The Case for Water Equity Investing 2017

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Summit Water periodically revisits the hydrocommerce industry and the merits that make the water space a compelling investible theme. The macro drivers that attracted us to the water sector still remain, the greatest of which continues to be the fundamental supply and demand imbalances that seem to implacably worsen. As the industry evolves to address its constantly changing situation, The Case for Water Equity Investing 2017 allows us to share with you, investors new to the space as well as those that have been long-term proponents, our thoughts on the developing investible landscape.

Broadly speaking the importance of the water-food-energy nexus has never been greater as the interconnected variables of global population growth, improvements in standards of living, and rising energy demand place further stress on already constrained water resources. Sustainability will be a key driver as industries focus on water usage and the availability of assets in geographic areas that suffer from the effects of climate change, over-exploitation of surface and ground water, and the appropriation of resources by an agricultural complex that is increasingly producing water-intensive goods. How we use water and where it comes from will play a critical part in the evolution of old habits and usage patterns.

Specific developments that we explore in-depth in the Current Trends Shaping Investment Opportunities section include: U.S. and international water utilities in transition, the evolution of water industrial companies, responses to widespread global drought, the impact of the incoming U.S. presidential administration, and finally what appears to be a sustained recovery in U.S. housing and commercial construction.

When you look at other critical industries such as timber, technology, mining, and consumer goods, the key element to sustainability for these businesses is the availability of water in some usable form. Energy production, potable water supply, and food production together account for over 94% of water withdrawals from groundwater, streams, rivers and lakes in the U.S., and the rates are similar in other developed nations.

To address the challenges, the global water industry will have no choice but to undergo a fundamental transformation from its present usage and pricing practices. We believe that investors will profit from the growth in the water industry if they take the time to understand how population growth, regulatory and government policy, climate change, and technology will all play a role going forward in the companies that comprise our investment universe.

The lure of water investing is far from a new idea as evidenced by the growth in the sector over the last decade. However, in light of the current trends we highlight above, we urge investors to take a fresh look at the respective parts of the global water industry and see how the mosaic is reshaping. As we have always stated, our first and foremost reason for this document is to provide a broad overview of issues relevant to the serious investor in water equities. Those recently developing an interest are encouraged to read The Case for Water Equity Investing in its entirety in order to gain an insight into the hydrocommerce space that Summit Water has developed over the last 30 years. For those that have been investors in Summit Water or have followed the evolution of water investing, we hope that we can provide not only a quick refresher but also shed insight into certain areas that we believe will be relevant to investing in water for years to come.

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Photo by John Dickerson
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Water is, and will always remain, the most essential life-sustaining substance on earth and the most critical industrial input to the world’s economy. Demand for clean water has expanded unrelentingly as the strains of population increase, emerging economies, pollution, and climate change have created crisis-level shortages in many regions for this most basic and necessary resource. Global water withdrawals have increased six-fold during the past century, twice the rate of population growth.

So if water is so overused, how has it remained so chronically undervalued? How have utilities not implemented full-cost pricing to truly reflect the expenses associated with treating and conveying water to the point of use? Why does the public at large share a common belief that water is basically a low-cost commodity relative to other natural resources with a much lower demand profile? How can industries use millions of gallons of water in the extraction of oil & gas or in the manufacturing of electronics while paying nominal fees and often returning the water polluted? Clearly, with unsatisfactory answers to all of these questions, the price of water does not accurately reflect its true economic and social value.

In truth, water has no economic or practical substitute, at any price or any supply level – the only substance or commodity in the world of which this is true. Meanwhile, the demand pressure created by the water-energy-food nexus (producing energy from fossil fuels and some renewable energy sources often requires substantial amounts of water and agriculture already accounts for 70% of the world’s water use), global manufacturing, and every other inherent water usage means we use more water on a per capita basis as standards of living advance. Thus, as the global population crosses the seven billion mark, the number of people affected by water scarcity will increase at an accelerated pace in the coming years.

Chronic social issues have long impacted areas throughout Asia and Africa that suffer from a lack of freshwater. But these issues, which were thought to be inherent to undeveloped regions, have also recently started making an impact in China, India, Australia, Indonesia, and especially in the western United States. The fight for water between growing urban areas, agriculture, energy, and various forms of industrialization could shape the geopolitical landscape for decades to come.

These undeniable fundamentals of supply and demand will only intensify over time, bringing the potentially devastating effects of the world water crisis into sharp relief. While the challenges certainly will be immense, equally as great are the long-term prospects for the industry that will meet our growing needs – as well as the opportunities for investors with the foresight and patience to position themselves ahead of the trend.

Summit Water has always maintained that the “water industry” is really a collection of fundamentally different businesses that all have something to do with delivery/treatment of clean water but come from varying economic sectors. A more apt descriptor is “hydrocommerce”, which better captures the massive scale of more than 50,000 utilities in the United State alone plus their diverse supply chain of technology providers, engineering firms, and heavy equipment manufacturers. The companies in this hydrocommerce universe are united not by business type but by a far more important investible characteristic – consistency.

THE UNDERLYING DRIVERS OF WATER INVESTING

No other industry rivals hydrocommerce in terms of strong fundamental drivers capable of propelling secular growth. Each of these underlying factors are worthy of detailed discussion, but are summarized briefly below to provide a basic foundation for further investment consideration.

THE BASIC WATER SITUATION: FIXED SUPPLY, EXPLODING DEMAND

The available supply of fresh water to meet all human needs amounts to less than one percent of all water on earth. Amazingly, surface rivers and lakes make up less than 1/100th of this already minute amount; the bulk of the world’s fresh water is currently inaccessible within the polar icecaps.
Meanwhile, available fresh water supplies are being effectively destroyed at an alarming rate by pollution from modern industrial, agricultural, and sanitation practices while very little fresh water is being created through cost prohibitive methods such as desalination. Groundwater supplies, by far the majority of available fresh water, are almost everywhere being “mined” beyond their natural rate of replenishment. Maude Barlow’s book Blue Gold reveals that in the Northern China Plain farming region, irrigation and intensive farming practices have caused the aquifer to fall up to 120 feet in the most stressed areas. Numerous sources have also cited that the critical Ogallala aquifer of the central U.S., providing 30% of the nation’s irrigation water for farmland, has experienced declines exceeding 10-50 feet in most regions and up to 100 feet in certain areas.

