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**THE USGBC LEED® PROGRAM
SUSTAINABLE BUILDING PRODUCTS
ATAS INTERNATIONAL, INC.**

About LEED

Coalition members of the United States Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED) Green Building Rating System to establish practices for designing, constructing, and certifying sustainable buildings. The LEED rating system has become a recognized benchmark for sustainable building practices. These practices fall into five categories: SS, Sustainable Sites, WE, Water Efficiency, EA, Energy and Atmosphere, MR, Materials & Resources and EQ, Indoor Environmental Quality.

Another Green Building Rating System is being promoted by the GREEN BUILDING INITIATIVE, using the Green Globes System in the U.S.A. We at ATAS International, Inc are actively monitoring this initiative and system, but we believe LEED will continue to be the dominant force in the industry.

According to the LEED rating system, points are awarded when the requirements of various credits are met. The applicant for LEED recognition is responsible for documenting compliance. The LEED rating system does not recognize or certify individual products, but information on product characteristics is often essential for an applicant to submit appropriate documentation for the overall construction project. Originally designed for New Construction, the LEED program has been expanded to include other categories such as renovations to Existing Buildings, New Retail, Schools and others. More extensive information on the LEED program may be found at www.usgbc.org. This guide reflects requirements of LEED-NC for new construction Version 2.2 October 2005.

ATAS products provide many opportunities for LEED projects.

The following sections and products within them may contribute to obtaining LEED Credits:

- ◆ **SS (Sustainable Sites) Credit 7.2: Heat Island Effect: Roof**
1 Point
- ◆ **EA (Energy and Atmosphere) Credit 1: Optimize Energy Performance**
1-10 Points
- ◆ **EA Credit 2: On-Site Renewable Energy**
1-3 Points
- ◆ **MR (Materials and Resources) Credit 2.1: Construction Waste Management: Divert 50% from disposal.**
1 Point
- ◆ **MR Credit 2.2: Construction Waste Management: Divert 75% from disposal.**
1 Point in addition to MR Credit 2.1
- ◆ **MR Credit 4.1: Recycled Content: 10% (post-consumer + ½ pre-consumer)**
1 Point
- ◆ **MR Credit 4.2: Recycled Content: 20% (post consumer + ½ pre-consumer)**
1 Point in addition to MR Credit 4.1
- ◆ **MR Credit 5.1: Regional Materials: 10% Extracted, Processed & Manufactured Regionally**
1 Point
- ◆ **MR Credit 5.2: Regional Materials: 20% Extracted, Processed & Manufactured Regionally**
1 Point in addition to MR Credit 5.1
- ◆ **EQ (Indoor Environmental Quality) Credit 1: Outdoor Air Delivery Monitoring**
1 Point
- ◆ **EQ Credit 2: Increased Ventilation**
1 Point
- ◆ **EQ Credit 7.1: Thermal Comfort: Design**
1 Point
- ◆ **ID (Innovation and Design Process) Credit 1-1.4: Innovation in Design**
1-4 Points

Every LEED project manager should investigate these opportunities. Suggestions for documenting achievements in each of these categories are shown on the following pages.

SS (Sustainable Sites) Credit 7.2: Heat Island Effect: Roof 1-Point

Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements (For roofing materials)

Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface

Roof Type	Slope	SRI
Low-Sloped Roof	≤ 2:12	78
Steep-Sloped Roof	≥ 2:12	29

SRI is calculated according to

ASTM E 1980.

Reflectance is measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549.

Emittance is measured according to ASTM E 408 or ASTM C 1371.

Default values will be available in the LEED-NC v2.2 Reference Guide.

How ATAS products contribute.

ATAS International, Inc. manufactures a broad range of metal roofing styles to satisfy various architectural requirements. The Solar Reflectance Index is calculated from the Total Solar Reflectance and Thermal Emittance of the surface coating. Values for ATAS paint colors and natural finishes that meet LEED requirements for this credit are shown on the condensed table on Schedule A.

