Camp Verde
ARIZONA

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AGENDA
2012 INTERNATIONAL BUILDING CODE ADOPTION MEETING
TOWN OF CAMP VERDE BUILDING DEPARTMENT
COUNCIL CHAMBERS – 473 S. MAIN ST. STE. 106
MONDAY, JANUARY 6TH, 2014 AT 4:00 PM

Note: The Town of Camp Verde Building Department will be hosting public meetings beginning Monday, October 7th, 2013 to focus on the potential adoption of the 2012 International Building Codes. Architects, builders, contractors, designers and general public from the Town of Camp Verde and surrounding areas are encouraged to attend. Meetings have been tentatively scheduled through February of 2014 and will begin at 4:00 PM and will end no later than 6:00 PM. It is possible that some agenda items will be carried over to a subsequent meeting. **In addition, a majority of Council members, Planning and Zoning Commission members, and Board of Adjustments and Appeals members may be present at these meetings**. For additional information, please contact the Building Department at 473 S. Main St. Ste. 108, Camp Verde, AZ 86322 – (928) 554-0060 – www.campverde.az.gov.

1. Welcome.
2. General questions, comments, or concerns for staff in regards to the IFC.
3. General questions, comments, or concerns for staff in regards to December 16th meeting.
4. Discussion of Section 2305.1 - Tank Filling Operations.
5. Discussion of Section 3208.3.1 - High Piled Combustible Storage – Rack Storage Flue Space Protection.
6. Discussion of Section 5003.12 - Hazardous Material Outdoor Control Areas.
7. Discussion of Section 5704.2.7.4 - Flammable and Combustible Liquids Emergency Venting of Storage.
8. Discussion of Section 5705.5 - Alcohol-based hand rubs classified as Class I or II Liquids.
9. Discussion of Section 6104.3.1 - LPG Installation on Roof Prohibited.
10. Discussion of Section 6109.15 - LPG Cylinder Exchange for Resale.
11. Final questions, comments, or concerns for staff in regards to the IFC.
12. Introduction to the International Energy Conservation Code (IECC)
13. Handout from 2011 AZBO Institute – 2012 IECC: Major Changes from the 2006 IECC and the 2009 IECC.
14. General questions, comments, or concerns for staff in regards to the upcoming IECC meetings.
15. Closing comments.

Posted By: KWelch Date/Time: 1/2/14 8:54am

The Town of Camp Verde Council Chambers is accessible to the handicapped. Those with special accessibility or accommodation needs, such as large typeface print, may request these at the Office of the Town Clerk.

Jack

CODE EDITION CODE SECTION	2006	2009	2012	*NOTES*
COMMERCIAL PROVISIONS				
Intent 101.3	"effective use of energy"	"effective use of energy"	"effective use and conservation of energy over the useful life of each building"	
Information on construction documents 104.2/103.2/103.2	104.2 envelope information, system and equipment efficiencies	103.2 envelope information, HVAC and SWH system and equipment types, sizes, and efficiencies, economizer descriptions, controls, fan horsepower and controls, lighting fixture schedule with wattage and control narrative	103.2 same as 2009	submittal/ plan review checklist?
Definitions Section 202				
Building	structure...used for...occupancy	structure...used for ...occupancy	hot water, and lighting, designed and installed to meets owner's project requirements and the code.	OPR - borrowed from LEED?
Building commissioning	N/A	N/A	A process that verifies and documents design/installation/function per OPR and the Code	
Coefficient of Performance - heating and cooling	N/A	N/A - used but not defined	the ratio of the rate of heat removal (to the rate of heat delivered) to the rate of energy input	
Continuous air barrier	N/A	N/A	a combination of materials and assemblies	see C402.4.1.2
Dynamic glazing	N/A	N/A	fenestration that has the reversible ability to change its performance properties - U-value, SHGC, VT	see C402.3.3.5

