



*Creating Markets, Creating Opportunities*



# A REVIEW OF GREEN BUILDING INCENTIVES AND AN INTRODUCTION TO EDGE CERTIFICATION

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Corinne Figueredo, IFC 4/19/17

# WHAT IF THE BUILDINGS IN YOUR JURISDICTION WERE RESOURCE EFFICIENT?



# TOOLS TO PROMOTE VOLUNTARY CHANGE IN THE BUILDING SECTOR

- INCENTIVE OPTIONS



- A tool to help designers
- An affordable certification
- An easy way to quantify impact (e.g. GHG tCO<sub>2</sub>e)

# INCENTIVE TYPES FOR GREEN BUILDINGS

## TOOLS TO INFLUENCE BUILDING PATTERNS ACROSS THE CITY

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### 1. Publicity

- Special recognition or awards

### 2. Expedited approval

- For planning, zoning or land use approvals
- For plan review of building permits
- For building inspections

### 3. Land Use Changes

- Density bonuses allowing for increased floor area ratio (FAR)
- Permitted mixed-use development

### 4. Financial

- Reduced or exempted planning approval or building permit fee
- Grants
- Revolving loan funds
- Reduced taxes

# INCENTIVES CAN HELP KICK-START A VIRTUOUS CIRCLE FOR GREEN BUILDINGS

*"We would fund  
efficient  
buildings, but  
there is no  
demand for  
them."*



Home Owners

*"We would like  
lower utility bills  
but there aren't  
any efficient  
homes."*



Investors

Value creation  
among all market  
players.



Builders

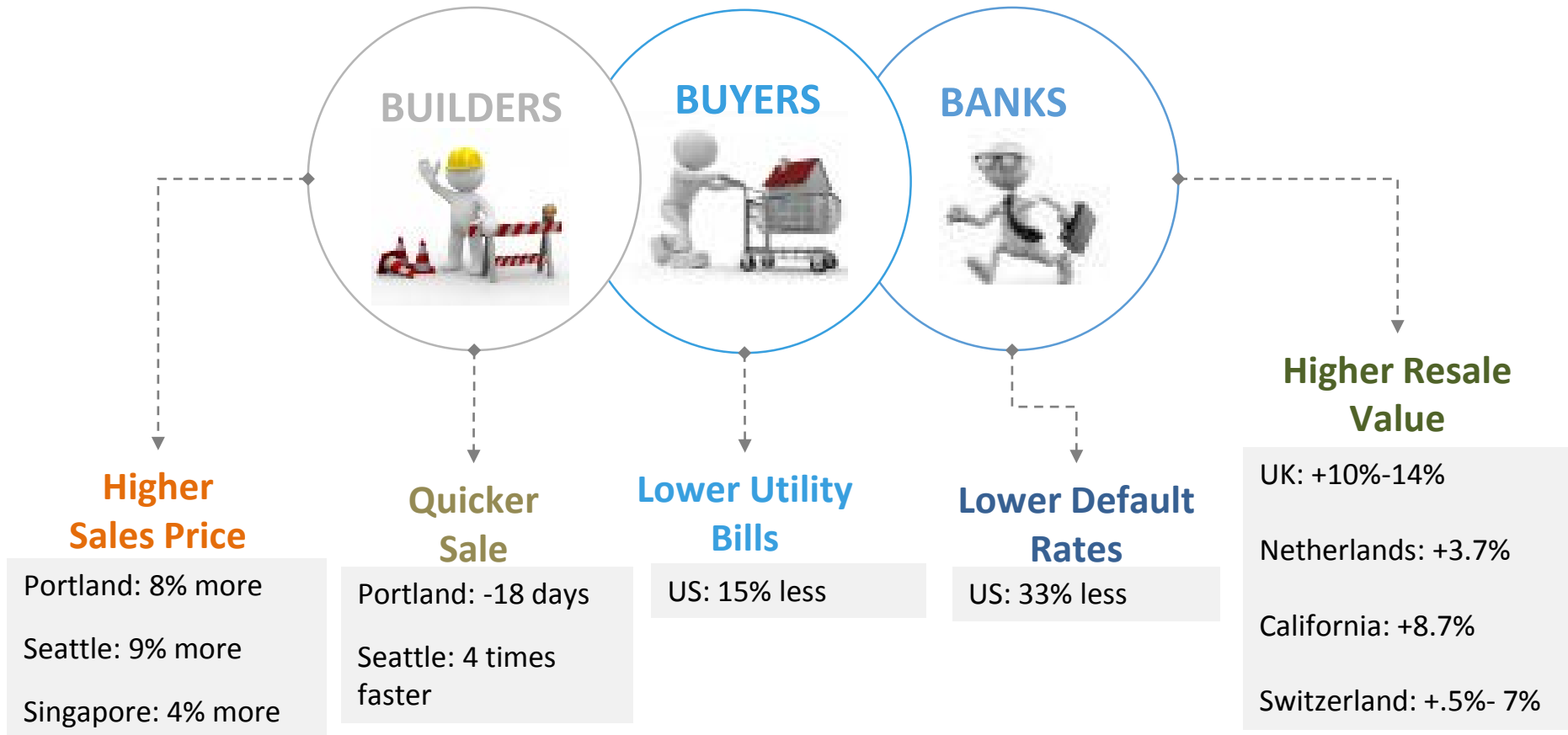
*"We would ask  
for energy-  
efficient homes,  
but investors  
won't finance  
them."*