Also see schedule: B The Total Solar Reflectance and Thermal Emittance Measured charts of products by ATAS International, Inc. This schedule shows the ATAS colors that meet ENERGY STAR® requirements and CRRC listed products.

HOW COOL METAL ROOFING CAN EARN POINTS an opinion written by Robert Scichili and Scott Kriner, published in the June 2007 Metal Architecture magazine is below. Courtesy of and refer to

www.metalarchitecture.com .

In November, 2005 version 2.2 LEED-NC was launched at the Greenbuild show. The new version included changes to individual credits, making some easier to achieve but others more difficult (www.usgbc.org/leed) A cool metal roof on a building project can directly or indirectly contribute up to 24 points in the LEED program. The cool metal roofing material itself is eligible for 1 point in Credit 7.2 Heat Island Effect: Roof in the Sustainable Sites category. The criteria for the point are that the roof must cover at least 75% of the roof surface area (excluding parapets, skylights and equipment), and meet the following thresholds for Solar Reflectance Index (SRI):

Low slope	(< 2:12)	min SRI of 78
Steep slope	(> 2:12)	min SRI of 29

LEED permits a weighted average to be calculated for buildings with multiple roof surfaces to demonstrate that the total roof area has an average SRI equal to or greater than a theoretical roof with 75% coverage.

The minimum SRI criteria limit the use of the type and color of cool metal roofing. For example, in the low slope category, an SRI of 78 would allow for a painted metal roof with a solar reflectance greater than 0.66, which is a very light color. Unpainted metal roofing does not meet the SRI requirement for low slope roofing.

For steep slope applications, the minimum SRI of 29 would allow unpainted metal roofing to be used, as well as painted metal with solar reflectance greater than 0.30, which could limit certain dark brown, green, blue and red colors.

Cool metal roofing can also contribute to the LEED-NC certification point system in the categories of Materials & Resources, Energy & Atmosphere, and Water Efficiency.

Metal roofing's well documented high recycled content and recyclability can contribute to points in the Materials and Resource category. When a building is renovated for reuse, an existing cool metal roof can contribute to the following points:

MR Credit 1.1 Building Reuse: Maintain 75% of existing walls, floors and roof - 1 point

MR Credit 1.2 Building Reuse: Maintain 95% of existing walls, floors and roof - 1 point

The fact that metal is fully recyclable helps with the construction waste management credits in LEED. An existing cool metal roof can contribute to the points:

MR Credit 2.1 Construction Waste Management: Divert 50% from disposal - 1 point

MR Credit 2.2 Construction Waste Management: Divert 75% from disposal - 1 point

The recyclability of metal also helps with the Materials Reuse credits. An existing cool metal roof can contribute to the following points:

MR Credit 3.1 Materials Reuse: Use salvaged materials for 5% of the total value - 1 point

MR Credit 3.2 Materials Reuse: Use salvaged materials for 10% of the total value - 1 point

Metal's well documented high recycled content can contribute points as follows:

MR Credit 4.1 Recycled Content: 10% of weighted avg. (post-consumer + ½ pre-consumer) - 1 point

MR Credit 4.2 Recycled Content: 20% of weighted avg. (post-consumer + ½ pre-consumer) - 1 point

The use of a cool metal roof can also contribute to points in the Energy Optimization credit in the category of Energy and Atmosphere. Modeling can show the beneficial impact on reduced heat gain making it eligible for the following points:

EA Credit 1 Optimize Energy Performance: Increase energy cost savings - up to 10 points

The impervious nature of metal roofing can also be used to its advantage in capturing rainwater for non-potable water use in a building. A cool metal roof can contribute the following points in the Water Efficiency category:

WE Credit 1 Water Efficient Landscaping: Reduce potable water for irrigation by 50% - 1 point

WE Credit 1.2 Water Efficient Landscaping: No potable water for irrigation - 1 point

WE Credit 2 Innovative Wastewater Technologies: Capturing rainwater for building sewage - 1 point

WE Credit 3.1 Water Use Reduction: 20% reduction in water usage - 1 point

WE Credit 3.2 Water Use Reduction: 30% reduction in water usage - 1 point

With the exception of the Sustainable Sites Credit 7.2, the cool metal roofing product itself cannot qualify for a point in the LEED program. Instead, the whole building project receives points from green designs and processes.

