

February 2012



RoofPoint

ELEVATING ENVIRONMENTAL PERFORMANCE

ROOFPOINT™

ADVANCING THE ENERGY POTENTIAL OF ROOFS

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AGENDA

AGENDA



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- ◆ **Why do we care about Climate Change?**
- ◆ **Emergence:** the Primary Driver of Climate Change
- ◆ **Why Buildings?**
- ◆ **Building Technologies:** a Solution to Climate Change
- ◆ **RoofPoint:** an Innovative Tool for Energy Management



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WHY DO WE CARE ABOUT CLIMATE CHANGE?

WHY DO WE CARE ABOUT CLIMATE CHANGE?



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- ◆ The IEA World Energy Outlook 2011 predicts CO₂ related emissions to increase by 20% between 2010 and 2035, with a long-term rise in average global temperature in excess of 3.5°C.
- ◆ The rise in temperature is expected to result in loss of between 5% and 20% of Global GDP each year.
- ◆ Developing countries are especially vulnerable to climate change because of their geographic exposure, low incomes, and greater reliance on climate sensitive sectors such as agriculture.



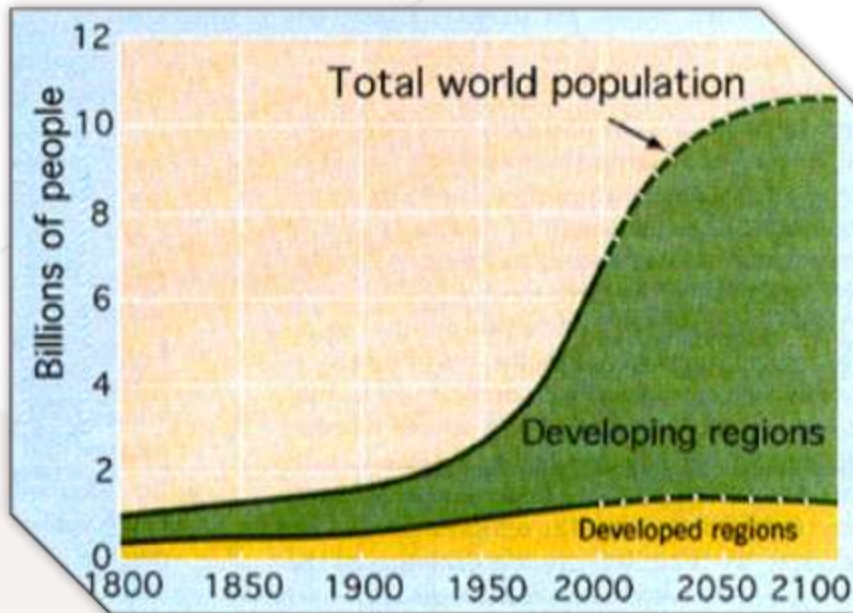
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EMERGENCY:
THE PRIMARY DRIVER OF
CLIMATE CHANGE

EMERGENCE: THE PRIMARY DRIVER OF CLIMATE CHANGE



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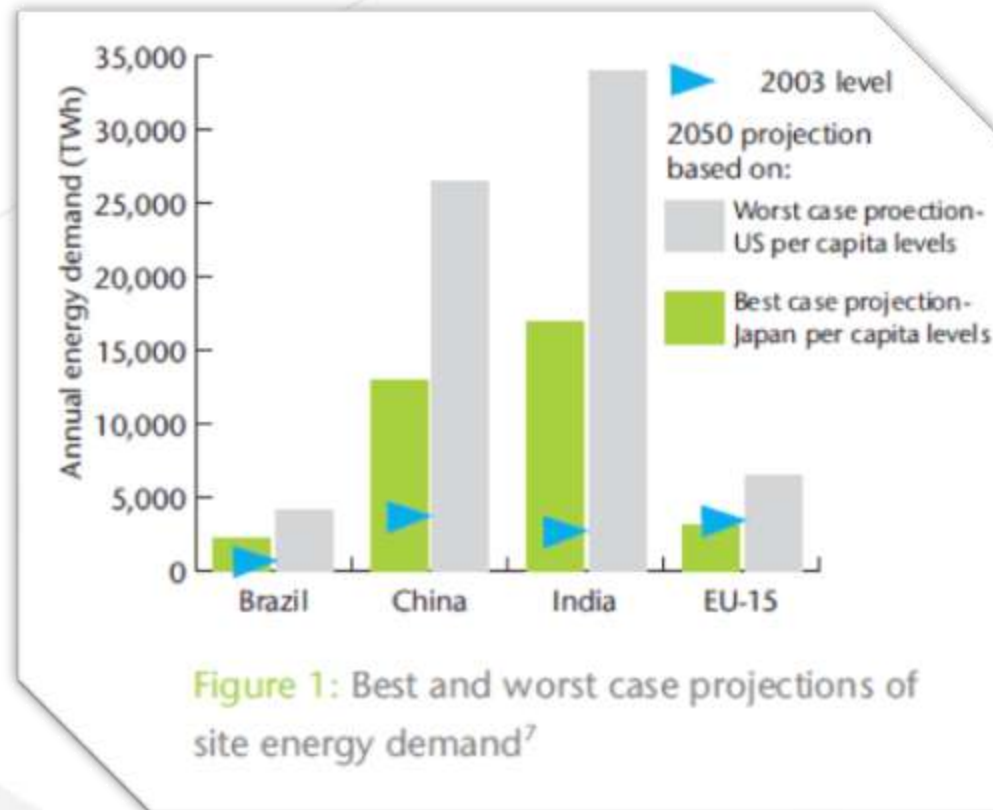


