

Top US Utility Requests **30** Design Scenarios for **24** MGD WRRF Master Planning Tender

Innovative Water Utility Incorporates Generative Design Software Into Its RFP

When it comes to capital planning, utilities and their consulting partners struggle to keep up with the demands of the future. Scenarios like ever changing regulatory requirements, weather conditions, population models, emerging contaminants, and advances in treatment technology are difficult to plan for. How can utilities effectively assess this range of potential scenarios, especially with limited time and budget?

One leading utility in the southern US has an answer.

The utility issued a tender for a Master Plan update for a 24 MGD facility. The original tender required 3 scenarios to be proposed as part of the facility upgrade. However, the utility determined that 3 design options wouldn't effectively cover the rapidly changing environmental challenges this water facility will face in upcoming decades. By incorporating design automation software into their amended RFP, including Transcend Design Generator (TDG) mock-ups, the utility requested bidders submit 30 scenarios - while keeping the original deadline and, most importantly, the budget.



About Transcend

Transcend is a diverse company of water treatment and engineering design specialists paired with sophisticated computer programmers. Transcend Design Generator (TDG) software allows engineers to automatically generate conceptual designs for WRRF's based on a wide range of inputs. In the last 10 years more than 10,000 designs were created by the tool with the total capacity of more than 95,630 MGD. That's twice the influent flow in North America per day.

Currently CAS, MBR, MBBR, MBBR-IFAS and SBR technologies are included - with both Biological and Chemical P removal - and new process units are added continuously. The tool supports both greenfield and existing facility assessments.

Transcend by the numbers:



10,000 Design Runs



88 Countries



95,530 MGD Influent

Background – Innovative Water Facility

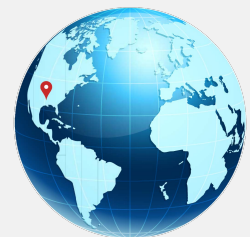
The utility serves 1.8 million people in the southern part of the US issued a tender for a Master Plan update for WWRF, a 24 MGD WWTP.

In the original tender, the utility had asked responding engineering design consultants to consider three scenarios for the updated Master Plan.

While the utility knew it needed more alternatives – including assessing new innovative technologies (MBR, MBBR, MBBR-IFAS, etc.) and/or various flow, loading, and effluent requirement scenarios that could happen in the coming decades – **the utility felt this was impossible given budget and time frame constraints.**

The Water Utility

The utility currently serves 1.8 million people in the southern part of the United States



The Utility's Regional Wastewater System

The water utility's regional wastewater system is a 24 MGD activated sludge treatment plant providing wastewater treatment services to all or portions of five cities.

The system provides treated effluent for irrigation under a Type II water reuse authorization from the State Regulator.

The current site consists of wet-weather storage, screening facilities, grit removal, three activated sludge treatment trains, tertiary treatment with ultraviolet disinfection, and a solids dewatering facility. Following dewatering, the biosolids are disposed of in an off-site municipal landfill.



"Transcend enables us and our consulting engineer partners to evaluate 10x the number of wastewater treatment concepts than we previously could... in considerably less time. It really is a game changer for how master planning and feasibility study work should be done in our industry"



1970

Service
began

24.0

mgd treatment
capacity

16.041

mgd avg.
daily flow

The challenge - accounting for variability in future planning scenarios

This utility faced significant challenges as they considered an updated master plan for a Regional WRRF.



Increasing
OPEX



Changing
Weather Patterns



Increasing
Influent Flow



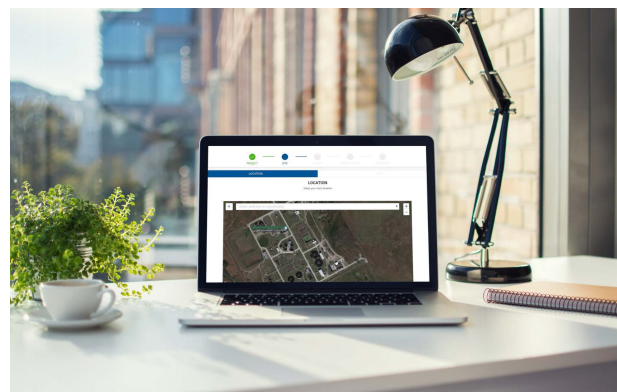
Growing
Population



Stricter
Effluent Limits



- Rising operating costs created a need to assess alternative technologies and unit processes that may serve to lower costs in the future
- Rapidly changing weather patterns in the south require assessment of different average and peak flows, both now and in the future
- Changes in influent loading are expected in the coming years
- Increasingly stringent environmental standards for effluent discharge and sludge disposal
- Increases in population growth



Given the range of possible scenarios to account for, the utility needed to assess a variety of alternatives and new technologies/approaches as it considered an updated master plan for the WRRF; however, it had limited time and resources to work with.

The utility turned to Transcend, an innovative software company focused on the conceptual design of built infrastructure, to help its engineering partners evaluate the optimal set of design solutions for a number of future scenarios within the required time frame and budget.

The Solution – Transcend Design Generator

After the utility discovered the Transcend Design Generator (TDG), they realized it would be possible to generate conceptual designs and 3D Models for 30+ alternatives for the facility with the same level of effort that was originally planned for 3 alternatives. Just as important, TDG would allow the utility's engineering partner to spend the vast majority of its time ideating possible alternatives and evaluating the outcomes, as opposed to just generating the documentation.

The utility subsequently issued an addendum to the tender requests each bidder to submit an offer which included conceptual design packages for 30 alternatives, utilizing advanced conceptual design automation software.

EPC's & Transcend – an ideal match

Transcend was contacted by a number of the engineering firms that planned to bid on the project. Each bidder asked Transcend to configure TDG so it was fit for purpose to assess the various alternatives that bidder wanted to assess for the utility.

Some of the bidders had already started their digital transformation journey with Transcend and were familiar with TDG.

Transcend worked closely with these bidders, even enabling them to run a few conceptual designs for the water utility that allowed them to include renderings and other documents in their submission.

The Result - more alternatives, 80% less time than traditional, manual design methods

Transcend is currently engaged with the engineering firm that works closely with the utility on the final software configuration and will support them as they leverage TDG to run 30 or more alternatives for a WRRF. The engineering firm will be able to spend the majority of its time coming up with alternatives and evaluating the outcomes, thus maximizing the value it brings to its client.

The Future

The utility is in continuous communication with Transcend about leveraging TDG for other master planning updates, and Transcend is working closely with a number of engineering firms on integrating TDG into their business processes around other pursuits and optioneering assessments.

TDG will enable this utility and their EPC partners to assess a range of potential future scenarios that better prepare the utility for unpredictable events in the decades to come. More alternatives assessed in the early stages of this project mean the 1.8 million people the utility serves will ultimately receive an innovative and sustainable WRRF compared to legacy solutions of the past.

Curious to see how Transcend can help you with WRRF master planning studies?

Send an email to capitalplanning@transcendh2o.com or call U.S. +1 (609) 577-4131

