

**Cost Saving Measures and Revenue Enhancement
Joint Outfall System
March 2017**

Introduction

This report provides an overview of cost saving measures implemented to benefit the Sanitation Districts collectively, and the JOS specifically. Many of these measures and strategies are not new programs. Districts' staff is continuously looking for ways to improve efficiency and reduce costs without compromising the quality of service to ratepayers or compliance with regulatory requirements. These initiatives involve staff optimization, resource sharing in the form of equipment pools, buying power related to chemical expenditures, increased energy efficiency, sewer cleaning and maintenance to extend the useful life of sewers, technological improvements, new approaches to capital projects and their design, utilization of low-cost capital funding strategies, and the sale of reclaimed water. Cost savings are quantified where possible.

COST REDUCTION EFFORTS

Staff Optimization and Reduction

There has been is a concerted effort to re-evaluate staff positions as they become vacant (e.g. through retirement) before back-filling with replacement employees. This strategy requires management to either fully justify filling a vacant position or eliminate it through consolidation of staff responsibilities where possible. As attrition has occurred, the Districts have re-allocated remaining staff to areas in the organization most in need of resources, resulting in a much leaner and more efficient organization. This has allowed staff Districts-wide to be reduced by over 18%, as shown in Table 1 below. Based on the average employee salary compensation in 2016, the reduction in staffing saves the Districts approximately \$40 million annually.

Table 1

Los Angeles County Sanitation Districts Staffing

Staffing Unit	Staffing Numbers as of December 2008	Staffing Numbers as of December 2013	% Change
Management	59	54	-10.2
Confidential	38	29	-23.7
Prof. Supervisory	76	61	-19.7
Non-Prof. Supervisory	93	81	-12.9
Professional	358	287	-19.8
Energy Recovery	59	32	-45.8
Technical Support	281	271	-3.6
Blue Collar	758	665	-12.3
White Collar	117	99	-15.4
Hourly	173	68	-60.7
Total	2012	1647	-18.2

In addition to staff reductions, the Districts utilize temporary employees to satisfy certain staffing needs, e.g., specialized technical skills or peak workloads in various locations. This philosophy is designed to facilitate efficient operations with reduced overall costs.

Chemical Expenditures –Bulk Buying & Minimizing Use Leads to Cost Savings

The Districts collectively purchase needed supplies in bulk when possible to capture pricing discounts and minimize costs. The large quantities of chemicals purchased on behalf of all treatment plants and sewer maintenance groups results in the Districts receiving volume discounts. While the chemicals used by the Districts do not have set price breaks for buying over a specified limit (the typical method of offering price discounts), by virtue of their size, the Districts are able to leverage their purchasing power and obtain extremely favorable price structures for all chemicals purchased when compared to market prices.

As an example of this shared buying power, the Districts collectively purchase 9 million gallons per year of sodium hypochlorite (bleach) for all of the treatment plant needs. Because of the large quantity purchased collectively, the Districts receive a discount of roughly 10% compared to market prices, resulting in annual savings of \$460,000. Other chemicals used by the Districts receive similar discounts.

For ammonium hydroxide, used in conjunction with chlorine to disinfect treated effluent, the discount has varied to as much as 50%. The Districts also receive a regular discount of 20% on the purchase of polymers, chemicals used to promote flocculation of small particles in wastewater. Flocculation results in larger aggregates that are easier to remove through settling, centrifuging, and filtration. Combined, the discounts received when purchasing ammonium hydroxide and polymers results in additional savings of \$350,000 annually.

The largest cost savings result from the purchase of iron salts (ferrous and ferric chloride). The Districts are the largest user of these salts, which are used to control odors in sewers, pumping plants and treatment facilities. Historically, there was only one local supplier for these materials, who effectively controlled the California market. In an effort to create a more competitive market the Districts worked with out-of-state suppliers to develop a proposal package. This resulted in contract awards to three suppliers with an annual savings of \$1.2 million. Combined with the bulk purchasing discounts noted above, the total annual savings on chemical purchases is over \$2 million.

Energy Production, Efficiency and Savings

Collectively, the Districts produce approximately 98 megawatts (MW) of power from its wastewater and solid waste facilities. Roughly, 26 MW of this power are used at the Districts' facilities, most notably at the Joint Water Pollution Control Plant (JWPCP), with the remainder of the power being sold to the electrical grid. JWPCP (the Districts' largest wastewater treatment plant) effectively generates and then uses 20 MW of power. This makes the plant nearly self-sufficient and saves the Districts from having to buy \$18 million of electricity from Southern California Edison (Edison). The Districts do spend approximately \$9 million in operations and maintenance expenses on the JWPCP's power plant, so our net savings are approximately \$9 million per year at the JWPCP. For the other wastewater treatment facilities, the Districts go into the open market and buy their power from non-traditional sources, saving approximately \$1 million per year.

