



Developing City-Wide Solutions for a Renewable Rikers Island: Evaluating Rikers Island to Meet Challenges of This Century

The New York City Department of Environmental Protection (DEP) is studying the feasibility of creating resources from wastewater at Rikers Island.

What's a Wastewater Resource Recovery Facility?

A Wastewater Resource Recovery Facility (WRRF) collects wastewater and stormwater from surrounding neighborhoods and creates valuable products including clean water, renewable green energy, fertilizer products, and more. DEP operates 14 WRRF's from across all five boroughs treating over 1.3 Billion gallons of water each day, and more than double that during heavy rains. DEP is responsible for creating the cleanest water we have seen in over 100 years in the New York harbor.

Why is DEP considering Rikers Island for wastewater treatment and resource recovery?

Recent City Council Legislation tasked DEP with the goal of reimagining Rikers Island. DEP is studying the feasibility of consolidating up to four existing WRRFs into one new WRRF that will greatly advance wastewater resource recovery for New York City and incorporate greater green energy infrastructure.

Why is this feasibility study important?

- **Current Conditions:** The four Upper East River WRRFs were first built in the 1930s. Operating, maintaining and upgrading these facilities to modern standards are not as cost-effective as compared to newer facilities.

Here are some specifics:

- o The City's Upper East River WRRFs are approaching 100 years old
- o The core operating infrastructure is in need of significant upgrades and rehabilitation

- o The current WRRFs are on space-limited sites challenging further expansion and resulting in significant costs to rehabilitate, operate, and maintain
- o Existing processes are high energy consumers, utilizing outdated equipment and operational programs
- o WRRFs are located on waterfront property in 4 NYC neighborhoods
- **Rising Challenges:** Continued population growth and a changing climate present new challenges and opportunities for the future of wastewater treatment.

Operational Challenges include:

- o Increasing nitrogen control in the Upper East River
- o Reducing Combined Sewer Overflows and treating or diverting greater volumes of urban stormwater
- o Changing targets for bacterial management.
- o Tighter environmental controls over time.

Additional challenges and pressures come from addressing:

- o Increasing population, real estate development, and sewerage expansion
- o Reducing flooding in low lying areas
- o Implementing advanced odor control
- o New and existing water quality regulations
- o Working to reach City-wide goals for greenhouse gas reduction and Carbon Neutrality through increased energy and operational efficiency, greater green energy production, and increased biosolids fertilizer products for beneficial use.

- **Opportunities:** Reimagine Rikers Island with the co-location of a modern consolidated WRRF and green energy infrastructure. DEP is evaluating this once-in-a-generation opportunity to advance our wastewater resource recovery infrastructure to a new level for more cost effective operation and sustainable response to today's climate challenges.

The Rikers Island feasibility evaluation will assess:

- The benefits-costs of operating, maintaining and upgrading existing WRRF infrastructure versus a modern-day facility through an economic, environmental and social lens (triple bottom line)
- Opportunities to Grow the circular economy in NYC by expanding recovery of valuable green resources from wastewater, which can:
 - Produce high quality fertilizer products that increase carbon sequestration and green the City.
 - Extract nutrients such as nitrogen and phosphorus and return them to soils on farms, parks and forests
 - Recycle water and make it available for non-potable uses (e.g., irrigation, industrial cooling)
 - Provide expanded receptacles to convert the City's food waste to green energy and valuable fertilizer
- Advancing the City's production of Renewable Green Energy
 - Create renewable green gas for local use
 - Take strides in heat and cooling energy recovery for operating facilities as well as district heating in surrounding communities
 - Use cutting-edge solar energy technologies, green energy battery storage, and other alternative technologies
- Providing additional community benefits, such as:
 - Create an Energy Hub by co-locating a consolidated state of the art WRRF on Rikers and merged with other critical City infrastructure and renewable energy sources
 - Optimize space and land use for essential public facilities and community benefits
- Environmental, Economic and Social (Triple Bottom Line) analysis to review opportunities for:
 - Increased educational and community engagement programs and accessibility features
 - Research on emerging technologies with academic, community, and utility partnerships
 - Job training, apprenticeships, skill enhancement at all levels
 - Water Resource Recovery Technology Research and Development Testing platforms to make New York City a regional, national and international leader in developing the technologies to address today and future challenges

