



Problem Summary & Decision Context

- The Net Zero Program represents “sustainability in action.” Projects are place-based partnerships with military and civilian communities that seek to create measurable reductions in waste volumes via testing and demonstration of innovative technologies.
- Net Zero (and more recently, net positive) waste strategies are comprised of five interrelated steps: reduction, re-purpose, recycling and composting, energy recovery, and disposal – with each step linking towards achieving net zero. These approaches can provide a framework for the application of ORD science and innovative technologies.



Task Overview

- The overall purpose of this task is to apply ORD science and tools in four case-studies aimed at achieving Net Zero waste to landfill through co-digestion and small-scale technologies.
- **Integrated Waste Management in Region 4 (Columbia, SC)**
 - The aim of this case study is to investigate strategies and methods for developing practical organics diversion, collection and processing solutions in US EPA Region 4, specifically the greater Columbia, SC area.
- **Co-Digestion at Fort Huachuca, Arizona**
 - This case study will evaluate the most effective organic waste diversion options for Fort Huachuca, with an emphasis on co-digestion and biogas generation at their wastewater treatment facility (WWTF).
- **Evaluation of Small-Scale Food Technologies towards Net Zero Waste**
 - This study will assess and evaluate the benefits and limitations of a variety of on-site food waste processing systems that are currently being used at Army installations.
- **Waste Sorting with Idaho National Lab**
 - This study, in collaboration with Department of Energy’s Idaho National Lab (INL), will evaluate and assess materials processing technologies that will enhance separation and sorting of waste streams in Materials Recovery Facilities (MRFs).

Accomplishments

- The Net Zero team recently received permission to demonstrate LeanPath 360 food waste technology at Fort Jackson (Columbia, SC). This will be the first full scale demonstration of Lean Path in a contractor-operated Army dining facility.
- Net Zero scientists produced a State of Science document on current and emerging MRF materials processing technologies that was well received by Idaho National Lab and industry representatives.
- Net Zero scientists are working alongside Army Corps of Engineers and Army staff to assemble a review and database of co-digestion practices in Army and civilian communities.

Future Directions

- In addition to helping installations and communities meet their waste reduction goals, a series of reports and guidance documents will be produced from the case studies. These will be made available to installations and communities seeking technologies and approaches to move toward Net Zero Waste or aligned goals. These include:
- Reports assessing the benefits and limits of Co-digestion (FY 2017); and on-site small-scale food waste management technologies (FY 2019) for Army installations.
- A report on detailed integrated management strategies for the diversion of organic materials from landfill into valued uses, using Columbia, SC as a case study area (FY 2017).
- A guidance document for installations & communities exploring co-digestion and other organics diversion strategies with broadly applicable steps to conduct a practical organics waste diversion plan (FY 2019).
- A report synthesizing the results of the INL technology demonstrations; it will include case studies and best practices for end-of-life management of recyclable materials in MRFs.