Energy & Atmosphere,

EA Credit 1: Optimize Energy Performance 1-10 points

Intent

Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

Requirements

Select one of the compliance path options described below.

Project teams documenting achievement using any of the three options are assumed to be in compliance with EA prerequisite 2.

OPTION 1: Whole Building Energy Simulation (1-10 points)

Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1 (without amendments) by a whole building project simulation using the building Performance Rating Method in Appendix G of the Standard.

New buildings must demonstrate percentage improvements of 10.5% for 1 point, up to 42% for 10 points.

Existing building renovations must demonstrate improvements of 3.5% for 1 point up to 35% for 10 points.

Note: The prerequisite performance standard is as per ASHRAE/IESNA standard 90.1-2004 (without amendments).

OPTION 2 Prescriptive Compliance Path (4 points)

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide for Small Office Buildings 2004. Restrictions are the building must be less than 20,000 square feet and must be office occupancy.

Project teams must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.

OPTION 3 Prescriptive Compliance Path (1 point)

Comply with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Benchmark™ Version 1.1 with exceptions.

How ATAS products contribute

The **InSpire™** Transpired Solar Collector Wall system made by ATAS International, Inc., incorporates perforated metal panels to preheat fresh ventilated air using solar energy. The system is especially beneficial when large amounts of fresh air are required, there is a long heating season, heating fuel costs are high and the building has a suitable wall facing generally south. See www.atas.com/inspire or contact ATAS International, Inc. at 1-800-468-1441 for details.

Energy for this renewable energy technology can be modeled using software described under EA Credit 2: On-Site Renewable Energy.

In addition to combating the Heat Island Effect, cool roofs can reduce cooling energy requirements. Metal roofs with high solar reflectance and thermal emittance are beneficial in cooling-dominated climates with high solar load.

Reflective and emittance data on ATAS materials are shown on schedule **B**.

The Oak Ridge National Laboratory (ORNL) developed cool roof calculators to predict energy savings for buildings with both high and low slopes. Links to these calculators are available at www.coolmetalroofing.com. Go to the **Resources** tab at the top and then click **ORNL/DOE Low (or Steep) Slope Cool Roof Calculator**. Solar reflectance and thermal emittance values from Schedule **B** can be entered to compare the energy savings for various alternatives.

EA Credit 2: On-Site Renewable Energy 1-3 points

Intent

Encourage and recognize increasing levels of on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use.

Requirements

Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building annual energy cost and using the table below to determine the number of points achieved.

Renewable Energy	2.5%	1 point
	7.5%	2 points
	12.5%	3 points

How ATAS products contribute

The **InSpire™** Solar Collector Wall System made by ATAS International, Inc can contribute to obtaining these LEED points. Also known as a Transpired Solar Collector, this active solar technology captures warm outside air at the surface of perforated collector panels and delivers it into the building, either through perforated ducts or a conventional air-handler. Quite simply, it is a wall that uses solar energy to heat fresh air. Details are available at www.atas.com/inspire, or contact ATAS International, Inc.

ATAS uses RETScreen® International Solar Air Heating analysis software or Swift™ Solar Wall International Feasibility Tool software to determine potential energy savings for the **InSpire™** Solar Collector. Both the RETScreen and Swift models were developed by Natural Resources Canada and validated against monitored projects. The DOE's National Renewable Energy Laboratory (NREL) is continually monitoring and validating buildings. RETScreen software is available free-of-charge at www.retscreen.net.

Given appropriate project data, ATAS representatives can analyze potential project scenarios if requested. The annual renewable energy collected is typically 1 to 2.5 therms per square foot of collector wall.

