Energy Management

We design and deliver
premium sensing solutions

setra®

Who is Setra?

Setra Systems, Inc. was founded in an age of transducer innovation. Our founders, Dr.Y.T. Li and Dr. S.Y. Lee were Professors of engineering at the Massachusetts Institute of Technology and co-developers of the Variable Capacitance Transduction Principle. Building on this heritage of innovation, Setra has designed and developed the most comprehensive product lines of pressure sensing transducers in the world. Setra has been innovating Test & Measurement sensor designs for over 50 years and has become a leader in the pressure transducer market.

- **Made in the USA**
- **Industry leader for over 50 years**
- **Innovator of the variable capacitance principle**
- **5-Sigma quality**
- **95% On time delivery**
- **99.8% Quality rating**
- **10+ Million sensors shipped**

Corporate Headquarters & Production Facility
Boxborough, Massachusetts, USA

Save time.
Save money.
Simplify your job.

Not all meters are created equally. Setra's power meter is designed to streamline the entire experience from purchasing to installation and startup. Setra products get the job done safely and correctly.

Whether you need:

- **High accuracy current measurements**
- **5-in-1 Communication protocols**
- **Desktop configuration**
- **Broadband power supply**
- **UL610-1 3rd Edition**
- **Easy and hassle-free installation**
- **Direct application support**

Setra has you covered

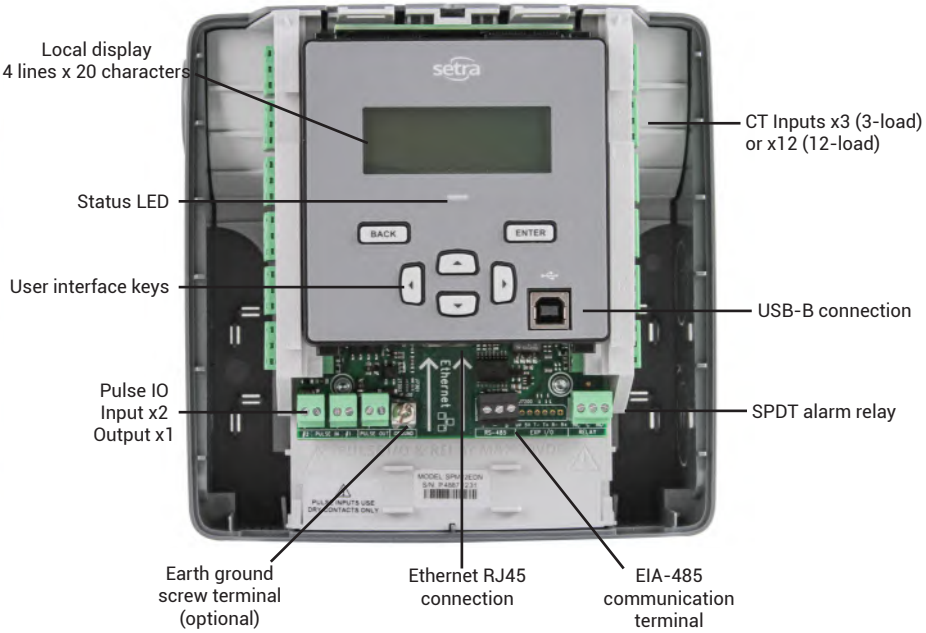
Contact us today

(267) 675-8117

www.CABriggs.com

3/12 Load Power Meter

3/12-Load Meter



Easy USB configuration

Using the Setra Power Meter web portal, power and configure the meter through your computer's UBS port. While other meters require configuration in a live enclosure, Setra's Power Meter can be easily configured outside of the panel, eliminating the risk of arc flash. The web portal can save meter settings, allowing the installer to clone meter profiles quickly and easily.

Advantages:

- Quick start-up
- Clone feature settings
- Configure anywhere

Field selectable CT'S

The Setra Power Meter series works with either Rogowski Coil "flex" CTs or conventional split-core CTs. The ability to have interchangeable CTs gives added flexibility for last minute changes at the job site. Setra's meters are embedded with the necessary amplifier/integrator circuitry for Rogowski Coil CTs - eliminating the need to provide external power.

Advantages:

- High accuracy: ±0.5% FS
- Lightweight: <0.5 lbs.
- Best in class position sensitivity

5-in-1 Communications

Unlike the competition which require costly expansion cards to carry multiple protocols, BACnet and Modbus are available with every unit giving the installer the flexibility to easily configure the unit anytime at no additional cost.

