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WHITE PAPER

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Water Investment: Opportunities for New Economy Investors

While COVID-19-based disruptions may cast a shadow, water investment is on the rise, and for good reason. Investment in U.S. water and wastewater infrastructure and services companies can be particularly rewarding for savvy investors committed to financial and technical innovation, particularly those with experience in public-private partnerships ("PPPs") who are keen on participating in the $30 trillion ESG market. For additional detail, we are providing Elise Zoli's talk and deck on ESG-driven, P3 water infrastructure finance at the new digital 2020 EarthX conference.

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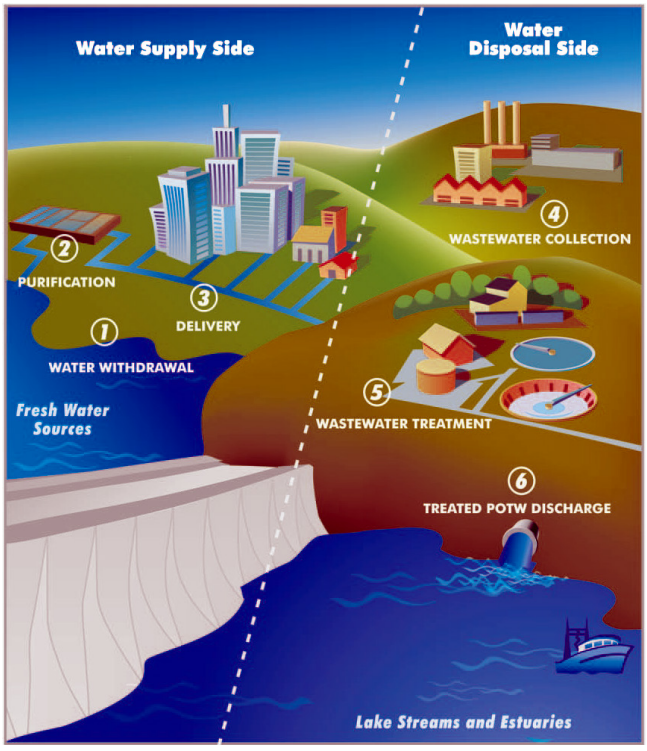
THE SITUATION

The fundamental proposition is straightforward: Water is far less ubiquitous than it seems, and water companies—the entities that deliver freshwater and treat wastewater—are, perhaps, the last uncharted territory for investment in the broader utility field. With an effective strategy, water utilities may also be the most ripe in terms of accessibility and growth potential, based on their current profiles.

Less than 2.75% of the Earth consists of fresh water, under 1% of which is potable (or drinkable) and otherwise available without *Star Wars*-era technology. To put this in perspective, if the world's water supply were 26 gallons, usable water would amount to a half teaspoon. Based on the hydrologic cycle, there is, and will be, no net increase in fresh water available to meet the needs of a rising population. Further, potable water may be constrained in population centers, like the coasts and the desert in the Southwest.



In the United States, water and wastewater infrastructure and services of any size are dominantly municipally owned or controlled (more than 85% of the U.S. population), typically in a segregated, specialty purpose not-for-profit entity (often called an enterprise fund) that is overseen and may be managed by a local or state government.[1] The water utility revenue model is ordinarily premised on monopolistic control within the municipality, combined with rate-setting capabilities conceptually designed to recover all expenditures, including for system repairs. As a result, in real terms, water utilities operate separately, frequently at a small scale, without many of the efficiencies that consolidation affords the comparable electricity and telecom sectors. Fragmentation among the thousands of U.S. water and wastewater companies (compared to 32 in the United Kingdom, for example) means that, despite even the best of efforts to share knowledge, technology, and systems, silo'd operation is the norm. As a consequence, the water sector shows hallmark siloing failures:

- ***Aging, energy-intensive systems:*** Infrastructure upgrades at water and wastewater systems have lagged since the 1970's, the last national push for water-related infrastructure upgrades. This older conduit infrastructure is linked directly to runaway expenditures, such water waste (known as "leakage" or "non-revenue water"), emergency repairs, and excessive electricity use (for pumping), which collectively consume capital, create and perpetuate inefficiencies, and compound the financial gap to be closed. Water and wastewater systems are also energy intensive, because they depend on large pumps to move water to and from treatment, with such pumps often employed 24 hours per day. As a result, energy costs dominate annual operating budgets. This dynamic makes water systems ideally suited for deployment of renewable power not only to reduce operating costs over time, but also to provide site-specific emergency power without the risks of interruption associated with grid-connected (outage) or fossil fuel-based (supply chain interruption) systems.

