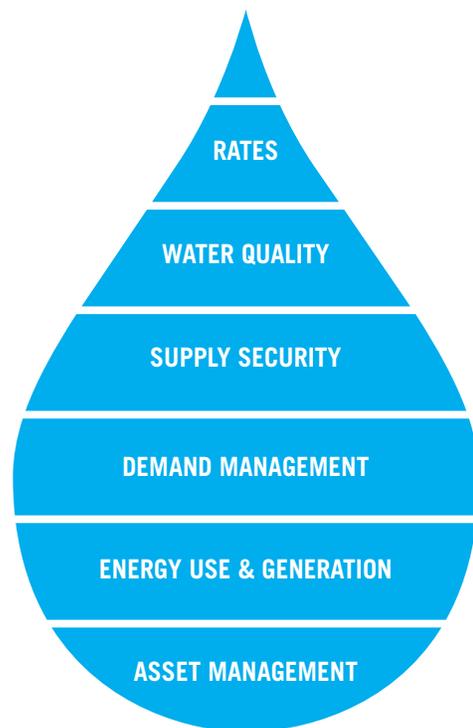




Disclosure Framework for Water & Sewer Enterprises

April 2013



STAKEHOLDERS ENGAGED IN FRAMEWORK DEVELOPMENT

Water Systems

Bellingham Water
Cascade Water Alliance
Denver Water
East Bay Municipal Utility District
Metropolitan Water District of Southern California
San Francisco Public Utility Commission
Seattle Public Utilities
Tacoma Water

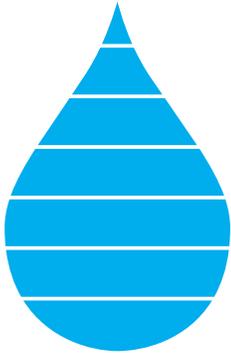
Investors

Boston Common Asset Management
Breckinridge Capital Advisors, Inc.
Calvert Investments
Christopher Reynolds Foundation
Clean Yield Asset Management
Friends Fiduciary Corporation
Impax Asset Management Ltd.
Pax World Management, LLC
Summit Global Management, Inc.
Trillium Asset Management, LLC
Walden Asset Management,
a division of Boston Trust & Investment

FOR MORE INFORMATION, CONTACT:

Sharlene Leurig

Senior Manager
Water Program
Ceres
99 Chauncy Street
Boston, MA 02111
leurig@ceres.org
www.ceres.org



Disclosure Framework for Water & Sewer Enterprises

In its *Report on Municipal Securities Market*, the United States Securities and Exchange Commission recommends the development of best practices in disclosure to improve the fairness and efficiency of the municipal market:

Municipal market participants should follow and should encourage others to follow existing industry best practices and expand and develop additional best practices guidelines in a number of areas to enhance disclosures and disclosure practices in the municipal securities market.¹

Given the heightened attention to credit analysis across the municipal market, and the shifting operating environment facing issuers within the water and sewer sector, Ceres is issuing this disclosure framework to ensure that all material information is provided to investors in the primary and secondary markets.

This framework was created through outreach to stakeholders on the buy- and sell-sides of the market, including large water and wastewater systems and more than a dozen institutional investors with \$40 billion in assets under management.

The framework entails six key areas of disclosure:

Supply Security

Demand Management

Asset Management

Water Quality

Energy Use and Generation

Rates

¹ SEC *Report on Municipal Securities Market*, July 31, 2012.

METHOD OF DISCLOSURE

How this framework is incorporated into market filings will be the work of system finance directors, bond counsel, financial advisors and underwriters. We encourage municipal market participants to advance enhanced disclosure practices that balance effort by utility administrators and their counsel with clear, reliable and regular information to investors.

Issuers in the water and sewer sector have a range of staffing resources to prepare and submit disclosure documents. For this reason, we encourage market participants to carefully consider where disclosure is most appropriately made with particular attention to the Comprehensive Annual Financial Report (CAFR), audited financial statements and Official Statements. For example, entities that do not publish a Comprehensive Annual Financial Report (CAFR), may be advised to incorporate by reference more regularly updated web-based information in the Official Statement.



