USING ROOFPOINT TO PROMOTE SUSTAINABLE SPF ROOFING

DR. JIM HOFF
CENTER FOR ENVIRONMENTAL INNOVATION IN ROOFING

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ROOFPOINT™ is an exclusive trademark of the Center for its roof guidelines and rating systems.
A WORD ABOUT THE CENTER
IN THE HEART OF DC, THE CENTER IS LOCATED AT
816 CONNECTICUT AVENUE, NW, WASHINGTON, DC 20006
CENTER MISSION

- Promote the development and use of environmentally responsible, high performance roof systems and technologies
- Provide a forum for the entire roofing industry
- Raise public awareness of the strategic value of our nation’s roofs
CENTER MEMBERS

The Leading…

- Manufacturers
- Contractors
- Consultants / Designers
- Material Suppliers
- Trade Associations (Including SPFA)

…in the Roofing Industry
ROOFPOINT

WHY IS IT NEEDED?
WHY RoofPoint?

STRATEGIC RESOURCE

• Energy Efficiency
  — 700+ Trillion BTU Annual Energy Savings Potential

• New Energy Production
  — 25+ Grand Coulee Dams of Solar Energy Potential

• Beyond Energy
  — Improved air quality / reduced heat island effects
  — Reduced water pollution / increased water supply
  — Reduced construction waste
  — Renewable / recyclable / reusable materials
  — Expanded building service life
  — Enhanced occupant safety and productivity
WHY RoofPoint?

MULTIPLIER EFFECT

NONRESIDENTIAL ROOFING MARKET: 2010

NEW BUILDINGS
< 0.5 BILLION SQ. FT.

EXISTING BUILDINGS
>2.5 BILLION SQ. FT.

EACH BUILDING REPRESENTS 500 MILLION SQ. FT. OF ROOFING OPPORTUNITY

Source: 2010 Roofing Market Forecast (TEGNOS Research, 2011)
WHY RoofPoint?
LACK OF EFFECTIVE TOOLS

The Challenge of Whole-Building Rating Systems…

- New Construction Focus
  - Addresses only 20% of annual roofing market potential

- System Complexity
  - Costly to apply to smaller scale roofing projects

- Lack of Emphasis on Primary Roofing Function
  - Roofs must still keep water out of the building…and for a long time
WHY ROOFPOINT?

IMPROVED DECISION MAKING

- Good Roofing Decisions Made Easier
  - Relevant, measurable goals
  - Covered in a single, comprehensive guideline

- Bad Roofing Decisions Avoided
  - Roof system durability emphasized
  - Roof maintenance emphasized

- Best Roofing Decisions Recognized and Rewarded
  - Program offers recognition for all roofing stakeholders
ROOFPOINT
HOW IT WORKS
ROOFPOINT FOUNDATION

- Initiated by Center Board of Directors
- Supported by a $750,000 grant from the Roofing Industry Alliance for Progress
- Drafted by Center Research Committee
- Vetted in two-step public review process
- Validated in a one-year national pilot program
GUIDELINE
1. 
2. 
3. 
4. 
5. 

CHECKLIST
☐ 
☐ 
☐ 
☐ 
☐ 

ASSESSMENT SYSTEM
OPTION A:  
+  
+  
+  

OPTION B:  
+  
+  

RECOGNITION
THIS IS TO CERTIFY THAT _____ MEETS THE CRITERIA FOR A ROOFPOINT ROOF
RoofPoint

Structure

Environmental Categories
(SECTIONS)

Key Strategies
(CREDITS)

Specific Goals
(INTENTS)

Measurable Criteria
(REQUIREMENTS)

Assessment System
(SCORING)

