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# THE POLICY CIRCLE

## WATER & POWER



# ➤ WHAT IS THE WATER SYSTEM? ◀

THE MODERN WATER SYSTEM INCLUDES DRINKING WATER AND WASTEWATER TREATMENT PLANTS, STORAGE FACILITIES, AND DISTRIBUTIONS SYSTEMS SUCH AS PIPES TO CONVEY DRINKING WATER.

IN THE 21ST CENTURY, AMERICA STILL FACES WATER ACCESS, AFFORDABILITY, AVAILABILITY, AND INFRASTRUCTURE CHALLENGES. ADDED TO THESE CONCERNS ARE DIFFICULTIES AND UNCERTAINTIES POSED BY THE CLIMATE, AS WELL AS WORRIES ABOUT CONSERVATION, CONTAMINATION, AND RESILIENCE.

WATER AFFECTS EVERYTHING FROM FOOD PRODUCTION TO NATIONAL SECURITY TO ENERGY CONSUMPTION. ENGAGING CONSTRUCTIVELY ABOUT THE IMPORTANCE OF WATER WILL ENSURE RELIABLE ACCESS TO CLEAN WATER FOR FUTURE GENERATIONS



# ➤ FACTS TO KNOW ◀



THERE ARE ROUGHLY 200,000 DRINKING WATER TREATMENT SYSTEMS. ABOUT 150,000 ARE RUN BY PUBLIC AGENCIES AND PROVIDE 90% OF AMERICANS WITH POTABLE WATER. PRIVATE SYSTEMS, SUCH AS RESIDENTIAL WELLS, SERVE 36 MILLION PEOPLE. PUBLIC DRINKING WATER SYSTEMS ARE REGULATED BY THE EPA; PRIVATE SYSTEMS ARE NOT.

THE AVERAGE AMERICAN USES BETWEEN 80 AND 100 GALLONS OF WATER DAILY. THE ESTIMATED TOTAL DAILY USAGE ACROSS THE COUNTRY TOPS 345 BILLION GALLONS. THE U.S. ENERGY SYSTEM IS THE LARGEST CONSUMER OF WATER, REQUIRING 58 TRILLION GALLONS OF WATER ANNUALLY AND AMOUNTING TO 40% OF TOTAL WATER WITHDRAWALS.

A WATER MAIN BREAKS EVERY 2 MINUTES IN THE U.S.; THE AVERAGE WATER UTILITY LOSES AN ESTIMATED 16% OF TREATED WATER DUE TO LEAKS. HOUSEHOLDS ARE ESTIMATED TO LEAK 900 BILLION GALLONS OF WATER, WHICH IS THE ANNUAL USE OF NEARLY 11 MILLION HOMES.

AT LEAST 2 MILLION AMERICANS DO NOT HAVE ACCESS TO SAFE DRINKING WATER AND SANITATION. MORE THAN 44 MILLION AMERICANS WERE SERVED BY PUBLIC COMMUNITY WATER SYSTEMS WITH SAFE DRINKING WATER ACT VIOLATIONS. ALMOST A QUARTER OF PRIVATE WELLS IN THE U.S. HAVE TESTED POSITIVE FOR CONTAMINANTS.



# ➤ GOVERNMENT SPENDING ◀



THE FEDERAL GOVERNMENT'S SHARE OF CAPITAL SPENDING FOR WATER AND WASTEWATER SYSTEMS FELL FROM 63% IN 1977 TO 9% IN 2017, AND THE FEDERAL SHARE OF OPERATION AND MAINTENANCE INVESTMENT FELL FROM 31% IN 1977 TO 4% IN 2017. TODAY COSTS FALL PRIMARILY ON STATE AND LOCAL GOVERNMENTS.

OF THE \$100 BILLION IN FEDERAL INFRASTRUCTURE SPENDING, 70% IS IN THE FORM OF GRANTS TO STATE AND LOCAL GOVERNMENTS. THIS INCLUDES DIRECT FEDERAL CREDIT PROGRAMS, TAX-EXEMPT BONDS AND CREDITS, AND STATE REVOLVING FUNDS.

TOTAL WATER INFRASTRUCTURE NEEDS IN 2019 AMOUNTED TO \$129 BILLION, BUT SPENDING ON WATER INFRASTRUCTURE AT THE LOCAL, STATE, AND FEDERAL LEVELS CAME TO \$48 BILLION.

THE EPA'S MOST RECENT ASSESSMENT FOUND U.S. WATER SYSTEMS NEED \$472 BILLION TO CONTINUE PROVIDING CLEAN AND SAFE WATER. CONSIDERING FURTHER DETERIORATION OVER THE COMING YEARS, THE U.S. WOULD NEED TO INVEST \$109 BILLION PER YEAR OVER THE NEXT 20 YEARS TO CLOSE THE WATER INFRASTRUCTURE GAP.



# ➤ FRAMING THE ISSUE ◀



THE PRIMARY MEANS FOR FUNDING WATER INFRASTRUCTURE IS USER FEES FROM WATER BILLS. THIS LEAVES MANY UTILITIES IN A CATCH-22 SCENARIO: THEY OPERATE AT A DEFICIT AND NEED TO RAISE RATES TO REFLECT THE TRUE COST OF WATER, BUT THEY ARE RELUCTANT TO RAISE RATES BECAUSE LOW-INCOME PAYERS CANNOT ABSORB THE ADDITIONAL COSTS.

