NATIONAL ECONOMIC & LABOR IMPACTS OF THE WATER UTILITY SECTOR

EXECUTIVE REPORT

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CONTENTS

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National Economic and Labor Impacts of the Water Utility Sector: Executive Report

For full text of the complete study, please visit www.waterrf.org.

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INTRODUCTION

The 30 utilities studied in this report provide water, wastewater, and stormwater service to 83 million people. Their combined capital and operating expenditures will average $23 billion per year over the next decade.

It is widely accepted and sometimes taken for granted that water, wastewater, and stormwater utilities significantly contribute to public health, business development, and the environment. What is not as well understood is how these same utilities support the local and national economy by providing jobs, building reliable infrastructure, and supporting technological advancement with clean and reliable water systems.

This study contributes to the overall discussion of the value of water by focusing on the economic impacts associated with water, wastewater, and stormwater service operations and capital investments. Funded by the Water Research Foundation (WRF) and the Water Environment Research Foundation (WERF), this study estimates how the planned operating and capital investments of 30 large public water utilities contribute directly and indirectly to the economy and employment markets in their respective regions and to the nation over the next decade.

The term "water utilities" is used throughout this report to describe the 30 public utilities that participated in this study. These utilities provide a broad range of services to their customers, including the provision of drinking water, wastewater collection and treatment, and/or stormwater collection and treatment. They operate in 25 distinct regions across the country and represent one-third of all large U.S. water utilities (those that provide water, wastewater, and/or stormwater service to more than 500,000 people).

The utilities surveyed in this study act as economic engines in their regions and to the nation as a whole. Combined, they provide water, wastewater, and stormwater service to 83 million people across the country. They directly employ 36,500 workers and provide access to quality jobs that offer competitive pay and career training opportunities. Their reported operating and capital expenditures, which average $23 billion per year for the next decade, support the production of other industries across the nation and provide safe and reliable water to their customers while treating wastewater and stormwater to maintain the public health of their communities.

The Water Sector Supports $524 Billion in Economic Activity

Water, wastewater, and stormwater utilities will contribute $524 billion to the economy over the next decade, supporting 289,000 permanent jobs.

Wastewater Treatment Facility

Agricultural Irrigation System

Over the next decade, the 30 water utilities participating in this study plan to spend an aggregate total of $23 billion per year for operations and capital expenditures. These plans represent the utilities' ongoing commitment to provide safe, clean, and affordable services to their clients and to the public. Approximately 60 percent of projected spending is attributable to the ongoing operation of the utilities and 40 percent is for capital infrastructure investments to maintain systems in a state of good repair.

As the $23 billion of direct spending on operations and maintenance is released into the larger economy, it is re-spent by workers and suppliers, generating additional positive economic output. *Output* refers to the market value of goods and services produced directly by the utilities in this study and indirectly by their expenditures and employee wages. In other words, the utilities' initial expenditures for materials, services, and labor (their *direct effects*) are transferred to other businesses and their employees. These businesses and their employees then engage in additional spending for materials and services (their *indirect and induced effects).*

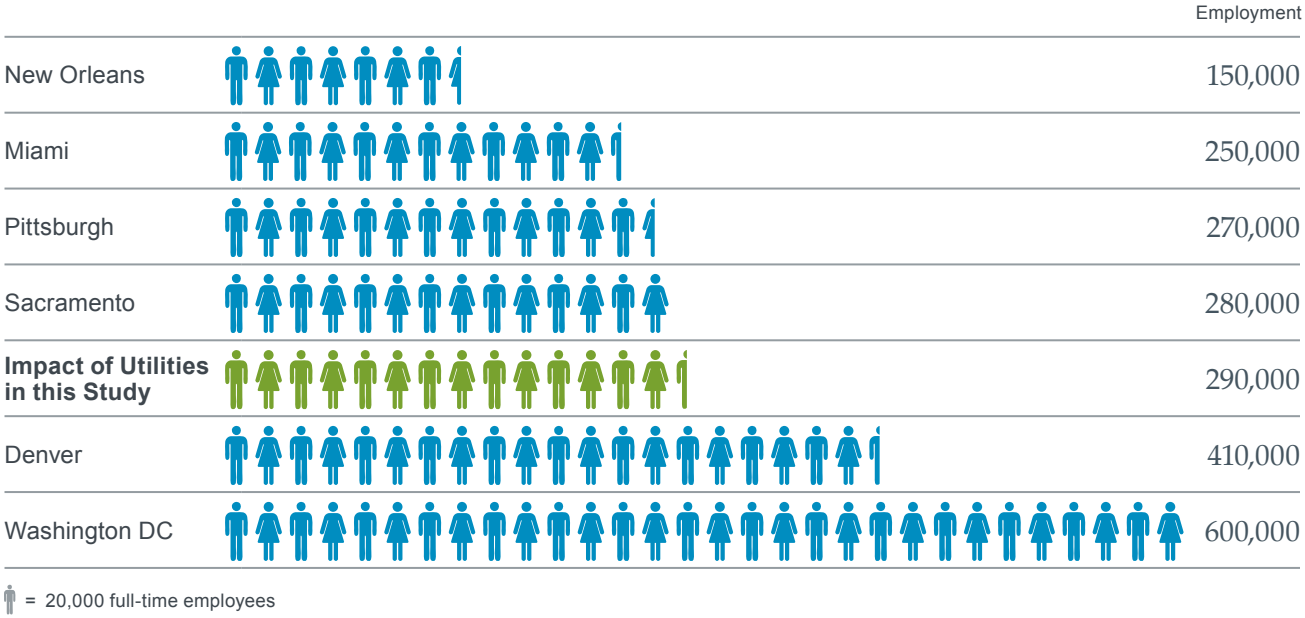
Thus, from 2014 to 2023, the operating and capital expenditures of the participating utilities will generate $52 billion per year in total annual economic output across the United States. This results in a national economic contribution of $524 billion over the next decade supporting approximately 289,000 permanent jobs. These jobs encompass employment that will be provided by the utilities (their *direct effects*) and within other industries that are supported by utility expenditures and employee wages (their *indirect and induced effects*).

