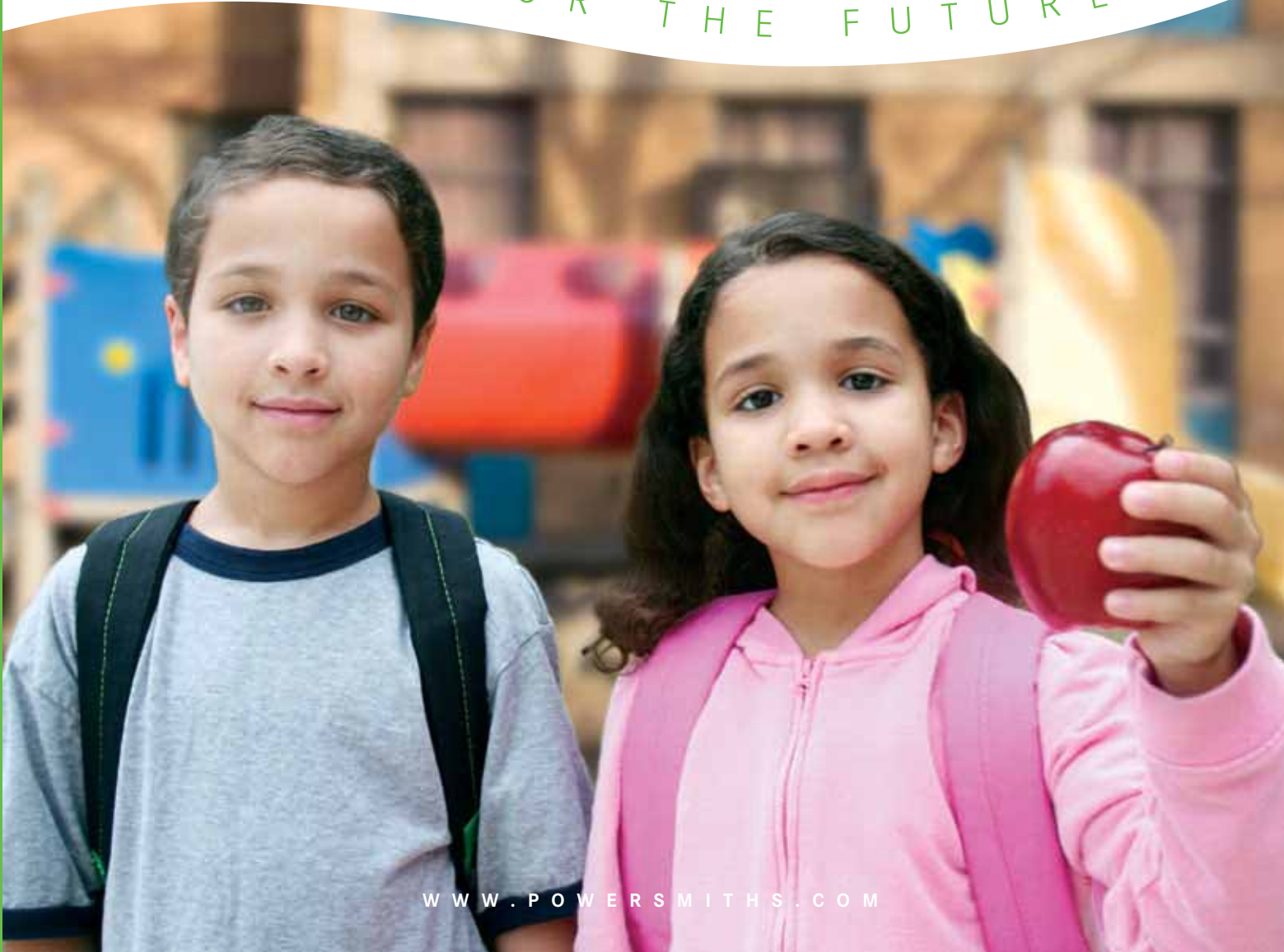


Powersmiths Contributions Towards
CHPS Criteria

P O W E R F O R T H E F U T U R E



CHPS Overview



Sustainable Sites



Water Efficiency



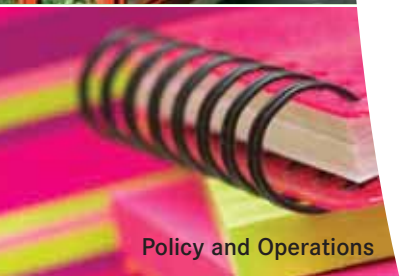
Energy Efficiency



Materials



Indoor Environmental Quality



Policy and Operations

The Collaborative for High Performance Schools (CHPS) promotes the design, construction and operation of schools that are energy and resource efficient, healthy, comfortable, well lit and contain the amenities for a quality education.

