

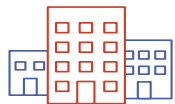


COMPANY OVERVIEW

&

CASE STUDIES

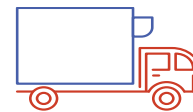
- Phase Change Solutions (“PCS”) is a global leader in the development of temperature control and energy-efficiency solutions utilizing phase change materials (“PCMs”)
- PCS has developed a patented, plant-based, non-toxic and non-corrosive PCM that can transition from solid-to-gel or solid-to-solid and can store large amounts of latent heat at targeted temperatures
- The Company’s proprietary PCMs, collectively referred to as BioPCM®, are used by Fortune 100 companies to reduce HVAC power consumption in the built environment and to control temperature during transportation of pharmaceuticals, food, and other high-value goods
- Current manufacturing, warehouse and innovation facilities will support substantial growth with minimal additional Capital Expenditures
- A World Class Leadership Team focused on scaling the company through and beyond Covid-19



More than 15 million square feet of BioPCM products have been installed



BioPCM products installed at more than 7000 telecom sites and data centers across the USA



Several million cold chain packages have been shipped in 2019 using BioPCM products



Over \$2.5 billion worth of food has been transported and delivered using PCS Solutions



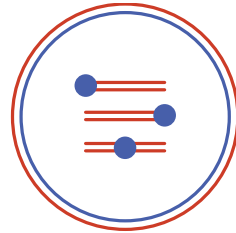
PCS has developed a family of proprietary, patent-protected PCMs referred to as BioPCM®

BioPCM has tunable physical properties, such as target temperature, density, viscosity, thermal conductivity, thermal diffusivity, specific heat, and latent heat

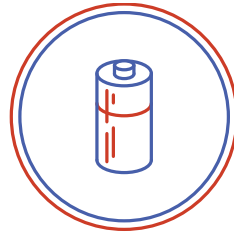
BioPCM can also exhibit a **solid-to-solid** or **solid-to-gel** phase transition, instead of a *solid-to-liquid* phase transition—these BioPCM products **do not “melt”** in the traditional sense!



- Plant-based
- Sustainably sourced
- Biodegradable
- Non-toxic
- Non-corrosive
- Non-flammable



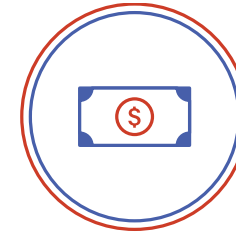
- Highly tunable set points
- -50°C to 175°C



- High thermal storage to weight ratio



- Useful life in excess of 100 years



- Attractive payback periods



- Reduced carbon footprint



Sustainability



Safety



Responsibility



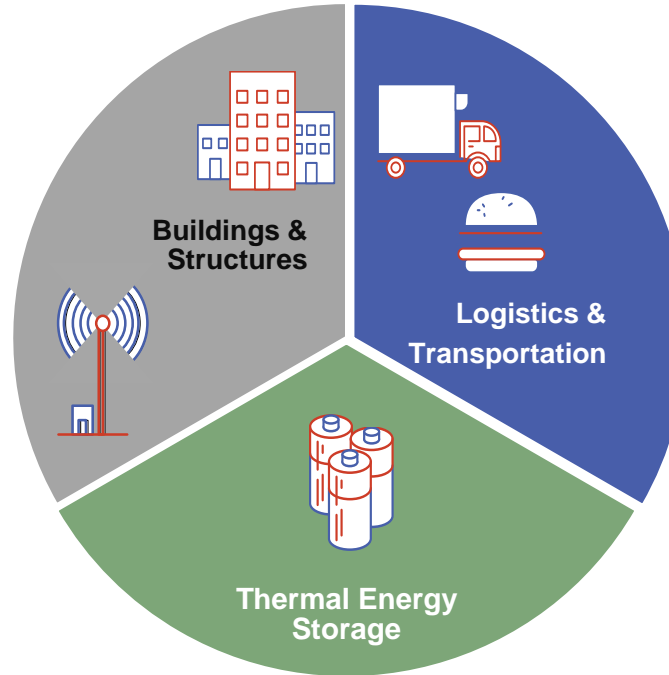
Longevity

BioPCM based solutions are used in a broad range of applications driven by specific temperature control needs. Our Go-To-Market strategy is organized in three business units

BUILDINGS & STRUCTURES

Engineered to improve comfort, reduce HVAC consumption, run-time and cycling in buildings and IT facilities

- Retail
- Commercial
- Hospitality
- Retrofitting
- Roofing
- New Construction
- Cell tower shelters
- Data rooms



LOGISTICS & TRANSPORTATION

Precise temperature control for transport of biologics, pharmaceuticals, produce, and prepared food

- Pharma logistics
- Bulk PCM
- Trucking & freight
- Coolers
- Catering
- Last mile delivery
- Storage & handling

