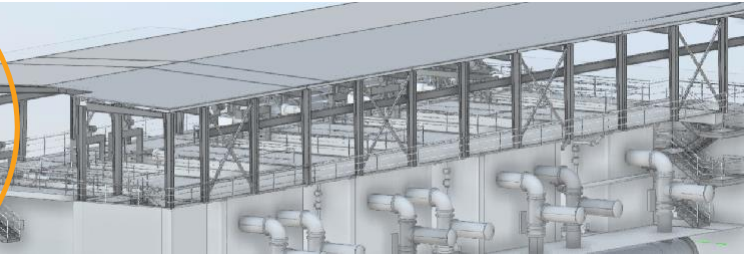


Miami-Dade Water and Sewer Department Ocean Outfall Legislation Update



The Miami-Dade Water and Sewer Department (WASD) will save more than \$300 million while maximizing the benefits of the Ocean Outfall Legislation Program by implementing an innovative and forward-thinking engineering approach

The OOL requires utilities in Southeast Florida to cease the normal use of the existing ocean outfalls for discharging treated wastewater by the end of 2025 to reduce nutrient discharges to the ocean and promote water reuse alternatives that are technically and economically feasible. For several years, WASD has been diligently working on many capital improvement projects associated with the OOL Program. Throughout this time, WASD’s approach to executing these projects has focused on maximizing its benefits while minimizing the financial impact on Miami-Dade County residents.

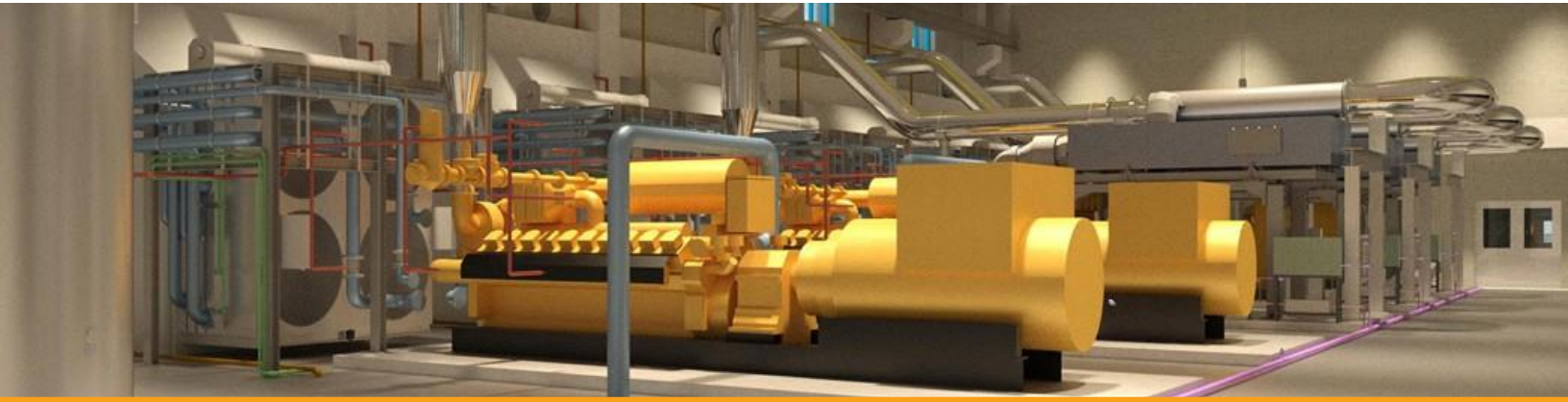
As an example of this approach, WASD is pleased to report on some recent significant cost-saving measures for the OOL Program, identified in coordination with one of our design and consulting partners. Through aggressive value engineering and innovative design, WASD and Black & Veatch have identified solutions that provide the County with substantial cost benefits, including capital savings of more than \$240M and operations and maintenance savings over \$3M per year at the County’s wastewater treatment plants.

TREATMENT PLANT IMPROVEMENTS

These improvements to existing treatment facilities at WASD’s plants are required to meet the new OOL regulations. Moreover, in 2018, the OOL Team identified viable design alternatives through a pilot study to test innovative filtration technologies. WASD invested approximately \$1M in this pilot program. The outcome demonstrated that a newer, less expensive filtration technology also met the requirements of the OOL regulations while providing more than **\$70M in savings** at two of WASD’s wastewater treatment plants.

BENEFITS ITEM	NORTH PLANT	CENTRAL PLANT
Construction Cost Savings (minimizing treatment facilities)	\$18M	\$37M
Engineering Services	\$2M	\$5M
Construction Management Services	\$1M	\$2M
WASD Overhead Savings	\$2M	\$5M
TOTAL SAVINGS	\$23M	\$49M





Design of the South Plant New Engine Generator Building

ENERGY MANAGEMENT AND BACKUP POWER

WASD engaged an engineering consulting firm to design the power backup and energy management systems for the South District Wastewater Treatment Plant (South Plant). Until recently, WASD had been using robust power backup systems that relied on low-speed generators. A detailed evaluation of energy management and back-up power resulted in the recommendation of high-speed generators for the South Plant, which are more cost-effective, environmentally friendly and provide equally reliability via low-speed units. These generators also offer valuable benefits such as increased sustainability. In addition, the innovative solution provides the County with significant capital and operational cost savings, as presented below.

CAPITAL AND OPERATIONAL COST SAVINGS

BLACK & VEATCH RECOMMENDATIONS	WASD BENEFITS	SOUTH PLANT	CENTRAL PLANT	NORTH PLANT	TOTAL
Use of High-Speed Generators	Capital cost savings (\$1.5M/unit).	12 Units \$18M	20 Units \$30M	16 Units \$24M	48 Units \$72M
Use of Larger Capacity Generators	Capital cost savings and minimized area required at the site.	\$22M	\$37M	\$ 29M	\$88M
Innovative Procurement	Capital savings by using the buying power of thousands of utilities.	\$3M	\$5M	\$4M	\$12M
Lower Air Emissions Design	Less air pollution for County residents, unrestricted operation, and significant power cost savings.	\$1.0 M/ year	\$1.2 M/ year	\$0.9 M/ year	\$60M/ over 20 years

TOTAL SAVINGS
\$232

In summary, WASD with the assistance of its consulting partners has been able to reduce total project costs on the OOL Program by more than \$300M through its innovative, sustainable, and forward-thinking engineering approach.