Recognition Program
(AWARDS)
ENERGY MANAGEMENT

RESOURCES
- MATERIAL MANAGEMENT
- WATER MANAGEMENT

LIFE CYCLE
- DURABILITY
- LIFE CYCLE MANAGEMENT

INNOVATION
- INNOVATION IN ROOFING
<table>
<thead>
<tr>
<th>CREDIT</th>
<th>TITLE</th>
<th>PRIMARY INTENT</th>
<th>STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>HIGH R ROOF SYSTEMS</td>
<td>Reduce Energy Use</td>
<td>Increase Roof R Value</td>
</tr>
<tr>
<td>E2</td>
<td>BEST THERMAL PRACTICES</td>
<td>Reduce Energy Use</td>
<td>Reduce Thermal Discontinuities</td>
</tr>
<tr>
<td>E3</td>
<td>ROOF SURFACE THERMAL CONTRIBUTION</td>
<td>Reduce Energy &amp; Heat Island Effects</td>
<td>Install Climate-Appropriate Roof Surface</td>
</tr>
<tr>
<td>E4</td>
<td>ROOF AIR BARRIER</td>
<td>Reduce Energy Use</td>
<td>Install Air Barrier</td>
</tr>
<tr>
<td>E5</td>
<td>ROOFTOP ENERGY SYSTEMS</td>
<td>Produce Clean Energy</td>
<td>Install Solar/Wind Energy</td>
</tr>
<tr>
<td>E6</td>
<td>ROOFTOP DAYLIGHTING</td>
<td>Produce Clean Energy</td>
<td>Install Daylighting</td>
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</tbody>
</table>
## RoofPoint Sections

### Material / Water Management

<table>
<thead>
<tr>
<th>Credit</th>
<th>Title</th>
<th>Primary Intent</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>Recycled Content</td>
<td>Reduce Solid Waste</td>
<td>Increase Recycled Product Content</td>
</tr>
<tr>
<td>M2</td>
<td>Material Reuse</td>
<td>Reduce Solid Waste</td>
<td>Increase Material Reuse</td>
</tr>
<tr>
<td>M3</td>
<td>Waste Management</td>
<td>Reduce Solid Waste</td>
<td>Reduce Roofing Waste &amp; Scrap</td>
</tr>
<tr>
<td>M4</td>
<td>Low-VOC Materials</td>
<td>Reduce Ground-Level Ozone</td>
<td>Reduce VOC Content</td>
</tr>
<tr>
<td>W1</td>
<td>Roof Storm Water Retention</td>
<td>Reduce Storm Water Runoff And Related Water Pollution</td>
<td>Install Vegetated or Water-retaining Roof System</td>
</tr>
<tr>
<td>W2</td>
<td>Roof-Related Water Use Reduction</td>
<td>Reduce Non-Potable Water Requirements</td>
<td>Capture Roof Water for Landscaping</td>
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<tr>
<td>CREDIT</td>
<td>TITLE</td>
<td>PRIMARY INTENT</td>
<td>STRATEGY</td>
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<tr>
<td>D1</td>
<td>DURABLE ROOF INSULATION</td>
<td>Reduce Insulation Damage</td>
<td>Install Durable Insulation System</td>
</tr>
<tr>
<td>D2</td>
<td>ROOF DRAINAGE DESIGN</td>
<td>Reduce Water Entry</td>
<td>Assure Positive Roof Drainage</td>
</tr>
<tr>
<td>D3</td>
<td>ROOF TRAFFIC PROTECTION</td>
<td>Reduce Surface Damage</td>
<td>Provide Traffic Protection</td>
</tr>
<tr>
<td>D4</td>
<td>INCREASED WIND RESISTANCE</td>
<td>Reduce Storm Damage</td>
<td>Increase Wind Uplift Rating</td>
</tr>
<tr>
<td>D5</td>
<td>HYGROTHERMAL ANALYSIS</td>
<td>Reduce Moisture Damage</td>
<td>Project Moisture Analysis</td>
</tr>
<tr>
<td>D6</td>
<td>CONSTRUCTION MOISTURE MANAGEMENT</td>
<td>Reduce Moisture Damage</td>
<td>Project Moisture Management</td>
</tr>
<tr>
<td>L1</td>
<td>ROOF MAINTENANCE PROGRAM</td>
<td>Increase Service Life</td>
<td>Ongoing Maintenance Program</td>
</tr>
<tr>
<td>L2</td>
<td>PROJECT INSTALLATION QUALITY</td>
<td>Increase Service Life</td>
<td>Contractor Quality Program</td>
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</tbody>
</table>
## RoofPoint Sections

