

A New Horizon: Private Biosolids Management for the City of Atlanta

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As part of the city of Atlanta's ongoing re-engineering and contract operations efforts, a combined request for qualifications and request for proposals (RFQ/RFP) was issued in April 2001 to solicit a provider for long-term biosolids management services. This procurement is groundbreaking because it includes permitting, design, marketing, public participation, and construction elements, as well as a 20-year contract operations component. In addition, the procurement is primarily performance based and is not tied to any particular biosolids disposal technology.

This article summarizes the goals of the procurement, the structure for implementing the services, the challenges faced during project development, and the pre-qualification and technical proposal evaluation processes.

KEYWORDS

Biosolids, design, build, operate, DBO, privatization, beneficial reuse

INTRODUCTION

The city of Atlanta operates four water reclamation centers (WRCs) and produces approximately 110 dry tons of biosolids per day. At the time the RFQ/RFP was issued, the city's primary disposal methods were incineration and sanitary landfilling of dewatered biosolids. Ash produced from incineration was either landfilled or used in brick production.

In late 2000, the city was in the final stages of \$600 million in improvements to the liquid stream treatment process at three of the WRCs in order to meet consent decree deadlines. Based on an Atlanta City Council resolution, the Department of Public Works (DPW) also had been directed to phase out incineration in favor of beneficial reuse of biosolids.

The DPW chose to solicit beneficial reuse solutions through an open procurement not tied to any specific technology and developed a performance-based RFQ/RFP. This procurement is the largest to date for biosolids in North America and is one of the first two large-scale design-build-operate (DBO) procurements in Georgia.

PROJECT GOALS

The following goals were developed and implemented both in the RFQ/RFP and in the proposed service agreement with the input of city stakeholders in the political, legal, financial, engineering, construction management, and operations sectors.

1) Beneficial Reuse

The Atlanta City Council had made its desire to end the incineration of biosolids clear in a 1997 resolution. DPW staff determined that some aspects of implementing beneficial reuse, particularly marketing the product, fell outside the strengths of city government. Also, the city sought to minimize its risk during the transition to a new method of biosolids treatment and disposal, so it structured the project with single-source responsibility for selecting and implementing a beneficial reuse technology.

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The selection process required proponents to meet minimum experience requirements and provide references at both the qualifications and proposal stages of the procurement. The service agreement defined "beneficial reuse" to specifically exclude direct incineration, sanitary landfilling, and monofill, and required that the beneficial reuse take advantage of the nutrient or fuel value of the biosolids. Although using biosolids for their fuel value is not considered beneficial reuse traditionally, the city wished to allow vendors of sludge-to-oil technologies to compete.

The city required that when the construction of capital improvements was completed, the facilities would produce a Class A biosolids product as described in 40 CFR Part 503, within the Exceptional Quality standards as understood by the industry. As an implementation constraint, 90 percent of the biosolids were required to be disposed of via beneficial reuse within four years. An additional 10 percent could be landfilled or incinerated, but the city would expect to recoup some of its expenses in the form of liquidated damages.

2) Capital Improvements

In addition to the capital improvements necessary to install a beneficial reuse technology, the city recognized the need to repair and upgrade its existing anaerobic digestion and dewatering facilities. The city's primary concern was to maintain a backup biosolids storage and disposal system in case the selected contractor was unable to remove biosolids from the WRCs. As a result, specific repair and replacement needs were identified at the anaerobic digesters, and contract allowances were provided for cleaning digesters and performing structural repairs that could not be identified in advance of the proposal due date.

The RFQ/RFP and service agreement set an aggressive deadline of completing the design and permitting phase, including design reviews, and beginning construction within 332 days of notice to proceed. The next deadline following the start of construction would be the date scheduled by the contractor in its proposal for acceptance of the improved biosolids facilities.

The design-build criteria were developed to reflect the desired level of quality for equipment and workmanship and to incorporate city contractual provisions for construction, as well as startup and acceptance testing procedures developed during the most recent capital improvements at the WRCs. The service agreement also incorporated the city's preference for a partnered approach to owner-contractor interaction. Responsibility for providing complete systems and proving performance through acceptance testing would remain with the contractor.

During the development of the RFQ/RFP, the connection between the capital improvements and contract operations

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This view of the dewatering/incineration building and digester complex at Atlanta's Utoy Creek Water Reclamation Center shows the newly covered primary clarifiers and thickening centrifuge building in the foreground.

