

# Sustainability Comparison of Drinking Water Treatment Approaches

Case Studies of Compliance to the Safe Drinking Water Act (SDWA) for Small Systems

## Key Results

1. Point-of-Use / Point-of-Entry (POU/POE) drinking water treatment technologies are viable solutions for SDWA compliance - as demonstrated by four case studies
2. POU / POE tend to be more protective of public health and the environment compared to necessary upgrades to central treatment
3. Individual state regulatory requirements for monitoring/sampling largely impact the cost to implement POU / POE as a long term compliance solution

## TRIPLE BOTTOM LINE ANALYSIS: 3 P'S OF SUSTAINABILITY

**PEOPLE:** evaluate human health impacts

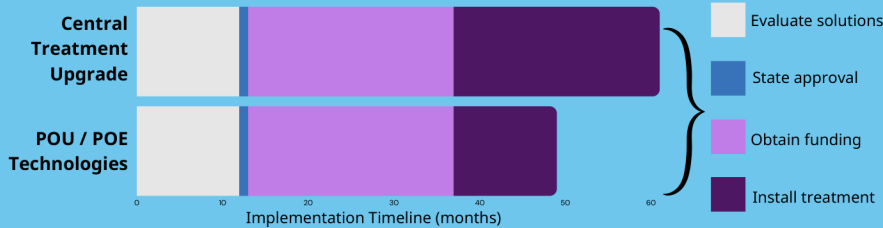
**PLANET:** determine environmental impacts

**PROFIT:** examine economic impacts over 30 years



PEOPLE

## TREATMENT IMPLEMENTATION TIMELINES >>> WORST-CASE SCENARIOS



**POU/POE technologies can be implemented at least one year faster & tend to have higher contaminant removal efficiencies, which better protects public health**

## ENVIRONMENTAL IMPACT OF TREATMENT

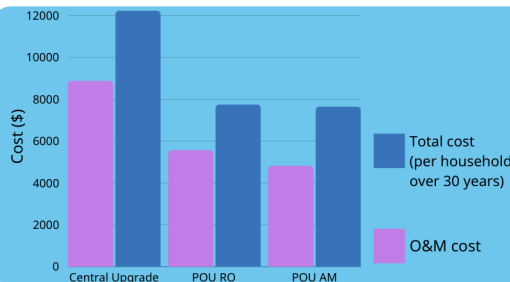


**POU / POE technologies had lower impacts to the environment than central treatment upgrades in 3 out of 4 case studies**

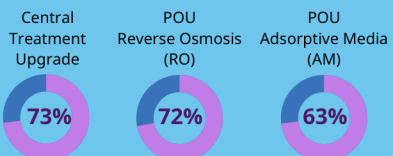
PLANET

PROFIT

## COST TO IMPLEMENT & MAINTAIN TREATMENT >>> NEW HAMPSHIRE CASE STUDY FOR ARSENIC TREATMENT AT 24 CONNECTIONS



### O&M Cost as a % of Total Cost for 30-years



**POU RO or AM devices at each home would have saved \$3,312 or \$4,063 respectively over 30 years**

Lane, K., Reckhow, D., Tobiason, J., & Kumpel, E. (2023). Triple-bottom-line approach for comparing point-of-use/point-of-entry to centralized water treatment. AWWA Water Science, 5(2). <https://doi.org/10.1002/aws2.1320>



Lane, K., Reckhow, D., Tobiason, J., & Kumpel, E. (2022). Sustainability Comparison Study: Assessing Centralized Treatment Upgrades and POU/POE Treatment for Small System Compliance to the SDWA. <http://www.wqrf.org/completed-studies.html>