Developers

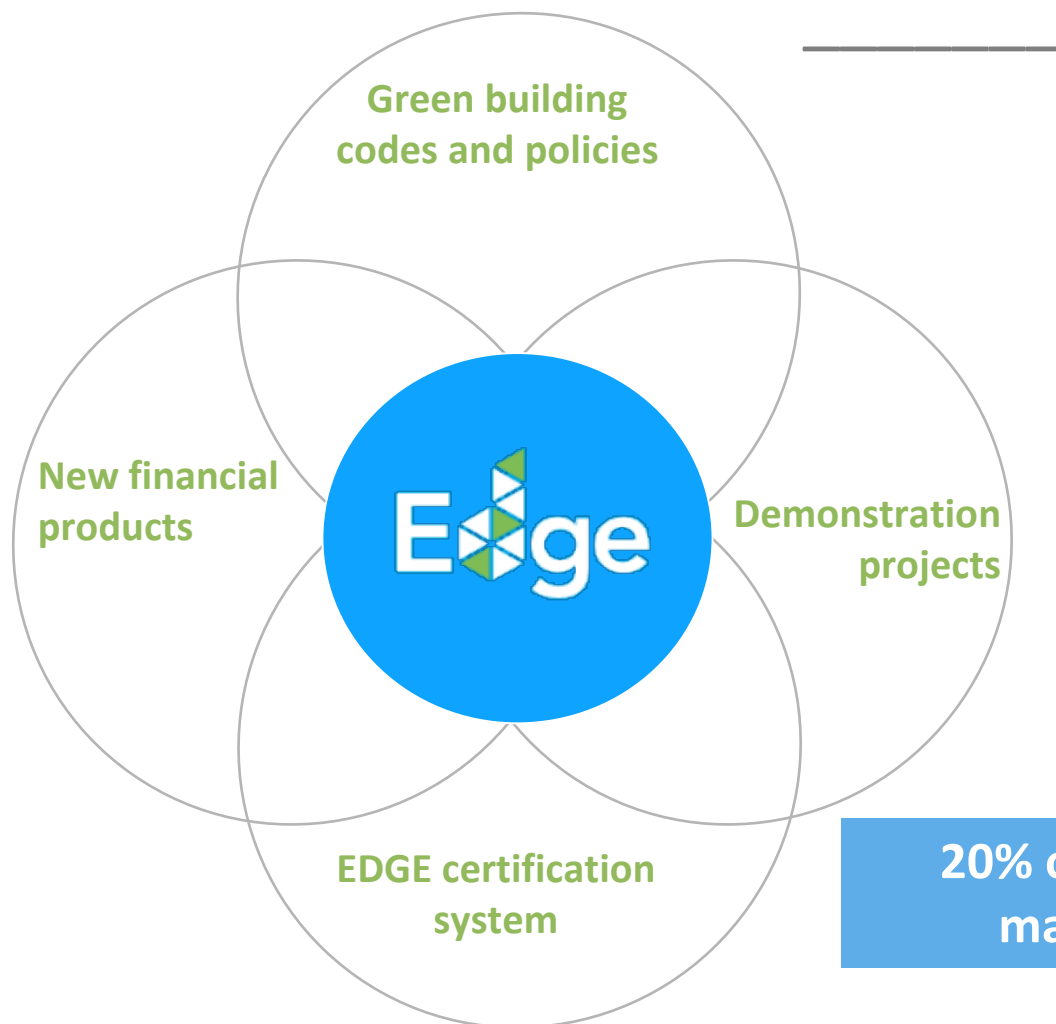
*"We can build  
energy-efficient  
homes, but  
developers  
don't ask for  
them."*