fenestration product				must still meet NFRC-100 (U-value), NFRC-200 (SHGC), and NFRC-400, et al (air leakage). Note that there are no Commercial Provisions for area-weighting for fenestration.
field-fabricated	N/A	N/A	frame is made at the site with field cuts	
site-built	N/A	N/A	field-glazed into frames made of factory-cut components	
Furnace electricity ratio	N/A	N/A	per Title 10 of US Code - no specific reference in IECC	
General lighting	N/A	N/A	substantially uniform level of illumination throughout an area	
IPLV - integrated part load value	used but not defined	used but not defined	a "figure of merit" expressing part-load efficiency at various load capacities	
On-site renewable energy	used (pools/performance) but not defined	used but not defined	derived from solar/wind/etc - system located on site	
Residential building	R-3, as well as R-2 and R-4 three stories or less above grade	same as 2006	One- and two-family, townhouses, and R-2, R-3, and R-4 three stories or less above	
Skylight	15 degrees or more from vertical	same as 2006	60 degrees or less from horizontal	
Storefront	N/A	N/A	non-residential, designed to resist heavy use	

Fenestration product rating 102.1.3/303.1.3/C303.1.3	102.1.3 U-factor per NFRC 100, w/ defaults. SHGC per NFRC 200, with defailts	303.1.3 same as 2006	C303.1.3 same as 2009, except add visible transmittance (VT) per NFRC 200, w/ defaults	see C402.3 re Fenestration
Application 501.2/501.2/C401.2	shall comply on an individual basis with 502, 503, 504, and 505, or with ASHRAE 90.1 as applicable to any Section. Exception - Sec 506 Total Building Performance, including listed mandatory measures.	shall comply with 502, 503, 504, and 505 in its entirety. As an alternate, shall comply with ASHRAE 90.1 in its entirety. Exception: comply with Section 506, including listed mandatory measures	shall comply with one of the following" 1)ASHRAE 90.1, 2)C402, C403, C404, C405, plus either C406.2, C406.3, or C406.4, or 3)C407 Total Building Performance, with mandatory measures, and demonstrate energy costs @ 85% of standard reference design.	
Application to existing buildings 101.4.1 & 101.4.3/101.4.1 & 101.4.3/C401.2.1	unaltered portions need not comply	stand alone addition can comply, or whole building can comply	shall comply with C402, C403, C404, and C405, or with ASHRAE 90.1	
Insulation and fenestration criteria 502.1.1/502.1.1/C402.1.1	shall meet the reqs of T502.2(1) (opaque assemblies) & T502.3 (fenestration). Bldgs with >40% vertical fenestration or >3% skylight shall comply with the bldg envelope provisions in ASHRAE 90.1	increased stringency in all CZ's, with "R" and "all other" columns in T502.2(1). Bldgs with >40% vertical fenestration or 3% skylight shall comply with the bldg envelope provisions in ASHRAE 90.1	Increased stringency in all CZ's. Bldgs with >30% vertical fenestration or 3% skylight shall comply with ASHRAE 90.1 per C402.3.1. (errata in C402.1.1)	increased requirements for CI in all wall types common
U-factor alternative NA/502.1.2/C402.1.2	N/A	Table 502.1.2 added for U-factor alternatives	same as 2009	for individual assemblies
Specific insulation requirements 502.2/502.2/C402.2	per T502.2.1	same as 2006	per T C402.2, with specific language for multiple CI layer installations	different from residential re CI
Roof assembly 502.2.1/502.2.1/C402.2.1	per T502.2.1, with exception for CI varying 1" or less	same as 2006	per T C402.2, with min reqs for skylight curbs	

