

# Presenters



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# Key Learning Objectives

- Participants will learn key drivers promoting “transparent” materials procurement practices, including an overview of “disclosure documents” to help consumers make informed specifications.
- Participants will learn new tools which have emerged to promote “transparency”, including Materials Matter, AIA 2030 Products, and the Living Product Challenge.
- Participants will learn about the concept of “hand-printing” as a means for promoting regenerative design practices.
- Participants will gain insight into the similarities and differences between WELL, LEEDv4, and the Living Building Challenge in terms of what each requires for material “transparency”.

# A Spectrum of Positive Outcomes



# Materials-focused



# Traits of Both Parents



## LEED-NC

- “Prerequisites” (7-13)
- “Credits” (~52)
- “Sections” (7)
- Min. Compliance “Certified”
- 50 points + 100% Prerequisites
- Certification 1-time

***36 LEED credits overlap WELL***



## WELL (NC)

- “Preconditions” (26-41)
- “Features” (~100)
- “Concepts” (7)
- Min. Compliance “Certified”
- 0 points + 100% Preconditions
- Certification every 3 years

***Designed to work with both systems***



## Living Building Challenge

- “Imperatives” (20)
- “Credits” (N/A)
- “Petals” (7)
- Min. Compliance “Petal Cert.”
- 3 of 7 Petals (Water + Energy + “X”)
- Certification 1-time

***8 LBC imperatives overlap WELL***

# Priorities

1994



*Location & Transportation*  
*Sustainable Sites*  
*Water Efficiency*  
*Energy & Atmosphere*  
*Materials & Resources*  
*Indoor Environmental Quality*  
*Innovation in Design*  
*Regional Priorities*

2006



*Place*  
*Water*  
*Energy*  
***Health & Happiness***  
*Material*  
***Equity***  
***Beauty***

2015



*Air*  
*Water*  
***Nourishment\*\*\****  
*Light*  
***Fitness\*\*\****  
*Comfort*  
***Mind***

# Lifecycle Cost of Buildings (30+ Years)



# Other Drivers

## Indoor VS outdoor cleanliness



## Stress



*Sedentary-ness*



*Indoor/Outdoor Disconnect*

# Ties Strategies to Health Outcomes

## Wellness and the Body Systems

The components of the WELL Building Standard represent a comprehensive set of strategies organized by specific impacts on health and wellness. Many features of the WELL Building Standard are ascribed to one or more of the following body systems:

CARDIOVASCULAR SYSTEM

DIGESTIVE SYSTEM

ENDOCRINE SYSTEM

IMMUNE SYSTEM

INTEGUMENTARY SYSTEM

MUSCULAR SYSTEM

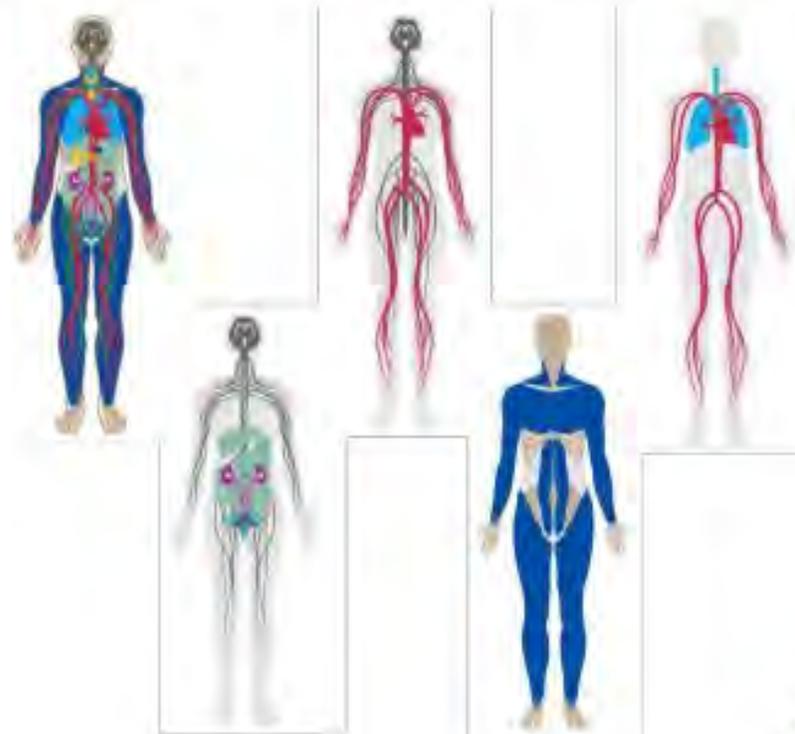
NERVOUS SYSTEM

REPRODUCTIVE SYSTEM

RESPIRATORY SYSTEM

SKELETAL SYSTEM

URINARY SYSTEM



# Materials Scope Within WELL



# AIR Feature 04 – VOC Reduction

## Interior Paints & Coatings (100%)

- (100%, installed) CA Air Resources Board (CARB) 2007, Suggested Control Measures SCAQMD Rule 1113 (June 2, 2011)
- (90%, volume) CA Dept. of Public Health (CDPH) Standard Method v1.1-2010
- Applicable national VOC control regulations, or VOC testing (see ASTM/ISO referenced standards)

