



A2EP – 2xEP Energy Productivity Summit
04-05 April, 2017
Australian National Maritime Museum
Darling Harbour, Sydney

Session 03

2xEP by 2030 by sector – Agriculture

Peter Carter

Andrew Chamberlin > presentation follows

Phil Shorten

Leigh Rostron

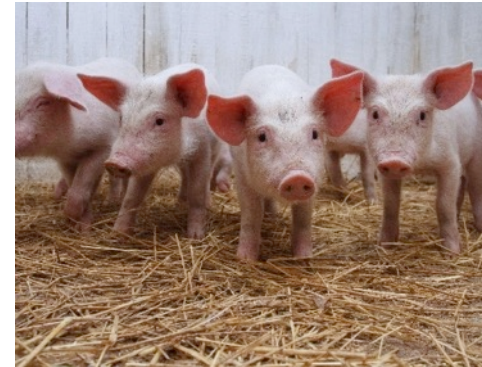
Chair: Tony Westmore



Doing more. Using less.

Energy Productivity

Andrew Chamberlin, Queensland Farmers' Federation





The Energy Savers programs are being funded by the Queensland Government and delivered by Ergon Energy in partnership with the Queensland Farmers' Federation and its member bodies.

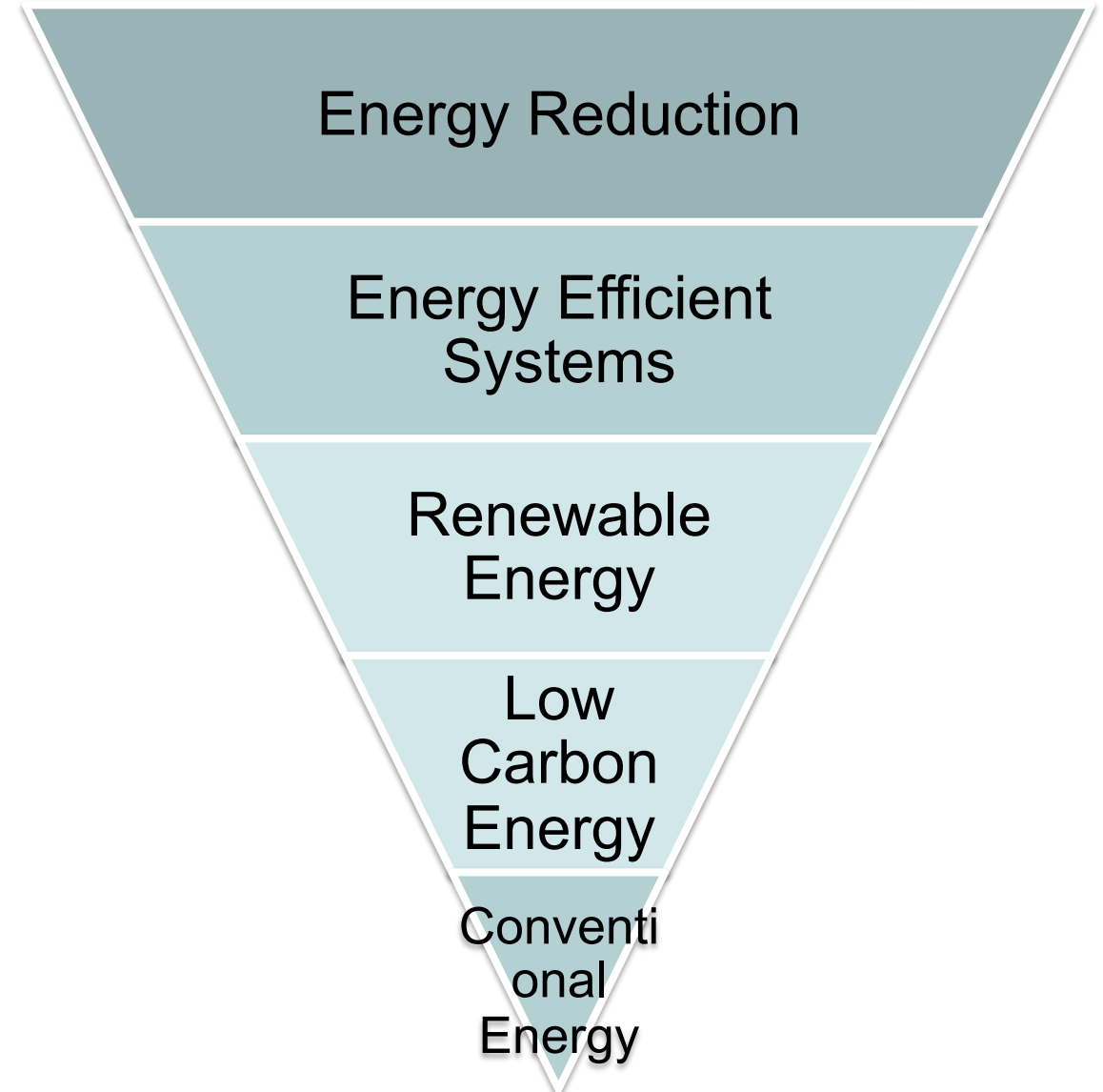




Energy Hierarchy Approach to EP

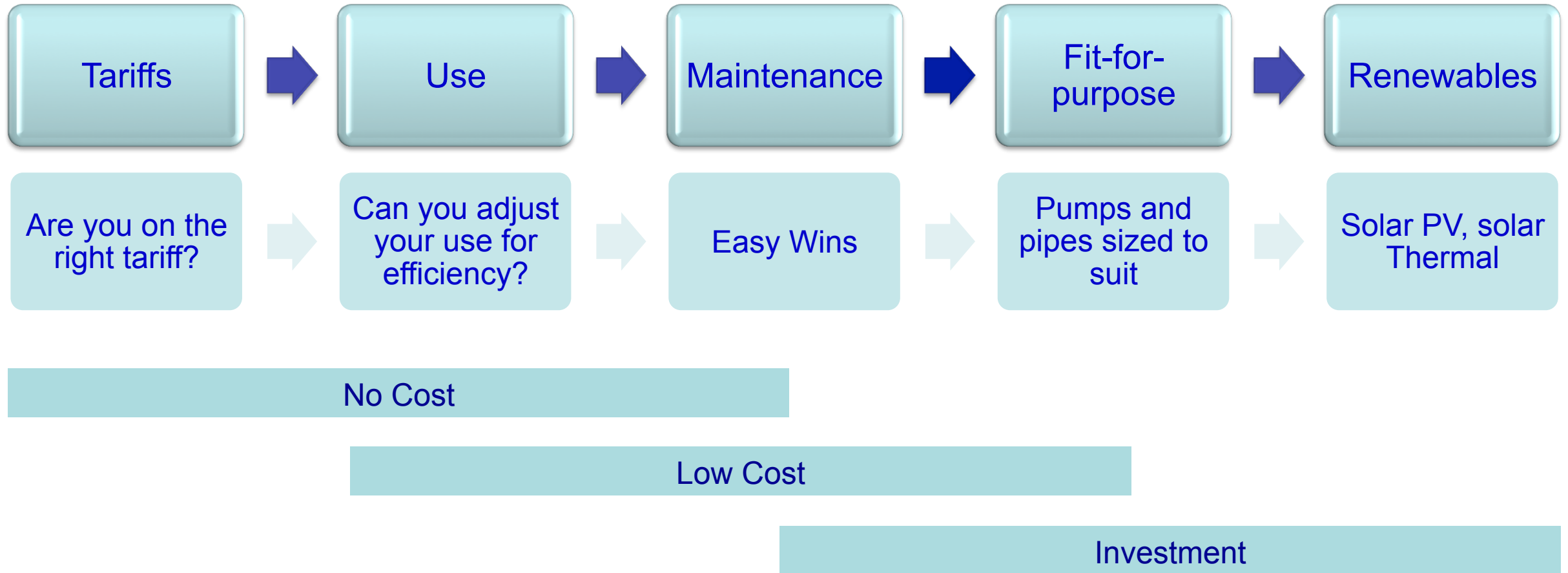
1. REDUCE kWh MJ ML
2. IMPROVE kWh/unit MJ/unit
(unit = ML and production)
3. THEN Low-emission source