# A VIRTUOUS CIRCLE SUSTAINED BY THE COMMERCIAL VALUE OF GREEN BUILDINGS



# IFC'S GREEN BUILDING PROGRAM: THE VISION

## A HOLISTIC ENGAGEMENT OF ALL STAKEHOLDERS



**20% of all new construction in target markets to be green in 7 years.**



# HOW CAN WE MAINSTREAM GREEN BUILDINGS?

## EDGE: A FAST, EASY AND AFFORDABLE CERTIFICATION



A metrics-driven, scalable voluntary standard was needed to align the interests of market players, prove the case for building green, and reward innovative design.

Recognizing that this approach was missing, IFC created EDGE. Over 1,000,000 square meters certified to date in 14 countries. Over \$2 billion in IFC's own green investments facilitated.

\*



# EDGE CASE STUDIES ONLINE: OFFICES, RETAIL, HOSPITALS, HOTELS AND HIGH TO LOW INCOME RESIDENTIAL



Kaufland  
📍 Bulgaria



First Home Premium - Binh Duong  
📍 Vietnam



Keserwan Medical Center  
📍 Lebanon



Citra Towers Kemayoran  
📍 Indonesia



City Express Hotels  
📍 Mexico



VBHC  
📍 India



Johnson Controls HQ Asia Pacific  
📍 China



Canopus  
📍 Brazil

# EXCELLENCE IN DESIGN FOR GREATER EFFICIENCIES



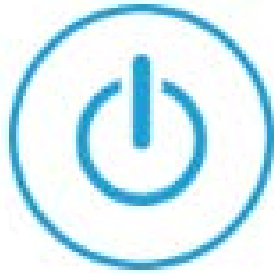
# THE FREE EDGE SOFTWARE OFFERS LOCALLY RELEVANT SOLUTIONS FOR RESOURCE EFFICIENT DESIGN, INCLUDING FINANCIAL COSTS AND BENEFITS.



[www.edgebuildings.com](http://www.edgebuildings.com)

# EDGE: A GREEN BUILDING STANDARD

## CLEAR, ACHIEVABLE TARGETS.



20%

ENERGY USE



20%

WATER USE



20%

EMBODIED ENERGY IN  
MATERIALS

‘A building that has **20% less energy, water and material consumption** compared to an equivalent **local** benchmark.’

The standard provides a performance assurance to buyers and investors.

# EDGE CERTIFICATION IS DELIVERED BY THE LARGEST AND MOST PRESTIGIOUS NETWORKS IN THE WORLD



## Worldwide



**GBCI®**

Green Business  
Certification Inc.