- ***Innovation and technology gaps***: Water systems have not had experienced sector-wide innovation efforts, despite a rise in transformative innovations (including as measured by patent filings). For instance, modern diagnostic technologies (e.g., leak detection and tracking systems) are underutilized, which means that maintenance is too often reactive (e.g., at a water main break), with the result that operations and maintenance activities dwarf operating budgets. Existing "smart water" technologies, including

supply-side and demand-side management, deserve far more effective deployment. This leaves utilities too often chasing maintenance emergencies and apologizing for budgetary overruns, which on the surface looks like poor planning, but in fact represents an economy of scale problem: Small utilities cannot afford the time or capital to implement available technological systems, train dedicated personnel, or use those systems in a proactive manner.

- ***Outmoded revenue models:*** Water pricing is unrealistically low. Worse, nuanced rate development—comparable to what has occurred in other utilities, such as the electricity, gas, and telecom sectors—has not occurred in water, despite the fact that most municipal water utilities possess ratemaking capabilities that could be employed to recover legitimate infrastructure costs. This dynamic is exacerbated by local politics and control, with the result that municipal utilities are unduly susceptible to local frustration over water bills and rate surcharges. The cumulative effect is that rates are frequently uncorrelated to realities of resource availability and system optimization, not to mention the need to drive conservation and reuse. Seattle's rates, for example, are a substantial multiplier of Oakland's.[2] Because rates are not employed to drive behavior (e.g., reuse, conservation, or time of use), Americans tend to treat water as more plentiful than it is, even where that is clearly not the case—a sobering point considering the relative scarcity of potable water in U.S. population centers.

- ***A perceived lack of investment experience and use of existing public resources:*** This sector has had sufficient and diverse private investment (hundreds of deals above $1.5 billion) to establish viability. However, enormous opportunity remains for increased, strategic investment at scale, particularly in the U.S. market, which is more than twice the size of any other national market, including China.

In short, individual U.S. municipal water utilities can and should be optimized, ideally not in their existing silo'd state, but on a portfolio basis through the deployment of known technology that can achieve critical efficiencies, chiefly by reducing leakage and energy costs, simultaneously advancing resilience, security, and sustainability goals. Further, the sector is now poised to move away from traditional forms of public procurement and finance (bonds), to consider PPPs grounded in readily replicable engineering solutions that, combined with nuanced ratemaking, can deliver reasonable returns on investments. How is this best done?

THE OPPORTUNITY

Effective consolidation (or the preferred "regionalization" in water parlance), combined with optimization of these systems, is the clearest path forward for investors focused on scale. That consolidation ordinarily is best achieved through some form of partial or complete privatization, combined with an influx of committed, often mission-driven, public/private partnership reflecting a combination of public and private capital. These twin drivers represent a trillion dollar opportunity for investors, particularly those with infrastructure credentials, a flair for financial and infrastructure creativity, and consumer savvy, ideally with a focus on sustainable optimization of these critical infrastructure systems.

For investors who already have dipped their toes in the water, the signs are more than superficially positive. In any random five-year period during the last 25 years, water utilities outperformed all other leading industry groups on a total return basis. In the last five years, American Water and Aqua America, leading water and wastewater treatment services suppliers to residential customers, saw their share prices more than double, respectively. Their pioneering efforts, not without their trials and errors, allow further refinement of the acquisition plan and investment approach.

PRACTICAL TIPS AND OBSERVATIONS

In the "all boats float on a rising tide" tradition, we think it is time to share a few insights for those intent on participating in this emerging market, one that is subject to complex, multifaceted regulation across 50 states and thousands of municipalities:

