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Reaping the Benefits of AMI: A Kansas City Case Study

In 2002, the Kansas City, Mo., Water Services Department (KCWSD), which has 167,000 customer accounts, needed to improve its customer service levels. About 15% of its bills were based on estimated consumption, and 35% of its customer call center volume was related to meter reading (e.g., billing disputes after previous estimated bills, estimation policy questions, meter-read recheck requests, high-bill inspection requests). Because of low customer confidence in the accuracy of KCWSD's bills, KCWSD had to expend additional resources (such as rereads) to defend the accuracy of its billing process.

In addition to these meter reading challenges, the average KCWSD water meter was more than 16 years old. KCWSD employees could not perform all the field service orders created (e.g., meter-reading verifications, final reads, high-bill/leak inspections, service turn-offs and service turn-ons for customers moving in and

out) in a timely manner. This resulted in significant backlogs, abandoned work, duplicate work orders, and customer dissatisfaction. KCWSD read and billed all residential and small commercial accounts bimonthly and did not have adequate data to verify on a timely basis how much water was being used at a particular address. This resulted in frequent trips to verify that inactive properties were not occupied. In addition, the geographic size of Kansas City—318 square miles—meant that the average customer service field trips were relatively expensive.

As part of the solution, KCWSD engaged SAIC to help select and acquire an advanced metering infrastructure (AMI) system and to design and plan for the improvement of customer service operations using the data collected by the meter-reading system.

When the AMI installation was nearly complete, KCWSD began to leverage its AMI investment by redesigning selected

business practices to take fullest advantage of the capabilities of its AMI system. Although KCWSD had already benefited from AMI savings through eliminating 33 positions, making improvements in meter accuracy, and switching to monthly billing, its leadership believed that additional improvements could be made in customer service and the efficiency of its operations by redesigning key billing and customer service policies and procedures based on the availability of daily meter reads.

ENSURING INCLUSIVE METHODOLOGY

Successfully managing large changes in an organization requires not only that the proposed changes be well-designed, but also that staff members be deeply involved from the beginning in order to gain their insights, understand and address their concerns, and ensure their understanding of the new policies and procedures and active support during implementation. As a result, KCWSD assembled a team composed of employees from the billing, customer service, field services, information technology, collections, and human resources departments to evaluate and redesign meter-related processes.

KCWSD began the reengineering effort with facilitated workshops to develop consensus around a vision statement for its customer service functions. This statement provided that customers are billed fairly, staff members are trained properly, and that KCWSD provides great customer service that builds a positive image.

The workshops also developed guiding principles that would be used throughout the project in assessing and comparing policy and procedure options. These principles established that KCWSD's policies and procedures should

- be businesslike and cost effective,
- minimize the extent to which some customers inadvertently and unfairly subsidize others,
- ensure that tasks are performed by as few people as possible who are closest to the task,
- encourage customer service employees to make the best use of available account and consumption information and perform only those field trips that are absolutely necessary, and
- optimize efficiency for an entire customer service process, not just the efficiency of one of the interrelated subtasks.

After the goals and guiding principles were established, the KCWSD team selected specific business processes for analysis and redesign. Processes were selected that had the greatest potential for improving customer service levels, eliminating tasks that were no longer necessary, redirecting staff members to more valuable activities, and improving KCWSD's financial performance. The selected processes

included high-bill complaints and follow-up procedures, move-in/move-out procedures, and payment delinquency processing.

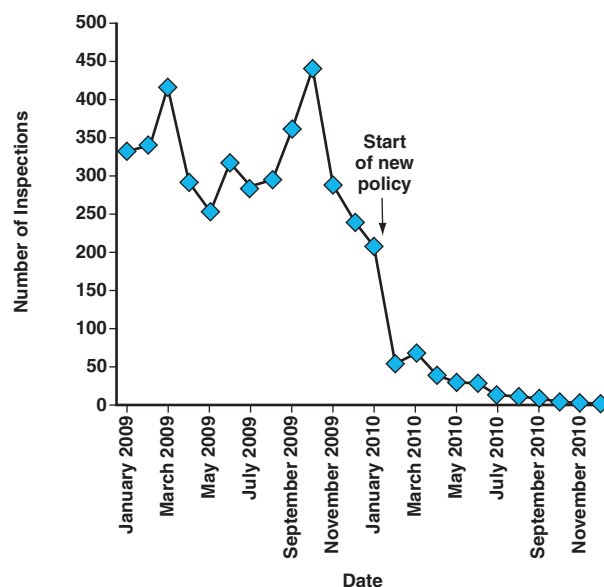
After the team identified the target processes, KCWSD performed benchmarking with other water utilities to learn from their experiences in implementing AMI systems with similar functionality. The experiences of other utilities helped KCWSD understand the potential of the new technology.