The potential impacts of global climate change will only intensify and complicate water supply issues. Shifting and more intense weather patterns, unpredictable precipitation levels, earlier snowmelt, and rising temperatures are wreaking havoc with the existing storage and distribution infrastructure.

Perhaps the most significant issue is simply the exploding demand for water, driven by the world’s growing population. It took mankind around 10,000 years to reach a total population of 1 billion. One hundred fifty years later (1950) the population had doubled to 2 billion. In 2015, the United Nations estimates that the global population stood at 7.3 billion people, and forecasts it to reach 8.5 billion by 2030. This unchecked population growth, along with the ensuing urbanization and industrial/agricultural expansion, place an incessant, accelerating demand on our essentially fixed water supply.

Not only are more people demanding more water, but as standards of living rise and industrialization advances, they are also demanding more of it on a per capita basis. According to The Urban Water Reuse Handbook, in 1900 the global annual water use per capita was 350 liters per day. In 2000, that number had grown to 640 liters per day.

Agriculture production, already demanding 70% of all fresh water currently used on a global basis, must increase 50-60% by 2050 to feed the world’s growing population, according to the
UN News Centre. Under current practices, this implies having at least 50% more water – which simply is not available. With 90% of irrigated acres served through water intensive practices such as flood and gravity, there is a substantial global need to develop efficient farmland practices such as mechanized irrigation and proper fertilizer application. The emphasis on “more crop per drop” is becoming priority.

Not only is food demand increasing but world energy demand is expected to also increase by 33% by 2040, according to the International Energy Agency. Water is critical to many aspects of power production, including the cooling of generating facilities, fuel extraction and production, fuel transportation through pipelines, and pollution control technologies. According to the Electric Power Research Institute, energy already accounts for 27% of all water use in the United States outside the agricultural sector, and the Union of Concerned Scientists maintains that by total withdrawals (water not later returned to the hydrologic system) thermoelectric production is actually the biggest consumer of water. While clean energy solutions such as solar and wind power may meet a portion of the increased demand, other new techniques such as hydraulic fracturing will place further demand on already stressed water supplies as it takes an equivalent of five Olympic size swimming pools to frack a single well, many of which are located in already stressed water regions such as the western United States.

**U.S. freshwater withdrawals**

Power plants account for the largest share of freshwater withdrawals in the United States.

![Water Use Pie Chart](chart.png)

**Source:** The Energy-Water Collision: Ten Things You Should Know (UCS, 2010)

**GEOGRAPHIC IMBALANCE BETWEEN SOURCES AND USES**

Water is not evenly distributed around the globe. According to Water for the World, fewer than ten countries possess 60% of the world’s available fresh water supply. China, for example, makes up almost 20% of the world’s population, but possesses less than 7% of the renewable water resources. Canada is the world’s most water-rich country but has a relatively small population, while Africa is a water-stressed continent where the population doubles every 20 years.

Half of all humans currently live in towns and cities and this number is increasing as more and more people, particularly in less developed countries, migrate from rural areas into growing urban hubs. The UN has stated that developing nations are currently gaining an average of 5 million residents every month. By 2030, it is expected that nearly two-thirds of the world’s population will live in broad urban areas and a handful of mega-cities, resulting in dramatically increased water demand on already over-stressed or effectively non-existent infrastructure systems. According to E&E News, in fast-urbanizing China nearly 90% of coastal cities face some degree of water scarcity.

As water resources become increasingly scarce, tensions between competing users may intensify at local, national, and even international levels. According to the UN, over 260 river basins are shared by two or more nations, 13 basins are shared between 5-8 nations, and 5 basins are shared between 9-11 nations. In the absence of strong political institutions, pacts and agreements, shifting usage patterns within a basin can lead to trans-boundary tensions. When major projects proceed without regional collaboration, they can become a point of conflict that heightens geopolitical instability.

According to the UN, around 1.2 billion people, or almost one-fifth of the world’s population, live in areas of physical water scarcity, and another 500 million people are approaching this situation. An additional 1.6 billion people, roughly one quarter of the world’s population, face economic water shortages, where countries lack the necessary infrastructure to take water from rivers and aquifers. By 2025, it is estimated...
that one-third of the world’s population will not have adequate access to drinking water. By 2050, more than 4 billion people, nearly half the world’s population, are expected to live in countries that are chronically short of water.

### Global Water Scarcity

[Map of global water scarcity]


According to the latest estimates from the U.S. Environmental Protection Agency (EPA), domestic water and sewer systems need at least $697 billion over 20 years to help protect public health and the environment. Other studies have found that water needs are even larger. The American Water Works Association estimates that drinking water systems need at least $1.1 trillion over the next 25 years to extend and replace the water pipes that are reaching the end of their useful life.

The American Society of Civil Engineers puts the number at $3.6 trillion by 2020, concluding that total investment will fall short by $1.6 trillion at current spending rates. New developments, security upgrades, advanced treatment requirements, and other needs may raise that bill much higher.

The water contamination crisis in Flint, Michigan, is a perfect case study for dilapidated infrastructure and its impact on water quality. Some water lines in Flint were installed between 1901 and 1920 and were made of cast iron and lead, which can leach into the water and cause major health issues. Some estimates to fix the water infrastructure in Flint are up to $1.5 billion.

