Green + Productive Workplace

Example of an simpler approach to green building assessment and certification

Simone Skopek
Certifications:
• Lay out the parameters for sustainable design and implementation
• Recognize high performance
“Leaders” represent <1% of building stock
Challenges:

• Cost
• Point chasing
• Prescriptive requirements and pre-requisites – “interpretation rulings”
• Complex certification and onerous submission requirements
Recommended Approach

- More affordable
- Simpler
- Apply rigor where it matters:
  - Report carbon, energy, water, waste
  - Management & Operations
- Continuous Improvement
- Avoid exaggerated claims
- Bottom line
“In our view, G+P is a solid program – comprehensive and user-friendly, that could easily replace LEED for Commercial Interiors (ID+C) and LEED-EBOM for tenants, and which delivers more directly relevant information, much faster and at a considerably lower cost than the BIU system from the UK’s BRE.

We believe it hits the mark where other assessments have failed.”

Jerry Yudelson
Author, speaker
former president of the Green Building Initiative
Former Chair of the GreenBuild Steering Cttee
Green + Productive Workplace

Building occupants:

- Impact the performance of buildings
- Challenging to motivate behavior changes
- Few metrics
- More interested in improving brand and productivity
New Realities Impacting the Workplace
New Realities Impacting the Workplace
New Realities Impacting the Workplace
New Realities Impacting the Workplace

The Rise of the Freelancer

- Over 60% of companies expect to hire freelancers in 2014.
- 38% of freelancers are earning more money than they did in-house.
- 55% of freelancers say they’ll never go back to traditional work.
New Realities Impacting the Workplace
New Realities Impacting the Workplace

## 5 Workplace Models

<table>
<thead>
<tr>
<th>Everyone has their own office or cubicle</th>
<th>Everyone has their own desk in an open office</th>
<th>Everyone has their own desk + some common space</th>
<th>Some assigned, some unassigned workstations + common space</th>
<th>ALL unassigned + common support space</th>
</tr>
</thead>
</table>

| 300-250sf/person | 250-200sf/person | 200-150sf/person | 150-100sf/person | 100-150sf/person |

*Space per employee is decreasing*

Increasing Choice, Efficiency, Flexibility and Cultural Integration

But the biggest shift is here
New Realities Impacting the Workplace
New Realities Impacting the Workplace

- 67% of employers say “employees’ poor health habits” is challenging affordable health coverage.
- 50% of employers offer wellness promotion initiatives.
- Need layout and features that promote exercise / good ergonomics; and dining facilities
As a result, 73% of corporate real estate executives expect to make changes in the workplace to improve productivity.
G4-EN3

Energy consumption within the organization

a. Report total fuel consumption from non-renewable sources in joules or multiples, including fuel types used.
b. Report total fuel consumption from renewable fuel sources in joules or multiples, including fuel types used.
c. Report in joules, watt-hours or multiples, the total:
   ○ Electricity consumption
   ○ Heating consumption
   ○ Cooling consumption
   ○ Steam consumption
d. Report in joules, watt-hours or multiples, the total:
   ○ Electricity sold
   ○ Heating sold
   ○ Cooling sold
   ○ Steam sold
e. Report total energy consumption in joules or multiples.
f. Report standards, methodologies, and assumptions used.
g. Report the source of the conversion factors used.
A green office is not necessarily comfortable or productive.
A productive office is not necessarily green
‘In your opinion, what is the best thing about this office?’
1. Natural light
2. Open plan
3. View
'In your opinion, what is the best thing about this office?'
1. Natural light
2. Open plan
3. View

‘Please describe your biggest complaint about your office’
1. Air temperature
2. Noise
3. Lack of privacy
Fix problems .... Improve productivity

<table>
<thead>
<tr>
<th></th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved acoustics</td>
<td>+ 6 - 300%</td>
</tr>
<tr>
<td>Improved lighting, day lighting and views</td>
<td>+ 5 - 18%</td>
</tr>
<tr>
<td>Improved thermal comfort and ventilation</td>
<td>+ 5%</td>
</tr>
<tr>
<td>Reduced stress from commuting</td>
<td>+ 11.5 working days/FTE</td>
</tr>
<tr>
<td>Improved ergonomics and privacy</td>
<td>+ 6%</td>
</tr>
<tr>
<td>Layout, comfort, social cohesion</td>
<td>+ 30%</td>
</tr>
</tbody>
</table>
Green + Productive Workplace