The KCWSD reengineering team documented the existing processes in flowcharts, determined work volumes, and identified decision points and criteria. During this process, the team members highlighted process steps that delayed task resolution or service delivery that might be unnecessary in light of the data provided by the AMI system.

The team, guided by SAIC, described the best customer service processes it could envision, referring to the guiding principles to help judge alternatives. Team members were encouraged to not be bound by current information technology processes, organizational structures, job title responsibilities, or policies if those policies seemed out of alignment with the utility's goals and priorities. The proposed revisions reduced unnecessary field investigations as well as unnecessary hand-offs of transactions from group to group for different process steps.

The KCWSD team then evaluated the proposed changes to processes and policies in terms of the effects on several dimensions of the workplace environment, including human resources, information technology

FIGURE 1 High-bill inspections by month



requirements, policies, laws and regulations, procedures, and customers and other stakeholders.

Managing change. To help ensure successful implementation, KCWSD assigned a senior staff member to manage and track the project and coordinate activities among several divisions. KCWSD established regular status meetings to monitor progress and highlight any needed resources or executive input. The project was divided into subprojects that were planned in detail by the project manager in conjunction with the staff members responsible for implementing the changes. The projects were tracked in a Gantt chart that was regularly updated and distributed to project participants. The plans needed to reflect that significant organizational change must be implemented on a realistic schedule, taking into account the maintenance of current operations and competing initiatives. Although KCWSD's customer service process redesign is still ongoing, this article focuses on results of the process changes implemented to date.

HIGH-BILL COMPLAINTS

KCWSD's traditional response to a customer's high-bill complaint was to quickly dispatch an inspector to verify the meter reading even though reading errors were usually not the source of the high bill. Then a separate leak check inspection was set up; this required the customer to schedule an appointment for

a KCWSD employee to inspect the indoor and outdoor plumbing and fixtures. If a leak was detected outside of the building, another trip might be required by a different KCWSD employee to determine whether the customer was responsible for the repair. More field trips were needed to validate that any leak (indoor or outdoor) was repaired and to reread the meter after 30 days to establish a new average daily consumption, which would be the basis for evaluating whether a customer qualified for any billing adjustment of the leak-based consumption.

This antiquated process required the customer to make multiple phone calls and service appointments. It also required KCWSD office employees to create and close service orders, calculate and process billing adjustments, and obtain necessary approvals—in addition to spending field-staff and call-center resources.

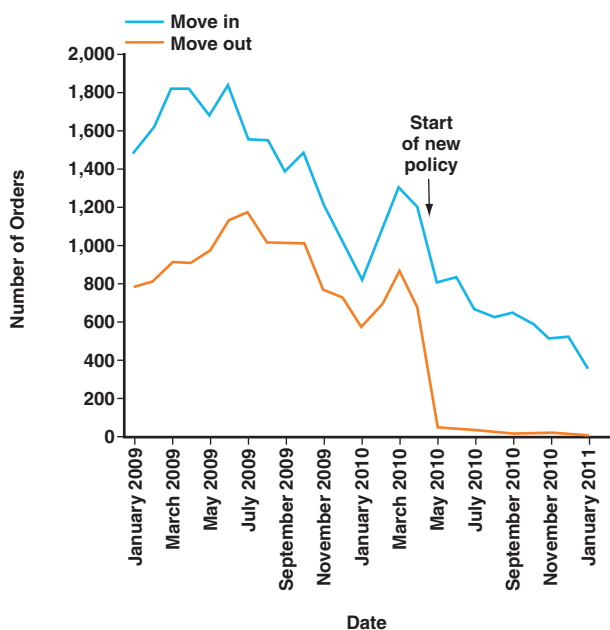
The change team posited that by retraining customer service representatives (CSRs) to use the daily AMI readings and recognize both normal and excessive consumption patterns—and to resist the customer's entreaty to “check the reading” or to schedule a leak inspection—it would be possible to eliminate 90% of these field trips.