Solar reflectance and thermal emittance NA/NA/C402.2.1.1	N/A	N/A	low slope roofs (<2:12) in CZs 1,2, and 3 to comply with T402.2.1.1 re minimum reflectance/thermal emittance. Four exceptions added for all orportions of such roofs.	
Slabs-on-grade 502.2.6/502.2.6/C402.2.6	per T502.2.1 - no AZ req	per T502.2.1 -no AZ req except R occs/see definitions	per T402.2 - AZ reqs in CZ 4-5	R-10 for 24" below - see C402.2.6
Insulation of radiant heating systems NA/NA/C402.2.8	N/A	N/A	floors and slabs min R - 3.5	
Bldg Envelope Reqs	T502.2(1)	T502.2(1) - see changes	T402.2 - see changes	
Fenestration 502.3/502.3/C402.3	per T502.3	per Table 502.3 - see changes	per Table C402.3 - see changes, with reference to daylighting controls per C405.2.2.3.2	
Maximum area for windows/skylights 502.3.1/502.3.1/C402.3.1	40%/3% per Table	same as 2006	30%/3% with increases to 40%/5% for areas with min daylit areas, VT reqs, and daylighting controls.	
Minimum skylight fenestration area NA/NA/C402.3.2	N/A	N/A	For (15) different uses >10,000sf with (min) 15' ceilings, total daylight zone under skylights (see definition) to be not less than 1/2 the floor area and (see calc for effective aperture). Exceptions for CZs 6-8, LPDs >.5W/sf, and natural obstructions. Rooftop monitors=clerestory windows. Additional reqs for multi-level lighting controls (C402.3.2.1, w/ exceptions) and for haze factor (C402.3.2.2, w/ exceptions).	

Maximum U-factor and SHGC 502.3.2/502.3.2/C402.3.3	per T502.3, based on CZ, framing materials (U-factor), and projection factor (SHGC)	per T502.3, based on framing materials and projection factor, with increased window U-factor stringency in extreme heating climates, and increased skylight U-factor and SHGC stringency in cooling climates.	per TC402.3, based on CZ and fixed v. operable v. doors. Increased stringency for U-factor and SHGC (per PF in Table 402.3.3.1) in cooling climates. Area-weighting for PF no longer permitted.	
Increased vertical fenestration SHGC NA/NA/C402.3.3.2	N/A	N/A	In CZ 1-3, allowable increase for SHGC for vert fenestration located entirely at min. 6' above the floor.	
Increased skylight SHGC NA/NA/C402.3.3.3	NA	NA	In CZ 1-6, allowable SHGC increase to .60 for areas provided with daylighting controls.	
Increased skylight U-factor NA/NA/C402.3.3.4	NA	NA	For skylights over daylight zones provided with auto daylighting controls, allowable U-factor increase to .90 in CZ 1-3, and .75 in CZ 4-8.	
SHGC for dynamic glazing NA/NA/C402.3.3.5	N/A	N/A	For dynamic glazing, for compliance with C402.3.3 (max fenestration U-value/SHGC), use the mfgr's lowest rated (best) SHGC. For ratios in C402.3.1.1, use the mfgr's max VT and Max SHGC. Area-weighted averaging with non-dynamic glazed products not permitted.	
Area-weighted U-factor NA/NA/C402.3.4	N/A	N/A	Area-weighting permitted by Table C402.3 category.	

Air leakage 502.4/502.4/C402.4	502.4 air leakage provisions for windows and doors (NFRC 400), curtain walls/storefront glazing/commercial doors (tested per ASTM E 283), sealing of the bldg envelope (openings and penetrations), dampers req's (gravity < three stories) on air exhausts and intakes, loading dock weatherseals, vestibules (six exceptions, incl CZ 1-2), and recessed lighting (3 options).	same as 2006, except additional reqs for hot gas bypass, recessed lighting to be IC-rated, labelled as tested per ASTM, and sealed. Moisture control provisions removed.	C402.4 w/ new section 402.4.1 for air barriers. C402.4.1.1 Air barrier construction - contains three performance reqs: 1)continuous, 2)joints/openings /penetrations to be sealed and secured to resist air pressure, and 3)recessed luminaires IC-rated, labelled, tested, and sealed, per 402.4.8. C402.4.1.2 Air barrier compliance options: 1) 15 materials "deemed to comply" with air permeability reqs, 2) 2 (masonry) assemblies "deemed to comply" with air permeability reqs, or 3) testing at (max).4 cfm/sf (75 Pa) per ASTM E 779.	Testing waives C402.4.1.1 items 1&3 (continuous air barrier and recessed lighting fixtures per C402.4.8), but not item 2 (seal joints and penetrations). (Note misprint C404.2.8.)
Air barrier penetrations 502.4.3/502.4.3/C402.4.2	502.4.3 sealing of the building envelope - joints, penetrations, opening, seams sealed with caulk or gasket systems.	502.4.3 same as 2006	C402.4.2 Air barrier penetrations - penetrations, paths, joint, seals to be caulked, gasketed, or otherwise sealed.	C402.4.2 essentially the same language as C402.4.1.1 item#2 above. Unclear but assume to be req'd in CZ 1-3 (see exception in C402.4.1).

