



ICE ENERGY®

CLEAN ENERGY DOESN'T GET ANY COOLER THAN THIS.



Ice Energy, Inc. LEED® Statement

Ice Energy is a member of the U.S. Green Building Council. Our flagship Ice Bear® Hybrid Air Conditioning system provides superior cooling comfort for commercial, light industrial and public sector buildings, using only a fraction of the peak energy required by conventional packaged rooftop air conditioning systems. Hybrid cooling reduces the environmental harm from air conditioning and surpasses the overall efficiency of conventional A/C equipment alone, while lowering customer energy bills.

Hybrid cooling permanently shifts peak demand by efficiently shifting energy usage from day to night. The Ice Bear system stores cooling energy at night when power generation emission rates are at their lowest and base load generation, generally cleaner and less expensive to operate, can sufficiently handle the electric demand. The stored energy is then utilized for building cooling during daytime peak demand periods to effectively offset 90-95% of the peak cooling load. Line losses on both transmission and distribution circuits are significantly lower at night, and off-peak power generation plants generally have a greater thermal efficiency, resulting in a reduced amount of source energy fuel required to cool buildings using Hybrid A/C.

Shifting energy load to off-peak hours has significant environmental benefits, including a reduction in the formation of ozone caused by the interaction of NOx and sunlight. High ozone levels that occur during summer afternoons can be mitigated by reducing the NOx emissions associated with the generation and transmission of afternoon power for air conditioning. An independent study performed by the environmental consultancy E3 Ventures found that hybrid cooling alone has the potential to dramatically reduce air pollutant emissions by reducing overall electricity consumption and by reducing the use of relatively high-emitting generation sources that are called into service on the hottest summer days. Depending on the base generation mix, NOx emissions can be reduced by as much as 56 percent and CO2 by 40 percent.



Hybrid cooling also improves the efficiency and economic value of Solar PV and enhances the viability of wind power, which is otherwise intermittent and largely generated off-peak.

While individual products are not LEED-certified, appropriate product applications can contribute to reaching the desired LEED rating. Ice Energy has LEED Accredited Professionals on staff ready to assist in your LEED certification documentation.



NC 2.2 POTENTIAL LEED® CREDITS

CATEGORY	ICE BEAR® CONTRIBUTION		APPLICATION
	DIRECT	INDIRECT*	
<u>EA: Prerequisite 3</u> Fundamental Refrigerant Management	1		The Ice Bear® 30 system utilizes the environmentally preferable R-410A refrigerant which contains no CFCs, resulting in zero ozone depletion potential.
<u>EA: Credit 1</u> Optimize Energy Performance	1 to 4		Hybrid A/C shifts 90-95% of peak cooling demand to off-peak and provides substantial energy cost savings when using rate tariffs with time-of-use and/or demand charges. It is up to 30% more efficient than traditional air conditioning, depending upon the climate zone, building configuration and operation.
<u>EA: Credit 2</u> On-Site Renewable Energy		1	The Ice Bear system improves the value of solar PV and wind generation systems by enabling low cost off-peak energy to be stored and used to off-set high-cost, higher polluting on-peak energy.
<u>EA: Credit 3</u> Enhanced Commissioning		1	The Ice Bear system's pre-charged ice making refrigerant circuit delivers optimal efficiency at start-up. Ice Energy's patented CoolData® controller supports a wide range of performance monitoring at commissioning and throughout the life of the product.
<u>EA: Credit 5</u> Measurement & Verification		1	The Ice Bear system's CoolData controller supports a wide range of performance monitoring requirements compatible with all standard commercially used measurement protocols throughout the life of the product.
<u>EQ: Credit 2</u> Increased Ventilation		1	Additional outdoor air ventilation, while desirable for improved indoor air quality, drastically increases peak cooling loads. The Ice Bear unit cuts peak load, allowing for increased ventilation without excess peak energy usage.
<u>EQ: Credit 6.2</u> Controllability of Systems		1	Using a pumped refrigerant system, individual cooling units can be installed and controlled to provide improved occupant control.
<u>EQ: Credit 7.1</u> Thermal Comfort: Design	1		The Ice Bear system's liquid overfeed technology and variable speed refrigerant pump deliver steady room supply air temperature and humidity control compared with traditional DX systems without risk of freezing the evaporator coil and independent of outside ambient air temperature.
<u>ID: Credit 1.1-1.4</u>	1 to 4		Shifting 90-95% of peak cooling load to off-peak provides substantial reduction of the building's peak energy consumption, dramatically reducing a building's carbon footprint

* Ice Bear technology can help meet these requirements. Points in the Indirect column refer to the total number of points possible for that credit.

Contact Ice Energy for specific applications that may qualify for Innovation in Design (ID) points.