### Innovation in Roofing

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>IR1</td>
<td>Innovation in Design</td>
<td>Recognize Design &amp; Product Innovation</td>
<td>Extra Credit for First-Time Innovation</td>
</tr>
<tr>
<td>IR2</td>
<td>Exemplary Performance</td>
<td>Raise Industry Standards</td>
<td>Extra Credit for Exceeding State-of-the-Art</td>
</tr>
</tbody>
</table>
Developed in two rounds of industry review

Validated through a one-year pilot program

Expanded to cover both steep-slope and low-slope

Simple organization with clear requirements

Designed for innovation and flexibility

Free download available

www.RoofPoint.org
## Fast and simple to complete

- Credits automatically tallied for final score
- Hyperlinks to requirements for each Credit
- Free download available
STRATEGIES FOR SPF ROOFING
### SPF ROOFING STRATEGIES

#### ENERGY

<table>
<thead>
<tr>
<th>CREDIT</th>
<th>TITLE</th>
<th>REQUIREMENT</th>
<th>SPRAY FOAM STRATEGY</th>
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<tbody>
<tr>
<td>E1</td>
<td>High R Roof Systems</td>
<td>Increase Roof R Value</td>
<td><em>Meet ASHRAE 189.1 R values</em></td>
</tr>
<tr>
<td>E2</td>
<td>Best Thermal Practices</td>
<td>Reduce Thermal Discontinuities</td>
<td><em>Monolithic application meets requirement</em></td>
</tr>
<tr>
<td>E3</td>
<td>Roof Surface Thermal Contribution</td>
<td>Install Climate-Appropriate Roof Surface</td>
<td><em>Install climate-appropriate surface coating</em></td>
</tr>
<tr>
<td>E4</td>
<td>Roof Air Barrier</td>
<td>Install Air Barrier</td>
<td><em>Monolithic application provides air barrier</em></td>
</tr>
<tr>
<td>E5</td>
<td>Rooftop Energy Systems</td>
<td>Install Solar Energy</td>
<td><em>Adhere thin-film PV</em></td>
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<tr>
<td>E6</td>
<td>Rooftop Daylighting</td>
<td>Install Daylighting</td>
<td><em>Install skylights</em></td>
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## SPF ROOFING STRATEGIES
### MATERIALS

<table>
<thead>
<tr>
<th>CREDIT</th>
<th>TITLE</th>
<th>REQUIREMENT</th>
<th>METAL STRATEGY</th>
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</thead>
<tbody>
<tr>
<td>M1</td>
<td>Recycled Content</td>
<td>Increase Recycled Product Content</td>
<td>Use bio-based polyols</td>
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<tr>
<td>M2</td>
<td>Material Reuse</td>
<td>Increase Material Reuse</td>
<td>Keep existing insulation in place</td>
</tr>
<tr>
<td>M3</td>
<td>Waste Management</td>
<td>Reduce Roofing Waste &amp; Scrap</td>
<td>Little or no waste with spray foam</td>
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<tr>
<td>M4</td>
<td>Low-VOC Materials</td>
<td>Reduce VOC Content</td>
<td>Spray foam has little or no VOC content. Use low-VOC surface coating</td>
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# SPF Roofing Strategies

## Durability

<table>
<thead>
<tr>
<th>CREDIT</th>
<th>TITLE</th>
<th>REQUIREMENT</th>
<th>Metal Strategy</th>
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<tbody>
<tr>
<td>D1</td>
<td>Durable Roof Insulation</td>
<td>Install Durable Insulation System</td>
<td>Install protective surface coating. Achieve hail rating.</td>
</tr>
<tr>
<td>D2</td>
<td>Roof Drainage Design</td>
<td>Assure Positive Roof Drainage</td>
<td>Spray foam systems easily engineered for drainage</td>
</tr>
<tr>
<td>D3</td>
<td>Roof Traffic Protection</td>
<td>Provide Traffic Protection</td>
<td>Limit roof access and/or provide specific roof access</td>
</tr>
<tr>
<td>D4</td>
<td>Increased Wind Resistance</td>
<td>Increase Wind Uplift Rating</td>
<td>Spray foam systems can be engineered for increased wind uplift</td>
</tr>
<tr>
<td>D5</td>
<td>Hygrothermal Analysis</td>
<td>Conduct Project Moisture Analysis</td>
<td>Conduct moisture analysis</td>
</tr>
<tr>
<td>D6</td>
<td>Construction Moisture Management</td>
<td>Conduct Project Moisture Management</td>
<td>Conduct project moisture management</td>
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## SPF Roofing Strategies