MR Credit 2.1: Construction Waste Management: Divert 50% from Disposal

1 point

MR Credit 2.2: Construction Waste Management: Divert 75% from Disposal

1 additional point

Intent

Divert construction, demolition and land clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process.

Requirements

Recycle and/or salvage at least 50% of non-hazardous construction and demolition. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or commingled. Calculations can be done by weight or volume, but must be consistent throughout.

How ATAS products contribute

All of the metallic materials used to manufacture ATAS products are valuable and scrap can be recycled. In addition, cardboard packaging can be recycled.

MR Credit 4.1: Recycled Content: 10% 1 point

MR Credit 4.2: Recycled Content: 20% 1 additional point

Intent

Increase demand for building products that incorporate recycled content materials, thereby reducing the impacts resulting from extraction and processing of virgin materials.

Requirements

Use materials with the recycled content such that the sum of post consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% or 20% (based on cost) of the total value of the materials in the project.

How ATAS products can contribute

Information on the recycled contents of materials used by ATAS International, Inc to manufacture products is as follows:

Material	Total Recycled Content (%)	Post-Consumer Recycled Content (%)	Pre-Consumer Recycled Content (%)
Steel (1)	31.6	24.6	6.6
Aluminum Alloy 3003	52.35	32.60	19.75
Aluminum Alloy 3105	91.06	68.48	22.57
Copper (2)	75	~37.5	~37.5
Zinc (2)	9	Not available	Not available

(1) Information on recycled content was obtained from www.recycle-steel.org , Steel takes LEED® with Recycled Content, June 2006.

MR Credit 5.1: Regional Materials: 10% Extracted, Processed & Manufactured Regionally 1 point

MR Credit 5.2: Regional Materials: 20% Extracted, Processed & Manufactured Regionally 1 additional point

Intent

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts from transportation.