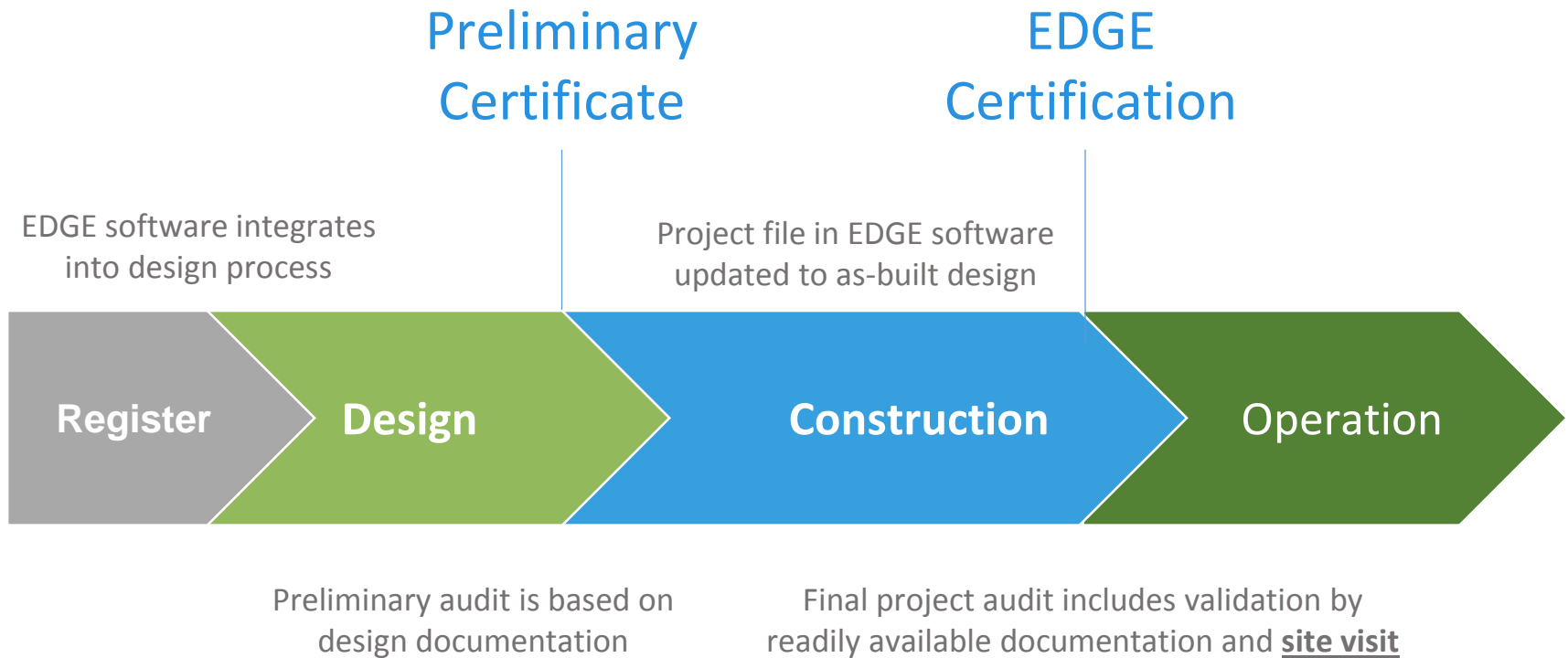
thinkstep

thinkstep-SGS  
joint venture

Philippine	Costa Rica	India	Indonesia	South Africa	Vietnam
 <p>PHILIPPINE GREEN BUILDING INITIATIVE</p>	 <p>Green Building Council Costa Rica</p>	 <p><b>GBCI®</b></p> <p>Green Business Certification Inc.</p>	 <p>Green Building Council Indonesia</p>	 <p>Green Building Council South Africa</p>	 <p>SGS</p>

IFC currently works with five local Certifiers to help scale up green building growth.

# EDGE CERTIFICATION PROCESS REQUIRES LITTLE ADDITIONAL DOCUMENTATION





# SOFTWARE DEMO



[www.edgebuildings.com](http://www.edgebuildings.com)



# WHAT IS NEW ABOUT EDGE?

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**FINANCIAL CALCULATOR** No other certification system has free software to estimate the cost of going green for fast decision-making.



**QUANTITATIVE APPROACH** EDGE projects performance with a uniquely measurable approach to impacts: **GHG tCO<sub>2</sub>e; water M<sup>3</sup>; kWh.**



**ONE-STOP SHOP** Efficiency simulations are executed in EDGE and the entire certification process can be conducted within the software.