Advantages:

- Increased flexibility
- Eliminate ordering mistakes
- BAS compatible

48 Load Power Meter

Logging

Setra's Power Meter logs data up to 62 days for all configured loads. Data can be accessed in via trend graphs, odometer, or downloaded to CSV file.

Advantages:

- 62 days of data
- Visual trending
- Downloadable

Broadband line powered

The Setra Power Meter series instruments are line powered and do not require external power. Its power supply can accommodate service voltages ranging from 80V-600V (line-to-line). This includes applications where single phase, three phase WYE or three phase DELTA service is required.

Advantages:

- Self-powered
- Reduce SKU's
- Increased flexibility

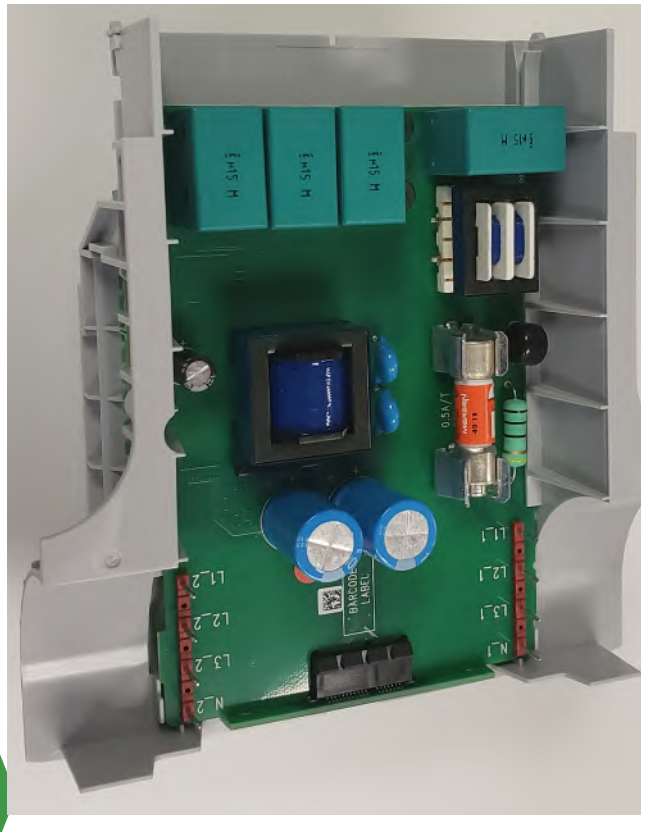
Revenue grade accuracy

When used with the Patrol Flex Rogowski coils, every Setra power meter can meet the standards required for revenue grade accuracy. The meter is ANSI C12.20 Class 0.2 allowing it to be used for energy cost allocation for multi-tenant billing.

Advantages:

- Meets revenue-grade standards
- Can verify energy bill from the utility

Multi- Load Monitoring



More Granularity at Lower Cost

Meter	CT's	Cost	# of Loads	Cost per Load
1	3 CTs	$900	3	$300
1	12 CTs	$1,900	12	$158
1	48 CTs	$4,000	48	$83

Example pricing. Call for quote.

All Setra power meters can use conventional CTs and Rogowski coils (Setra's Patrol Flex and Split-Core Performance CT)

CONTINUOUS SAMPLING

Both the Power Battalion 48 and the Power Squad 12 use continuous sampling, meaning more information and no "blind cycles." Continuous sampling provides 9x more data than with traditional computed results. More granular data enables end users to make real-time, well informed decisions.

Advantages:

- Allows for THD capture in real time
- Allows for more accurate frequency detection

DEMAND SIDE MANAGEMENT

The Power Battalion 48 can be used with standard CTs, 2 Volt output or less, or with Rogowski style CTs to monitor any combination of up to 16 three-phase or 48 single-phase loads. The versatility of the device allows monitoring of two separate voltages and transformers on same meter simultaneously.

Advantages:

- No need to order different models for different applications.
- One meter can handle any multi-circuit job

Multi- Load Monitoring

WEB BROWSER ENABLED

The web-based browser makes it quick and easy to configure and set up the meter. The web server is intended for users in the field to configure the meter and also track real-time data from any web browser.

Advantages:

- Direct access to web pages via Ethernet or USB
- Instant display of real-time data
- No software to download or installation necessary

DUAL INPUT VOLTAGE REFERENCES

Monitoring multiple loads has never been easier. The Setra Power Meter makes it possible to capture low voltage (120V, 208V) as well as high voltage loads (480V, 600V) from the same meter. Eliminate the need to have multiple multi-circuit meters in order to measure different load types.