**GREEN**
- Energy/carbon
  - lighting; heating/cooling; plug load; server rooms
- Water
- Materials & Resources
  - green office supplies; green construction materials; reduce consumption (e.g. paper)
- Waste
- Public disclosure
  - energy; carbon; water; waste

**SMART**
- Space use efficiency
- Occupant engagement
  - Green Team; HR; IT; tenant/landlord teamwork
- Commuting

**PRODUCTIVE**
- Layout
  - that supports tasks/workflow and informal cohesive networks
- Acoustics
- Visual comfort
  - daylighting; lighting design; biophilia; visual interest
- Thermal comfort
- IAQ
- Employee amenities
- Wellness programs
Green + Productive Workplace

- Low energy intensity
- High performance building
- High % of occupants who find the environment acceptable
Portfolio Approach

- **East HQ (fit-out 2016)**
  - 22,230 SF / 94 employees

- **Slade (renovated in 2013)**
  - Sales & Marketing
  - 17,760 SF / 83 employees

- **Burl St.**
  - Finance, Accounting/HR
  - 13,763 SF / 71 employees

- **Danby Rd. (fit-out 2016)**
  - Research Division
  - 31,332 SF / 122 employees

- **Rae St.**
  - Client accounts
  - 32,200 SF / 145 employees

- **Elm Ave.**
  - Client Accounts
  - 12,300 /73 employees
### Corporate Leadership Assessment

Policies and directives that set a company-wide direction to be carried out by facility managers, business unit managers, Green Teams, HR, IT and employees.

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Date entered</th>
<th>Score</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRM Headquarters</td>
<td>Dec. 18, 2015</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Rutherford Center</td>
<td>Dec. 12, 2015</td>
<td>64%</td>
<td>45%</td>
</tr>
<tr>
<td>Leo Productions</td>
<td>Dec. 22, 2015</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>NEM S.E. Branch</td>
<td>Dec. 22, 2015</td>
<td>78%</td>
<td>60%</td>
</tr>
</tbody>
</table>
### Policies

<table>
<thead>
<tr>
<th>DISCLOSURE</th>
<th>DIRECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers of Business Units</td>
<td>Does the firm have a published Environmental Policy or annual CSR report that addresses its real estate (including leased assets) with respect to energy, GHG emissions and waste management?</td>
</tr>
<tr>
<td>Tenant Facility Managers</td>
<td>Yes</td>
</tr>
<tr>
<td>Green Teams</td>
<td>Yes – all three (Targets, Strategies and KPIs)</td>
</tr>
<tr>
<td>Human Resources</td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td></td>
</tr>
<tr>
<td>Build-out</td>
<td></td>
</tr>
</tbody>
</table>

**Does the firm communicate directives re. sustainability and wellness to the appropriate personnel in terms of:**

1. TARGETS;
2. STRATEGIES and RESOURCES; and
3. KEY PERFORMANCE INDICATORS (KPIs)

*to reduce energy, waste (and water where applicable) in offices?*

- Yes
- No
- NA (single small location)

**Are all sites in the portfolio larger than 10,000 SF actively monitored and benchmarked for energy and sustainability?**

- Yes
- No
- NA (small locations)

**Do new or renewed leases contain specific "green clauses" that set out mutually agreed performance targets and actions that landlord and tenant will take to achieve those shared goals?**

- Yes
- No

**Is there a requirement for separate electricity metering at the time of a new (or renewed lease or build-out)?**

- Yes
- No
Policies and directives that set a company-wide direction to be carried out by facility managers, business unit managers, Green Teams, HR, IT and employees.
BRM Headquarters

Green Assessment
Sustainability in the workplace including energy, water, waste, materials, commuting, and Green Teams

Health & Productivity Assessment
Workplace attributes that affect productivity and wellness including layout, acoustics, visual comfort, thermal comfort, IAQ, amenities, and wellness programs
### High Efficiency Lighting & Moderate Lighting Levels

