Alterations Feature in COMcheck

U.S. Department of Energy
Building Energy Codes Program
DOE's Building Energy Codes Program is an information resource on national model energy codes. We work with other government agencies, state and local jurisdictions, national code organizations, and industry to promote stronger building energy codes and help states adopt, implement, and enforce those codes.

The Program recognizes that energy codes maximize energy efficiency only when they are fully embraced by users and supported through education, implementation, and enforcement.

**Free Software**

- **REScheck**
  - REScheck, REScheck-Web, REScheck Package Generator
- **COMcheck**
  - COMcheck, COMcheck-Web, COMcheck Package Generator

**Technical Support**

- **Resource Center**
  - Resource Center
- **Ask an Energy Codes Expert**
  - Ask an Expert
When does COMcheck apply?

Commercial New Construction, Alterations and Additions

- Commercial Buildings include all buildings except
  - Single family
  - Low rise multi-family < 3 stories in height

- State Dependent
  - Not all states have the same code, some states have state-specific energy codes
  - Check to see what code is applicable in your state and if COMcheck is accepted
  - Status of State Codes
Alterations/Renovations/Remodels are covered in major energy codes

- IECC since 2000
- ASHRAE 90.1 since 1999

Historically, energy code compliance has been focused on new construction

Application and Enforcement depends on local or State Code officials
IECC Requirements

- 2000, 2003 – Altered components must meet new construction requirements
- 2004 – Same requirement but with exceptions noted for:
  - Storm windows
  - Glazing only replacement
  - Insulation cavities that are not exposed or are already filled.
ASHRAE 90.1 Requirements

- 1999 - 2004 versions – Altered components must meet new construction requirements
  ... but with various exceptions for:
  - Envelope
  - HVAC
  - Water Heating
  - Lighting
- Applies to affected components only!
- Cosmetic treatments do not need to be considered….unless they expose energy components
- Allows energy trade-off compliance method in addition to prescriptive
90.1 – Envelope Exceptions

- Storm windows
- Glazing replacement only (= U/SHGC)
- Window replacement (< 25% and = U/SHGC)
- Insulation cavity already filled (R=3/inch) or unexposed
- Roof membrane only or below deck insulation
- Vestibule requirements not applicable on door replacement
90.1 HVAC/SWH Exceptions

- Equipment modification or repair only (no increase in energy)
- Where compliance requires extensive revision to other systems
- Refrigerant change only
- Relocation only
- Water Heaters, Ductwork, and Piping – where there is insufficient clearance
90.1 Lighting Exception

- Replacement of less than 50% of luminaires in a “space”….but must not increase energy use.

  Note: replacement of luminaire components only (lamp, ballast) does not constitute an alteration for compliance purposes.
Project Type: Alterations
Space Conditioning: Nonresidential
Area Categories:
Use if LIGHTING is being altered ONLY
Alterations

An Alterations feature is included when 90.1-1999, 90.1-2001, or 90.1-2004 is selected from the Code menu. This feature is only included for these editions of the 90.1 Standard because these editions provide detailed requirements for alterations. To use the alterations feature, select Alterations as the Project Type on the Project screen.

Alteration projects involve changes to or replacement of: 1) existing building components that are part of the building envelope; 2) lighting, heating, ventilating, air conditioning, and water heating equipment; or 3) other equipment. Alterations also include converting an unconditioned or semi-heated space to a conditioned space. Additions (i.e., added square footage), even if in conjunction with existing building alterations or "New Construction" (i.e., new building), must be shown to comply in separate compliance runs. Software inputs for alterations include only those envelope components, lighting fixtures, or mechanical systems/equipment that will exist upon completion of the alteration project.

Compliance is shown as Pass/Fail for Envelope and Lighting.

Space Conditioning Type
Space Conditioning: Nonresidential

Envelope:
- Roof: Attic roof with Steel Joists = cavity insulation R3/inch
- Skylights: replace all existing skylights (<2% skylight/roof%)
  - U-factor = 0.660   SHGC = 0.35
- Exterior walls – Steel-framed, 24” o.c.
  - R-value = 13 cavity insulation
- Vertical Glazing: 20% replaced
  - Pre-Alteration: Metal-Frame Single Pane, U-factor = 1.250, SHGC = 0.82
  - Post alteration: Vinyl frame-double pane low e, U-factor = 0.33, SHGC = 0.35

Mechanical: service repairs to Rooftop Package Units
Area Categories (Lighting Alteration only):

- **Hotel/Motel: Hotel Lobby  3,000 sq. ft.**
  - Metal Halide 75W, 1 lamp/fixture, electronic, 50 fixtures, fixture wattage = 80
  - Compact Fluorescent, twin tube 13W, electronic, 1 lamp/fixture, 14 fixtures, fixture wattage = 15
  - Chandeliers – 4, 8 lamps/fixture, fixture wattage 200, decorative allowance (1,000 sq. ft. floor area)

- **Hotel/Motel: Hotel Dining Area  15,000 sq. ft.**
  - 48” T8 28W Super T8, electronic, 3 lamps/fixture, 32 fixtures, fixture wattage = 82
  - Compact Fluorescent, twin tube 18W, electronic, 2 lamps/fixture, 328 fixtures, fixture wattage = 38
  - Metal Halide 100W, electronic, 1 lamp/fixture, 30 fixtures, fixture wattage = 105

- **Hotel/Motel: Guest Rooms  20,000 sq. ft.**
  - Exempt: <50% of fixtures replaced and no increase in energy use.

- **Corridor/Hallways  2,000 sq. ft.**
  - 24” TIU 32W, 2 lamps/fixture, 8 fixtures, fixture wattage = 62
  - Compact Fluorescent, twin tube 13W, electronic, 1 lamp/fixture, 27 fixtures, fixture wattage = 15