Sustainable Wastewater Infrastructure of the Future (SWIFt) Initiative

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Agenda

- Background on SCEP
- Overview of SWIFt
- Results So Far
- Training Series
- One-on-One TA
- Next Steps
- Better Plants
- Questions

Office of State and Community Energy Programs (SCEP)

SCEP is part of a concerted effort at the U.S. Department of Energy to expand the capabilities of states, local, and tribal communities to bring to life high-impact, self-sustaining clean energy transformations.

Why Wastewater

Untapped Potential for Energy & Cost Savings

- The U.S. has more than 16,000 publicly owned wastewater treatment facilities operating at approximately 81% of their design capacities and 15% operating at or beyond their maximum capacities, receiving a D+ on the 2021 Infrastructure report card.[1]
- Wastewater facilities can often achieve a 20% to 30% reduction in energy use through energy efficiency upgrades and operational measures.[2]
- Across the country, municipal wastewater treatment plants are estimated to consume more than 30 billion kWh per year of electricity (which equates to about $2 billion in annual electric costs)[3,4] and are responsible for 44 million metric tons (MMT) of greenhouse gas emissions each year.[5]
- A 10% reduction in the energy use of U.S. wastewater systems would collectively save approximately $400 million and 3 billion kWh

U.S. Wastewater Infrastructure received a D+ on the 2021 Infrastructure Report Card.[1]

1. American Society of Civil Engineers. 2021. 2021 Infrastructure Report Card. https://infrastructurereportcard.org/wp-content/uploads/2020/12/Wastewater-2021.pdf
2. Environmental Protection Agency. 2015. Energy Efficiency in Water and Wastewater Facilities A Guide to Developing and Implementing Greenhouse Gas Reduction Programs. https://www.epa.gov/sites/default /files/2015-08/documents/wastewater-guide.pdf
3. EPRI and Water Research Foundation. Electricity Use and Management in the Municipal Water Supply and Wastewater Industries
4. Assumes $0.07/kWh average electric costs
5. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020. 2022, EPA: Washington, DC. p. 841.
6. Environmental Protection Agency. 2015. Energy Efficiency in Water and Wastewater Facilities A Guide to Developing and Implementing Greenhouse Gas Reduction Programs. https://www.epa.gov/sites/default/files/2015-08/documents/wastewater-guide.pdf

Overview of SWIFt

Training in data management, EE improvements, advanced technology integration, and project financing

154 signatory partners representing over 328 facilities across 43 states

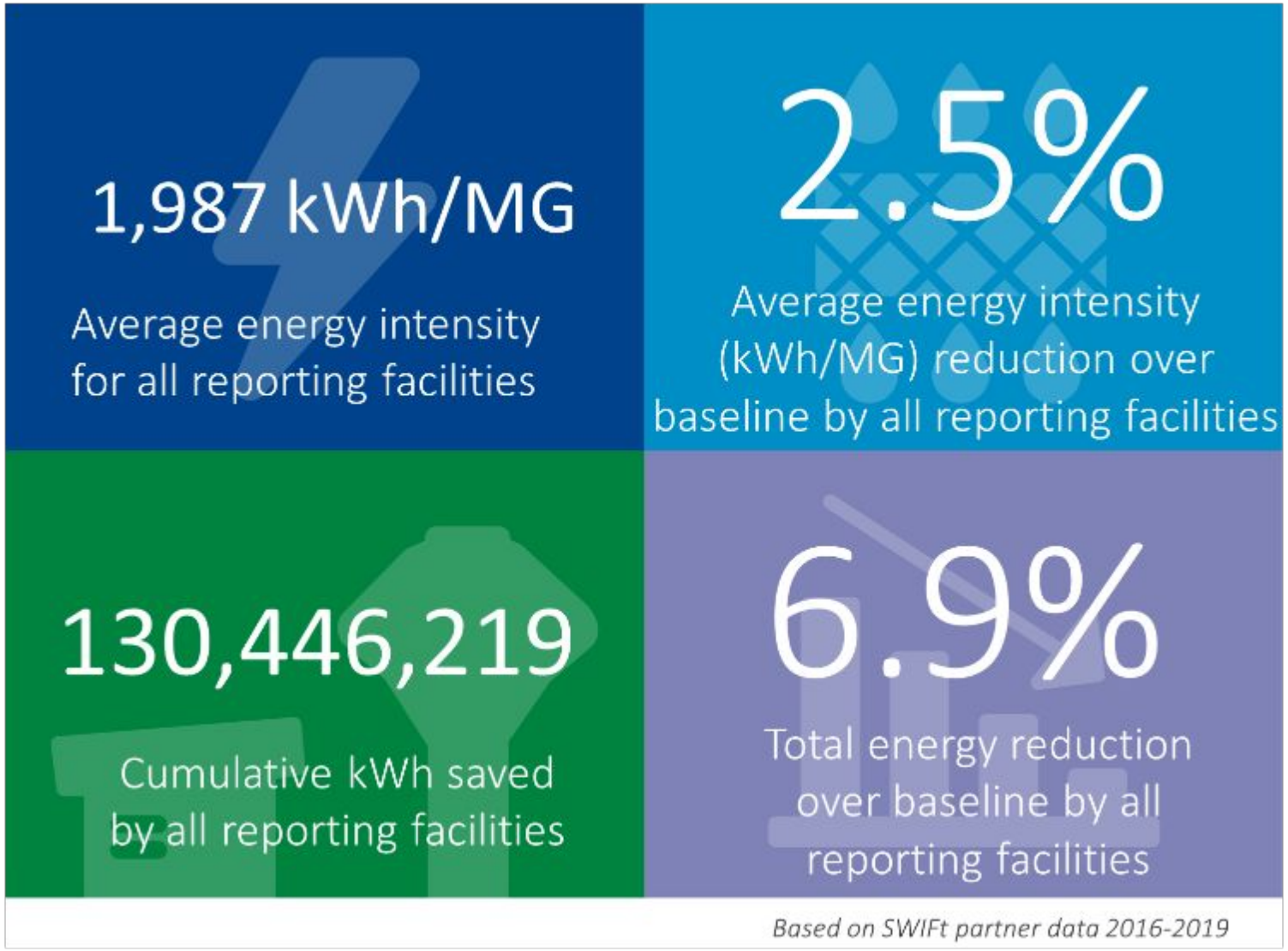
Average utility energy savings between 5-25%