TABLE 1: Economic Impact of Utilities

	Employment	Labor Income	Output
Aggregate Impact over 10 years	2.9 million job-years	$189 billion	$524 billion
Annual Impact	289,000 jobs	$19 billion/year	$52 billion/year

Impacts are expressed in real 2014 dollars, values may not total due to rounding.

FIGURE 1: Total Employment Contribution of Utilities in this Study Compared to Total Employment of U.S. Cities



To put this level of economic activity into context, the total annual employment impact of the utilities in this study exceeds the total workforce of many American cities, including the cities of New Orleans (150,000 employees), Miami (250,000 employees), Pittsburgh (270,000 employees), and Sacramento (280,000 employees) (U.S. Census Bureau 2013).

The combined economic contribution by the utilities in this study exceeds the gross regional product of metropolitan regions such as Chattanooga, Tennessee; Springfield, Massachusetts; Huntsville, Alabama; and Santa Barbara, California (Bureau of Economic Analysis 2013).

On average, every $1 million in direct spending by the utilities in this study supports 16 jobs throughout all sectors of the economy. When compared to prior economic impact studies, we find that investments by utilities in this study generate similar job impacts as compared to investments in clean energy, transportation, and health care. Further, investments by participating utilities generate more jobs per $1 million than investments in military spending or personal income tax cuts (U.S. Department of Transportation 2013, Heintz et al. 2009, and Heintz et al. 2011).

FIGURE 2: Ripple Effect of Water Investment (every $1 million in direct spending by water utilities supports 16 jobs nationwide)

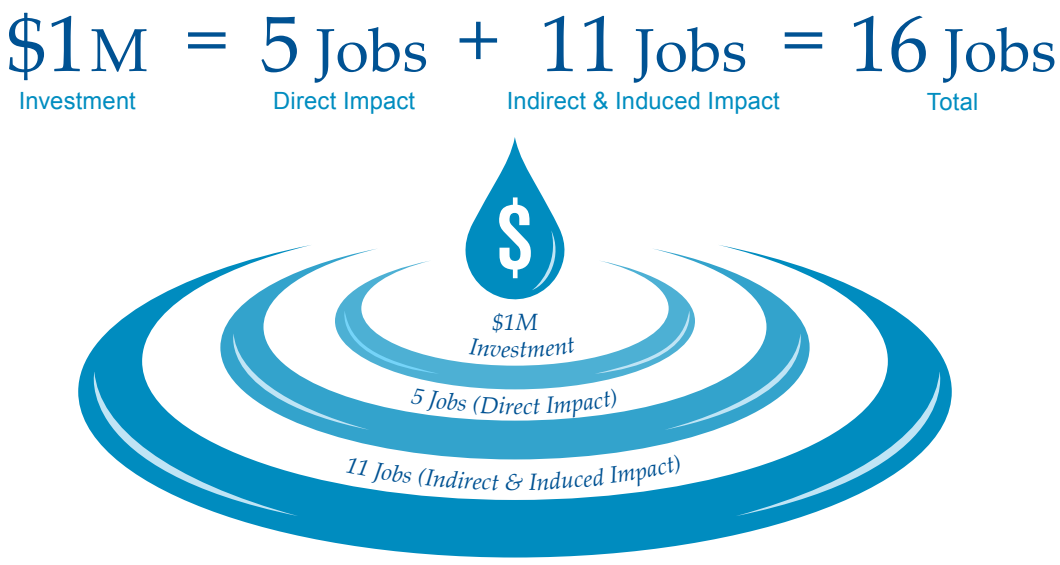
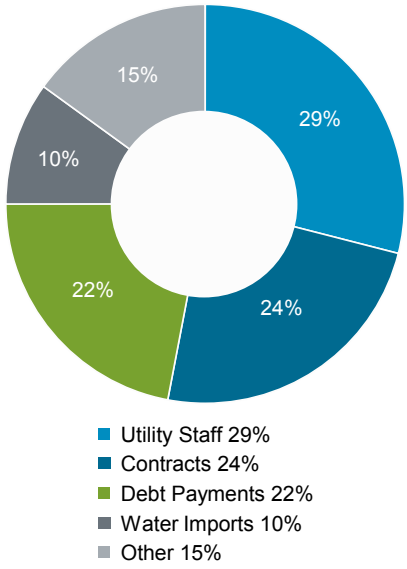