## Interior Adhesives & Sealants

- (100%, installed) SCAQMD Rule 1168, July 1, 2005
- (90%, volume) CDPH Standard Method v1.1-2010
- Applicable national VOC control regulations, or VOC testing (see ASTM/ISO referenced standards)

## Flooring

- Meet CDPH Standard Method v1.1-2010
- FloorScore still recognized by WELL & LEEDv4



# AIR Feature 04 – VOC Reduction

## Insulation

- CDPH Standard Method v1.1-2010 (impacts thermal and acoustic insulation in ceilings and walls)

## Furniture & Furnishings

- (95%, cost) ANSI/BIFMA e3-2011 Furniture Sustainability Standard sections 7.6.1 and 7.6.2, tested in accordance with ANSI/BIFMA Standard Method M7.1-2011



TM

the BIFMA sustainability standard

# 3,660 Products

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## Category

- Accessories (139)
- Architectural Products (15)
- Casegoods (355)
- Seating (2,438)
- Systems (161)
- Tables (552)

## Sustainability Criteria

- Bio-based Renewable Materials
- Extended Product Responsibility
- Life Cycle Assessment
- Low Emitting
- Recycled Content
- Sourcing of Raw Materials

## level

- level 1 (1,473)
- level 2 (1,526)
- level 3 (661)

## Brand

- Allseating (120)
- Bernhardt Design (156)
- Global Furniture Group (365)
- High Point Furniture Industries (133)
- KI (167)
- La-Z-Boy Furniture Contract (260)
- Nightingale Corporation (148)
- Steelcase Inc. (160)

[show more](#)

level® has been created to deliver the most open and transparent means of evaluating and communicating the environmental and social impacts of furniture products in the built environment.



Seating



Tables



Casegoods



Systems



Accessories



Architectural Products

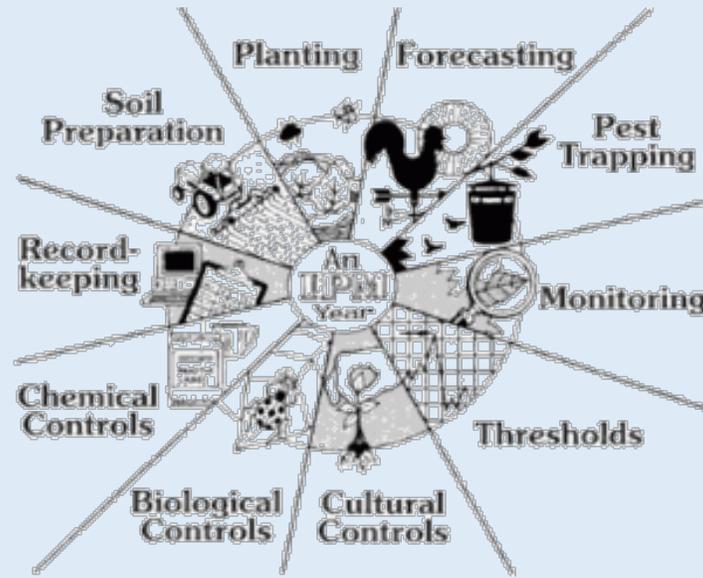
Thursday, March 09, 2017

10:30am – 12:00pm

Blake Jackson

# AIR Feature 10 – Pesticide Management

- Generate a plan compliant with Chapter 3 of the SF Environment Code Integrated Pest Management (IPM) program
- Only pesticides with hazard tier ranking 3 (least hazardous) per the City of San Francisco Department of the Environment's (SFE) Reduced-Risk Pesticide List
- Appendix A to Article 37 "Boston Green Building Credits" includes IPM language



# AIR Feature 11 – Fundamental Materials Safety

## New Construction & Major Renovation

- No asbestos
- Lead limited to 100ppm (weight)

## Lead Abatement

- On-site investigation by technician – US EPA 40 CFR Part 745.65 for residential dwellings or child-occupied facilities
- If hazards found, adherence to US EPA 40 CFR Part 745.227 (see multi-family dwellings)
- Adherence to final rules (US EPA RIN: 2070-AJ56) supersedes 40 CFR



