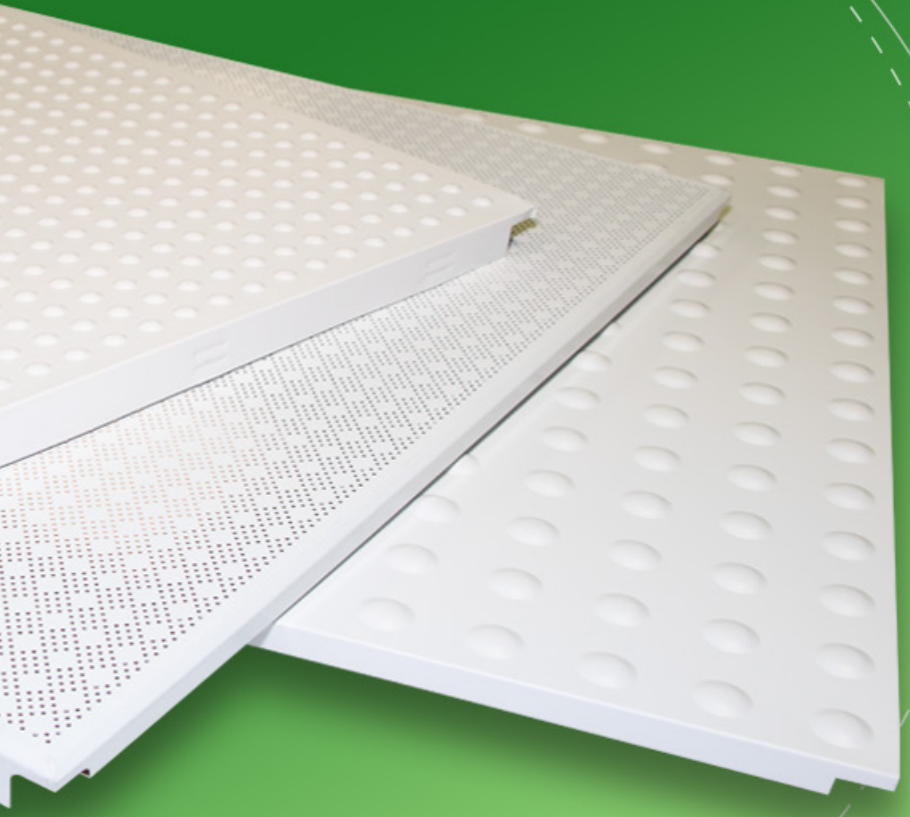

Next generation energy efficiency for today's telecom provider

ENRG Panel is a proven and cost-effective means to reduce telecom shelter energy consumption

ENRG Panel is the next generation in energy efficiency for today's telecom service providers, designed specifically with telecom shelters in mind.

The equipment housed in a telecom shelter generates substantial amounts of heat, usually requiring air conditioning units to maintain ambient temperatures that are optimal for equipment longevity, performance and efficiency.

ENRG Panel works together with traditional HVAC units in a telecom shelter, reducing HVAC power consumption up to 25-35%, run time up to 15-20% and cycling frequency up to 20-25% — all while maintaining a consistent and stabilized temperature in accordance with industry standards.

In most locales, savings from ENRG Panel will return its fully-installed cost in less than three years, and in many cases less than two. Additional savings are realized through peak load shifting in locales that charge demand fees, increased HVAC life-expectancy and reduced maintenance and repair costs.

ENRG Panel consumes no power and requires no maintenance to provide consistent power energy savings over its estimated useful life of more than 100 years.

Phase Change Energy Solutions

ENRG™ PANEL

powered by BioPCM®

UP TO 25-35% REDUCTION OF HVAC COSTS

UP TO 15-20% REDUCTION OF HVAC RUNTIME

UP TO 20-25% REDUCTION OF HVAC CYCLYING

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Phase Change Energy Solutions

ENRG™ PANEL

powered by BioPCM®

Energy efficiency has become a top priority for telecom service providers. The cost of electricity is near historical highs, and growing consumer demand for coverage and data-heavy services is only expected to increase power consumption. By increasing efficiency, telecom service providers can reduce operating expenses and free up resources to support growth while also addressing global and corporate concern about the impact of power consumption on CO_2 emissions, air pollution and climate change.

Features & Benefits

REDUCES HVAC POWER CONSUMPTION

ENRG Panel reduces shelter air conditioning power consumption up to 25-35%, run time up to 15-20% and cycling frequency up to 20-25%. Additional savings are realized in locales that charge fees for peak demand electricity usage.

ATTRACTIVE PAYBACK PERIOD

While the payback period for ENRG Panel is dependent on local electricity costs, weather and shelter operation specifics, in most locales power savings are sufficient to return the fully-installed cost of ENRG Panel in under three years, and in many cases under two years.

NO OPERATING COST, LONG LIFETIME

ENRG Panel operates passively, requiring no power and no maintenance to provide consistent savings over its useful life of more than 100 years.