In developing countries, various estimates conclude that total spending on water infrastructure must increase by a staggering 140% from the current level of approximately $75 billion annually to around $180 billion annually to meet expected future needs. $99 billion per year will be required just for the Asia and Pacific region. According to a recent Bank of America/Merrill Lynch research report, global water equipment capex is expected to be a US$655 billion market from 2013-2018 with pipes (US$132bn), pumps (US$71bn), automation and control (US$63bn), valves and fittings (US$56bn), and aeration (US$33bn) accounting for the largest segments.

Climate change will likely increase the amount of money necessary for storing and distributing water, and innovative solutions must emerge as the magnitude of these looming expenditures becomes clearer. From underground aquifer recharge in place of expensive surface impoundments, to in-place rehabilitation of existing piping instead of outright replacement – expect more dollars to be spent in more creative ways.
GLOBAL AWARENESS

Key U.S. legislation such as the Clean Water Act and the Safe Drinking Water Act are forging much tougher regulatory standards. Allowable contaminant levels continue to be lowered, and tougher enforcement has been pushed by the Obama administration although it remains to be seen if this will continue under the Trump administration. These trends contribute to new capital investment requirements and help drive the already strong demand for monitoring and treatment technologies and services.

In addition to promulgating regulatory improvements, infrastructure spending programs have been approved over the last couple of years in the U.S. that should benefit the hydrocommerce space. The 2014 Water Infrastructure Financing and Innovation Act (WIFIA) will provide long-term, low-cost credit assistance in the form of direct loans and loan guarantees to creditworthy water projects, including those championed at various government levels but also by private entities. The EPA estimates that the program will allow the agency to make approximately $1 billion in loans and stimulate about $2 billion in total infrastructure investment. The WIIN Act, or Water Infrastructure Improvements for the Nation, was also made into law by the Obama administration in late 2016, authorizing vital water projects across the country to restore watersheds, improve waterways and flood control, and improve drinking water infrastructure. It also authorizes $170 million for communities facing drinking water emergencies, including funding to Flint to recover from the lead contamination in its drinking water system.

Most countries worldwide are moving in the direction of tougher and more complex regulatory regimes with respect to drinking water protection and wastewater treatment requirements, although some are only now beginning to enforce them. It is these regulations which fundamentally drive the day-to-day activities, spending levels, and commercial developments in the water industry.

Popular media are granting historically high levels of attention to water resource issues, and this coverage will only inflate as the real problems worsen. Heightened public awareness campaigns and non-profit organizations such as Water.org greatly help spur regulatory reforms, increase spending, and encourage better policymaking at the highest levels.

The financial and business worlds are also rapidly coming up the learning curve on the economic impact of water. Ceres, a non-profit organization advocating for sustainability leadership and backed by an investor network with more than $11 trillion in assets, has highlighted corporate water stewardship through The Ceres Aqua Gauge that provides a broad overview of how competing freshwater demands and limits to supply are beginning to affect corporate financial performance.

Companies that provide products or services tangential to the core water industry are looking at ways of becoming more involved. Industries whose existence depends on clean water supplies – sectors like semiconductor, food and beverage, and pharmaceutical – are increasingly realizing their true dependence on clean water and the business risks to which they may be exposed. Hence, large corporations are becoming far more involved on both the supply and demand sides of the clean water business, and the financial sector is becoming better-prepared to fund these new needs and opportunities.
THE INVESTIBLE WATER EQUITY UNIVERSE
The global water industry is enormous – one of the world’s three largest industry groups in terms of embedded capital, along with oil & gas and electrical power. However, it remains ill-defined and poorly understood by the general investing public when compared to the more traditional and widely-followed sectors of the global economy. In fact, the water “industry” is not properly an industry at all, rather a wide spectrum of companies spanning diverse industrial sectors. A more suitable term is “hydrocommerce”, denoting the full continuum of companies involved in the collection and distribution of clean water for human benefit.

The Hydrocommerce Cycle

Hydrocommerce may be more explicitly characterized as those companies that provide products and services enabling the flow of usable water from (1) initial raw supply sources, through (2) collection and treatment, to (3) distribution among the various types of end-users, and finally through (4) wastewater treatment and disposal (see graphic). Summit Water estimates that the global market for these products and services is now over $1 trillion per year.

Summit Water monitors a proprietary universe of publicly traded hydrocommerce companies, built and screened over the past three decades, which currently represents 396 names with a total market capitalization of over $1 trillion (see table). It is a truly global business, with equities traded on many exchanges around the world. Although the U.S. is the largest single water market, only about one-third of our water universe is U.S.-based.

Summit Water’s universe is growing in both developed and developing markets around the world. Beyond the U.S., every major developed market is represented including Canada, United Kingdom, the European Union, Switzerland, Australia, New Zealand, Japan, Hong Kong, South Korea, and Singapore. New investible opportunities are emerging most frequently in certain rapidly developing regions (BRIC, MENA, Pacific Rim) where privatization and foreign investment are now encouraged.

Summit Water Universe – January 2017

<table>
<thead>
<tr>
<th>Region</th>
<th>Market Cap (M)</th>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia &amp; Pacific Rim</td>
<td>$338,928</td>
<td>171</td>
</tr>
<tr>
<td>Europe</td>
<td>$296,019</td>
<td>91</td>
</tr>
<tr>
<td>Latin America &amp; Canada</td>
<td>$41,536</td>
<td>31</td>
</tr>
<tr>
<td>United States</td>
<td>$391,298</td>
<td>103</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$1,067,590</td>
<td>396</td>
</tr>
</tbody>
</table>

Note: All information from Bloomberg. This table does not include large conglomerate companies.

As described in more detail below, we divide the water investment landscape into two key sectors – (1) the water utilities themselves, which actually provide drinking water and wastewater services to end-users, and (2) the vast array of supporting companies that provide the technologies, services, and “razor blade” products that the utilities need in order to continue operating each and every day.
WATER UTILITIES – THE PRIMARY SUPPLIERS

While often overlooked by momentum investors, water utilities are considered portfolio stalwarts by value investors, and rightly so. Water is very much a localized resource, unlike electricity or natural gas that can be widely distributed, so local water provision is one of the world’s few true natural monopolies. Although the business of providing uninterrupted supply of clean water and dependable wastewater services to an ever-growing and never-satiated demographic is more understood than many of the common market sectors, unlike other industries water utilities still provide attractive long-term performance that is relatively unaffected by cyclical market conditions.

