



JONES LANG
LASALLE

Real value in a changing world

Energy Efficiency and Renewable Energy Options in Green Building Design

Gagan Singh











CEO – Project & Development Services

Jan 8, 2011

Helping our clients LEED the way in US



Our Green Building Experience (India) – Management/ Facilitation

MNC clients	LEED GOLD (NC)		Microsoft Hyderabad – 2008	Indian Developers	LEED GOLD (CS)		RMZ Millenia Business Park Chennai – 2008	
	LEED SILVER (NC)		Motorola Chennai – 2008		LEED PLATINUM (Pre Certified) CS		RMZ Ecospace Kolkata – 2009	
	LEED PLATINUM (NC)		Novartis Healthcare, Hyderabad – 2009		LEED PLATINUM (CI)		Royal Dutch Shell Chennai – 2009	
	LEED SILVER (NC)		CA Technologies, Ph II Hyderabad – 2010		Indian MNCs	GRIHA 3 Star (T)		HUL New Eco Campus Mumbai – 2010
	LEED SILVER (NC)		Oracle Phase 3 Hyderabad – 2010			LEED GOLD (NC)		VIMTA Life Sciences Hyderabad – 2009

CS – Core and Shell, NC – New Construction, CI – Commercial Interiors, T – Targeted

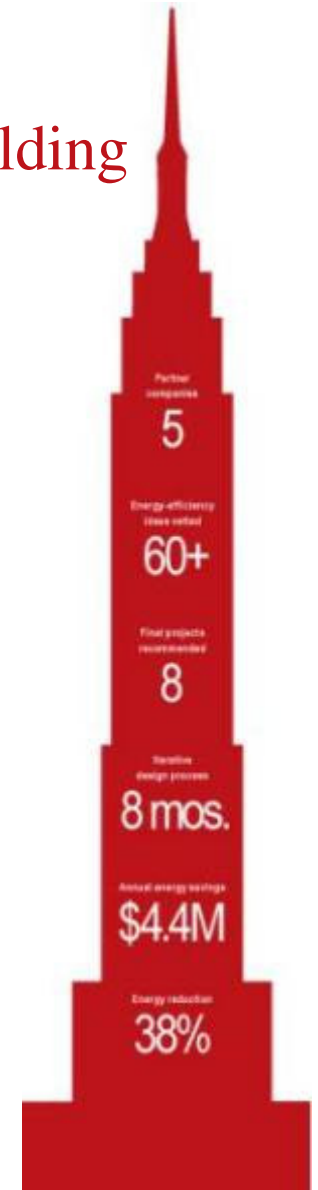
Case Study: Empire State Building (ESB)

A landmark sustainability project for the Empire State Building

The Empire State Building, an iconic, pre-war trophy office building, can catalyze change by cost-effectively reducing greenhouse gas emissions while attracting world class tenants.