Air leakage of fenestration 502.4.1/502.4.1/C402.4.3	502.4.1 Window and door assemblies, labelled per NFRC 400, and NOT TO EXCEED the values in 502.4.2 (.3 cfm/sf @ 75Pa).	502.4.1 same as 2006 (see misprint)	C402.4.3 maximum leakage per Table C402.4.3 as tested and labelled.	Note increased stringency (20X) in curtain wall leakage - 2009@.3cfm/sf, 2012 @ .06 cfm/sf - !
Doors and openings to shafts, chutes, stairways, and elevator lobbies - NA/NA/C402.4.4	N/A	N/A	C402.4.4 Openings to meet Table C402.4.3, or be gasketed, weatherstripped, or sealed. Note exception for rated doors - ?	
Air intakes/exhausts, stairways, and shafts NA/NA/C402.4.5	N/A	N/A	C402.4.5 Class 1 motorized dampers @ max 4cfm/sf req'd for vents in stairways and shafts (C402.4.5.1), w/ no exceptions, and in outdoor airt intakes and exhausts (C402.4.5.2), w/ exceptions for exhaust/relief dampers, < three story bldgs, CZs 1-3, and intake/exhausts dampers <300cfm. Dampers <24" in either dimension may test @ 40cfm/sf.	
Loading dock weatherseals 502.4.5/502.4.5/C402.4.6	502.4.5 - "...to restrict infiltration when vehicles are parked in the doorway." - ?	same as 2006	same as 2006	

Vestibules 502.4.6/502.4.7/C402.4.7	502.4.6 "A door" that separates conditioned space from the building exterior.. Exception for CZ 1-2.	same as 2006	C402.4.7 "All building entrances...", incl doors adjacent to revolving doors. Exceptions for CZ1-2, doors not intended to be used by the public, doors from (?) a space <3000sf, revolving doors, doors from sleeping units, and doors used primarily for vehicle movement/material handling,	
Recessed luminaires 502.4.7/502.4.8/C402.4.8.	502.4.7 - IC-rated and labeled at (max)2 cfm, and sealed.	502.4.8 same as 2006, except limited to recessed lights installed in the bldg thermal envelope.	C402.4.8 same as 2009, except testing reference to *conditioned space* deleted.	
Building Mechanical Systems - mandatory provisions				All systems - simple and complex
Calculation of heating and cooling loads 503.2.1/503.2.1/C403.2.1	503.2.1 Design loads calculated per ASHRAE Fundamentals	503.2.1 Design loads calculated per ASHRAE/ACCA 183.	C403.2.1 Design loads to include HVAC, building envelope, ventilation, lighting, and occupancy factors.	
Equipment and system sizing 503.2.2/503.2.2/C403.2.2	503.2.2 capacity "shall not exceed" loads calculated per 503.2.1	503.2.2 same as 2006	C403.2.2 output capacity "shall not exceed" loads calculated per C403.2.1.	
HVAC equipment performance reqs 503.2.2/503.2.2/C403.2.2	503.2.2 per Tables, with exception for some water-cooled chiller equipment pkgs.	503.2.2 same as 2006, with updated tables.	C403.2.3 same as 2009, with updated Tables and new provisions for positive displacement chiller pkgs.	
HVAC system controls 503.2.4/50	503.2.4 Thermostatic controls, heat pump supplementary heat, set point overlap restrictions, off-hour controls, thermostatic setback capabilities, auto setback and shutdown, shutoff damper controls.	503.2.4 same as 2006, except add snow melt controls.	C403.2.4 same as 2009, except add auto start capabilities.	