FIGURE 3: Allocation of Operating Expenditures



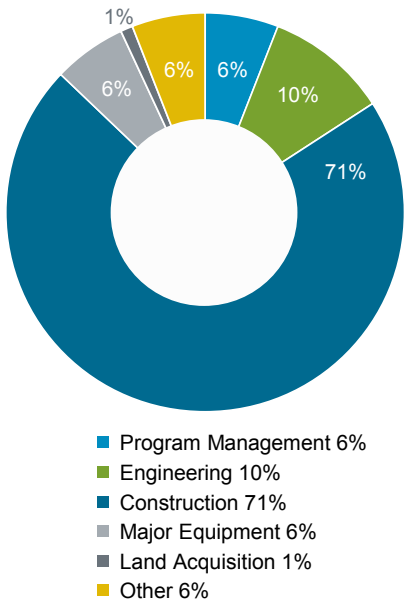
Operating Budget Impacts:

$299 billion in output over 10 years and 157,000 jobs per year

In 2014 alone, the aggregate operating expenditures across participating utilities total $12 billion; the average operating budget per utility is more than $400 million in 2014. The participating utilities plan to spend $145 billion to operate and maintain water, wastewater, and stormwater services over the next 10 years (see Table 2). The reported escalation rate for utility operations over the period averages 3.5 percent per year, a reflection of increasing maintenance needs and higher costs of commodities such as energy and chemicals, combined with inflation.

The projected operating expenditures of the utilities in this study will generate $30 billion in annual economic outputs to the nation and will sustain 157,000 jobs per year over the next decade (see Table 3). Altogether, this represents an aggregate output of $299 billion over ten years.

FIGURE 4: Allocation of Capital Plan Investments



Capital Plan Impacts:

$225 billion in output over 10 years and 131,000 jobs per year

Capital expenditures are intended to fund the planning and construction of utility infrastructure necessary for our future. Over the next decade, participating utilities will be: replacing aging infrastructure, improving local water quality, expanding services to accommodate increased demand, building system resiliency in the face of rising natural risks, and responding to an assortment of other needs that are driving investments in water infrastructure throughout the nation. In fiscal year 2014, participating utilities have committed $10 billion to capital plan investments. These utilities plan to invest more than $88 billion in the next ten years (see Table 2).

By funding these capital improvements, the 30 utilities in this study are making a sizable contribution to the nation's critical water infrastructure needs. While sizeable, this infrastructure commitment represents only a modest portion of the nation's unfunded water infrastructure needs. The Environmental Protection Agency has estimated the nation's capital need over the next 20 years to be approximately $720 billion in total: $20 billion annually for drinking water infrastructure and an additional $16 billion per year for wastewater infrastructure (EPA 2008; EPA 2013; adjusted to 2014 dollars).

The projected capital plan investments of the utilities in this study will generate $22 billion in annual economic outputs to the nation and will sustain 131,100 jobs per year for the next decade. Altogether, this represents an aggregate output of $225 billion over ten years.

Water Treatment Facility

TABLE 2: Operating and Capital Plan Projections, 2014-2023

	2014	Aggregate Total Over 10 Years
Operating Expenditures		
Total, Utilities in This Study	$12 billion	$145 billion
Average Per Utility	$413 million	$5 billion
Capital Plan Projections		
Total, Utilities in This Study	$10 billion	$88 billion
Average Per Utility	$333 million	$3 billion

As reported by participating utilities, in nominal dollars.

TABLE 3: Economic Impact of Operating and Capital Expenditures

	Aggregate Impact (Over 10 Years)	**Annual Impact** (Per Year)	**Direct Effect** (Per Year)	**Indirect & Induced Effect** (Per Year)
Employment	**2.9 million job-years**	**289,000 jobs**	**87,000 jobs**	**202,000 jobs**
Operations	1.6 million job-years	157,000 jobs	37,000 jobs	121,000 jobs
Capital	1.3 million job-years	131,000 jobs	50,000 jobs	81,000 jobs
Economic Output	**$524 billion**	**$52 billion**	**$18 billion**	**$34 billion**
Operations	$299 billion	$30 billion	$10 billion	$20 billion
Capital	$225 billion	$22 billion	$8 billion	$14 billion

Impacts are expressed in real 2014 dollars, values may not total due to rounding.

