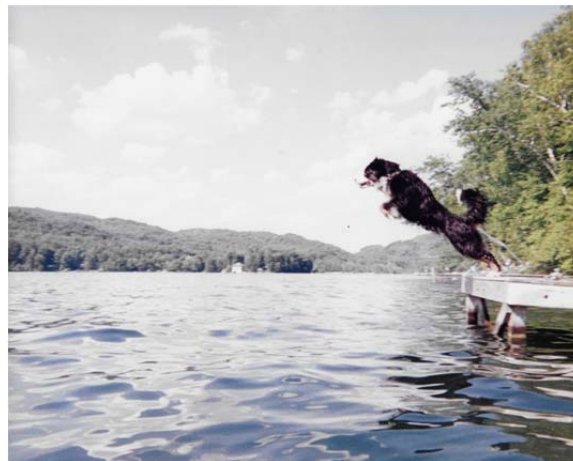




## INVESTMENT THOUGHTS

MARCH 2019

### A PRECIOUS RESOURCE



A resource so precious to all aspects of life – Water

A known fact: 70% of the Earth is covered by water. However, only 2.5% of our water is fresh water and, according to the World Health Organization, only 1% of that fresh water is accessible. Yes, you read that correctly, less than 1% of the Earth's water is available for us to use so it is truly Earth's most precious resource. Can we take you back to economics class? You may have heard all about supply and demand. There is a short supply of fresh water while the demand continues to grow. As dependence on water increases there are severe socioeconomic implications for imbalances in either supply or demand. Water management and conservation are becoming more important for humanity and the need for better solutions may help fuel the growth of water related investments. We do like to combine sense and cents.

According to Deloitte, in 2010 America used 355 billion gallons of water... per day! Think of the demand for water not just in our daily personal uses (about 13%) or agriculture (37%) for growing food but also economically in businesses such as restaurants, hotels and manufacturers (50%). Did you know colleges are by far the largest users of water provided by utilities? Breweries and wineries are in the top 10 as well (although some may say they should be exempted). All sectors of the economy rely on and benefit from water systems efficiencies and reliability.

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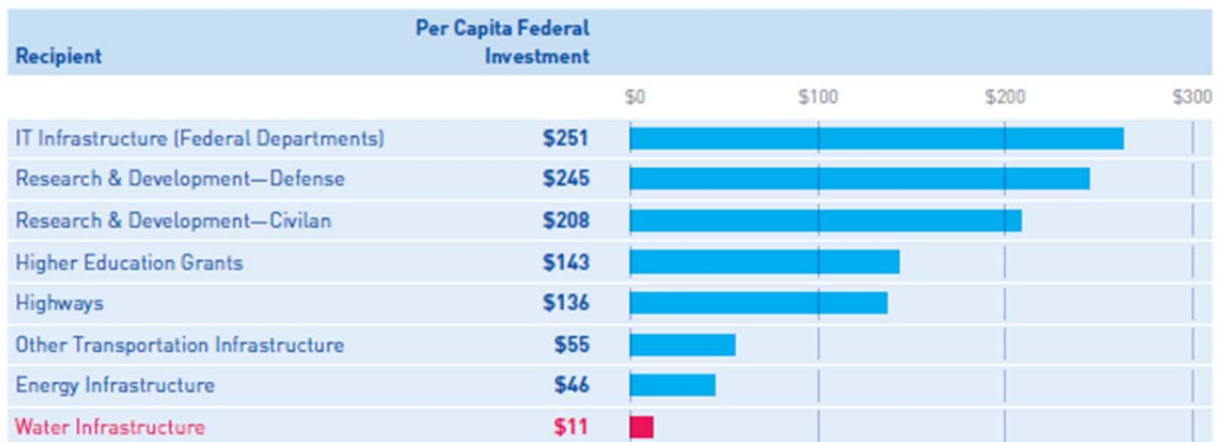
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# INVESTMENT THOUGHTS

One of the key issues is our aging infrastructure. There are more than 1 million miles of pipes used for water distribution and recovery in the US. We know the projected lifespan of underground pipes is between 50 and 100 years depending on the pipe material, soil and installation. According to the Environmental Defense Fund more than 500,000 children in the US have elevated levels of lead in their blood, primarily from lead paint and pipes. In 2011, an American Water Works Association analysis showed that one third of water mains will need to be replaced by the year 2040.

