

Utilities Privatization in US Army Installations

*Juan C. Santos Borrero
Engineering Management Program
Dr. Hector J. Cruzado
Graduate School
Polytechnic University of Puerto Rico*

Abstract — *Utilities Privatization creates an opportunity for the Army to make utilities a “must fund requirement” and guarantee ample resources and funding to properly operate, maintain and renew the systems. Field tests proved that a privatized system significantly reduces outage durations and provide for an efficient and resilient utility system. Over the course of a 50 year base contract, the privatization endeavor will provide the Army Installation with approximately 15% of Net Present Value Savings.*

Key Terms — *Public Works, Utility outage, System Resilience, Operations and Maintenance*

INTRODUCTION

Recent Army budget cuts and employee hiring freezes have taken a toll on the operations and maintenance of Army Installations water and sewer utilities. Army bases are facing a high demand of maintenance requests due to aging and failing water and sewer utility infrastructure. The Directorate of Public Works (DPW) does not have the manpower or resources to achieve all that is required to maintain the systems up to national and local health and environmental regulatory standards. This causes a lot of grief on tenants in the form of long downtime during outages, emergency repairs and regular maintenance. Most of the shop employees are unionized, approaching retirement and have to deal with the constraints and long processes of the Federal Government’s Service Acquisition. This makes the DPW’s job challenging, when these utilities have a direct impact on soldiers and the Army Mission at the base.

A solution to this problem lies in the privatization of the water and sewer utilities, where a private contractor purchases the system and performs all the necessary Operations and Maintenance to abide by regulatory standards at

private industry pace and delivery rate. The contractor, as the system owner, does not have to abide by the Federal Government’s Service Acquisition laws, therefore fulfilling the maintenance requirements and tending to emergencies at a more effective and speedy rate. The objective is to reduce the duration of water and sewer service interruptions caused by unplanned emergencies and routine maintenance of the utility systems.

LITERATURE REVIEW

The Department of Defense (DoD), which includes the Army, has entered into many Utilities Privatization contracts since the early 1990’s. These contracts provide a wealth of information on privatization, and are constantly referenced and studied when awarding new contracts on other installations. The Fort Jackson Utilities privatization contract was selected to be used as a case study based on the similarities in size, scope, geography and mission of the subject installation. Fort Jackson’s Water and Wastewater UP contract [1] was made available for review. Since it is in full effect in the Fort Jackson Army Garrison, it was used to gain more details on what the UP effort provides, in order to facilitate the comparison between private and government ownership.

The contract states that through the conveyance authority of Title 10 U.S.C. S2688, the system owner will provide all operations and maintenance under the more efficient, non-bureaucratic processes of the private industry. It also includes a complete Renewals and Replacements program which was non-existent when owned by the government due to the lack of resources and funding. This funded program, included in the contract, schedules the renewal of the system and its components once they exceeded its useful life.

All regulatory responsibility and ownership liability was also passed on to the system owner. The move to privatization also allowed Army to access a unique funding stream or “pot of money” that made all work on utilities a “must fund” requirement. This basically means that any privatized utility did not have to compete with roads, bridges or buildings for getting a slice of the annual budget. This was obviously never before seen in government ownership, and a huge step forward in improving system efficiency, resiliency and overall condition.

Previous to privatization, a Certified Economic Analysis [2] was prepared by a private company called Guernsey. This included a Life Cycle Cost Analysis as well as the development of a government cost estimate to compare with the system Owner’s proposal. The results of said analysis shown in Table 1 shows that the privatization alternative can achieve a 15.6% Net Present value Savings over the course of a 50 year contract. This means that the privatization is economically viable and will result in long term financial benefits to the government and will undoubtedly reduce the cost to the government over the course of 50 years.

Table 1
Summary of Life Cycle Cost Analysis Results-Privatization Alternative

Summary of Life Cycle Cost Analyses Results – Privatization Alternative				
	Net Present Value Savings		EUAC Savings	
1. Base Case (50 year Contract) with Residual Value	\$7.0 Million	15.6%	\$387,000	15.6%
2. Base Case (5 10 year Contracts) with Residual Value	\$6.6 Million	14.6%	\$363,000	14.6%
3. Sensitivity / Margins of Error Analysis – Base Case without Residual Value	\$9.8 Million	20.4%	\$537,000	20.4%
4. Sensitivity / Margins of Error Analysis – Discount Rate	Feasible except at discount rates lower than 3.4% (current OMB discount rate – 5.2%)			
5. Sensitivity / Margins of Error Analysis – IGCE O&M / G&A	Feasible except when the Government O&M / G&A costs are less than 55% of the IGCE.			
6. Sensitivity / Margins of Error Analysis – IGCE R&R	Feasible except when the Government R&R costs are less than 80% of the IGCE			
7. Sensitivity / Margins of Error Analysis – IGCE ICU _s	Feasible even if the Government ICU costs are equal to \$0.			

Table 2 shows the annual cost to operate by Government. Monthly Operating Reports from the Fort Jackson system owner were crucial in the research. These contain data on all major contract deliverables like water quality sampling and test results, number of service interruptions, emergency repairs and sewer overflows. This information was

comprehensively used in determining the quantities and durations of service interruptions in order to perform a direct comparison between government and private contractor performance. Maintenance records and most importantly, service interruption data for the government owned systems in the subject Army Installation were scarce and could practically be deemed non-existent.

