

**WESTERN DOWNS REGIONAL COUNCIL  
INTEGRATION OF DRIVE BY AUTOMATED  
METER READING**



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# WESTERN DOWNS REGIONAL COUNCIL INTEGRATION OF DRIVE BY AUTOMATED METER READING

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## ABSTRACT

All councils face the challenge of reducing operating costs. Labour accounts are a substantial segment of these costs.

The recent amalgamation of several councils in South Western Queensland has affirmed the need for efficient and cost effective operating practices. This presented Western Downs Regional Council the opportunity to implement Drive by AMR (automatic meter reading) technology with the expectation of reducing meter reading time and costs in outlying areas and improving meter reading accuracy.

With the capability of increased meter reads, Western Downs Regional Council are anticipating another benefit; effective demand management through improved and more frequent advise to customers on water consumption.

The paper details the roll out strategy for the implementation of Drive by AMR as well the integration into meter reading systems. The paper will present the anticipated benefits as well as drawbacks from the implementation and integration of a Drive by AMR.

## 1.0 INTRODUCTION

With the recent amalgamations, Western Downs Regional Council inherited a service area of 38 000 km<sup>2</sup>. This included the management of 22 water supplies. Presently there are 10 000 water connections over the region, however we are in a high growth area and expect the number of connections to substantially increase. With such a vast serviceable area, it was imperative to improve our water meter reading practice by reducing the costs and improving efficiency. Western Downs Regional Council's Utilities Department investigated the implementation of Drive by AMR (Automatic Meter Reading) technology with the expectation of reducing meter reading time and costs in outlying areas and improving meter reading accuracy.



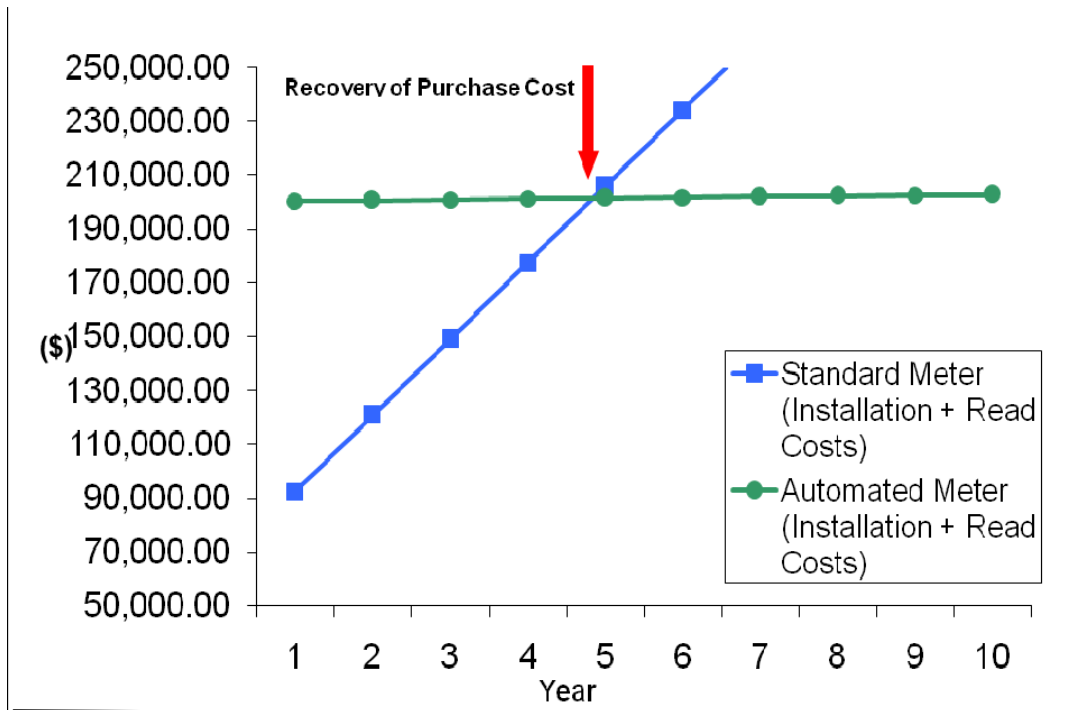
## 2.0 WESTERN DOWNS REGIONAL COUNCIL'S OBJECTIVE

We, as a Council face the challenge of having unmetered supplies within our region that necessitated - due to legislation the metering of water connections as well as inheriting towns where the meter replacement programs are nonexistent. Knowing the labour constraints we face in the outer regions, we made the decision to investigate the option of Automated Meter Reading.

The next step was to clarify our objectives and look for a product that met those objectives. Our primary objective was for an automated system that would reduce meter reading time. Our secondary objective was for a product that could be easily integrated into our Civica billing system. We then undertook investigations to find a product that would meet our primary and secondary objective and chose the Emeris Drive by AMR system.