Supply Security

The following factors are important to giving analysts a clearer picture of the reliability of an issuer's water supply and an enhanced view of management quality.

SCENARIO ANALYSIS INFORMING SUPPLY MANAGEMENT

Water managers project water sales using assumptions on the yield of water supplies in a given year. The assumptions that shape yield projections include projected future precipitation, which is inherently uncertain and which may vary considerably under different climate scenarios. As yield projections undergird financial planning and supply management, the range of scenarios employed by a water system to assess the range of potential future supply conditions should be of interest to investors when assessing the probability of a system meeting its revenue forecasts.

✓ **Recommended Disclosure:** Utilities should disclose the scenario analysis behind revenue projections and supply planning.

ASSESSMENT OF CLIMATE CHANGE EFFECTS

As noted by the Environmental Protection Agency, "Climate change impacts pose challenges to drinking water, wastewater, and stormwater (water sector) utilities in fulfilling their public health and environmental missions. Extreme weather events, sea level rise, shifting precipitation and runoff patterns, temperature changes, and resulting changes in water quality and availability contribute to a complex scenario of climate change challenges that have potentially significant implications for the sustainability of the water sector."² Water systems such as those in the Water Utility Climate Alliance³ are employing scientific and asset management tools to assess the effects of climate change on their systems and adapt system operations and capital planning accordingly.

✓ **Recommended Disclosure:** Utilities should disclose their approach to assessing the effects of climate change on their systems.

STANDING OF WATER RIGHTS RELATIVE TO OTHER USERS

Many surface water supplies are shared between users. In basins with firm water allocations, the volume of water apportioned to a user may not be available under conditions of low flow. Depending on the degree of over-allocation of water resources and relative seniority of water rights, persistent drought or legal reductions in water delivered may result in a significant reduction in water delivery to users with junior rights.

✓ **Recommended Disclosure:** Water providers should disclose the relative seniority of water rights, the volume of water apportioned them and the sensitivity of those rights to flow reductions.

² EPA, "Climate Ready Water Utilities." <http://water.epa.gov/infrastructure/watersecurity/climate/index.cfm>

³ Members include Central Arizona Project, Denver Water, Metropolitan Water District of Southern California, New York City of Environmental Protection, Portland Water Bureau, San Diego County Water Authority, San Francisco Public Utilities Commission, Seattle Public Utilities, Southern Nevada Water Authority and Tampa Bay Water. <http://www.wucaonline.org/html/>

VOLUMETRIC CONDITIONS OF WATER RESOURCES (SURFACE AND GROUNDWATER)

The percent capacity of surface water and groundwater supplies is a fundamental factor in a system's ability to deliver water. As noted above, the volumetric condition of shared surface water supplies may be an early indicator of a reduction in delivery to users with junior standing. Similarly, groundwater supplies are seriously over-drafted in many regions of the United States, particularly west of the Mississippi, posing a challenge to the long-term reliability of these resources.⁴

✔ **Recommended Disclosure:** Utilities should disclose the current volumetric conditions and ten-year historic trend of each major water supply source.

CONDITION ASSESSMENT OF THE WATERSHED(S) FEEDING SUPPLY

Watersheds provide water capture, filtration and supply services to utilities⁵ and are as much a part of a utility's system as its water treatment plants and distribution mains. The degradation of watersheds through land development or wildfire increases the cost of treatment incurred by water utilities. A notable example is the \$40 million in reservoir dredging and water treatment costs incurred by Denver Water following the Buffalo Creek and Hayman Fires.

✔ **Recommended Disclosure:** Utilities should disclose the condition of the watershed(s) feeding their water supply, for example by percentage of watershed developed or percentage of watershed actively managed for wildfire prevention.