U.S. Water Utilities Outperform

Comparing the Returns of Water Utility Stocks Against the Major Indices:

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Water Utility Stocks*</td>
<td>943.02%</td>
<td>12.44%</td>
</tr>
<tr>
<td>S&amp;P 500 CONS DISCREET IDX</td>
<td>543.95%</td>
<td>9.75%</td>
</tr>
<tr>
<td>S&amp;P 500 HEALTH CARE IDX</td>
<td>504.53%</td>
<td>9.41%</td>
</tr>
<tr>
<td>S&amp;P 500 ENERGY INDEX</td>
<td>467.01%</td>
<td>9.06%</td>
</tr>
<tr>
<td>S&amp;P 500 CONS STAPLES IDX</td>
<td>413.77%</td>
<td>8.52%</td>
</tr>
<tr>
<td>S&amp;P 500 INDUSTRIALS IDX</td>
<td>380.32%</td>
<td>8.16%</td>
</tr>
<tr>
<td>S&amp;P 500 INFO TECH INDEX</td>
<td>377.87%</td>
<td>8.13%</td>
</tr>
<tr>
<td>S&amp;P 500 UTILITIES INDEX</td>
<td>332.54%</td>
<td>7.59%</td>
</tr>
<tr>
<td>S&amp;P 500 MATERIALS INDEX</td>
<td>264.12%</td>
<td>6.67%</td>
</tr>
<tr>
<td>S&amp;P 500 FINANCIALS INDEX</td>
<td>197.58%</td>
<td>5.60%</td>
</tr>
</tbody>
</table>

Data Source: Bloomberg Analytics – All returns are with dividends reinvested.
*An equally-weighted list of all publicly traded U.S. water utility stocks that existed during the periods 12/31/96 to 12/31/16.

This fundamental strength and consistency has historically translated well to the equity performance of publicly traded water utilities. The reason for the attractive equity growth of the utilities is no mystery – when times get tough, we may all cut back on fancy restaurants, new cars, and other discretionary items, but we generally continue to use the same amount of water. We really have no choice. So utilities generally produce and sell the same amount of water, and thus generate a reliable revenue stream – a revenue stream that, in fact, inevitably grows as the result of periodic regulatory rate increases and capital investment. It is often said that what financial markets hate most is uncertainty, so this predictability may go long way in explaining the outperformance of water utility equities throughout the years.

Indeed, compared with almost any other industry, water utilities have a very compelling business model in terms of persistent demand and consistent earnings. According to a 2017 report by the Circle of Blue Organization, the price of water was up 5% in 30 major US cities in 2016 and up 48% since 2010. This, in turn, leads to another hallmark of the water utility business – regular dividend increases – which highlight the regularity of the cash-flow generated by these enterprises. As an example, California Water Service Group recently declared the company’s 288th consecutive quarterly dividend, representing the 50th consecutive annual dividend increase. Payments like these are a major contributor to the long-term performance of utility equities, and also tend to reduce market volatility for these shares over general market cycles.

Although many emerging-market water utilities lack comparatively long histories as publicly traded entities, initial evidence suggests investor appetite is strong for the same solid business fundamentals regardless of location. However, most emerging market utilities still typically trade at much lower P/E Ratio levels than their developed market counterparts. This suggests there may remain room for further equity appreciation among those emerging market utilities that can continue posting strong financial results, and the basic principles of supply and demand make this a likely scenario.
Part II: 2017 Update – Industry Performance and Trends

U.S. Water Utilities vs. International
Comparative Performance 12/31/96 - 12/31/16 (In US Dollars):

<table>
<thead>
<tr>
<th>Utility Name</th>
<th>Country</th>
<th>Total Return</th>
<th>Annual Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAN STATES WATER CO</td>
<td>United States</td>
<td>1014.21%</td>
<td>12.80%</td>
</tr>
<tr>
<td>CONNECTICUT WATER SVC INC</td>
<td>United States</td>
<td>554.75%</td>
<td>9.85%</td>
</tr>
<tr>
<td>AQUA AMERICA INC</td>
<td>United States</td>
<td>1125.63%</td>
<td>13.34%</td>
</tr>
<tr>
<td>SJW CORP</td>
<td>United States</td>
<td>1163.78%</td>
<td>13.52%</td>
</tr>
<tr>
<td>CALIFORNIA WATER SERVICE GRP</td>
<td>United States</td>
<td>785.41%</td>
<td>11.51%</td>
</tr>
<tr>
<td>*Average – U.S. Utilities</td>
<td></td>
<td>928.76%</td>
<td>12.36%</td>
</tr>
<tr>
<td>GUANGDONG INVESTMENT LTD</td>
<td>Hong Kong</td>
<td>116.32%</td>
<td>3.93%</td>
</tr>
<tr>
<td>PENNON GROUP PLC</td>
<td>UK</td>
<td>617.36%</td>
<td>10.35%</td>
</tr>
<tr>
<td>SEVERN TREN PLC</td>
<td>UK</td>
<td>524.33%</td>
<td>9.58%</td>
</tr>
<tr>
<td>UNITED UTILITIES GROUP PLC</td>
<td>UK</td>
<td>302.77%</td>
<td>7.21%</td>
</tr>
<tr>
<td>*Average – International Utilities</td>
<td></td>
<td>390.20%</td>
<td>8.27%</td>
</tr>
</tbody>
</table>

Data Source: Bloomberg Analytics – All returns are with dividends reinvested

*The largest publicly traded U.S. and international water utility stocks that existed during the period 1996 - 2016

WATER INDUSTRIALS – ESSENTIAL PROVIDERS OF PRODUCTS, SERVICES, AND SOLUTIONS

Although water utilities have attractive fundamentals from an investment perspective, they represent only a small portion of the overall water investment theme. Of the Summit Water-defined hydrocommerce universe of 400 companies, only 15% are water utilities. The vast majority are those enterprises that feed the supply chain for water and wastewater utilities – either (1) basic water industrial stocks: pump, pipe, and valve manufacturers, filtration and treatment companies, testing equipment and instrumentation providers; or (2) service businesses: design-engineering and construction firms, operations, service and maintenance companies, and analytical testing laboratories.

