

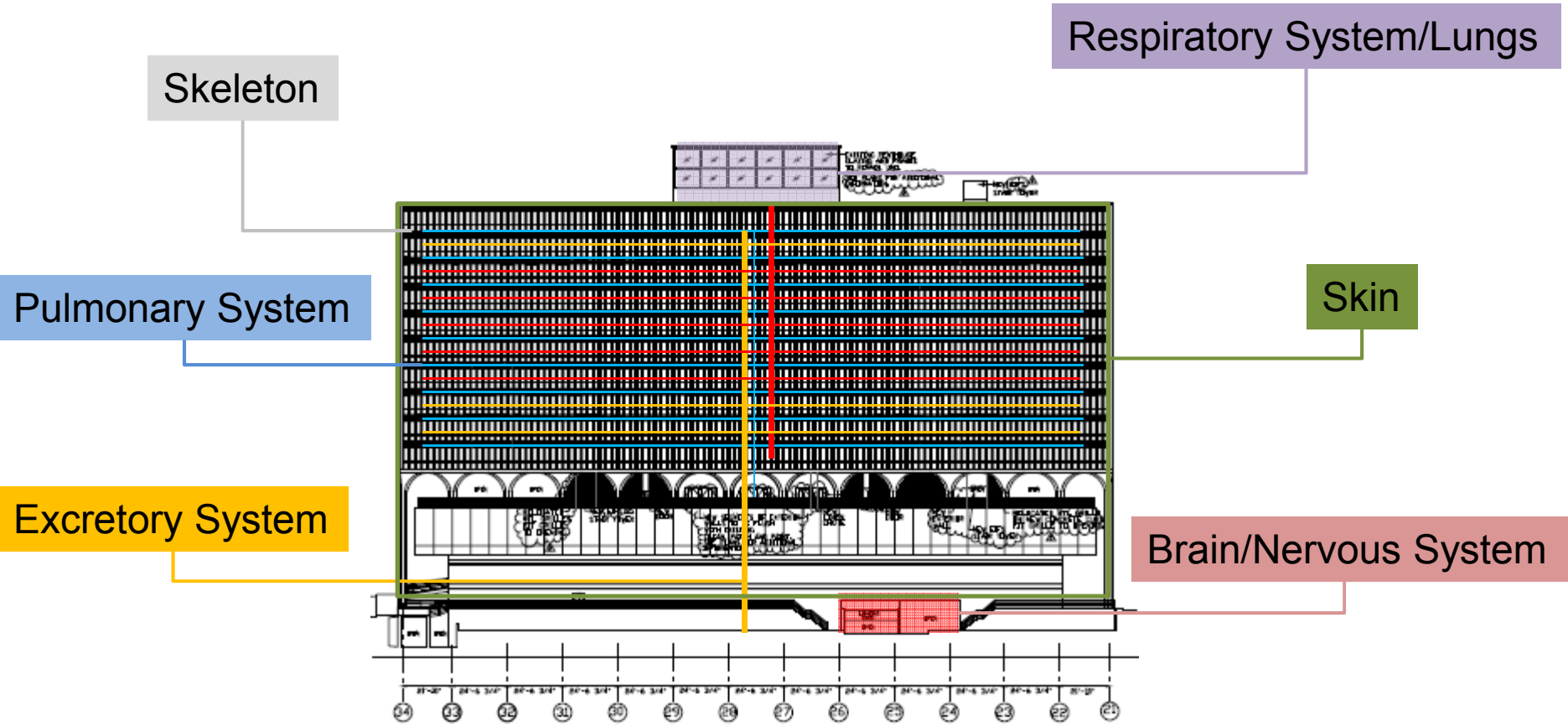
# Green Hotel Renovations

Craig Nicholson, LEED AP BD&C  
Director of Sustainable Development  
AJAX Consulting Services, Inc.