To assist school boards to plan and build schools that reduce environmental impacts and maximize student performance, CHPS has defined a framework and guidance to help school boards plan and build better schools.

Powersmiths and CHPS

Powersmiths helps your school board meet its high performance goals by supplying products and services that:

- Reduce electricity waste
- Support commissioning, verification and on-going energy management programs
- Help teach sustainability principles and build environmental awareness

Installing and implementing Powersmiths solutions in your school can help you earn CHPS points for energy efficiency, effective metering and sub-metering, energy management and the use of the school as a teaching tool for sustainability.

CHPS Schools Outperform

Schools built in conformance with CHPS guidelines have been shown to:

- Heighten student performance
- Reduce operating costs
- Better student and teacher health
- Increase average daily attendance
- Improve teacher satisfaction and retention
- Reduce liability exposure
- Reduce indoor and outdoor environmental impact
- Expand a school's eligibility for financial incentives

These outcomes are a win/win for students, the community and the nation.

Powersmiths welcomes the opportunity to work with your board as you plan and build CHPS schools that demonstrate leadership, enhance student performance, conserve resources and reduce greenhouse gas emissions.

Powersmiths is a member of the following organizations:

- USGBC (US Green Building Council)
- CaGBC (Canada Green Building Council)
- Energy Smart Schools
- EnergyStar®
- AASHE (Association for the Advancement of Sustainability in Higher Education)
- NJHEPS (New Jersey Higher Education Partnership for Sustainability)
- Green Schools Alliance

Product Certifications include:

- ISO 14001 (Environmental Management)
- ISO 9001 (Quality Management)
- EnergyStar Partner
- Ecologo





Transformers as a Source of Energy Savings

E-Saver-C3™ and T1000-C3™



There are many steps that schools can take to increase energy efficiency, but few if any are as easy to implement and have as short a payback as increasing transformer efficiency. Once installed, your school's transformers will stay in operation for decades, often as long as the school itself. Getting your decision right can save your school millions of kWhs and hundreds of thousands of dollars over the life of school building.

Legislated efficiency standards for transformers like NEMA TP1, EPACT 2005 and C802.2 represent the least efficient performing transformers that can be legally installed.

Powersmiths E-Saver-C3™ and T1000-C3™ transformers exceed these standards to reduce transformer electricity waste by 60% or more. Installing Powersmiths C3 transformers can cut your schools electricity consumption by one and a half to two percent. And for schools, a one and a half to two percent reduction in electricity consumption means thousands of dollars annually and substantial reductions in polluting emissions from the local utility.

CHPS Category: Energy Efficiency
Goal – Superior Energy Performance

- Exceeds mandated efficiency standards to reduce electricity waste by 30% or more
- Calculating savings is made easy with the use of Powersmiths free Energy Saving and Payback Calculator

Easy Skid™



Powersmiths designed Easy Skid™ to conserve wood, facilitate shipping and simplify the installation of electrical transformers. Manufactured with FSC wood to conserve forests.

CHPS Category: Materials
Goal – Divert Waste from Landfill Sites

- Supports waste reduction – Packaging uses 70% less wood and biodegradable shrink wrap

SMART™ Integrated Meter Option



Fundamental building commissioning and on-going efficiency verification is recognized in CHPS as a means to achieve energy efficiency. But accessing consumption and efficiency data from transformer can be difficult, risky and time consuming. Powersmiths has solved the safety and accuracy problems associated with acquiring energy measurements, by integrating SMART meters into Powersmiths transformers. SMART provides effective sub-metering of your transformers, while eliminating the safety and disruption risks inherent in opening transformer enclosures.

CHPS Category: Energy Efficiency
Goal – Fundamental Building Commissioning

- Validates transformer performance to ensure it meets specifications

CHPS Category: Energy Efficiency
Goal – Enhanced Commissioning and Sub-metering

Measurement and Validation

- Tracks process load and plug load vs. benchmark model
- Provides accountability of on-going energy consumption over time, tracking actual usage vs. benchmark model



Metering & Sub-Metering for Energy Management

Cyberhawk™ Metering Family



Cyberhawk energy meters monitor and record electricity consumption and power quality, in addition to measuring and recording data from pulse measured systems such as gas and water meters.

The Cyberhawk family comprises meters for the building entrance that not only measure total power input and quality but

protect the building from power quality events including severe lightning strikes. Additional Cyberhawk meters supply the sub-metering recommended in CHPS as a means of tracking and comparing consumption and identifying problems and opportunities to conserve. Cyberhawk meters provide a comprehensive data set for the school's environmental

curriculum and Energy Management System (EMS). All metered data is Web accessible for anytime anywhere energy management.