A Pathway to Quality Jobs

One-third of the water sector workforce is currently eligible for retirement. Utilities are actively recruiting and training new workers to fill these employment opportunities.

Water utilities provide residents in our communities with access to stable, high-quality jobs with competitive wages and benefits. Utilities in this study anticipate significant workforce replacement hiring needs over the next decade, with nearly a third of their existing workforce currently eligible for retirement. In order to help satisfy this pending demand, utilities are actively engaged in workforce development activities, laying a path for the next generation of employees to access careers operating and maintaining our critical water systems. These positions are not only in engineering, but represent a full spectrum of occupations from business management to administration and customer service.

Municipal Water Employee

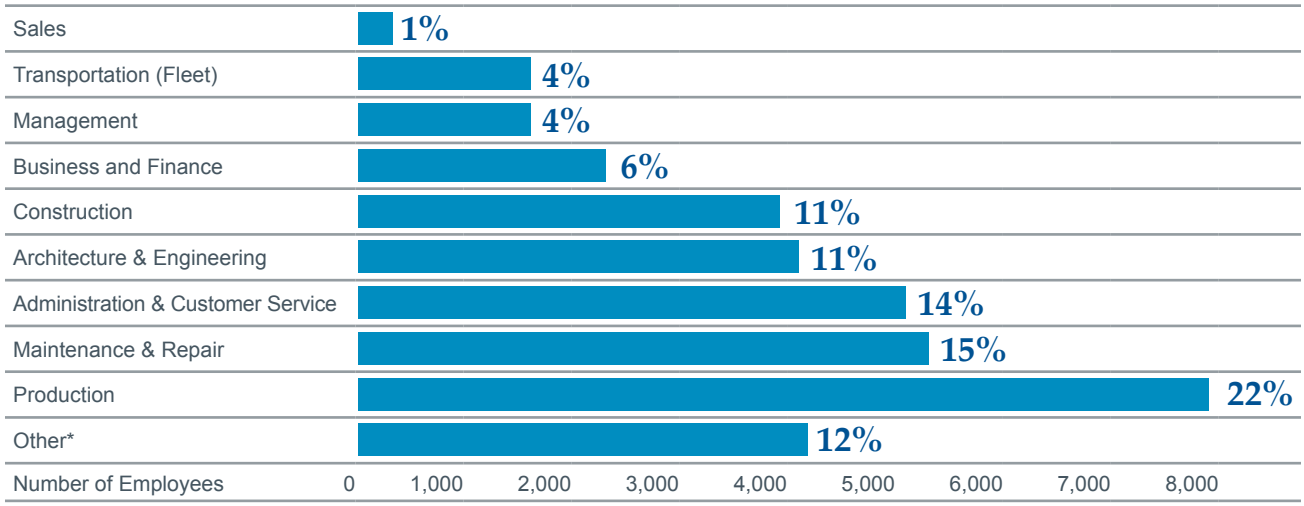
REPLACING AN AGING WORKFORCE

According to the Bureau of Labor Statistics, the median water sector employee is 48 years old—six years senior to the national median employee age of 42. Due to a number of circumstances, including the pending retirement of the Baby Boomer generation, water utilities are anticipating unprecedented workforce replacement needs over the next decade.

Among participating utilities that provided an estimate of retirement eligibility, 20 percent of their employees are currently eligible for regular retirement, while another 10 percent of employees are eligible for early retirement. This finding correlates to a study by the Water Research Foundation, which projects that 37 percent of water utility workers and 31 percent of wastewater utility workers will retire over the next decade (Brueck et al. 2010). Workforce replacement needs within the water sector over the next decade exceed the 23 percent nationwide replacement need of the total workforce (Bureau of Labor Statistics 2012). If this projection is realized, as many as 12,400 jobs will be vacated over the next decade at the utilities participating in this study, not including workers contracted to the utilities by outside firms, who represent an additional workforce replacement opportunity.

FIGURE 5: Water Sector Employment by Occupation at Utilities in this Study

** Includes uncategorized*



For more information regarding how employees are classified by occupation, please see the complete technical report.

TRAINING AND HIRING THE NEXT GENERATION

At least 70 percent of employees are concentrated in the production, maintenance, administrative, engineering, and construction occupations, according to surveyed utilities (Figure 5). Entry-level positions in most career paths within the water sector can be accessed with a high school diploma. Advanced positions being vacated by experienced workers typically require additional post-secondary education or on-the-job training.
To ensure workforce sustainability, a majority of utilities in this study participate in training and professional development initiatives that support successful career entry and advancement of the next generation of workers.