# AIR Feature 11 – Fundamental Materials Safety

## Asbestos Abatement

- Inspect every 3 years: Asbestos Hazard Emergency Response Act (AHERA)
- Develop, maintain, and share asbestos AHERA-based management plan, including corrective actions (40 CFR part 763)
- Perform a post-abatement clearance (AHERA, 40 CFR part 763)

## Polychlorinated Biphenyl (PCB) Abatement

- If original pre-1950, conduct evaluation and abatement according to US EPA Steps to Safe PCB Abatement Activities and remove PCB-containing lighting ballasts per EPA guidelines

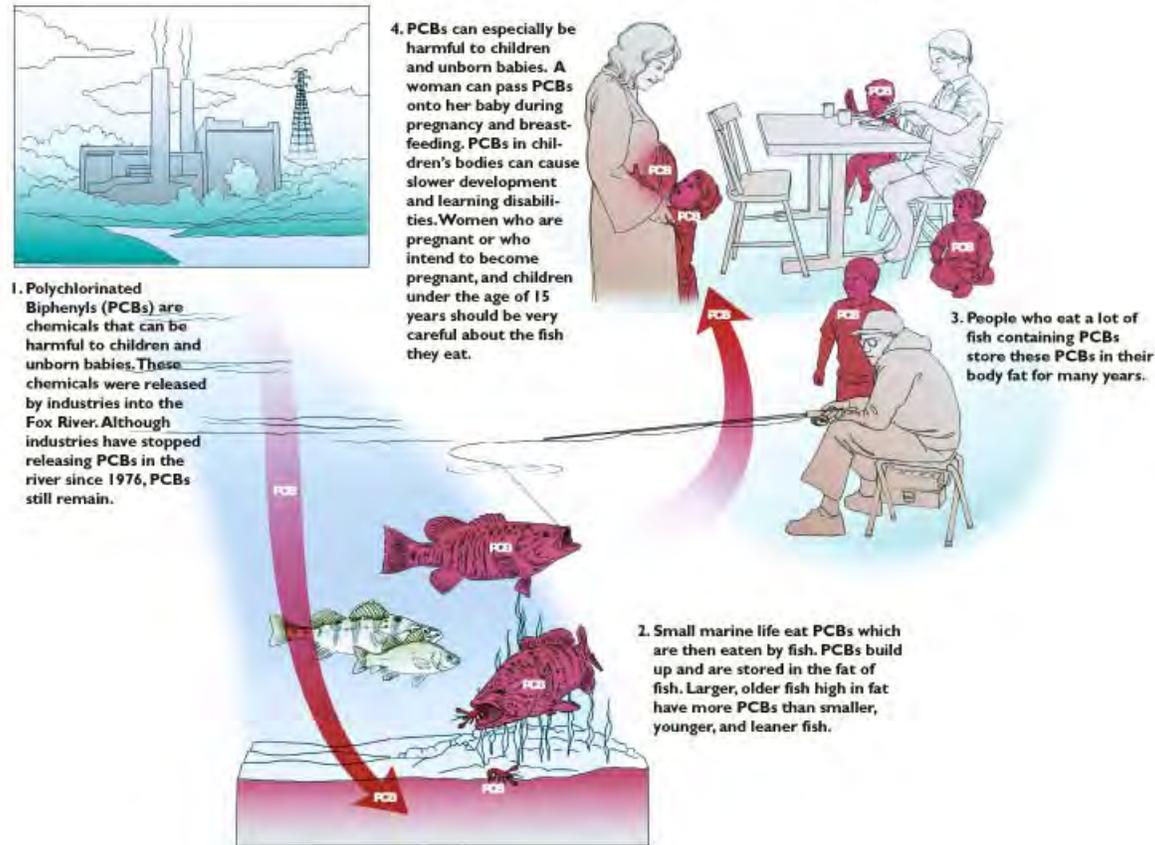
## Mercury Limitation

- No new mercury containing thermometers, switches, and electrical relays
- Develop a plan to upgrade existing mercury-containing lamps to low-/zero-mercury lamps (Appendix C, Table A5)
- Allowable exit signage: Light-emitting diode (LED) and light-emitting capacitor (LEC) only
- No mercury vapor or probe start metal halide high intensity discharge (HID)