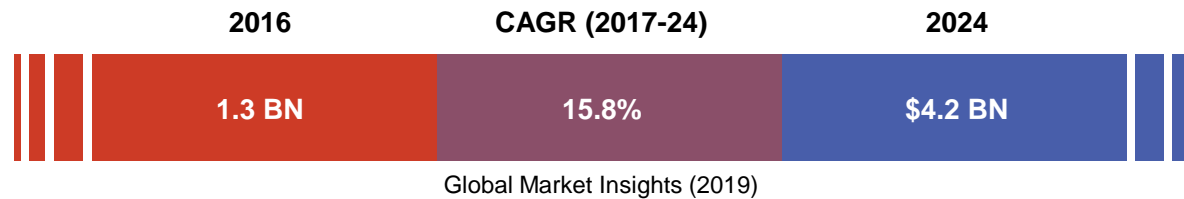
THERMAL ENERGY STORAGE

Bulk thermal storage for commercial and industrial applications

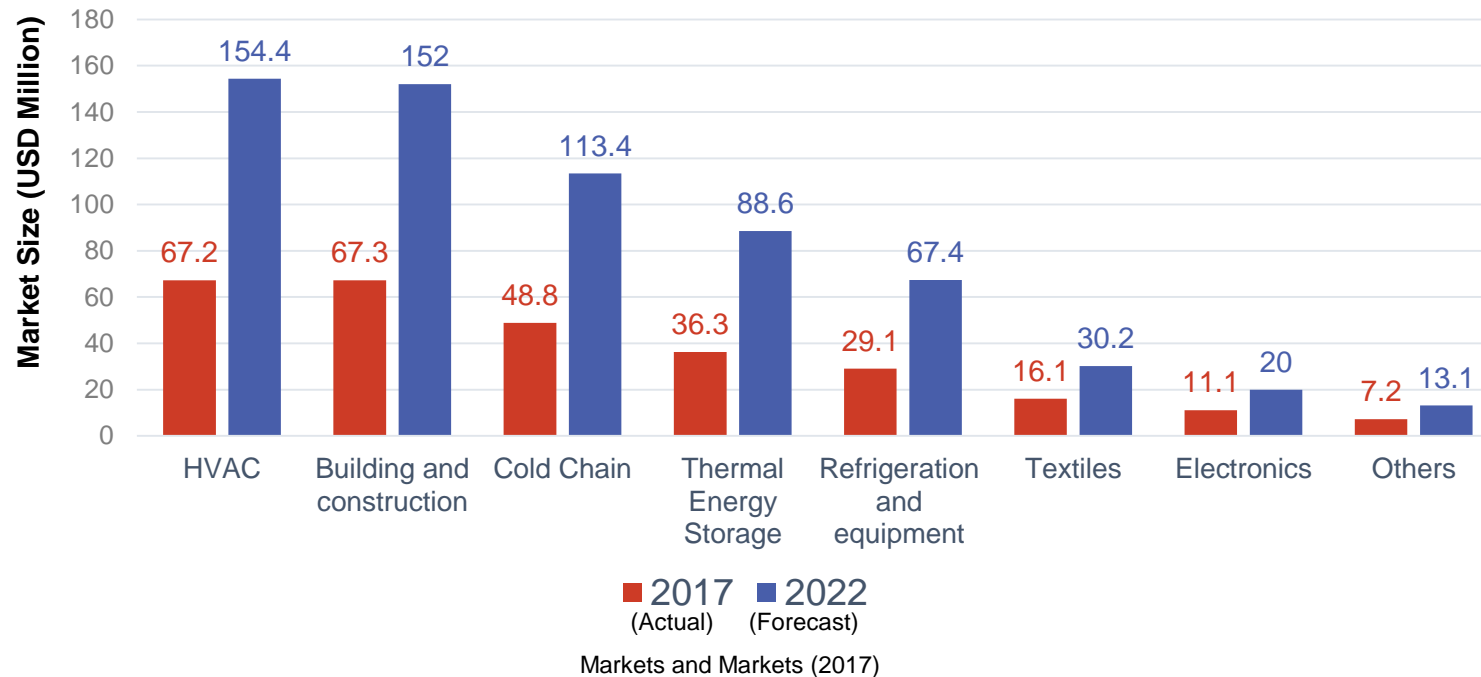
- HVAC load shifting
- Industrial heat recovery
- Thermal battery
- Domestic hot water

	Solid-to-gel & solid-to-solid	Tunable transition temps	High energy density	Long lifetime	Low cost of production	No super cooling	Low environmental impact	Non-toxic	Non-corrosive	Non-flammable
BioPCM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paraffin PCMs	✗	✗	✓	✗	✗	✓	✗	✗	✓	✗
Salt hydrate PCMs	✗	✗	✗	✗	✓	✗	✓	✗	✗	✓

Overall Global PCM Market growth



PCM Market Growth by Application



Global PCM market is segmented by PCM type, application, and geography.¹⁻⁶

- Type: organic (e.g., petroleum-based paraffins), inorganic (e.g., salt hydrates), and bio-based (e.g., fatty acids derived from non-food plants)^{2,3,6}
- Application: built environment, telecommunications, cold chain, food delivery, other shipping, refrigeration, consumer products, etc. ^{1-4,6}
- Geography: North America and Europe are currently the world's largest PCM markets.^{2,4}
- Continued growth is expected in North America, Europe, and Asia ^{2,3,4} across all PCM types (bio-based, organic, inorganic).^{1,4}
- Highest growth is expected in the built environment through the mid-2020s, with significant growth also projected for cold chain/shipping, refrigeration, and thermal energy storage.^{1,3}
- CAGR for the global PCM market is expected to exceed 15% from 2017 to 2024, with a global market size of \$1.3B in 2016 growing to \$4.2B by 2024.⁷

¹"Global Advanced Phase Change Materials Market: Market Estimation, Dynamics, Regional Share, Trends, Competitor Analysis 2014-2018 and Forecast 2019-2025," Precision Business Insights (2018).

²"Advanced PCM Market– Global Forecast to 2022," Markets and Markets (2017).

³"Phase Change Materials: Technologies and Global Markets," BCC Research (2017).

⁴"Advanced Phase Change Materials Market," Grand View Research (2017).

⁵"Phase Change Materials Market Report 2019-2029," Vision Gain (2019).