### Life Cycle

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<tbody>
<tr>
<td>L1</td>
<td>Roof Maintenance Program</td>
<td>Establish Ongoing Maintenance Program</td>
<td>Establish Ongoing Maintenance Program</td>
</tr>
<tr>
<td>L2</td>
<td>Project Installation Quality</td>
<td>Establish Contractor Quality Program</td>
<td>Establish Contractor Quality Program</td>
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</tbody>
</table>
RoofPoint profiles
Continuous R-10 above deck plus R-38 in attic beneath exceeds ASHRAE 189.1

Seamless SPF application eliminates thermal discontinuities and provides air barrier

Highly reflective (SRI = 91) coating increases energy efficiency and reduces urban heat island effect

Skylight system reduces artificial lighting demand

Application of additional coating layer and roofing granules increases durability and service life
ROOFPOINT PROFILE

DESERT WATER STORAGE

- Special design for water storage in desert environment. Super high R insulation (R-50) and cool roof reduce evaporation.

- Extensive recycling program including 100% recycling of existing metal roof and structural system.

- 40 KW rooftop solar installation installed, with remainder of roof designed to be solar-ready.

Yuma NAVFAC
Yuma, AZ
Integrated solar carports provide clean energy and shade

Rooftop solar system provides 70% of total building power

R-30 roof insulation and high albedo roof surface reduce building energy demands
Vegetative roof area offsets storm water footprint for additional service bays.

Controlled roof daylighting in service area minimizes artificial lighting demand during operating hours.

Rooftop PV system generates significant portion of electrical needs, while rooftop solar thermal system provides all hot water.
Traditional 4-Ply built-up roof provides durability

Highly reflective white marble surfacing saves energy and mitigates heat island effects

High-R roof insulation saves energy

PA Turnpike Industrial Park
Middletown, PA
Recycled content of steel roofing material promotes responsible material use

Rooftop PV system provides portion of building power

Medium albedo roof surface reduces peak summer air conditioning usage with minimal winter heating offset

Heartland Consumer Power
Madison, SD
Intensive vegetative roof reduces peak energy demand, mitigates heat island effects, increases biodiversity and reduces storm water run off.

Solar chimney with thick, black EPDM roof uses solar heat to move air within building.

Manitoba Hydro
Winnipeg, MB
ROOFPPOINT PROFILE

URBAN OASIS

- Extensive vegetative system offsets building footprint for storm drainage and heat island effects
- Existing waterproofing membrane repaired and covered with new fleece-backed membrane to accommodate planting media and pavers
- Ground-penetrating radar technology used to verify building load capacity.

Sam Nunn Federal Center
Atlanta, GA
RoofPoint Profile
Sustainable School

- Integrated wall and roof daylighting combined with demand-controlled ventilation reduces overall energy consumption while allowing effective classroom illumination.
- Comprehensive rain water collection and storage provides support for school rain garden.
- High albedo roof surface increases PV efficiency, reduces cooling loads and lowers ambient temperature.

Turkeyfoot Middle School
Edgewood, KY
ROOFPOINT PROFILE

SUSTAINABLE FACTORY

- Cool roof surface saves energy and reduces peak cooling demands
- Integrated roof daylighting reduces need for artificial lighting
- High performance cover board and high-R insulation system reduces overall building energy demand
- Enhanced wind uplift design in high wind area of Mexico

LEGO Molding Facility
Cienega de Flores, Mexico
ROOFPOINT
2012 AND BEYOND

2012
- Final version of RoofPoint guideline (RoofPoint 2012) released
- Formal roof certification program will be launched
- Training and registration program for evaluators will be established

Beyond 2012
- RoofPoint will evolve into a national standard
Download a copy of RoofPoint and see how this program can benefit your organization:
www.RoofPoint.org

Contact the Center or a Center Member if you are interested in participating in the Pilot Program:
Center for Environmental Innovation in Roofing
202.380.3371
info@roofingcenter.org
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