
ENVIRONMENTAL Fact Sheet



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Energy Audits for New Hampshire Wastewater Treatment Facilities

What is an energy audit?

An energy audit is a method to evaluate a wastewater treatment facility's (WWTF's) or collection system's energy use and to identify opportunities to improve energy efficiency, reduce energy usage and thereby reduce operating costs. During an energy audit, energy professionals will systematically evaluate a WWTF to determine what opportunities exist to modify operations or install new equipment to improve the WWTF's performance. Energy audits provide a method to prioritize energy-related products based on both overall savings and length of payback. All WWTFs would benefit from energy audits. However, the energy and cost savings can only be realized when the WWTF actually implements the audit's recommended changes.

Types or levels of energy audits

1. Benchmarking Level Audit – evaluates existing power consumption using utility bill analysis and benchmarking tools such as EPA's Portfolio Manager available for use at http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager or EPA's Energy Use Assessment Tool available for download at http://water.epa.gov/infrastructure/sustain/upload/energy-use-assessment-tool_usersguide_april2012-508.pdf. As a note, EPA plans to release a new, improved benchmarking tool July 2013.
2. Level 1 Audit or Simple Walk-Through Audit – An auditor typically just conducts a lighting and HVAC system evaluation. These are frequently town-wide audits for all municipal buildings, typically resulting in recommendations for low cost improvements to lighting and HVAC systems. These audits are a starting point but due to the high energy usage of WWTFs, in-depth audits are more beneficial.
3. Level 2 Audit or Energy Survey and Analysis Audit – An auditor evaluates lighting, HVAC and equipment used in existing processes. The auditor typically takes additional time to review energy bills and suggest low cost improvements for lighting, HVAC and equipment upgrades such as variable frequency drives or high efficiency motors.
4. Level 3 Audit or Detailed Process Energy Audit – An auditor evaluates energy used in existing and alternative processes. The auditor may provide recommendations for process and operation optimization, equipment and potential design modifications. The auditor may also evaluate utility bills, develop pump curves and collect data on energy use throughout the WWTF. Potential renewable energy assessments may also be included in a detailed process energy audit. Recommendations of an audit will include both short- and long-term payback options.

5. Design Phase Energy Audit – An auditor evaluates plans and specifications during design phase for upgrades or new WWTF. This is a very cost effective audit technique.

How much do these audits cost?

Costs for an audit typically range from free to \$50,000+, depending on the level of audit and the size of the WWTF. Most electric utility providers in New Hampshire have audit assistance programs available for WWTFs. These programs also include rebate programs for energy improvements implemented at the WWTF.

NHDES Clean Water State Revolving Fund is also initiating a principle forgiveness program for its loans to encourage WWTFs to conduct and implement energy audits. For additional information on this program, refer to

<http://des.nh.gov/organization/divisions/water/wweb/documents/wastewater-criteria.pdf>

For additional information on Energy Management for Water and Wastewater Utilities, refer to http://www.epa.gov/owm/waterinfrastructure/pdfs/guidebook_si_energymanagement.pdf. For additional information on energy audits, refer to

http://watercenter.montana.edu/training/savingwater/mod2/downloads/pdf/EPRI_Energy_Audit_Manual.pdf

You may also contact Sharon Rivard, P.E. NHDES WWEB at (603) 271-2508 or sharon.rivard@des.nh.gov with questions regarding energy audits for WWTFs.