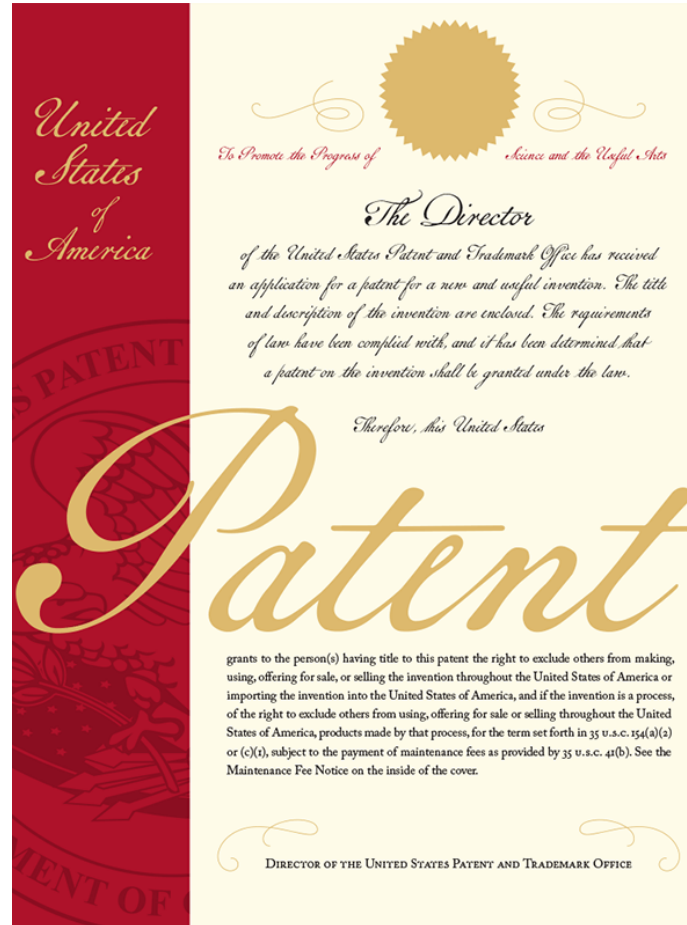
⁶"Advanced PCM (Phase Change Materials) Market: Global Industry Analysis 2014-2018 and Forecast 2019-2029," Persistence Market Research (2018).

⁷"Phase Change Materials Market," Global Market Insights (2019).

We have central technology patents with broad scope to protect our competitive advantage.

Our IP portfolio includes patents, trademarks, and trade secrets covering:

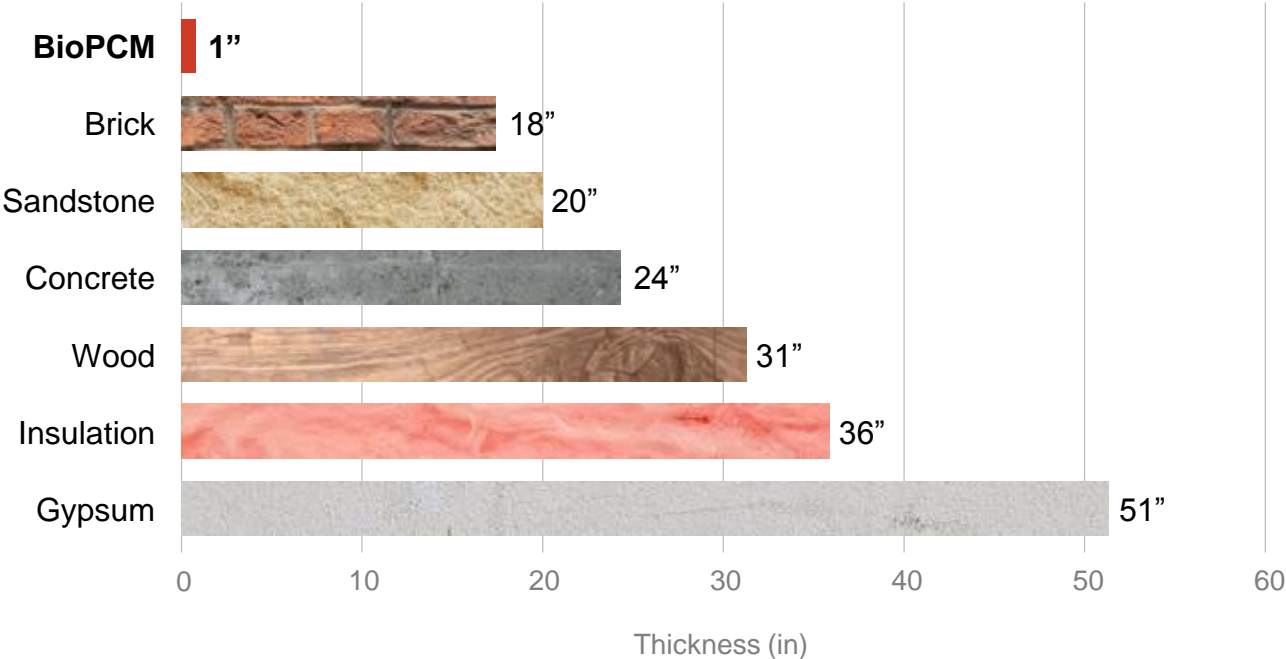
- ✓ Solid-to-solid BioPCMs
- ✓ Solid-to-gel BioPCMs
- ✓ Thermal energy storage
- ✓ Food delivery
- ✓ Pharma delivery
- ✓ Roofing and interior PCM products
- ✓ Other application-specific products and methods



- PCS IP portfolio includes:
 - Patents/patent applications
 - Trademarks
 - Trade secrets/“know how”
- Patents - Covering food services, pharma, thermal energy storage, and built environment:
 - 85 total filings
 - 29 issued and non-expired patents
 - 21 pending applications
 - 15 new filings in the past 12 months