Participating in the virtual training is free and open to all staff at the utilities

Results So Far: Energy Savings

Based on results from 2016-2019.

Data from 2020-2023 forthcoming.



Results So Far: Wastewater Energy Management Toolkit

Visit the Wastewater Energy Management Toolkit at the Better Buildings site.

Data Management

The Energy Data Management Manual provides clear, step-by-step guidance to track energy performance and compares publicly available energy data management tools.

Measure Planning

The Measures Checklist includes no-and low-cost energy savings options and identifies 23 high impact innovative energy conservation and resource recovery measures.

The Measure Planning Workbook is an automated tool that can help facilities decide whether and how to implement one of the 23 measures.

The Financing Matrix highlights available financing and funding programs and mechanisms for the wastewater sector.

The Energy Savings Performance Contracting Guide helps decision makers consider this option for wastewater infrastructure improvements.

The Infrastructure Improvement Plan Template outlines topics a facility may consider including in their own plan. Several example plans are also available

Virtual Training Sessions

01
Energy Management Tools

02
Process Energy Conservation and W3

03
Energy Map, BOD, and Pumping

04
Headworks and Blower Energy

05
Aeration Process Requirements

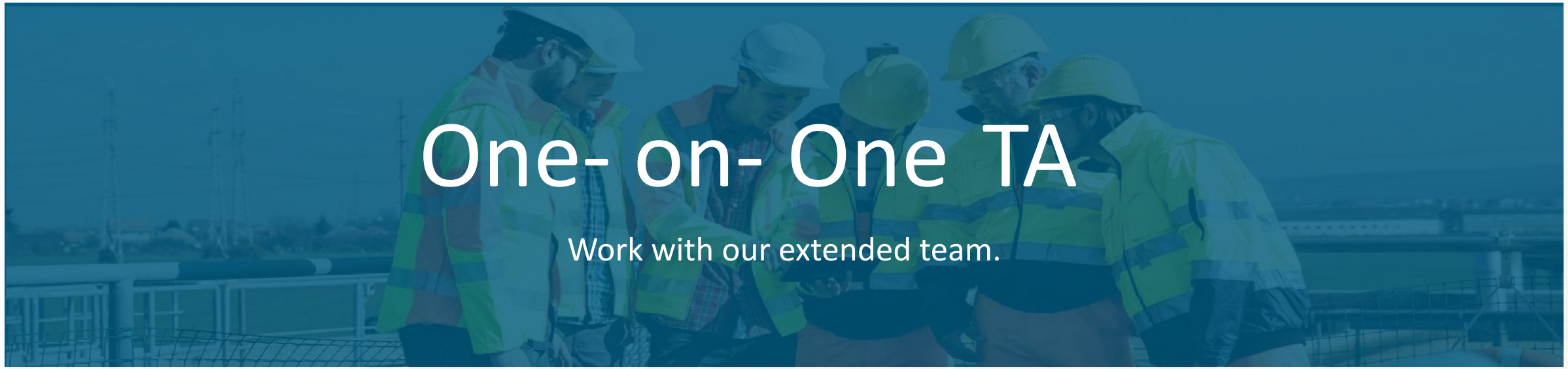
06
Sludge Quality, SRT, and Fans

07
Secondary Clarifier Optimization

08
Dewatering, Digestion, & Decarbonization

09
Renewable Energy & Financing

10
Nutrient Recovery & Emerging Contaminants



One- on- One TA

Work with our extended team.