Every water utility, whether owned by a municipality or private investors, must buy the products and services necessary to provide consistent water supplies in a regulatory-compliant manner. By law, they cannot defer maintenance or suspend capital spending due to prevailing economic conditions. Every water utility is hence a steady customer of water industrial companies, so these companies in turn profit from the consistent buying patterns – and share some of the same revenue stability characteristics as the water utilities themselves.

Since Summit Water began tracking its water universe, we have found that companies that sell primarily to water utilities have a more persistent and stable business profile than similar companies who might be selling into more cyclical industries. As a result, these businesses have tended to outperform other industrial sectors with respect to equity growth.

Put simply, a valve maker selling to water utilities is likely to have a stronger, more enduring business than a valve maker selling to the oil or aircraft industry. There is a pronounced “trickle-down” effect in the water industry, not only with
respect to consistency of demand, but also with respect to earnings and resulting equity performance. Many of these industrial companies sell into various end-markets, but to the extent that they are more focused on water-related clientele, they tend to have a more consistent and predictable workflow and revenue. Summit Water is therefore very careful to include in its hydrocommerce universe only those product and service providers that demonstrate a great degree of “water content” and a commitment to that segment of their business.

U.S. Water Industrial Outperform

Comparing the Returns of Water Industrial Stocks Against the Major Indices:

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Water Industrial Stocks*</td>
<td>820.28%</td>
<td>11.74%</td>
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<td>543.95%</td>
<td>9.75%</td>
</tr>
<tr>
<td>S&amp;P 500 HEALTH CARE IDX</td>
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<tr>
<td>S&amp;P 500 ENERGY INDEX</td>
<td>467.01%</td>
<td>9.06%</td>
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<td>S&amp;P 500 CONS STAPLES IDX</td>
<td>413.77%</td>
<td>8.52%</td>
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<tr>
<td>S&amp;P 500 INDUSTRIALS IDX</td>
<td>380.32%</td>
<td>8.16%</td>
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<tr>
<td>S&amp;P 500 INFO TECH INDEX</td>
<td>377.87%</td>
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<td>S&amp;P 500 UTILITIES INDEX</td>
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<td>S&amp;P 500 MATERIALS INDEX</td>
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<tr>
<td>S&amp;P 500 FINANCIALS INDEX</td>
<td>197.58%</td>
<td>5.60%</td>
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Data Source: Bloomberg Analytics – All returns are with dividends reinvested
*An equally-weighted list of 10 publicly traded U.S. water industrial stocks that existed during the period.

Water industrial companies also benefit from additional direct purchase orders from other end-users such as agricultural concerns and thermoelectric providers. Given the strong demand drivers outlined earlier, these markets may account for accelerated future growth beyond the industrials’ steady, if not particularly exciting, “razor blade” business with water utilities. In addition, much like the utilities, many segments of the water industrial sector tend to be highly localized and fragmented, offering fertile prospects for the benefits of consolidation. Despite these investment characteristics, hydrocommerce industrials have yet to become a widely followed economic market sector and are consequently still under-recognized by the larger names on Wall Street.

EQUITY PRODUCT RETURNS

Beyond the returns presented earlier for theoretical buckets of water utility and industrial stocks, actual investible products in the water theme have also performed well relative to the general markets. Summit Water was the first to shape the global hydrocommerce industry into an investible product, running an equity hedge fund in the space from 1999-2016 that delivered a lifetime 7.6% compounded annual net return. This compares to an annual total return for the S&P 500 of 4.8% over the same period, giving the Summit Water fund a 7.0% annual alpha versus this widely accepted barometer of the general U.S. market.

Since launching at the beginning of 2016, the new Summit Zacks Global Water Index (NYSE: ZAXWTRX), which incorporates fundamental investment factors that have been strong historical indicators of the long-term performance of water equities, increased 16.51% on a Gross Total Return basis in its first full year of operation. This again compares favorably to the S&P 500 index, which returned 11.96% on the same basis for 2016. Back-tested 11 years to the beginning of 2006, the Summit Zacks Index grew at a gross annualized rate of 15.76% while the S&P 500 index increased 7.72% per year over the same period, for an annualized alpha of 7.09% in favor of the Summit Zacks Index.

Currently, there is roughly $14 billion invested globally in equity products that are dedicated solely to water. Almost 50% of the assets under management in the water theme are invested through UCITS fund structures in Europe, 25% invested through ETFs, and 15% through open-ended structures such as mutual funds. Curiously only about 26% of these products are available in the U.S., which speaks to the appetite of international investors compared to U.S. demand even though the U.S. constitutes the largest single country in terms of equities and market capitalization in the investible universe.
Summit Water launched the Summit Zacks Global Water Index in 2016 as a “smart beta” alternative to the market dominance of passive water indices that are constructed through various measures of market capitalization. Equities are selected for the Summit Zacks Index through a proprietary formula of relevant company fundamentals including measures of price/earnings, enterprise value to EBITDA, and return on equity, to identify water companies that offer the greatest potential from a yield and risk/return perspective while maintaining global diversification. Through this methodology, the Index targets a more balanced and representative exposure to the global water industry that encompasses several world markets and broader capitalization levels, as opposed to a less-diversified basket of the largest, most expensive stocks.
The issues below are key drivers to a number of critical trends in the water industry – developments that are shaping the landscape for current and future investment opportunities.

