WATER RESOURCES UTILITY OF THE FUTURE

A CALL FOR FEDERAL ACTION

WHAT IS THE WATER RESOURCES UTILITY OF THE FUTURE?

Forty years after the passage of the Clean Water Act, public agency leaders are transforming the way they deliver clean water services. At the heart of this transformation is the emergence of new technologies and innovations that can stretch ratepayer dollars, improve the environment, create jobs and stimulate the economy. The most progressive of today's clean water agencies are defining what is meant by the Water Resources Utility of the Future (UOTF).

For decades terms like "sewage treatment" or "sewerage agencies" were used to describe our nation's wastewater treatment agencies, but these terms are changing. These utilities are now being called "clean water agencies," "enterprises," or "resource recovery agencies". What does this mean? Instead of solely collecting and transporting wastewater to central treatment plants, these utilities are recovering valuable resources, partnering in local economic development, and aligning themselves as members of the watershed community in order to deliver maximum environmental benefits at the least cost.

Today's clean water utilities do this by reclaiming and reusing water, extracting and finding commercial uses for nutrients and other constituents in the waste stream, capturing waste heat and latent energy in biosolids and liquid streams, generating renewable energy using their land and other horizontal assets, and using green infrastructure to manage stormwater – all of which results in a profound improvement to the quality of life.

These actions signal that the market for innovation in the clean water sector is strong. Resistance to change, however, is also significant, and is reinforced by several key trends: regulatory pressures; strained utility/local, state and federal budgets; customer confusion about the benefits of innovation; skyrocketing demands for capital competing for every dollar; risk and regret associated with technology failure, and venture capital looking elsewhere for faster and safer returns.

Nothing short of a national strategy to reform the U.S. water sector is likely to drive the kind of change that will be needed to fully address future challenges and embrace new opportunities. This Call for Federal Action defines tangible steps that we can take as a nation to realize a shared vision for the future. It presents ten priority actions that Congress and the federal government can take to help the Water Resources Utility of the Future become a reality. We call on Congress, the U.S. Environmental Protection Agency, the U.S. Department of the Interior, the U.S. Department of Agriculture, the U.S. Department of Energy, and other key federal agencies to rethink their relationship to the water sector, take these ten key actions, and make the UOTF possible for all utilities.

This publication draws from the *Water Resources Utility of the Future… A Blueprint for Action*, developed by the National Association of Clean Water Agencies (NACWA), the Water Environment Research Foundation (WERF), and the Water Environment Federation (WEF).

MOTIVATION	ACTIVITY	INNOVATION
Reduce Cost	Energy Efficiency	Energy Efficient Equipment & Networks
	Energy Recovery	Methane & Hydrogen Recovery, Heat Recovery
	Operating Efficiency	Automation and Smart Operations, Asset Management, Sourcing
Diversify Revenue	Water Reuse	Industrial Cooling, Recharge, Landscape, Golf Course Irrigation
	Materials Recovery	Phosphorous Compounds, Nitrogen Compounds, Metals
	Materials Conversion	Bioplastics, Pyrolysis Fuel Oil, Algal Biomass, Solid Fuels, Fertilizers
	Biosolids Reuse	Liquid Fertilizer
	Energy Generation	Photovoltaics, Wind Turbines
Support Community & Economy	Growth Planning	Sector Expansion, Targeted Upgrades, Managed Package Plants
	Community Partnering	Nonpoint Source Controls, Biowaste Conversion to Methane, Green Infrastructure

TEN PRIORITY ACTIONS FOR CONGRESS AND THE FEDERAL GOVERNMENT

- Support a Congressional Clean Water Technology & Innovation Caucus that can bring a focus to Utility of the Future (UOTF) priority issues.
- Refocus existing federal grant programs to support UOTF initiatives.
- Create a program for early stage technology and innovation investment for the water sector similar to programs that exist in the energy sector.
- Develop, clarify, and expand tax credit and incentive programs that will encourage clean water agencies and their private sector partners to engage in UOTF-related activities, especially in energy conservation and production, water reuse, resource recovery, and green infrastructure.
- Support statutory changes to the Clean Water Act and Safe Drinking Water Act that bolster the important role recycled water can play in public health and safety.
- Support an Executive Order on water reuse/recycling that coordinates federal reuse policies and programs, and stimulates innovation.
- Develop an intergovernmental partnership to address water sector adaptation and resiliency needs in the face of changing weather patterns.
- Create and support market-based approaches to efficiently and more equitably address watershed-scale water quality challenges.
- Ensure that the implementation of the U.S. Environmental Protection Agency's Integrated Planning & Permitting Framework fully accounts for UOTF-type activities.
- Consider and explore a new 21st Century Watershed Act that can drive the water sector toward the emerging UOTF model.

WATER RESOURCES UTILITY OF THE FUTURE

EXAMPLES FROM COAST-TO-COAST OF THE WATER RESOURCES UTILITY OF THE FUTURE

Utilities large and small are beginning to take on the Water Resources Utility of the Future (UTOF) mantle. Some are making it a guiding force that permeates their management philosophy while others are doing so to the degree market forces and return on investment dictate. All, however, can use the support of the federal policy to move in this direction. The brief examples which follow illustrate the types of activities, which, if realized on a national scale, would have profound benefits to the economy, the environment and public health.