EXTENDS HVAC EQUIPMENT LIFETIME

By reducing HVAC runtime and compressor cycling, ENRG Panel extends HVAC equipment lifetime and reduces repair and maintenance costs.

REDUCES CARBON FOOTPRINT

1,000 telecom shelters with ENRG Panel installed reduces annual power consumption by more than 10,000,000 kWh — a CO_2 emissions equivalent to 800,000 gallons of gasoline consumed or 7.5 million pounds of coal burned.

EASY AND QUICK INSTALLATION

ENRG Panel is delivered fully-assembled and requires less than an hour to install in a typical telecom shelter. If desired, Phase Change Energy Solutions offers full-service domestic installation services through its network of national, certified installers.

ENRG Panel's rail-mounted lock-in-place track system simplifies installation in tight spaces

SMALL FORM FACTOR

ENRG Panel is surface-mounted along walls and ceilings. At only one inch thick, ENRG Panel preserves valuable floor space for future installations of telecom equipment.

RESPONSIBLY MANUFACTURED

BioPCM is non-toxic and non-corrosive and is manufactured using sustainably grown, plant-based by-products.

MADE IN THE U.S.A.

BioPCM is manufactured and packaged in Asheboro, NC.

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ENRG™ PANEL

powered by BioPCM®

Performance in a typical shelter

ENRG Panel™ is a proven and cost-effective means for telecom providers to reduce energy consumption.

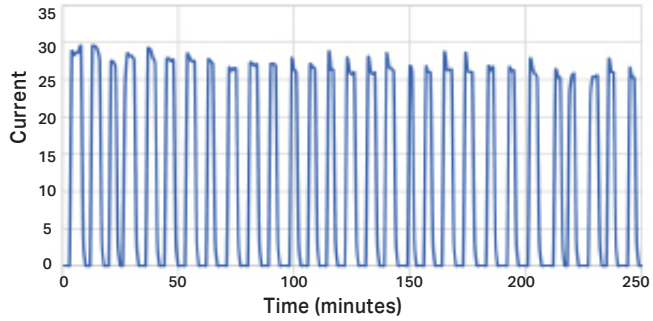
Since its release in November 2016, ENRG Panel has been installed and closely monitored in thousands of U.S. telecom shelters. The following tables illustrate typical and expected ENRG Panel performance results based on actual data.

Typical shelter

Structure	320 ft³ (20'x12'x8') one-story masonry structure
A/C units	Two 5-ton unitary packaged HVAC units
# ENRG Panels	35-60, depending on monthly energy use
Fully-installed cost of ENRG Panels	$2,000-$3,000

Before installation of ENRG Panel

Run time: 1.36 hours; 29 cycles



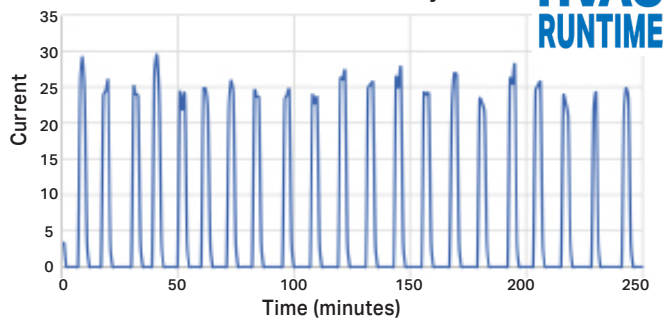
Performance

	Avg. daily power consumption	Avg. daily run time (hr/day)	Avg. daily # of compressor cycles
Before ENRG Panel	140	8.2	174
After ENRG Panel	112	6.8	126
Daily savings	**28 (20%)**	**1.4 (17%)**	**48 (27.5%)**

After installation of ENRG Panel

Run time: 1.13 hours; 21 cycles

REDUCTION OF HVAC RUNTIME

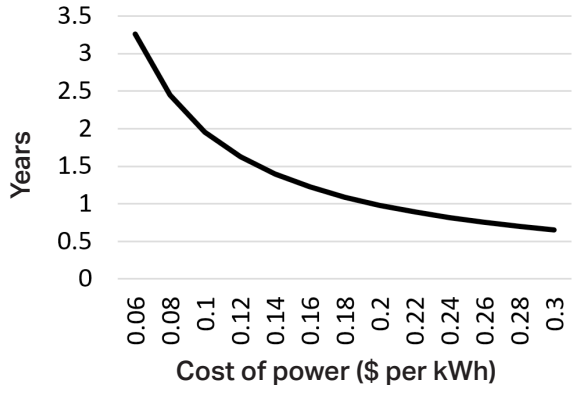


Savings and payback

Annual energy consumption savings (kWh)	10,220 kWh
Annual energy cost savings* (at $0.12/kWh)	$1,226
Total annual operating cost savings	$1,258
Simple pay-back period (at $0.12/kWh)	1.5 - 3 years
30-year approximate savings from ENRG Panel installation	$30,000 - $40,000

*Does not include additional savings realized through peak load shifting reduction in demand charges.