**U.S. UTILITIES IN TRANSITION**

Over the last several years, the pace of consolidation in the U.S. water utility industry has continued at a brisk pace. The two largest U.S. utilities swapped systems in three states to enhance existing footprints for each company – American Water Works (AWK) acquired the New York operations from Aqua America (WTR) and WTR acquired the Ohio and Texas operations from AWK. American Water Works also announced divestitures in Arizona and New Mexico to Utilities, Inc., and Aqua America announced a sale of their Florida operations to the Florida Governmental Utility Authority. Also, Connecticut Water (CTWS), the biggest investor-owned utility in the state of Connecticut, made headway into the state of Maine with the acquisitions of The Maine Water Company (from WTR) and Biddeford & Saco Water Company (BDDD-formerly public). Buybacks are also beginning to take place in the utility sector with Aqua America recently announcing a one million share buyback and American States Water announcing a 1.2 million share buyback.

As in previous years, the rollup of small, underperforming, mismanaged water systems continued at attractive valuations. Both AWK and WTR were active during the last several years. According to Bluefield Research, in 2016 investor-owned utilities completed 56 water deals representing more than $622 million in acquisitions, up from 33 transactions for $297 million in 2015. We expect this activity to continue indefinitely as these smaller systems age, need investment, and are desperate for larger, more skilled utilities to come in and take over their systems.

U.S. utilities are also actively engaged in nascent non-regulated business lines that appear to be attractive revenue sources going forward. The first non-regulated activity is water and wastewater services to various U.S.-based military base operations. AWK recently won its 12th base operation, while AWR has 10 bases in their portfolio and several more bids outstanding. AWK and AWR are the only two investor-owned utilities that are actively pursuing these military base operations contracts, which they estimate to be an $11 billion market.

The second non-regulated business opportunity is homeowner services, providing maintenance to domestic homeowners and smaller commercial businesses to protect against the cost of repairing broken or leaking water and sewer lines connecting them to water/sewer networks. Most customers are unaware that the lines that connect their homes are their responsibility and not owned by the utility. The attractive part of this business line is that it is an easy sell to existing customers as an add-on service, and the cost-to-customer is low with little risk and great return on capital to the utility. AWK recently announced partnerships with New York City, Nashville and Houston, and currently has nearly 1.4 million customer contracts in this space. The total size of this market is roughly 75 million households and 23 million small businesses, and adoption rates are currently very low so there is a long growth runway.

**INTERNATIONAL UTILITIES IN TRANSITION**

International utilities also experienced moderate M&A and IPO activity since our last report. Manila Water Company (MWC) has built a solid platform for rollups in Vietnam, with their first Vietnamese acquisition of Clark Water Company from Veolia and three subsequent purchases since then. Other activity in emerging markets included the 2012 IPO of Phnom Penh Water Supply (PWSA KH), becoming the first domestically listed company on the new Cambodian Stock Exchange. Further, according to Global Water Intelligence, there is the planned 2018 IPO of Saigon Water Supply Corp. (SAWACO), Vietnam’s largest water utility.

Once again, British utilities have been the target of takeover rumors that have persisted over much of the past decade. British utilities have historically been targets of takeovers, of the 10 that were privatized in 1989 only 3 remain. In mid-2013, Severn Trent was approached by a consortium of private acquirers, but the bid was rejected and the company remains...
listed on the LSE. However, recent news has indicated that once the new AMP6 regulation is crystallized, new bids in the U.K. water sector may become “more likely.”

Some emerging market utilities have been subject to regulatory, governmental, and environmental issues. SABESPA, the Brazilian utility that serves São Paulo, has experienced pressure from regulators regarding tariff reductions and also faces extreme drought conditions. COPASA, another Brazilian Utility, is under the same scrutiny with drought and civil unrest making headlines and impacting the bottom line. Manila Water has also been approached from their regulator about tariff reductions, but they have appealed the decision and are expected to win. This uncertainty has led to rough stock performance from these utilities over the past couple of years, but valuations have consequently become more compelling for the medium term.

TRUMP ADMINISTRATION PLANNED INVESTMENT IN INFRASTRUCTURE

Infrastructure is an area attracting intense investor interest as the Trump administration takes office in 2017. On the heels of the WIFIA and WIIN programs approved in the last couple of years, Trump is proposing a $1 trillion, 10-year infrastructure plan that would target transportation, clean water, telecom, and security. While details are still hazy, the purported “deficit-neutral” plan relies on higher tax revenue, public-private partnerships, and tax credits. FoodandWaterWatch.org reports that Trump’s policy advisors have outlined a plan that would give private investors a massive $0.82 tax credit for every one dollar invested into an infrastructure project.

According to a plan posted on the Trump website:

- Infrastructure investment strengthens our economic platform, makes America more competitive, creates millions of jobs, increases wages for American workers, and reduces the costs of goods and services for American consumers.

- America’s infrastructure is a linchpin of private sector growth but, today, much of our infrastructure is crumbling.

- Regarding water specifically, an investigation this year by USA Today “identified almost 2,000 additional water systems spanning all 50 states where testing has shown excessive levels of lead contamination over the past four years.” This included 350 systems that supplied drinking water to schools or day care facilities.

Regardless of the wisdom of this potential spending plan, many infrastructure engineering firms and industrial companies in the hydrocommerce space would benefit greatly from this demand tailwind. A significant portion of any investment likely would go toward repair work, which is labor intensive and progresses quickly, but a tight market for the requisite labor may limit the ramp-up speed.

Various outlets are also reporting that Trump has aligned himself with agricultural interests on a host of water issues, appointing noted advocates on water development to top posts in his transition team, the EPA, and Department of Interior. He has also promised to side with farmers in the ongoing “Waters of the United States” rule that would substantially increase the EPA’s oversight of various water resources.