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is ambient lighting high efficiency (T8s, T5s or LED lighting)?</td>
<td>90-100% high efficiency</td>
</tr>
<tr>
<td></td>
<td>80-89%</td>
</tr>
<tr>
<td></td>
<td>50-79%</td>
</tr>
<tr>
<td></td>
<td>&lt;50% high efficiency</td>
</tr>
<tr>
<td>Are LED lamps being used for general lighting?</td>
<td>&gt;50% of the area</td>
</tr>
<tr>
<td></td>
<td>&gt;25% of the area</td>
</tr>
<tr>
<td></td>
<td>&gt;10% of the area</td>
</tr>
<tr>
<td></td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Do task lights or display lighting use energy efficient bulbs?</td>
<td>Yes – primarily LED bulbs</td>
</tr>
<tr>
<td></td>
<td>No – primarily CFL bulbs</td>
</tr>
<tr>
<td></td>
<td>T8s or T5s</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>NA (no task lighting)</td>
</tr>
<tr>
<td>Do (electric) ambient lighting levels meet (and not exceed) the values recommended by IESNA in most of the following areas:</td>
<td></td>
</tr>
<tr>
<td>• for screen tasks, 200 - 300 lux (28 FC) of ambient lighting?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>NA (minimal computer work is done)</td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
</tr>
<tr>
<td>• for service areas e.g. hallways, print rooms, kitchens and tenant-installed washrooms, 100-200 lux (10 FC)?</td>
<td>75-100% of service areas</td>
</tr>
<tr>
<td></td>
<td>50-74%</td>
</tr>
<tr>
<td></td>
<td>Less than 50%</td>
</tr>
<tr>
<td></td>
<td>NA (no service areas)</td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
</tr>
<tr>
<td>Does the office consume 0.9 watts/SF or less for lighting OR 1.40 watts/SF for retail space?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>
### Lighting Controls

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is (most of) the lighting linked to a building automation system (BAS) and/or to occupancy sensor controls?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes – and also integrated with HVAC</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Not sure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do enclosed spaces (such as offices, meeting rooms, storage rooms) have their own lighting controls or occupancy sensors?</td>
</tr>
<tr>
<td>75-100% of enclosed areas</td>
</tr>
<tr>
<td>50-74%</td>
</tr>
<tr>
<td>&lt;50% of enclosed area</td>
</tr>
<tr>
<td>NA (no enclosed spaces)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there zoned lighting controls for different areas within large open offices or retail (more than 3,000 SF?)</td>
</tr>
<tr>
<td>Yes (75% of office area)</td>
</tr>
<tr>
<td>Partial (&gt;50%)</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can lights be dimmed in most of the office?</td>
</tr>
<tr>
<td>Yes - most areas (&gt;70%)</td>
</tr>
<tr>
<td>Some areas (&gt;50%)</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there lighting occupancy sensors (motion detectors) in the following areas:</td>
</tr>
<tr>
<td>• Open office areas?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Some</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Occupant-installed washrooms?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Some</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>
### Reduce Hours of Lighting

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there prominent signage that lights should be turned off when space is unoccupied OR are there occupancy sensors or automatic controls to turn off the lights at the end of the day?</td>
<td>Yes - signage or occupancy sensors&lt;br&gt;No signage but employees habitually switch lights off when a room is unoccupied&lt;br&gt;No&lt;br&gt;NA (occupants do not control lighting)&lt;br&gt;NA (build-out)</td>
</tr>
<tr>
<td>Are lights switched off at night, weekends etc.? (i.e. Is there a system or protocol to ensure this?) OR are there occupancy sensors or automatic controls to switch off lights at the end of the day?</td>
<td>Yes - automated&lt;br&gt;Yes – manually switched off consistently as per a rigorous protocol&lt;br&gt;No&lt;br&gt;NA (facility runs 24 hrs.)&lt;br&gt;NA (build-out)</td>
</tr>
<tr>
<td>Where lighting is controlled manually, are midnight audits conducted to monitor whether lights are being switched off?</td>
<td>Yes&lt;br&gt;No&lt;br&gt;NA (automated shut-off)</td>
</tr>
<tr>
<td>Is cleaning done during the day?</td>
<td>Yes - automated&lt;br&gt;No&lt;br&gt;NA (facility runs 24 hrs. or not feasible)&lt;br&gt;NA (build-out)</td>
</tr>
<tr>
<td>Where lighting is controlled centrally after hours, are there additional zone switches with occupancy sensors or timers in the occupant space to control after-hours lighting?</td>
<td>Yes&lt;br&gt;No&lt;br&gt;NA</td>
</tr>
</tbody>
</table>
Sustainability in the workplace including energy, water, waste, materials, commuting and Green Teams