HISTORIC AND PLANNED INVESTMENT INTO WATERSHED PROTECTION

Recognizing the value of protected land in managing system operating costs and water quality, a growing number of utilities are developing their own watershed protection and restoration programs—just as they would invest in the routine maintenance and replacement of constructed storage, treatment and distribution assets. Most utilities do not own outright the lands in their supply watersheds. For these utilities, efforts at watershed protection and restoration are necessarily undertaken in partnership or coordination with external parties including landowners.⁶ These efforts are undertaken to manage escalating operating costs driven by land development that contributes to non-point source water pollution, to protect the watershed against catastrophic damage from wildfire and to forestall capital costs such as water filtration plants. The best known example of a deferred capital outlay enabled by watershed protection is New York City, which spent roughly \$1.5 billion to protect land whose water filtration services obviated a \$6 billion water filtration plant.⁷

✔ **Recommended Disclosure:** Utilities should disclose their historic and planned investments into watershed protection and partnership efforts with landowners in watersheds not wholly owned by the utility.

4 Chris Wickham, "World is Over-Using Underground Water Reserves for Agriculture." *Scientific American*, August 8, 2012.

5 A February 2013 letter from the San Francisco Public Utilities Commission to the Governmental Accounting Standards Board (GASB) requested that GASB include the topic of natural resource reporting for such services to its technical agenda in 2013.

6 Carpe Diem West, "Watershed Investment Programs in the American West, An Updated Look: Upstream Watershed Health & Downstream Security," November 2011.

7 National Research Council (NRC), 2000. *Watershed Management for Potable Water Supply: Assessing the New York City Strategy*. National Academy Press, Washington, D.C.



Demand Management

As the cost of providing water services escalates, demand management grows in importance as a tool for managing costs and ensuring achievement of supply and quality goals. Though they are demand-side tools, water conservation and efficiency are sources of water supply. In some regions of the country, such as Texas, water from demand management is projected to provide as much as quarter of total future supply.⁸ In other areas of the country, water efficiency programs are designed to address nonrevenue water loss, water that is treated and delivered through the system but which earns the utility no revenue as it is lost or improperly metered. On the stormwater side, utilities are also beginning to phase in pricing and incentives to reduce demand for stormwater management and related wastewater treatment.⁹ Given the extraordinary need for capital replacement for aging systems and the rapidly escalating costs of new water supplies, demand management is of direct relevance to operating costs, capital expenditures, supply sufficiency and regulatory compliance costs.

ASSUMPTIONS UNDERLYING DEMAND PROJECTIONS

Currently, the National Federation of Municipal Analysts (NFMA) recommended best practices for disclosure include population trends and forecasts. Yet in recent decades, the growth in demand for water has changed in relation to population growth.¹⁰ While weather and economic productivity are contributing factors in recent years, there is strong reason to believe that reductions in per capita demand also have been driven by efficiency gains from active efforts to encourage conservation and passive efficiencies brought about by market-wide technological efficiencies in the industrial, commercial and residential sectors.¹¹ As demand and population can no longer be assumed to grow proportionately, analysts should look to historic per capita or customer class demand trends, with a particular emphasis on trends over the last decade, to assess the reasonableness of systems' future demand projections.

✔ **Recommended Disclosure:** Utilities should disclose historical per capita and/or customer class demand on a decadal basis.

SENSITIVITY OF DEMAND PROJECTIONS TO PRICE

Water demand is not static—it is highly influenced by a variety of factors including the price a customer pays for water. As the marginal cost of additional water supplies rises, demand for water for discretionary uses can be expected to decline.¹² The amount by which demand will

8 Texas Water Development Board, "Water for Texas: Summary of the 2011 Regional Water Plans," January 2011.

9 Philadelphia Water Department, "Green City, Clean Waters."
http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan/

10 Alliance for Water Efficiency, "Declining Water Sales and Utility Revenues: A Framework for Understanding and Adapting," August 2012.
<http://www.allianceforwaterefficiency.org/uploadedFiles/News/NewsArticles/NewsArticleResources/Summit-Summary-and-Declining-Water-Sales-and-Utility-Revenues-2012-12-16.pdf>

