

### **Why get started on a Green Building initiative?**

Sustainability is increasingly an essential business strategy – for companies large and small. A Green Building can cut costs, create a healthy environment for workers or tenants, and enhance corporate image. Green Building certification can facilitate Green Leases in the highly competitive Class A office space market, and create the conditions to improve productivity or trim insurance costs.

Plus, individual state and cities are passing Green Building ordinances – Seattle's new Energy Disclosure Ordinance, NYC's PLANYC – Greener, Greater Buildings Plan, San Francisco's SF Squared plan and CALGreen, to name a few. These programs will have compliance requirements and may well serve as the basis for new retrofit incentive programs.

The best known Green Building certification regime is U.S. Green Building Council's LEED program spanning an array of project types:

- o New commercial construction and major renovation projects (LEED-NC)
- o Existing building operations (LEED-EB)
- o Commercial interiors projects (LEED-CI)
- o Core and shell projects (LEED-CS)
- o Schools (LEED-School)
- o Retailers (LEED-Retail)
- o Hospitals (LEED-Healthcare)
- o Advanced Energy Metering (PC26)
- o Reconcile Projected and Actual Energy Performance (PC27)

Another Green Building program – Green Globes – is managed by The Green Building Initiative which rates buildings to promote environmentally friendly buildings. Then, there is the Department of Energy's initiative for [Net-Zero Energy Buildings](#)

What's the common thread? Each of these Green Building regimes require that building owners monitor, track and report resource utilization on an on-going basis – not just during a certification process.

### **How can Agilewaves help you meet LEED requirements?**

Agilewaves can be essential to your sustainability initiatives, by providing an advanced building measurement foundation – one that supplies the rigorous metrics required by LEED, and more. There are three distinct ways that the Agilewaves' Building Optimization System can help you meet LEED's requirements by providing a robust building infrastructure:

#### **Energy Optimization**

Energy Optimization is our forte and a key activity within the Energy and Atmosphere credits. By providing submetering for energy and water use, along with the analytical tools to optimize performance continuously, Agilewaves can help you achieve immediate energy savings – often 20+% in the first year. Our flexible design allows you to set baselines, then track resource use for discrete Energy Efficiency Measures (EEM).

See the [details](#) on Energy Efficiency solutions from Agilewaves.



## **Energy Star**

Agilewaves can supply the data required for LEED's performance reporting requirements, including automatically submitting data to Energy Star Portfolio Manager. More importantly, we have the ability to help you boost your Energy Star scores with real-time data to better manage consumption.

See the [details](#) on how Agilewaves can help boost your Energy Star Scores.

## **Indoor Environmental Quality**

Agilewaves' installations can include IAQ, temperature and humidity sensors to provide readings which can be correlated with energy utilization. Lighting control systems can also be integrated into your Agilewaves building infrastructure.

## **Measurement & Verification Via Agilewaves Advanced Metering System**

It's now recognized that performance data must not simply be collected, but gathered and processed in a manner that allows meaningful comparison between predicted and actual energy performance.

Agilewaves can serve as your foundation for verifying progress for LEED-EBOM projects and support new Pilot Credits for the new LEED Advanced Energy Metering initiative.

### **LEED Advanced Energy Metering (Pilot Credit 26) LEED Reconcile Projected and Actual Energy Performance (Pilot Credit 27)**

Agilewaves provides the foundation for ongoing accountability of building energy consumption over time per the new LEED M&V credits:

- o Permanently installed meters with recording intervals stored in 5-minute increments
- o Measurements for consumption, demand and power factor
- o Ability to transmit data to remote location
- o Data Collection via LAN or Building Automation System
- o Data Storage for metered data, up to 11 years
- o Remotely-accessible data retrieval and energy diagnostic reports of hourly, daily, monthly and annual energy use data.

Agilewaves routinely measures all whole-building energy sources (electricity, gas, steam, etc) as well as renewables generation, and can scale, as needed, to collect and track discrete measurements for typical end uses (HVAC, lighting, plug loads, etc).

With a modular design that can scale from whole-building energy source measurement to end-use consumption metrics, Agilewaves can easily support LEED designs using either the Prescriptive Approach (Option 1/Path 1 & 2) or Performance Approach (Option 2/Path 1 & 2).