Workplace attributes that affect productivity and wellness including layout, acoustics, visual comfort, thermal comfort, IAQ, amenities and wellness programs
LAYOUT AND ACOUSTICS
6-300% improved productivity

<table>
<thead>
<tr>
<th></th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>67%</td>
</tr>
<tr>
<td>Call worker satisfaction</td>
<td>300%</td>
</tr>
<tr>
<td>Sales productivity</td>
<td>20%</td>
</tr>
<tr>
<td>Ability to focus</td>
<td>48%</td>
</tr>
<tr>
<td>Memory tasks</td>
<td>10%</td>
</tr>
<tr>
<td>Stress (blood pressure heart rate)</td>
<td>27%</td>
</tr>
</tbody>
</table>
LAYOUT AND ACOUSTICS
6-300% improved productivity
Welcome to the Quiet Zone

- Turn cell phone ringers to silent
- Take phone conversations out of library
- Music with headphones allowed (make sure you're not disturbing others with volume)

Talk out there, think in here.
DAYLIGHT & VIEW
7-18% improved productivity
DAYLIGHT & VIEW
7-18% improved productivity
LIGHTING DESIGN
5% improved productivity
THERMAL COMFORT
5% improved productivity
IAQ
10-100% improved productivity

What is Legionella?
ERGONOMIC WORKSTATIONS & TRAINING
Does an employee survey indicate that the majority are satisfied with the acoustic environment?

- High level of satisfaction overall
- Mixed responses
- Largely dissatisfied
- NA (no occupant survey done)
- NA (build-out)

Are there any observed or reported acoustic problems associated with:

- Sources outside the building?
  - No problems
  - Some problems

- Neighboring tenancies?
  - No problems
  - Some problems

- HVAC (Typically a rumbling, vibration or rushing noise)?
  - No problems
  - Some problems

- Lighting fixtures (typically a humming or buzzing noise)?
  - No problems
  - Some problems

- Plumbing (typically creaking, squeaking or rattling)?
  - No problems
  - Some problems

Are there dedicated “Quiet Zones” OR acoustically separated areas for focused concentrated work?

- Yes - sufficient to meet demand
- Not sufficient to meet demand
- NA (e.g. call center, retail)

Are there sufficient small enclosed meeting rooms to take conference calls on speaker phones or have a confidential conversation?

- Yes - sufficient to meet demand
- Not sufficient to meet demand
Does an employee survey indicate that the majority are satisfied with the acoustic environment?

- Generally satisfied overall
- Mixed responses
- Largely dissatisfied
- NA (no occupant survey done)

Are there any observed or reported acoustic problems associated with:

• Sources outside the building?
  - No problems
  - Some problems

• Neighboring tenancies?
  - No problems
  - Some problems

• HVAC (Typically a rumbling, vibration or rushing noise)?
  - No problems
  - Some problems

• Lighting fixtures (typically a humming or buzzing noise)?
  - No problems
  - Some problems

• Plumbing (typically creaking, squeaking or rattling)?
  - No problems
  - Some problems

Are there dedicated “Quiet Zones” OR acoustically separated areas for focused concentrated work?

- Yes - sufficient to meet demand
- Not sufficient to meet demand
- NA (e.g. call center, retail)

Are there sufficient small enclosed meeting rooms to take conference calls on speaker phones or have a confidential conversation?