At least half of participating utilities provide regular on-the-job skills training, and an equal number participate in workforce training programs that prepare new workers for employment opportunities. Local and/or disadvantaged residents receive priority for filling vacancies through local hiring programs at a third of utilities in this study. More than two-thirds of utilities also prioritize hiring external contractors that are locally-owned, women-owned, and/or minority-owned businesses.

SUPPORTING PROSPERITY

Water, wastewater, and stormwater utilities are generating new economic opportunities in our communities by their commitments to constructing, operating, and maintaining safe and reliable water systems. Utility employment represents a full spectrum of rewarding careers, and utilities are making sure the next generation of workers receives the necessary training and education to access quality career pathways.

This study has shown that the opportunities generated by water utilities extend to the industries that supply goods and services to support their activities, from construction and engineering services to chemical manufacturing. Altogether, operating expenditures and capital investments by the water utilities in this study support 289,000 jobs in many different sectors of the economy.

This study estimates the economic contributions resulting from the operating and capital expenditures of water, wastewater, and stormwater utilities. Considering the essential nature of these utilities to public health, business, and the environment, the findings of this study represent only a portion of the water sector's total economic value in our national economy.

About the Utilities in this Study

Every day, utilities in this study distribute 7 billion gallons of water and collect and treat 6 billion gallons of wastewater.

Supplying Clean Water to Users

THE ROLE OF WATER UTILITIES

As suppliers, water utilities procure, treat, and distribute potable water for homes, businesses, industries, power plants, and other water users. When customers use water, they generate wastewater from domestic functions like cooking and washing, from commercial uses including landscaping and restrooms, and from industrial processes. As providers of wastewater service, water utilities then collect, treat, and return water back to the environment. Many wastewater utilities also collect, treat, and return stormwater back to the environment.

STUDY PARTICIPANTS

Thirty water, wastewater, and stormwater utilities across the U.S. participated in this economic impact study. Utilities from nine of the top ten largest metropolitan areas in the country are represented. Nearly every participating utility operates in a metropolitan region with a population greater than one million residents. Half of all large U.S. metropolitan areas are represented (U.S. Census Bureau 2014).