Industrial Assessment Center
U.S. Department of Energy

Industrial Assessment Centers

Free assessment that identifies energy saving recommendations. IACs typically identify more than $130,000 in potential annual savings opportunities.

U.S. Department of Energy
CHP Technical Assistance Partnerships

CHP TAPs

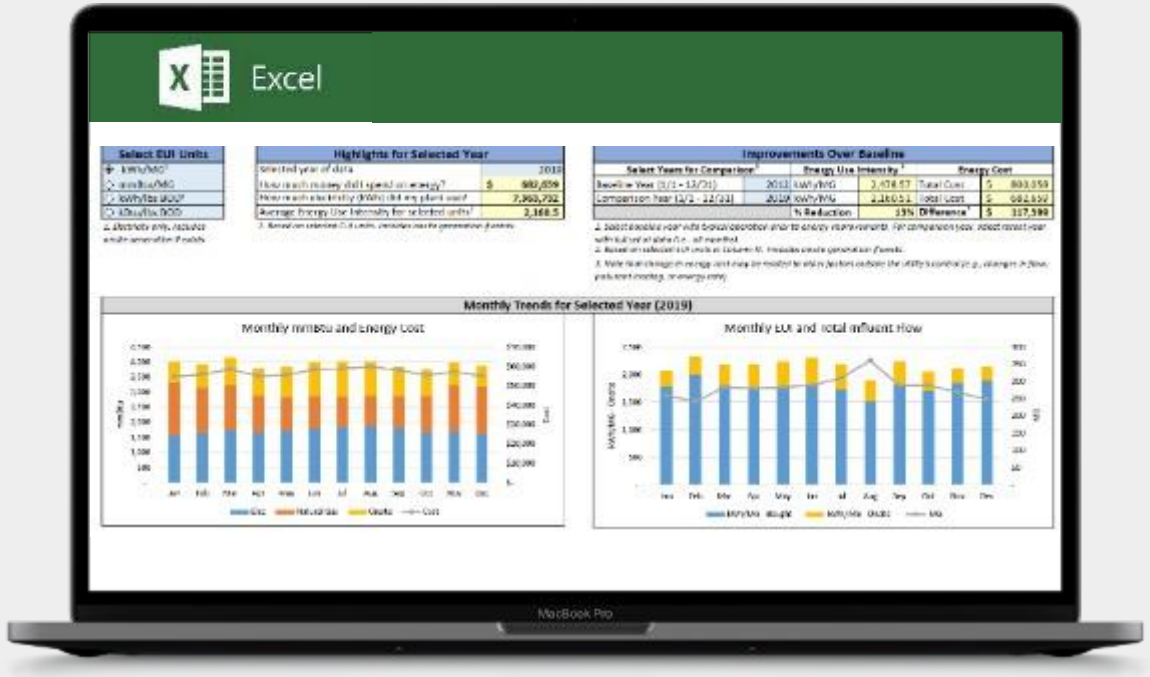
As leading experts in CHP (as well as microgrids, heat to power, and district energy) the CHP TAPs work with sites to screen for CHP opportunities as well as provide advanced services to maximize the economic impact.

WNTR
Water Network Tool for Resilience

Wastewater Infrastructure Resilience

Provides systems level modeling which integrates network structure, operations, and performance to quantify how utilities are impacted by disruptions.

Next Steps and Forthcoming Additions to the Toolkit



SWIFt is Set to Sunset in 2024

Leaves Behind a Legacy of Impactful Resources in the Wastewater Energy Toolkit

One Final Training Opportunity on Net Zero Energy Use in Wastewater Facilities in Spring of 2024

New Additions to the Toolkit in 2024

- Implementation Strategies for Advanced Energy Conservation and Resource Recovery Upgrades at Wastewater Treatment Facilities
- Wastewater Treatment Energy Management Data Tool
- Pathways Towards Net-Zero Energy Use in Wastewater Treatment Facilities
- SWIFt Partner Success Stories in Energy Capture, Energy Efficiency, Resource Recovery, and Advanced Data Management
- 50001 Ready Strategic Energy Management Sample Plan for Wastewater Utilities

Continuing on with DOE's Better Plants Program

Voluntary and free to participate

Partners set long-term strategic goals

DOE works with you to achieve your goal

Why Partner with Better Plants?

1

Technical Assistance

3

Peer-to-Peer Networking Opportunities

National Recognition

2

4

Access to DOE and National Lab R&D

Wastewater Specific Partners

If you are interested in joining Better Plants, please visit [Join | Better Buildings Initiative (energy.gov)]

Or reach out to betterplants@ee.doe.gov

Questions?

For any additional SWIFt questions, please contact shannon.zaret@hq.doe.gov