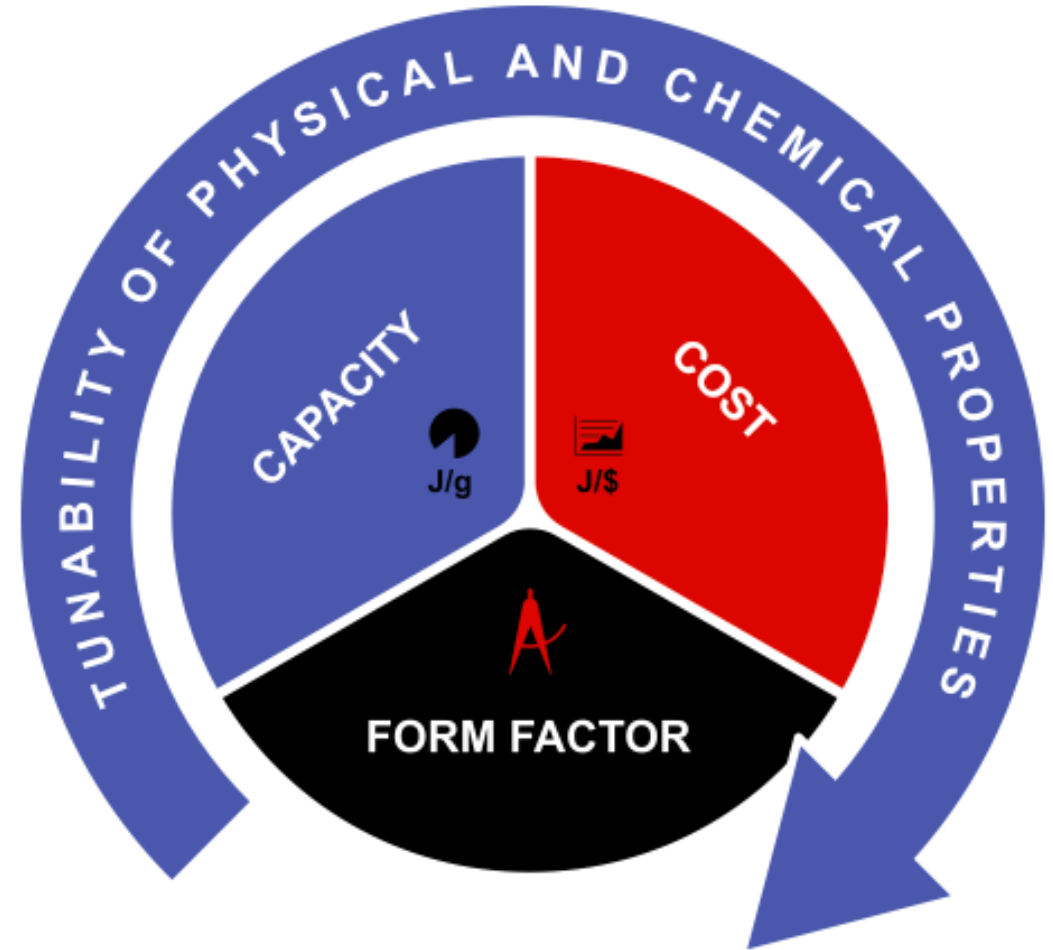
At its specified transition temperature, a 1-inch thick layer of BioPCM will store as much heat as a 24-inch thick block of concrete of equal footprint.

Equivalent thickness of conventional materials to match 1-inch thick layer of BioPCM



Our R&D efforts are guided by four core objectives:

1. Increase thermal storage capacity to enable development of solutions where weight is a concern
2. Improve efficacy of our solutions to offer better ROI to our customers
3. Develop and refine form factors, including moldable solid shape and foam, etc. to improve ease of installation
4. Introduce sustainable materials, products and applications to build the circular economy



 **Sustainability**

 **Safety**

 **Responsibility**

 **Longevity**

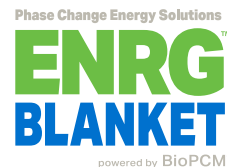


PRODUCTS & APPLICATIONS



Product Overview

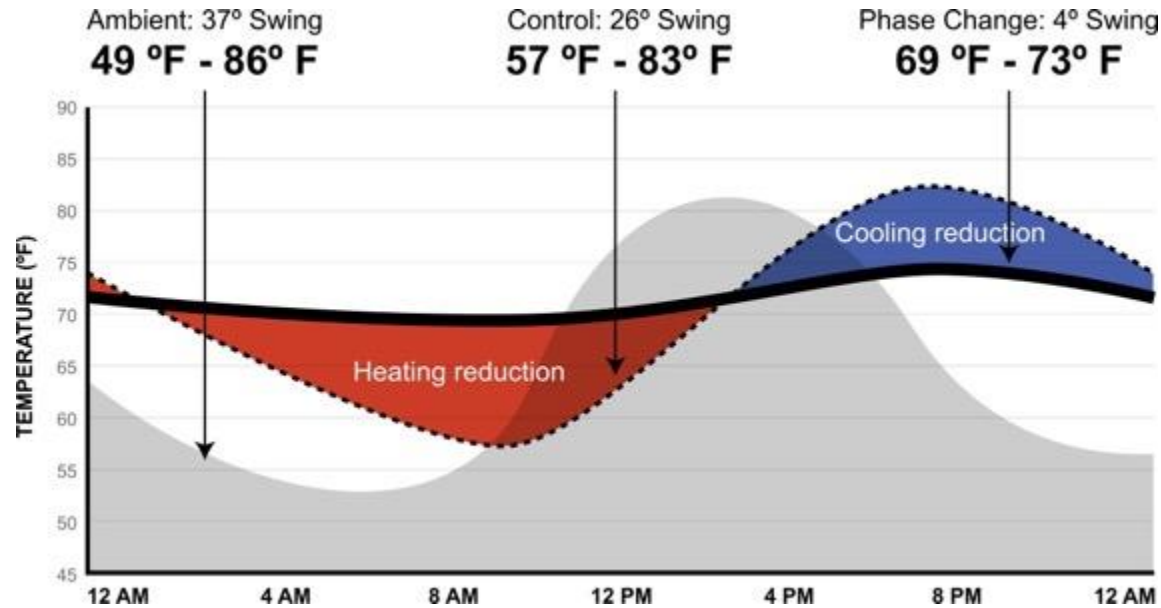
- ENRG Blanket® encloses BioPCM between two durable, multi-layer films, creating a tear-resistant, long-lasting energy-management and temperature-control product that can maintain its thermal performance for over 100 years
- PCS can engineer solutions for virtually any building type, including low-rise commercial, multi-story offices, schools, and warehouses
- \$16.5B U.S. TAM: 10B ft² of retail buildings in U.S., 55% having dropped ceilings
- Additional \$1.3B U.S. TAM from 85,000 bank branches and 37,000 hotels