11 David LaFrance, "What To Do With Less," *Journal AWWA*, November 2011.

12 Jeffrey Hughes, "Prices and Revenue: A Challenging Relationship" *Environmental Finance at the University of North Carolina*, August 23, 2012.
<http://efc.web.unc.edu/2012/08/23/pricing-and-revenues-a-challenging-relationship/>

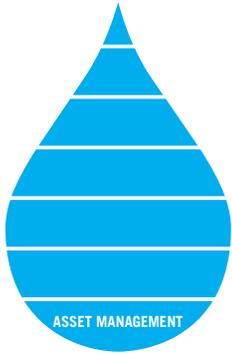
diminish in any given region as prices rise depends on a number of factors including income, weather, the cost a customer faces in implementing efficiency measures versus buying more water, and the degree of difference in pricing per unit of water between different tiers of use. For utilities that adopt tiered pricing schemes to drive conservation among their customer base, the sensitivity of customer demand to per-unit pricing is a critical factor in setting the volumetric and pricing thresholds of tiers and designing tiers to provide steady revenue.

✔ **Recommended Disclosure:** Utilities should disclose their approach to assessing the price sensitivity of their customers by class, and the price effect incorporated into demand projections.

PERCENT OF SUPPLY FROM CONSERVATION/EFFICIENCY AND PROGRESS AGAINST DEMAND MANAGEMENT GOALS

For many utilities, conservation and efficiency are projected to be significant sources of long-term supply, constituting as much as a quarter of future supply sources in some areas. For example, urban water suppliers in California are required to set reductions goals by 2015 and 2020 in compliance with the state's *20x2020 Water Conservation Plan*, and in Texas the conservation and efficiency accounts for 25% of the state's 2060 water supply. Beyond compliance with state regulations, the comparative costs of water gained from efficiency programs versus water secured from "hard" sources of supply such as reservoirs and water diversion projects make demand management an important tool for managing long-term affordability of water rates. Efficiency and conservation programs have demonstrated ability to defer capital costs by decades, allowing utilities to maintain flexibility as population or usage trends evolve. Efficiency and conservation programs also lower operating and maintenance costs associated with the treatment and pumping of water. Yet challenges to demand management persist, including political resistance to conservation rate structures, technical challenges related to revenue declines and funds available for demand management programs, which are frequently financed on a pay-as-you-go basis.

✔ **Recommended Disclosure:** Drinking water utilities should disclose their progress against long-term demand management goals.



Asset Management

Issuers regularly disclose characteristics of treatment plants and other facilities including age of assets, capacity, miles of mains and major upgrades. In addition to these characteristics, there are a number of variables that may be indicators of imminent capital expenditures or deteriorating financial health.

WATER LOSS RATES

Unaccounted water is water lost in the system after treatment or delivered to customers in excess of billed volume. In some communities with severely degraded infrastructure, the rate of water loss can be as high as 60%. Whatever the size of a system's actual or apparent water leakage, the loss of treated water is a financial drain on the system as expenditures on treatment chemicals and energy are incurred without recovery.

✔ **Recommended Disclosure:** Drinking water and wholesale utilities should regularly disclose their water loss rates using a method of measurement recommended by a professional association, such as the American Water Works Association's Water Loss Methodology.

ASSET CONDITION ASSESSMENT AND REPLACEMENT

Systems across the country are contending with aging infrastructure that will pose significant replacement costs. Yet estimates of failing infrastructure based on engineering standards or manufacturer recommendations may be inflated. In this circumstance, the accounting value of the assets in place may differ substantially from their economic value. For example, older metal distribution mains may be fully depreciated but have another 30 years of service while non-fully depreciated distribution assets constructed of PVC may require early retirement. New technologies allow utilities to assess the condition of assets in place to gain a clearer picture of replacement needs driven by physical condition instead of accounting practice.

✔ **Recommended Disclosure:** Systems should disclose their approach to assessing the condition of their assets and forecasting replacement needs.