THE EVOLUTION OF INDUSTRIALS

The lingering effects of the U.S. housing market collapse, followed by a worldwide recession and successive near-misses of a European Union breakup, have all conspired to inhibit global industrial sales growth. In the face of modest top-line increases, water industrials have taken to optimizing and rationalizing their businesses, either at their own discretion or through the influence of their shareholder base.

Companies came through the financial crisis fearing bankruptcy due to both operational and financial leverage, and began aggressively cutting costs and using strong free cash flow generation to pay down debt. The stability of aftermarket revenue that many industrials in the hydrocommerce space experienced created overcapitalized balance sheets during the ensuing years. Layer on top of that the ability to borrow money at historically low rates, and industrials within the space became subject to the ire of activist shareholders.
SPX Corp, Flowserve, and Calgon Carbon all have been put in the crosshairs by activist groups seeking improvements with regard to operating margins, capital allocation, and capital structure. Throughout 2013, Ashland was also the target of several shareholders, notably Jana Partners, who advocated for the sale of underperforming businesses and the use of proceeds to repurchase what they believed to be undervalued Ashland stock. Announced in early 2014, the Ashland Water Technologies business was sold to private equity for premium valuation of $1.8 billion. Train Partners, the investment company led by Nelson Peltz, purchased 7.2% of Pentair in June 2015, encouraging Pentair to boost shareholder value through accretive mergers and acquisitions to consolidate the flow control sector. Pentair wasted no time as it announced its first acquisition in August of 2015 when it acquired Erico Global for $1.8 billion.

Several industrial companies in the water sector also took it upon themselves to make both transformative and incremental changes in the face of a challenging climate. The most notable was Pentair’s purchase of Tyco Flow Control from Tyco International in 2012 for roughly $5 billion, after Pentair identified an opportunity to bring Tyco Flow Control’s lagging operating margins up Pentair’s standards by integrating its lean enterprise playbook. Among other transformative actions, Sulzer sold its coating business for $1.1 billion in order to focus on the oil & gas, power, and water markets, while Sweitzer-Mauduit International (SWM), a maker of cigarette filters, bought water filtration materials producer DeStart for $230 million, citing sales synergies between the two companies.

Other water industrials capitalized on strong free cash flow to invest organically, either through capital expenditures or by repurchasing their own stock. Investments were made in order to improve manufacturing efficiency, take out operational inefficiencies, and increase operating margins. Among the many companies repurchasing their own stock, in some cases financed with low-cost debt, the most definitive repurchase came from Mueller Industries, which was able to repurchase 27% of its stock from their largest shareholder, Leucadia National, at a 15% discount to prevailing market prices.

Should top line growth return to the mid-to-high single digits experienced in the decade leading up to the financial crisis, actions taken by industrial companies within the water universe, either by their own will or at the request of their shareholder base, will have a dramatic positive impact on the per share value of their respective businesses in the future. Housing and commercial construction as well as an energy transformation in North American are major identifiable tailwinds for industrial companies moving forward. Margin growth and efficient use of capital should allow companies benefiting from these tailwinds to accelerate earnings over the coming years.

**CLIMATE CHANGE SPURRING TECHNOLOGY INNOVATION**

Although drought in the western U.S. is a reality the region has had to face for a considerable time, only recently it is bringing the ideas of water allocation, price, use, and efficiency to the forefront. Pre-drought, water was taken for granted because of its low price and abundance – just turn on the tap and get fresh, clean, reliable water at a very little cost. With water increasingly in short supply, coupled with concerns over climate change and rising costs, technology is now stepping in to shore up the deficiencies. Smart metering, leak detection, efficient irrigation in agricultural and landscape applications (“more crop per drop”), water reuse (“toilet to tap”), and desalinization are a handful of innovations that are leading the vanguard of water resource management.

A good analogy to the current water situation is the energy renaissance that took place in the late 2000’s when oil prices were high and the consensus view was that we were at “peak oil.” This crisis lead to massive technology advancements in areas such as alternative energy (solar, wind, hydro), electric cars, battery technology, and energy efficient appliances. Energy conservation finally became in vogue to the masses and was no longer viewed as a liberal, “save the earth” way of thinking. Under the “new normal” circumstances, attitudes toward water efficiency are changing in this regard as well.
Part III: Current Trends Shaping Investment Opportunities

**Smart meters** emerged in the early 2000s but the space is now undergoing rapid development and adoption. The strength of smart meters is found in the ability to offer water utilities specific paths towards operating cost and carbon footprint reduction while improving service and supply management. These include identifying end-point leakage, gaining clarity between leakages, detecting non-revenue water and chargeable consumption, establishing consumption patterns, and using predictive analytics to regulate supply. Metering companies such as Itron (NYSE: ITRI), Badger Meter (NYSE: BMI), and larger enterprises with metering divisions such as Xylem (NYSE: XYL) will benefit from this trend.

**Agriculture** is facing more competition for water resources in the wake of increased pressure from urbanization, industrialization, and climate change, as well as through changes in the seasonal timing of rainfall and snowmelt and a higher incidence and severity of floods and droughts. Advanced irrigation practices can enhance water efficiency to reduce these burdens, through innovations such as sensors and communications, intelligent on-demand watering systems, high efficiency delivery mechanisms for nutrients, and brackish water re-use. Rationalized water-price increases should further incentivize farmers to adopt technology and appropriate practices for conserving water. Companies such as Toro (NYSE: TTC), Valmont (NYSE: VMI), and Lindsay (NYSE: LNN) are providing these innovative products.