Key Features & Benefits

- Reduces HVAC Power Consumption – Reduces total HVAC run time by up to 20% and total HVAC power consumption by up to 35%
- Attractive Payback Period – In most locations, savings from ENRG Blanket will return fully-installed cost in under 4 years
- No Operating Cost / Long Lifetime – Requires no power and no maintenance to provide consistent savings over its 100+ year useful life
- Improves Building Comfort for Occupants
- Extends Useful Life of HVAC Equipment
- Reduces Carbon Footprint
- Easy and Quick Installation – ENRG Blanket delivered in 2'x4' sheets that are easy to handle and install
- Responsibly Manufactured in the USA – Non-toxic and non-corrosive, and manufactured using renewable plant by-products

Field Proven - Almost 10 million square feet installed, including at 1200 branches of a Tier I bank



Operation

BioPCM absorbs heat without changing temperature (latent storage)

- Control (dashed line) reflects the performance of typical insulation
- Phase Change (solid line) shows the thermal buffer that BioPCM provides in addition to insulation in **regulating temperatures** within the structure **which improves HVAC energy savings**

Macro Cycle (Full Transition)

- Absorption of heat during day (temperature > BioPCM transition temp.)
- Release of heat during night (temperature < BioPCM transition temp.)

Micro Cycles (Partial Transitions)

- BioPCM partially recharges with each HVAC cycle
- Reduced on/off cycling, and HVAC runs slightly longer when on
- Longer run pulls more latent load and recharges PCM



Easily installs above drop ceilings

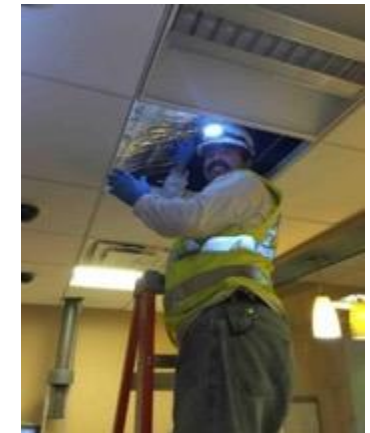
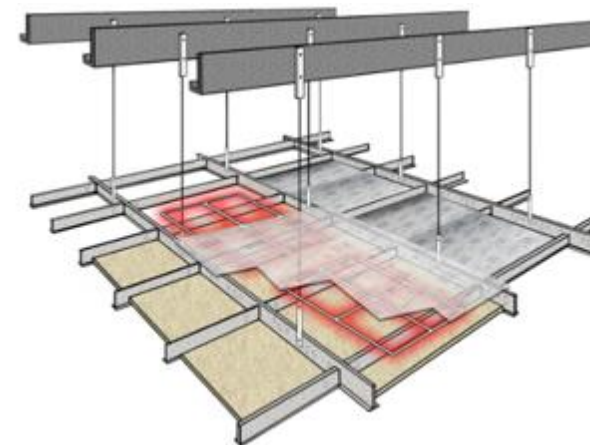
BioPCM absorbs heat without changing temperature (latent storage)

ENRG Blanket™ can be installed in multiple locations throughout the building envelope, including the roof.

ENRG Blanket encloses BioPCM® between two rugged, multi-layer films (polymer and/or aluminum).

Tear-resistant, long lasting, ENRG Blanket will maintain its thermal performance for over 100 years.

Installation does not require a power shutdown



Product Overview

- BioPCM enclosed in a durable polymeric panel for telecom sites and data centers
- Over \$270M U.S. TAM: 300,000 telecom shelters in the U.S. (> 1M worldwide), with approx. 60% viable for ENRG Panel

Proven Results & Versatile Design

- **More than \$6M saved so far**
- **8% average utility savings**
- **3-10% reduction in peak demand (kW)**
- **20% average reduction in HVAC consumption**
- **16% average reduction in run-time**
- **12% average reduction in cycling**
- **Payback period of less than 2 years**
- **Consumption reduced by more than 30,000,000 kWh, equating to more than 2,500,000 gallons of gasoline burned**