SOLAR \$\$ CHALLENGING THE
ENERGY HEIRARCHY





Action Categories





Case Studies

1. Reducing Variables: Brisbane Nursery
2. Evenness of Water: Mareeba Banana Farm
3. Whole of system design: Bundaberg Cane Farm

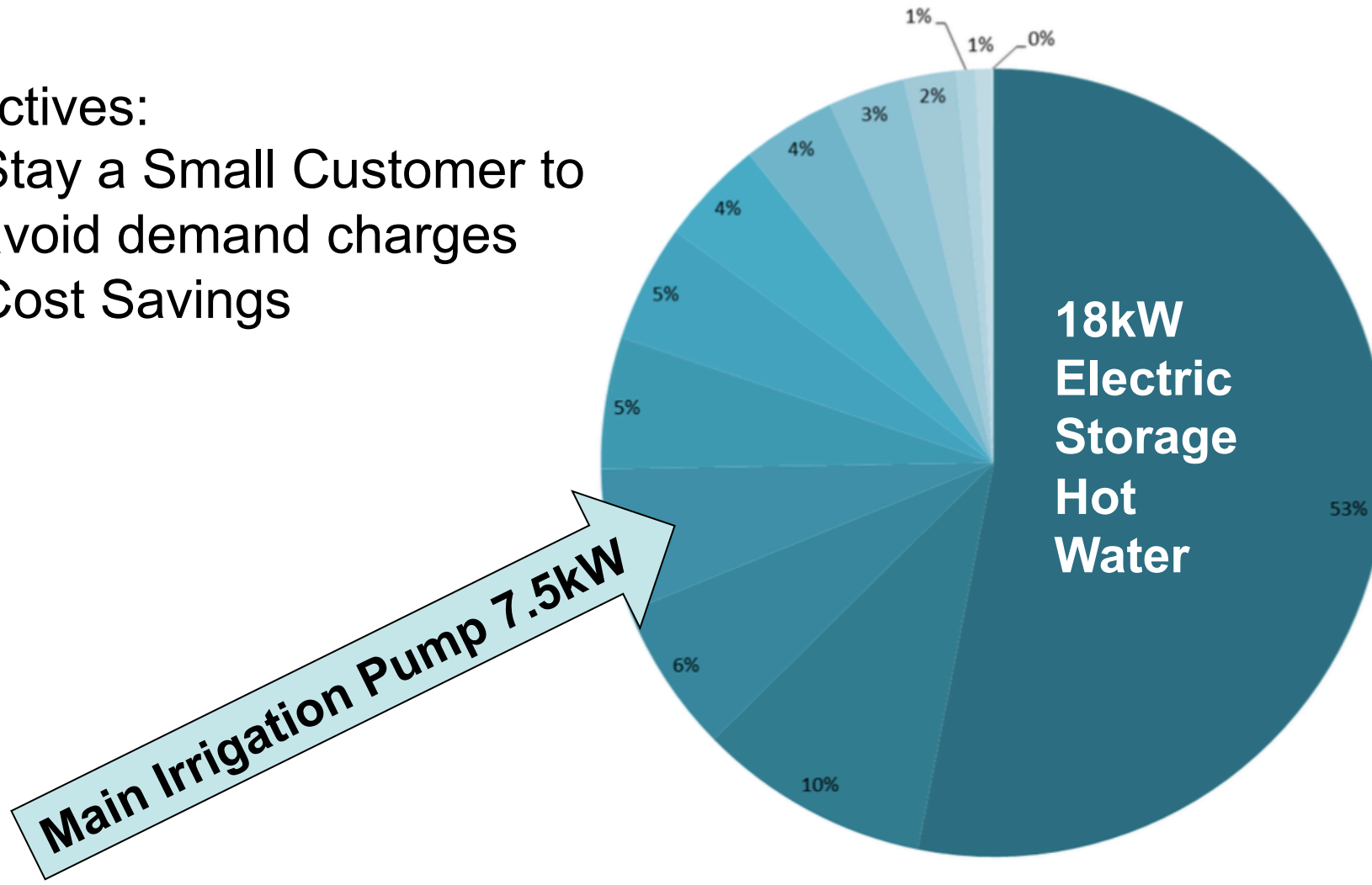




Brisbane Nursery

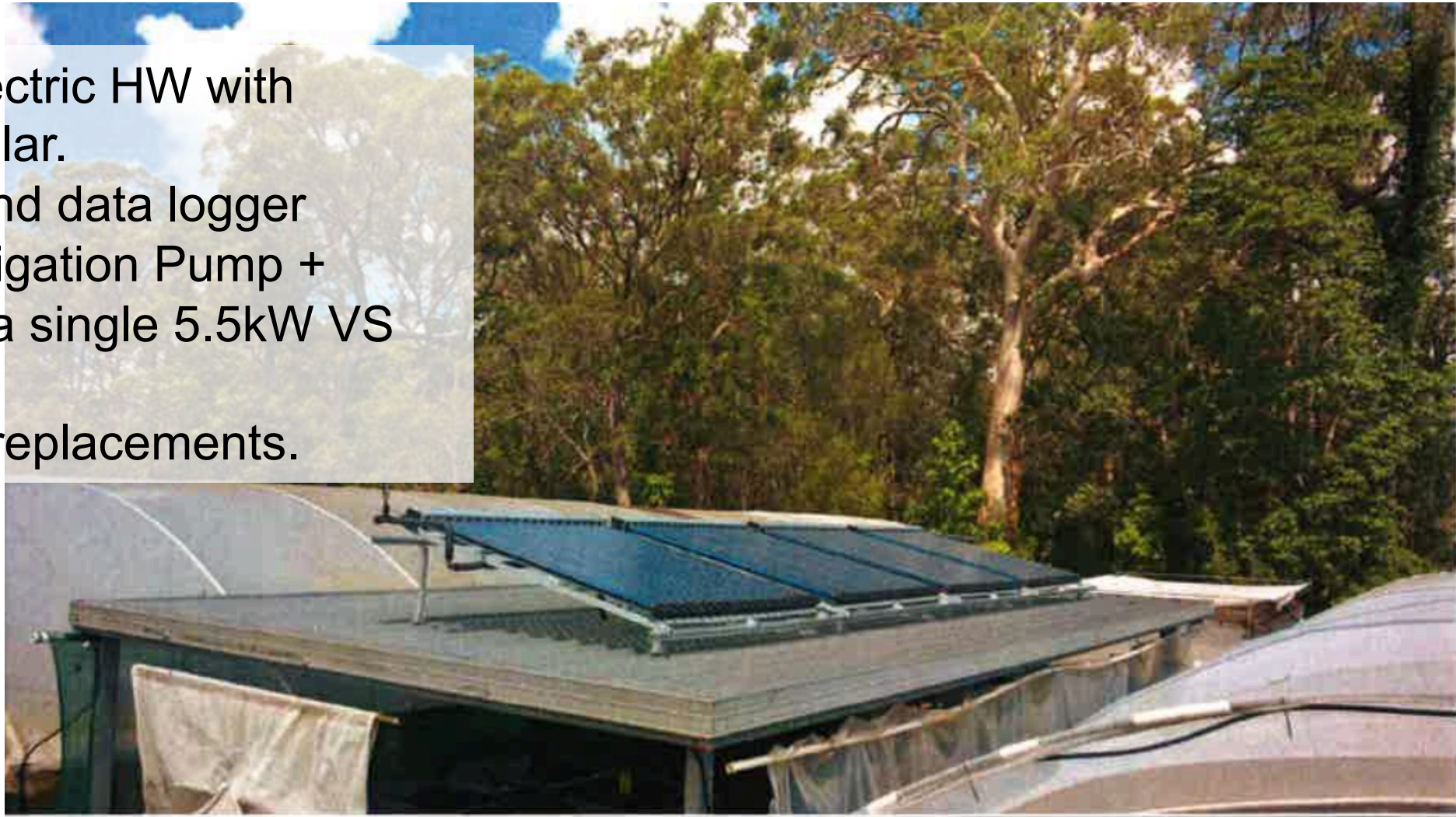
Objectives:

