The Nexus of LEED, WELL and I²SL

October 22, 2019

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The Nexus of LEED, WELL and I²SL

Learning Objectives:
1. Identify synergies between LEED, WELL and I2SL high performance principles;

2. Optimize investment in sustainability to achieve a vibrant research environment and reduce costs;

3. Understand how the trend toward blurring the boundary between laboratory vs. office vs. collaboration results in opportunities and challenges for high performance lab design; and

4. Avoid pitfalls by taking advantage of lessons learned from a campus that has evolved in the context of sustainability certifications.
FIRST WELL GOLD PROJECT IN US

At time of certification (March 18) the EMD Serono project was: 1st project to achieve WELL Gold in the US, and the 2nd to achieve WELL Gold in the world, under the New & Existing Building category.

The project is also the:

- 3rd New & Existing Building WELL certified project in the US
- 4th New & Existing Building WELL certified project in the World
- 38th certified WELL project of any type in the US
- 80th certified WELL project of any type in the world
STAIR PROMOTION
LINKAGES BETWEEN LEED, WELL and I²SL

Design to be complimentary tools—each with their own focus.
“WE DID LEED, LET’S DO WELL”
“WE DID LEED, LET’S DO WELL”

We ask, “why not do both?”
GREEN BUILDING ADDRESSES:

Climate change

Resource depletion

Water consumption

Degradation of ecosystems/habitat

Indoor environmental quality

Occupant health, comfort + productivity

Costs of owning + operating work + living spaces
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Focus of I²SL EPC

Focus of WELL
LEEDv4 System Goals

- Reduce contribution to global climate change
- Enhance individual human health
- Protect and restore water resources
- Protect and enhance biodiversity and ecosystem services
- Promote sustainable and regenerative material cycles
- Build a green economy
- Enhance community quality of life
LEEDv4 System Goals

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  Focus of WELL
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THE “TRIPLE BOTTOM LINE”
HOW A WELL CERTIFIED BUILDING HELPS EMD SERONO

1. Attract, and Retain Top Talent
2. Differentiate from competitors
3. Improve focus with a variety of workspaces
4. Create a competitive advantage
5. Engage building occupants
6. Improve worker experience
7. Increase worker satisfaction
8. Reduce presenteeism and building complaints
CONSULTANT VS. DESIGNER

Owner: Occupant  
Comfort on a Budget,  
Lab Safety

Architect: Vision

Interior Designer:  
Different Vision

Engineers: That’s not how we did it last time

LEED Energy Modeler

Utility Incentive  
Energy Modeler

Code Consultant

Sustainability Consultant: You can get a point for that.

Commissioning

Civil: You can’t dig 150 geothermal wells in that wetland

Landscape Consultant

Air Quality Consultant: That might not be healthy

Acoustical Consultant

Common Goal: Together we help our clients manage projects that deliver high-performing, sustainable, LEED & WELL buildings.
COMFORT VS. EFFICIENCY

**Typical Office Building Cost in $/sf/yr**

- **Salaries & Benefits**: $318.00
- **Technology**: $50.00
- **Mortgage/lease**: $16.00
- **Energy**: $2.25
- **Office Churn**: $1.00
COST TO CONSUMERS

It can take over 10 years and a billion dollars to bring a treatment to patients.

A WELL certified building may help reduce time to market through employee engagement, wellness and worker satisfaction.
WHAT MATTERS TO USERS?

gsa public building service surveys

FIG 2. PERCENT SATISFIED WITH ENVIRONMENTAL CONDITIONS

- Amount of Light
- Visual Comfort
- Workspace Satisfaction
- Daylight
- Views
- Building Satisfaction
- Noise Levels
- Air Quality
- Temperature
- Speech Privacy

source: gsa public buildings service, sound matters, how to achieve acoustic comfort in the contemporary office, 2011
**A Breath of Fresh Air?**

Do Indoor CO₂ Levels Directly Affect Perceived Air Quality, Health, or Work Performance?

By William Fisk, Fellow, ASHRAE; Paul Wangschel, Ph.D., Associate Member ASHRAE; and Jie Yang, Ph.D.

This article summarizes the findings of 10 recent studies investigating whether increased carbon dioxide (CO₂) concentrations, with other factors constant, influence perceived air quality, health, or work performance of people.
A BREATH OF FRESH AIR?
COST VS IAQ

Labs vs Office – VOC vs CO2

For Office Space:

ASHRAE 62.1 Min = 20,000 cfm

LEED: +30% ventilation = 26,000 cfm

$20,000 increase in energy costs per year (+5%)

= loss of 1-2 Leed Energy points.
A BREATH OF FRESH AIR?
COST VS IAQ

Well Standards for IAQ -

+60% ventilation = +2 points

Demand controlled vent: Lowers CO2 limits from 1100 to 600 ppm

Emphasis on Balancing and CX

Alternatives

Enhanced Ventilation
Expel internally generated pollutants and improve air quality in the breathing zone through an increased supply of outdoor air or increased ventilation efficiency.
### LEED EAc2 POINTS FOR ENERGY PERFORMANCE

**TABLE 1. Points for percentage improvement in energy performance**

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<th>New Construction</th>
<th>Major Renovation</th>
<th>Core and Shell</th>
<th>Points (except Schools, Healthcare)</th>
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A Breath of Fresh Air?  
Cost vs IAQ

Air Quality Study
VOCs and Labs

Static pressure:

+1.0” = $4,000 /year
(minus ~0.5 Leed points)

Filter Technology

The EMD solution....
WELL VS LEED LIGHTING

Designing to WELL Circadian resulted in higher LPD
FAÇADE & DAYLIGHT VS ENERGY

Glazing Considerations

% Window – Wall Ratio

Energy Code

Thermal Comfort

High Ventilation Buildings
= Less Façade Impact

Focus on Reducing Loads and HVAC system performance.
MORE LEED/WELL PARADOXES

Water Use Reduction vs Energy Saving Cooling Towers.

500,000 gallons of water / year

Did you know that 14% of the Earth’s potable water is used by buildings?
MORE LEED/WELL PARADOXES

LEED & Well:
Acoustic performance vs Energy

Sound attenuators = higher pressure drop = more energy

Low velocity + duct liner = lower pressure drop = less energy.

Well: Sound Reducing & Masking Systems

Impacts specific to Labs
The Nexus of LEED, WELL and I²SL

Conflicts will always exist

Must define priorities

Regardless of your users IAQ & thermal comfort are key considerations.

HVAC design can leverage synergies between credits

For EMD, with blurred lines between office and lab, A DOAS system with fan coils offered comfort, health, flexibility and energy savings.
QUESTIONS + ANSWERS