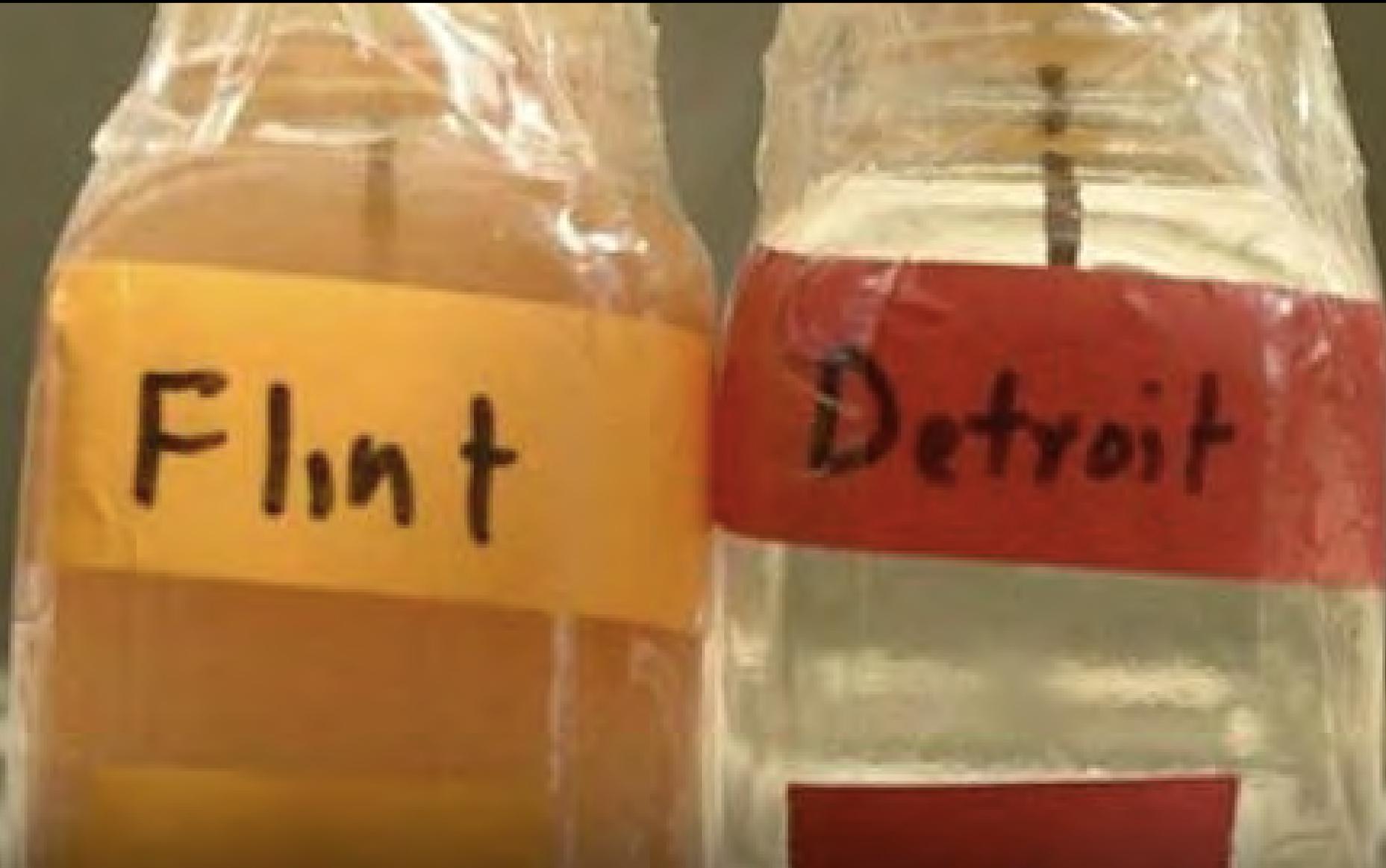
# Polychlorinated Biphenyls (PCB's) Illustrated

## How Do PCBs Get Into the Fish I Eat?



**209** Chemicals with common structure & varying number of attached chlorine atoms.  
**PCB's are a level 1 PBT – Persistent Bio-accumulative Toxin**

# Relevancy



# AIR Feature 17 – Direct Source Ventilation

All cleaning and chemical storage units, bathrooms, and all printers and copiers must be separated from adjacent spaces by self-closing doors and separate, non-recirculated exhaust.

## Exceptions (Printers Only):

- Ecologo CCD 035
- Blue Angel RAL-UZ 171
- Green Star



# AIR Feature 24 – Combustion Minimization

## Appliances:

Combustion fireplaces, stoves, space-heaters, ranges and ovens are forbidden

## \*\*\*Sources:

All combustion equipment to meet SCAQMD rules for pollution: internal combustion engines, furnaces, boilers, steam generators, process heaters, and water heaters

## \*\*\*Exhaust:

Exterior idling limit: 30 seconds

## \*\*\*Equipment:

Non-road diesel engines comply with US EPA Tier 4 PM standards, meet model year 2007 standards (or local equivalent), and all loading/unloading must take place away from air intakes and operable windows.