Our goal at Agilewaves is to help LEED designers build cost-effective building performance designs – increasing the level of accountability for a given M&V budget.

See the [details](#) on typical Project Costs.

### Agilewaves for LEED Advanced Energy Metering: Pilot Credits 26 and 27



The new LEED M&V regime requires a permanent, accessible, visible display for building performance measurement. The Agilewaves System includes a dashboard and reports to supply the required calculations for:

- whole building energy demand and consumption
- all energy sources (utilities monitoring)
- end-use demand and consumption
- average and peak demand metrics.

LEED M&V Requirement	Agilewaves Supports Via
Meters that are permanently installed, record at intervals of 1 hour or less, and transmit data to a remote location.	Agilewaves Building Optimization System is a permanent advanced metering system which records data in 5 minute increments. Gateways communicate between measurement devices and a remote data collection system.
Electrical meters shall record both consumption and demand. Whole-building electrical meters should record power factor (if appropriate).	Agilewaves can measure whole-building energy sources: electricity, natural gas, propane, steam, chilled water, on-site renewable generation, geothermal or ground source energy.  Circuit-level metering records end-use consumption for: primary/secondary HVAC systems and equipment, lighting, plug loads, vertical transportation, processes, misc loads.
Data collection system using communication infrastructure	Communication gateways to collect data and/or integrates with Building Automation Systems via a BACnet over IP protocol
Data Storage with will capability of storing all meter data for at least 18 months	Agilewaves has the capacity to store interval measurements for up to 11 years.
Remotely-accessible data retrieval and reporting of metered energy use data, hourly, daily, monthly and annual.	A full range of Energy Diagnostics Reports on interval data (in 5 minute increments) including whole-building trends, top consumers and comparisons.

### Pilot Credit 27: Projected and Actual Energy Performance

With Agilewaves' analysis and annotation capabilities, and the ability to import baseline energy models, LEED designers can reconcile actual tenant energy use and tenant energy use predicted by EA Credit 1:

- Identify variances between actual tenant energy use and predicted tenant energy.
- Measure actual avoided tenant energy use compared to the EA Credit 1 baseline.
- Measure avoided tenant energy costs compared to the EA Credit 1 baseline.
- Measure avoided tenant GHG emissions compared to the EA Credit 1 baseline.

**Take a look at how Agilewaves Building Optimization System (BOS) can help with LEED projects.**

Our system is sophisticated, yet easy-to-use for sustainability practitioners, allowing them to track resource use in real-time, and at the same time, create the metrics required for LEED reporting.

LEED Topic	LEED Credits	LEED EBOM 2009 Existing Building Operations
Sustainable Sites SSc8	1	<b>Light Pollution Reduction</b> Indoor & outdoor lighting, time-of-day analysis
Water Efficiency WEc1	1-2+	<b>Water Performance Measurement</b> Set baselines, sub-system water metering
Water Efficiency WEc2	1-5	<b>Additional Indoor Plumbing Efficiency</b> Document potable Water Efficiency gains
Energy & Atmosphere EAc1	1-18+	<b>Optimize Energy Performance</b> Collect actual metered energy consumption, submit data to Portfolio Manager for Energy Star benchmark  Improve benchmark score via end use consumption analysis, facilitating Energy Efficiency Measures (EEM) design, commissioning projects or energy audits
Energy & Atmosphere EAc2.3	2	<b>Ongoing Commissioning</b> Monitoring-based Commissioning (MBCx)
Energy & Atmosphere EAc3.2	1-2	<b>Performance Measurement: System Level Monitoring</b> Measure end-use energy consumption, continuously. Automatically, electronically
Energy & Atmosphere EAc4	1-6+	<b>On-site and Off-Site Renewable Energy</b> Sub-meter renewables, verify performance
Energy & Atmosphere EAc6	1	<b>Emissions Reduction Reporting</b> Submit monthly to Energy Star Portfolio Manager
Energy & Atmosphere EAp2	Req	<b>Minimum Energy Performance</b> Submit data to Energy Star Portfolio Manager
Indoor Environmental IEQc2.3	1	<b>Occupant Comfort – Thermal Monitoring</b> Continuous monitoring of air temperature and humidity
Innovation IOc1	1-3	<b>Innovation in Operations</b> Exemplary Performance – extensive monitoring may assist in exceeding LEED performance thresholds