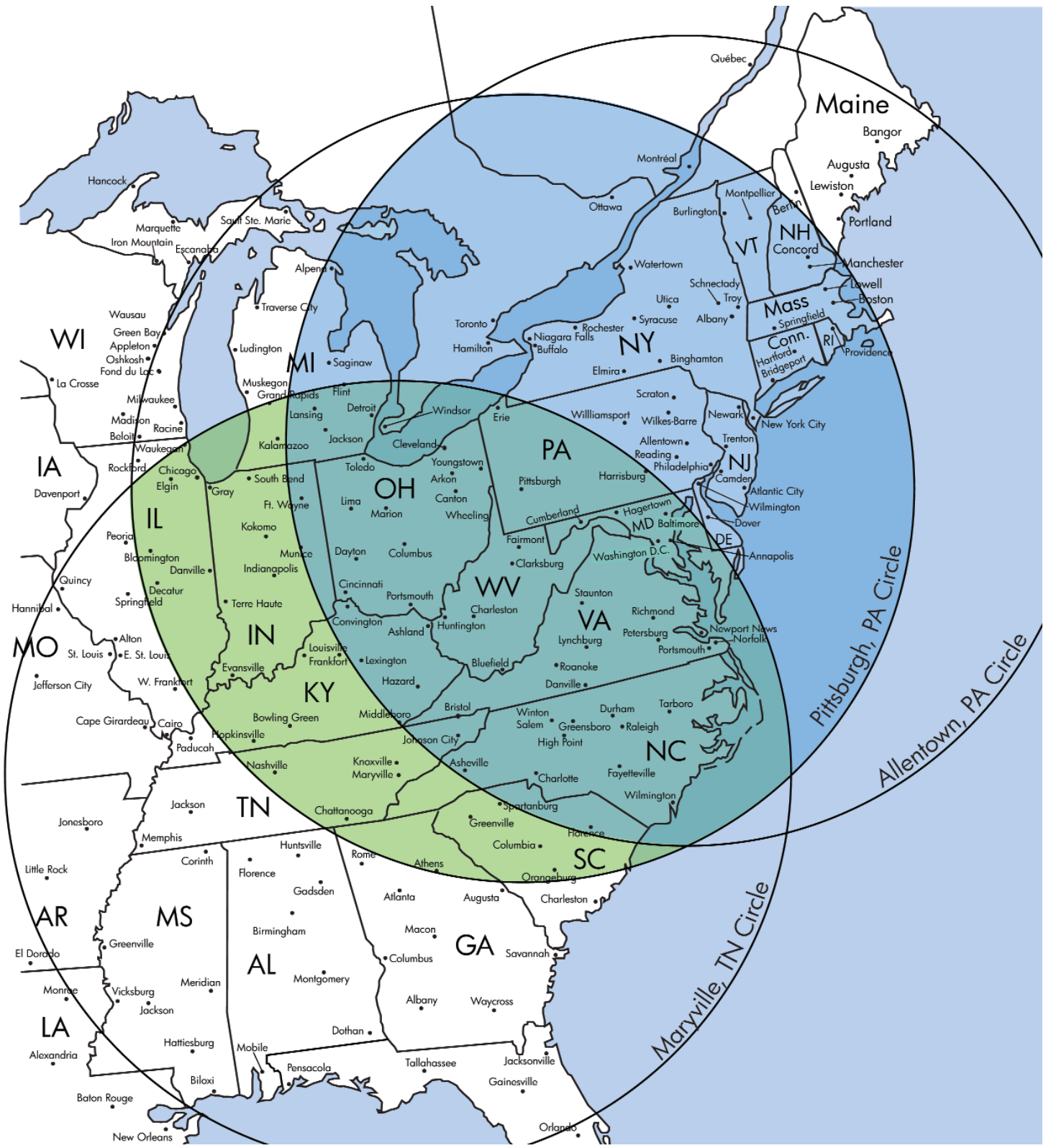
Requirements

Use building materials or products that have been extracted or recovered as well as manufactured, within 500 miles of the project site for a minimum of 10% (20%) (based on cost) of the total material value. If only a fraction of a product or material is extracted/ harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

How ATAS products contribute

An example where ATAS International, Inc. products would be eligible to contribute to obtaining LEED points is area roughly bound by: the Canadian Border. Portsmouth, NH. Boston, MA. Myrtle Beach, NC. Asheville, NC. Cincinnati, OH. Fort Wayne, IN. Lansing, MI. Alpena, MI.

See Circles on Map, Page 11



ATAS Manufacturing Locations and Materials

Manufacturing locations are as follows:

- Allentown, PA (corporate office and principal manufacturing location)
- Mesa, AZ
- Maryville, TN

The three plants have different manufacturing capabilities. Check with ATAS to determine the production location for specific products.

ATAS products are manufactured from the following materials:

- Steel, with either a zinc (galvanized) or 55% Al-Zn coating
- Aluminum
- Copper
- Zinc

Metal Refining/Processing Locations

Metal refining and processing plants are located where raw materials and energy sources are abundant and economical. This dependence on naturally occurring deposits limits options for regional manufacturing. Material production/recovery locations and percent recovered are shown in the following table:

Material	Applicable ATAS Product(s)	Primary Material Production/ Recovery Location	% by Weight Harvested/ Extracted/ Recovered
Steel	All	Pittsburgh, PA	31.6 ⁽¹⁾
Aluminum	Soffit Only	Uhrichsville, OH	80.0 ⁽²⁾
Copper	All	Buffalo, NY	75.0 ⁽²⁾
Zinc	All	Not Domestic	N/A

(1) As iron ore is extracted 985 miles from the Allentown production facility, it is very unlikely that a project will be eligible for the total value of the steel. More likely, only the recycled portion of the steel may qualify under the "Recovered" portion of this credit. Use the current value for recycled content as listed at www.recycle-steel.org, but only if the steel company can verify that the recycled steel was obtained within 500 miles of the project site.

