



LOAD CONTROL ON HIGH POWERED IRRIGATION EQUIPMENT

Lamb County Electric Cooperative

Challenge :: Peak load conditions can be major events. When the G&T gives the order to shed 10, 20, 50 or however many megawatts of power is required to avoid a shortfall and possibly a brownout, a utility must make a quick decision on where to cut back. In Lamb County, a west Texas farming community, the common course of action was to curtail power to high-powered pumps used for crop irrigation. But the Cooperative sought a better way. Not only did Lamb County want to minimize the impact of load shedding, it wanted a system that could report how much power had actually been saved so members could be compensated equitably and the coop could confirm success with its G&T.

Solution :: Lamb County added precision to load control activities by using its Tantalus communications network to coordinate shed events as well as other advanced metering applications. Tantalus' innovative addressing capability makes it possible for a utility to communicate in a coordinated fashion with specific groups of meters and associated load control modules. Utility staff manage events via a web-based application that communicates with polyphase meters and Tantalus Load Management Switches. The coop can quickly obtain both the current load of an individual pump and the sum of all pumps in a select group, and then issue a curtailment command to one or more groups for a set amount of time.

The long-range, wireless TUNet network provides cost effective coverage and the freedom to surgically deploy devices anywhere in the service territory, even in the most sparsely populated areas. This allows Lamb County to prioritize deployment of TUNet enabled polyphase meters and load control modules to participating farms, then proceed with residential smart metering.

Results :: Farming is the lifeblood of the local economy. Putting control in the hands of the cooperative helps ensure that no single farm is unnecessarily disrupted, as was sometimes the case when the G&T ran the program. The flexibility to enact just enough curtailment and to select where it comes from helps Lamb County manage energy usage while minimizing the impact on farmers.

The Tantalus solution enables the coop to act quickly and decisively in a critical peak situation. Now, in just a few minutes, Lamb County can obtain the current load measurement on individual or groups of pumps, and then issue a curtailment command from its operations center to one or more groups for a specified amount of time. Because some farms operate as many as 40 separate sprinkler systems, the coop can assign pumps to different groups so that irrigation on a single farm is never halted entirely. Time-stamped records confirm which meters were involved, so the utility can quantify success and compensate members based on how many pumps were involved and how much power was curtailed. Benefits beyond load control include visibility if an irrigation pump has been off line for an extended period. If an anomaly appears, the coop can simply alert the member that there may be an equipment failure or that pump settings are incorrectly set, so the problem can be fixed before it escalates.

By integrating TUNet with its OMS, Lamb County can instantly gauge the size and severity of a power outage. Complete situational awareness enables it to precisely assess the extent of an outage and determine how best to manage and prioritize restoration procedures. Furthermore, detailed customer and system load profiles provide data that will enable the coop to make more strategic energy purchases in the future.

“The Tantalus solution takes the guesswork out of load shedding. The ability to quickly identify where load can be shed and confirm the exact amount of power shed adds precision and speed to load control activities.”

- Delbert Smith,
General Manager & CEO

Lamb County Electric Coop Profile

- Littlefield, Texas
- 2400 members / 6400 polyphase meters
- 1600 square mile service area
- 2900 miles of line / 16 substations
4 customers per mile

TUNet Advantages

- Coordinated measurement and control of polyphase irrigation equipment enables Lamb to obtain current load on individual meters or groups of pumps
- Local coop control ensures no farm unnecessarily involved in shed events; minimal impact on members
- Time-stamped records verify which meters involved equitably compensate members and quantify success with G&T
- Broad wireless coverage for surgical deployment to high priority accounts; self-associating system requires minimal manual set-up
- Interface with NISC OMS via MultiSpeak 3 for up-to-the-minute outage condition status and restoration progress
- Power quality monitoring; ability to detect if a pump has been off line for an extended period, which may indicate equipment failure or incorrect settings
- Tamper and theft detection helps the Coop eliminate revenue seepage
- Single network supports utility automation evolution strategy: C&I metering > load control > residential metering