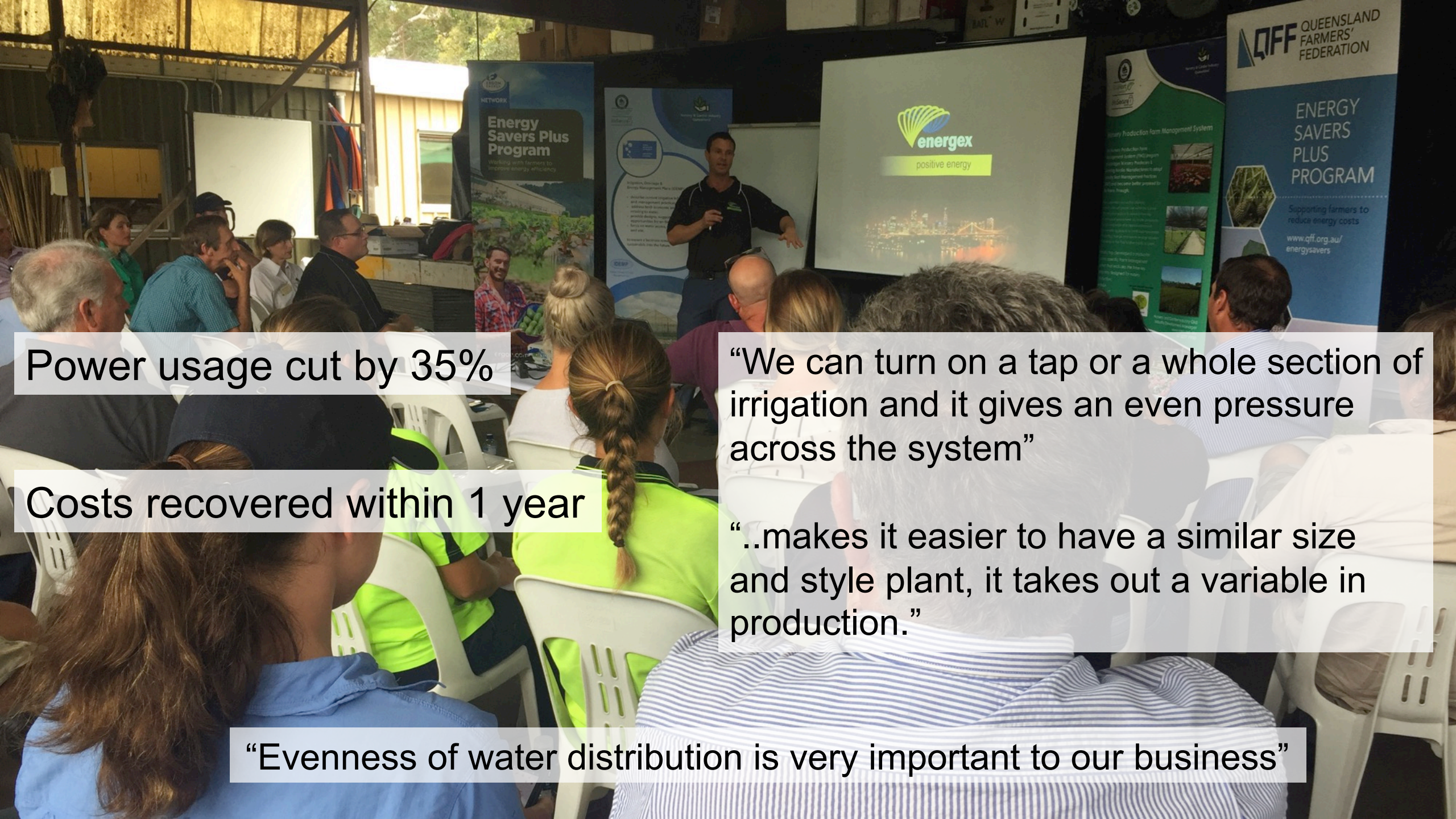
1. Stay a Small Customer to avoid demand charges
2. Cost Savings





