CASE STUDY TAR-CS1

# Tariff Assessment:

## Pressurised Irrigation System – Small Business Account

*(to be read in conjunction with Fact Sheet TAR-FS1 and Information Sheet 'TAR-IS1 Tariffs for Irrigators 2020/21')*

**From the quarterly account over the summer period, Table 1 below summarises the energy use information for a typical grower with pressurised irrigation system like a centre pivot, lateral move, winch, soft and hard-hose, or short boom.**

***Table 1*** *Energy usage information for a summer billing period (1st Dec. to 28th Feb. inclusive).*

| Account classification: Small business | | | | Motor size: 45 kW | Tariff 65 |
|---|---|---|---|---|---|
| Current electrical energy cost for this period: | | | | $ 8,813 | |
| Billing period: | 1/12/19 to 28/02/20 | No of days billed: | 90 | Total kW.h: | 33,600 |
| Peak kW.h usage: | 6,720 | Off-peak kW.h usage: | 26,880 | PEU%: | 20% |

**This information allows us to ask five important questions:**

### 1 What impact does reducing the Peak Energy Usage % (PEU%) make to the energy cost?

**Answer:** Table 2 shows the impact of decreasing and increasing the proportion of peak energy used (PEU%), while using T65. Decreasing the PEU% from the current 20% to 10% would result in $613 saving for that quarter ($8,813 - $8,200). If the PEU% were to increase, the quarterly cost would rise by approx. $600 for each 10% increase of PEU%. Note: the particular amount of increase/decrease will vary with each account's energy use.each 10% increase of PEU%. Note: the particular amount of increase/decrease will vary with each account's energy use.

### 2 Would a flat rate tariff, like T20 be more cost effective?

**Answer:** Table 2 shows that the flat rate tariff, T20 for "Small" business, would have had a slightly lower energy cost than the current tariff, for that bill, by approx. 1% ($90). However, if the PEU% on T65 was 30% or more, more significant savings would have been realised under T20.

### 3 Is Tariff 33 (Economy) or Tariff 34 (Load-control) an appropriate option in my irrigation situation?

**Answer:** Table 2 shows that under all PEU% with T65, T33 and T34 would have been cheaper than T65 for this account. With a PEU% of 20% on T65, this account would have saved 30% ($2,650) if T33 was in use and would have saved 26% ($2,304) if T34 was in use during this quarter.

The question for the irrigation manager is whether potential load-shedding under Tariff 33 and Tariff 34 will impact upon irrigation performance. Automation can help manage the disruption by being able to re-start pumps and irrigation equipment. However, many irrigation water supply schemes cannot cope with intermittent starting and stopping of pumps, and in these situations, it is likely the irrigation supply scheme managers would warn farmers about using such tariffs and causing interruptions in water supply. Ergon should be consulted to gain a better understanding of the expected timing and frequency of any load-shedding for the specific NMI.

### 4 How would other tariffs like T22A, T24 or T41 affect my energy cost?

**Answer:** These three tariffs have particular time conditions that must be met in order to generate potential savings. However, there is a risk of a higher energy cost if these set time conditions are not adhered to. Manually operated pumps make keeping to these strict time conditions very difficult, if not impossible. Automation can provide a solution to this problem. Due to the more complex nature of the analysis for these tariffs, it is recommended that specialist advice be obtained.

1. To cost out T22A in direct comparisons, energy use between 10am and 8pm weekdays from beginning of December to end of February would be needed, rather than just the T65 12-hour per day, 7-day per week Peak period energy consumption data given in this case. If no Peak period energy use occurred over this particular billing period, in the 84 hours of the T65 off-peak period available every week of the year, it would cost $7,588, whereas T22A in the 118 hrs available off-peak each week from 1st Dec. to end of Feb., it would cost $8,166.