\*\*\*Appendix A to Article 37 *“Boston Green Building Credits”* has combustion minimization language



# AIR Feature 25 – Toxic Material Reduction

## **Perfluorinated Compounds (PFC's) – bioaccumulators/potent GHG:**

Limited to **100ppm** in components constituting at least 5% weight of furniture or furnishing (drapes/curtains) assembly (*bioaccumulators*)

## **Halogenated Flame Retardants - carcinogenic:**

Limited to **100ppm** (or code): window, waterproofing membranes, door/window frames, siding, flooring, ceiling tiles, wall coverings, piping, electrical cable, conduit, junction boxes, insulation, furniture, furnishings, textiles, and fabrics

## **Phthalates (plasticizers) – endocrine disruption:**

Limited to **100ppm** in flooring and carpet, wall coverings, blinds, shades, shower curtains, furniture and upholstery

## **Isocyanate-based polyurethane – respiratory/carcinogenic:**

**Forbidden** in interior finishes

## **Urea-formaldehyde – respiratory/carcinogenic:**

Limited to **100ppm**: furniture, composite wood, laminating adhesives/resins, and thermal insulation

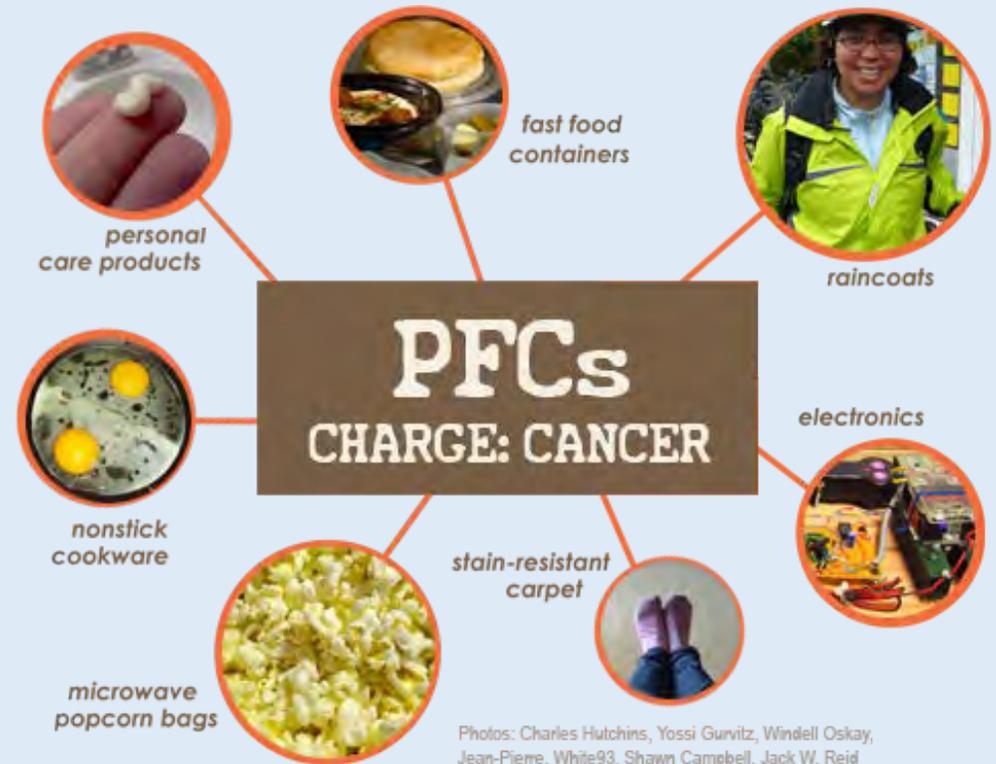
# Flame Retardants & PFC's Galore

Source: [www.transparency.perkinswill.com](http://www.transparency.perkinswill.com)



- 1a) Waterproof Membrane
- 1b) Insulation
- 1c) Conduit
- 2 Furniture
- 3 Drapes
- 4 Carpet
- 5 Wall Coverings
- 6a Electronics
- 6b Window Frame

NFPA 285\*\*\*



# And Phthalates Too

1. DEHP
2. DBP
3. BBP
4. DINP
5. DIDP
6. DNOP (often in PVC)

\*Guidelines on utensils & kitchenware





# AIR Feature 29 – Cleaning Equipment

## **Equipment:**

Mops, rags, dusters must utilize microbial denier < 1.0

Cleaning products must be certified under the following: EPA Design for the Environment, UL Ecologo, and/or GreenSeal

Mops must not be hand-wrung

Vacuums must contain HEPA filtration

Chemical storage areas must segregate, label, and warn of the mixing of ammonia and bleach



# NOURISHMENT Feature 54 – Safe Food Preparation Materials

## **Cooking Material:**

Food preparation tools (except cutting boards) are to be homogenous: ceramic (no lead), cast iron, stainless steel, glass, coated aluminum, solid (non-laminated) wood untreated or treated with food-grade mineral or linseed oil.