(2) Information on recycled content was obtained from a Technical Bulletin from the Metal Construction Association titled, "Recycled Content of Metal Roofing and Siding Panels." Technical Bulletin #04-0004, 5/04.

See www.metalconstruction.org.

Principal sites for intermediate coating operations on painted materials are as follows:

- Pittsburgh, PA
- Philadelphia, PA

Regional Materials Calculations

Examples of regional materials calculations for products made by ATAS International, Inc. are shown on page 13

LEED® - NC Version 2.2, October 2005
 Materials and Resources
 Credits 5.1 & 5.2 Regional Materials

Project Location

Product Name	Material (Product) Manufacturer	Material Type	% by Wt. Harvested/ Extracted/ Recovered	Total Cost of Product to Customer (\$)	Cost Value of Recovered Portion (\$)	Manufacturing Location ⁽¹⁾	Recovery Location ⁽²⁾	Distance between Project & Manufacturer ⁽³⁾ (mi)	Distance between Project & Recovery Location ⁽³⁾ (mi)	Value Qualifying as Regional (\$)	Information Source
Field-Lok FLS	ATAS Int.	Steel	31.6	\$3,500.00	\$1,106.00	Allentown, PA	Pittsburgh, PA				ATAS Letter
Soffit	ATAS Int.	Aluminum	80.0	\$750.00	\$600.00	Allentown, PA	Urichsville, OH				ATAS Letter
Dutch Seam MRD	ATAS Int.	Copper	75.0	\$3,500.00	\$2,625.00	Allentown, PA	Buffalo, NY				ATAS Letter

(1) List ATAS Plant Location

(2) From Metal Refining/Processing Table

(3) Must be less than 500 miles to qualify

EQ Credit: Outdoor Air Delivery Monitoring 1 point

Intent

Provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being.

Requirements

Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements. Configure all monitoring equipment to generate an alarm when conditions vary by 10% or more from setpoint, via either a building automation system alarm to the building operator or via a visual or audible alert to the building occupants.

InSpire™ Solar Wall System provides preheated outdoor air which can be monitored.

EQ Credit 2: Increased Ventilation 1 point

Intent

Provide additional outdoor ventilation to improve indoor air quality for improved occupant comfort, well-being and productivity

Requirements

For mechanically ventilated spaces.

Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1 as determined by EQ Prerequisite 1.

How ATAS products contribute

In regions with long heating seasons and high fuel prices, costs to heat even the minimum amount of ventilation air are significant. Providing additional outdoor ventilation air can be cost prohibitive. The **InSpire™** Solar Collector Wall System, which utilizes solar energy to preheat ventilation air, can ease the financial burden of improving the overall comfort and well-being in the work place.

For details visit www.atas.com/inspire or contact ATAS International, Inc. at 1-800-468-1441

EQ Credit 7.1: Thermal Comfort: Design 1 point

Intent

Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

Requirements

Design HVAC systems and the building envelope to meet the requirements of ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy.

How ATAS products contribute

In heating dominated climates, providing the required amount of ventilation air while maintaining comfortable temperatures can be problematic. Preheating the ventilation air using solar energy can be an effective strategy for achieving this goals affordably.

For information on how the **InSpire™** Solar Collector Wall can help, visit www.atas.com or contact ATAS International, Inc. at 1-800-468-1441

In cooling dominated climates, a [Cool Roof] can ease the financial burden of providing comfortable temperatures. The discussion under Energy & Atmosphere, EA Credit 1: Optimize Energy Performance can provide some guidance toward a successful strategy.

Innovation and Design Process

ID Credit 1-1.4: Innovation in Design 1-4 points

Intent

To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED-NC Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED-NC Green Building Rating System.

Requirements

Credit 1.1 (1 point) In writing, identify the intent of the proposed innovation credit, the proposed requirements for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements.

Credit 1.2, 1.3 and 1.4 (1 point each) same as credit 1.1

Potential Technologies & Strategies

Substantially exceed a LEED-NC performance credit such as energy performance. Apply strategies or measures that demonstrate a comprehensive approach and quantifiable environment and/or health benefits.