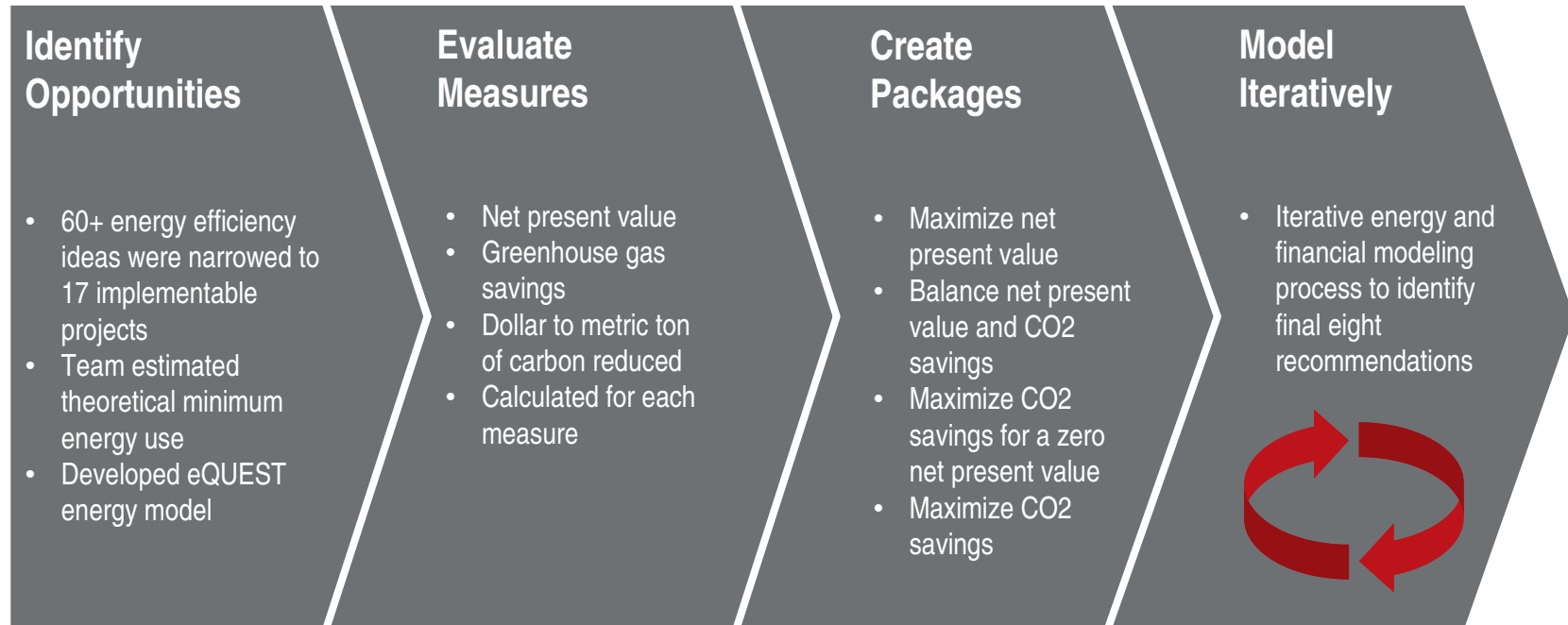
Recognized throughout the world
3.8 million visitors per year
102 stories and 2.8 million square feet
CO ₂ emissions of 24,000 tons per yr
\$11 million in annual energy costs
Peak office building demand of 9.5 MW
88 kBtu per SF per yr for the office building

Jones Lang LaSalle manages the Empire State Building sustainability project, which reduces energy usage by nearly 40 percent.





Process of elimination



8 select improvements for the greatest impact

Window Light Retrofit

Refurbishment of 6,500 glass windows, using existing glass to create triple-glazed insulated panels; reduced summer heat gain & winter heat loss.

Radiator Insulation Retrofit

Introduction of insulation behind radiators to reduce heat loss and more efficiently heat the building perimeter.

Tenant Lighting, Daylighting and Plug Upgrades

Introduction of improved lighting designs, daylighting controls, plug load, occupancy sensors.

Air Handler Replacements

Replacement of air handling units with VFD fans to allow increased energy efficiency in operation and improved comfort.

Chiller Plant Retrofit

Improve chiller efficiency and controllability.

Whole-Building Control System Upgrade

Upgrade of existing building control system to optimize HVAC operation as well as provide detailed sub-metering information.

Ventilation Control Upgrade

Introduction of demand control ventilation in occupied spaces to improve air quality and reduce energy required to condition outdoor air.

Tenant Energy Management Systems

Introduction of individualized, web-based power usage systems for each tenant to allow more efficient management of power.

The results

The \$13.2M plan is projected to:

- **Reduce energy use by 38 percent, an annual savings of \$4.4M**
- **Reduce carbon emissions by 105,000 tons over the next 15 years**
- **Be funded through energy and operational savings**
- **Completed within two years**
- **Serve as a model for owners of existing buildings**



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Thank you

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