

Energy Use Efficiency

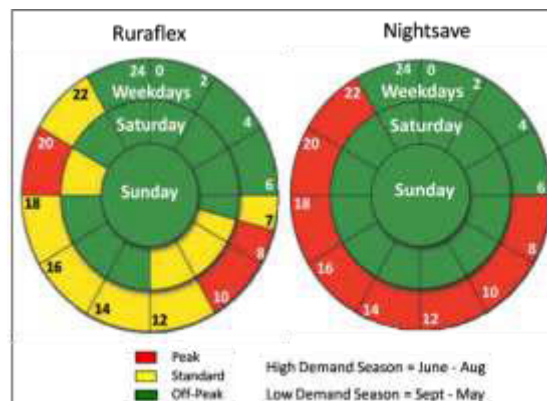
- The electric motor coupled to the irrigation pump is not excessively over-sized
- The most appropriate ESKOM electricity tariff option has been selected

Correct pump and motor size

Over-sizing of motors is common and can cause an unnecessary increase in energy requirements. The motor should be selected to operate at a high load relative to capacity. The key to an efficient pumping system is to select the best motor/pump combination at the design stage.

Correct electricity tariff option

The Ruraflex option offers the most flexibility for irrigators and is generally the default option. The Ruraflex tariff provides opportunities where pump operation can be shifted to off-peak periods. In other words, use of electricity during low demand and off-peak periods is rewarded with lower charges.



Designated periods for peak, standard and off-peak consumption for the Ruraflex and Nightsave Rural tariff options

The Nightsave option is best suited for high load factor applications e.g. 24x7 pumping with a notified maximum demand of 25kVa and greater. These high load factor (continuous pumping) situations are not likely to occur in irrigation. The occurrence of rainfall, for example, will prevent continuous irrigation.

The Landrate option is for customers with a demand not exceeding 100kVa. The energy charge is fixed and does not vary according to time of year, but is dependent on the size of supply.

Better Management Practice	<ul style="list-style-type: none"> Pump operation, informed by irrigation scheduling, is limited during the electricity peak hours when possible 	<p>Pump operation</p> <p>Full use should be made of the off peak pumping opportunities. Given that irrigation systems only need to operate at their peak capacity for part of the season, the irrigation system can be operated at night whenever possible and only extend into electricity peak periods when irrigation demand requires it. The biggest opportunity for reduced pumping is through better use of rainfall. Managing the irrigation system to use as much of the rainfall that occurs in a season through effective irrigation scheduling, can significantly reduce the amount of irrigation water pumped, and through that, reduce energy use.</p>
Better Management Practice	<p>Evaluation</p> <ul style="list-style-type: none"> The irrigation system is evaluated at least every two years to ensure uniform and accurate application of water 	<p>Evaluation</p> <p>The objectives of evaluating the performance of an irrigation system are to:</p> <ul style="list-style-type: none"> determine if the system is working according to a farmer's assumptions and design specifications in terms of the amount of water applied, determine how much variation there is in the amounts of water applied across the field/farm (uniformity) and whether or not the measured variation has a significant impact on crop yields, deep percolation (drainage) and runoff losses, fertiliser use efficiencies and production costs, determine the causes of the variation in applied water, check the efficiency with which power is being used, and produce recommendations to improve on any aspects that would result in the effective use of water and energy. <p>There are a number of published evaluation methodologies for the various types of irrigation systems. A particularly useful resource is the <i>Manual for the Evaluation of Irrigation Systems</i> published by ARC - Institute for Agricultural Engineering, P/Bag X134, Pretoria, 0001 or email iaeinfo@arc.agric.za. SASRI, Extension Specialist and/or Irrigation consultants can be used to conduct irrigation system evaluations.</p>