



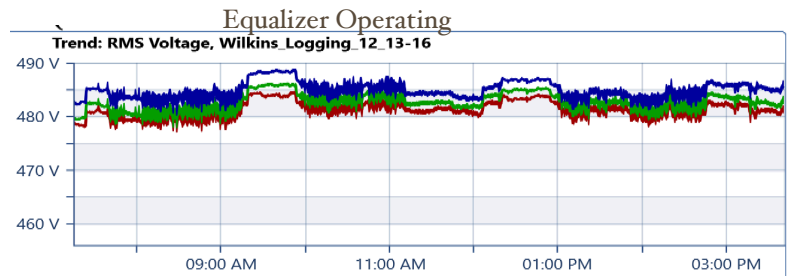
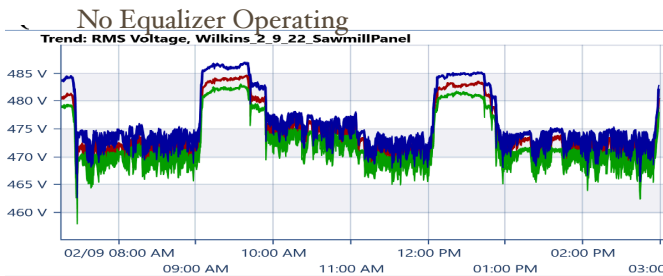
In the spring of 2022, Wilkins Lumber communicated a concern about inordinate demand charges, along with a desire to advance their sustainability and decarbonization objectives.

Energy LB analyzed their sawmill network through data recording at distinct set locations during a week of production. High reactive power levels, significant voltage instability and current imbalance across phases were observed in the recorded data. These phenomena contribute to heat dissipation and loss, reduced torque available to motor loads, degradation of efficiency, performance and life of equipment.

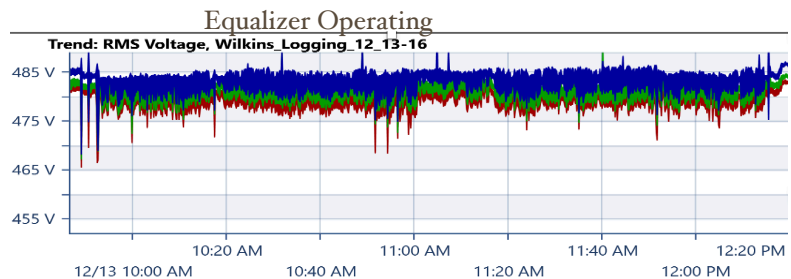
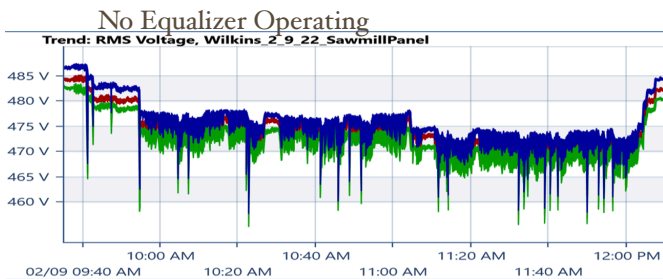
An Elspec Equalizer 418kVAR system was recommended due to its proven technology for reactive power compensation and voltage stabilization, the dominant concerns to be addressed in the sawmill. Energy LB worked with Wilkins to apply for and receive USDA REAP grant funding to allay a portion of the investment costs.

Voltage Stability Comparison

full production day:



2.5 hour morning production shift:



Benefits Realized with Equalizer Engaged

- Mean voltage drop of 8-12V, repeated voltage dips of 20-24V largely mitigated
- ~5% mean starting/max torque improvement, nearly ~10% better at high load points
- higher available torque yields reduced operating current and lower temperatures
- cooler operation leads to less loss and longer motor longevity

Effect of Equalizer System on Operational Electrical Parameters

Equalizer operation was switched off at 1:26:30pm. 5 minute before and after intervals are presented.

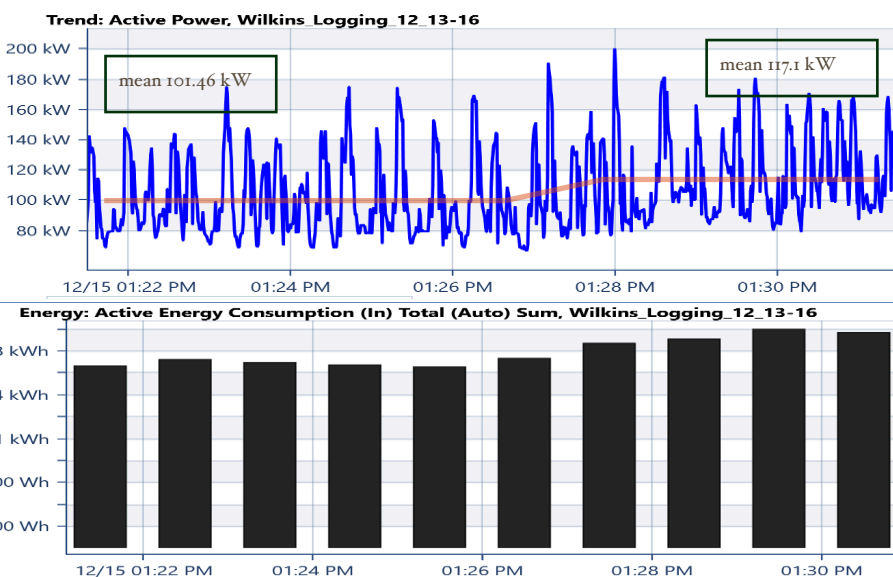


Immediate Effects of Equalizer Switched Off

- **voltage:** down in mean and stability
- **current** from xfrmr to service entrance : 74a -> 146a mean
- **apparent power:** 120kVA -> 204kVA mean
- **reactive power:** ~0kVAR -> ~160kVAR mean
- **power factor:** ~Unity (1.0) -> [0.5-0.6]

The EQ corrections to the electric quality and distribution add up to reduced distribution loss, lower operating temperatures, more efficient and reliable operation, and thus decreased downtime and maintenance.

Energy reductions are evident. Mean/peak kW demand levels are greater without the EQ operating; and the kWh levels, here computed across each minute, are observed to rise after the EQ was switched off. After ~90 sec the mean kW has risen 15.6kW in this short interval. This will affect peak demand charges directly also.



We are excited to see the long-term effects of the Elspec on both our efficiency and our bottom line – and anticipate that reduced wear on machinery will be another benefit.

Quite apart from the numbers, the improvement is obvious. Our sawyer, Bill, commented that the lights don't flicker when the saw encounters a board, and there is much less 'boggling' of the machines when they're starting up. He feels that the mill is running more efficiently."

Sally Wilkins, co-owner