Advantages:

- 2 voltage inputs in the same meter
- Capture lighting loads and optimize chillers from the same meter
- High voltage cover ensures safe operation

Intuitive Configuration Portal
Installation

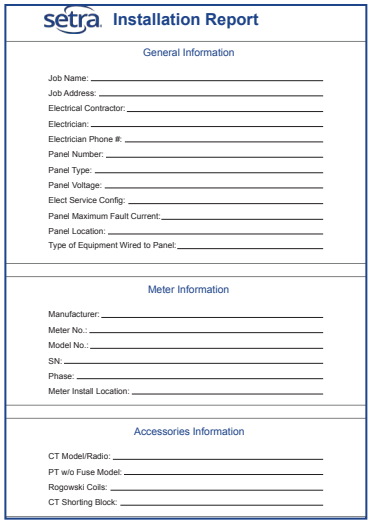
Safe Configuration

At a desk or in the field, configure safely through USB port.

Intuitive Navigation

With Setra's Halo-Dot, visually click on what needs to be configured

Simplified Communication



setra Installation Report

General Information

Job Name: _____
Job Address: _____
Electrical Contractor: _____
Electrician: _____
Electrician Phone #: _____
Panel Number: _____
Panel Type: _____
Panel Voltage: _____
Elect Service Config: _____
Panel Maximum Fault Current: _____
Panel Location: _____
Type of Equipment Wired to Panel: _____

Meter Information

Manufacturer: _____
Meter No.: _____
Model No.: _____
SN: _____
Phase: _____
Meter Install Location: _____

Accessories Information

CT Model/Radio: _____
PT w/o Fuse Model: _____
Rogowski Coils: _____
CT Shorting Block: _____

Simplify job hand-offs by generating a PDF of configuration and installation directly from the meter.

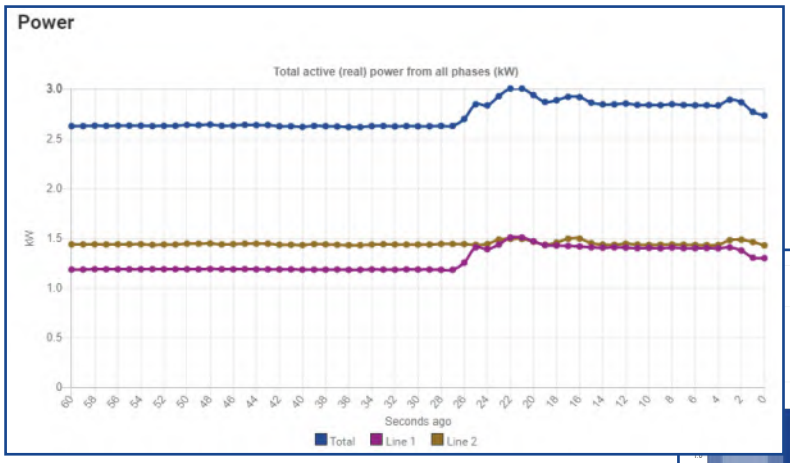
Intuitive Configuration Portal
Data

On-board Data Logging

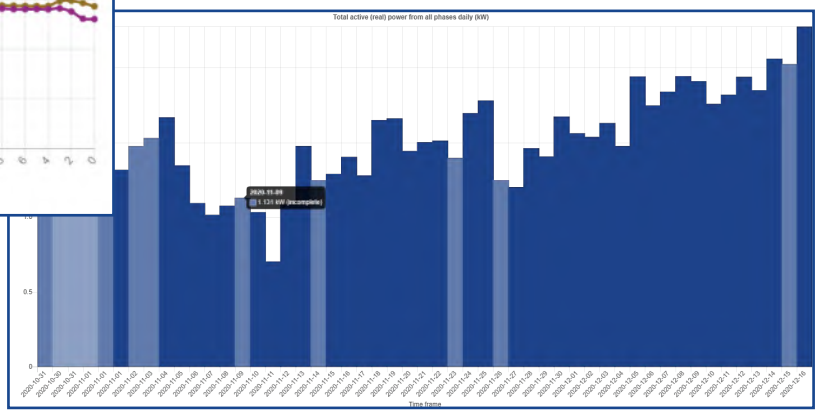
Of power and energy data stored for every Load

Never lose data again when your comms go down...