The Districts have a dedicated Energy Recovery Engineering (ERE) Section that focuses on reducing the cost of electricity and developing renewable energy sources. Energy costs typically represent the second highest cost category for wastewater treatment plant operations, second only to labor costs. The ERE Section keeps electricity costs down through two major activities: (1) being an active

player in the electricity market to obtain the lowest purchase price possible, and (2) reducing the amount of energy used.

The Districts keep their cost of electricity lower primarily by purchasing power through an independent electricity service provider under California's Direct Access (DA) program. By buying power from Direct Access, our energy rates are about 4% less than we would otherwise pay Edison. Purchasing power from the Districts' Puente Hills and Calabasas Landfill gas-to-energy facilities has also been a win-win for both the wastewater and solid waste operations. Wastewater paid less than it would if it had to buy the power from Edison and solid waste sold it at a rate higher than it would receive if it sold that power to the grid.

In 2006, a full time energy efficiency position was created in the ERE Section to coordinate energy efficiency activities, audit energy consumption at the water reclamation plants, identify new energy efficiency projects, obtain energy efficiency rebates from SCE, and review electricity bills in detail to correct errors and ensure that facilities have been placed in optimal usage tiers. These activities have resulted in about \$6 million in savings per year and over \$40 million since 2006.

Lastly, the Districts continually evaluate advances in renewable energy technologies for potential application at Districts' facilities. Recently, the Districts have begun to use our unused anaerobic digestion capacity at JWPCP to help our member cities divert food waste from restaurants. This will lessen our reliance on landfill and increase the amount of biogas we produce. We anticipate producing an additional 760,000 gasoline-gallon-equivalents of clean fuel at a natural gas fueling station. This would generate additional revenue that will help defray the costs of operating the wastewater management system. In the last 10 years, the Districts have developed six biogas fueled power plants, including the first applications of low emission turbine, micro-turbine, and fuel cell technologies at various water reclamation plants and landfills.

Sewer Cleaning and Maintenance

One of the chemical compounds commonly found in wastewater is sulfides. Metals (such as iron) historically present in wastewater would preferentially bind with the sulfides, forming an inert solid that could easily be removed from the wastewater. In the early 1980s, EPA mandated that all wastewater agencies implement an industrial wastewater pretreatment program to have companies remove metals before they discharge their wastewater to the sewer system. Without the presence of metals to bind them, the sulfides produce hydrogen sulfide gas. The hydrogen sulfide gas, through a series of complex chemical and biological reactions, is converted to sulfuric acid, which then corrodes the inner surface of concrete pipes. Left unchecked the sulfuric acid will continue to corrode the pipe until it loses its structural integrity, at which point it must be replaced at a significant cost.

In order to reduce the rate of corrosion and to eliminate the need for replacing structurally deficient sewers, the Districts have implemented an innovative crown spraying program. Under this program, caustic chemicals are sprayed on the crown of the sewer (the area at the top of the sewer above the water line where the sulfuric acid accumulates). These compounds, similar to milk of magnesia, are acid neutralizing and retard the rate of corrosion, delaying or preventing the need for sewer rehabilitation/replacement. While it is difficult to quantify the savings derived from crown spraying, the program clearly extends the life of the sewer and the time for rehabilitation or repairs.

Another important issue related to sewers is their routine cleaning. Cleaning is critical for clearing tree roots, removing debris, and preventing the build-up of fats, grease, and oils (FOG), all things that can result in sewer spills if not taken care of. With the emphasis by EPA on no spills (and the ensuing fines), this becomes a critical issue. To ensure the optimal schedule to both minimize the chance

of spills and maximize the interval between cleanings, the Districts collectively undertook a study to determine the appropriate frequency of sewer cleaning in a wide variety of sewer sizes.

The methodology for sewer cleaning is critical for improving efficiency and reducing costs. There are two methods for cleaning smaller diameter sewers (15" and less): bag cleaning and hydro-cleaning (i.e. jetting). A study undertaken by the Districts' Wastewater Collection Systems Section shows that the hydro-cleaning method reduces the cleaning costs for these smaller sewers by approximately 80% compared to the bag cleaning method. The primary savings are from a reduction in labor (2-man crew versus 5-man crew) and an increase in productivity due to the more efficient operation. The Districts now operate five hydro-clean trucks in the Joint Outfall System, with estimated annual cost savings of \$1 million.

Equipment Pools-Savings from Equipment Pool

An equipment pool was set up within the Joint Outfall System (JOS) to purchase equipment that can be utilized at multiple facilities. Whenever a facility uses equipment from the equipment pool, it pays a rental fee so that the equipment can be replaced when it reaches the end of its useful life. The total current value (replacement cost) of this rented equipment is approximately \$25 million, with the most expensive pieces (graders, bulldozers, vacuum-jetter sewer cleaners, loaders, and a boom-crane truck) ranging in price from \$250,000 to \$650,000 per unit. Most of this equipment is relatively specialized and not readily available at commercial rental yards. Without the benefit of the equipment pool, each district would most likely have to purchase all of the equipment used in its jurisdiction. Since each district annually utilizes approximately 25% of the equipment, that purchase cost would be \$6.25 million for each district. Factoring in a 15 year useful life and depreciation, the annualized purchase price per district would be approximately \$550,000. Based on average annual rental charges for each district, it is estimated that the JOS Districts save over \$4 million annually by renting equipment through the equipment pool.