**PROJECT INTEGRATION** The design tool guides users from the start and documents required are just invoices, photos, architectural drawings.



**LOCATION-SPECIFIC** EDGE has city – level climate and lifestyle data for more accurate results.



**GREEN BUILDINGS FOR ALL** Fast and affordable, EDGE makes certification easy for everyone.

# EDGE'S GROWING NETWORK



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# USA, ARLINGTON, VIRGINIA: BUILDING DENSITY

**LEED** is used to support a tiered benefit system in which projects that have the highest LEED certifications are rewarded with the most generous Floor Area Ratio (FAR).

- INCENTIVE - Developers may be granted additional density up to 0.25 FAR and/or additional height (up to 3 stories if the building meets the Silver LEED rating or higher).
- REQUIREMENT - Arlington County requires the developer to post a bond or a letter of credit equal to the amount of the approved bonus density multiplied by the average rental rate. If the building does not achieve the promised level of performance, the bond or credit defaults to the County.

# CHINA : DIRECT CASH SUBSIDY PROGRAM

**3-Star** certification supports a significant national cash subsidy program channeled from Beijing to provincial & local governments by Ministry of Housing & Urban Rural Development (MOHURD).

- INCENTIVE - Cash subsidy per square meter:
  - ~\$7/ square meter for a 2-Star certified building.
  - ~\$13 /square meter for a 3-Star certified building
- REQUIREMENT - a project must get full post construction certification.

Central government, now considering implementing reduction of property tax to owners of green buildings coupled with an interest subsidy program.

# BRAZIL : TAX AND DENSITY INCENTIVES

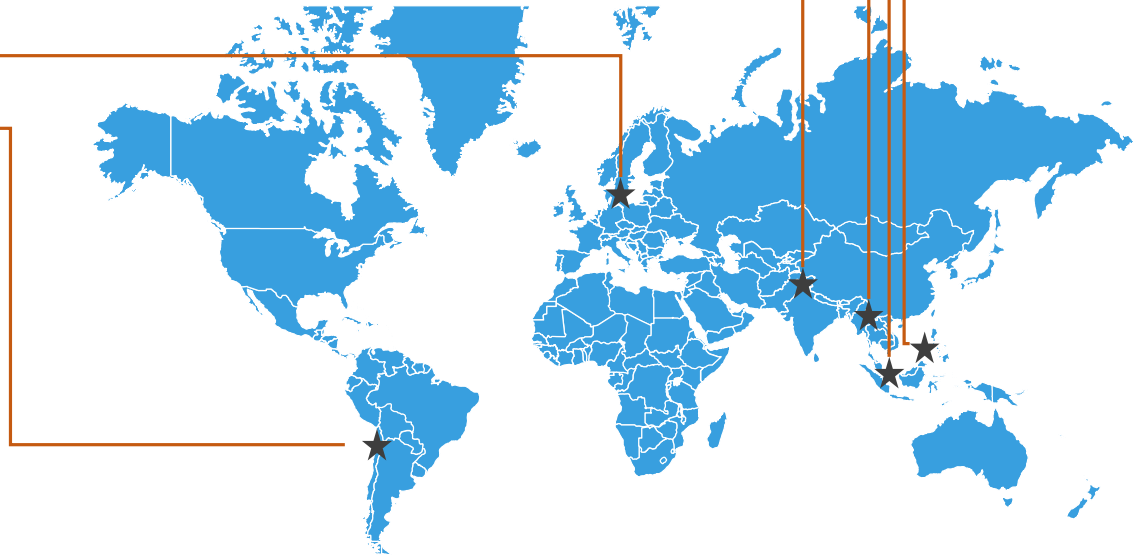
**LEED, AQUA, PBE Edifica and EDGE** support São Paulo's incentives for environmentally friendly or sustainable buildings.

- INCENTIVES – increases in **density**; significant **discounts on the one-off tax** "Outorga Onerosa" paid to the municipality upon project completion.
- REQUIREMENTS – Projects which introduce **green space or increased permeability**, get density bonus. Projects which receive **third party green certifications** or energy efficiency labels get density and/or tax breaks.

