



Benefits of metering and telemetry to farmers:  
High-level review  
(October 2018)  
NSW Department of Industry

# Background

As part of its Water Reform Action Plan (released in December 2017) the NSW Government is considering how to implement in practice the water management and compliance recommendations that resulted from an independent investigation by Ken Matthews AO into NSW water management and compliance and from the Murray–Darling Basin Water Compliance Review.

Following initial consultation in March and April 2018, in August the Department of Industry released a draft water metering policy and regulation for non-urban water meters in NSW. The proposal sets out proposed new metering standards that will apply to licensed water take which meets specified thresholds based on:

- Infrastructure size
  - Surface water: work authorised is 100mm or larger
  - Ground water: work authorised is 200mm or larger
- Multiple works on the same licence, approval or landholding
- At-risk ground water sources

More information of the proposed requirements is available [here](#).

# Broader benefits of metering

The installation of accurate metering can deliver a number of indirect and direct benefits to irrigated producers, such as:

Water trading: NSW has well developed trading markets, nonetheless measurement is a critical component of an effective trading scheme, because without measurement it is not possible to know whether irrigators have already used available allocation or not. Water trading has been demonstrated to provide a number of benefits to irrigators and the economy more broadly, because:

- it facilitates the transfer of water to its highest value use,
- It provides drought resilience benefits as irrigators can buy or sell allocation, and
- irrigators can potentially access additional water products (such as carryover, parking and forward allocations) which can provide significant hedging benefits to reduce future water supply risks.

Equity gains for all water users (economic, social and environmental) by reducing deliberate or inadvertent over-use. Obviously, the producers that were previously over-using will be impacted but this would be offset by gains to other users.

Increased administrative efficiency for government by using technology to reduce labour cost associated with monitoring, compliance and enforcement requirements.

Maintenance of social licence to operate. Often criticism is levelled at either individuals or regions that this could increase sovereign risk to producers. Metering can help to mitigate this risk by providing an independent and verifiable source of information on water use to address accusations with face.

# What are the gains to individual farmers from metering and telemetry?

To maximise profit an irrigation business is looking to maximise revenue (yield and quality) while minimising cost (inputs).

Prior engagement with farm businesses, by both Marsden Jacob and OD Hydrology, has identified that accurate metering can deliver a number of benefits to the irrigation farm businesses, both individually and collective.

So how does metering and telemetry support increased profitability in farm businesses?



# Revenue opportunities

Accurate water metering with telemetry that is reported real-time back to the farmer can help irrigators to maximise the revenue potential from a crop.

Revenue for an irrigator is a function of yield and quality, this function varies by crop type. For instance:

- Cotton producers are looking to maximise both yield and quality with water being a key input for irrigated cotton
- Grape producers are looking to maximise quality (e.g. sugar content) and sometimes this is prioritised over yield with water application being a key consideration
- Rice producers are looking to maximise both yield (tonnes per hectare) and quality with water being a key input
- Citrus producers' preference is quality (over-watering can lead to low sugar content or damaged fruit) while also maximising yield.

Metering information coupled with farm water balance monitoring and other in-field monitoring techniques (such as soil moisture monitoring and ground water piezometers), has been demonstrated to help farmers optimise water consumption (both in terms of quantity and timing ) to deliver maximum revenue.

Metering and telemetry improves certainty about on-farm water balance. Annuals in particular have greater certainty about how much water they actually need per hectare of crop, which means they can be less conservative in their water planning. This can mean that they may be able to reduce their water consumption and insurance requirement which in turn can liberate available allocation that could be:

- sold on the water market, or
- retained for future production, or
- used to support additional production with similar or lower risk, or
- it could even mean that an irrigator could reduce entitlements to free up capital.

# Cost savings from metering

Accurate water metering with telemetry that is reported real-time back to the farmer can also help irrigators to minimise production costs, because this information can help irrigators to optimise their crop watering practices.

For some, but not all producers, it may be that the crop was previously being over watered (either through ignorance of how much water is actually being used or deliberately because pumps have to be manually turned off), so a variety of cost savings can emerge, including:

- Energy costs – from reduced pumping and deliver requirements, or by facilitating monitoring of pump and irrigation system performance.
- Water charges – irrigators pay fixed and variable charges, if they are using less water their variable charges will be reduced.
- Water charges – reduced risk of overuse charges or having to rebalance account holdings at the end of the water year.
- Other input costs – more accurate water metering can improve crop health and thus reduce the need for pesticides to manage issues such as disease and fungus.