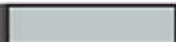
How ATAS products contribute

The **InSpire™** Solar Collector Wall System manufactured by ATAS International, Inc. may contribute to obtain LEED credits.

Schedule A
ATAS INTERNATIONAL, INC.
Total Solar Reflectance, Thermal Emittance
and Solar Reflectance Index Measured on ATAS Materials that
Qualify for LEED-NC SS Credit 7.2 Heat Island Effect: Roof

Revised 04/01/08

Category	ATAS No.	Name	Description	Total Solar Reflectance (ASTM E903 or C1549)	Thermal Emittance ASTM C1371 or (ASTM E408)	Solar Reflectance Index (SRI) (ASTM E1980)
Painted	608	Mission Red	Low Gloss	0.32	(0.89)	34
Painted	609	Sierra Tan	Low Gloss	0.33	0.87	35
Painted	10	Ascot White	Std. Gloss	0.60	(0.89)	72
Painted	26	Bone White	Std. Gloss	0.70	0.87	85
Painted	17	Brite Red	Std. Gloss	0.51	0.85	58
Painted	31	Champagne	Std. Gloss	0.55	0.79	62
Painted	05	Concord Cream	Std. Gloss	0.55	(0.89)	65
Painted	23	Coppertone	Std. Gloss	0.50	(0.86)	57
Painted	Special	CR White (special)	Std. Gloss	0.70	(0.87)	85
Painted	13	Dove Grey	Std. Gloss	0.31	(0.89)	33
Painted	22	Mint Green	Std. Gloss	0.29	(0.89)	30
Painted	08	Mission Red	Std. Gloss	0.32	0.87	33
Painted	15	Rawhide	Std. Gloss	0.43	(0.89)	49
Painted	06	Sandstone	Std. Gloss	0.46	(0.88)	52
Painted	14	Siam Blue	Std. Gloss	0.31	(0.88)	32
Painted	09	Sierra Tan	Std. Gloss	0.35	0.87	37
Painted	28	Silversmith	Std. Gloss	0.49	(0.88)	56
Unpainted	797	Galvalume® Plus	---	0.68	0.08	55

 Shaded cells are "Special" paint system. Inquire about other, high-reflectance colors.