CHPS Category: Energy Efficiency Goal – Fundamental Building Commissioning

- Validates energy system operation
- Measures performance to ensure specifications are met

CHPS Category: Energy Efficiency Goal – Enhanced Commissioning and Sub-metering

- Can sub-meter all energy consuming systems in support of effective energy management
- Records temperature sensors and pulse inputs from water and gas meters
- Provides accountability of on-going energy consumption over time, tracking actual usage vs. benchmark model

The School as a Learning Tool

Windows on the World™ (WOW) Energy Management and Sustainability Education System



WOW accesses resource consumption-data from the school's metered systems and consolidates it onto one platform, for use in energy

management and sustainability education programs.

Decision support tools in WOW facilitate on-going accountability of installed systems, by enabling users

to track the performance of multiple building systems against user defined benchmarks, all from one convenient platform.

WOW supports your efforts to use your school facility as a learning laboratory through colourful intuitive Web pages that can be customized to showcase and explain your school's high performance features. Displayed on touch screen displays and over the Web, WOW invites students, teachers and visitors to learn how the school conserves resources, preserves natural environments and captures renewable energy. Interactive features and colourful graphs and gauges

allow users to identify daily weekly and monthly resource consumption data and compare and translate energy savings into tangible environmental benefits.

The School as a Learning Tool Goal – Build Environmental Awareness

- Provides a permanent educational display
- Explains how the school's environmental features work
- Incorporates live data to describe and demonstrate high performance features
- Shows real-time and historical resource use
- Translates energy savings into tangible environmental benefits

CHPS Category: Energy Efficiency Goal – Implement an Energy Management System

- Consolidates data to support validation of all energy systems
- Provides oversight of energy, water and other resource consumption on an on-going basis helping to ensure that systems continue to function as intended
- Compares actual performance against benchmarks
- Provides one convenient portal for insight and management



CONTRIBUTIONS BY CHPS CREDIT/PREREQUISITE

Fundamental Building Commissioning

SMART Integrated Meter

- Provides a continuous log of transformer's load profile
- Available with quick connects to Cyberhawk Portable Meter to measure power and efficiency

Cyberhawk Portable Meter

- Captures energy, efficiency and power quality data to verify systems and individual equipment meet performance specifications

Cyberhawk MPC

- Installed at the building entrance, records whole building electrical usage and can be used to benchmark against system's design specifications
- Reads analog information such as temp. sensors and pulse measured inputs from water and gas meters
- Protects electrical infrastructure from damaging power events
- Characterizes and time-stamps power anomalies
- Provides detailed energy and power quality information

Cyberhawk 100

- Captures energy, efficiency and power quality data to verify systems and individual equipment meet performance specifications
- Continuously records analog information like temp. sensors, and pulse input from water and gas meters

Cyberhawk 300

- Measures up to three 3-phase points in a single meter
- Captures energy, efficiency and power quality data to verify systems and individual equipment meet performance specifications
- Continuously records analog information like temp. sensors, and pulse input from water and gas meters

Enhanced Commissioning and Sub-Metering

SMART Integrated Meter

Cyberhawk Portable Meter

Cyberhawk 100

Cyberhawk 300

Cyberhawk MPC

Windows on the World

- Consolidates data from all Web-accessible meters to provide comprehensive insight into the performance of all resource input systems
- Validates operation of all energy systems
- Measures actual performance against established performance benchmarks
- Alerts managers to performance problems

Superior Energy Performance

E-Saver C3 & T1000 C3 High Efficiency Transformers

- Exceed legislated efficiency standards to deliver measurable energy savings
- Energy savings can reduce building's total electricity use by 1.5 - 2%
- Savings can be easily documented using Powersmiths Energy Savings and Payback Calculator™

The School as a Learning Tool

Windows on the World (WOW)

- Demonstrates how your building achieved CHPS certification
- Allows the building to be used as a learning tool
- Describes high performance features using live data
- Supports curriculum studies
- Correlates building features to CHPS checklist and tracks actual performance against benchmarks
- Educates building occupants and visitors on sustainability
- Helps foster a culture of conservation

Construction Waste Diversion

Easy Skid

- Powersmiths ships transformers on Easy Skid which uses 70% wood than standard shipping pallets.
- Biodegradable shrink wrap and FSC wood are used

To find out more about how Powersmiths products and services can help you meet your CHPS certification goals, contact us at: info@powersmiths.com or 1-800-747-9627



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