CORE & SHELL POTENTIAL LEED® CREDITS

CATEGORY	ICE BEAR® CONTRIBUTION		APPLICATION
	DIRECT	INDIRECT*	
<u>EA: Prerequisite 3:</u> Fundamental Refrigerant Management	1		The Ice Bear® 30 system utilizes the environmentally preferable R-410A refrigerant which contains no CFCs, resulting in zero ozone depletion potential.
<u>EA: Credit 1</u> Optimize Energy Performance	1 to 4		Hybrid A/C shifts 90-95% of peak cooling demand to off-peak and provides substantial energy cost savings when using rate tariffs with time-of-use and/or demand charges. It is up to 30% more efficient than traditional air conditioning, depending upon the climate zone, building configuration and operation.
<u>EA: Credit 2</u> On-Site Renewable Energy		1	The Ice Bear system improves the value of solar PV and wind generation systems by enabling low cost off-peak energy to be stored and used to off-set high-cost, higher polluting on-peak energy.
<u>EA: Credit 3</u> Enhanced Commissioning		1	The Ice Bear system's pre-charged ice making refrigerant circuit delivers optimal efficiency at start-up. Ice Energy's patented CoolData® controller supports a wide range of performance monitoring at commissioning and throughout the life of the product.
<u>EA: Credit 5.1</u> Measurement & Verification—Base Building		1	The Ice Bear system's CoolData controller supports a wide range of performance monitoring requirements compatible with all standard commercially used measurement protocols throughout the life of the product.
<u>EQ: Credit 2</u> Increased Ventilation		1	Additional outdoor air ventilation, while desirable for improved indoor air quality, drastically increases peak cooling loads. The Ice Bear unit cuts peak load, allowing for increased ventilation without excess peak energy usage.
<u>EQ: Credit 6</u> Controllability of Systems		1	Using a pumped refrigerant system, individual cooling units can be installed and controlled to provide improved occupant control.
<u>EQ: Credit 7</u> Thermal Comfort: Design	1		The Ice Bear system's liquid overfeed technology and variable speed refrigerant pump deliver steady room supply air temperature and humidity control compared with traditional DX systems without risk of freezing the evaporator coil and independent of outside ambient air temperature.
<u>ID: Credit 1.1-1.4</u>	1 to 4		Shifting 90-95% of peak cooling load to off-peak provides substantial reduction of the building's peak energy consumption. Ice Bear systems can reduce peak power plant CO2 emissions by 20-34%, NOx emissions by more than 50%, and avoid the smog-forming potential of daytime electrical energy generation. Actual results depend on the source power generation for a specific location.

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COMMERCIAL INTERIORS POTENTIAL LEED® CREDITS

CATEGORY	ICE BEAR® CONTRIBUTION		APPLICATION
	DIRECT	INDIRECT*	
<u>EA: Prerequisite 3</u> CFC Reduction in HVAC&R Equipment	1		The Ice Bear® 30 system utilizes the environmentally preferable R-410A refrigerant which contains no CFCs, resulting in zero ozone depletion potential.
<u>EA: Credit 1.3</u> Optimize Energy Performance, HVAC	1 to 2		Hybrid A/C shifts 90-95% of peak cooling demand to off-peak and provides substantial energy cost savings when using rate tariffs with time-of-use and/or demand charges. It is up to 30% more efficient than traditional air conditioning, depending upon the climate zone, building configuration and operation.
<u>EA: Credit 2</u> Enhanced Commissioning		1	The Ice Bear system's pre-charged ice making refrigerant circuit delivers optimal efficiency at start-up. Ice Energy's patented CoolData® controller supports a wide range of performance monitoring at commissioning and throughout the life of the product.
<u>EA: Credit 3</u> Energy Use, Measurement & Payment Accountability		1	The Ice Bear system's CoolData controller supports a wide range of performance monitoring requirements compatible with all standard commercially used measurement protocols throughout the life of the product.
<u>EQ: Credit 2</u> Increased Ventilation		1	Additional outdoor air ventilation, while desirable for improved indoor air quality, drastically increases peak cooling loads. The Ice Bear unit cuts peak load, allowing for increased ventilation without excess peak energy usage.
<u>EQ: Credit 6.2</u> Controllability of Systems		1	Using a pumped refrigerant system, individual cooling units can be installed and controlled to provide improved occupant control.
<u>EQ: Credit 7.1</u> Thermal Comfort: Design	1		The Ice Bear system's liquid overfeed technology and variable speed refrigerant pump deliver steady room supply air temperature and humidity control compared with traditional DX systems without risk of freezing the evaporator coil and independent of outside ambient air temperature.
<u>ID: Credit 1.1-1.4</u>	1 to 4		Shifting 90-95% of peak cooling load to off-peak provides substantial reduction of the building's peak energy consumption. Ice Bear systems can reduce peak power plant CO2 emissions by 20-34%, NOx emissions by more than 50%, and avoid the smog-forming potential of daytime electrical energy use. Actual results depend on the source power generation for a specific location.