- Yes - sufficient to meet demand
- Not sufficient to meet demand
- NA (e.g. call center, retail)
Do walls, ceilings and partitions absorb sound as follows:

- Ceilings with an NRC of at least 0.75 OR acoustical ceiling clouds or canopies of at least NRC 0.90?  
  - Yes
  - No
  - Not sure
  - NA (not a build-out)

- Walls with an NRC of 0.80 or more?  
  - Yes
  - No
  - Not sure
  - NA (not a build-out)

- Partitions with an NRC of 0.70 or more?  
  - Yes
  - No
  - Not sure
  - NA (not a build-out)

- Carpeted floors with a NRC of 0.15?  
  - Yes
  - No
  - Not sure
  - NA (not a build-out)

Do wall assemblies avoid sound travelling between rooms through the walls by having the following minimum Sound Transmission Class (STC) ratings:

- STC-50 to isolate video conference and training rooms?  
  - Yes
  - No
  - Not sure
  - NA (no conference rooms)
  - NA (not a build-out)
EXECUTIVE SUMMARY
Overview
Scores & Ratings
Financial Impacts
Red Flag Summary

CORPORATE LEADERSHIP
Policies
Disclosure
Directives

GREEN WORKPLACE
Energy
Water
Waste
Materials
Commuting
Green Team

HEALTH & PRODUCTIVITY
Acoustic Comfort
Indoor Air Quality
Thermal Comfort
Visual Comfort
Layout

Benchmarking Scale

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Overall</th>
<th>Green</th>
<th>Productive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>70-74%</td>
<td>70-100%</td>
<td>70-100%</td>
</tr>
<tr>
<td>Very Good</td>
<td>75-79%</td>
<td>70-100%</td>
<td>70-100%</td>
</tr>
<tr>
<td>Excellent</td>
<td>80-84%</td>
<td>70-100%</td>
<td>70-100%</td>
</tr>
<tr>
<td>Outstanding</td>
<td>85-100%</td>
<td>70-100%</td>
<td>70-100%</td>
</tr>
</tbody>
</table>

G+P Workplace uses a simple traffic light scoring scheme:
<50%    Potential risk
50–70%  Opportunity
>70%    Above average

YOUR BENCHMARKS

<table>
<thead>
<tr>
<th>Location</th>
<th>Overall</th>
<th>Green</th>
<th>Productive</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horsham</td>
<td>81%</td>
<td>76%</td>
<td>83%</td>
<td>EXCELLENT</td>
</tr>
<tr>
<td>San Diego</td>
<td>76%</td>
<td>72%</td>
<td>75%</td>
<td>VERY GOOD</td>
</tr>
<tr>
<td>Lowell</td>
<td>60%</td>
<td>53%</td>
<td>65%</td>
<td>-</td>
</tr>
<tr>
<td>Santa Clara (116)</td>
<td>62%</td>
<td>60%</td>
<td>63%</td>
<td>-</td>
</tr>
<tr>
<td>Santa Clara (116A)</td>
<td>71%</td>
<td>70%</td>
<td>72%</td>
<td>GOOD</td>
</tr>
<tr>
<td>Lawrence</td>
<td>69%</td>
<td>66%</td>
<td>72%</td>
<td>-</td>
</tr>
</tbody>
</table>
### EXECUTIVE SUMMARY

- Overview
- Scores & Ratings
- Financial Impacts
- Red Flag Summary

### CORPORATE LEADERSHIP

- Polices
- Disclosure
- Directives

### GREEN WORKPLACE

- Energy
- Water
- Waste
- Materials
- Commuting
- Green Team

### HEALTH & PRODUCTIVITY

#### Portfolio
- Productive: 59%
- Acoustics: 46%
- IAQ: 69%
- Thermal: 40%
- Visual: 74%
- Layout: 54%
- Amenities: 81%
- Wellness: 51%

#### Bay St. Operations
- Productive: 74%
- Acoustics: 95%
- IAQ: 65%
- Thermal: 59%
- Visual: 80%
- Layout: 81%
- Amenities: 74%
- Wellness: 64%

#### BRM HQ
- Productive: 59%
- Acoustics: 35%
- IAQ: 81%
- Thermal: 32%
- Visual: 92%
- Layout: 47%
- Amenities: 85%
- Wellness: 42%

#### Mitchell & Associates
- Productive: 54%
- Acoustics: 35%
- IAQ: 83%
- Thermal: 11%
- Visual: 71%
- Layout: 45%
- Amenities: 82%
- Wellness: 53%

#### Rutherford Center
- Productive: 39%
- Acoustics: 30%
- IAQ: 8%
- Thermal: 49%
- Visual: 22%
- Layout: 92%
- Amenities: 49%