FIGURE 6: Utility Services Provided by Study Participants

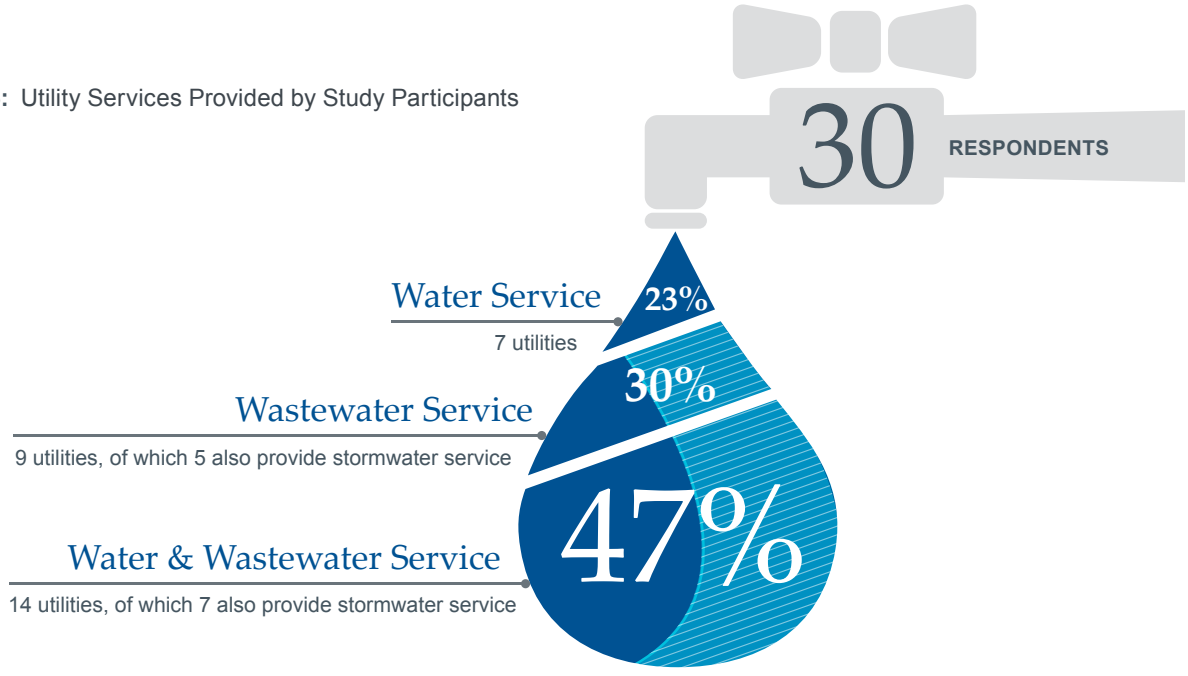
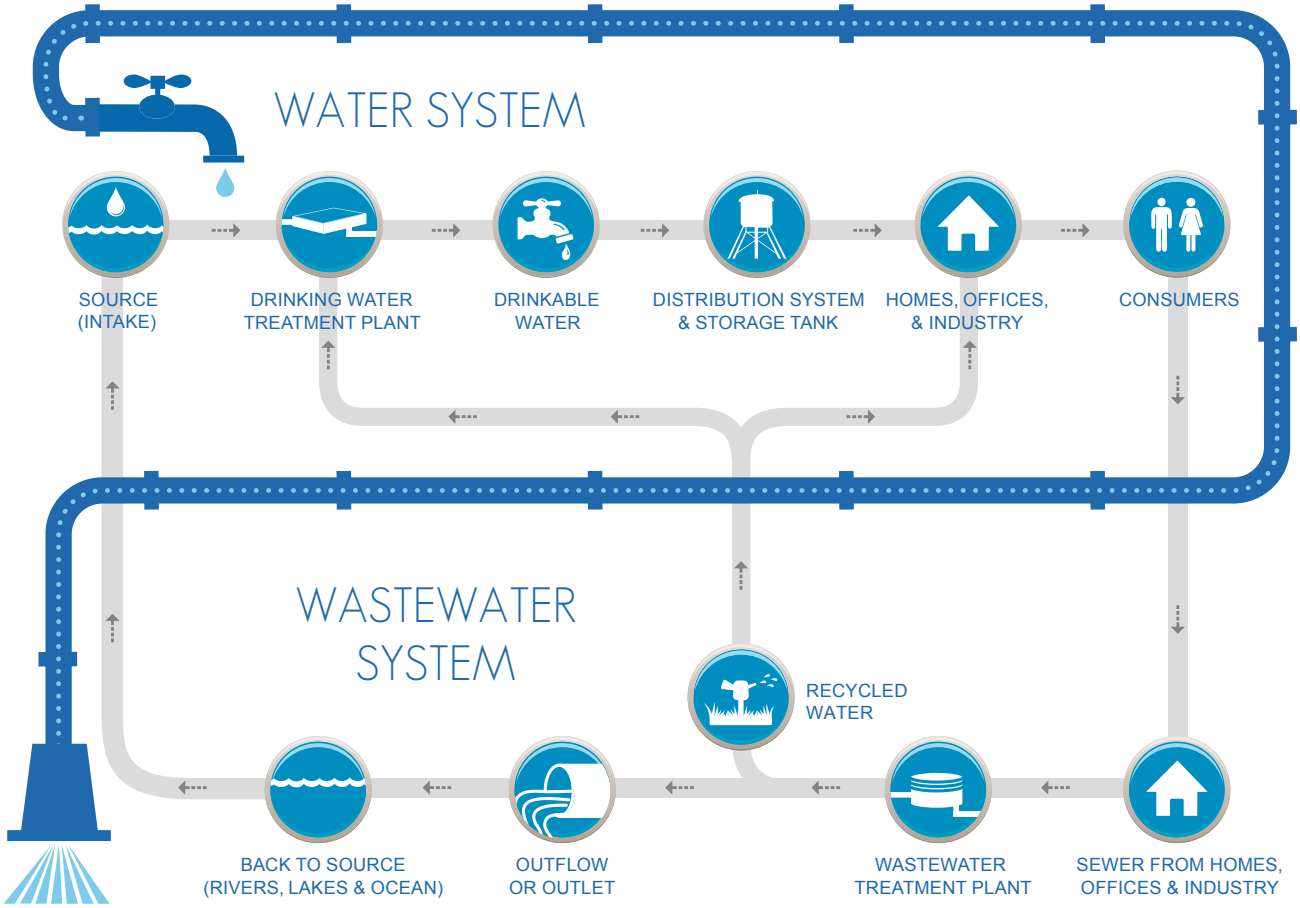