## **Cutting Surfaces:**

Cutting boards should be made of the following and removed when excessively worn: marble, plastic, glass, pyroceramic, solid (non-laminated) wood untreated or treated with food-grade mineral or linseed oil.

## **Microwave Safe Kitchenware & Appliance Specifications**

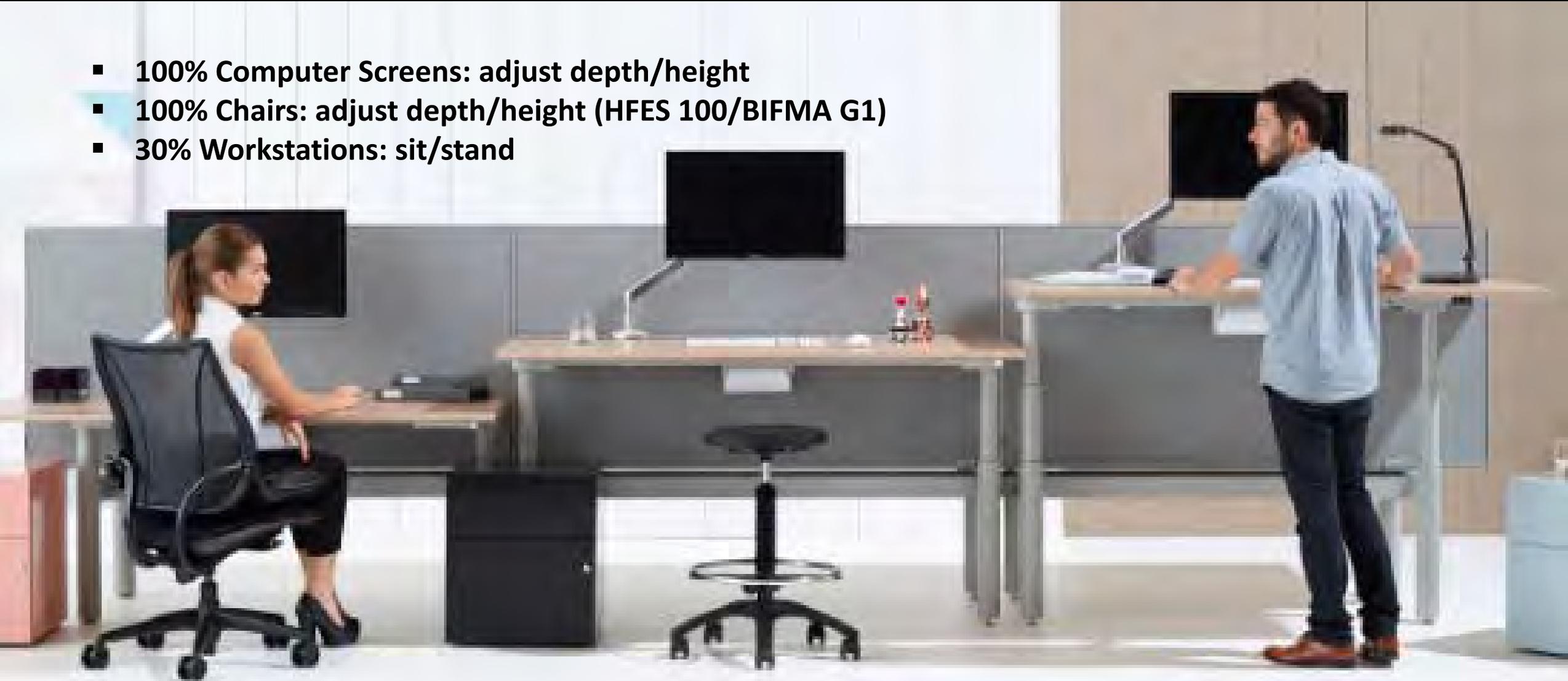
Circular Plates:	9.5" max.
Non-circular Plates:	170in.sq. max.
Bowls	10oz. max.
Cups	8 oz. max.

## **Miscellaneous (Other Preconditions & Optimizations)**

Refrigerator	247cu.ft. max. with visual display & removable drawer
Minimum appliances	Microwave, Storage, and Dishwasher ( <i>for LEEDv4, must be EnergyStar rated</i> )
Food	to be organic/humane-certified, limits on trans-fat/sugar, transparent practices (awareness)

# COMFORT Feature 70 – Ergonomics: Visual & Physical

- 100% Computer Screens: adjust depth/height
- 100% Chairs: adjust depth/height (HFES 100/BIFMA G1)
- 30% Workstations: sit/stand



# MIND Feature 97 – Materials Transparency

## Material Information:

**(50% cost)** of all interior finishes, materials, furnishings (including workstations) and built-ins must utilize some combinations of the following: Declare, HPD, or any method in LEEDv4 MR credit Building Product Disclosure Optimization – Material Ingredients, Option 1.