- ◆ Urbanization and economic development are driving current and future energy demand that far outpaces current supply.
- ◆ Demand from emerging economies is placing upward pressure on fuel and material prices.
- ◆ Demographic growth in the developing world.

EMERGENCY: THE PRIMARY DRIVER OF CLIMATE CHANGE



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WHY BUILDINGS?

WHY BUILDINGS?

THE IMPACT



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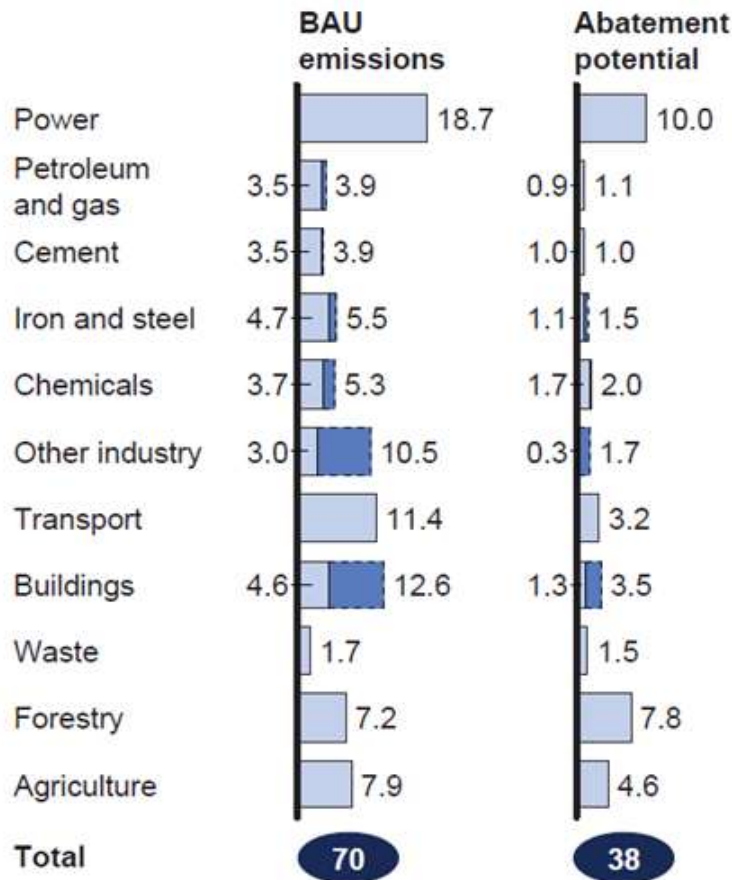
- ◆ In Canada, Mexico and the United States, buildings account for about 20%, 30% and 40% of energy consumption, respectively.
- ◆ In the United States alone, commercial and residential buildings account for 39% of CO₂ emissions.
- ◆ Building site energy consumption is expected to grow in the developing world.

WHY BUILDINGS?

THE IMPACT



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The building industry has the leading potential for abatement among all industries.

