

# New Report Analyzes the Financial Benefits of Investing in Water Infrastructure

Capital projects make Camden cleaner, greener, and more affordable

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Prior to 1999, when Camden County Municipal Utilities Authority (CCMUA) began upgrading the equipment in its wastewater treatment plant in response to daily odor complaints, the New Jersey Department of Environmental Protection (DEP) had placed CCMUA under an administrative consent order for compliance violations, due to excessive pollutant discharges and odor problems. The terms of the consent order, negotiated between CCMUA and the DEP, required CCMUA to construct about \$7 million in odor-control systems for the plant.

“It is essential for wastewater treatment utilities to make odor control a top agency priority,” said Andrew Kricun, the authority’s executive director and chief engineer. “If our neighbors are complaining about odors, then no matter how well you’re doing with water treatment, you are not a good neighbor. In addition, we need to make sure that our neighbors know that we value them and do not wish to detract from their quality of life with odors from our treatment plant.”

The authority’s Delaware No. 1 Wastewater Treatment Plant serves approximately 500,000 residences, plus commercial and

industrial customers in more than 30 municipalities. The plant is designed to handle 80 million gallons of sewage per day, and currently handles an average of approximately 58 million gallons per day. The 1999 consent order and remediation measures imposed on the plant presented Kricun, who had just been promoted to deputy executive director, with a challenge: Could the utility find ways to invest in upgrading its equipment, allowing it to mitigate the odor complaints and comply with the consent order, without exposing its ratepayers to large rate increases? He thought it could.

## Investing in Water Infrastructure

A forthcoming report from the Jersey Water Works collaborative looks at CCMUA's two-pronged approach to the problem, and the results it yielded. First, because the cost of upgrading the plant's equipment would be significant, Kricun looked for ways to borrow money at very low interest rates. Second, he made sure that upgraded equipment not only improved outcomes, but also improved efficiency and reduced operating costs.

### Lowest-Cost Financing

Even before 1996, CCMUA had been a frequent borrower from the New Jersey Water Bank (Water Bank), a financing program administered jointly by the newly named New Jersey Infrastructure Bank (NJIB), formerly the NJEIT, and the Department of Environmental Protection (DEP). The Water Bank offers qualified borrowers low-interest financing on loans for system upgrades, and its funds were used for the original construction of CCMUA's wastewater treatment plant in the 1980s.

Beginning in 1996 and continuing over the next 20 years, CCMUA has borrowed a total of \$190 million from the program to fund a series of upgrades at the plant, with an average of 70% of these funds coming from the State at 0% interest and the remainder of the projects' costs financed through NJIB's AAA-rated bonds. As the report illustrates, the result has often been an effective interest rate of less than 1% due to the combination of the NJIB's AAA credit rating and the DEP's 0% funds, a substantial decrease versus the interest rate CCMUA would have paid, had it financed these projects on its own. By utilizing the Water Bank for financing, CCMUA minimized its cost of borrowing, which, in turn, allowed the authority to borrow a significantly larger sum and invest in more equipment than the bond market would have permitted.

After accounting for funds received from the state at 0% interest and \$8.14 million of principal forgiveness funds granted to the CCMUA, the NJIB estimates that from 1996 to 2016, had CCMUA borrowed the same dollar value of funds on its own and paid the NJIB's AAA interest rate on 100% of



## About the New Jersey Water Bank Financing Program

The recently renamed New Jersey Infrastructure Bank (NJIB), formerly NJEIT, is an independent state financing authority responsible for providing and administering low-interest loans to qualified municipalities, counties, regional authorities, and water purveyors in New Jersey for financing water quality infrastructure projects that enhance ground and surface water resources, and ensure the safety of drinking water supplies.

The financing program initiative through which NJIB, in association with the New Jersey Department of Environmental Protection (DEP), offers these loans is known as the New Jersey Water Bank Financing Program. The program makes funds available for the construction of wastewater conveyance and treatment facilities, drinking water distribution and treatment facilities, stormwater management, combined sewer overflow systems and other point and non-point source pollution management projects. The program also provides funds for activities with defined water-quality benefits, such as open space land purchase and conservation, projects that involve remedial action (including brownfield remediation) and well sealing.

Long-term financing available from the program is sourced from both the DEP in the form of a zero-interest-rate loan, and from NJIB as a loan financed with proceeds from the NJIB's issuance of long-term, AAA-rated municipal bonds on the open market. Since being established by the Legislature in 1985, the program has issued over \$7.1 billion in loans, saved tax- and ratepayers over \$2.46 billion through interest savings and loan forgiveness, and created an estimated 123,000 direct construction jobs.

those funds, CCMUA would have spent an additional \$71.4 million in interest expenses, or 38% of the funds borrowed. Instead, it was able to invest those savings into additional projects that increased the plant's efficiency and helped minimize its operating costs, while addressing many of the underlying causes of the original consent orders.

**Improved Efficiency**

By investing in equipment upgrades, the authority didn't just want to bring itself into compliance with DEP mandates, it wanted to leverage the opportunity to lower operating costs. To do so, it targeted three key drivers of cost at the plant:

**Disposal costs** Treating sewage generates two byproducts: clean, liquid effluent, which is discharged into local waterways, and the remaining solids, called sludge, which require disposal. Disposing of sludge can represent a significant part of a treatment plant's operating cost, depending on how much water, and its associated weight, the sludge still contains at the end of the treatment process. Despite a 48% increase in wet sludge capture, CCMUA's purchase of a new and highly efficient dewatering machine enabled it to reduce the overall weight of its sludge by 75%, from the equivalent of approximately 160 wet tons per day to approximately 40 dry tons per day, generating a 40% reduction in annual disposal costs and a savings of approximately \$3.5 million per year. In addition, the increase in wet sludge capture resulted in a significant increase in effluent quality, resulting in improved water quality in the Delaware River. Using funds from the Water Bank, the CCMUA was able to improve its environmental performance, while also reducing its annual operating cost.

