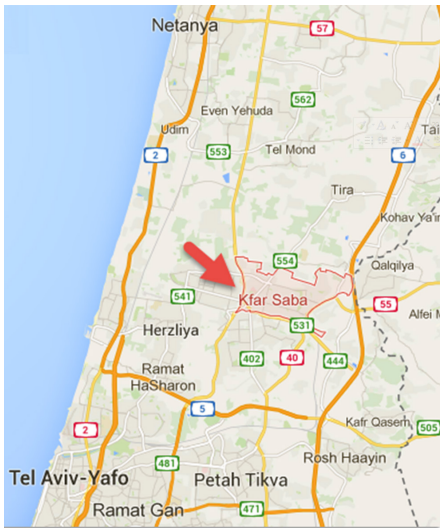
Been There, Done That:
A Practical Guide for Getting Maximum Return On Your AMI Investment

ARAD
Water Measuring Technologies

Kfar Saba is a generally affluent city of 100,000 located in Israel's centrally located Sharon region. The Kfar Saba Water Plant (KSWP) was established in 1931 as a resident-owned cooperative to develop and manage Kfar Saba's water resources. Today KSWP manages 33,000 water meters of which 95% are residential and 5% agricultural, with an annual water consumption of ~8 million m3.



During an in-depth interview that we conducted in May 2015 with KWSP's CEO Rivka Harisson about the lessons learned from their AMI deployment, she set the stage by emphasizing that KSWP was, from its inception, a professional organization with a single, clear mandate - to provide Kfar Saba residents with a reliable water supply. Thus, KSWP has invested steadily in improving water infrastructures and services over the last 8 decades. Rivka proudly pointed out "We are one of the few municipalities in Israel in which wells that were dug in the '40s, '50s and '60s are still functioning at high capacity. Also, when Israel decided in the 1990's to take water and sewage management out of the hands of municipalities and place it in the hands of professional corporations, KSWP was used as the organizational model."

Since 2009, KSWP has invested ILS 17 million (~USD 4.4 million) in deploying Arad's AMI solution, including Multi-jet M (20-50mm) and Ultrasonic Octave (50-250mm) water meters, the Dialog3G Fixed Network cellular infrastructure, and the CityMind MDM software. When asked why KSWP decided to make this significant investment, **Rivka provided several insights that should be of interest to any water utility management team considering an AMI investment.**

Why KSWP decided to invest in AMI

Staying at the cutting edge

First and foremost, she stressed that the investment was, in a sense, part of KSWP's organizational DNA. "I will soon be 37 years in the organization, and I have never had a dull moment because the corporate culture has always been one of progress and being on the cutting edge of technology. For example, 20 years ago we established an automated control system which is still working very, very well and we are trying to figure out how to get it to serve us for another 20 years even though at this point the spare parts are hard to come by. We also have our own advanced GIS system that we built ourselves, among the most advanced in Israel."

Manual meter reading, even when incorporating data loggers, is a physically demanding, Sisyphean task that is prone to human error both when recording data and when entering it into the billing system. The prevailing feeling was that it was just too old-fashioned and, no matter the cost, they had to move on.

Improving customer service

Another important consideration was improving customer service. Since KSWP is owned by its customers, providing them with the best service possible has always been a foremost value. As we will outline in more detail below, it is **the customers** who **have been the prime beneficiaries of the AMI investment.**

Savings

Last but not least, they hired economists to prepare a detailed economic cost-benefit analysis and the report provided to KSWP's directors showed clearly that **an AMI system would justify itself economically** enhanced leak detection, reduced water theft, and more accurate billing.

Thus, although KSWP first started to talk about remote reading as long as 12 years ago, in 2007 they initiated the transition to AMI in earnest when they saw that the AMI technology was more mature.

What did you learn from the bidding and deployment process

Close monitoring & open communications

In order to **close knowledge and experience gaps**, KSWP retained two consultants to prepare the tender as well as assist in vendor selection and system deployment: a lawyer/economist and a water control expert. The consultants, together with three KSWP staff members, formed the core of a steering committee that closely accompanied the process and, as we shall see below, still meets on a regular basis. As Rivka stated "The steering committee played an invaluable role in the ultimate success of our deployment. **It brought together around one table all of the relevant professional stakeholders**, including KSWP field personnel, to raise problems and suggest solutions."