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# BUILDING ANATOMY



# PEAK LOADS IN HOTELS

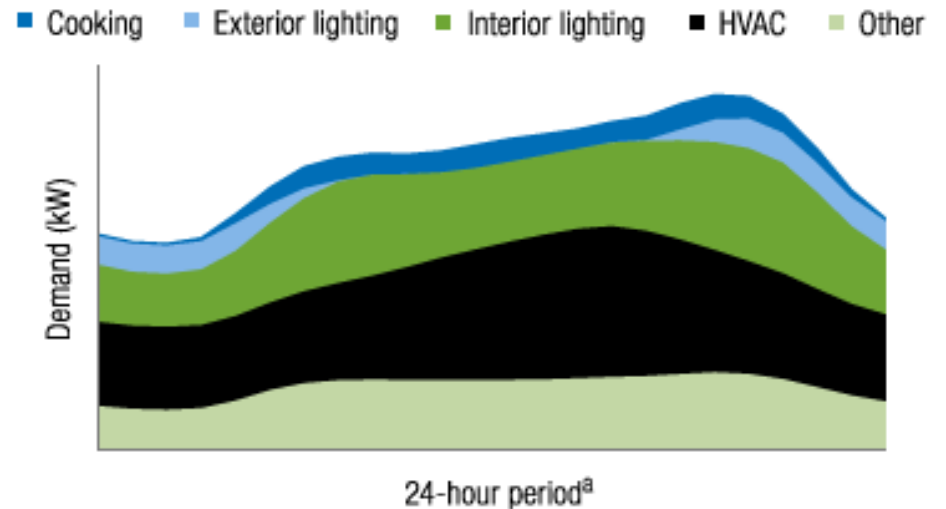
## Guest Occupancy

- Heating/Cooling
- Lighting
- Plug Loads

## Conferences

- Body Mass Factor
- A/V Equipment Loads

## Dining/Restaurants



Notes: kW = kilowatt.

a. 24-hour period = midnight to midnight.

© E Source; data from ITRON

# PEAK PERFORMANCE

**If we think of buildings as living systems, how can we design buildings that operate at peak performance during peak demand?**



# SHORT TERM SOLUTIONS

- **Back of House areas**
- **Laundry**
- **Pools & Hot Tubs**
- **Housekeeping procedures**
- **Kitchen and Food Prep**
- **Public restrooms**
- **Guest service options & Choose to Conserve Programs**



# LONGER TERM SOLUTIONS

- **Commissioning & Retro-Commissioning**
- **Daylighting**
- **LED's**
- **Lighting control**
- **Water heating**
- **Building Envelope**
- **HVAC**
  - **Ventilation Control**
  - **Energy Management**



**"A society grows great when old men plant trees whose shade they know they shall never sit in." Greek Proverb**

# THE RIGHT TEAM IS THE KEY TO SUCCESS!

- Owner
- Operator (GM, Engineering Staff, Green Team, etc.)
- Interior designer
- Architect
- Owner's Rep/Project Manager
- Engineers & Consultants
  - Mechanical
  - Electrical
  - Lighting
  - AV
- General Contractor
- Purchasing Agent



# CHOOSING APPROPRIATE METRICS



- Energy Star®
  - Products
  - Buildings



- Cradle to Cradle™
  - Material Health
  - Material Reutilization
  - Renewable Energy
  - Water Stewardship
  - Social Fairness



- LEED Interior Design & Construction
  - Integrative Process
  - Location & Transportation
  - Water Efficiency
  - Energy & Atmosphere
  - Materials & Resources
  - Indoor Environmental Quality
  - Innovation
  - Regional Priority



# CRITICAL COMPONENTS

- Energy Efficiency

- Install high-efficiency heating and cooling equipment
- Install high-efficiency lights and appliances

- Water Conservation

- Install water-efficient equipment

- Indoor Air Quality

- Use low VOC finishes and adhesives
- Properly commission air handling equipment
- Thermal comfort

- Materials

- Utilize sustainably harvested wood
- Utilize rapidly renewable materials
- Use durable products and materials
- Buy locally
- Reuse and Recycle

# Case Study

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“Action expresses priorities.”  
-Gandhi

# HOTEL ZETTA – SAN FRANCISCO

“We started playing with re-words – recharge, relax, reuse, rejoice, recycle-and it all became this fusion of the energy they wanted for this hotel-an urban retreat...edgy, yet casual. Recycled art became immediately part of the idea.”