We have some time, but not much, to develop a strategy to fund the upgrading of our aging infrastructure and there are additional issues. First, we must understand there are many indirect costs associated with water use and the infrastructure costs, making the true cost of water difficult to calculate. Second, water is the least expensive of the major utility services, therefore the publicly owned water utilities, which serve approximately 86% of the national population, get paid by amount of water usage and many local municipalities have limited financial capacity for future investments. The federal government is responsible for assisting public systems and does have a budget line item for water, but it spends on water infrastructure to the tune of 23 times less than what it spends on information technology. It also spends about 12 times less on water than on our highways.

Figure 1 – Annual federal investment per capita



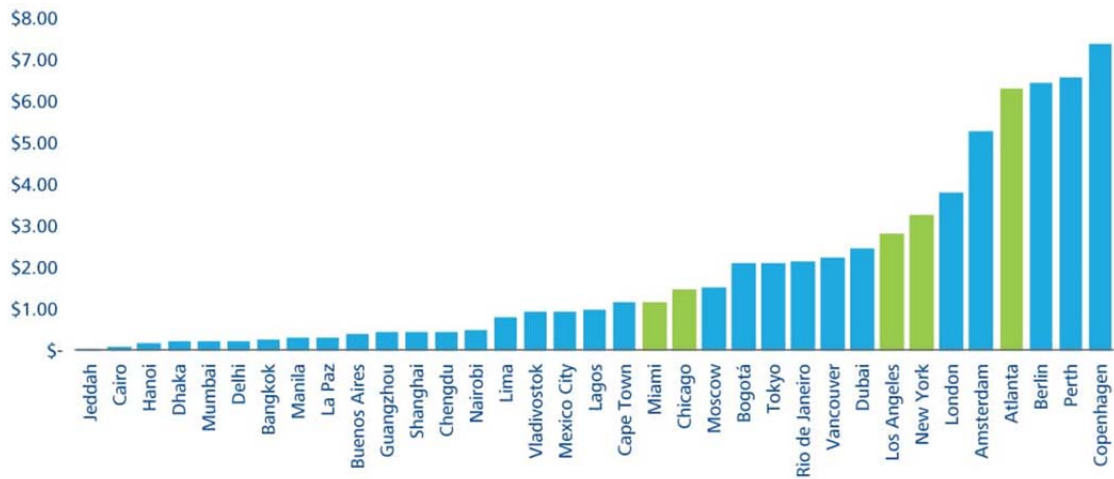
Values expressed in 2014 dollars. Source: CBO 2015, CBO 2013, GAO 2016.

Sources: Congressional Budget Office, [thevalueofwater.org](http://thevalueofwater.org)

Deloitte reports that water prices in the US rose 41% from 2010 to 2015 to an average of \$62.40. In the Upper Valley the town of Lebanon is drowning in water infrastructure costs and has raised its water charges by 7% in 2017 and 5% in 2018. Recent consultant reports indicate that Lebanon rates would have to go up by over 7% for the next four to five years to keep up with upcoming expenses. Residents would shed tears but they might be billed for it.

# INVESTMENT THOUGHTS

Figure 2 – Water prices around the world (US dollars per cubic meter)



Sources: Fortune, Deloitte

## World Water Day

March 22<sup>nd</sup> is World Water Day. The theme this year is 'Leaving no one behind'. Education is essential for breaking the cycle of poverty yet over half of the world's schools lack access to safe water and proper sanitation. Lack of water also engenders lack of equality because in developing countries girls and women are made responsible for carrying water (often for miles and from untreated sources) to use at home. Here are some additional facts:

- Around 4 billion people (nearly two thirds of the world's population) experience severe water scarcity during at least one month per year
- 2.1 billion people live without safe water at home (accessible, available and free from contamination)
- More than 700 children under age 5 die every day from diseases linked to unsafe water and poor sanitation
- 700 million people could be displaced by intense water scarcity by the year 2030



# INVESTMENT THOUGHTS

## The role of technology

Technology is playing an important role in allaying some of the water supply concerns. Powerful computers, wireless networks and data analysis are helping improve efficiency and reliability. Household appliances are being designed to reduce water usage. Storage and distribution is made more efficient while testing and filtration in treatment plants reduces health risks. As an example of early stage innovation, consider the desalination process that removes salt and other minerals from water. If it can become more cost effective and energy efficient, it will represent a huge leap forward for humanity (and its companion animals).