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became apparent. Initially, the city's preference was to provide the contractor with dewatered biosolids, maintaining operation of dewatering equipment and the anaerobic digesters. However, concerns over the need for improvements at the anaerobic digesters led the city to make the contractor responsible for all existing solids-handling equipment from a point just upstream of the anaerobic digesters.

By making this point the demarcation between city and contractor responsibility, the city hoped to achieve two goals: (1) to provide an incentive for high-quality design-build improvements to the digestion facilities by making the contractor responsible for their long-term operation; and (2) to lessen the coordination required between city operations staff and the contractor to perform the design-build improvements to the digestion and dewatering equipment while maintaining their operation. The only disadvantage to this approach was that operating data for the material fed into the digesters was not available. As a result, approximate quantities based on several assumptions were used to develop the baseline biosolids quantities against which the proponents would bid.

3) Long-Term Contract Operations

By including long-term operations as a component of the RFQ/RFP, the city sought to minimize the additional cost of beneficial reuse. The project also was structured in distinct stages, with the contractor taking over operation of the existing solids-handling facilities 120 days following the notice to proceed. In the cost proposal, each proponent bid operating fees for both an "interim operating period" and a "final operating period," reflecting the difference in operating costs between using the existing facilities and beneficially reusing biosolids products from improved facilities.

Atlanta's other experience with privatization has been its 20-year contract for the operation and maintenance of its entire drinking water system, which was put into place in 1999. The city felt it important to incorporate lessons learned from this experience into its next public-private partnership. These included detailing expectations of the contractor for coordination with the

city, reporting, and maintenance of equipment and facilities. Atlanta also provided an extensive table of liquidated damages to reflect its costs in responding to a variety of failures by the contractor to perform the services as detailed in the agreement.

Based on the water system experience, the other area of concern was customer service. In hopes of encouraging an integrated approach to operations and maintenance activities, the city required in the service agreement that the contractor maintain an active role in the National Biosolids Partnership (NBP) and implement an environmental management system (EMS) based on NBP guidance.

4) Risk Minimization

Numerous provisions of the service agreement were used to shift risk to the contractor. Recognizing that marketing the beneficial reuse product would be key to the success of this type of biosolids disposal, the city included marketing as part of the ongoing contract operations portion of the service agreement, complete with an annual review of this activity as part of an overall comprehensive review. Proponents were required to submit marketing experience information with the qualifications package and to submit a preliminary marketing plan with the technical proposal.

In addition to its design responsibility for the improved biosolids facilities, the contractor was also responsible for all permitting activities required to implement the shift to beneficial reuse. This was intended to provide the city additional security because the contractor would be the party selecting the technology for implementation.

The service agreement also included multiple guaranty requirements. For the long-term contract operations, the contractor was required to maintain a letter of credit that the city would draw from in the event of a breach of contract. To protect Atlanta against a failure of the technology selected by the contractor to meet the contractual performance requirements, an efficacy letter of credit was required for two years after substantial completion of the design-build improvements. Initially, the city had investigated efficacy insurance for the term of the service agreement but determined that this coverage was both esoteric and prohibitively

expensive. The city also required that traditional construction performance and payment bonds be carried for the design-build portion of the services.