- At bottom, investment in the water sector can reward moderately creative portfolio investment structures at scale. The targeted water systems are those ideally suited for seriatim deployment of readily replicable, engineering optimization, combined with amenability to ratemaking initiatives. While water data is uniformly lacking, we have worked to develop those profiles. Engineering optimization

occurs via targeted upgrades, particularly focused on conduit management that reduces leakage and deployment of renewable energy (both subject to favorable grant and tax treatment). We also have worked to advance leading, consensus engineering standards that meet resilience, security, and sustainability standards, including as developed by the American Society of Civil Engineers. Rates for these upgrades are premised on direct benefits of improved energy systems, pump efficiencies, and treatment innovation, as well as the indirect benefits of portfolio consolidation, such as shared diagnostics, billing, purchasing, maintenance, contractor, employee, and equipment. We have undertaken systematic rate work, nationally. In this way, based on our experience, the water sector can and should mirror our work in the consolidation of the telecom and nuclear sectors in 1990 and 2000, respectively. In other words, and at bottom, the opportunity is to build a regional portfolio of synergistic utilities made more efficient across the portfolio. This takes strategy and forward planning that we believe can occur efficiently, again at scale, under knowledgeable leadership.

- We recommend transaction fundamentals that integrate high quality PPPs, leveraging non-dilutive capital from federal and state sources (e.g., revolving grants for upgrading, repairing, and "greening" systems in a manner that reduce future costs and water losses). In 2019, for instance, the United States made available $2.6 billion in new funding to the state revolving funds to improve water infrastructure, above and beyond the nearly $20 billion committed in 2018. Such public funds, and again the non-dilutive capital it represents, too rarely factor, in our experience, into the financial sector's assessment of water investment opportunities or deployment of capital. This is true, despite the fact that such public resources have for more than a decade driven and increasingly continue to drive, investment in analogous sectors (e.g., the U.S. Department of Energy's and the U.S. Department of Agriculture's grants, loans, loan guarantees, and tax benefits).

- Successful rate structures not only underpin returns on investment, but are necessary to drive long-term resilience, security, and sustainability that are the heart of mission-driven investment. Rates, at baseline, must reduce the stranded costs of increased pumping of non-revenue water estimated as 10% to 37% nationwide. But, far more can and should be done to drive more practical rate structures, including by rewarding reuse and demand-side management. Further, we suggest that time of use and seasonal factors should not only be on everyone's short list, but in every rate, including for example to advance drought management. Here, education can be achieved at scale and with the distance that privatization affords, and we work with the leaders in the space on education. Finally, a variety of staged fees (with various names) have now been legally validated as reasonably allocated by utilities in the courts. Again, the electricity sector offers a model for more comprehensive pricing of new interconnections, costs that should include whole system effects.

- As is typical in new markets, algorithms matter to those committing material capital. We have worked on, and been impressed by, various assessments of targets based on a variety of criteria, including in some instances laggard status (e.g., whether the worst performing, mid-sized water utilities may represent the best opportunities). We likewise believe selection science algorithms are relevant, including use of Whole Foods-type micro-demographics algorithms designed to facilitate selecting communities amenable to more sustainable water systems and willing to pay for them. We also consider needlessly underestimated strategies to remedy circumstances where other major non-residential users do not pay or underpay for water, as has emerged in the public discussion.

- Due diligence is inevitably challenging, but absolutely necessary. Too often omitted are:

    - Ratemaking capability analysis;
    - Rate non-payment assessments;
    - Leakage assessments, including from metering gaps and fire-protection;
    - Mandates to serve, tort liability, and national security risk mitigation strategies; and
    - Unassessed political risk.

In the end, water may be among the private sector's last, best opportunity to deliver utility-based financial performance and ESG metrics, at once. A commitment to strategy and scale, with sense of urgency, is critical.

LAWYER CONTACTS

Elise N. Zoli
Boston
+1.617.449.6807
ezoli@jonesday.com

Andrew M. Levine
New York
+1.212.326.8319
amlevine@jonesday.com

Michael P. Earley
Chicago
+1.312.269.4349
mearley@jonesday.com

Brian L. Sedlak
Chicago
+1.312.269.4334
brianlsedlak@jonesday.com

ENDNOTES

1 F. Bloetscher, *Water Basics For Decision Makers: Local Officials' Guide to Water & Wastewater Systems, American Water Works Association* (2009).

2 U.S. Department of Energy, Water and Wastewater Annual Price Escalation Rates for Selected Cities Across the United States (September 2017; prepared by Pacific Northwest National Laboratory for the Federal Energy Management Program); see also Congressional Record Service, *Funding for EPA Water Infrastructure: A Fact Sheet* (revised March 2019) (from 1973-2019, Congress alone has provided approximately $130 billion in real dollars, not inflated).