## **Top 5 quick energy opportunities**

Peak or Vats and **Pumps** Lights **Solar Panels** off peak? cylinders ÷ "Getting Solar and closing our water systems was going to pay for itself in less than two years. I Exposed metal on older Get better lighting and save Save up to 30% with time-Variable Speed Drives / Make sure you use all the want to hand the farm energy with LED lights. of-use or day/ night rates. digital controllers give power you generate. Turn vats, hot water cylinders on to the next generation better flow while protecting and pipes: wraps can be on hot water, effluent and in the best shape for Unsure if you have LEDs, Add timers on hot water installed to save energy. equipment and saving ice-banks during the them to be successful." photograph the lights and cylinders, ice banks, effluent energy. daytime. Check for leaks. pumps and more. message the electrician to confirm. Not sure if you have these Ensure you select the right It also helps with solar PV installed? Does the equipment so it can work in payback. equipment have a box next a power outage. to them and wired in? If May also suit small, separate not then you probably don't connections, e.g. water have a VSD/ controller. pump at runoff. Vat **PPA** Own Hot water Savings \$500-1,500 low \$300 30% \$1-3,000 \$5-15,000 low <| Investment \$300 low 1.5 \$6,100 \$50-150,000 nil 5 < 2-6 Payback years 3-6 short short 6-12

# **Taking action**

# Top five quick energy opportunities (page 2)



Tane chose **LED lighting** simply for better light.

Changing the most used lights, and adding a switch to turn these on/off, boosts savings.



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For Angie, **timers** were a simple step to bill savings (and carbon cuts) for hot water cylinders, ice banks and effluent pumps. The electrician helped calculate loads, run times and settings, and installed timers for best use of **solar PV**.

Pete gets multiple benefits with efficient pumping with **variable speed drives (VSDs)** and **digital pump controllers** (e.g. F60s) including:

- lower water cost
  - reduced waste water
  - better plant life/reduced risk
  - energy savings
  - leak/burnout detection.

Debbie cut her exposure to energy price rises and prepared for resilience by adding **solar panels** on the farm. She ensured proper design for actual daytime loads that helped the payback.

**Timers** on hot water cylinders, ice banks and effluent pumps means that when we use power better matches solar PV.

Doing ground works themselves helped cut costs - but installers were happy to do everything too.

# Your Quick Steps

#### Insulate VATs

 Fonterra can advise you on your VAT type/ size



Wrap hot water cylinder, lag pipes and fix leaks

- For cylinder wraps call your plumber (can also self wrap)
- Pipe lagging must suit temperature and pipe diameter



# Install variable speed drives and pump controllers (e.g.F60s)

- Call your pump supplier
- Check all pumps (see our advice)



#### Install LED lighting



#### Install timers



Call your electrician



#### Install solar panels (PV)

- User timers/smarts
- PV has pay-as-you-generate (Power Purchase Agreement or PPA) and other finance options
- See the solar panels guide for more on what to ask, look for and consider

Financial insights are illustrative based on generic information. Specific sizing, costing and benefit assessments are recommended. Version 14/1/24

### Are these top energy saving investments in your Farm Plan?

"We wanted a farm that was labour efficient. So, we needed to invest in good automation and monitoring.

As an off shoot we also got energy efficiency. Our rule was payback within half the warrantied life"

#### Hot water heat pump

Heat Recovery

Snap Chilling

Yard Washdown

Precision Irrigation



Replace cylinder(s) with hot water heat pumps.

Running costs 25-35% of old cylinders; 50% of gas hot water, but re-plumbing needed



Hot water for cleaning is pre-heated.

This is from the waste heat in chilling and dumped wash water.

Can reduce water needs/ waste and improve farm resilience (less energy needed). ARECO PAUS

30% energy efficiency for cooling, plus heat recovery.

Higher capital cost options often save more over life and cut emissions.