**Installed Portfolio with a Tier 1 Telecom Company
~7000 Sites Across the USA
Almost 300,000 ENRG Panels Installed**



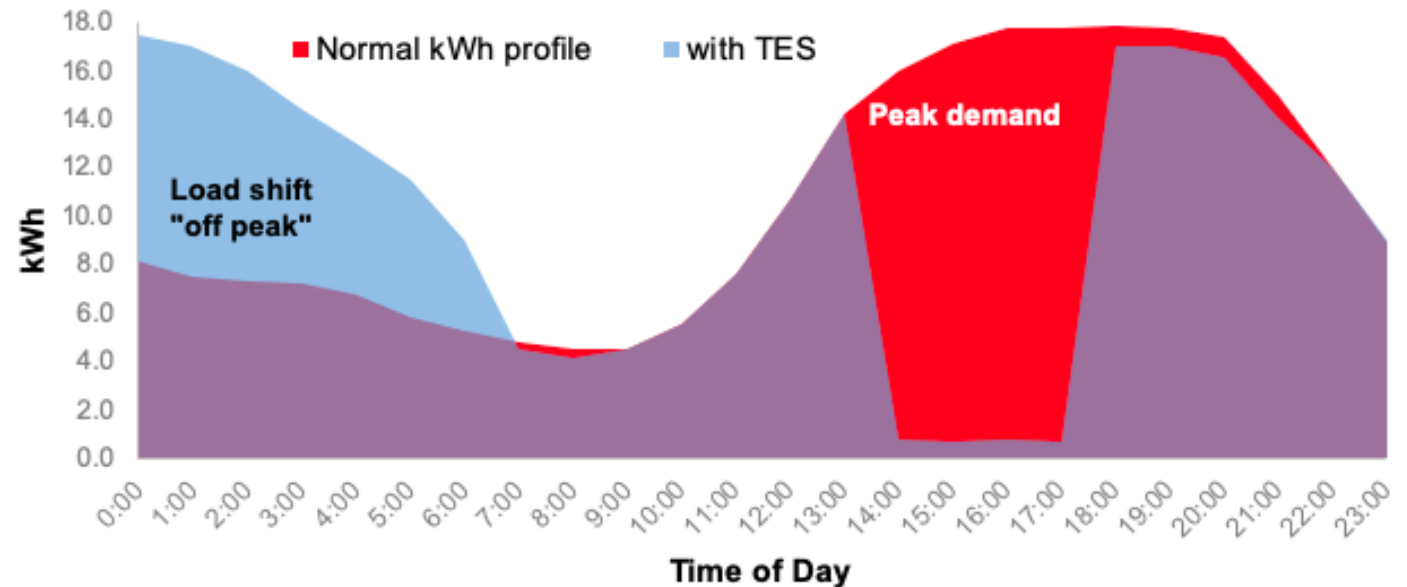
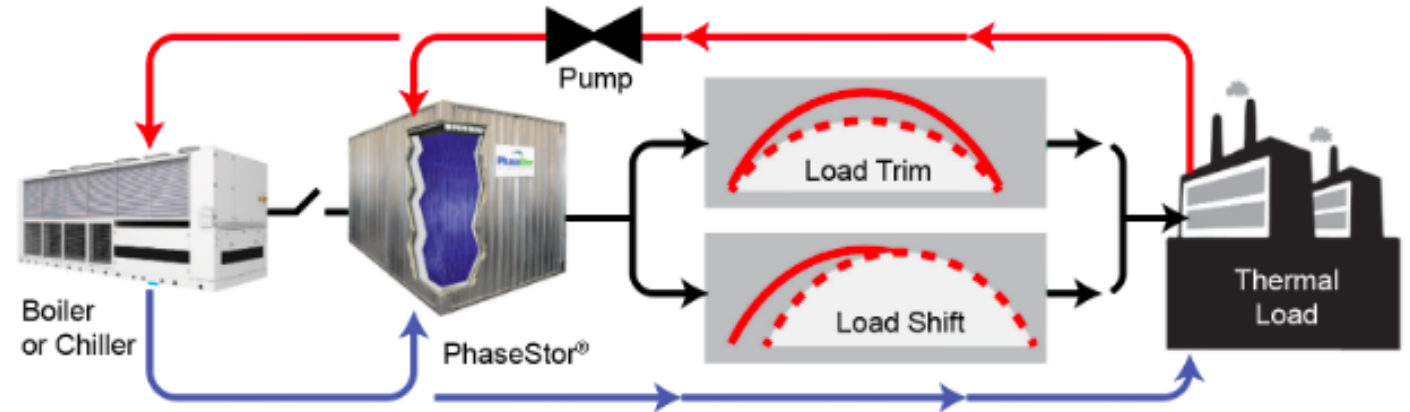
Product Overview

- Bulk thermal storage for commercial and industrial applications
- \$18B U.S. TAM: 17B ft² of U.S. commercial space relies on central chillers for cooling; 398M ton-hours of unpowered cooling needed to effectively peak shift

Key Features & Benefits

- Adds thermal storage to new or existing systems with easy installation
- Reduces HVAC operational and capital costs by off-peak charging and downsizing the chiller
- Provides redundancy and resilience
- Modular systems can be used for both heating and cooling
- Industrial waste heat can be captured and reused
- BioPCM does not change volume significantly during phase changes, such that PhaseStor avoids tank ruptures common to water/ice based systems

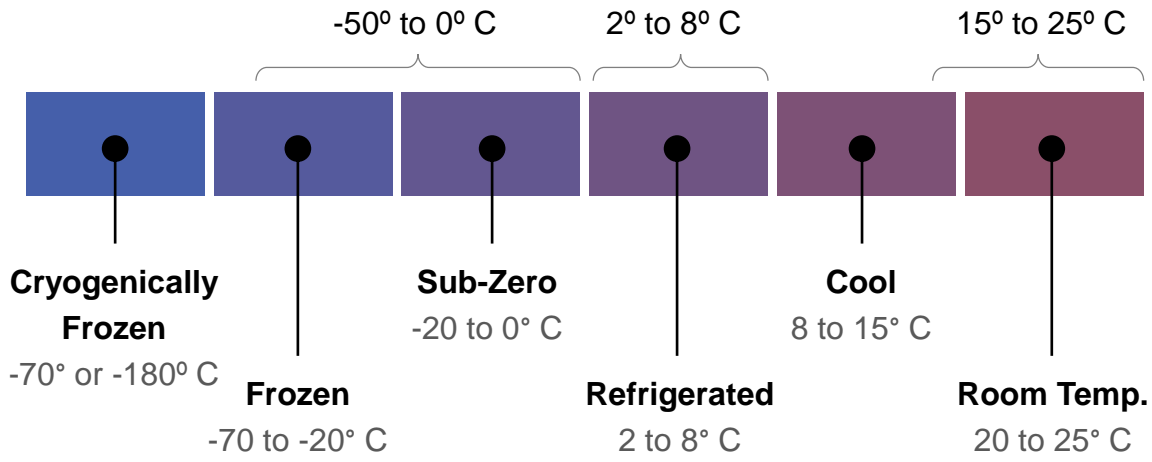
PCS's thermal energy storage systems are providing 100's of millions of BTUs daily for our customers