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SCHOOLS POTENTIAL LEED® CREDITS

CATEGORY	ICE BEAR® CONTRIBUTION		APPLICATION
	DIRECT	INDIRECT*	
EA: Prerequisite 3 Fundamental Refrigerant Management	1		The Ice Bear® 30 system utilizes the environmentally preferable R-410A refrigerant which contains no CFCs, resulting in zero ozone depletion potential.
EA: Credit 1 Optimize Energy Performance	1 to 4		Hybrid A/C shifts 90-95% of peak cooling demand to off-peak and provides substantial energy cost savings when using rate tariffs with time-of-use and/or demand charges. It is up to 30% more efficient than traditional air conditioning, depending upon the climate zone, building configuration and operation.
EA: Credit 2 On-Site Renewable Energy		1	The Ice Bear system improves the value of solar PV and wind generation systems by enabling low cost off-peak energy to be stored and used to off-set high-cost, higher polluting on-peak energy.
EA: Credit 3 Enhanced Commissioning		1	The Ice Bear system's pre-charged ice making refrigerant circuit delivers optimal efficiency at start-up. Ice Energy's patented CoolData® controller supports a wide range of performance monitoring at commissioning and throughout the life of the product.
EA: Credit 5 Measurement & Verification		1	The Ice Bear system's CoolData controller supports a wide range of performance monitoring requirements compatible with all standard commercially used measurement protocols throughout the life of the product.
EQ: Credit 2 Increased Ventilation		1	Additional outdoor air ventilation, while desirable for improved indoor air quality, drastically increases peak cooling loads. The Ice Bear unit cuts peak load, allowing for increased ventilation without excess peak energy usage.
EQ: Credit 6.2 Controllability of Systems		1	Using a pumped refrigerant system, individual cooling units can be installed and controlled to provide improved occupant control.
EQ: Credit 7.1 Thermal Comfort: Design	1		The Ice Bear system's liquid overfeed technology and variable speed refrigerant pump deliver steady room supply air temperature and humidity control compared with traditional DX systems without risk of freezing the evaporator coil and independent of outside ambient air temperature.
ID: Credit 1.1-1.4	1 to 4		Shifting 90-95% of peak cooling load to off-peak provides substantial reduction of the building's peak energy consumption. Ice Bear systems can reduce peak power plant CO2 emissions by 20-34%, NOx emissions by more than 50%, and avoid the smog-forming potential of daytime electrical energy use. Actual results depend on the source power generation for a specific location.
ID: Credit 3 Green Education	1		Ice Energy provides signage and description of how the Ice Bear unit's unique hybrid cooling method can save energy and reduce emissions.

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EXISTING BUILDING POTENTIAL LEED® CREDITS

CATEGORY	ICE BEAR® CONTRIBUTION		APPLICATION
	DIRECT	INDIRECT*	
EA: Prerequisite 3 Refrigerant Management— Ozone Protection	1		The Ice Bear® 30 system utilizes the environmentally preferable R-410A refrigerant which contains no CFCs, resulting in zero ozone depletion potential.
EA: Credit 1 Optimize Energy Performance		2 to 3	Hybrid A/C shifts 90-95% of peak cooling demand to off-peak and provides substantial energy cost savings when using rate tariffs with time-of-use and/or demand charges. It is up to 30% more efficient than traditional air conditioning, depending upon the climate zone, building configuration and operation.
EA Credit 2.2-2.3: Existing Building Commissioning		2 to 6	The Ice Bear system's pre-charged ice making refrigerant circuit delivers optimal efficiency at start-up. Ice Energy's patented CoolData® controller supports a wide range of performance monitoring at commissioning and throughout the life of the product.
EA: Credit 3.1-3.3 Performance Measurement		1 to 3	The Ice Bear system's CoolData controller supports a wide range of performance monitoring requirements compatible with all standard commercially used measurement protocols throughout the life of the product.
EA: Credit 4.1-4.4 On-site & Off-site Renewable Energy		1 to 4	The Ice Bear system improves the value of solar PV and wind generation systems by enabling low cost off-peak energy to be stored and used to off-set high-cost, higher polluting on-peak energy.
EA: Credit 6 Emissions Reduction Reporting		1	The shift of energy use from peak to off-peak by an Ice Bear system can reduce power plant CO2 emissions by 20-34%, NOx emissions by more than 50%, and smog associated with daytime energy use. Actual results vary depending on the power generation to a specific project location.
EQ: Credit .1.3 IAQ Best Management Practices: Increased Ventilation		1	Additional outdoor air ventilation, while desirable for improved indoor air quality, drastically increases peak cooling loads. The Ice Bear unit cuts peak load, allowing for increased ventilation without excess peak energy usage.
EQ: Credit 2.3 Occupant Comfort: Thermal	1		The Ice Bear system includes CoolData monitoring, which can assist in measurement verification of energy use, temperatures, and time, including notification of need for system adjustment or repair. It is Ethernet-based which allows it to communicate with the most building systems and also includes capability for additional sensors to monitor other building equipment or air quality levels such as CO2.
IO: Credit 1 Reduce Emissions	1		Shifting 90-95% of peak cooling load to off-peak provides substantial reduction of the building's peak energy consumption. Ice Bear systems can reduce peak power plant CO2 emissions by 20-34%, NOx emissions by more than 50%, and avoid the smog-forming potential of daytime electrical energy use. Actual results depend on the source power generation for a specific location.

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