Paid pilot competition between the 2 leading candidates

In addition to the steering committee, Rivka believes that another key to the success of the project was that the tender included a paid one-year pilot for the two leading candidates. Arad and the other chosen candidate company each installed 500 meters in similar but separate areas. The steering committee, which now included representatives of the vendors, met on a weekly basis to review the pilot data, identify problems and fine-tune the AMI requirements. The pilot results showed that Arad's system was more reliable and more usable and thus Arad was chosen to lead the AMI deployment. Arad continued to participate in the steering committee meetings, which as the system became more established, met every two weeks, then every month. Even today the steering committee meets several times a year to hear about new features in the Arad pipeline and to discuss system improvements.

Slowly but surely

Arad said they could replace all of the meters in one year. KSWP chose instead to implement one geographic area at a time, learn from the results, draw conclusions, revise plans as necessary and move on to the next area. Arad was integrally involved through the steering committee and, from Rivka's point of view, "Arad was very good at listening to their customer and improving the software – and other system elements – accordingly."

Although this stepwise approach extended the project duration, Rivka is convinced that, at the end of the day, it ensured a better implementation.

Do not mix & match vendors

For the most part the project unfolded smoothly. However, Rivka pointed out one mistake that was made which cost them time and money. At the time of AMI deployment, KSWP had already purchased and installed integrated compound meters. Because Arad employs a different technology to manage flow differentials, there was an attempt at the beginning of the deployment to create a cooperation between the two vendors. However, this cooperation proved infeasible and, in the end, KSWP chose to abandon the integrated meters in which they had already invested and use only Arad's ultrasonic Octave meters in the deployment. According to Rivka "This decision made the project a little more expensive than originally planned, but it was clear that this was the decision that should have been made from the get-go and we decided to go ahead anyways. Perhaps other utilities can learn from this story and avoid making the same error."

What benefits have you realized from the AMI deployment

Leak detection and alerts

We conducted the interview with Rivka on a Sunday, which is Israel's equivalent of Monday, i.e., the day after the weekend. Rivka quickly glanced at her smartphone and was able to tell us that 48 customers received leak alerts by SMS over the weekend. On a daily basis, she informed us, there are 20-30 such alerts. Being able to notify the consumer of a suspected leak, even if by a mailed letter, is a dramatic improvement over the pre-AMI days, when a customer might only become aware of a leak in the next (overly high) water bill.

Customer satisfaction

The AMI deployment has dramatically reduced billing errors and the unpleasantness that such errors can cause between the utility and its customers. Moreover, since for various reasons it is not feasible for KSWP to implement district metering areas (DMAs), the prime beneficiary of savings from early leak detection is the individual consumer. Rivka commented "Any water utility that places a high value on customer satisfaction must ensure that it chooses an AMI vendor that provides savings and other benefits to end-users and take note that it may not be the lowest bidder."

Water theft reduction

Arad's meters alert the system if a magnet is being used to interfere with the logger. Rivka told us that "when we replaced all of the meters as part of the deployment, we found a lot of magnets. With the new system in place, we have been able to reduce the phenomenon by punishing the offenders who we succeed in catching 'red-handed'."

The bottom line

Even before the AMI deployment, KSWP's NRW was unusually low (5-6%). For example, the national NRW average in Israel is ~11% which is, in itself, lower than the NRW average of similarly developed countries like the USA, where NRW is typically 25-30%. The AMI deployment reduced NRW by a further 3%, which represents an annual savings of ~ILS 1.36 million (~USD 0.35 million). Thus, from NRW reduction alone, the system will pay for itself in 15 years. But there are other tangible and intangible values and Rivka's bottom line is that the AMI deployment places KSWP exactly where it wants to be — ahead of the curve both in terms of operational and water usage efficiency, as well as providing its customers with superior service.

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