POWERSMITHS

LEED® Application Guide

for New Construction and Major Renovations

POWER FOR THE FUTURE

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LEED® Overview

Because buildings consume more than one third of the nation's energy and water resources, reducing their environmental footprint can play a significant role in reaching sustainability and climate goals. Leadership in Energy and Environmental Design (LEED) is a voluntary, building rating system that provides a framework and guidance on sustainable design, construction and maintenance practices for built structures.

Sponsored by the U.S. Green Building Council and adopted by the Canadian Green Building Council, the LEED rating system emphasizes state-of-the-art strategies for sustainable development under six (6) categories: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality and Innovative Design. By Meeting specific targets and prerequisites, buildings can be certified to one of four (4) levels: Certified, Silver, Gold or Platinum; depending on the extent to which the building incorporates environmental features and practices.

LEED Buildings Outperform

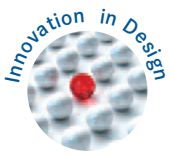
LEED Buildings cost less to operate, use less water, and have a lower environmental impact during construction and their operational life. They also provide a healthier learning and working environment, delivering measurable performance improvements in the workplace and enhanced learning scores.

Powersmiths and LEED

Powersmiths is committed to helping to build a sustainable future by supplying products and services that:

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

Installing and implementing Powersmiths solutions in your building can help earn points in the following LEED certification categories:



This booklet delineates how Powersmiths products and services contribute to LEED buildings with specific reference to LEED categories and credit numbers

Powersmiths is a member of the following organizations:

- U.S. Green Building Council
- Canadian Green Building Council
- Association for the Advancement of Sustainability in Higher Education

Powersmiths Certifications Include:

- ISO 14001 - Environmental Quality Management
- ISO 9001 - Quality Mangement
- ISO 17025 - Certified Efficiency Test Lab

Transformer Contributions

OPAL™ Series Transformers

Few people understand the role that transformers can play in conserving electricity. Nevertheless, the U.S. Department of Energy (DOE) estimates that 60-80 billion kWh of electricity are wasted annually by transformers, by all types of buildings throughout North America. This represents eight to 9 days of the total North American generating capacity and billions of wasted dollars. Clearly, increasing transformer efficiency can have significant impact.

Powersmiths OPAL™ series distribution transformers exceed DOE 2016, legislated minimum efficiency requirement, reducing up to 50% more energy waste than the standard transformer. Because OPAL transformers reduce energy waste beyond the minimum standard, they contribute to your LEED Certification score.

LEED Category: Energy and Atmosphere
Credit 1

Optimize Energy Performance

- Provides higher than mandated efficiency to yield significant energy savings.
- Savings calculations are made easy with the use of Powersmiths free Energy Saving and Payback Calculator

Easy Skid™

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

LEED Category: Material and Resources
Credit 2.1 & 2.2

Divert Waste from Landfill Sites

- Supports waste reduction –Packaging uses 70% less FSC® wood and reduced waste wrap

Cyberhawk TX™ Integrated Meter

Fundamental building commissioning and on-going efficiency verification is one key to gaining LEED Certification, but accessing consumption and efficiency data from transformers can be difficult, risky and time-consuming adhering to arch flash legislation. Powersmiths has solved the safety and accuracy problems associated with acquiring energy measurements by integrating meters into Powersmiths transformers. The SMART & Cyberhawk TX meters provide access to transformer efficiency measurements and energy consumption data without opening the transformer. This greatly facilitates commissioning and on-going validation.

LEED Category: Energy and Atmosphere
Prerequisite 1

Fundamental Building Commissioning

- Validates transformer performance to ensure it meets specification

LEED Category: Energy and Atmosphere
Credit 5

Measurement and Validation

- Provides accountability of on-going energy consumption over time, tracking actual usage vs. benchmark model

[1] U.S. Department of Energy, 10 CFR Part 431, [Docket No. EERE-2010-BT-STD-0048] Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule, April 18, 2013

Metering

Cyberhawk™ Metering Family

Cyberhawk energy meters provide a comprehensive data set for on-going measurement and verification of building resource systems. Cyberhawk meters measure and record electricity consumption and power quality and can also record data from an pulse-measured system including water and gas systems. An integrated web server provides remote access to all data including events, data logs and waveforms, in support of on-going measurement, verification, and sustainability education.