The **Milwaukee Metropolitan Sewerage District (MMSD), Wisconsin** has set stringent, 25-year sustainability, cost reduction and efficiency goals. MMSD promotes the future use of green infrastructure, cost-effective watershed-based permitting and effluent trading, renewable energy sources to meet 100% of its energy needs, and reduction in its carbon footprint by 90% from a 2005 baseline through energy efficiency projects.

The **Ohio River Basin** serves as a model for other watershed-based trading programs. Launched in 2009 with some states joining as recently as 2012, the project is a first-of-its-kind interstate multi-credit trading program. At full scale, it will become the world's largest water quality trading program, potentially creating credit markets for 46 power plants, thousands of wastewater facilities and other industries, and up to 230,000 farmers.

The **East Bay Municipal Utility District (EBMUD), California**, is blending community food waste (e.g. fats, oils, and grease from local restaurants and food waste from wineries and farms) with their own biosolids to produce enough methane-generated electricity to meet their own energy demand and send excess to the local grid. This 55,000 megawatt-hour/year $31 million biogas project saves the utility $3 million a year in energy, and contributed to EBMUD's reduction of 13,300 metric tons of carbon from its 2010 baseline.

Essex Junction, Vermont's two million gallons per day (MGD) clean water utility recently installed two-30 kilowatt methane-fueled micro-turbines to generate its own electricity from biosolids. In this combined heat and power (CHP) project, waste heat offsets the cost of fuel needed to heat its anaerobic digesters. This project provides a total energy savings of $33,000 per year, and reduces CO_2 emissions by 30 tons per year.

Detroit's Water and Sewerage Department, Michigan will provide the local electric power company 800,000 wet tons per day of biosolids, which will be dried and used in its Rouge River Power Plant in place of coal, helping meet the State of Michigan's mandate to secure 10% of its power from renewable sources.

Gloversville-Johnstown, New York's wastewater facility, serving 25,000 residents and 12 local industries, generates 90% of its energy needs in its anaerobic digester processing biosolids from the plant plus local dairy wastes. It saves $500,000 a year in energy costs and nets $750,000 a year in additional revenue from dairy waste acceptance fees.

The **State of Connecticut**, as part of its program to meet nitrogen load reductions to Long Island Sound, has established a successful nitrogen credit exchange/trading program. During the period 2002-2009, $46 million in nitrogen credits were bought and sold, providing a cost-effective alternative for 79 clean water agencies to meet their nitrogen waste load allocations as part of the total maximum daily load (TMDL) adopted for Long Island Sound. Compared to other alternatives, these facilities have saved between $300 and $400 million through trading.

The **New York City**'s Green Infrastructure Plan predicts that, "every fully vegetated acre of green infrastructure would provide total annual benefits of $8,522 in reduced energy demand, $166 in reduced CO_2 emissions, $1,044 in improved air quality, and $4,725 in increased property value."

The **City of Philadelphia, Pennsylvania**, signed a $2 billion agreement with the U.S. Environmental Protection Agency in 2012. The agreement allows the Agency to provide technical support and monitoring, including in school gardens and low-income neighborhood revitalization, through green design. The Agency will be working hand in hand with the City's 25-year Green City, Clean Waters plan, which aims to protect and enhance urban watersheds by managing stormwater through green infrastructure techniques.

D.C. Water's new Clean Rivers, Green District partnership with the U.S. Environmental Protection Agency uses green infrastructure to prevent pollution from coming into contact with rainwater, while also providing public health, livability, and economic benefits for the District of Columbia and its residents.

The **Hampton Roads Sanitation District (HRSD), Virginia** recovers and converts about 85 percent of phosphorus and 25 percent of ammonia from its dewatering process into a slow release fertilizer, Crystal Green™. Fertilizer revenues offset both capital and operating costs, effectively reducing discharge of nutrients at no cost to HRSD and, compared to alternatives, saves ratepayers money.

The **Camden County Municipal Utility Authority, New Jersey** has implemented a series of operating performance improvements, green infrastructure, solar energy, and currently underway, methane recovery from biosolids. Combined operating and capital costs are now lower than they were in 1996, effluent is cleaner, as are the tributaries to the Delaware River, and vendor-financed solar photovoltaic arrays save about $300,000 a year in energy costs.

WATER RESOURCES UTILITY OF THE FUTURE

The *Water Resources Utility of the Future… A Call for Federal Action* is based on *The Water Resources Utility of the Future… A Blueprint for Action*. The *Blueprint* was a cooperative effort between NACWA, the Water Environment Research Foundation (WERF), and the Water Environment Federation (WEF), and defines the evolving environmental, economic, and social roles that clean water utilities are playing in their communities. You can download a copy of *The Water Resources Utility of the Future… A Blueprint for Action* at *www.nacwa.org/blueprint*.

NACWA
A Clear Commitment to America's Waters

The National Association of Clean Water Agencies (NACWA) is the leading advocate for responsible national policies that advance clean water. NACWA represents the collective interests of America's clean water utilities – dedicated public servants and true environmental champions. For over 40 years, NACWA has been the clean water community's voice in Congress, at the U.S. Environmental Protection Agency, in the media and in the courts.

National Association of Clean Water Agencies
1816 Jefferson Place N.W.
Washington D.C. 20036
P 202.833.2672
www.nacwa.org