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Introduction

- A responsible strategic management consulting company working for a green and clean environment and sustainable development. With an objective to promote green growth and sustainable development, we aim to create viable framework and solutions for maintaining the equitable development all around. With a focus to maintain the sustainable performance, we wish to facilitate the organisations in achieving the inclusive economic goals.

- With our multi-disciplinary team, we provide Green Building Certification Services catering to LEED Green Homes, GRIHA, IGBC, Energy Modeling & Simulation Study, Day lighting Analysis, Fundamental and Enhanced Third Party Commissioning Services, Energy Audits for Building & Industry pan India.

- Total Integrated experience of more than 20 years in Environmental Field.
Green Building refers to environment friendly and resource efficient structure and application of processes throughout its entire life cycle, i.e., planning, designing, construction, operation, maintenance, renovation, and demolition.

Features of Green Building:
- Less Water
- Optimizes energy efficiency
- Conserves Natural Resources
- Generates less waste
- Provides healthier space for occupants
Green Building Ratings In India

<table>
<thead>
<tr>
<th>LEED for New Construction (NC)</th>
<th>IGBC - New Buildings</th>
<th>GRIHA (Built up area &gt; 2500 sqm.)</th>
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<tr>
<td>LEED for Core &amp; Shell (CS)</td>
<td>IGBC - Green Homes</td>
<td>SVA GRIHA (Built up area &lt; 2500 sqm.)</td>
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<td>GRIHA for Large Development (Built up area &gt;1.5 lac sqm.)</td>
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<td>LEED for Existing Buildings: Operations &amp; Maintenance (EB:O&amp;M)</td>
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<td>IGBC - SEZ</td>
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<td>IGBC - Existing Buildings</td>
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**LEED** – Leadership in Energy & Environmental Design  
**IGBC** – Indian Green Building Council  
**GRIHA** – Green Rating for Integrated Habitat Assessment
Categories

- Sustainable Sites
- Water Efficiency
- Energy Efficiency
- Material & Resources
- Indoor Air Quality
- Innovations
Our Services

- Green Building Consultancy
- Building Simulation
- Building Commissioning
- Third Party Audits
Green Building Consulting

Green Building Consultancy
Building Simulation
Building Commissioning
Third Party Audits
Sustainability/ Prefeasibility Assessment:
A feasibility study is undertaken to assess the potential of the project in order to achieve the desired rating i.e. IGBC/ LEED/ GRIHA

- IGBC & LEED
  - (CERTIFIED, SILVER, GOLD, or PLATINUM)
- GRIHA
  - (1STAR, 2STAR, 3STAR, 4STAR & 5 STAR)

Services Offered - Green Building Certification:
- Facilitation
- Energy Simulation
- Fundamental & Enhanced Commissioning
Green Building Consulting

Building Simulation

Building Commissioning

Third Party Audits

Building Simulation
Building Simulation

- Software based analysis to assess the energy efficiency and climate responsiveness of a building design
- This helps in assisting architects, consultants and project team to
  - Decide on design strategies,
  - Improving/achieve overall energy efficiency,
  - Selection of building materials and
  - Optimization of building economics based on Life Cycle Cost (LCC)
*All types of building viz. residential, institutions, office buildings, factories, data centers etc. are covered
Energy savings from various ECM’s calculated

Comparison between Recommended Options and ASHRAE Budget Case
Day Light Simulation

- To check the amount of daylight coming inside the workplace
- Helps in selection of glass to avoid the glare and increase visibility with less heat ingress

Daylight analysis at Second Floor

Daylight analysis at Third Floor
Lighting Simulation

- Checks the light trespass from individual luminaries
- Calculates the energy savings from integration of daylight and efficient lighting design
- Helps in Designing of lighting and maintain uniform lumens levels in the user areas
- Reduces the lighting power densities or excessive lighting.
Climate analysis includes the following studies to determine the design strategies at conceptual design stage:

- Shading Analysis
- Sunpath Analysis
- Solar Insolation Analysis

Benefits of Climate analysis:

- Enhance daylight
- Determine sun shading
- Determine the envelope elevations
- Determine the master plan with landscape layout
- Ensure natural ventilation through wind analysis
At 14:00 Hrs

Sun path Analysis
Study of shadows and orientation at different times on 21\textsuperscript{st} June.
Solar Insulation Analysis
LEED Commissioning

- Systematic Verification and Documentation process of the building systems as designed is undertaken to meet the requirements.

- Some of the requirements in Green Building Commissioning under LEED rating and commissioning is Mandatory.