Live



Historical



"It's nice to be able to look at software and immediately know how to use it...this meter is a home-run"

setra

Gain flexibility with Rogowski coils

SAVE ON SHIPPING COSTS

The Power Flex has a current range of 5 to 5,000A yet weights less than 0.5lbs!

Power Flex Rogowski coil

Offered in 12", 24" and 36" lengths, the Power Flex is the most accurate Rogowski Coil in submetering. Rogowski Coils offer significant installation advantages over split-core CTs because of their lightweight, wide current range, mechanical flexibility for mounting in tight quarters and easy placement around cable bundles and busbars. The Power Flex leads can be extended up to 300" without degrading the accuracy of the unit. The Power Flex is calibrated to better than 0.5% accuracy for use in revenue grade applications.

Best in class linearity

Conventional CTs are wound over a magnetic iron core, which makes them more susceptible to saturation leading to linearity error. Engineers and contractors must adjust the phase shift of the meter to compensate in order to achieve an accurate reading. Rogowski Coils are wound over a non-magnetic core, giving them perfect linearity and improved accuracy over wide current ranges.

Advantages:

- High accuracy: ±0.5%FS
- Lightweight: <.5lbs
- Minimal linearity effect: ±0.2%

Installation savings

Installers can save significant time and labor using the Power flex due to its flexibility and ease of surrounding conductors of all sizes. Selecting a Rogowski Coil instead of a conventional split-core CT can save the installer over two hours per metering point in a challenging installation, which could be the different between making and losing money on a job.

Advantages:

- Easy installation
- 3 Sizes (12", 24", 36")

Wide current range

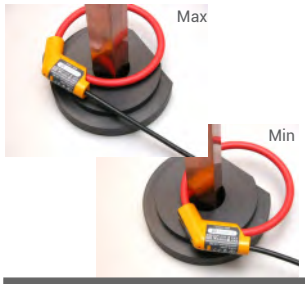
The Power Flex has a current range of 5-6,000A yet weights less than 0.5lbs, drastically reducing shipping costs. A typical 100A CT weighs 2lbs, however as the current range expands to 3000A, the average weight can increase from 2lbs to 20lbs. Considering three CTs are required to monitor a 3-phase motor, certain applications could require up to 65lbs of shipping weight per metering point; a serious waste of shipping dollars.

Advantages:

- Reduce inventory
- Reduce shipping cost

Let us prove it to you

Setra performed lab studies to see how the Power Flex compares to the leading competition.



	Position Sensitivity	External Voltage Influence (w/ 15mm bus simulator & 100V/50Hz external voltage)	Impact on Cable from External Magnetic Field
SETRA	Max. Value: 1001.5A Min. Value: 998.5A	0.024mA	2.3A
LEADING COMPETITOR	Max. Value: 1005.A Min. Value: 990A	0.415mA	5A
RESULT	Setra <0.2 position influence, 5 times better than leading competitor	Setra is 17 times better than leading competitor	Setra is 2 times better than leading competitor

Rogowski vs. Conventional CT:

Understanding specific job requirements, such as performance, installation, amperage load and environmental factors is critical to selecting the proper current transformer for an application. Conventional CTs do come with their limitations in that they are difficult to install and are lacking in performance and measurement range. Rogowski coils have significant advantages from installation, cost and performance standpoint.

Busbars and irregular shaped cable bundles are common in applications with high power requirements. Conventional CTs typically are not able to fit around the monitored conductor, leading to an exhausting and time consuming installation. The flexibility of Rogowski coils saves the installer a significant amount of time & physical exertion because of how easily they surround a conductor. Selecting a Rogowski coil over a conventional CT can save over two hours per metering point in a challenging installation. Selecting Rogowski coils can also reduce shipping costs due to their wide current range, lowing the cost of the overall job.