FarmSource partners are Coolsense (incl. Fonterra exclusive Pay As You Save – PAUS - option) and DTS.



Consider water and effluent savings by moving away from a high water use wash system.

You can make the most energy savings where there is significant pumping (distance or elevation).

Consider installing a low water system e.g. a "dung buster" scraping system on backing gate.



Precision irrigation claims up to 50% water reductions. Energy savings are a byproduct.

Nanobubble technology can also save 15-25% (not in costs/ savings below).

					backing gate.	
			PAUS	Own		
Savings	50%+	30%/ \$10,000k pa	Lower	30%	Good	Good
Investment	\$10,000	\$45,000	Minor	High	Minor increment	Minor increment
Payback years	Н	4-5	<	Varies	Short	Short

# **Taking action**

Top energy savings for your Farm Plan (page 2)

### **Plan now for renewals**



**Estimate renewal date** 



Update your Farm Plan

Talk to supplier(s)

well in advance



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#### Yard Washdown

- Water use, water cycle, scraping gates
- Timing depends on opportunity/ related investment

#### **Precision irrigation**

• If you use significant irrigation and assessing for other reasons, consider energy savings



Hot water heat pumps are energy efficient so ideal for Sue's new shed. More work e.g. re-piping is needed for replacements of existing cylinders.



For Ray, assessing the best heat recovery option well ahead of chiller replacement not only saves on hot water, but gets it quicker - reducing risk.

- For Bob, choosing a snap chiller was \* about milk quality. But for the same or little extra money, energy efficiency and reduced greenhouse gases boosted the benefits.
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Adding the scraping gate has helped Chris cutting effluent and water use, with the bonus of energy savings on reduced pumping.

Smartly irrigating, for Mark, drives water use and stock health, but planning for energy efficiency adds to the return.

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#### Install heat recovery

On cylinder renewal

On chiller renewal



#### Install snap chiller

- On chiller renewal
- Check FarmSource partners
- Coolsense offer Pay As You Save and reduced greenhouse gas from refrigerants

Hot water heat pump to replace cylinder

· Heat pump most beneficial for new shed

# Top energy saving operational choices

Changing what the team does, or checking what service technicians cover, can find immediate savings for low or no cost Use the check lists below to confirm what the team is doing and identify items for action.



#### **Dairy shed**

Plant renewal	Plan in place for what to buy when you have plant failure	
plans	Energy efficiency included as part of that decision	
	Your refrigerant plant is checked annually	
Plant service schedules	Your milk plant is checked annually, e.g. vacuum regulation, airflow, leaks, drive belt	
	Water leaks are spotted quickly (e.g. excess pumping)	
	Your hot water cylinder temperature is checked and optimum (55C at end of wash)	
Set point temperatures	You have considered a hot water wash every second day (efficient plant set ups)	
	Regular temperature check of your milk cooler water and milk outlets	
	Unused hot water cylinders	
Switch off unused plant	Lights off after milking	
	Your pumps	

### **Diesel and time savings**

Feeding practices	Feed stored in more than one location to save time and reduce tractor miles
	Plan for multi-purpose trips to save time and fuel
Frequency	Use the smallest appropriate vehicle for the job at hand (tractor size, ute, quad, motor bike)
choice & care of vehicle	Check tractor servicing, tyre pressures and choose settings for the job/ load (check visor/ manual quick guide)
	Electric options include ubco or e-bike, Tuatara electric quad, electric ute and tractor (light duties only, high cost) assessed
Using contractors	Using contractors more often as they tend to have right sized and most modern vehicles, reducing fuel and carbon
	Assess energy efficiency gains when assessing wearables
neru wearables	If using them, reducing the frequency of trips (miles) as wearables allow



Taranaki Rural Energy

Have you seen our other At A Glance guides?

Top 5 Quick Energy Opportunities Are These Top Energy Saving Investments In Your Farm Plan? www.taranakicc.nz/taranaki-rural-energy/