**Water reuse**, recycling wastewater into other productive uses, is not new – non-potable water recycling systems have been in place for decades. However, with water supplies constrained, cities are now embracing the use of the “toilet to tap” paradigm for applications such as agriculture, landscaping, and golf course irrigation. In addition, recycled water is being used for street cleaning, fire-fighting, geothermal energy production, preventing seawater intrusion into freshwater aquifers, industrial processing, commercial laundering, restoring natural wetlands and creating constructed wetlands. Filtration companies such as Danaher (NYSE: DHR) and Calgon Carbon (NYSE: CCC), pump manufacturers such as Xylem (NYSE: XYL) and Gorman Rupp (NYSE: GRC), and engineering companies such as Tetra Tech (NASD: TTEK) and Aecom (NYSE: ACM) should benefit from water reuse infrastructure projects.

**Desalinization** is the process of desalting seawater into potable, fresh water. Of the world’s water, 97.5% is seawater and 2.5% is fresh water, so as population grows and fresh water becomes more and more precious, increasing fresh water through desalinization might be the only sustainable solution. It is a way to augment the amount of water in agricultural regions such as California or to supply the entire water needs of places like the Cayman Islands, Singapore, and the Middle East. The biggest drawbacks regarding the desalinization process are the tremendous amount of energy necessary, which leads to higher costs per gallon, and the toll the brine byproduct takes on the local marine life. Technology improvements have mitigated some of these concerns and proponents of desalinization continue to try and find solutions. The largest benefactors of desalinization are the membrane and equipment manufacturers such as Veolia (FR: VIE) and Doosan Group (SKR: 034020), who have divisions catering just to this area. Also, desalinization specialists such as Consolidated Water (NASDAQ: CWCO) and Energy Recovery (NASDAQ: ERII) are other companies that would benefit from a desal boom.
HOUSING & COMMERCIAL CONSTRUCTION RECOVERY

A key growth engine for the hydrocommerce market is expanding housing and commercial construction, an engine that began to slow, and played a key role in the global financial crisis, in 2008. It has taken more than have half a decade for companies in the water space to feel confident growth has returned, but it has. The table below highlights commentary from companies with core businesses that not only have strong repair-and-replace sales but also sell parts into new housing and commercial developments. The contrast between time periods is enormously apparent.

Company executives clearly share an optimistic outlook for their end markets, which stands in stark contrast to their recessionary outlooks, because of the methodical recovery in new housing starts and commercial construction. Prior to the housing and financial crisis, the U.S. averaged 1.5 million new homes every year from the time the U.S. Census Bureau began collecting data in 1959. The level of new homes being built increased to nearly 2.3 million at the height of the housing bubble in 2006, however activity drastically reversed in the subsequent years as housing starts plummeted to under 500k in 2009, the lowest-ever recorded reading. The period between the housing crisis and present represents the only extended period in which housing starts remained below 1 million.

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<th>Company</th>
<th>Recession</th>
<th>Today</th>
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<td>Mueller Water Products</td>
<td>“Demand for our products dropped significantly during the first quarter of fiscal 2009. A sharp decline in municipal spending that had been growing in prior quarters was the primary driver of this drop-off in orders. The liquidity crisis, budget shortfalls and uncertainty surrounding the proposed federal stimulus bill all factored into the decline in municipal spending.” – Gregory Hyland, Mueller Water CEO, February 2009</td>
<td>“Water rates have increased faster than any other utility. And state and local seasonally adjusted tax receipts continue to increase and hit new highs, and municipalities are overall in better shape than they have been over the past several years. We saw a contribution to growth in 2014 coming from the municipal side and expect that to continue in 2015.” – Evan Hart, SVP &amp; CFO November 2014</td>
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<td>Mueller Industries</td>
<td>“We expect the recovery in residential construction to be modest due to the continuing high rates of unemployment, the impact of mounting foreclosures, the tightening of lending terms and the phase out of governmental stimulus spending. Private non-residential construction declined by over 20 percent in 2009, and the outlook is for a further decline in 2010, with recovery commencing in 2011.” – February 2010</td>
<td>“We are pleased with the continued improvement in our business performance. Unit volumes improved in all four quarters in 2014 versus the prior year and continue to rise with the gradual improvement of the markets we serve. We are encouraged by the market trend and anticipate continued strengthening in 2015.” – Greg Christopher, Mueller Industries CEO, February 2015</td>
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<td>Watts Water</td>
<td>“The United States residential construction market declined over 30% for the second year in a row, commercial construction in the United States softened and started to decline toward year end, and European construction levels declined across most markets.” – Patrick O’Keefe, Watts Water CEO, February 2009</td>
<td>“Recently, we have felt the tailwinds of the new residential construction growth in the U.S. and expect that growth should continue as we head into 2015 with potential upside coming from a return of the commercial market.” – Robert Pagano, Watts Water CEO, November 2014</td>
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As it stands today, the residential housing market is appropriately healthy and currently building more than 1 million new homes in the U.S. (better late than never), and has the opportunity to expand further to the long term yearly average of 1.5 million starts. Much of our water universe is well-positioned to benefit from a U.S-led housing recovery. For some companies this will be a welcome enhancement to already strong core repair-and-replace business, allowing investors to unlock further value. For example, Mueller Water Products CFO Evan Hart recently commented that “in 2013, housing accounted for about 5% of our overall [company] revenues but historically housing accounted for 30% to 35% of our revenues. So there’s clearly a lot of upside.”

On top of the revenue tailwind, companies who “right-sized” their businesses and increased cost efficiencies in the wake of the housing crisis are likely to see earnings grow at rates much higher than revenue due to increased incremental margins. Mueller’s Hart also stated that “at 1.1 million to 1.2 million housing starts, we should achieve the same margins that we did in the past at 1.5 million housing starts and that’s due to the costs that we’ve taken out of the business.”

Housing starts have also served as a leading indicator for commercial construction over the past decade. In fact, commercial construction peaked two years after housing starts peaked before falling off by 60% over the ensuing 2.5 years, while the trough in commercial construction occurred fifteen months after new housing starts bottomed. With housing continuing to pick up speed we expect commercial construction to follow. Top line growth tailwinds coupled with much higher incremental margins bodes well for water companies selling into growing housing and commercial construction end markets.