Where metering and telemetry are coupled with other farm systems, and thus permit the remote operation of water infrastructure this can also deliver a number of benefits to irrigators, including:

- Convenience: Irrigators no longer needs to manually turn on/off pumps, and they can remotely monitor whether pumps are running.
- Improved detection of water losses within irrigation delivery systems thus helping irrigators to know where changes need to be implemented to improve on-farm water efficiency.



## Funding precedents where meters have been included in programs

There are numerous precedents where the installation of meters has been supported by funding programs, including:

- NSW Sustaining the Basin Irrigation Farm Modernisation (STBIFM): The installation of meters was an eligible activity.
- NSW Metering Scheme project: The Australian Government provided funding of up to \$31.5 million for the NSW Southern-connected Metering project.
- Murray-Darling Basin Water Infrastructure program: Metering is an eligible project under the program. However, on-farm projects are only eligible in Queensland, South Australia and the Australian Capital Territory.

# STBIFM – Metering Fact Sheet

STBIFM metering fact sheet identifies the benefits of accurate metering to be as follows.

An accurate meter can provide important data for irrigators. Metering can provide information on:

- Pump performance
- Irrigation system performance
- Extracted water volumes.

It gives irrigators a greater ability to:

- Manage farm water use
- Accurately measure water efficiency gains
- Manage water accounts
- Confidently participate in water trading markets.

Accurate metering is crucial to good water management and important for fairness and equity between licence holders. For further information about metering go to the Water NSW review of meter accuracy factsheet.

Source: [Metering fact sheet](#)



# Conclusions

More accurate water measurement, particularly where telemetry provides real-time access, can help irrigators to *“make more informed management decisions. Metering helps them to calculate the efficiency of their system, to identify and minimise water losses such as seepage and evaporation and to make better planning decisions and, ultimately, more profitable farming systems.”*<sup>1</sup>



So, metering helps farmers to operate closer to their profit maximising frontier without increasing their risk.

The greatest benefits are obviously going to emerge for those farmers who have out-dated or no metering.

Note: 1. [http://www.moreprofitperdrop.com.au/wp-content/uploads/2013/10/WATERpak-1\\_7-Metering.pdf](http://www.moreprofitperdrop.com.au/wp-content/uploads/2013/10/WATERpak-1_7-Metering.pdf)

# References

In preparing this memorandum a rapid scan of publicly accessible materials has been undertaken. This rapid scan has identified a significant body of material that supports the findings, including:

- Australian Government (2009) National Framework for Non-urban Water Metering, Regulatory Impact Statement <https://www.environment.gov.au/system/files/resources/8a42e0e3-50d7-4295-9c17-a5222ec4cee2/files/final-ris-non-urban-water-metering.rtf>
- Cotton Research and Development Corporation – Accelerating Precision to Decision Agriculture (P2D) project, <https://www.crdc.com.au/precision-to-decision>
- DairyNZ, Water meters and monitoring, <https://www.dairynz.co.nz/environment/water-use/water-meters-and-monitoring/>
- Irrigation Australia Ltd, WATERpak — a guide for irrigation management in cotton and grain farming systems, [http://www.moreprofitperdrop.com.au/wp-content/uploads/2013/10/WATERpak-1\\_7-Metering.pdf](http://www.moreprofitperdrop.com.au/wp-content/uploads/2013/10/WATERpak-1_7-Metering.pdf)
- NSW Sustaining the Basin Irrigation Farm Modernisation, Metering Fact Sheet, [https://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0010/560296/stbifm-water-metering-factsheet.pdf](https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0010/560296/stbifm-water-metering-factsheet.pdf)
- NSW Sustaining the Basin: Metering Project, [https://www.water.nsw.gov.au/\\_data/assets/pdf\\_file/0008/549278/recovery\\_sustain\\_basin\\_bc\\_meters\\_nw\\_11june10.pdf](https://www.water.nsw.gov.au/_data/assets/pdf_file/0008/549278/recovery_sustain_basin_bc_meters_nw_11june10.pdf)
- Tasmanian Government, Benefits of Water Meters, <http://dpiuwe.tas.gov.au/water/water-licences/water-meters>