

Whole Building Approach

⌘ **Goal:** *"to create buildings that are responsive, responsible and defensible."*

⌘ **What this means:**

- ☒ Buildings must be competently planned; functionally adequate; appropriate in form; cost effective; constructible; adaptable; durable and contextual.

⌘ ALL BUILDING SYSTEMS ARE INTERDEPENDENT **NOT** INDEPENDENT !

Whole Building Approach

⌘ **"Sustainability":**

- ☒ meets the needs of the present without compromising the ability of future generations to meet their own needs.
- ☒ "Reduce, reuse and re-cycle" are key strategies to adopt.
- ☒ Applies both to new building construction and renovation of existing buildings.

"Sustainable" Building Design

⌘ **Site responsive:**

Examples: re-use of existing structures, blend into natural habitat; landscaping

⌘ **Energy Efficient:**

Examples: effective HVAC and lighting systems, meet or exceed minimum code req'ts

⌘ **Conserve water:**

Examples: recycling of non-potable water, eliminate run-off, efficient fixture use.

⌘ **"Green" Materials":**

Examples: re-use existing materials and finishes, maximize recycled content of materials, minimize debris.

“Sustainable” Building Design

⌘ **Indoor Environmental Quality:**

Examples: improve human thermal comfort, ensure adequate supply of ventilation air, utilize natural lighting systems, eliminate VOC's.

⌘ **Operation and Maintenance:**

Examples: training of building users and facilities personnel, building automation systems, utilize environment friendly cleaning products, recycling/waste management programs

Definition of Terms/Concepts

⌘ **“Title-24” Standards:**

- ☒ dictated by California Energy Commission
- ☒ Building Envelope constraints:
 - ☒ insulation types and performance
 - ☒ glazing types and performance
 - ☒ infiltration
- ☒ Lighting system constraints:
 - ☒ lighting levels (footcandles, lumens, watts per sq. ft.)
 - ☒ fixture performance
 - ☒ use of “day-lighting” and occupancy sensors

“Title-24” Standards

- ☒ **HVAC System constraints:**
 - ☒ need to justify sizing of proposed new equipment via load calculations
 - ☒ efficiency rating of heating/cooling equipment (minimum levels of EER, AFUE, COP)
 - ☒ establishes standards for duct/pipe insulation
 - ☒ establishes ventilation rates for building occupants
 - ☒ automatic control and shutdown of equipment
 - ☒ need for “air-side” economizers on larger systems
 - ☒ regulates use of electric resistance heat
