STRATEGIC DIRECTIONS IN THE U.S. WATER INDUSTRY

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ABSTRACT

In recent years water industry leaders have seen a series of mega-issues unfolding. In the spring of 2013 Black & Veatch released its second report, “Strategic Directions in the U.S. Water Industry”. The report summarizes a water industry survey and analysis which identifies four mega-issues impacting utilities today: Buried Infrastructure, Sustainability, Operational Enhancements, and Financial Overview. This paper consists of a consolidated discussion of these issues as well as the findings of Black & Veatch’s survey. The full survey can be obtained from Black & Veatch’s web site at www.bv.com/reports.

Buried Infrastructure

- The survey results indicate there is a significant opportunity to reduce operational capital costs.
- Utility leaders from all regions selected aging infrastructure as their top concern
- Managing capital and operational costs are two of the top five industry issues, reducing non-revenue water and the amount of water main breaks could have a substantial and positive impact on a utilities bottom line and future resource needs.

Sustainability

- Integrated Resource Planning – planning priorities are a function of local variations; planning choices consider regional factors such as climate-influenced water supplies, growing service populations, and capital constraints.
- The Nexus of Water and Energy – in Black & Veatch’s Strategic Directions in the U.S. Electric Industry Report, water supply has been the second highest ranked environmental concern for seven consecutive years.

Operational Enhancements

- Asset Management is a maturing trend – more than 70% of respondents are expecting to achieve high levels of asset management maturity, or install leading asset management practices within their organizations, during the next three years.
- In order to meet the Asset Management goal, utilities will need to more heavily to focus on telecommunications and utility automation. Asset Management systems are highly dependent upon a utility gaining increased functionality from its information systems in a manner that supports efficient decision-making.

Financial Overview:

- The industry issues identified through the survey reflect the difficulties of justifying competing capital and operational expenses with limited and often insufficient revenue.
- The survey results indicate that utility managers are being asked to do more with less or find alternative means of addressing the issue.

KEYWORDS

INTRODUCTION

Black & Veatch has, for the second year, prepared the Strategic Directions in the U.S. Water Industry Report. The report is based on a survey of nearly 400 water and wastewater utilities across the United States. Through the survey and report, Black & Veatch provides an industry viewpoint of the emerging trends in our industry. The survey and report focus on four primary issues impacting the industry; Buried Infrastructure, Sustainability, Operational Enhancements, and Financial Overview.

The figure below presents the top 10 industry issues. The top five issues remain unchanged from the 2012 results. Aging infrastructure is the top concern, followed by managing capital costs and operational costs. Funding or availability of capital and increasing/expanding regulation are the fourth and fifth industry issues, respectively.

Report Figure 4, Top 10 Industry Issues

METHODOLOGY

The Strategic Directions in the U.S. Water industry Report is a compilation of data and analysis from an industry-wide survey. The report is intended to provide insights on challenges and opportunities facing the water and wastewater industry.
The survey was completed from March 18 through April 7, 2013. A total of 397 qualified water industry participants completed the online questionnaire. Statistical significance testing was conducted on final survey results. Represented data have a 95 percent confidence level. The figures below provide additional detail regarding the types of utilities represented by the respondents, services their organizations provide and geographic region served.

Report Figure 1, Respondents by Organization Type

Report Figure 2, Industry Respondents by Service Region
RESULTS AND DISCUSSION

Buried Infrastructure:
The survey results indicate that there is opportunity to reduce operational and capital costs through proactive approaches that address water loss due to water main breaks and leakage/non-revenue water.

Survey responses from all regions selected aging infrastructure as their top concern. The topic of aging infrastructure spans all asset types, including pipelines, tunnels, dams, pumping, storage and treatment facilities, this analysis focuses specifically on buried infrastructure. The need to replace buried infrastructure for water, stormwater and wastewater represents the greatest need for capital improvements.

The regions of the county with the greatest buried infrastructure renewal and replacement needs are the Northeast and Midwest. The figure below presents the average age of distribution and collection systems by serve region.

While the industry understands the age of its infrastructure, and the need for renewal and replacement, competing demands for capital have slowed the investment in these assets. The current rate of replacement for aging infrastructure for collection and distribution systems is less than 1% for most utilities.
Renewal and replacement of distribution systems could provide a partial answer to the funding needed for these projects through reduction of non-revenue water. Non-revenue water is a combination of leaks, meter inaccuracy, theft, billing system inconsistencies and unbilled but authorized water. Reduction of non-revenue water could increase a utility's total revenues as well as reduce operating costs.

