

# LEED

Leadership in Energy and Environmental Design





# GREEN BUILDING

In years past, the theory of high performance “green” buildings was hard to define and the practice even more obscure. All of that is rapidly changing. As of January 2011, over 37,000 projects in the United States have registered for certification under the LEED (Leadership in Energy and Environmental Design) Green Building Rating System from the U.S. Green Building Council (USGBC). There are LEED projects in all 50 states and 91 countries around the world. From reflective roofs and super-efficient windows to flexible access floors and ultra-efficient HVAC systems, a wealth of new technologies is adding function, value, and high performance to today’s commercial buildings. Integrated design processes allow project teams to take full advantage of these technologies at the lowest first costs. Thanks to LEED and other programs such as ENERGY STAR, common benchmarks, support tools, and opportunities are emerging to offer market differentiation for buildings that create higher private and public value.

## RECOVER HIGHER FIRST COSTS – IF ANY

Asking if a high performance green building costs more than a conventional alternative is a little like asking which is more expensive, an efficient car or an inefficient one? The answer, of course, depends on factors such as the make and model, features, and driving preferences. Many green buildings cost no more to build - or even less than the alternatives - because resource-efficient strategies often allow downsizing of more costly mechanical, electrical, and structural systems.



## DESIGN FOR COST-EFFECTIVENESS

A high performance green building is an efficient building. Savings in energy costs of 20 - 50% are common through integrated planning, site orientation, energy-saving technologies, on-site renewable energy producing technologies, light reflective materials, natural daylight and ventilation, and downsized HVAC and other equipment.

## ENHANCE HEALTH AND WELL-BEING

High performance green buildings typically offer healthier environments for tenants. A new survey of laboratory and field research suggests rich opportunities ahead for owners and occupants alike to better understand and take advantage of various green building features to enhance worker well-being and performance. No wonder businesses are beginning to use high performance buildings as a potent tool for recruiting and retaining the best employees.

## REDUCED LIABILITY

The Environmental Protection Agency (EPA) recognizes “sick building syndrome” as a real occurrence. The World Health Organization reported up to 30% of new and remodeled buildings worldwide may be subject to complaints related to indoor air quality.

With an increase in mold-related claims, insurance companies have begun to take defensive action with mold clauses and rate hikes. Some industry experts are even predicting that insurance companies will start linking lower premiums to high performance buildings.

## CREATE VALUE FOR TENANTS

According to the EPA, a tenant can save approximately \$0.50 per square foot per year through cost management and operations strategies that cut energy use by 30%. The tenant’s accumulated savings can represent \$50,000 or more in a five-year lease of 20,000 square feet of office space. Savings can be even higher when incorporating a variety of high performance and flexible building design components.

## INCREASED PROPERTY VALUE

An asset that maintains its value through higher occupancy and easier maintenance is easier to sell and may command a higher market valuation. There is growing confidence in the industry that a high performance

green building can either capture lease premiums or present a more competitive property in an otherwise tough market. Reduced operating costs also generate increased cash flow, which helps free capital for other investments. As green buildings are increasing recognition of LEED and ENERGY STAR programs, the marketplace is expected to follow with a system of preferential pricing.



## EMPHASIS ON THE FUTURE

As concerns over energy prices and energy security grow, government support for improving our infrastructure is at unprecedented levels. Movements are underway to develop energy-efficient government facilities or refurbish existing facilities to set the example of how green buildings are the way of the future.

There is also a new emphasis on revitalizing thousands of school buildings across the country in need of repair and upgrade. Such efforts on renovation are projected to not only save billions of dollars in energy, but to improve the working and learning environments.

# THE LEED PROGRAM

Now that you've seen some of the benefits to LEED Certification, let's look at the actual heart of the programs and the various levels and factors that affect the ratings.