Demand control ventilation NA/503.2.5.1/C403.2.5.1	N/A	503.2.5.1 - reqd for spaces >500sf, an avg occupant load of 40/1000sf, and served by systems with an air-side economizer (see 503.3/C403.3 and 503.4/C403.4), auto modulation control of the air damper, or >3000cfm design outdoor airflow. (See 2012 for clarification of exceptions.)	C403.2.5.1 same as 2009, except change to avg occupant load of 25/1000, and add exception for process load ventilation.	
Energy recovery ventilation 503.2.6/503.2.5/C403.2.6	503.2.6 req'd for fan systems with design airflow >5000cfm, and a minimum outdoor air supply of 70% or greater, with exceptions for labs et al, some semi-conditioned spaces, heating systems in climates <3600 DD, some cooling systems, some dehumidification systems, systems with >60% site-recovered energy.	same as 2006, with one lab exception removed.	C403.2.6 when required by Table C403.2.6 (based on CZ, % of outdoor air, and and total design outdoor airflow), with exceptions added for cooling energy recovey in some CZs, heating energy recovery in some CZs, systems where the largest source of air exhausted at one location is less than 75% of the design outdoor airflow rate, and systems expected to operate <20hrs/week.	
Duct and plenum insulation and sealing 503.2./503.2.7/C403.2.7	503.2.7 R-5 in unconditioned spaces/R-8 outside the building or within the bldg envelope adjacent to the bldg exterior.	same as 2006, except duct sealing reqs moved to IMC.	C403.2.7 same as 2009, except R-6 for ducts in unconditioned spaces.	
Piping insulation 503.2.8/503.2.8/C403.2.8	503.2.8 per Table 503.2.8 for three fluid types and two pipe size ranges. Exceptions for some factory-installed piping, piping for fluids 55-105 degrees F, fluids not heated or cooled with fossil fuel or electricity, and some runout piping.	503.2.8 per Table 503.2.8, with insul increases for pipes <1.5". Exception added for piping installed in room fan coils and unit ventilators.	C403.2.8 per Table C403.2.8, with reqs based on fluid operating temp, insulation conductivity, and pipe size. Exempt temp range narrowed to 60F-105F. Exception added for strainers and valves 1" or less, and for some underground piping.	

Protection of piping insulation NA/NA/C403.2.8.1	N/A	N/A	C403.2.8.1 req'd when exposed to weather, from damage due to sunlight, moisture, maintenance, wind, and solar radiation. Masking tape not permitted.	also in residential provisions
Mechanical system commissioning and completion 503.2.9/503.2.9/C403.2.9	503.2.9 air and hydronic balancing, operating manuals - all bldgs.	same as 2006	C403.2.9 per C408.2 (new Section), with reqs for a commissioning plan, air and hydronic system balancing, functional performance testing of equipment , controls, and economizers, preliminary and final commissioning reports with documentation (drawings and manuals), and lighting system control functional testing. Exceptions for bldgs <480,000 btu/hr cooling or <600,000 btu/hr heating, and for systems serving dwelling and sleeping units in hotels and motels.	balancing for all bldgs?
Air system design and control NA/503.2.10/C403.2.10	N/A	503.2.10 for HVAC systems having a total fan system motor nameplate horsepower >5hp, shall not exceed the allowable fan system hp in Table 503.2.10.1(1). Exceptions for some hospitals and labs, exhaust fan motors 1hp or less, and fume hoods. For each selected motor, the selected motor may be no greater (bhp) than the next larger size available. Exceptions for nameplate rating for some motors.	C403.2.10 same as 2009, except single-zone VAV systems to comply with constant volume reqs. Exception for fume hoods deleted.	

