Broad & LEED for Existing Buildings: Operation and Maintenance (EBOM) Certification

Broad Efficiency Improvements & Opportunities

<table>
<thead>
<tr>
<th>Energy</th>
<th>50% More Efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC</td>
<td></td>
</tr>
</tbody>
</table>

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</tr>
</thead>
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<tr>
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<td></td>
</tr>
</tbody>
</table>

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<td>Landfill Diversion</td>
<td></td>
</tr>
</tbody>
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What is LEED-EBOM

LEED for Existing Buildings: Operations and Maintenance is a rating system applicable to building operations, processes, and system upgrades. LEED certified buildings are designed to:

- Lower operating costs
- Reduce waste sent to landfill
- Conserve water and energy
- Be healthier and safer for occupants
- Reduce harmful greenhouse gas emissions

- MR – Materials & Resources
- IEQ - Indoor Env. Quality
- EA – Energy & Atmosphere
- IO – Innovation in Operations
- SS – Sustainable Sites
- WE – Water Efficiency

Energy

- Controls Upgrade for Building
- CO₂ Sensors for Air Quality Monitoring in Auditorium and Conference Rooms
- Whole Building Controls Upgrade
- Broad is 26% more efficient than comparable buildings

![Energy Efficiency Chart]

Water Fixtures

- Dual Flush Toilets (1.1 GPF 1.6 GPF)
- Aerators on bathroom fixtures (0.5 GPM, a 50% Reduction)
- Pint flush urinals (48k gallons per year saved)

![Water Fixtures Chart]

Waste

- On March 1, 2012 Caltech Facilities and Safety conducted a waste stream audit of Broad
- The Audit found that over 20% of the waste stream could be diverted to the Campus Composting Program

![Waste Diversion Chart]

What does this mean for you?

- **Improved Thermal Control** - Your offices and laboratories controls are now digital and provide real-time conditions to regulate temperature
- **Building System Optimization** – Heating and cooling is now 50% more efficient in Broad
- **First LEED EBOM Building on Campus** – this means fewer greenhouse gas emissions
- **Alternatively Financed** – Project cost (~$1 Million) covered by Caltech’s Green Revolving Fund and paid for by avoided utility costs from Broad energy efficiency savings

![Energy Efficiency Chart]

What else have we done in Broad?

- **Walk-off Mats** – Reduce dirt and debris in building and improve indoor air quality (IEQ)
- **Broad Café** - Locally sourced / organic produce (MR)
- **Retrocommissioning** – whole building optimization investigation (EA)
- **Custodial Effectiveness Audit** – Use of green cleaning products (IEQ)
- **Ventilation Studies** – ensure proper airflow rates (IEQ,EA)
- **Broad-Specific Carbon Emissions Tracking** – quantify, track and record emissions reductions (EA)

If you have any questions, feel free to contact:

Energy & LEED EB Manager Matthew Berbee Matthew.Berbee@caltech.edu
Director of Sustainability Programs John Onderdonk John.Onderdonk@caltech.edu
Energy Services Administrator Michelle McFadden Michelle.McFadden@caltech.edu