Table 2
Annual Cost for Government owned potable water operations

(a) Item	(b) Wage Grade	(c) Quantity	(d) Annual Cost	(e) Overhead Rate	(f) Annual Cost	
Labor:						
Supervisor / Foreman	WS-10	0.5	X	\$55,661	X 1.5560 = \$43,364	
Plumbers / Equipment Operator	WG-10	2.0	X	\$42,806	X 1.5560 = 133,214	
Apprentice Plumber	WG-07	1.0	X	\$35,464	X 1.5560 = 55,182	
Maintenance Mechanic	WG-05	1.0	X	\$30,514	X 1.5560 = 47,479	
Subtotal Labor		4.5			\$279,179	
Equipment (GSA Vehicle Lease):						
		Quantity	Monthly Rate	Months	Milage Rate	
Backhoe with front end loader		0.5	\$550	12.0	\$0.12	42 = \$3,330
Dump Truck		0.2	\$295	12.0	\$0.77	250 = \$1,167
Pickup Trucks		2.5	\$286	12.0	\$0.71	1,000 = \$23,750
Miscellaneous Tools/Equip		1.0	\$190	12.0	---	---
Subtotal Equipment						\$36,507
Contract & Miscellaneous Expenses						
Annual Recalibration of PRV Test Kits (\$500 / year plus \$500 test kits replace every 5 years)					\$2,720	
SCIDHRC Water Quality Analysis		12	X	\$750	= 9,000	
Contractor Support Contracts					65,000	
Right-of-way Maintenance					10,000	
Chemicals (i.e., chlorine)					12,000	
Supplies and Misc. Expenses					35,000	
Subtotal Contract & Misc. Expenses					\$133,720	
Total O&M Expenses					\$449,406	
G&A Expenses (25% of Labor-Related O&M Expenses)					\$67,395	
Total O&M and G&A Expenses					\$519,200	

ANALYSIS APPROACH

The objective was to reduce the duration and quantity of water and sewer service interruptions caused by unplanned emergencies and routine maintenance of the utility systems. Given that we already had ample data on the privatization front, we needed to test the government owned system in the field in order to accurately compare the two. Six service interruptions were observed on base during the month of September. All interruptions were timed, documented and incident reports created for them.

RESULTS

The data collected was carefully selected to match weather conditions, climate, time of day, non- holiday and staff availability. This allowed for

a level playing field. Figure 1 shows the service interruption durations on potable water system unplanned emergencies for both private and government owned utility systems. In some cases, government owned durations are six times the durations of the private owner.

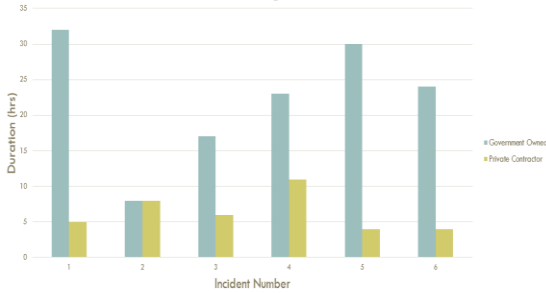


Figure 1
Service Interruption Durations

DISCUSSION

There are multiple reasons to explain why the private owner had better response times. With the privatization, System Owners have a 24/7 emergency call center. Customers can contact the owner directly and they are contractually obligated to respond within one hour of the call. They have the equipment and materials readily available, and if not, they have suppliers under contract ready to supply materials 24/7 for the fixes. System owners are better staffed with crews of up to 5 personnel, whereas the government can only have 2 plumbers on their payroll and do not work 24/7. System owners have contracts in place with water testing labs to make sure the water is safe to drink before restoring the services. Government does not have the authority to have these agreements because of strict federal regulations on how to acquire services. They would have to use one of their available contracting vehicles like an in place Job Order Contract to purchase any equipment, materials, construction or specialized service required for the repair. All of this increases the interruption durations. The adoption of “just in time” techniques for inventory of tools and parts also takes a toll on durations on the government side. Instead of having a fully stocked van with

parts and tools, the plumber needs to develop the parts list once he gets to the site and then go and purchase them. Having completed this field work proved that Privatization is the better option to considerably reduce durations of service interruptions during unplanned outages and emergencies.

CONCLUSION

Utilities Privatization was proposed as a solution to reducing the durations of service interruptions during unplanned outages and emergencies. Through the research and field tests conducted herein it was determined that UP will indeed significantly reduce the time of interruption. UP brings other value added to the table like private industry expertise and resources. It introduces the stream lining of acquisition processes for utility maintenance by completely eliminating the long, cumbersome and bureaucratic federal acquisition regulations processes from the mix. Certified Economic Analyses on Army installations have proved UP to be economically viable, and that the government could potentially save 15% of their net present value through a 50 year contract.

UP allows government to access a separate funding source for the sustainment of the utilities and this becomes a “must fund” requirement. No longer will a utility necessity get shelved because of lack of funds. A renewals and replacements program gets introduced with UP. This was not part of the government’s work plan since budget cuts had basically thrown scheduled replacements out of the picture. When systems get renewed on a regular basis, service interruptions will reduce greatly. System efficiency and resilience will replace an unreliable aging and failing infrastructure.

All of these reasons have aided in the subject DPW’s decision to privatize water and sewer systems. The installation will be requesting the privatization package through Army Headquarters level. This will comprise of a lengthy two year contract procurement period, in which potential owner’s will have to submit bid proposals. These

proposals will be evaluated in source selection board and a Certified Economic Analysis will have to be prepared in order to justify said undertaking. If the analysis yields results of cost savings or “same cost” over 50 years, the DoD will accept and move forward with the privatization of the water and sewer system of the installation.

REFERENCES

- [1] Certified Economic Analysis Fort Jackson (Guernsey, 2007)
- [2] Fort Jackson Monthly Operating Reports on Water and Sewer Utilities (American States Utility Services, 2017)