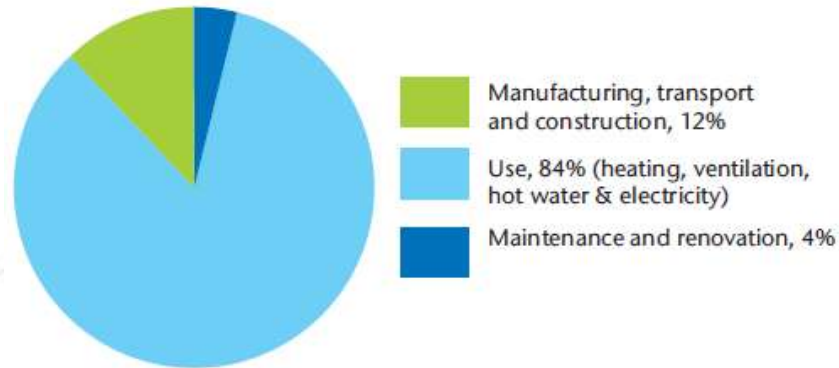
In billions of tons of CO₂ per year.

WHY BUILDINGS?

THE IMPACT



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The vast majority of a building's energy consumption results from daily usage: heating, ventilation, hot water and electricity.

WHY BUILDINGS?

MISPERCEPTION OF IMPACT



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- ◆ On average, buildings account for 40% of CO₂ emissions.
- ◆ Public perception generally underestimates this figure, meaning that the potential for energy savings has not been fully realized by the public.

WHY BUILDINGS?

MISPERCEPTION OF COST



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“How much more do you think a certified sustainable building would cost to build relative to a normal building?”

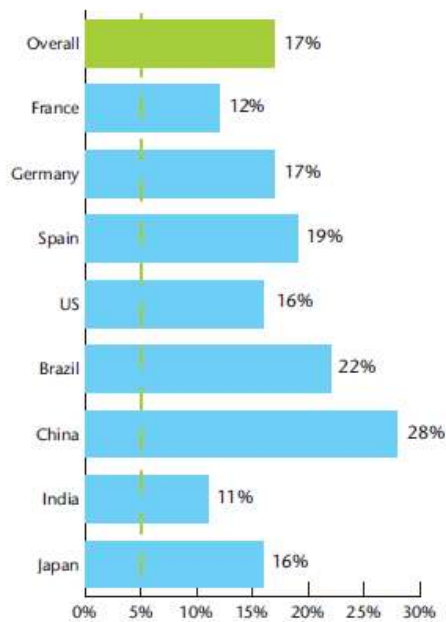


Figure 12: Estimates of cost premium for “a certified sustainable building”

- ◆ Making a building environmentally sustainable costs approximately 5% more than following business as usual practices.
- ◆ However, public perception of the cost of sustainability is wildly overestimated.



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BUILDING TECHNOLOGIES: A SOLUTION TO CLIMATE CHANGE

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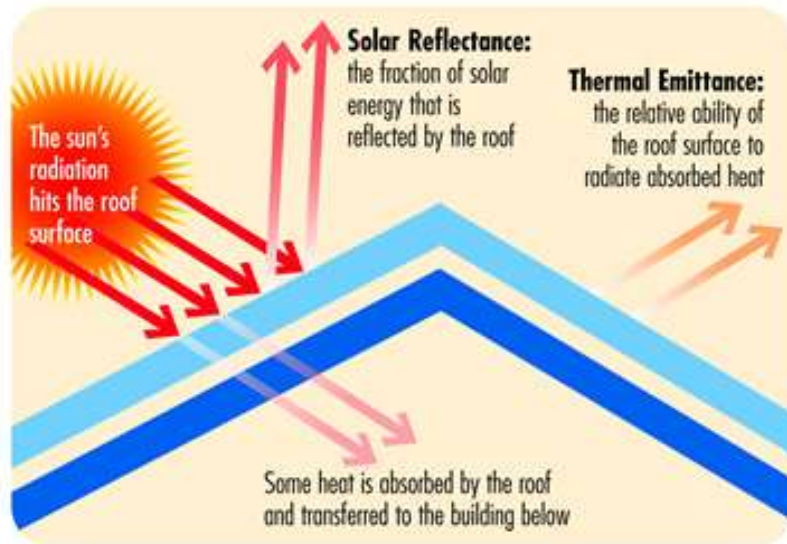
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- ◆ Cool Roof Surfaces
- ◆ Building Insulation