The exact rates of discount for different levels of certification are expected to be published shortly by the municipal government. The law was passed in late 2016.

# LET'S DISCUSS WHAT MAKES SENSE FOR YOUR CITY: IFC IS WORKING WITH SEVERAL CITIES WORLDWIDE

- Mandaluyong
- Jakarta
- Ho Chi Minh city
- Bhubaneswar
- Belgrade
- Buenos Aires



We invite you to reach out to Corinne at [cfigueredo@ifc.org](mailto:cfigueredo@ifc.org)





[www.edgebuildings.com](http://www.edgebuildings.com)



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# ANNEXES

Homes

Hotels

Retail

Offices

Hospitals

Base Case Utility Cost **402,432** \$/Month

Incremental Cost **0** \$

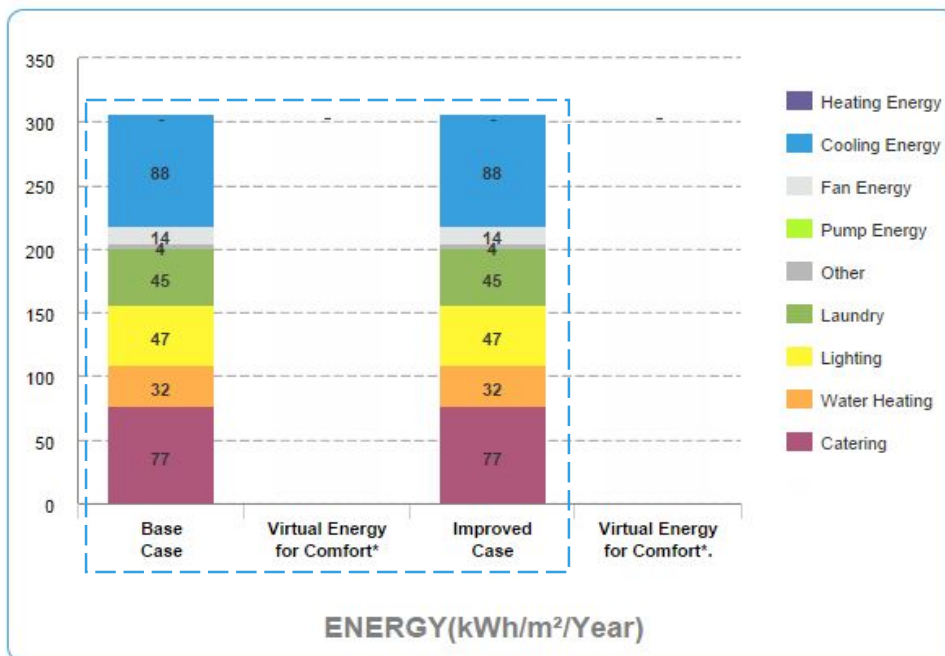
Utility Costs Reduction  \$/Month

Payback in Years  Yrs.

## Energy Efficiency Measures

- ☐ Reduced Window to Wall Ratio - WWR of 40%
- ☐ External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- ☐ Insulation of Roof Surface - U Value of 0.45
- ☐ Insulation of External Walls - U Value of 0.45
- ☐ Low-E Coated Glass - U Value of 3 W/m<sup>2</sup> K and SHGC of 0.45
- ☐ Higher Thermal Performance Glass - U Value of 1.95 W/m<sup>2</sup> K and SHGC of 0.28
- ☐ Natural Ventilation - Corridors
- ☐ Natural Ventilation - Guest Rooms with Auto Controls
- ☐ Variable Refrigerant Volume (VRV) Cooling System - COP of 3.45
- ☐ Air Conditioning with Air Cooled Screw Chiller - COP of 3.2
- ☐ Air Conditioning with Water Cooled Chiller - COP of 5.39
- ☐ Ground Source Heat Pump - COP of 4.65
- ☐ Absorption Chiller Powered by Waste Heat for Space Heating- COP of 0.7
- ☐ Recovery of Waste Heat from the Generator for Space Heating
- ☐ Variable Speed Drives on the Fans of Cooling Towers
- ☐ Variable Speed Drives Pumps
- ☐ Sensible Heat Recovery from Exhaust Air - Efficiency of 60%
- ☐ High Efficiency Condensing Boiler for Space Heating - Efficiency of 90%
- ☐ High Efficiency Boiler for Water Heating - Efficiency of 90%
- ☐ Variable Speed Hoods with Automated Fan Controls