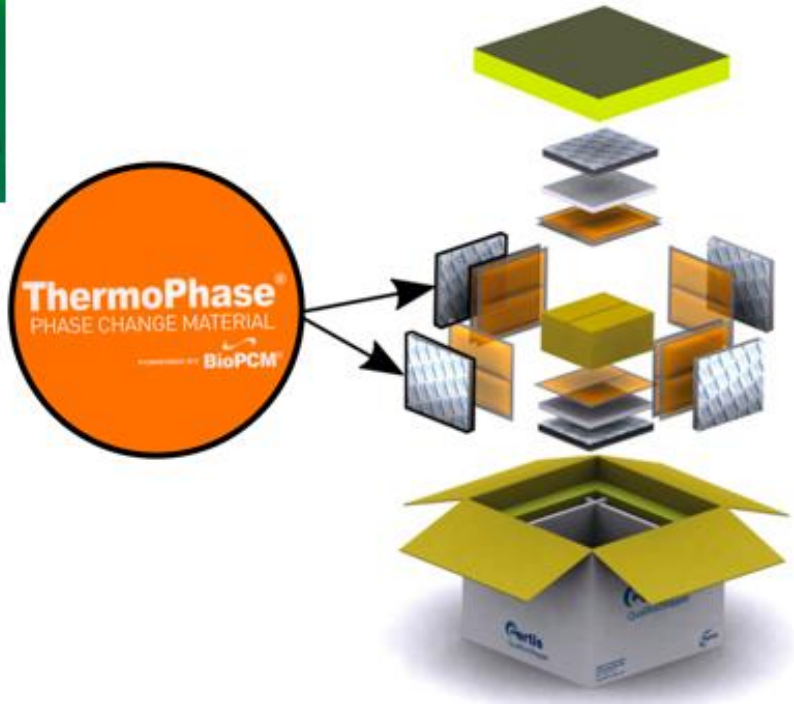
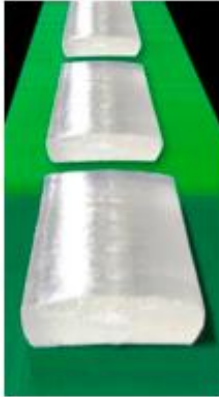
Product Solutions

- Various solid-to-solid, solid-to-gel, shape-stable, other BioPCM products
 - Single-use and reusable “bricks”
 - Single-use “pillows” and “mats”
 - Reusable “bottles”
- BioPCM products generally form part of a total package or shipper
- Load temperatures maintained for 24-120 hours
- Used by major wholesalers, producers, and distributors
- \$1B annual U.S. TAM; \$3-5B annual global TAM

3 Notable Temp. Ranges



Several million cold chain packages have been shipped in 2019 using BioPCM products



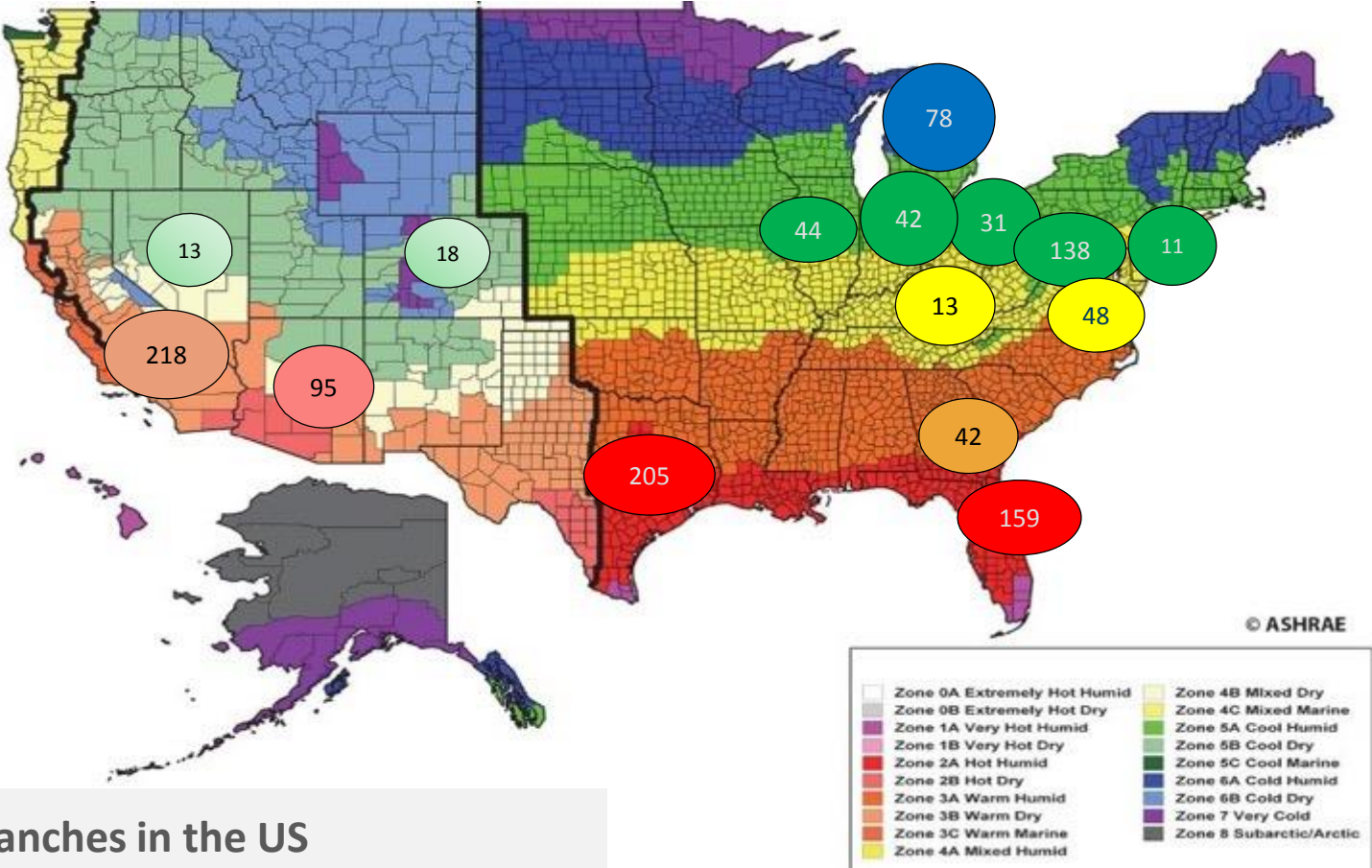
Over \$2.5 billion worth of food has been transported and delivered