COOL ROOF SURFACES



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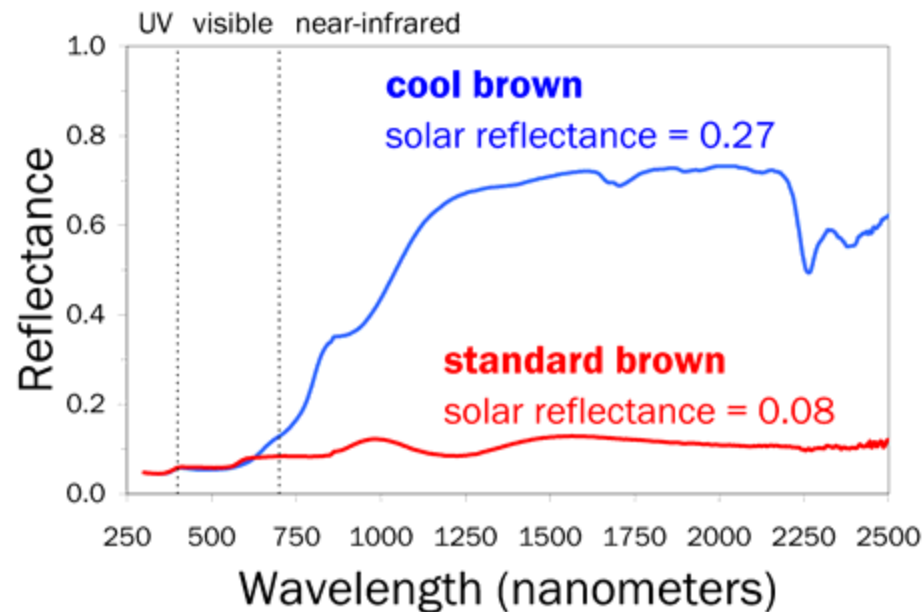


- ◆ A cool roof surface reflects and emits the sun's heat back to the sky instead of transferring it to the building.
- ◆ Cool surfaces are measured by two properties: solar reflectance and thermal emittance.

COOL ROOF SURFACES



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Solar spectral reflectance of cool and standard brown surfaces.

COOL ROOF SURFACES



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Why cool roofs?

- ◆ Net Energy Savings
- ◆ Reduced Peak Energy Needs
- ◆ Heat Island Reduction

COOL ROOF SURFACES



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Types of cool roof surfaces:

- ◆ Cool Membranes
- ◆ Cool Coatings
- ◆ Cool Metal
- ◆ Cool Shingles and Tiles



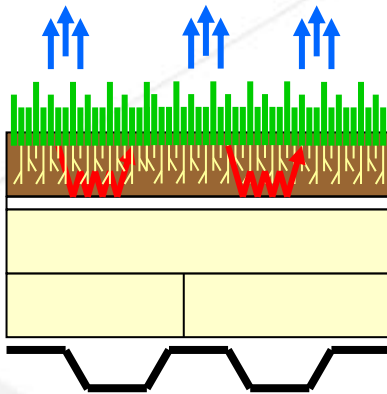
COOL ROOF ALTERNATIVES



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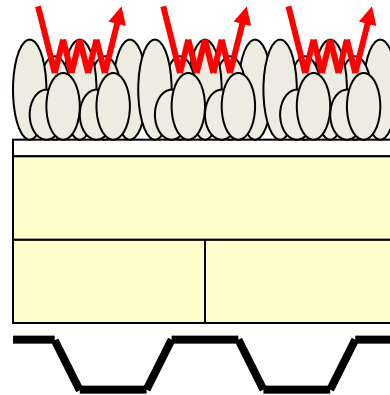
COOL