---

**Portfolio**

- Green: 65%
- Energy: 62%
- Water: 52%
- Waste: 69%
- Materials: 66%
- Commuting: 85%
- Green Team: 55%

- Bay St. Operations: 73%
- Energy: 69%
- Water: 74%
- Waste: 74%
- Materials: 78%
- Commuting: 83%
- Green Team: 95%

- BRM HQ: 89%
- Energy: 93%
- Water: 88%
- Waste: 87%
- Materials: 97%
- Commuting: 82%
- Green Team: 69%

- Mitchell & Associates: 62%
- Energy: 57%
- Water: 62%
- Waste: 67%
- Materials: 66%
- Commuting: 81%
- Green Team: 46%

- Rutherford Center: 39%
- Energy: 30%
- Water: 8%
- Waste: 49%
- Materials: 22%
- Commuting: 92%
- Green Team: 49%
## EXECUTIVE SUMMARY

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Red Flag Summary

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Directives

### GREEN WORKPLACE

Energy

Water

Waste

Materials

Commuting

Green Team

### HEALTH & PRODUCTIVITY

Acoustic Comfort

Indoor Air Quality

Thermal Comfort

Visual Comfort

Layout

---

## RED FLAG SUMMARY

The following is an overview of red flags that warrant concern or call for further investigation.

### Bay Street Ops Center

- Score: 73%
- Area: 13,763 SF
- Employees: 56
- Lease ends: 2019

**Green**
- No red flags

**Productive**
- There may be ways to improve the layout to better correspond to actual work processes and support informal cohesive networks
- Check for opportunities to improve health and wellness in the workplace

---

### Rutherford Center

- Score: 46%
- Area: 102,300 SF
- Employees: 40
- Lease ends: 2016

**Green**
- Check for potential lighting energy savings
- There may be an opportunity to save energy for heating and/or cooling and perhaps also improve comfort
- Check for potential for plug load reduction opportunities
- There may be ways to reduce water consumption
- Review waste management and/or how toxic waste is being disposed

**Productive**
- Acoustic conditions may be impacting wellbeing and productivity
- Thermal comfort issues could be affecting wellbeing and productivity
- There may be ways to improve the layout to better correspond to actual work processes and support informal cohesive networks
- Check for opportunities to improve health and wellness in the workplace
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ENERGY - LIGHTING

High efficiency & Moderate levels
Lighting is high efficiency; Light levels comply with IESNA recommendations

Controls
Lighting linked to BAS; Zoned controls; Dimmable lighting; Occupancy sensors; Daylight harvesting

Reduce hours of lighting
Where lights are manually controlled, prominent "lights-off" signage; midnight audits for manual controls; Lights off at night; Daytime cleaning

<table>
<thead>
<tr>
<th>Location</th>
<th>Bay Street</th>
<th>BRM</th>
<th>Mitchell &amp; Associates</th>
<th>Rutherford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>74%</td>
<td>59%</td>
<td>54%</td>
<td>51%</td>
</tr>
<tr>
<td>Controls</td>
<td>95%</td>
<td>35%</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>Energy Use</td>
<td>65%</td>
<td>81%</td>
<td>83%</td>
<td>50%</td>
</tr>
</tbody>
</table>

ENERGY - PLUG LOAD

Office & Kitchen Appliances
Workstation devices ensure that desktop equipment is switched off when not in use; Where there are no switch-off devices, there is signage reminding employees to switch off desktop equipment, AND midnight audits to verify. There are no redundant appliances; the office uses laptops rather than desktops; The office/kitchen uses ENERGY STAR office equipment and appliances

<table>
<thead>
<tr>
<th>Location</th>
<th>Bay Street Operations</th>
<th>BRM Headquarters</th>
<th>Mitchell &amp; Associates</th>
<th>Rutherford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>89%</td>
<td>86%</td>
<td>22%</td>
<td></td>
</tr>
</tbody>
</table>
# EXECUTIVE SUMMARY

- Overview
- Scores & Ratings
- Financial Impacts
- Red Flag Summary

# CORPORATE LEADERSHIP

- Policies
- Disclosure
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# GREEN WORKPLACE

