CASE STUDY TAR-CS3

Tariff Assessment:

Irrigator – Large Business Account

(to be read in conjunction with Case Study TAR-CS1 and Information Sheet TAR-IS1 'Tariffs for Irrigators 2020/21')

This information sheet uses identical information to the case study on the Fact Sheet TAR-CS1, but in this example the account has been classified as a "Large" business account due to the annual total energy use being 100,000 kW.h or greater.

From the quarterly account over the summer period, Table 1 below summaries the energy usage information for an irrigation system that has been classified under a "Large" business account.

Table 1 *Energy usage information for the summer period.*

Account classification: Large business				**Motor size: 45 kW**	**Tariff 65**
Current electrical energy cost for this period:				$8,813	
Billing period:	1/12/18 to 28/02/19	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 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 that the amount of cost increase/decrease will vary with each account

2 Would a Load Control tariff like T60A or T60B be more cost effective?

Answer: T60A is a flat-rate interruptible supply primary load control tariff suited to business operations/equipment that can manage up to 6 hours of outages per day without notification. Table 3 shows that the flat rate tariff, T60A for "Large" business, would have had a higher energy cost for that bill by approx. 25% ($2,206 higher cost).

T60B is a flat-rate interruptible supply secondary load control tariff suited to business operations/equipment that can manage up to 6 hours of outages per day without notification when used in conjunction with a continuous supply-tariff at the same NMI (T50 is selected in this case as default primary tariff). Table 3 shows that, the T50+60B for "Large" business, would have had a higher energy cost for that bill by approx. 18% ($1,560 higher cost).

3 Is Tariff 33 an appropriate option in my irrigation situation?

Answer: Tariff 33 is not available to Large Business accounts. If the account was able to be reclassified as a Small Business account, then T33 would be available. See Information Sheet TAR-CS1for the impact T33 would have had on these circumstances under a "Small" Business account.

The first question to resolve is whether the account can be re-classified as a Small Business account. A second question to resolve is whether this tariff's potential to load shed will impact upon irrigation management. Automation can help manage the disruption by being able to restart pumps and irrigation equipment. However, many irrigation water supply schemes cannot cope with the intermittent starting and stopping of irrigation pumps; in these situations, it is likely the irrigation water supply scheme managers would warn farmers against using such tariffs.

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4 How would other tariffs like T44 and T50 affect my energy cost?

Answer: Both tariffs are demand tariffs, so irrigation systems that demand energy at the minimum 'chargeable demand' will create the lowest total energy costs. Having an efficient pump that is well suited to the duty range and installing a VFD will contribute to minimising the demand. However, there is a risk of a higher energy cost if the set conditions are not adhered to. Manually operating pumps makes keeping to these conditions very difficult, if not impossible. Automation can provide a solution to this problem.

Table 2 provides an insight to the T44 and T50 energy costs for a very specific situation. For an average demand of 40 kW from this pump motor, T44 has a threshold demand of 30 kW. The chargeable demand for T44 would be 10 kW, in this case, and that would apply for the 3 monthly billing periods. Tariff 44 has a flat cost structure for energy and chargeable demand all year. If the demand was lower, the total cost would also have been lower. Tariff 50 has different pricing structures for the summer months (Dec. to Feb. inclusive) and the non-summer months. A threshold demand of 20 kW applies in the summer months, while 40 kW applies in the non-summer months.

For this example, Table 2 highlights that T44 would have been 4% higher ($344) for that quarter than the actual T65 cost (based on 20% PEU). T44 would have become a cheaper option if the PEU% under T65 was 30% or more.

When considering T50 for this specific situation, it is important to realise that T65 20%PEU is equivalent to 118 hours of pumping per week. In a valid "apples-to-apples" comparison, 118 hours/week of pumping under T50 could create a chargeable demand of 0 kW. Comparing T50's summer period pricing structure with T65 at 20% PEU, the energy cost would have been $1,242 cheaper (or 13% lower) than the actual T65 cost. During the non-summer period the quarterly cost would have increased to $8,411 (5% lower than the actual T65 bill).

Due to the more complex nature of these tariffs and the requirement to have the ½ hour interval data, it is recommended that specialist advice be obtained.

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 electricity 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 hour interval data from your 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 demand tariffs, T44 and T50. Assumed chargeable demand of 40 kW for each month for both tariffs0.* **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%		T65 Cost for 90-day period 0% Peak	T44	% Change	Difference	T50 Summer	T50 Non-Summer
60%	More peak than off-peak	$ 11,263		19%	$ 2,106		
50%	Equal amount of peak & off-peak	$ 10,650		14%	$ 1,494		
40%		$ 10,038		9%	$ 375		
30%		$ 9,425	$ 9,157	3%	$ 988	$7,570	$ 8,411
20%	Actual for this bill	$ 8,813		4%	$ 344		
10%		$ 8,200		12%	$ 956		
0%	All off-peak	$ 7,588		21%	$ 1,569		

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	T60A	% Change	T50+60B	% Change
$ 8,813	$ 2,206	25%	$ 1,560	18%