2. For T24 comparisons, you would need the average of the 4 largest daily demands calculated from the average of the twenty ½ hour intervals between 10am and 8pm on those four days, which would provide the required chargeable "Demand" in kW for each month. If only off-demand period energy (118 hours per week) were used during any of the summer months (Dec., Jan, or Feb.) the chargeable demand is 0 kW for that month. A minimum chargeable demand of 3 kW applies for non-summer months. For the 90-day summer period of this bill, the total cost is $6,140. This compares favourably with the T65 only Off-Peak scenario costs (84 hrs per week) for the same billing period of $7,588 as shown in Table 3.
3. For T41 comparisons, the largest ½ hr average interval "Demand" in kW would be needed in the billing period, and would normally be measured in the electricity meter. As an example, if it happened to be 45 kW, then this bill would be $9,394, compared to off-peak T65 from No.1 above of $7,588.
4. For T24A comparisons, you would need the average of the 4 largest daily demands calculated from the average of the twenty ½ hour intervals between 4 pm and 9 pm on those four days, which would provide the required chargeable "Demand" in kW for each month. If only off-demand period energy (143 hours per week) were used during any of the months. The chargeable demand is 0 kW for that month. For the 90-day period of this bill, the total cost is $8,280, compared to off-peak T65 from No.1 above of $7,588 as shown in Table 3.
5. T24B comparisons, you would need the average of the 4 largest daily demands calculated from the average of the twenty ½ hour intervals between 4 pm and 9 pm on those four days, which would provide the required chargeable "Demand" in kW for each month. If only off-demand period energy (143 hours per week) were used during any of the months. The chargeable demand is 0 kW for that month. For the 90-day period of this bill, the total cost is $7,418, compared to off-peak T65 from No.1 above of $7,588 as shown in Table 3.

## 5 Is this information enough to make a decision?

**Answer:** In short – No. Using energy information from a single bill rarely provides an accurate understanding of the energy pattern through the year, nor from year to year. Without the ½ hour time interval data from Ergon's meter, demand tariffs are challenging to compare with existing tariffs. In irrigated sugarcane, irrigation requirements and energy usage are seasonal, with summer months usually being the higher water use months. Also, year-to-year energy usage patterns can fluctuate considerably depending upon area planted, rainfall distribution and irrigation allocations. A minimum of two years of the ½ hr interval data from your electronic meter should be examined.

***Table 2*** *Impact on energy cost by changing 1) the proportion of T65 Peak:Off-Peak usage, and 2) changing to the flat rate tariffs, T20(S), T33 and T34.* **BLUE** *values indicate a* **SAVING**, *while* **RED** *indicates an* **EXTRA COST**. *Based on prices published 16/10/2020 by Ergon, and include GST.*

| TARIFF 65 PEU% | | TARIFF 65 COST for the 90 day period | Compared to T65: SAVING or EXTRA COST by being on T20 or T33 or T34 | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | T20S | % Change | T33 | % Change | T34 | % change |
| 60% | More peak than off-peak | $ 11,263 | $ 2,540 | 23% | $ 5,100 | 45% | $ 4,754 | 42% |
| 50% | Equal amount of peak & off-peak | $ 10,650 | $ 1,927 | 18% | $ 4,488 | 42% | $ 4,141 | 39% |
| 40% | | $ 10,038 | $ 1,315 | 13% | $ 3,875 | 39% | $ 3,529 | 35% |
| 30% | | $ 9,425 | $ 702 | 7% | $ 3,263 | 35% | $ 2,916 | 31% |
| 20% | Actual for this bill | $ 8,813 | $ 90 | 1% | $ 2,650 | 30% | $ 2,304 | 26% |
| 10% | | $ 8,200 | $ 523 | 6% | $ 2,037 | 25% | $ 1,691 | 21% |
| 0% | All off-peak | $ 7,588 | $ 1,135 | 15% | $ 1,425 | 19% | $ 1,079 | 14% |

***Table 3*** *. Cost comparison between T65 with 0% peak energy consumption to 0% peak and 0 kW demand for T24, T24A and T24B,* **BLUE** *values indicate a* **SAVING**, *while* **RED** *indicates an* **EXTRA COST**. *Based on prices published 16/10/2020, by Ergon, and include GST.*

| T65 Cost for 90-day period 0% Peak | T24 0% Peak 0 kW Demand/month | % Change | T24A 0% Peak 0 kW Demand/month | % Change | T24B 0% Peak 0 kW Demand/month | % Change |
|---|---|---|---|---|---|---|
| $ 7,588 | $ 1,448 | 19% | $ 692 | 9% | $ 170 | 2% |