VEGETATION



A Traditional Alternative Using Transpiration & Thermal Mass

COOL BALLAST



An Emerging Economical Alternative Using Thermal Mass

COOL COLORS



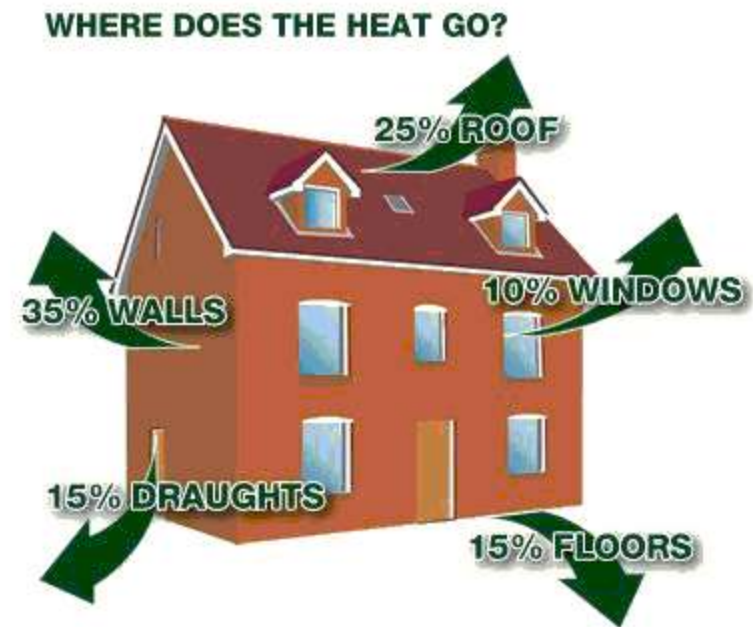
An Aesthetic Alternative

BUILDING INSULATION



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- ◆ Building insulation is an efficient way to improve energy efficiency and abate climate change.
- ◆ Heating and cooling account for 50% to 70% energy used in the average home. Inadequate insulation and air leakage are the leading causes of energy wasted in homes.





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ROOFPOINT: AN INNOVATIVE TOOL FOR ENERGY MANAGEMENT

WHAT IS ROOFPPOINT?



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- ◆ RoofPoint provides a tool for private and public sector adoption of roofing best practices.
- ◆ RoofPoint is a voluntary, consensus-based green rating system developed to provide a means for roofing contractors, building owners and designers to select roof systems based on long-term energy and environmental benefits.

WHAT IS ROOFPPOINT?



RoofPOINT

GUIDELINE

1.
2.
3.
4.
5.



CHECKLIST

-
-
-
-
-



ASSESSMENT SYSTEM

OPTION A:	OPTION B:
+	+
+	+
+	+



RECOGNITION

THIS IS TO CERTIFY THAT _____ MEETS THE CRITERIA FOR A ROOFPPOINT ROOF



WHY ROOFPOINT?



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◆ Lack of Roofing Visibility and Influence

- ◆ Low-slope roofing systems contribute in many ways to achieving building sustainability. However, many prominent green building rating systems tend to narrowly focus on one or two roof system options—cool roofing and vegetated roofing—instead of the broader array of roofing systems available to enhance the sustainability of the built environment.

◆ Too Little Attention to Re-Roofing

- ◆ Green building rating systems, with their predominant focus on new construction or major building renovation, tend to neglect the billions of square feet of re-roofing systems installed on existing buildings every year.

◆ Too Little Emphasis on Roof Durability

- ◆ Green building rating systems may place too little emphasis on the durability and long-term performance required for a roofing system to be considered truly sustainable; and this lack of emphasis on roofing durability may significantly reduce the long-term sustainability of the underlying building.

ROOFPOINT PROJECTS IN NORTH AMERICA



RoofPOINT



LEGO® Molding Facility

Ciénega de Flores, Nuevo León, México

Submitted by Firestone Building Products

- ◆ Cool roof surface to reflect solar energy and reduce air conditioning needs
- ◆ Multiple staggered layers of roof insulation to increase overall energy efficiency
- ◆ Extensive roof skylight system to minimize artificial lighting needs
- ◆ Enhanced wind uplift design to resist severe storms
- ◆ Increased roof membrane thickness to accommodate roof maintenance traffic

ROOFPOINT PROJECTS IN NORTH AMERICA



RoofPOINT



- ◆ Largest green roof in Latin America featuring a running track, meeting and contemplation areas
- ◆ Solar-powered area lighting and solar thermal system for restrooms
- ◆ Comprehensive water management system retains and reuses all rain water
- ◆ Highly durable roof system featuring new PVC membrane to extend roof service life

INFONAVIT

Ciudad de México, D.F., México

Submitted by Center for Environmental
Innovation in Roofing

ROOFPOINT PROJECTS IN NORTH AMERICA



RoofPOINT



Douglass Colony Group HQ
Commerce City, Colorado, USA
Submitted by Douglass Colony Group

- ◆ R-38 insulation exceeds ASHRAE 189.1 minimum requirements by over 50% to reduce heating and cool demands
- ◆ Cool roof with high albedo roof surface to reduce the urban heat island effect
- ◆ 100,000 kW rooftop solar power system will support a portion of the building's electricity demands
- ◆ Skylight system combined with interior lighting sensors reduces the need for artificial lighting

ROOFPOINT PROJECTS IN NORTH AMERICA



RoofPOINT



Headquarters Honda
Clermont, Florida, USA
Submitted by Tecta America

- ◆ Vegetative roof area offsets storm water footprint for additional service bays
- ◆ Controlled roof daylighting in service area reduces artificial lighting demand during operating hours
- ◆ R-23 insulation to help meet LEED® Platinum energy standards
- ◆ 126 kW rooftop PV system generates significant portion of the facilities electrical needs

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