Long Track Record of Success

- PCS has supplied Chick-fil-A for over 20 years
- PCS is currently rolling out new catering and last-mile delivery bags for Chick-fil-A, with other products in development
- The Company designed a system that successfully delivered a steaming hot Pizza Hut pizza to the summit of Mt. Kilimanjaro— a 12-hour delivery time



Installed Portfolio (Retail Banks)



>100,000 bank branches in the US

>1500 bank branches installed

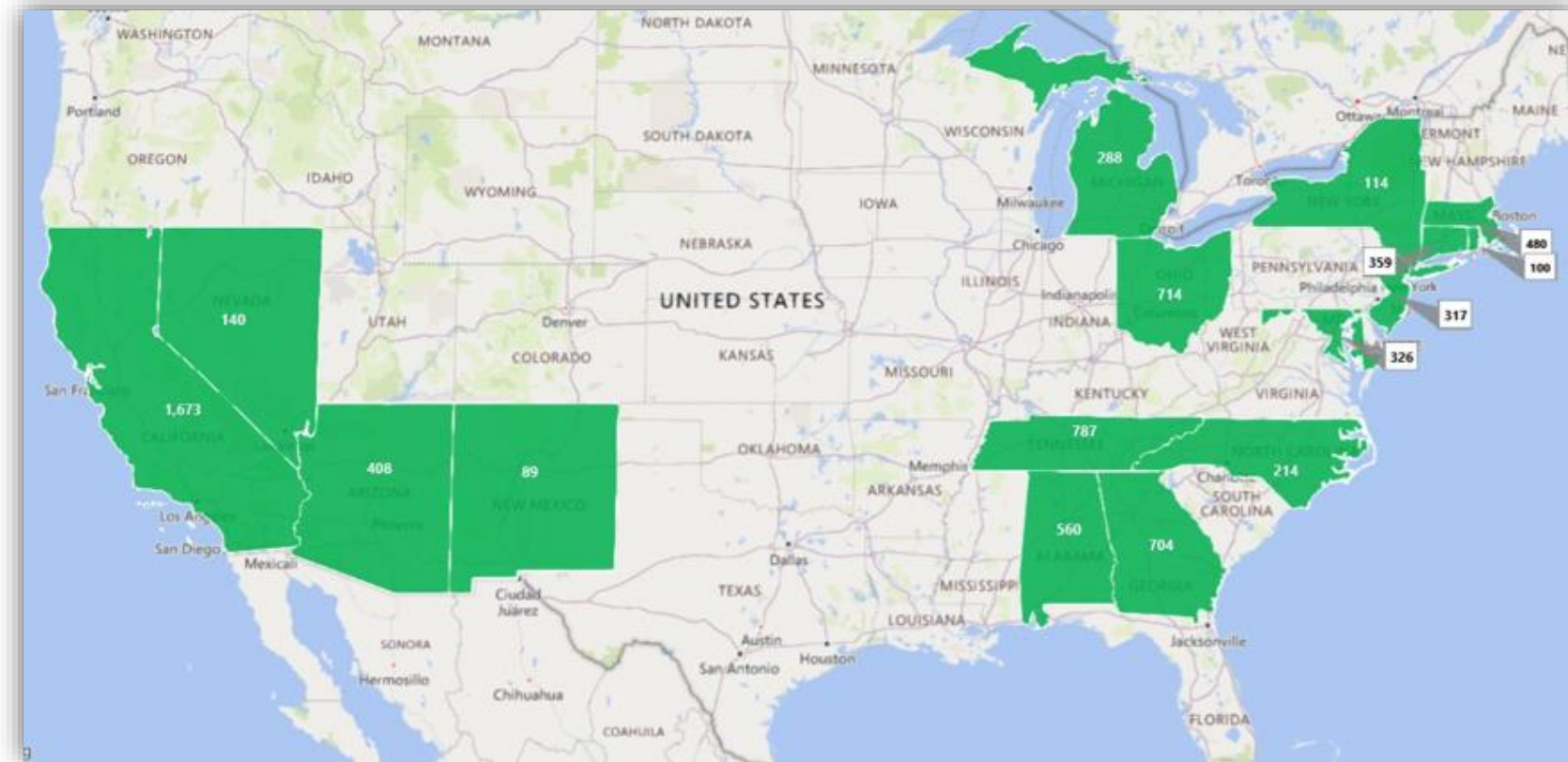
2-5 years ROI of installed cost of ENRG Blanket

State	Installed Site Count
AZ	95
CA	218
CO	18
CT	11
FL	159
GA	42
IL	44
IN	42
KY	13
MI	78
NJ	48
NY	138
NV	13
OH	31
TX	205
Other	46

Proven Results: Case Study – Global Telecom Company

- Tier I global telecom leader
- More than 7K cell sites installed across the U.S
- \$5.2 MM in energy savings
- 2-year ROI

- Reduces carbon footprint
- Reduces runtime by up to 16%
- Reduces cycles by up to 12%
- Reduces peak demand by up to 10%
- **Delivers up to 12% whole building savings and 34% HVAC savings**





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