Heating outside a building NA/503.2.11/C403.2.11	N/A	503.2.11 must be radiant systems, with timers or occupant sensors.	same as 2009	
Simple HVAC systems and equipment				
Economizers 503.3.1/503.3.1/C403.3.1	503.3.1 Supply air economizers req'd for cooling systems per Table 503.3.1(1), based on CZ. Such systems to be capable of providing 100% outdoor air, with a means to relieve excess outdoor air to prevent overpressurization. Exceptions for systems meeting or exceeded the minimum equipment efficiencies of Table 503.2.3(1) or 503.2.3(2), by the percentages shown in Table 503.3.1(2), and for some spaces with open case refrigeration (freezers only) and special filtration ventilation systems per the IMC.	same as 2006, except changes to Table 503.3.1(1)	C403.3.1 "Each cooling system that has a fan shall include either an air or water economizer..." to comply with new Table C403.3.1(1). Such systems to be capable of being sequenced with the mechanical cooling equipment and not controlled only by mixed air temps, and must have high-limit shutoffs, and capable of relieving excess outdoor air. Exceptions added for some process humidification systems, systems serving residential spaces <5 times the limits in Table C403.3.191), and systems expected to operate <20 hrs/wk.	C403.4.1 has no provisions for water economizers - ?
Complex HVAC systems and controls				

Economizers 503.4.1/503.4.1/C403.4.1	503.4.1 Supply air economizers req'd for cooling systems per Table 503.3.1(1). Exceptions for some water economizers, and for equipment covered by the minimum efficiency reqs of Table 503.2.3(1), (2), or (6) (EER), or Table 503.2.3(7) (IPLV), and that meet or exceed the minimums by the percentages in Table 503.3.1(2).	same as 2006	C403.4.1 new reqs for water economizers and integrated controls.	Note deleted language for air economizers. Note no tradeoffs for higher efficiency equipment.
Variable air volume fan control 503.4.2/503.4.2/C403.4.2	503.4.2 Individual VAV fans with motors 10hp or greater to have variable speed mechanical or electrical drive or controls that resulktin fan motor demand of no more than 30% of design wattage at 50% of design airflow.	same as 2006	same as 2009, except for all VAV fans with motors of 7.5 hp or greater. Option added for van-axial fans with variable pitch blades.	
Service water heating				
Piping insulation 504.5/504.5/C404.5	504.5 for automatic-circulating systems, min 1" insulation. For non-recirculating systems without integral heat traps, min 1/2" insulation for the first 8'.	same as 2006	C404.5 for automatic-circulating hot water and heat-traced systems, min 1" insulation. Heat-traced systems to meet the mfgr's insulation installation instructions, with min 1" insulation on untraced piping within a heat-trace system.	
Hot water system controls 504.6/504.6/C404.6	504.6 Automatic circulating or heat trace systems to be conveniently controlled automatically or manually when system not in use.	same as 2006	C404.6 Circulating HW system pumps or heat trace to be arranged to be turned off automatically or manually when there is limited hot water demand.	
Pool heaters 504.7.1/504.7.1/C404.7.1	504.7.1 to be equipped with a readily accessible shut-off switch	same as 2006	C404.7.1 switch "mounted outside of the heater".	

Pool covers 504.7.3/504.7.3/C404.7.3	504.7.3 Heated pool to be equipped with a vapor retardant cover. Pools heated to >90 degrees to be equipped with an R-12 cover. Exception for pools with 60% solar.	same as 2006	C404.7.3 R-12 at 90 degrees deleted. Exception for solar increased to 70%.	Note "site-recovered energy"
Electrical Power and Lighting Systems				
General 505.1/505.1/C405.1	505.1 covers lighting system controls, the connection of ballasts, the maximum lighting power for interior applications, and minimum acceptable lighting equipment for exterior applications. Exception for lighting within dwelling units.	505.1 limits exception to dwelling units where 50% or more of the permanently installed fixtures are high-efficacy.	C405.1 adds "electrical energy consumption" to scoping. Further limits exception to dwelling units with 75% high-efficacy fixtures (in commercial bldgs).	
Light reduction controls 505.2.2.1/505.2.2.1/C405.2.1.2	505.2.2.1 each area requiring manuals controls shall also allow the occupant to reduce lighting load in a reasonably uniform pattern by 50%. Control options are 1)controlling all lamps or luminaires, 2)dual-switching, 3)switching the middle lamp, or 4)switching each lamp. Exceptions for 1)spaces with only one luminaire, 2)areas controlled by an occupant-sensing device, 3)corridors, et al, 4)sleeping units, and 5)spaces using <.6W/sf.	same as 2006	C405.2.1.2 same as 2009. Exception added for daylight spaces per C405.2.2.3.2	
Automatic lighting shutoff 505.2.2.2/505.2.2.2/NA	505.2.2.2 buildings larger than 5000sf to be equipped with an automatic control device to shut off lighting, on a schedule, by occupant sensor, or by control from another space.	same as 2006	N/A	see C405.2.2.1 Automatic time switch control devices below