–Andrea Dawson, Dawson Design Associates



# INTEGRATED DESIGN

## Sustainable Design as “Focal” Point

- In the literal sense
- Hotel Identity
- Value structure of target guests
- Art informs design
- Marketability
- The complete story



Chandeliers crafted from 600 pairs of recycled glasses welcome guests at Hotel Zetta

# Water Efficiency

- **Low Flow Faucets**
- **Low Flow Showerheads**
- **Dual Flush Toilets**



# Energy Efficiency

- **HVAC upgrades & Commissioning**
- **LED Lighting Throughout**
- **Occupancy Sensors for lighting and thermal controls**



# Materials & Resources

- **Liquidation & Recycling**
  - Waste diversion
  - Upcycling
- **Flooring**
  - Durable/low maintenance goods
  - Remnant carpet
- **Nanotechnology Paint**
  - Non-toxic, Zero VOC, prevents mold & mildew
  - Energy savings
- **Furniture**
  - Domestic sourcing & ingredients



# Indoor Environmental Quality

- **Low-Emitting Materials**

- Adhesives
- Paints

- **Thermal Comfort**

- BMS with Local Control
- Occupancy Sensors

- **Interior Lighting**

- Daylight
- Occupancy Sensors
- Dimmable LEDs





# HOTEL ZETTA – LOBBY



# HOTEL ZETTA – PRESS



“The place is big on reusing and recycling, but in a witty way. In the lobby Brian Mock’s dog sculpture is built from dead computer parts, while old photo negs make a modern mosaic.”

- Living Etc.

“Chic, modern hotels are nothing new but when you add sustainable elements and high-class design, modern turns into marvel.”

- TheManual.com

“a Second Life - Recycled art defines a San Francisco Hotel”

- Hospitality Design

# Best Practices

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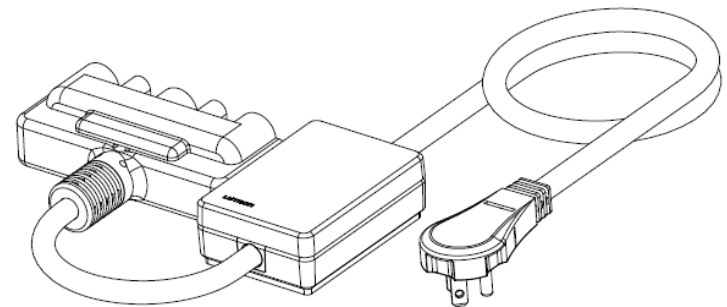
“Learn from the birds what food the thickets yield;  
Learn from the beasts the physic of the field;  
The arts of building from the bee receive;  
Learn of the mole to plow, the worm to weave.”

-Alexander Pope

# RETROFITS IN EXISTING HOTELS

## Lighting:

- **Wireless Occupancy Sensors**
- **Plug-In Appliance Modules**
- **Daylight Sensors**



# RETROFITS IN EXISTING HOTELS

## Heating/Cooling:

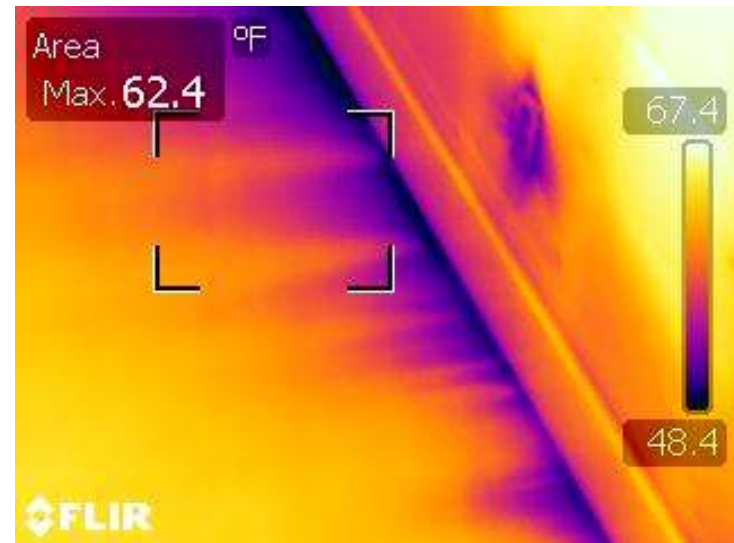
- **T-Stats with Occ. Sensors**
- **Building Automation Systems**
- **Smart rooms – tied to reservation system**



# RETROFITS IN EXISTING HOTELS

## Building Envelope:

- Façade inspections
- Replacement windows
- Insulation



# CONTACT INFO

Craig Nicholson, LEED AP BD&C  
Director of Sustainable Development  
AJAX Consulting Services, Inc.

[cnicholson@ajaxpartners.com](mailto:cnicholson@ajaxpartners.com)

Phone: (781) 863-5070

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