

# Energy Savers Plus Program

targets significant energy savings for a  
**Queensland horticulture farm**

PROPOSED SOLUTION 

Potential energy savings 

## Key facts

### Farm / Industry

Horticulture

### Product

Radish, shallots, Chinese vegetables, English spinach, Dutch carrots, iceberg lettuce and assorted herbs

### Location

Morton Vale

### Irrigation

Drip and micro irrigation

### Pumps

Centrifugal

### Solution

**Proposed:** Variable speed control of pumps and solar photovoltaic installation

*The Energy Savers Plus Program is funded by the Queensland Department of Energy and Water Supply*



## Farm profile

The property consists of 28 hectares of farming land located in Morton Vale in the Lockyer Valley and produces a variety of vegetable crops depending on market demand.

The main crops include radish, shallots, Chinese vegetables, English spinach, Dutch carrots, iceberg lettuce and assorted herbs.

The main water supply is gravity fed to a site storage dam where it is then pumped into the irrigation system. Water is delivered to the vegetable crops mainly by a solid set system with sprinklers. The majority of electricity consumption on site is used for pumping and refrigeration.

### Current energy demand

The site energy consumption assessed as part of this energy audit consists of:

- Two centrifugal irrigation pumps of 11kW and 22kW as well as a 1.2kW pump that is used to circulate fertiliser in the irrigation system
- Three centrifugal pumps ranging between 1.1kW and 5.5kW that supply the farm residence, sheds and vegetable washing system
- A 0.95kW self-priming centrifugal bore pump is used to supply the processing shed
- Refrigeration system servicing one cold room in the packing shed with 9.3kW input power compressor

### Action

The audit of site energy consumption evaluated:

- variable speed control of pumps
- solar photovoltaic (PV) installation
- cold room door seal replacement – removing heat ingress could result in savings of up to 10% for refrigeration.

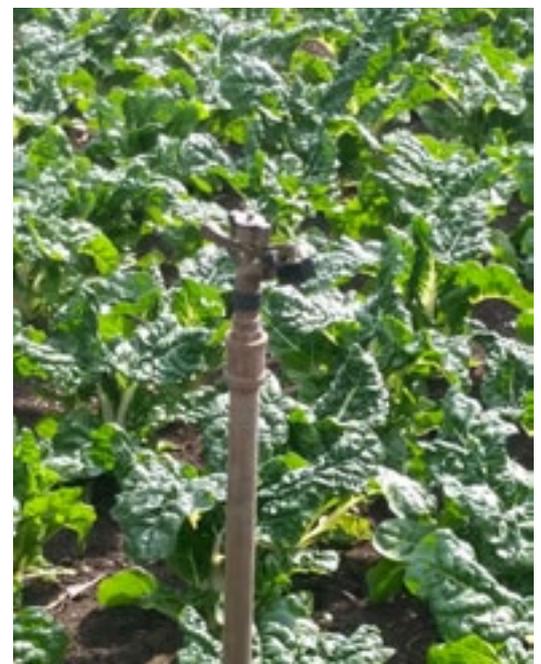
### Results

From the energy saving evaluation, one initiative was identified with potential energy savings of 58% of the site total usage

and a payback period of 4.4 years (approx.).

There is a need on site to construct a new shed to accommodate some equipment that is currently located in the existing shed. The energy audit report recommended installation of a 30kW solar PV system on the new shed roof to offset a large portion of electricity usage on site.

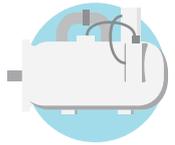
Another initiative investigated in the energy audit was implementation of variable speed control on a 22kW irrigation pump and a 5.5kW vegetable wash pump. However, this initiative has a payback period of 7.7 years, hence considered a longer-term project suiting end of life replacement.



# Recommendations

The energy audit recommendations are summarised below:

Solution	 <b>Install 30kW solar PV system</b>
Est. energy savings (kWh/annum)	47,170
Est. operating cost saving	\$8,729
Est. cost to implement	\$38,560
Payback period (years)	4.4
Est. demand reduction (kW)	30
Est. energy savings	58%

Forecast savings in operating costs	 <b>Existing system</b>	 <b>Upgraded system</b>	 <b>Reduction in operating costs</b>
Annual operating cost	\$18,447	\$9,718	-
Cost to implement	-	\$38,560	-
Operating costs for first 5 years	\$92,235	\$87,150	\$5,085
Annual operating cost for years 6 to 10	\$18,447	\$9,718	\$8,729
<b>Total energy costs for 10 years</b>	<b>\$184,470</b>	<b>\$135,740</b>	<b>\$48,730</b>

## Farmer feedback

Whilst some of the solutions to our issues were probably well known to us, there were other areas where we weren't up to date on technology that was available to help us, nor the startling amount of wastage if we continue along unchanged. The clarity provided by this audit makes for easy decision making as most initiatives pay for themselves.