As shown in Figure 1, KCWSD has seen a dramatic reduction in workload as a result of the new high-bill policies that it put in place. All CSRs have been given electronic access to the meter-reading details in the AMI database, trained in its use, and taught how to describe the consumption pattern to customers on the telephone (i.e., CSRs can describe whether there has been a significant increase in consumption, how much it is, whether it appears to be caused by a leak, when the high consumption started, and if it has ended). The CSR can also e-mail or fax a copy of the customer's daily consumption as of the previous night. These CSR–customer conversations have been successful in dramatically reducing the number of field orders created in response to high-bill complaints and have increased customer confidence in the accuracy of their water bills. These changes in field trips alone have yielded approximately \$450,000 per year in cost savings.

Additionally, KCWSD's customers can now view their daily AMI readings on the utility's website. This allows customers to answer many of their consumption-related questions 24 hours per day, seven days per week, without having to call the KCWSD. This website receives about 2,000 unique visitors per month.

Next steps. KCWSD is developing a new release of its website. This new release will allow customers to receive automatic notifications of high consumption via e-mail or an automated phone call so the customer can either verify the high use or resolve the problem before receiving a high bill.

FIGURE 2 Move-in/move-out service orders by month



MOVE IN/MOVE OUT

The review of KCWSD's move-in/move-out procedures identified improvements that could be made based on the availability of AMI data and also spurred proposed changes in some out-of-date policies. In the past, KCWSD relied almost exclusively on customers to notify the company of move ins and move outs. KCWSD has traditionally turned off the water of a property whose occupant requested a final bill because he or she was moving.

After the water was turned off, the arrival of a new customer required another field trip to turn the water back on. These move ins and move outs accounted for more than 35,000 field trips per year. The KCWSD team felt that, with daily meter readings, there was no longer a need to turn water on and off every time a customer moved.

AMI data allow KCWSD to monitor vacant properties to ensure that no water is being consumed. If there is consumption on an account that should be unoccupied, that consumption is billed to the owner of the property. The owner of the property is recorded in the KCWSD account or is available online in county records. Field personnel can also turn the water off if no new customer can be established. In addition, city ordinance is clear that it is the customer's responsibility to protect the piping from freezing (which generally requires either maintaining a minimum temperature or draining the pipes in addition to turning the water off). KCWSD has communicated this to customers and has developed a program that enables the department to shut off water at the owner's request and recover the costs of that service. There has been no significant public reaction to this change in policy.

Figure 2 shows the dramatic reduction in field orders. Although the number of move-out service orders dropped quickly after the new policy was put into effect, the number of move-in service orders is falling more slowly because of the number of inactive properties that had already been turned off and need to be reconnected. Taken together, this is a reduction of about 30,000 staff field trips per year, which cost approximately \$75 each, resulting in a savings of \$2.25 million per year.

In addition, to reduce the risk of frozen meters, KCWSD's marketing division undertook a public information campaign letting customers know that KCWSD no longer turns off water and that customers are responsible for ensuring that their piping does not freeze. This marketing effort appears to have been successful; the number of work orders for frozen pipes has been lower this winter than last winter, before the policy was changed.

CONCLUSIONS

By redesigning policies and procedures to take advantage of the wealth of data provided by AMI,

KCWSD has eliminated approximately one third of its customer service field trips. AMI is a valuable tool for reducing costs, increasing customer service levels, and improving operational efficiency. However, simply installing the hardware and computer systems was not enough to reap many of the benefits of the technology. AMI may enable a utility to substantially improve its operations beyond meter reading. However, designing and implementing those improvements are projects in themselves. Successful change at KCWSD has required

- executive commitment to keep employees focused on their goals over a substantial period and to keep staff from becoming overwhelmed by the other day-to-day pressures of their jobs;
- a formal planning process to evaluate, select, and design changes; identify resources responsible for implementing the changes; and determine timetables for deliverables; and
- active day-to-day change management by someone dedicated to planning, leading, and tracking the process.

The KCWSD is dedicated to further customer service and efficiency improvements and appreciates the level of effort that will be needed to implement those changes.

—Rob Thiemann works in Kansas City, Mo.'s, water supply division. He has worked in the water industry for 14 years and was previously the meter reading division manager for the city and was responsible for implementing Kansas City's \$35 million automatic meter reading system.

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