## Investment implications

Conceptually the value and benefits of fresh water outweigh the costs. Investing in a specific socially responsible theme such as water is most appropriate for long term investors as the risk and reward balance takes time to develop, similar to the time required to replace 100 year old pipes. There is no pure water stock play that encompasses the entire water cycle and infrastructure loop. Investing with an Exchange Traded Fund (ETF) is one way of encompassing a diversified water play. The multi-year performance of a water related fund, such as PHO, is shown below.

Figure 3 – Price chart of Invesco Water Resources ETF



Source: [finviz.com](http://finviz.com)

There are many water related subsectors, from pipe manufacturers to pumps, meters, filters and other equipment and technologies, so a diverse portfolio is a more reasonable approach. Some of the companies that we have identified with interesting exposures to water are summarized herewith.

Aqua America is a regulated water and wastewater treatment utility. It was founded in 1886 by Swarthmore College professors that were granted a charter to provide water to a township in Pennsylvania. Today Aqua America serves over 3 million people in 8 states and has a market capitalization of over \$6 billion. There are more than 53,000 water systems in the US, so you can imagine how an experienced company like Aqua America can offer the benefits of scale and quality control when acquiring these fragmented and often outdated water systems. Did we mention the liquid cash dividends producing a near 2.5% yield?

# INVESTMENT THOUGHTS

Itron sounds like a sci-fi movie but it is actually a metering company. Itron measures electric power, natural gas and water flows then leverages that data to provide a range of services to utilities and cities. The company's water-related services include leak detection, pressure management, demand forecasting and quality control. Itron's products and services are used in over 100 countries and it has a market capitalization of about \$2 billion. Itron has over 1,400 patents registered or in application. According to Itron in the US only half of water meters are automated and in the rest of the world only 9% of over 1 billion meters are automated. As 5G and other high speed telecom and wireless data technologies are implemented, Itron and the world's water resources may benefit.

Xylem, for those of you with gardens and farms, is a vascular system that brings water from the roots to the stems and leaves of plants. Besides stumping your friends at the next gardening show, you can also mention Xylem the company, which is a world-wide manufacturer and developer of equipment and technologies for water distribution and treatment. From pumps to turbines to aerators Xylem is a leader in the field with revenues of about \$5 billion per year and a market capitalization of over \$14 billion.

As investors we follow several companies and funds in the areas of water and sustainability. Technologies such as desalination and hydroponics have interesting applications and we will monitor them. Company financial strength and investment potential are primary considerations. We are patient for the right opportunities at reasonable valuations with good risk-reward balances that can contribute to a diversified portfolio.

Although we have only touched briefly on several aspects of the impact and industry of water, you can see how essential water is in our lives. Some people may not be completely aware of water's extended effects, its hidden costs or the potential ramifications of its depletion. Water is our shared commodity. Hopefully we can all help bring awareness to preserving such a precious resource. Enjoy your glass of water today (and every day, lukewarm is better for you).

We welcome your comments.

Thank you.

Best regards,



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# INVESTMENT THOUGHTS

## Additional information:

- Thank you to Jon Molesworth for the opening photo. We dedicate this newsletter to Tucker.
- Girls and boys photo: [www.thewaterproject.org](http://www.thewaterproject.org)
- World Health Organization [www.who.int](http://www.who.int)
- US Census [www.census.gov](http://www.census.gov)
- Water World Magazine [www.waterworld.com](http://www.waterworld.com)
- Environmental Defense Fund [www.edf.org/health](http://www.edf.org/health)
- Deloitte [www.deloitte.com/insights](http://www.deloitte.com/insights)
- Valley News [www.valleynews.com](http://www.valleynews.com)
- American Water Works Association [www.awwa.org](http://www.awwa.org)
- United Nations, [www.worldwaterday.org](http://www.worldwaterday.org)