## Accessible Information:

All declarations must be compiled and made accessible (digital and/or physical) as part of a printed manual and available to occupants.



*Least Stringent*  
*20 products/5 manf.*



*Midway*  
*25% value required/50% optimization*



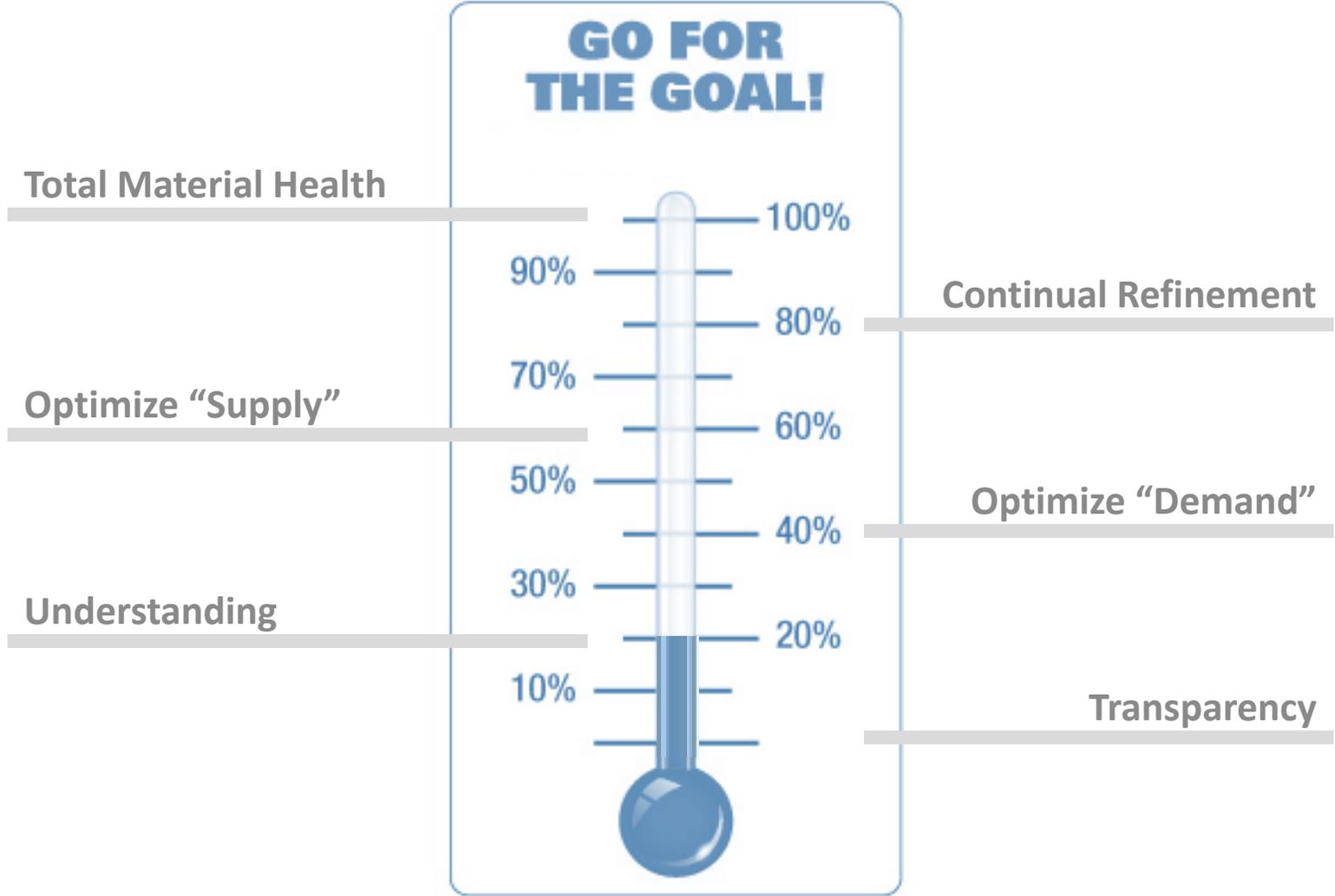
*Most Stringent*  
*No Redlist Chemicals (100% value)*