Payback estimate on average installation



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ENRG Panel is powered by BioPCM®, a proprietary phase change material developed and manufactured by Phase Change Energy Solutions

Phase Change Energy Solutions
ENRG™ PANEL
powered by BioPCM®

Phase change materials (PCM) are substances that absorb thermal energy when freezing. During a phase change (melting or freezing), molecules rearrange themselves and cause an entropy change that results in the absorption of "latent heat", meaning the temperature of the material itself remains constant and does not affect the temperature of the system.

When heat is applied to a block of ice, the ice and resulting melted water remain at 32°F until the phase change is complete, (there is no more ice). The heat is absorbed as latent heat until the ice completely changes phase into water.

Ice is a phase change material

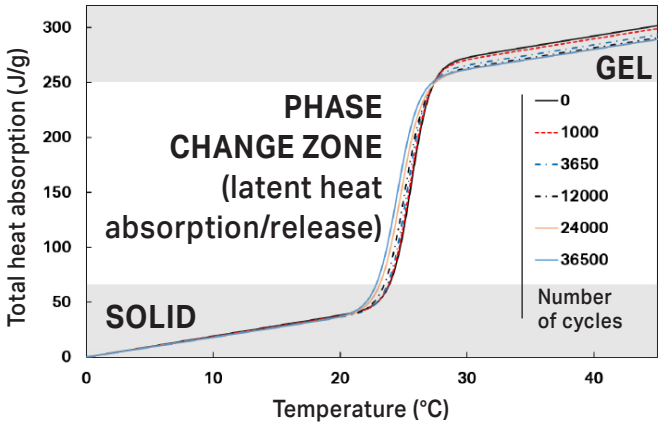
Conversely, when heat is removed from a pool of water, the temperature of the water and resulting ice will not fall below 32°F until the water completely changes phase into ice.

UP TO 25-35% REDUCTION OF HVAC COSTS

UP TO 15-20% REDUCTION OF HVAC RUNTIME

UP TO 20-25% REDUCTION OF HVAC CYCLYING

Phase Change Energy Solutions designed BioPCM to absorb and release enormous amount of heat during phase changes. At its target temperature, the BioPCM within a one-inch thick ENRG Panel will store as much heat as a 24 inch thick block of concrete of equal footprint. BioPCM is manufactured using sustainably-grown, plant-based by-products, is non-toxic, non-corrosive and has a demonstrated useful life of over 100 years.



Enthalpy curves of BioPCM® (Q25) demonstrate excellent energy storage performance through thousands of phase change cycles.

When ENRG Panel is installed in a telecom shelter, the BioPCM inside absorbs heat, (melts), when ambient temperature exceeds target room temperature, and releases heat, (freezes), when ambient temperature falls below target room temperature.

Through this recurring process, ambient temperature within the telecom shelter is stabilized around the target room temperature. As a result, less mechanical, (HVAC), cooling is required, and HVAC power consumption is greatly reduced.

Microscopic image of BioPCM during a phase change transition

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ENRG Panel™ 5-year comprehensive warranty

Phase Change Energy Solutions warrants its ENRG Panel products, (including BioPCM®), to be free from manufacturing defects and defects in workmanship for a period of 5 years from date of sale. Additional terms and conditions apply. Please refer to complete warranty terms.

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Install today. Save tomorrow.

To learn more about Phase Change Energy Solutions and our efficiency solutions

visit www.phasechange.com
email info@phasechange.com
or call 800-283-2887 (U.S.)
336-629-3000 (international)

Phase Change Energy Solutions is a global leader in the development and deployment of next generation energy efficiency and thermal storage solutions that harness the power of BioPCM, the company's proprietary phase change material. BioPCM products are used to improve whole-building energy efficiency in retail, commercial, hospitality and industrial applications; enable safe transport of sensitive food and pharmaceutical products; and provide enhanced thermal storage capabilities for industrial processes.

Fortune 100 banking, telecom, hospitality and technology companies, as well as the U.S. government, have installed millions of square feet of BioPCM products to reduce operating expenses and environmental impact.

ENRG Panel technical specifications

ENRG Panel Size	24 in x 24 in x 1 in
Assembly	22 gauge coated aluminum panel with steel mounting components
Phase Change Material	BioPCM® 2.04 lbs (0.92 kg) per ENRG Panel
Target Temp	73°, ENRG Panel Q23 77°, ENRG Panel Q25 80°, ENRG Panel Q27 84°, ENRG Panel Q29
Specific Heat	0.9 BTU/lb (2.1 J/g)
Latent Heat	89 BTU/lb (207 J/g)
Thermal Conductivity	0.06 W/ft-K (0.2 W/m-K)
Fire Rating	Meets or exceeds ASTM E84, UL 723 and ASTM E800-0 99 standards

Recommended # of ENRG Panels:

30-60, depending on monthly energy usage