- Replaced 18kW Electric HW with Evacuated Tube Solar.
- \$24 thermometer and data logger
- Replaced 7.5kW Irrigation Pump + booster pump with a single 5.5kW VS Pump.
- LED fluoro lighting replacements.





Power usage cut by 35%

Costs recovered within 1 year

“We can turn on a tap or a whole section of irrigation and it gives an even pressure across the system”

“..makes it easier to have a similar size and style plant, it takes out a variable in production.”

“Evenness of water distribution is very important to our business”

Mareeba Banana Farm

Pumpstation:

90kW Pump

11 blocks

- Different sizes
- Different levels

\$90,000 p.a. electricity costs





3 RECOMMENDATIONS

Add variable speed drive (VSD) to 90kW motor

Add dynamic head control and remove primary sustain valve

Change from tariff 44 to tariff 66



Bill cut by ~45%

- <2 yr payback for VSD
- Tariff Savings

“cut maintenance costs on pump and pipes because it’s not running as hard – looking at a longer pump life”

“2ML per year variation between our biggest and smallest blocks, now expecting it to be more even.”

“Each plant, no matter what block it’s in, is getting a nice even watering”

Bundaberg Cane Farm

A photograph of a mechanical pump system. The system features a large green pump unit with a red base, connected to a network of red pipes. The pipes have several flanges and a blue-handled valve. The entire assembly is mounted on a wooden frame. In the background, there is a corrugated metal roof and a blue cylindrical tank. The scene is outdoors, likely at a farm or industrial site.