# Key Takeaways

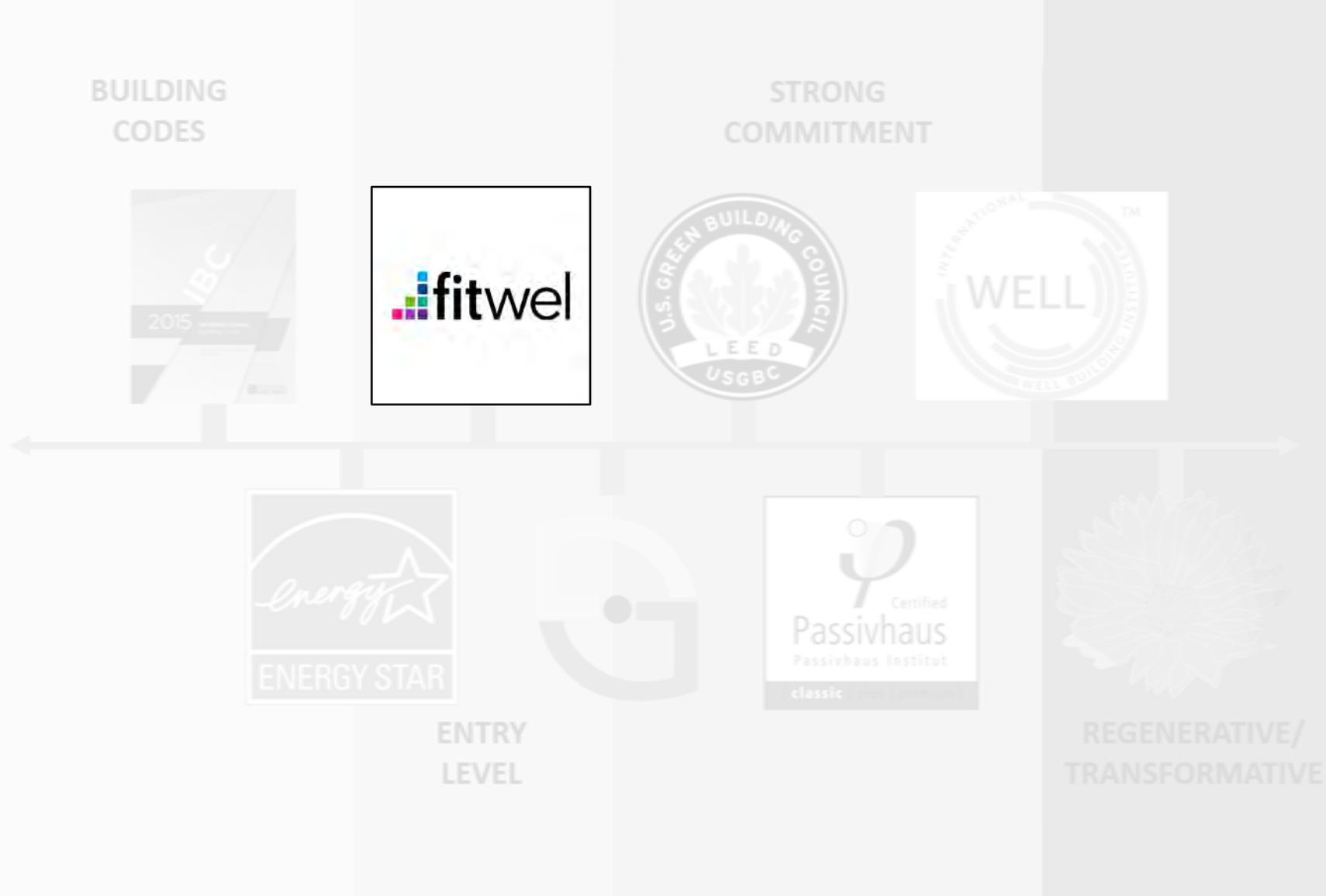
- **Harmonization**: LEEDv4 (all suites)/Living Building Challenge(v3.0)
- **Eco-logos**: narrowed selection from trusted, 3<sup>rd</sup>-party verified sources
- **Lifecycle**: Design/Construction + Operations (green cleaning)
- **Total Design**: “Building to silverware” (complexity)
- **Scope Creep**: how do we deliver/sell such comprehensive services?
- **New Partners**: who do we involve beyond AEC (toxicologist)?
- **Fees**: Increased scope and administrative costs (recertification)
- **Commitment**: obligatory recertification (every 3-years) through verification



# It's a Process



# Fitwel



# Fitwel Materials/Transparency Scope

- **No preconditions or prerequisites** – 144pt system (90 = 1 star; 105 = 2 stars; 125 = 3 stars)
- IPM included (2.66pts) without reference standard
- Asbestos-free interiors (4.66pts)
- Active workstations promoted (1.67) without min. threshold
- Healthy food & beverage/vending scope (7.00pts), references HHS/GSA Guidelines
- **Unique section: EMERGENCY PREPAREDNESS:**
  - Equipment/supply database (1.67pts)
  - Install/test Automated External Defibrillator (2.66pts)
  - Scheduled first-responder during occupied hours (1.00pts)
  - Emergency address notification system (4.33pts)