FIGURE 7: Water Supply and Wastewater Treatment



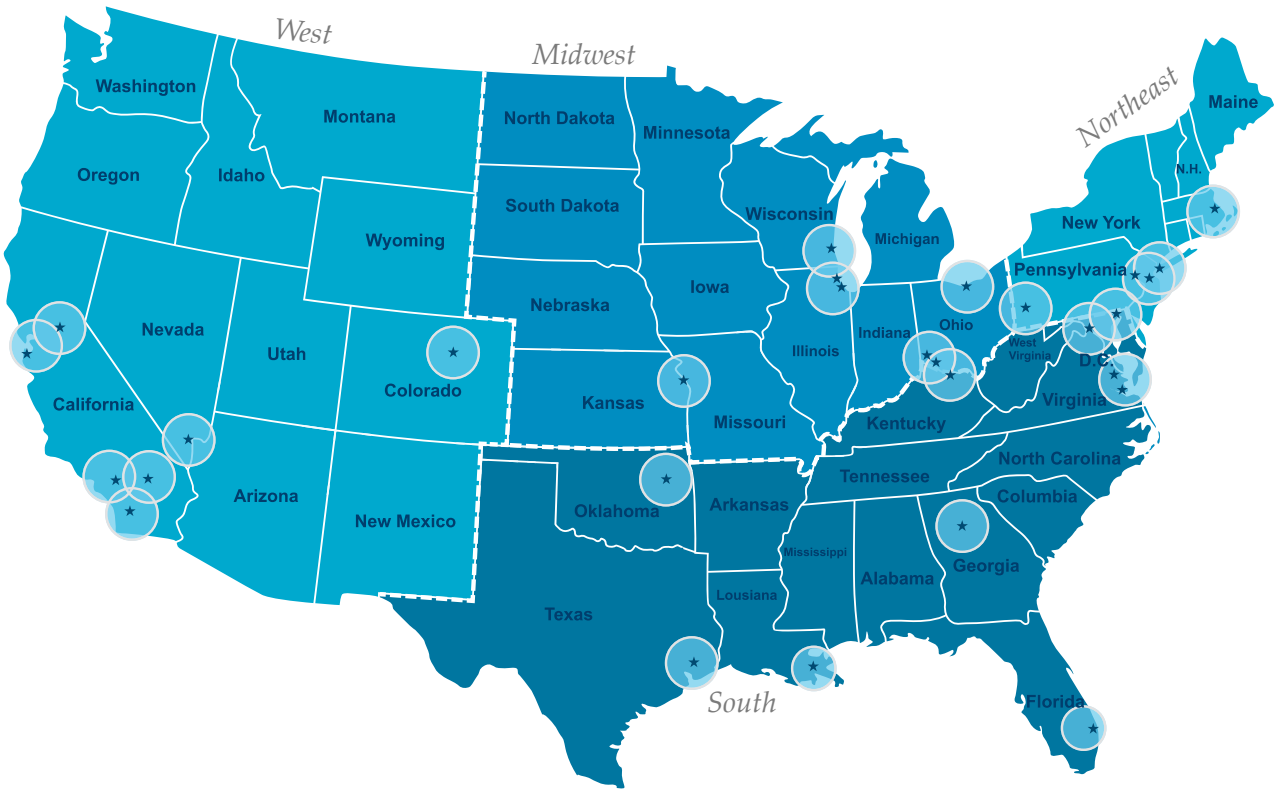
On a daily basis, the water utilities in this study distribute approximately seven billion gallons of water and collect and treat six billion gallons of wastewater, representing 16 percent of drinking water distributed by and wastewater treated by utility systems in the U.S. (U.S. Geological Survey 2005; Environmental Protection Agency 2012). Thirteen billion gallons is enough to fill the entire Empire State Building nearly 50 times per day.

To provide this scale of service, these utilities are investing significant resources into planning, designing, constructing, operating, and maintaining water, wastewater, and stormwater systems. These investments ensure a safe and reliable water supply for customers and maintain public health, safety, and environmental quality in their communities. Investments by water utilities also result in significant and meaningful contributions to local and regional economies through the provision of jobs and the circulation of capital via business spending and labor income.

The utilities were surveyed regarding their current and projected operating budgets, capital plans, and labor practices over the next ten years. Responses were supplemented with information from an extensive literature review, and the economic impacts of the data were then analyzed to determine the level of output, labor income, and jobs generated by utility investments.

The utilities in this study serve 83 million people across the country, more than 25% of the total U.S. population.

FIGURE 8: Map of Participating Utilities



PARTICIPATING UTILITIES

Alexandria Renew Enterprises
Boston Water & Sewer Commission
Camden County Municipal Utilities Authority
City of Atlanta Department of Watershed Management
City of Baltimore Water & Wastewater Utility
City of Chicago Department of Water Management
City of Houston–Combined Utility System
City of Los Angeles Bureau of Sanitation
City of Tulsa Water and Sewer Department
District of Columbia Water and Sewer Authority
Denver Water
Hampton Roads Sanitation District
Kansas City Missouri Water Services Department
Los Angeles Department of Water and Power
Louisville and Jefferson County Metropolitan Sewer District
Louisville Water Company
Metropolitan Sewer District of Greater Cincinnati
Metropolitan Water District of Southern California
Metropolitan Water Reclamation District of Greater Chicago
Miami-Dade Water and Sewer Department
Milwaukee Metropolitan Sewerage District
Northeast Ohio Regional Sewer District
NYC Department of Environmental Protection
Orange County Water District
Philadelphia Water Department
Pittsburgh Water & Sewer Authority
Sacramento Regional County Sanitation District
San Francisco Public Utilities Commission
Sewerage and Water Board of New Orleans
Southern Nevada Water Authority