- Energy
- Water
- Waste
- Materials
- Commuting
- Green Team

# HEALTH & PRODUCTIVITY

- Acoustic Comfort
- Indoor Air Quality
- Thermal Comfort
- Visual Comfort
- Layout

## LAYOUT

### Activity-based Layout
- Activity-based allocation of space for collaboration, concentration, conversation and confidentiality;
- Balanced use of space;
- Ease with which to find people, book space

### Social Cohesiveness
- Features that promote informal social cohesion;
- Ease with which to find people, book meeting rooms

### Flexibility
- Flexible space, furniture, power and communications connectivity;
- Flexible work arrangements

<table>
<thead>
<tr>
<th>Location</th>
<th>Activity-based Layout</th>
<th>Social Cohesiveness</th>
<th>Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Street Operations</td>
<td>48%</td>
<td>77%</td>
<td>61%</td>
</tr>
<tr>
<td>BRM Headquarters</td>
<td>86%</td>
<td>100%</td>
<td>31%</td>
</tr>
<tr>
<td>Mitchell &amp; Associates</td>
<td>22%</td>
<td>80%</td>
<td>73%</td>
</tr>
<tr>
<td>Rutherford Center</td>
<td>36%</td>
<td>32%</td>
<td>81%</td>
</tr>
</tbody>
</table>

## AMENITIES

### Local Amenities
- Walkable neighborhood with shops, banking, a variety of restaurants; green spaces;
- Where public transportation is lacking, there is minimal gridlock and ready access to main arteries, airport etc.

### Office Amenities
- Employee amenities: lunch room, exercise facilities, quiet room, facility for nursing mothers; water stations

<table>
<thead>
<tr>
<th>Location</th>
<th>Local Amenities</th>
<th>Office Amenities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Street Operations</td>
<td>48%</td>
<td>77%</td>
</tr>
<tr>
<td>BRM Headquarters</td>
<td>86%</td>
<td>100%</td>
</tr>
<tr>
<td>Mitchell &amp; Associates</td>
<td>22%</td>
<td>80%</td>
</tr>
<tr>
<td>Rutherford Center</td>
<td>36%</td>
<td>32%</td>
</tr>
</tbody>
</table>
FINANCIAL IMPACTS

The following values represent the order of magnitude of wasted energy and lost productivity due to current deficiencies. The estimates show the potential savings from taking corrective action. Values are purposely estimated on the low side to provide a credible case for action. Conservative estimates for “energy inefficiency” are a maximum of 5% for a worst case of inefficient lighting, plug load and server room lighting and plug load. Conservative estimates for “lost productivity” are a maximum of 6%, which represent the reduced quantity and/or quality of work output per employee (as gauged in minutes lost) in a worst case scenario of acoustic, thermal and visual discomfort, bad air, poor layout of space and lack of wellness features and amenities.

<table>
<thead>
<tr>
<th>Location</th>
<th>Square Feet</th>
<th>Lighting</th>
<th>Plug Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Street Operations Center</td>
<td>13,763 SF</td>
<td>$660</td>
<td>No Savings</td>
</tr>
<tr>
<td>BRM Headquarters</td>
<td>32,200 SF</td>
<td>No Savings</td>
<td>No Savings</td>
</tr>
<tr>
<td>Mitchell &amp; Associates</td>
<td>50,000 SF</td>
<td>No Savings</td>
<td>$3,000</td>
</tr>
<tr>
<td>Rutherford Center</td>
<td>102,300 SF</td>
<td>$7,370</td>
<td>$6,140</td>
</tr>
</tbody>
</table>
FINANCIAL IMPACTS

The following values represent the order of magnitude of wasted energy and lost productivity due to current deficiencies. The estimates show the potential savings from taking corrective action. Values are purposely estimated on the low side to provide a credible case for action. Conservative estimates for “energy inefficiency” are a maximum of 5% for a worst case of inefficient lighting, plug load and server room lighting and plug load. Conservative estimates for “lost productivity” are a maximum of 6%, which represent the reduced quantity and/or quality of work output per employee (as gauged in minutes lost) in a worst case scenario of acoustic, thermal and visual discomfort, bad air, poor layout of space and lack of wellness features and amenities.