LEED Category: Energy and Atmosphere
Prerequisite 1

Fundamental Building Commissioning

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

LEED Category: Energy and Atmosphere
Credit 5

Measurement and Validation

- Provides accountability of on-going energy consumption over time, tracking actual usage vs. benchmark model

Powersmiths WOW™

Education for Sustainability and Energy Management System

WOW accesses resource consumption and production data from a building's BAS/BMS, meters and sensors, and consolidates it into one platform where it can be used for energy management and sustainability education.

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 delivers sustainability education through colourful intuitive webpages that showcase and explain a building's high performance features. Displayed on a touchscreen kiosk and over the web, WOW invites building occupants and visitors to learn how a building achieved LEED certification and view the building's actual resource savings. WOW's interactive graphs and gauges translate energy savings into tangible environmental benefits allowing the building to become a teaching tool for sustainability.

LEED Category: Energy and Atmosphere
Credit 5

Measurement and Validation

- Provides oversight of energy, water and other resource consumption/production on an on-going basis helping to ensure that systems continue to function as intended
- Compares actual performance vs. LEED benchmarks

LEED Category: Innovation in Design
Credit 1 - 1.4

- Uses the building as a teaching tool (an explicit credit in LEED for Schools)
- Incorporates live data to describe and demonstrate high performance features
- Tracks actual performance across all categories against the LEED benchmark

LEED for Schools: Innovation in Design
Credit 3 – The School as a Teaching Tool

- Display meters that measure energy and other resource inputs and outputs
- Provides a wealth of real-time and historical resource data that can be used to support curriculum in science, math, social studies and geography

EA Prerequisite 1
Fundamental Building Commissioning

Transformer Meters:
SMART Integrated Meter
Cyberhawk TX Integrated Meter

- Provides a continuous log of transformer's load profile, efficiency and power quality data

Advanced Submeters:
Cyberahawk Express
Cyberhawk 300
Cyberhawk 200M

Our range of submetering products and data reporting solutions are application-designed to support the commissioning and metering program you need

- Provide cost-effective submetering with flexible application options
- Capture energy, efficiency and power quality data to verify systems and individual equipment meet performance specifications
- Support performance validation of building systems and electrical devices
- Access your data over network, web or cloud with Powersmiths WOW integrating all your building data under one platform
- Multi-phase measurements solutions from a single meter
- Extract single circuits from a mixed panel for more convenient analytics of system data groups

Powersmiths WOW

- Capture readings from renewable energy sources, energy consumption, water consumption, steam, occupancy sensors, temperature readings, subsystems like plug loads, lighting and HVAC, and more, all under one platform
- Compare real-time data with model data to verify and adjust systems for optimal performance

EA Credit 5
Measurement and Verification

SMART Integrated Meter
Cyberhawk TX Integrated Meter
Cyberhawk Express Submeter
Cyberhawk 300 Submeter
Cyberhawk 200M submeter

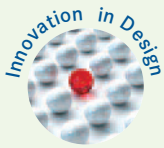
Powersmiths WOW

- Consolidates data from all your systems' and building's meters, sensors and BMS/BAS to provide comprehensive insight into performance analytics
- Validates operations of building energy systems
- Measures actual peformance benchmarks
- Alerts managers of system performance issues and helps to keep your efficiency goal on track

EA Credit 1
Optimize Energy Performance (2-10 points)

OPAL™ High Efficiency power Transformers

- Exceeds legistlated DOE 2016[1] efficiency standards, delivering measurable savings with up to 50% less energy waste beyond the minimum requirement
- Energy Savings can reduce buildings total electricity use by 1%, contributing between 1/2 to 1 LEED Credit
- Savings can be easily documented using Powersmiths' Energy Savings and Payback Calculator (ESP™)



ID Credit 1
Innovation in Design

Powersmiths WOW

- Demonstrates how your building achieved LEED Certification
- Highlights ECMs and their live data

  Allows the building to be used as a teaching tool
- Showcases high performance features and ECMs alongsidetheir lreports and data readings
- Supports curriculum studies
- Correlates building features to LEED checklist and tracks actual performance against benchmarks
- Educates building occupants and visitors of their role in energy consumption and sustainbility topics
- Helps to foster a culture of conservation

MR Credit 2
Construction Waste Management

Easy Skid™

- Transformers are shipped on the Easy Skid which uses 70% less wood than standard shipping pallets
- Standard reduced wrap packaging to minimize waste

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

[1] U.S. Department of Energy, 10 CFR Part 431, [Docket No. EERE-2010-BT-STD-0048] Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule, April 18, 2013

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