## LEED CERTIFICATION

- LEED for New Construction
- LEED for Commercial Interiors
- LEED for Existing Buildings
- LEED for Core and Shell
- LEED for Schools
- LEED for Homes
- LEED for Neighborhood Development
- LEED for Retail
- LEED for Healthcare

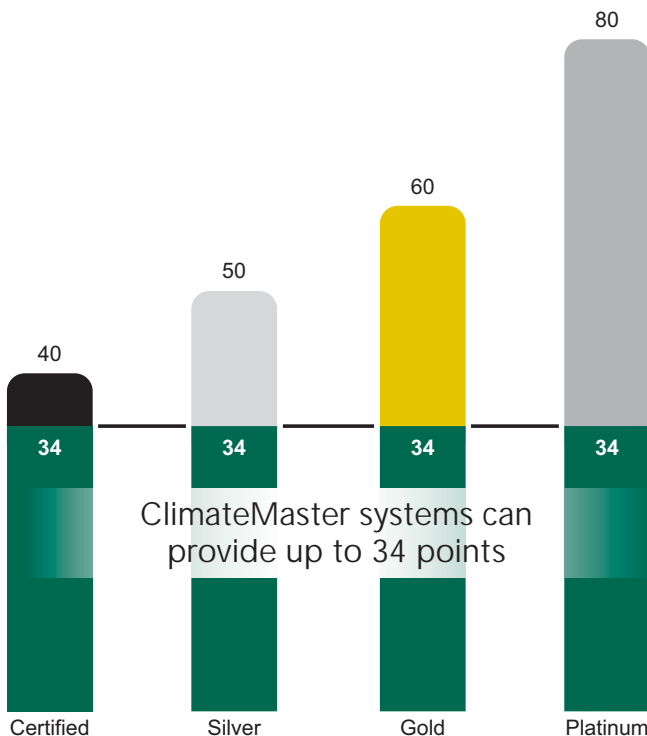
Note: LEED for Healthcare is currently in pilot test.

## LEED 2009 FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS

The LEED rating system was first introduced in the year 2000 and is continuing to shape the building industry. There are eight prerequisites and five points categories.

### Prerequisites

- Construction activity pollution prevention
- Water use reduction
- Minimum energy performance (ASHRAE 90.1)
- Fundamental commissioning of building energy systems
- Fundamental refrigeration management
- Storage and collection of recyclables
- Minimum IAQ performance (ASHRAE 62)
- Environmental tobacco smoke control



## POINT SYSTEM

Five basic categories make up the design points system. Totaled together, these points determine your certification level. The level of certification depends upon the total number of points.

As you can see, energy and atmosphere along with indoor environmental quality factors make up half of the available basic points. Product solutions from ClimateMaster are a perfect fit for these categories and can also offer additional points for enhanced solutions.

Five categories for accumulating points

1. Sustainable sites.....26 Points
2. Water efficiency.....10 Points
3. Energy and atmosphere\*.....35 Points
4. Materials and resources.....14 Points
5. Indoor environmental quality\*.....15 Points

Subtotal: 100 Points

- Innovation in design.....6 Points
- Regional priority.....4 Points

Total points available equals 110, which is 30 points over the minimum requirements for Platinum certification.

## THE CLIMATEMASTER SOLUTION

By choosing ClimateMaster Water-Source Heat Pumps, you can help satisfy more than half of the requirements for LEED Certification.



\* ClimateMaster Solutions for maximizing points

## HOW DOES CLIMATEMASTER HELP SATISFY LEED REQUIREMENTS?

### OPTIMIZED ENERGY EFFICIENCY

ClimateMaster produces the world's most efficient geothermal and water-source heat pumps. Since the LEED program assigns additional points based upon increased efficiency beyond ASHRAE 90.1 minimums, equipment selection can greatly affect the total number of points. For example, the ASHRAE 90.1-2007 specifies a minimum efficiency of 12 EER for water source equipment.

The Tranquility 27<sup>®</sup> Series boasts an efficiency rating up to 27 EER when used with a ground loop. The reduced energy consumption of buildings designed around the Tranquility 27<sup>®</sup> Series can add a significant number of points for existing construction or new construction when used in conjunction with a geothermal loop system. Therefore, ClimateMaster equipment can provide a large percentage of points depending upon equipment selection.

### BUILDING ENERGY REDUCTION OZONE DEPLETION

ClimateMaster's commitment to environmentally friendly design is reflected in the development of new products with zero ozone depletion refrigerants, such as EarthPure<sup>®</sup> (HFC-410A). EarthPure<sup>®</sup> is already being used in the Tranquility family of products, and will continue to be incorporated into other product lines in the future. Two LEED points are available for selecting products with EarthPure<sup>®</sup>.