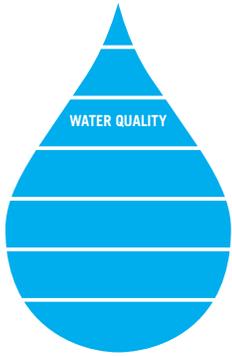
VALUATION AND BUDGETING FOR NATURAL INFRASTRUCTURE MANAGEMENT

A growing number of utilities now regard natural systems including forested lands, wetlands and constructed green spaces as part of their infrastructure asset base. These assets may be entirely undeveloped and far from the utility's service area or may be constructed or restored assets within the service area itself. Natural infrastructure provides a variety of services, including carbon sequestration, water filtration and flood management. Some of these services

can be monetized—for example, carbon-sequestering forests are eligible for credits under the California Environmental Protection Agency Air Resources Board’s cap-and-trade program—while others reduce the cost of operation for storing stormwater or filtering drinking water.

The accounting practices for these natural assets are not evenly developed. Some types of natural infrastructure could theoretically appreciate in value over time, for example in the case of forested lands managed to become more fire-resilient. For constructed natural infrastructure, such as bioswales or green roofs, standards for depreciation and operation & maintenance costs are not yet well established. Over time accounting standards for valuing natural assets will hopefully become more standardized, driven in part by efforts such as San Francisco Public Utility Commission’s petition to the Governmental Accounting Standards Board to define accounting standards for natural assets.

✔ **Recommended Disclosure:** Utilities should disclose metrics related to their natural infrastructure including acres of watershed owned, acreage of forested land owned, or acres of constructed wetlands owned, and where quantifiable, the methodology for assessing the value of those assets.

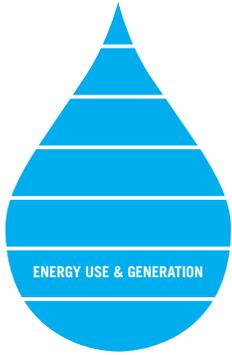


Water Quality

STEPS BEING TAKEN TO COMPLY TO ANTICIPATED REGULATION

Current disclosure guidance, such as that provided by the National Federation of Municipal Analysts, recommends that issuers provide a “statement of compliance with pending or proposed rules under the Safe Drinking Water Act or Clean Water Act.” In addition to these federal laws, states may seek to implement stricter standards related to nutrients, pesticides, pharmaceuticals and heavy metals. Depending on the cost of compliance, water service providers may find that these pending regulations create financial incentive to pursue demand management or system optimization to limit the volumes of water that must be treated. Furthermore, while these regulations impose costs on utilities, in some instances they create the opportunity for capital investments that tap into new revenue streams. For example, wastewater systems may respond to anticipated regulation of nutrients such as nitrogen and phosphorous by outfitting their wastewater treatment plants to harvest these compounds for commercial sale, thereby complying with forthcoming regulations while diversifying revenue streams. One example of such a system is the San Francisco Public Utilities Commission.

- ✔ **Recommended Disclosure:** Utilities should disclose steps they are taking in their capital planning process to adapt treatment technologies or modify water delivery to comply with anticipated regulation, including related revenue opportunities or cost efficiencies gained.



Energy Use & Generation

Across the water enterprise, moving and treating water requires energy. In fact, water systems may be among the largest energy users in a utility service area. But the energy-intensity of water services varies greatly based on the distances across which water must travel and the level of treatment that must be provided by constructed assets. As energy prices rise, the energy profile of a water system may present operating cost constraints or benefits.

ENERGY INTENSITY FOR WATER TREATMENT AND DELIVERY

The energy intensity of a water service provider is one determinant of its sensitivity to energy price fluctuations. The source of the water service provider's energy may also be important depending on the regulations governing energy generation in the market from which it purchases; for example, California's carbon reduction law will affect the cost of carbon-intensive energy sources more so than low-carbon energy sources, costs which will be passed on to water systems users.

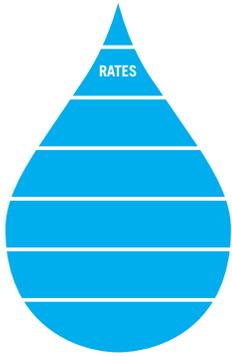
✔ **Recommended Disclosure:** Drinking water, stormwater and wastewater providers should disclose the energy intensity of their services along with their fuel mix to give analysts a better sense of the operating and maintenance costs associated with energy use and the system's sensitivity to energy price changes.