THE WATER-ENERGY NEXUS REFERS TO THE FACT THAT MEETING ENERGY NEEDS REQUIRES WATER, INCLUDING ELECTRICITY GENERATION AND RESOURCE EXTRACTION AND PROCESSING. MEETING WATER NEEDS ALSO REQUIRES ENERGY. GIVEN LONG TERM GLOBAL TRENDS, THESE RESOURCE TRADEOFFS AND COMPLICATIONS ARE ONLY EXPECTED TO INTENSIFY WITH GROWING DEMAND FOR WATER AND ENERGY.

WATER IS ALSO ESSENTIAL FOR AGRICULTURE, AND ITS EFFECTS ON THE FOOD SUPPLY CHAIN AFFECT PRICES AND AVAILABILITY OF FOOD. MANY METHODS EMPLOYED BY THE AGRICULTURAL INDUSTRY ARE NOT THE MOST WATER-CONSCIOUS, LEADING TO THE DEPLETION OF GROUNDWATER AND POLLUTION FROM FARM FERTILIZERS DRAINING INTO RIVERS AND STREAMS.

AN ESTIMATED 47% OF MAINTENANCE WORK BY UTILITIES IS REACTIVE, DONE ONLY AS SYSTEMS FAIL RATHER THAN PROACTIVELY TO PREVENT CRISES SUCH AS FLOODING AND BREAKS. FOR THIS REASON, MANY UTILITIES DO NOT HAVE PREVENTATIVE TOOLS THAT COULD HELP EVALUATE INFRASTRUCTURE CONDITIONS AND RISKS. MANY OTHERS CANNOT AFFORD THESE NEW TECHNOLOGIES.

# ➤ SOLUTIONS ◀

INVESTING IN WATER INFRASTRUCTURE COULD ADD \$4.5 TRILLION IN GDP OVER THE NEXT TWO DECADES AS HOUSEHOLD AND BUSINESSES ENJOY THE BENEFITS OF WATER RELIABILITY AND WATER-RELIANT INDUSTRIES INCREASE PRODUCTIVITY AND EFFICIENCY. INVESTMENT IS ALSO ESTIMATED TO CREATE 800,00 NEW JOBS BY 2039. TRAINING PROGRAMS WILL ALSO MODERNIZE THE WATER WORKFORCE.

SMART WATER TECHNOLOGIES SUCH AS LEAK DETECTION SYSTEMS, SEISMIC RESILIENT PIPES, WATER QUALITY MONITORING, AND REAL-TIME DATA SENSORS CAN IMPROVE WATER QUALITY AND ELIMINATE LOSS. INNOVATION IN THE PRIVATE SECTOR AND PHILANTHROPY CAN HELP REDUCE PRICES FOR THIS TECHNOLOGY AND MAKE IT MORE AVAILABLE FOR WATER SYSTEMS.

CURRENT REGULATORY AND FUNDING FRAMEWORKS FAVOR CENTRALIZED INFRASTRUCTURE. SETTING STANDARDS AND PROVIDING TECHNICAL ASSISTANCE TO SMALL-SCALE AND DECENTRALIZED SYSTEMS TO ENSURE THEY ARE APPROPRIATELY STAFFED CAN HELP FILL GAPS. CONSOLIDATING SYSTEMS WILL ALSO ALLOW SMALLER COMMUNITIES TO POOL RESOURCES.

# ➤ WHAT YOU CAN DO ◀

**MEASURE** -  
HOW IS WATER INFRASTRUCTURE IN YOUR STATE OR COMMUNITY? IS YOUR REGION PRONE TO FLOODING OR DROUGHT? DO YOU UNDERSTAND YOUR WATER BILL? IS YOUR WATER FROM A PUBLIC OR PRIVATE SYSTEM?



**IDENTIFY** -  
WHO PERFORMS MAINTENANCE, UPGRADES, AND QUALITY CONTROL PROCESSES? WHO ARE MEMBERS OF UTILITY BOARDS IN YOUR STATE? WHAT STEPS HAVE YOUR ELECTED OFFICIALS TAKEN?



**PLAN** -  
SET MILESTONES BASED ON YOUR STATE'S LEGISLATIVE CALENDAR OR LOCAL COMMUNITY CALENDAR.



**REACH OUT** -  
FOSTER COLLABORATIVE RELATIONSHIPS WITH COMMUNITY ORGANIZATIONS, SCHOOL BOARDS, LOCAL BUSINESSES, AND OTHER COMMUNITY MEMBERS.



**EXECUTE** -  
DETERMINE THE BUDGET AND STAFF SALARY FOR YOUR LOCAL DEPARTMENT OF WATER AND SANITATION. SHOW UP AT LOCAL MEETINGS ON WATER OR AT A PUBLIC WORKS COMMISSION AND ASK ABOUT INFRASTRUCTURE PROJECTS. CALCULATE YOUR OWN WATER FOOTPRINT.