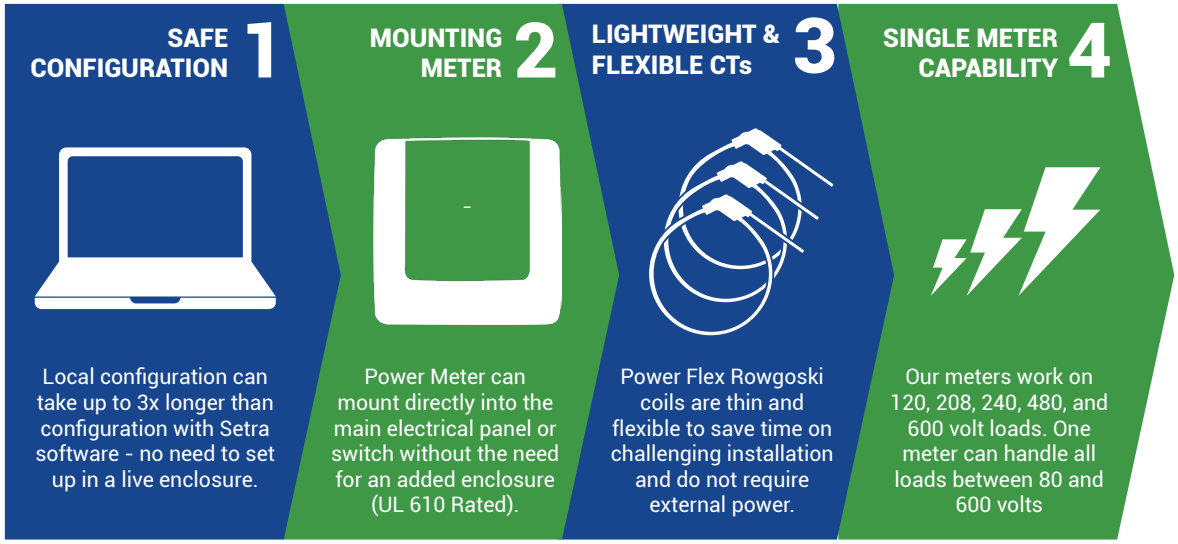
A technical limitation of a conventional CT is the narrow range of current it can measure vs. the size of the CT; as the current range increases the size and weight of the CT required increases dramatically. Rogowski coils have a current range of 5-6,000A (depending on the max current rating of the meter), which means that any Rogowski coil can be installed in any application regardless of monitored amperage load.

Setra partnered with Fluke to deliver the Power Flex Rogowski Coil; the highest performance Rogowski coil in submetering today. The Patrol Flex is calibrated to better than ±0.5% FS accuracy for use in revenue grade (tenant billing) applications.

Is Setra the right solution for you?

With a variety of submeters available on the market, it can be difficult to know which meter is right for your specific application. Check out the Power Patrol versus two of the leading meter manufactures and see how it stacks up. If you value maximum versatility without sacrificing performance, then the Power Patrol is the right solution for you.

Which power meter can save you time & money?



Easy USB setup

The initial set-up of any Setra power meter can be done from a laptop using the free Setra portal software, allowing for cloning of the setup parameters for multiple meters. No need to configure the unit in a live enclosure while wearing personal protection equipment like an arc flash suit.

Save over 50% on installation

(minutes)	Configuration	Mounting	Wiring CT	Voltage Wiring & Comms Protocols	Total Minutes*	Total Install Cost*
setra 	5	5	15	15	**40**	**$132**
Competitor 1 Panel Mount 	25	25	15	15	80	$266
Competitor 2 Surface Mount 	30	15	15	15	75	$250

*Based on a $200/hr and an installation on a 2,000 Amp service.

Setra vs. the competition

At Setra, the performance of our product is second to none, which is why we have no reason to exaggerate our product capabilities. By reading through various competitors' technical specifications, it isn't always clear which product performs the best in specific applications; this is why we tested our product against several leading competitors.

		Single-Circuit			Multi-Circuit			
		Setra Power Meter	Competitor #1	Competitor #2	**Setra Power Meter 12 & 48 Load**	Competitor #3	Competitor #4	Competitor #5
								
Hardware	Field selectable CTs	✓	X	X	✓	X	X	X
Hardware	Optional display	✓	✓	✓	✓	✓	X	X
Hardware	Dual voltage reference	X	X	X	✓	X	X	X
Hardware	Broadband power supply (80-600 VAC)	✓	X	X	✓	X	X	X
Hardware	Safety cover to install in live enclosure	✓	X	X	✓	X	X	X
Hardware	Pulsed output	✓	✓	✓	✓	X	X	X
Communications Protocol	Ethernet & RS485 standard	✓	X	X	✓	X	✓	X
Communications Protocol	Modbus & BACnet standard	✓	X	X	✓	X	X	X
Meter Configuration	USB power up & configuration	✓	X	X	✓	X	X	X
Meter Configuration	Web browser configuration	✓	X	X	✓	X	X	X
Features	Power odometer installation report	✓	X	X	✓	X	X	X
ANSI C12.20	ANSI C12.20 Class 0.2	✓	✓	✓	✓	X	✓	✓

Benefits of submetering

Increasing energy costs are frequently the largest variable expense for commercial and industrial facilities. Real-time submetering data can help facility managers drive savings by highlighting opportunities to optimize equipment and site performance. This data can provide feedback on energy consumption; how much energy is being used throughout the day and identify which areas are consuming more energy than necessary.