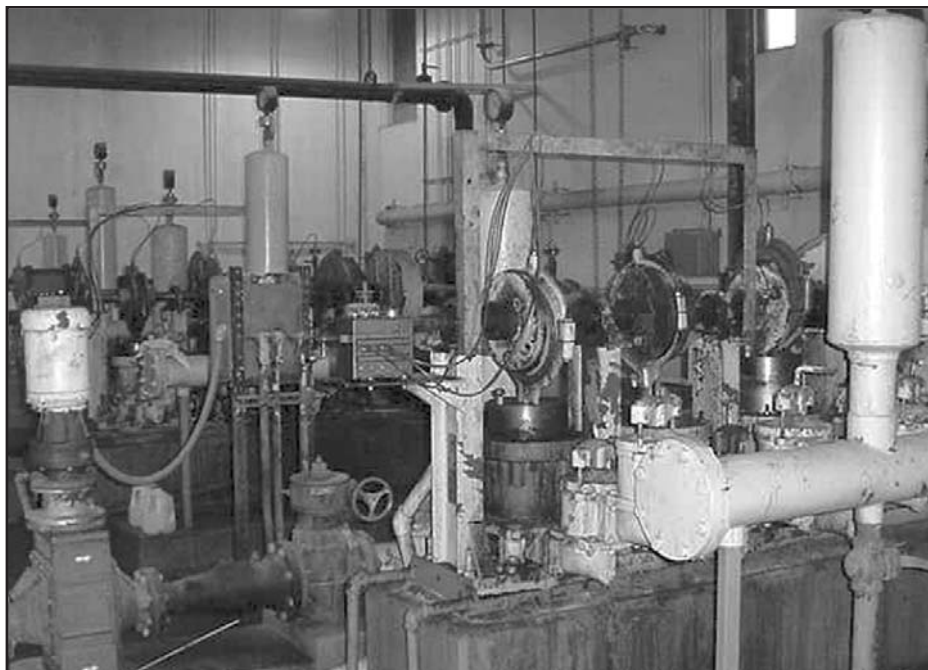
5) Good Citizenship

Despite the reality that the shift to beneficial reuse of biosolids was the result of public outcry over incineration, the city of Atlanta recognized that ongoing public education about this project would be necessary. By including public participation tasks in the biosolids contractor's scope, the city continued its efforts to overcome a public credibility problem regarding its wastewater system that dates to the early 1990s. In evaluating the technical proposals, public participation and coordination with city operations were given equal weight with the quality of the operations and maintenance plan and management team.

In addition to educating the public about the changes to the biosolids disposal system, the contractor would also have to be a good neighbor, particularly by controlling odors from the facilities and hauling activities. Modeling of odor control performance was required as part of the design of the new facilities. Also, the contractor was required to maintain a published telephone number for citizen feedback and to investigate citizen complaints in conjunction with the city. In the event of excessive odor problems, the contractor would be required to pay liquidated damages to cover city costs to react to the problem, both in terms of operations and public relations. Continuing odor problems would be cause for termination of the contract.

QUALIFICATIONS AND PROPOSAL EVALUATION

To evaluate the qualifications statements and technical proposals, the city selected representatives from the political, legal, financial, engineering, construction management, and operations stakeholder groups. These representatives were grouped, and with non-voting facilitation by the consultants, each group was tasked with evaluating a portion of the submittals and scoring each proponent.



Sludge transfer pumps in the digester headhouse.

A total of four teams submitted qualifications statements, and the city decided to qualify all four teams to submit technical proposals. Atlanta received proposals from three of the four teams by the October 12, 2001, due date.

The cost component of the technical proposals was sequestered so the city evaluation groups could evaluate the quality of the technical proposals independently. The final component of the evaluation involved the use of a "value index" to assign a final score to each team. The value index concept had been developed during Atlanta's privatization of the water system. The equation used for the long-term biosolids contract is as follows:

$$\text{Value Index} = \frac{\text{Technical Component Score} \times 1000}{(\text{Total Proposal Cost (in \$millions)})^{1.5}}$$

In this equation, the "Total Proposal Cost" is the net present value of the capital and operations expenses over the course of the 20-year contract, as calculated by the city using assumed escalation and discount rates. The primary difference between the formula used in the water system privatization and the formula above was in the weighting given to cost by the exponent. In the water privatization, the Total Proposal Cost was raised to the power of 2.0, reflecting an emphasis on cost reduction as the driving force behind the procurement. Based on a sensitivity analysis of this formula in the range of expected Total Proposal Cost values, the city chose to reduce the exponent to 1.5 for the biosolids procurement to place a greater weight on a high-quality approach. With Total Proposal Cost raised to the 1.5, the analysis showed that a 20-point margin in technical score equated to roughly \$32 million in capital costs, \$2 million in annual operations and maintenance fees, or some combination thereof.

CONCLUSIONS

Atlanta's design-build-operate procurement for its biosolids program fits into a larger, overall program of privatization and re-engineering to improve services while reducing costs. The key features of this project included:

- Implementing beneficial reuse of biosolids by a phased transition from incineration and landfilling.
- Developing a procurement framework that gave flexibility to proponents in designing their technical approaches while providing a clear separation between city and contractor operations.
- Incorporating insight gained from Atlanta's previous experience with privatization.
- Continuing to improve wastewater system credibility with the public.
- Selecting a proponent in a manner that took into account both cost and the quality of the technical approach.

The city of Atlanta has selected the Atlanta Biosolids Consortium, whose primary partner is US Filter Operating Services, among three proponents and is preparing to finalize and sign the service agreement.