New Construction	Existing Building	LEED Points
12%	8%	1
14%	10%	2
16%	12%	3
18%	14%	4
20%	16%	5
22%	18%	6
24%	20%	7
26%	22%	8
28%	24%	9
30%	26%	10
32%	28%	11
34%	30%	12
36%	32%	13
38%	34%	14
40%	36%	15
42%	38%	16
44%	40%	17
46%	42%	18
48%	44%	19



Tranquility 27<sup>®</sup> (TT) Family

Category	Factor	Points
Optimized energy performance		up to 19
Ozone depletion	Systems without HCFCs. The Tranquility Family of products use EarthPure <sup>®</sup> HFC-410A refrigerant	2
Measurement and verification	Monitoring and optimization of building energy and water consumption - DDC controls	3
Indoor environmental quality	Provide IAQ monitoring via CO2 sensor (CO2 sensor for each ClimateMaster Rx ERV) Provide for effective delivery and mixing of fresh outdoor air Design system for air change effectiveness 30% greater than ASHRAE 62.1-2007 minimum	2
Thermal comfort	Comply with ASHRAE 55 thermal comfort standards Include temperature and humidity monitoring with humidification and/or dehumidification capabilities	2
Innovation in design	Up to five points for exceptional performance above requirements set by the LEED program (e.g. Provide training on green buildings, open to the public (must be pre-approved) One point may be earned for an involved LEED accredited professional - Architect, Engineer, Contractor, Manufacturer's Representative, Etc.	6
Total potential ClimateMaster Solutions points:		34

# THE CLIMATEMASTER SOLUTION

## MEASUREMENT AND VERIFICATION

Building management controls are becoming increasingly popular in the commercial marketplace. ClimateMaster DDC controls allow the building owner to gain a LEED point if used for monitoring and optimizing building energy usage. Plus, DDC controls from ClimateMaster provide maximum flexibility with all of the most popular protocols – LonWorks, BACnet, Modbus and Johnson N2.

## INDOOR ENVIRONMENTAL QUALITY

ClimateMaster's Rx ERV module provides a very cost-effective method for bringing in outside air through the use of energy recovery technology. One LEED point can be gained for meeting LEED requirements for air changes per hour. In addition, up to 70% of the energy can be recovered from the building's exhaust air, saving 3 tons of equipment capacity for every 1,000 cfm of outside air.

Smaller equipment directly impacts building life cycle costs and lowers up-front installation costs. Another LEED point can be added for control of outside air using ClimateMaster's CO<sub>2</sub> sensor to control the Rx ERV module.



Rx (ERV) Module

## THERMAL COMFORT

ClimaDry™, one of the finest innovations in ClimateMaster's broad product line, is the perfect compliment to a HVAC system when humidity control is essential. One LEED point is available for systems that monitor and control temperature and humidity. The patented ClimaDry™ dehumidification system is the only modulating reheat option in the WSHP industry that maintains neutral supply air temperature even with cool building loop temperatures, using a standard AHRI certified refrigerant circuit (the reheat function is applied to the condenser water circuit).

## THE INDUSTRY LEADER

In summary, ClimateMaster equipment offers the designer substantial flexibility in maximizing LEED points, while minimizing up-front installation costs and decreasing overall building operating costs. LEED certification is based upon

long-term environmental impact, so HVAC equipment selection is extremely important in determining building sustainability and life cycle costs. ClimateMaster's reputation for high quality products and leadership in the industry provides the building owner with peace of mind.

For over 50 years we have been focused on enhancing business and home environments around the world. Our mission as the world's largest and most progressive leader in the water-source and geothermal heat pump industry reveals our commitment to excellence – not only in the design and manufacture of our products, but in our people and services. Let ClimateMaster be your answer to LEED building design.

# THE CLIMATEMASTER FAMILY OF PRODUCTS





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ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time for order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products.

The management system governing the manufacture of ClimateMaster's products is ISO 9001:2000 certified.

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We are a proud supporter of the Geothermal Exchange Organization - GEO. For more information visit [geoexchange.org](http://geoexchange.org)

ClimateMaster is a company of LSB Industries, New York Stock Exchange Symbol: LXU