Submetering applications

HOSPITALS & HEALTHCARE FACILITIES

Healthcare facilities are among the most energy-intensive facilities in the U.S. Hospital facility managers find it challenging to identify energy inefficiencies in their buildings because the industry has lacked energy use data. A submeter can measure, analyze and report on the energy usage in these healthcare facilities. The energy cost savings ranges from 10% to 32%, according to an analysis completed of "typical" facilities in five climate zones.

INDUSTRIAL & MANUFACTURING PLANTS

Energy usage in industrial buildings is collected and monitored for multiple types of energy. Industrial buildings use energy-intensive HVAC systems to support processes and personnel. These support functions consume up to 33% of all energy used in manufacturing areas. Government statistics show that, on average, 30 percent of energy in these types of buildings is wasted. A focus on improving energy efficiency is important to reduce the cost of these manufacturing plants.

PEAK DEMAND

In some areas, utilities have a "ratchet clause" which means they can bill users for their highest one-time peak demand over the entire billing cycle. Peak demand charges can account for 30-70% of your electric bill. Rates for peak demand vary greatly and are determined by a number of factors such as region, utility provider, tariffs, and pricing structures. Across the United States, peak demand charges are one of the most expensive parts of the total utility bill.

UNIVERSITIES & EDUCATIONAL FACILITIES

The annual energy bill to operate America's primary and secondary schools totals nearly $8 billion. Many schools must deal with buildings that use energy inefficiently; student housing and recreation facilities require 24-hour heating, cooling, and power. Without cost accountability, many student and on-campus vendors waste energy.

RETAIL & COMMERCIAL BUILDINGS

Retail buildings represent approximately 13% of energy use in commercial buildings nationwide. Over 70% of these buildings have been built before 1980, and many are past due for energy management upgrades. Every dollar saved in energy efficiency can result in over ten dollars in incremental revenue.

What is submetering?

Submetering is the installation of metering devices with the ability to measure energy usage after the primary utility meter. Submetering offers the ability to monitor energy usage for individual tenants, departments, pieces of equipment or other loads individually to account for their actual energy usage. With submetering, a clear and accurate picture of how and when energy is being consumed inside a facility is created.

Types of submetering

MEASUREMENT & VERIFICATION

Meters and sensors are installed in a facility to monitor the energy savings from energy retrofit projects on systems such as lighting and HVAC. The sensors are connected to a data acquisition servers (DAS) or building control system (BCS) and the run times or energy consumption are measured and compared to energy usage prior to the installation. The M&V system may have to be in place and operational for several days or months in advance to establish a sound baseline for comparison. The key to ultimate success or failure of the M&V program is the ability to isolate the specific system being modified from the rest of the energy consuming equipment in the building.

TENANT SUBMETERING

Tenant submetering is a broad term applied to the use of hardware and software to bill tenants in commercial facilities for their actual usage of energy. The goals of tenant submetering are to ensure that the owner recovers the cost of energy from tenants and to make sure that tenants with high energy usage are not subsidized by those with lower usage. The owner installs meters to monitor the consumption of electricity, gas, water and steam by individual tenants. The tenant is billed at the end of the month at the same rate the building owner pays for the building as a whole.

Demand response

The demand response programs offered by utilities provide commercial and industrial building owners with reduced electrical rates in exchange for an agreement to curtail energy use at the request of the utility. Typically, these requests come during periods of high load such as hot summer afternoons. Building owners or managers who have the ability to reduce loads by turning off equipment or using alternative sources of energy can see significant savings under these programs. The future of demand response is likely to contain more options for automatic, real-time reductions to load, triggered directly by the utility with little involvement of the owner.

Energy cost allocation

Cost allocation refers to the use of meters and DAS to submeter and allocate energy usage by department or cost center with a campus or industrial facility. Allocating these costs provides accountability for energy use in campuses and allows businesses to accurate determine the cost of projects and services. For each building or department, the facility manager installs the necessary sensors and meters to isolate and measure the energy used by that department. On a monthly basis, the data from the DAS is analyzed to produce a cost for energy assignable to the department. For most energy and facility managers, there are benefits and payback to investing in the hardware and software to submeter campuses or industrial facilities.

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