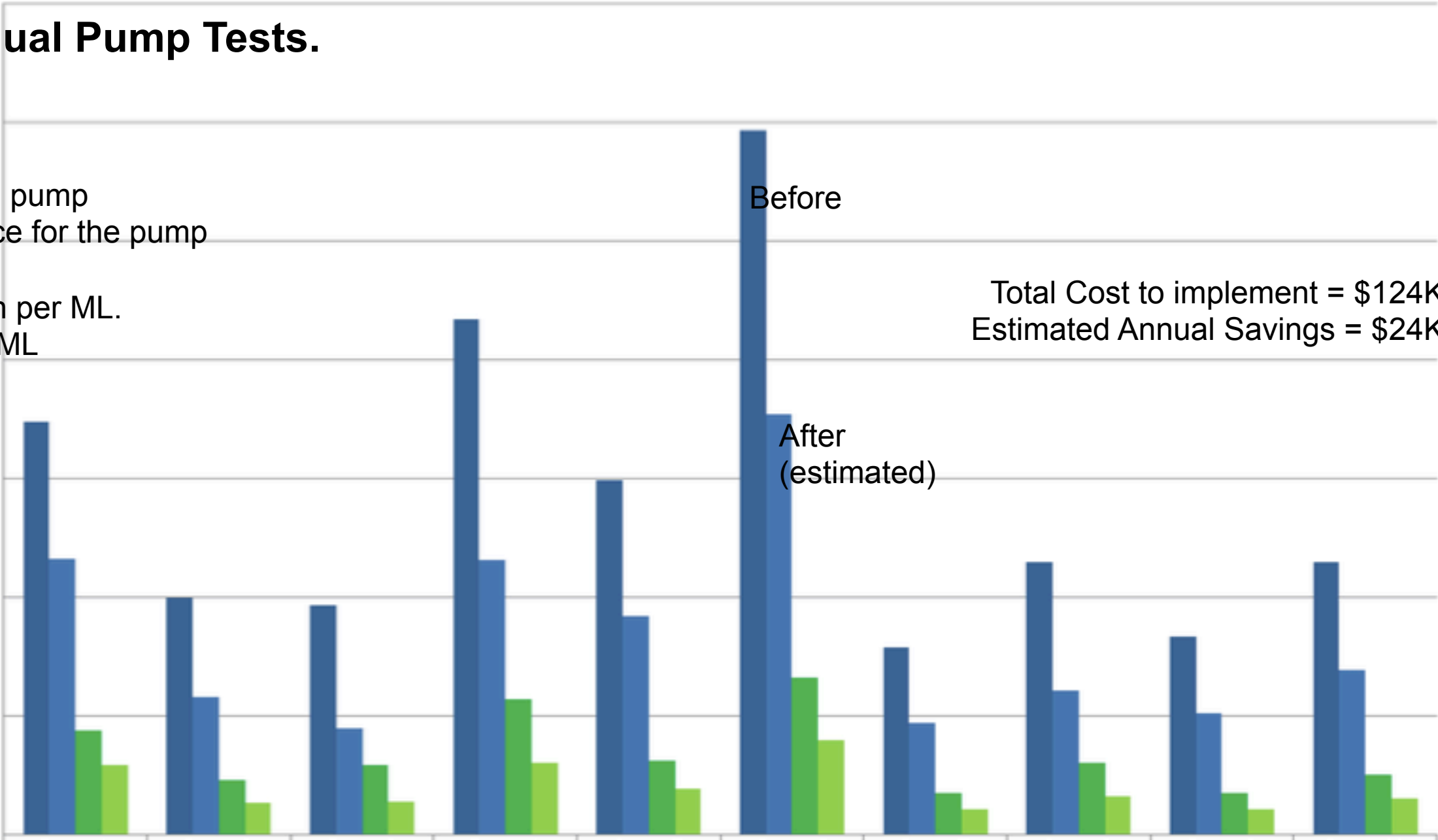
1. Individual Pump Tests.
2. Whole-of-system approach.

Figure 1: Potential changes per pump

1. Individual Pump Tests.

Variation in pump
performance for the pump
stations
Blue = kWh per ML.
Green = \$/ML

Total Cost to implement = \$124K
Estimated Annual Savings = \$24K



2. Whole of System Approach.

Power usage cut by 60%

“The time to get around the block has halved...”

“14 Days to 6”

“Frees up considerable time to manage the rest of the business and spend more quality family time”

“The Cane would really be suffering at the moment without this new system”

“We’re hoping to lift it from 30 to 40 tonnes to 50 tonnes per acre in the sandy part.”

Productivity benefit > Energy Cost Savings

Others

Mundubbera Citrus Farm:

"Before installing our variable speed drives, we had to irrigate all three blocks to get rid of the pressure. Now we can just do one or two as required."

Bushgarden Nursery:

"I haven't had to fix a blown pipe"





ENERGY SAVERS



Website & e-news

QFF
QLD FARMERS' FEDERATION

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FILTER CASE STUDIES BY SECTOR

LOCATION PUMP TYPE IRRIGATION TYPE TECHNOLOGY

MUNDUBBERA
MUNDUBBERA CITRUS FARM
54% actual energy savings

CAIRNS
CAIRNS COLD STORE
30% actual energy savings

BURDEKIN
LOWER BURDEKIN WATER
40% actual energy savings

www.qff.org.au/energysavers



Summary

1. Energy Efficiency Projects have led to product quality and productivity improvements, reduced maintenance costs.
2. Efficiency and renewables technologies are improving and becoming cheaper.
3. Innovative Financing models are available.
4. www.qff.org.au/energysavers for case studies and technology information and the Energy Savers e-news



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