**Schedule B
 ATAS INTERNATIONAL, INC.**

Total Solar Reflectance and Thermal Emittance Measured on ATAS Materials

revised 4/01/08

Category	ATAS No.	Name	Description	Reflectance (ASTM E903 or C1549)		Thermal Emittance (ASTM C1371 or ASTM E408)	Solar Reflectance Index (SRI) (ASTM E1980)	Meets ENERGY STAR®*			Meets LEED® - NC v. 2.2 Credit 7.2 Heat Island	Listed by CRRC
				Initial	3-Year			Steep Slope	Low Slope	Listed by ENERGY STAR		
Painted	629	Char Brown	Low Gloss	0.08	---	0.86	1					
Painted	611	Forest Green	Low Gloss	0.14	---	0.87	10					
Painted	608	Mission Red	Low Gloss	0.32	0.32	.89	34	Yes		++	+++	
Painted	616	Rocky Grey	Low Gloss	0.15	---	0.85	10					
Painted	609	Sierra Tan	Low Gloss	0.33	0.32	0.87	35	Yes		++	+++	
Painted	620	Slate Grey	Low Gloss	0.21	---	0.85	17					
Painted	24	Antique Patina	Std. Gloss	0.26	0.26	0.86	25	Yes		++		
Painted	10	Ascot White	Std. Gloss	0.60	0.60	0.89	72	Yes		++	+++	
Painted	02	Black	Std. Gloss	0.06	---	0.85	-2					
Painted	26	Bone White	Std. Gloss	0.70	0.69	0.87	85	Yes	Yes	++	+++	
Painted	25	Boysenberry	Std. Gloss	0.14	0.14	0.90	11					
Painted	17	Brite Red	Std. Gloss	0.51	0.44	0.85	58	Yes		++	+++	
Painted	31	Champagne	Std. Gloss	0.55	0.49	0.79	62	Yes**		++	+++	
Painted	04	Chocolate Brown	Std. Gloss	0.10	0.10	0.90	6					
Painted	01	Classic Bronze	Std. Gloss	0.09	---	0.85	2					
Painted	05	Concord Cream	Std. Gloss	0.55	0.55	0.89	65	Yes		++	+++	
Painted	23	Coppertone	Std. Gloss	0.50	0.51	0.86	57	Yes		++	+++	
Painted	Special	CR White (special)	Std. Gloss	0.70	---	0.87	85	Yes**	Yes**		+++	Yes
Painted	13	Dove Grey	Std. Gloss	0.31	0.31	0.89	33	Yes		++	+++	
Painted	11	Forest Green	Std. Gloss	0.16	---	0.85	11					
Painted	27	Hartford Green	Std. Gloss	0.10	0.10	0.88	5					
Painted	30	Hemlock Green	Std. Gloss	0.18	0.18	0.84	13					
Painted	03	Medium Bronze	Std. Gloss	0.11	0.11	0.89	7					
Painted	22	Mint Green	Std. Gloss	0.29	0.29	0.89	30	Yes		++	+++	
Painted	08	Mission Red	Std. Gloss	0.32	0.32	0.87	33	Yes		++	+++	
Painted	12	Patina Green	Std. Gloss	0.23	0.23	0.88	22					
Painted	15	Rawhide	Std. Gloss	0.43	0.43	0.89	49	Yes		++	+++	
Painted	07	Redwood	Std. Gloss	0.21	---	0.85	18					

				Reflectance (ASTM E903 or C1549)		Thermal Emittance (ASTM	Solar Reflectance Index	Meets ENERGY STAR®*			Meets LEED® - NC v. 2.2
Painted	18	Regal Blue	Std. Gloss	0.15	0.15	0.88	12				
Painted	16	Rocky Grey	Std. Gloss	0.15	---	0.85	9				
Painted	06	Sandstone	Std. Gloss	0.46	0.46	0.88	52	Yes		++	+++
Painted	14	Siam Blue	Std. Gloss	0.31	0.31	0.88	32	Yes		++	+++
Painted	09	Sierra Tan	Std. Gloss	0.35	0.34	0.87	37	Yes		++	+++
Painted	28	Silversmith	Std. Gloss	0.49	0.49	0.88	56	Yes		++	+++
Painted	21	Slate Blue	Std. Gloss	0.20	0.20	0.90	19				
Painted	20	Slate Grey	Std. Gloss	0.21	---	0.89	18				
Painted	19	Teal	Std. Gloss	0.21	0.21	0.89	20				
Unpainted	797	Galvalume® Plus	---	0.68	0.57	0.14	58	Yes	Yes	++	+++
Unpainted		Anthra Zinc Pre-Weathered	---	0.06	---	0.64	-15				
Unpainted		Quartz Zinc Pre-Weathered	---	0.20	---	0.33	-18				
Unpainted (anodized)	471	Dark Bronze	---	0.15	---	0.77	6				

Shaded cells are "Special" paint system. Inquire about other, high-reflectance colors.

* ENERGY STAR® Requirements:

Steep Slope > 2:12 0.25 initial; 0.15 after 3 years

Low Slope <= 2:12 0.65 initial; 0.50 after 3 years

** Meets ENERGY STAR® requirements based on initial reflectance only. No data available after 3 years.

Selected ATAS roofing products are ENERGY STAR® qualified with these paint systems. Contact ATAS for further information.

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+++ Meets LEED® - NC Version 2.2 Credit 7.2 requirements for Heat Island Effect - Roof. Minimum SRI for Low Slope (<= 2:12) is 78 and