



*BCW
carbon and energy*

Energy Audits of Irrigation Systems

A Consultative Process

NSW Office of Environment and Heritage Energy Saver Program

Operations Audited

River to flood Irrigation (yet to be completed)



Bore to flood irrigation



Irrigation channel operator



Audit Stages

Preliminary data analysis to identify consumption patterns, variable charges etc.

Site visit to identify opportunities for both energy saving and demand management

Interim report with cost/benefit and second site visit

Develop business cases for selected opportunities



Preliminary Analysis

If you don't measure it you can't improve it...

Monthly energy use, monthly flows for individual pumps, diesel use in pumps, hours of operation of recycle pumps etc.

This information is useful in managing energy and managing pumps



Energy Reduction

Minimising the lift required of the pumps
(static head and friction loss)

Minimise run-off water

Pump and motor selection/ upgrade/
maintenance



Demand Management

Minimising use of pumps during peak and shoulder where possible

Use of buffer storage

Avoid use of pumps for short periods out of season

Power Factor Correction



Outcome (Case with demand management option)

109 MWh of electricity savings annually

30% reduction of annual site energy consumption

64% reduction of annual site energy cost

6 year payback

Buffer Storage

Capital cost = \$250,000 (1km pipe was largest cost)

Zero annual energy savings

Annual energy cost savings = \$54,469

4.6 year payback



Outcome (Case without demand management option)

174 MWh of electricity savings annually

11% reduction of annual site energy consumption

10% reduction of annual site energy cost

Simple payback of 0.6 years



Reduce flow rate of bore pump to reduce recycle rate

Capital cost = \$0

Annual energy savings = 30 MWh

Annual energy cost savings = \$5,490

Immediate payback



Replace Small Recycle Pump

Capital cost = \$10,000

Annual energy savings = 32.2 MWh

Annual energy cost savings = \$5,897

1.7 year payback



Funding assistance for implementation

Energy Saver technical support

Energy Savings Scheme

Federal Emissions Reduction Fund
(Carbon Farming Initiative)

Questions?