## 3.0 QUALIFYING CHOICE

### 3.1 Standard Meter Costs VS Automated Meter Costs over a 10 Year Replacement Program



**Table 1: Cost Analysis (1000 meters)**

Cost Analysis (1000 meters)							
Yr	Standard Meter			Automated Meter Reading			
	Replacement	Reading	Total Cost to Date	Replacement	Reading	Total Cost to Date	Saving to date
1	64,000.00	28,350.00	92,350.00	200,000.00	280.00	200,280.00	-107,930.00
2		28,350.00	120,700.00		280.00	200,560.00	-79,860.00
3		28,350.00	149,050.00		280.00	200,840.00	-51,790.00
4		28,350.00	177,400.00		280.00	201,120.00	-23,720.00
5		28,350.00	205,750.00		280.00	201,400.00	4,350.00
6		28,350.00	234,100.00		280.00	201,680.00	32,420.00
7		28,350.00	262,450.00		280.00	201,960.00	60,490.00
8		28,350.00	290,800.00		280.00	202,240.00	88,560.00
9		28,350.00	319,150.00		280.00	202,520.00	116,630.00
10		28,350.00	347,500.00		280.00	202,800.00	144,700.00

Installation Cost (Standard Meter) (\$/Meter)	64	Reading Cost Standard Meter (Reads/year x Time to read meter x Labour to read meter)	28350
Installation Cost (Automated Meter) (\$/Meter)	200	Reading Cost Automated Meter (Reads/year x Time to read meter x Labour to read meter)	280
	<b>Standard</b>		<b>Automated</b>
<b>Labour (\$)</b>	<b>105.00</b>		<b>70.00</b>
<b>Time to Read (Hrs)</b>	<b>135</b>		<b>2</b>
<b>Number Reads/Year</b>	<b>2</b>		<b>2</b>

This data was modeled on a meter replacement program undertaken in the town of Miles which has 1000 connections. Over the 10 year replacement program, we expect to save \$144 700 through the installation of AMR meters for this supply. The purchase price and installation costs of an AMR system are greater, however due to the decreased meter reading costs we estimate to recover the extra purchase and installation costs in year 5 of our 10 year program.

From a revenue perspective having the ability to increase the frequency of reads if we choose and see earlier recoup of expenditure supports the implementation of AMR.

#### 4.0 INSTALLATION METHOD

Using Miles again as an example we saw a relatively straight forward installation process. The AMR meters are of the same length as a standard meter and can be read above and below the ground, subsequently there are no adjustments required to pipe work.

As Miles did not have a meter replacement program we needed to install AMR meters for all of the water connections within Miles. The process was completed over 6 months; progression was delayed by significant rainfall over. The battery life for the meters of the AMR system we chose is 10 to 12 years; this obviously works well with our 10 year water meter replacement program.

It should be noted that existing meters of any size, which have a pulse output belonging to the system we chose can be coupled with their pulse reader installation kit to allow AMR reading without having to replace functioning meters.

The below ground meters in Miles were found to be installed in two different style of below ground meter boxes generically referred to as black boxes and green boxes. We encountered difficulties when replacing water meters housed within the black style meter boxes. The black boxes were too narrow and required modification to fit over the AMR meters. This however does not occur with meters housed in green meter boxes. In considering any AMR system the installation of the meter and dealing with issues such as the style of in ground boxes may have a significant bearing on the type of meter chosen and the cost of change over.

## **5.0 OPERATIONAL PROCESS**

The simplicity of collecting data from AMR technology allows for faster, safer and more efficient meter reading practices.

The meter reader drives the normal route in a vehicle installed with the vehicle receiver and antenna. All AMR enabled meters when driven past will automatically transfer their readings. The system advises missed reads so blind data is reduced. The hand held device can be removed from the vehicle receiver and the data entered manually should the need arise.

Our meter readers are safe in the security of their vehicles and their time is used more efficiently than the current practice of walk and read. There has been examples in Australia and overseas where readings are routinely collected by vehicles that are visiting properties anyway such as garbage trucks and police cars.

One of the central principles for the successful implementation of an AMR system is assured integration into existing meter reading systems. As clarified earlier the system integrates to our billing system, the Civica program. The rating department uploads the reads from the hand held device through a simple plug in receiver and then downloads the required data.

## **6.0 BENEFITS**

Western Downs Regional Council considered the following advantages when investigating the implementation of AMR technology.

1. The simplicity of data collection
2. Reduction in labour costs
3. Integration into our billing system

It should be noted that AMR technology can be very valuable in Water Demand Management strategies. As the systems have greater functionality for reading they can be used to closely monitor consumption of users and also to determine if water restriction breaches are taking place.

At this point in our meter replacement program, we needed to focus on the improvement of meter reading efficiencies for our region so we chose a system that does not focus primarily on demand management functionalities.

## **7.0 DRAWBACKS**

The obvious drawback with the installation of an AMR meter system is the increased purchase cost of the meter. The cost of AMR meters is significantly higher than that of standard meters and while those costs can be recouped over the meter replacement program it still requires a large fiscal outlay for the supply of AMR meters.

As mentioned earlier the drawback with the installation method is the sizing of black meter covers. The installation costs will be increased if supplies consist of a majority of meter covers that require modification to be used with AMR meters. This may be a lesser problem where most meters are installed above ground.

Meter faults are another observable drawback associated. We do not, at this stage have enough data to provide relevant findings in regard to meter faults with an AMR system and although faults apply to standard meters the core for our implementation of an AMR system is the efficiency of meter reading. If efficiency is compromised so is the fiscal benefit of an AMR system.

## **8.0 CONCLUSION**

As Western Downs Regional Council is in the early stages of our integration into drive by AMR technology we can only observe and anticipate expected outcomes.

We have set our objectives and purchased a product that supported those objectives.

We have begun the installation of AMR meters within our regional supplies and have at this stage observed an uncomplicated integration.

We have collected data and implemented this data into our billing system suffering only minimal data losses.

Therefore at this stage in the process the integration of drive by automated meter reading is anticipated to have substantial financial and operational benefits. However it will probably take one full meter life cycle to fully understand and quantify the benefits obtained.