Coppervale

COPPERVALE INSIGHTS SERIES

Reducing Energy Costs for Unmetered Power Supplies in the CableTV Outside Plant Network

Our research shows that the average unmetered power supply in an OSP network is charged significantly in excess of an average metered power supply.

This indicates the probabality of overcharges and consequently, cost savings. How can a cable operator take advantage of this opportunity?

Coppervale can help.

Introduction

Coppervale has performed utility bill and outside plant audits on behalf of cable operators since 2009, covering approximately 160,000 OSP power supplies across North America. The goal of these audits is to create cost savings by correcting billing errors, optimizing tariffs, eliminating unused utility accounts, securing more favorable rates, and identifying overall energy efficiency opportunities in the plant.

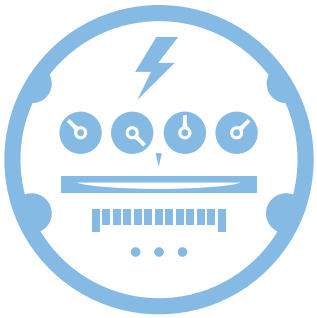
One of the largest cost savings opportunities lies in the unmetered utility accounts for power supplies. Based on our audits, we see approximately 50% of all power supplies billed by utilities as unmetered. Many of these unmetered accounts are charged much in excess of actual usage, when compared to metered power supply accounts. Our investigations show that the average metered power supply draws approximately 435 kWh per month, while unmetered power supplies are billed at an average of 580 kWh per month, i.e. at a 30% higher level.

Unmetered usage is usually set when a power supply is commissioned and not (or rarely) updated when, for example, power supplies are upgraded to more efficient models. Many of the unmetered accounts were set up twenty years ago or earlier. At the time, design programs were not as accurate as they are today and many designers implemented safety factors that were never utilized. In most cases, unmetered accounts are invoiced in bulk on single summary bills, thereby hiding the billing details and unnecessary costs. It is in the cable operators' best interest to accurately reflect power supply usage in billing. How can we achieve this for the unmetered locations?

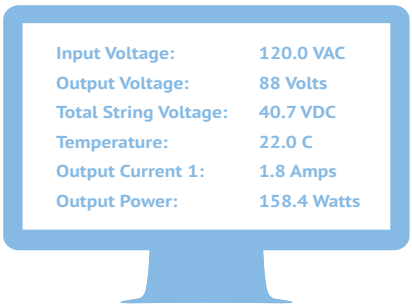
A Range of Solutions

Metering — A Costly Option

Installing meters at unmetered locations would be the obvious choice to ensure accurate billing. However, economics often render this impossible. Depending on location, preparing the site for a meter installation runs at $600 or more. In many cases, costs are much higher for older sites that have to be upgraded to the latest code. At an average usage reduction of 145 kWh per month and a cost of 10.41 cents per kWh (U.S. average per EIA), the payback is around four years, which is excessive for most operators. In addition, installing a meter base requires disconnecting the power supply from the grid for a short period of time, which leads to the possibility of service interruptions. While a newly commissioned power supply can be fitted with a meter going forward, metering is not an economically viable option for the vast majority of the legacy plant. Our experience has shown that utilities also do not appreciate the cost they incur setting hundreds or thousands of meters in a short time.

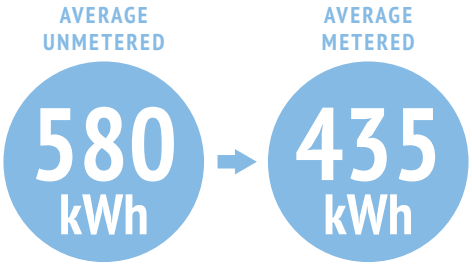


Status Monitoring — A Useful Measurement Tool



Most fielded power supplies are equipped with a status monitoring system which provides critical information about power supply health to the network operations center. The data acquired includes some usage information, but legacy transponders only provide output voltage and current. Calculating input power from this data requires assumptions regarding plant power factor and power supply efficiency; the results are usually no better than +/-10%. Upgrading transponder hardware and software to achieve utility grade power measurements is estimated to cost several hundred dollars per site and runs into the ROI limitation discussed above. Depending on utility cooperation, operators may be able to use the limited usage information to convince utilities to reduce the assumed average usage in billing.

Metered Usage Extrapolation — A Basis for Negotiation



The usage of 435 kWh per metered site mentioned earlier is an average. In a large sample, usage will be normally distributed around this mean, with half of the supplies using more and half using less than the average. For large populations of power supplies within a utility territory, the metered average will represent the plant average very accurately. In these cases, the metered average can be assigned to all unmetered power supplies for billing purposes. This approach only work where the metered and unmetered populations are large enough to allow for statistical relevance. For example, a system with 2,000 metered and 3,000 unmetered power supplies on the same utility lends itself well to this approach. On the other hand, the approach is not appropriate for a system with 5,000 power supplies, only 50 of which are metered.

Unmetered Plant Sampling — An Evidence-based Approach

This methodology is applicable for systems where most of the plant is unmetered; it utilizes the distribution of power supply kWh draw around a mean. For this approach, a statically representative sample of the plant is selected at random and measured using a utility grade meter. The resulting average is then applied to the billing for all unmetered power supply accounts in the utility's territory. The method uses spot measurements, since the outside plant is a constant power load. Coppervale has coordinated several programs like this in the United States. The measurements are usually performed by an independent contractor at the MSO's expense, with the utility spot checking individual sites for accuracy. The utility and MSO enter into a contract specifying the new billing loads and agree on a time frame for a renewed measurement program to verify and update the plant kWh average. Given the static nature of the outside plant, we have seen contract run times of three to five years.

Coppervale has been monitoring the powering characteristics of 80,000 metered power supplies in the U.S. for the past three years and we have seen year on year variations of less than 1%. Despite MSO's implementing programs affecting powering (e.g. fiber deep roll out, Wi-Fi implementation, power supply efficiency upgrades), these activities only affect a few thousand power supplies per year. Given the sheer magnitude of the installed base of more than half a million power supplies, the average usage of the plant will not be affected materially over a period of a few years.

Reduce Your Energy Costs Today!

As cable operators continue to seek operating expense reductions, unmetered power supply accounts represent a significant savings opportunity. We have shown ways to determine the powering requirement of unmetered plant quite accurately without cost intensive metering programs. However, the methodologies discussed require the agreement and support of the host utilities. To find out how much your business can save on your unmetered power supply billing, contact Coppervale at 360-392-2598, or visit Coppervale.org to sign up for a free analysis.

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About Coppervale

Coppervale Enterprises Inc. is the broadband industry's leading energy management, engineering and sustainability consultancy. Our team consists of energy and carbon management specialists, sustainability professionals, and veteran cable engineering consultants. Let Coppervale show you how to improve operational efficiency, reduce your energy costs, and minimize your carbon impact.

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