Survey responses indicate there is uncertainty with respect to non-revenue water. 17.4 percent of respondents indicated they do not know what the level of non-revenue water is for their system. A well
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run and managed system typically achieves between 8 and 12 percent of non-revenue water. The national average for non-revenue water is just over 20 percent with some utilities having the oldest infrastructure exceeding 30 percent.

Report Figure 8, Current Levels of Non-Revenue Water

Sustainability:

Report Figure 15, Most Significant Sustainability Issues

Strategic Directions

Report Figure 15 presents the most significant sustainability issues as selected by the survey participants. As can be seen in the figure, Water Supply/Scarcity is the leading sustainability issue within our industry. The good news is, more than half of the utilities represented in the survey indicate their system can achieve between 5 and 30 percent reduction in demand as a result of water conservation measures.
Operational Enhancements:

Industry estimates indicate that as much as one third of water and wastewater infrastructure in our county has surpassed its useful life. Costs estimated for rehabilitation or replacing this infrastructure is estimated in the trillions of dollars. It should be no surprise that utilities across the country are focusing on asset management. Report Figure 18 represents respondent’s asset management maturity level today and their three year estimate.

The primary benefit utilities are seeking to achieve from asset management is the prioritizing of infrastructure replacement. Report Figure 19 below presents the top 10 benefits utilities are looking for from their asset management systems.

In order to meet the needs from asset management systems, utilities understand the critical need for quality data from their systems. Seventy percent of respondents indicated their future telecommunications network will be an important asset in the future (Report Figure 21).
Report Figure 18, Asset Management Maturity Level Now and in Three Years

**ASSET MANAGEMENT MATURITY LEVEL NOW AND IN THREE YEARS**

- **Current stage**
- **Three years from now**

Limited understanding of asset management and not sure where to start.

Basic understanding of asset management.

Good understanding of asset management. Implementation is in progress.

Very good understanding. Good practice asset management is integrated and applied throughout the organization.

Excellent understanding. Leading the way in development of asset management concepts and ideas.

I don’t know.

Source: Black & Veatch

Respondents were asked to select the response that best describes the level of asset management maturity within their organization today and what they expect it to be in three years.

Report Figure 19, Benefits of Asset Management Improvement Programs

**BENEFITS OF ASSET MANAGEMENT IMPROVEMENT PROGRAMS**

- No benefit
- Some benefit
- High benefit
- I don’t know

Prioritizing infrastructure replacement

Effective CIP development and implementation

Better asset condition and remaining life

Justification for project financing and rate increases

Improved asset inventory data

Capital and operating cost efficiencies

Ability to understand and manage risk

Operational optimization

Knowledge transfer & interdepartment communication

Determining level of service goals

Source: Black & Veatch

Respondents were asked to rate the level of benefit an asset management improvement program will have on each of the listed activities.
Financial Overview:

Report Figure 24, Revenues versus Cost of Service

Utilities from across the county are struggling with the balance between the needs of their system and the cost these needs will require. It can be argued that the top 10 industry issues are a result of limited capital within the industry. More than 40 percent of all respondents indicate their system’s revenues do not meet the full needs of the system (Report Figure 24).

Report Figure 27 provides a look at the rate increases needed to cover costs. Nearly 47 percent of respondents indicate a rate increase of at least 10 percent would be needed to cover the full costs of making necessary capital improvements.
DISCUSSION

This paper presents a short overview of the key findings from Black & Veatch’s the 2013 Strategic Directions in the Water Industry Report. The full 85 page report provides a much more in depth and thorough review of the industry survey. This report can be obtained from Black & Veatch’s web site at: www.bv.com/reports

CONCLUSIONS

The water and wastewater industry in the U.S. is at a critical point in its life cycle. Many of the assets that we enjoy were placed into service many years ago at much lower costs than will be required to maintain these assets into the future. The cost of needed water and wastewater infrastructure renewal and replacement is estimated in the trillions of dollars. This occurring at a time when customers and governing bodies are hesitant to rate rates to levels needed to fund these critical repairs. The findings of this survey provide a summary of our industry’s greatest needs and how utilities are working to meet these needs given the financial limitations they face.

ACKNOWLEDGEMENTS

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REFERENCES

“2013 Strategic Directions in the U.S. Water Industry”, a Black & Veatch Report