Staff Sharing Between Districts

Technically, each of the individual Sanitation Districts in Los Angeles County is a separate political and financial entity. As such, each one of them could independently hire staff to represent them and to operate their facilities. However, 24 Districts have entered into a joint administration agreement to share administrative staff. The advantage of sharing administrative staff (e.g. accounting, purchasing, payroll, human resources, technical services, financial management) is that each District doesn't need to hire a full complement of staff on its own. By taking advantage of the economy of scale in sharing staff, each District only pays a fraction of the cost it would otherwise pay for maintaining a dedicated staff on its own.

Technological Improvements

The Sanitation Districts have an IT Section that manages computer hardware and software, phone services, internet and networking issues, and a variety of other technology based functions. In recent years, the section has worked to identify areas where cost savings may be captured. These have included re-structuring maintenance contracts, eliminating old technology for information storage, and re-scheduling work to minimize overtime. In addition, the section developed an automated system for monitoring the status of back-up batteries (for maintaining an uninterrupted power source in the event of loss of power from the electric grid) at each of the Districts' facilities, resulting in a collective one-time cost saving of \$180,000.

The Districts implemented a "Work Asset Management" (WAM) application several years ago that tracks all planned maintenance work, while monitoring and recording the status of the effected

physical assets. WAM is a powerful tool to review various maintenance programs and identify priorities (i.e. critical assets and elements), allowing for optimization of maintenance activities and the benchmarking of crew performance. WAM is also a very effective application when utilizing shared resources, both labor and equipment, because it allows for more efficient scheduling and utilization of those resources.

Capital Funding Strategy-Securing Low Interest Rate Funding

The Districts strategy for funding capital projects has always been to secure the lowest cost financing that is available. Historically, this meant obtaining state and federal grants under the Clean Water Grant Program. Under this Program, an agency would receive a combined state and federal contribution equal to 87.5% of the project cost (in some special cases, this increased to 97.5%). This contribution was truly a grant and did not have to be repaid; thus, the local agency was only responsible for 12.5% of the total project cost. More recently, the Districts have been able to secure over \$5 million in state grants (through Propositions 50 and 84) to partially offset the costs of several JO capital projects.

Unfortunately, the Clean Water Grant Program was phased out in the mid-1980s and became a low-interest loan program (the State Revolving Fund or SRF Loan Program). Under this program, the State Water Resources Control Board loans 100% of the project cost to an agency at ½ of the current state general obligation bond rate. The current SRF loan interest rate is around 2%. These loans are for 30 years and, because, unlike most bonds, the repayment does not begin until after construction is complete, the agency has to put little to no money upfront. The Joint Outfall Districts have financed over \$500 million of capital projects through the SRF Loan Program, with over \$100 million in interest savings compared to conventional bond financing.

In structuring bond deals, the Districts are rated on the collective strength of all districts, because of certain step-up provisions, instead of being rated individually with the overall rating being linked to the weakest individual credit. This approach has resulted in the Districts being rated AA+, the same rating as the federal government. Without the collective strength of the Districts, the interest rate on the bonds would have been 35 to 40 basis points higher and increased costs to the Districts.

Districts staff continually monitors the marketplace and interest rate trends to evaluate whether refunding of current bonds makes sense. In 1993, the Districts sold bonds in a pre-emptive move to prevent the State from taking more of the Districts' historic share of the property taxes. In 2003, interest rates had dropped to, what were then, all-time historic lows. The Districts took advantage of that opportunity to refinance that existing debt and to sell some additional bonds to fund needed capital improvements. In 2011, rates had dropped even further and the Districts were able to refinance approximately \$138 million of those 2003 bonds, resulting in a collective net present value savings of \$10.6 million Districts-wide. In 2013, the Districts were able to refinance the remaining \$154 million of the 2003 bonds, at a collective net present value savings of \$29 million.

REVENUE ENHANCEMENT

Supplementing Revenues with the Sale of Reclaimed Water

Water has always been in short supply in Southern California, with the demand being met with the importation of water from other localities. Unfortunately, the supply of water from other places is not limitless, especially in times of drought. The Districts recognized this fact back in the early 1960's and developed a plan to collect wastewater from residential and commercial sources, treat it through advanced water reclamation plants, and then recycle it. Under this plan, the Districts currently produce 135 million gallons per day of recycled water, using it at over 850 different sites throughout Los Angeles County. In addition to the indirect benefit to the local communities of reducing the amount of imported water that

must be purchased, the Districts generate approximately \$4.5 million in annual revenue through the sale of recycled water.