**Energy** is another significant cost of the wastewater treatment process, and the authority was able to reduce its energy use in two ways. First, it decreased the amount of energy required to run its operations. The utility upgraded its sludge collection equipment to force a greater part of the sedimentation process to be accomplished by gravity, which requires virtually no energy, than was previously

possible. And second, it used the plant itself to generate a portion of its own energy demand. In 2012, CCMUA installed solar energy panels across much of the plant. These panels currently generate between 8% and 10% of the authority's energy needs, at a cost of less than 5 kWh, or less than 50% of the 10 kWh it pays on average for energy from the grid.

Energy savings from these solar panels has totaled approximately \$642,000 since they were installed. In addition, CCMUA is currently constructing a sludge digester and combined heat and power (CHP) facility at the plant that will generate biogas and then convert that gas to electricity. This initiative is expected to generate 50% to 60% of CCMUA's energy needs.

The advertisement features a blue header with the text "The Power of Collaboration" and the MEL logo. Below this, it says "SERVING YOUR COMMUNITY JUST GOT EASIER." and "Introducing the New MEL Safety Institute Mobile App." The central image shows a tablet and a smartphone displaying the app's interface, which includes a "Protecting You and Your Hometown AGAINST CYBER ATTACKS" banner and a "NEWS & UPCOMING EVENTS" section. At the bottom, there are buttons for "DOWNLOAD THE FREE APP TO YOUR SMARTPHONE NOW" and logos for the App Store and Google Play. The footer contains the text "THE MUNICIPAL EXCESS LIABILITY JOINT INSURANCE FUND", the tagline "Committed to safety as a way of life at the workplace and in your community", and the website "NJMEL.ORG".

## Investing in Water Infrastructure

**Staffing** Newer, more efficient equipment, requiring fewer people to operate and repair, has allowed CCMUA to reduce its staff, from approximately 230 full-time-equivalent employees in the 1990s to 135 in 2016. This was done gradually through natural attrition and retirements rather than layoffs, resulting in an annual savings of approximately \$6 million in salaries and benefits.

### Benefits of Being a Good Neighbor

Kricun used savings garnered from these plant-wide investments to purchase odor control devices. The newer, more efficient equipment enabled CCMUA to reduce odor complaints from the hundreds per year it received prior to completing the upgrades to just five since 1999.

The authority has also reduced its discharge of untreated solids by approximately 20,000 tons per year, representing a significant environmental improvement in that part of the Delaware River.

CCMUA's approach to investment for better air quality and water quality in South Camden has served as a template for its stormwater management initiatives, like the new Phoenix Park, which

## About Jersey Water Works

Jersey Water Works is a cross-sector collaborative working to transform New Jersey's inadequate water infrastructure through sustainable, cost-effective solutions that provide communities with clean water and waterways; healthier, safer neighborhoods; local jobs; flood and climate resilience; and economic growth.

offers community members access to the Delaware River on what was once the site of heavy industry. These efforts have helped make the city's riverfront more beautiful and accessible for Camden residents, and have helped keep nearby neighborhoods more attractive and clear of storm-related sewage back-ups and flooding.

### The Result: Keeping User Rates Low

As the report illustrates, the efficiencies these investments have brought, combined with the low borrowing costs achieved through the Water Bank, have allowed CCMUA to keep its rate increases well below the rate of inflation. The utility did not increase rates from 1996 through 2011 and from 2012 to 2015 it increased its user fees from \$337 per year per household to just \$352, a 4% change. Had the fees

paralleled the Consumer Price Index during those 20 years, they would now exceed \$500 per household, an increase of almost 50%.

However, by systematically returning to ratepayers some of the savings generated by equipment upgrades, and using the remainder for both debt service and further upgrades, the authority has been able to reduce the percentage of its budget a typical household pays for sewer service.

"No one really wants a sewage treatment plant as a neighbor," said Kricun. "But in the past 20 years we have gone from being seen as an offensive necessity to being looked at as a true community partner. And we are striving to be an anchor institution in Camden City, building parks and green infrastructure throughout the city, and then hiring at-risk Camden youth to maintain those green spaces.

He adds: "We have also significantly improved our water quality performance, while holding our rates. In fact, due to internal efficiency and the help of the New Jersey Water Bank, we have actually reduced our rates by about 40% over the past 20 year, after adjusting for inflation. And we're not done yet—by the end of 2019, we plan to be a net generator of energy, and we will be passing some of those savings onto our customers as well." ♪

@ For more information on the collaborative and how to join, visit [jerseywaterworks.org](http://jerseywaterworks.org).

The full report on the financial benefits of a robust asset management program will be posted on the collaborative's website. If you are interested in being notified when it is released, please contact Jane Rosenblatt at [jrosenblatt@njfuture.org](mailto:jrosenblatt@njfuture.org) or David Zimmer at [dzimmer@njeit.org](mailto:dzimmer@njeit.org).



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