0.00%



Homes

Hotels

Retail

Offices

Hospitals

**Base Case Utility Cost** 102,432 \$/Month

**Utility Costs Reduction** 40,040 \$/Month

**Incremental Cost** 915,675 \$

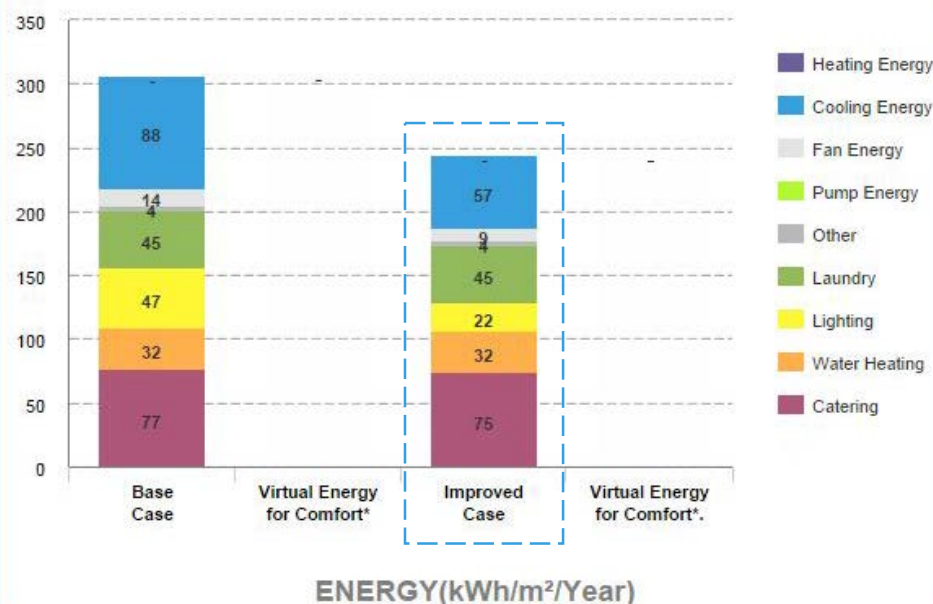
**Payback in Years** 1.9 Yrs.

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39.3% Meets EDGE Standard





# PASSIVE DESIGN FOR ENERGY EFFICIENCY

Orientation

Shading

Natural Ventilation

Insulation

Window to Wall Ratio

Materials and Color

Bruck Passive House Hotel, EDGE Certified, 2015



# EFFICIENT AND LOW CARBON SYSTEMS

## Building Systems

- Lighting
- Air Conditioning (Cooling)
- Heating
- CHP
- Lifts and Escalators
- Hot Water
- Metering
- Small Power – Appliances

## Low Carbon and Renewable Energy Technologies

- Combined Heat and Power
- Solar Thermal Panels
- Photovoltaic Panels
- Solar Cooling
- Biomass & Biofuel
- Ground Source Heat Pumps
- Air Source Heat Pumps



# WATER EFFICIENCY

Low-flow Plumbing Fixture

Aerators and Auto Shut-off Faucets

Rainwater Harvesting System

Efficient Water Closets

Grey Water Treatment and  
Recycling System

Black Water Treatment and  
Recycling System

Water-efficient Landscaping

Condensate Water Recovery

Abhikalpan Office, EDGE-certified office project in India (2016)



# DEFINING GREEN DESIGN

## LOW EE MATERIALS

Reduce quantity

Substitute high-energy materials

Find alternatives with low embodied energy

City Express Hotel-Santa Fe, Preliminary EDGE Certificate in Mexico (2012)