Employees Lay New Water Supply Lines

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City of Los Angeles Bureau of Sanitation

City of Tulsa Water and Sewer Department

District of Columbia Water and Sewer Authority

Denver Water

Hampton Roads Sanitation District

Kansas City Missouri Water Services Department

Los Angeles Department of Water and Power

Louisville and Jefferson County Metropolitan Sewer District

Louisville Water Company

Metropolitan Sewer District of Greater Cincinnati

Metropolitan Water District of Southern California

Metropolitan Water Reclamation District of Greater Chicago

Miami-Dade Water and Sewer Department

Milwaukee Metropolitan Sewerage District

Northeast Ohio Regional Sewer District

NYC Department of Environmental Protection

Orange County Water District

Philadelphia Water Department

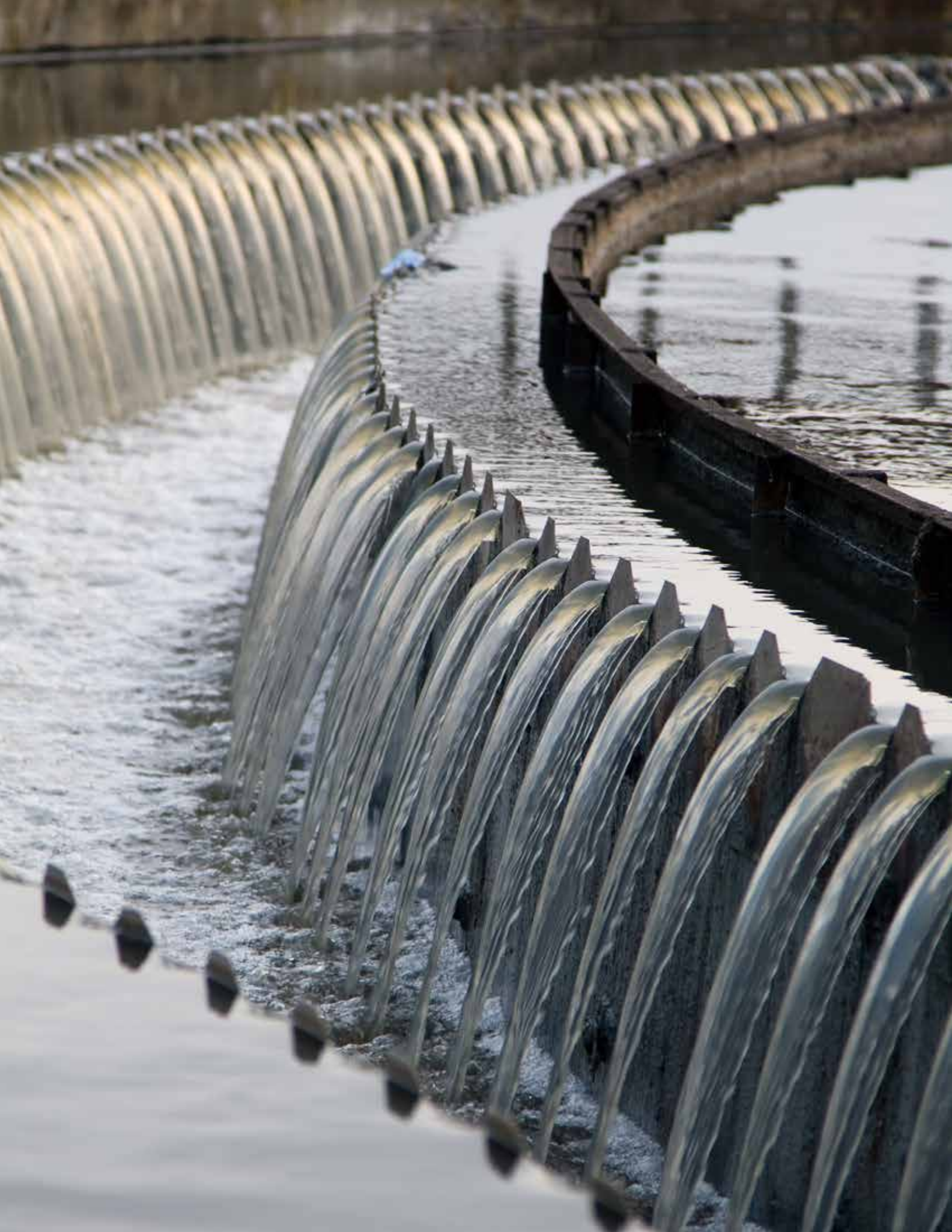
Pittsburgh Water & Sewer Authority

Sacramento Regional County Sanitation District

San Francisco Public Utilities Commission

Sewerage and Water Board of New Orleans

Southern Nevada Water Authority



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