

# SUSTAINABILITY AND ENERGY MANAGEMENT

FOR WATER RESOURCE  
RECOVERY FACILITIES

 Manual of  
Practice No. 38



ASCE Manuals & Reports on  
Engineering Practice No. 137

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# **SUSTAINABILITY AND ENERGY MANAGEMENT FOR WATER RESOURCE RECOVERY FACILITIES**

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ASCE Manuals and Reports on Engineering  
Practice No. 137

2018

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601 Wythe Street  
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ISBN: 978-1-57278-341-6

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Under the Direction of the **Municipal Subcommittee** of the **Technical Practice Committee**

2018

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Authors' and reviewers' efforts were supported by the following organizations:

AECOM, Piscataway, New Jersey; Buffalo, New York  
American Water, Voorhees, New Jersey  
Arcadis U.S., Inc., Highlands Ranch, Colorado; Buffalo, New York;  
White Plains, New York  
Arvos Schmidtsche Schack LLC, Wexford, Pennsylvania  
Automation Federation, Raleigh, North Carolina  
Barge, Waggoner, Sumner and Cannon, Nashville, Tennessee  
Bedrock Enterprises, Inc., Baden, Pennsylvania  
Black & Veatch, Coral Springs, Florida; Indianapolis, Indiana;  
Overland Park, Kansas; Kansas City, Missouri; St. Louis,  
Missouri; Memphis, Tennessee  
Brown and Caldwell, Maitland, Florida; Orlando, Florida; Charlotte,  
North Carolina; Nashville, Tennessee; Alexandria, Virginia;  
Seattle, Washington  
Carollo Engineers, Costa Mesa, California; Walnut Creek, California;  
Littleton, Colorado; Tampa, Florida; Dallas, Texas  
CDM Smith, Carlsbad, California; Irvine, California; Los Angeles,  
California; Denver, Colorado; Bogota, Columbia; Maitland,  
Florida; Miami, Florida; Orlando, Florida; Boston, Massachusetts;  
Manchester, New Hampshire; Albany, New York; Raleigh, North  
Carolina; Providence, Rhode Island; Houston, Texas; Austin,  
Texas; Dallas, Texas; Fairfax, Virginia; Leesburg, Virginia;  
Bellevue, Washington  
CH2M, Tampa, Florida; Chicago, Illinois; Albuquerque, New Mexico;  
Herndon, Virginia; Toronto, Ontario, Canada  
Corrosion Probe, Inc., Centerbrook, Connecticut  
DC Water, Washington, D.C.  
Donohue & Associates, Inc, Chicago, Illinois  
Dynamita, Toronto, Canada  
Dynamita S.A.R.L., Nyons, France  
EnviroSim Associates Ltd., Hamilton, Ontario, Canada  
Evoqua Water Technologies LLC, Bradenton, Florida  
Garver, Dallas, Texas; Frisco, Texas  
Gray and Osborne, Seattle, Washington  
GREELEY and HANSEN, Chicago, Illinois, San Francisco, California  
Hazen and Sawyer, Raleigh, North Carolina  
HDR Engineering, Inc., Walnut Creek, California; Calverton,  
Maryland; Cleveland, Ohio; Nashville, Tennessee  
Hubbell, Roth & Clark, Inc., Detroit, Michigan

inCTRL Solutions Inc., Oakville, Ontario, Canada  
Intera, Richland, Washington  
Johnson County Wastewater, Olathe, Kansas  
Kennedy/Jenks Consultants, San Francisco, California  
Kimley-Horn and Associates, Inc., Mesa, Arizona; Ocala, Florida;  
Tampa, Florida; West Palm Beach, Florida; Ft. Worth, Texas  
Laura Marcolini & Associates, Inc., Cumberland, Rhode Island  
Louisiana State University, Baton Rouge, Louisiana  
Madison Metropolitan Sewerage District, Madison, Wisconsin  
Manhattan College, Bronx, New York  
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St. Croix Sensory, Inc., Stillwater, Minnesota  
Stantec Consulting Services, Rocklin, California; Denver, Colorado;  
Tampa, Florida; Portland Oregon  
Tesco Controls, Inc., Sacramento, California  
Total Safety Compliance, Mesa, Arizona  
University of Pittsburgh, Pittsburgh, Pennsylvania  
URS Corporation, Buffalo, New York  
U.S. Environmental Protection Agency, Boston, Massachusetts  
V&A Consulting Engineers, Houston, Texas  
Vandertulip WateReusEngineers, San Antonio, Texas  
Varec Biogas, Stafford, Texas  
Veolia North America, Chicago, Illinois  
Washington State Department of Ecology, Bellevue, Washington  
WesTech Engineering, Salt Lake City, Utah  
Xylem Inc., White Plains, New York



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# Sustainability and Energy Management for Water Resource Recovery Facilities

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## 1.0 INTRODUCTION

Energy savings and sustainable design deserve special attention to be sure water resource recovery facilities (WRRFs) have long-term adaptability and resilience to global climate change, volatile energy prices, and other predictable change scenarios. Municipal WRRFs in the United States use approximately 30.2 bil. kWh/yr, or approximately 0.8% of total electricity use in the United States (EPRI, 2013). Yet, of the approximately 14,780 WRRFs in the United States, only approximately 1268 (8.4%) include anaerobic digestion (which offers the potential to recovery chemical energy) and beneficially use this energy on site for production of power and/or heat (WEF, 2013).

The umbrella of *sustainability* covers long-term provisions for resilient facilities to manage a wider range of stressors, and treatment process adaptability to accommodate changing regulations. Sustainability in this context refers to the ability to continue operating without causing immediate or long-term harm to the environment, society, or depleting natural resources. In the accounting sense, this means planning for the future by making annual financial investments that seek to minimize the total life cycle cost of a WRRF across its full life and avoid deferring costs and negative effects to future generations. The concept of sustainability has also expanded to include indirect effects to the greater community, and consider local industry partnerships and social justice issues. Optimizing the sustainability of a WRRF requires