### Health & Productivity

<table>
<thead>
<tr>
<th>Facility</th>
<th># of employees</th>
<th>Acoustics</th>
<th>IAQ</th>
<th>Thermal comfort</th>
<th>Visual comfort</th>
<th>Layout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Street Operations</td>
<td>56</td>
<td>No Savings</td>
<td>$14,780</td>
<td>$24,640</td>
<td>No Savings</td>
<td>No Savings</td>
</tr>
<tr>
<td>BRM Headquarters</td>
<td>122</td>
<td>$174,460</td>
<td>No Savings</td>
<td>$174,460</td>
<td>No Savings</td>
<td>$174,460</td>
</tr>
<tr>
<td>Mitchell &amp; Associates</td>
<td>200</td>
<td>$211,000</td>
<td>No Savings</td>
<td>$187,000</td>
<td>No Savings</td>
<td>$132,000</td>
</tr>
<tr>
<td>Rutherford Center</td>
<td>40</td>
<td>$35,200</td>
<td>$10,560</td>
<td>$17,600</td>
<td>$10,560</td>
<td>$35,200</td>
</tr>
</tbody>
</table>
## ENERGY

<table>
<thead>
<tr>
<th>Activity</th>
<th>Bay Street</th>
<th>BRM</th>
<th>Mitchell &amp; Ass</th>
<th>Rutherford</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider the possibility of installing sub-metering for the project area.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Install high efficiency lighting.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Consider installing LED lighting.</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Measure ambient lighting levels in areas where screen tasks are done, 200-300 lux (28 FC) of ambient lighting should be sufficient for screen tasks, along with some task lighting. There may be an opportunity to &quot;de-lamp&quot; some areas.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Calculate the wattage per square foot for the office (wattage of all the lamps divided by floor area). Take appropriate action to achieve approximately 0.9 watts per SF.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Enclosed rooms (e.g. offices, meeting rooms, storage rooms) should have their own lighting controls.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Large open offices should have zoned lighting controls.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Consider installing dimming controls for lights.</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Provide lighting occupancy sensors (motion detectors) in conference rooms, enclosed offices, storage, supply rooms or printing rooms.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Consider installing daylight-sensors to automatically dim electric light levels.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Automate lights off at the end of the day, weekends etc.</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>1</td>
<td><strong>Energy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Consider the possibility of installing sub-metering for the project area.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Install high efficiency lighting.</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>Consider installing LED lighting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Measure ambient lighting levels in areas where screen tasks are done. 200-300 lux (28 FC) of ambient lighting should be sufficient for screen tasks, along with some task lighting. There may be an opportunity to &quot;de-lamp&quot; some areas.</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>Calculate the wattage per square foot for the office (wattage of all the lamps divided by floor area). Take appropriate action to achieve approximately 0.9 watts per SF.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Enclosed rooms (e.g. offices, meeting rooms, storage rooms) should have their own lighting controls.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8</td>
<td>Large open offices should have zoned lighting controls.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>9</td>
<td>Consider installing dimming controls for lights.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Provide lighting occupancy sensors (motion detectors) in conference rooms, enclosed offices, storage, supply rooms or printing rooms.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>11</td>
<td>Consider installing daylight-sensors to automatically dim electric light levels.</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>12</td>
<td>Automate lights off at the end of the day, weekends etc.</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>13</td>
<td>Where there are no occupancy sensors or BAS to shut off lights, conduct midnight audits to check whether lights are being switched off after-hours.</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>14</td>
<td>Consider seeking professional advice to reduce unwanted heat loss and/or solar gain through windows.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Consider adding solar control window film to reduce energy use and improve comfort in spaces that are in direct sunlight.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Install window blinds.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>17</td>
<td>Install automated controls on the operable windows based on outdoor temperature, occupancy sensors and window (open or closed) sensors.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>18</td>
<td>Check temperature settings i.e. 75°F (24°C) or higher in the summer, and 70°F (21 °C) or lower in winter.</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Implement temperature set-back when the office is unoccupied.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>20</td>
<td>Install devices that switch off office equipment when occupants are not present.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

- Affordable
- Portfolio approach
- Asset management + certification
- Ongoing continuous improvement
- Corporate leadership
- In-house – affordable, educational, part of the culture
- Facility Managers have ownership of the process
- Strategic
- Financial metrics
- Meaningful to the ones who control the purse-strings