ENERGY GENERATION

Water treatment and delivery also produces energy that can be harvested and sold. A growing number of wastewater service providers capture and refine the methane produced in digesters to meet their own energy needs or to sell on the market. One such utility is East Bay Municipal Utility District, which expanded its treated waste stream to accept fats and greases from livestock operations in order to enhance its revenue from energy generation. Energy can also be generated from the movement of water, with large-scale turbines that harness energy from water released from dams and with micro-turbines embedded in gravity-fed pipelines. In fact, technology exists today to make some portions of the water sector net energy positive, i.e. a greater producer of energy than energy user.¹³

✔ **Recommended Disclosure:** Utilities should disclose energy production investments in their asset base, the end use of that energy (self-use versus sale) and all relevant regulatory, technical and financial factors associated with such activities.

13 "Energy-Positive Wastewater Treatment and Recovery," Re-inventing the Nation's Urban Water Infrastructure (ReNUWit) http://www.renuwit.org/sites/default/files/E2InfoSheet010412_0.pdf.



Rates

Current disclosure guidance endorsed by the National Federation of Municipal Analysts recommends that issuers disclose current rates by customer class and five-year history of rate adjustments, average monthly bill for residential customers based on 7,500 gallons of usage and comparable rates for similarly sized systems. Yet the rising marginal cost of water supplies and water treatment is leading many systems to redesign rates to create pricing incentives for customers to reduce demand on the system. Depending on the pricing structure, the typical bill of a household or commercial user may not rise if their use declines or remains below a given threshold. In this pricing environment, comparison of rates for 7,500 gallons per month to a static benchmark such as 2% of Area Median Income or to similarly-sized water systems may fail to capture the actual bill a typical customer pays. Recent trends in rate structuring across the water and sewer sector suggest that analysts would benefit from an expanded set of metrics, including:

DRINKING WATER RATE STRUCTURE FOR ALL CUSTOMER SECTORS

A growing number of utilities are moving toward inclining block rate structures to encourage customers to make efficient use of water. In an inclining block rate structure, customers that use water above a certain volume are charged a higher price per marginal unit to reflect the higher cost of securing water supply to meet that demand. However, there are many utilities that still charge a single unit rate for all levels of demand and even some with declining block rate structures, in which customers pay less per unit consumed above a certain threshold.

- ✓ **Recommended Disclosure:** Drinking water utilities should disclose the basic structure of their rates for each class of customer, including the fixed charge assessed for each connection, the number of tiers in the rate structure, and the percentage of customers in each tier.

STRUCTURE OF STORMWATER AND WASTEWATER RATES

Some stormwater and wastewater service providers are beginning to assess rates based on the volumetric contribution of customers to the system. This is a significant departure from the traditional method of stormwater and wastewater rate assessment, which would either be a fixed rate or a rate based on the drinking water meter size. For example, Philadelphia is transitioning to a volumetric stormwater rate structure based on the acreage of impervious surface on a customer's property, reflecting the relative contribution of runoff to the stormwater system during rainfall events.

- ✓ **Recommended Disclosure:** Stormwater and wastewater utilities should disclose the basic structure of their rates for each class of customer, including the fixed charge for each connection, the number of tiers in the rate structure and the percentage of customers in each tier.

AFFORDABILITY OF RATES

As water service providers develop pricing structures designed to communicate the cost of service and to replace aging infrastructure, maintaining the affordability of water while securing sufficient revenue demands long-term rate planning. Yet not every system has a policy to manage long-term affordability for low-income customers or across the customer base.

- ✓ **Recommended Disclosure:** Utilities should discuss their approach to measuring affordability and the pricing strategies, incentives and programs in place to maintain affordability.



Ceres
99 Chauncy Street
Boston, MA 02111
T: 617-247-0700
F: 617-267-5400

www.ceres.org

©2013 Ceres