- These ratings require appointment of a “Commissioning Authority”, who is independent from the design and O&M team.
Retro Commissioning is a process which addresses efficiency problems of operational buildings by undertaking a systematic process of:

- Investigating
- Testing
- Analysing
- Adjusting and correcting

Additional Solutions offered along with Retro Commissioning:

- Energy Audits
- Water Audits
- Waste Audits
- Facility Surveys
Third Party Audits

Green Building Consulting

Building Simulation

Building Commissioning

Third Party Audits
Third Party Audits

- Energy Audit
- Lighting Audit
- Water Audit
- Waste Audit
Some of the benefits of Green Building may be exhibited as under

- **Intangible Benefits**
  - Brand Recognition for green commitment and responsible environment, social and economic player
  - Out of turn consideration and priority over others in getting environment clearance (projects => BUA 20000 sqm)
  - Marketing exposure through listing on IGBC/LEED/GRIHA website
  - Normally MNCs prefers to deal with Green Buildings only

- **Tangible Benefits**
  - Water savings : Upto 40%
  - Energy savings: Upto 50%
  - Carbon Emission Reduction Upto 35%
  - Reduction in Solid Waste: Upto 70%
# Government Incentives GRIHA

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<th>GRIHA Incentives</th>
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<td>Urban Development &amp; Housing Department, Government of Jharkhand incentivizes GRIHA Rated projects by awarding additional FAR of up to 7%</td>
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<td>Public Works Department, Government of Maharashtra mandates GRIHA for all government projects</td>
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<td>Uttar Pradesh Housing and Urban Planning Department: GRIHA incentives</td>
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<td>Haryana government: GRIHA Incentives</td>
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<td>Government of West Bengal, Department of Municipal Affairs: GRIHA incentives</td>
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<td>Pune Municipal Corporation (PMC) - GRIHA incentives</td>
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<td>Pune Municipal Corporation (PMC) - SVA GRIHA incentives</td>
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<td>Sikkim adopts GRIHA</td>
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<td>Additional 5% free of cost FAR for GRIHA projects in Rajasthan</td>
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<td>Fast track environmental clearance for GRIHA pre certified projects</td>
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<td>NOIDA and Greater NOIDA embrace GRIHA</td>
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<td>Pimpri Chinchwad Municipal Corporation: GRIHA incentives</td>
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<td>Pimpri Chinchwad Municipal Corporation: SVA GRIHA incentives</td>
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<td>SIDBI announces concessional rate of interest for GRIHA projects</td>
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<td>Additional 5% free of cost FAR for GRIHA projects in Punjab</td>
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<td>Ministry of Urban Development, Government of India announces free of cost 1% to 5% extra ground coverage and FAR for GRIHA projects</td>
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Government Incentives to IGBC-rated Green Building Projects

- **The Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India**, offers fast track environmental clearance for green building projects which are Precertified/ Provisionally Certified by IGBC.

- **Government of Punjab**
  - *Department of Local Government (Town Planning Wing)* offers an additional 5% Floor Area Ratio (FAR) free of charge for projects which are rated Gold or above by IGBC.
  - *Punjab Urban Development Authority* offers an additional 5% FAR free of charge for projects adopting IGBC’s Green Building Ratings.

- **Urban Development and Housing (UDH) Department, Government of Rajasthan** offers additional 5% FAR free of charge for projects which are rated Gold or above by IGBC.

- **Government of West Bengal**
  - *A. Government of West Bengal (Department of Municipal Affairs - Kolkata Municipal Corporation)* additional 10% FAR for projects which are Precertified/ Provisionally Certified as Gold or above by IGBC.
  - *B. Government of West Bengal (New Kolkata Development Authority)* additional 10% FAR for projects Precertified/ Provisionally Certified as Gold or above by IGBC.

- All IGBC rated green building projects in the MSME sector shall be eligible for financial assistance at concessional rates from *Small Industries Development Bank of India (SIDBI).*
Government Incentives IGBC/ LEED Contd..

- Government of Uttar Pradesh
  - A. Government of Uttar Pradesh (Housing and Urban Planning Department):
    Additional 5% FAR free of charge for projects which are rated as Gold or above by IGBC.
  - B. Additional 5% FAR free of charge is offered by the Greater Noida Industrial Development Authority (GNIDA) in Uttar Pradesh for projects which are rated as Gold or above by IGBC.

- Pune Municipal Corporation (PMC) and Pune Metropolitan Region Development Authority (PMRDA), Government of Maharashtra offers an additional FAR of 3%, 5% and 7% for Green Buildings rated as Silver, Gold and Platinum respectively by IGBC.

- Public Works Department (PWD), Government of Maharashtra has mandated that the renovation of existing buildings and the development of all new government buildings in Maharashtra shall be carried out as per the suitable IGBC Green Building Rating system.

- Government of Andhra Pradesh
  - The Industries & Commerce Department offers 25% subsidy on total fixed capital investment of the project (excluding cost of land, land development, preliminary and preoperative expenses and consultancy fees) for buildings which obtain green rating from IGBC. This incentive is applicable for MSME and large industries.
  - Municipal Administration and Urban Development Department offers the following incentives to projects obtaining the rating from IGBC:
    - 20% Reduction on Permit Fees
    - If the property is sold within three years, one-time reduction of 20% on Duty on Transfer of Property (Surcharge on Stamp Duty) on the submission of Occupancy Certificate issued by the Local Authority.

- Government of Himachal Pradesh (Town & Country Planning Deptt) offers an additional 10% FAR for projects which are granted Gold / Platinum rating by IGBC.

- Urban Development and Housing Department, Government of Jharkhand offers an additional FAR of 3%, 5% and 7% for Green Buildings rated by IGBC as Silver, Gold and Platinum respectively.

- Government of Haryana (Town & Country Planning Department), as per amendment in chapter 6 of the Haryana Building Code 2017 on 8 May 2018, offers an additional FAR (Floor Area Ratio) of 9%, 12% and 15% for Green Buildings rated as Silver, Gold and Platinum respectively by IGBC.
For more information or requirements, please contact;

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