and collaboration are required.

The concept of design/build as a method to cut costs and increase the speed at which facilities are built is an example of creative engineering. The industry is positioned to receive tremendous attention over the next decade. There are huge opportunities for those who are strong enough to take them on.

A key to taking advantage of this great market opportunity lies in consumer attitudes and acceptance of changes. Therein lies another opportunity – to educate consumers about sustainability and other strategic utility plans that will create increased understanding and support.

### Megatrend #8—Outsourcing and Alternative Service Providers Will Increase

During the past several years, we have seen an increase in the number of outsourcing and alternative service provider revenues.

One example of outsourcing is to contract out operations and maintenance. The private sector company is able to increase efficiencies within the utility primarily because they impose new work practices. More than 2,400 water and wastewater plants are being run by private sector organizations.

Alternative service methods include design, build, and operate (DBO) and other innovative methods to deliver large capital projects. Prior to the DBO method, public utilities would go through a rigorous process to build a plant that included planning, designing, hiring contractors, building the plant, and finally starting the plant. Alternative service providers can take less time and cost less money.

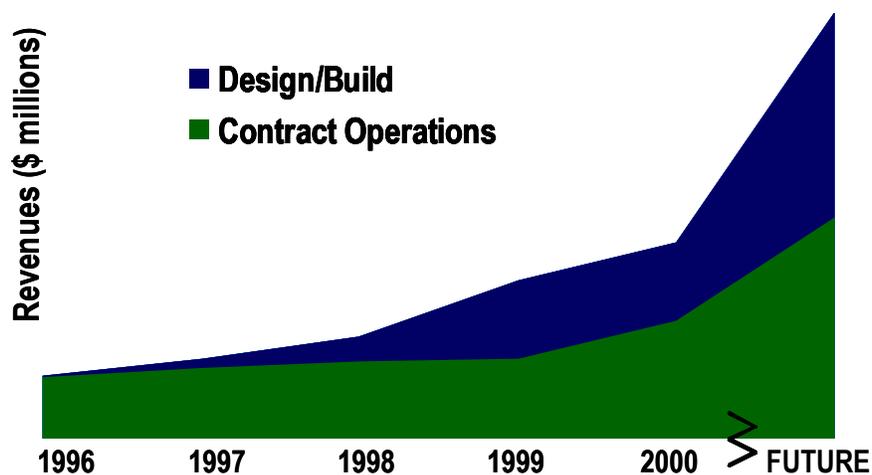


Figure 4: Contract operations and DBO revenues continue to grow.

Use of outsourcing and alternative providers could see a larger increase in the near future, due to shrinking budgets and demonstrated time and money savings from alternatives. (See Figure 4).

### Megatrend #9—Technology Will See Even More Rapid Expansion

One of the major tools to make efficiency a reality in the public utility industry is through the use of automation and technology. In public facilities today, typically only 50 percent of the automation or information systems are being effectively used.

In many cases, the automatic portion is turned off because operators and managers do not believe it will work. Within a private sector operation, however, automation is used more extensively to improve productivity. Utilities will experience tremendous increase in the effective use of automation and technology. Utilities can take advantage of the benefits offered by technology such as integrating information systems so resources and data can be shared, using the web to increase information available to internal and external customers, and using mobile equipment that enables workers to increase efficiency and effectiveness.

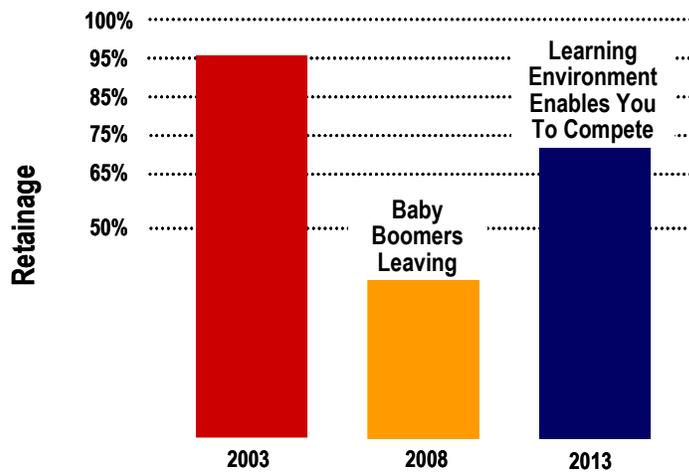
Public agencies must overcome the problems with automation and technology in order to get the efficiencies and performance necessary. This means that the business case for the use of technology and automation must be made prior to any project, and that business case must be proven in every instance.

It is clear that e-Government will affect utilities more – from how to buy supplies or sell services, how to pay bills and receive payment for services. The most important results of e-Government will be significant savings for a utility and improved service for its customers.

**Megatrend #10—Workforce Development Will Be More Vital Than Ever**

The workforce is changing and it will change even more rapidly during the next few decades.

The diversity of workers is greatly shifting as baby boomers retire. Workforce flexibility is essential, and all managers, supervisors, and employees in the industry must receive diversity education in order to ensure a smooth transition (see Figure 5).



**Figure 5: Learning and Training Environment Attracts and Retains Employees**

New technical skills must be learned in order to use the technology and automation that is necessary to be efficient and productive. A tremendous investment in training will be needed to get the workforce ready for the new ways. Efficiency and improved performance come from new ways of working together – new work practices and more technologies.

Thus, training programs (not just training classes), training centers, and training institutes will be necessary within (or available to) every agency to ensure that the behaviors are changed permanently, and that the diverse workforce is ready to use the new methods.

**Get Ready for 10 Megatrends**

Public utilities already are facing these 10 megatrends. It makes no difference how big or small the organization is – all public utilities will face the impact of these issues. Utilities need to position themselves now, so they will be prepared to manage these megatrends. Foreseeing the impact and building organizational and operational strategies now will not only avoid a crisis situation but will improve overall performance and sustainability.

Utilities that adapt will be a more productive, creative, and sustainable organizations.

Isaac Asimov's statement has never been truer than it is today – *It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be.*