Additional lighting controls NA/NA/C405.2.2	N/A	N/A	C405.2.2 Each area that is required to have a manual control shall also have 1)automatic time switch control devices, 2)occupancy sensors, and 3)daylight zone control	
Automatic time switch control devices C405.2.2.1	(see 505.2.2.2)	(see 505.2.2.2)	C405.2.2.1 "...in all areas of the building." Exceptions for emergency egress lighting, and lighting controlled by occupancy sensors. The device shall include an override switch located where the lights controlled are visible. The override switch shall operate for (max) two hours, and control a (max) 5000sf. Exceptions for malls, arcades, auditoriums, single tenant retail, industrial, and arenas include >two hr override when using a captive key device, and increase to (max) 20,000sf.	
Occupancy sensors NA/NA/C405.2.2.2	N/A	N/A	C405.2.2.2 to be installed in all classrooms, conference rooms, lunch/break rooms, private offices, restrooms, storage rooms, janitors closets, and other spaces 300sf or less enclosed by floor-to-ceiling partitions. Devices to turn off lighting within 30 minutes of the occupants leaving the space, and either manual on or auto on to (max) 50% level. Exception for	

Daylight zone control NA/505.2.2.3/C405.2.2.3	N/A	505.2.2.3 Daylight zones to be provided with controls that control lighting independent of general area lighting. Exception for some small daylight zones.	C405.2.2.3 "...controlled independently of general area lighting, and in accordance with..." C405.2.2.3.1 (manual) or C405.2.2.3.2 (automatic), with a maximum 2500sf per daylight zone. As an alternate to manual controls, automatic controls to be readily accessible, and operate by 1)continuous dimming capable of reducing power to 35% of rated power, or 2)stepped dimming, with (min) one step at 50-70% of rated power, and another at 35% of rated power.	see C405.2.2.3.3 multi-level lighting controls below
Multi-level lighting controls NA/NA/C405.2.2.3.3	N/A	N/A	C405.2.2.3.3 - ?	Note - are multi-level lighting controls required if C404.2.2.3.1 is selected?
Specific application controls NA/NA/C405.2.3	N/A	N/A	C405.2.3 separate controls req'd for display and accent lighting, supplemental task lighting, "nonvisual" applications, i.e. plants, and lighting sales and demonstrations. Sleeping units in hotels/motels to have a master switch at the main entrance that controls all permanently installed luminaires and switched receptacles.	

Total connected interior lighting power 505.5.1/505.5.1/C405.5.1	505.5.1 "...sum of the watts..." for screw lampholders, low voltage lighting, "other" luminaires (?), and line voltage track and plug-in busways (the greater of total lamp watts or 30W/lf). Exceptions for specialized medical/dental, professional sports arena playing fields, display lighting for galleries/museums, sleeping unit lighting in hotels/motels, and emergency lighting.	505.5.1 same as 2006, except track lighting at 30W/lf (min), or per wattage limit of circuit breaker. Nine new exception added, for special lighting needs, landmarks, casinos, theatrical, photographic processes, mfgr-installed equipment/instrumentation lighting, task lighting for plant growth, advertising/directional signage, restaurant food prep/warming, lighting for sale or demonstration, approved emergency lighting, integral freezer/refrigerator lighting, enclosed retail display windows, furniture-mounted supplemental task lighting with auto-shutoff. Separate controls req'd for exempt medical/dental and gallery/museum display lighting.	same as 2009	
Interior lighting power 505.5.2/505.5.2/C405.5.2	505.5.2 allowances per Table 505.5.2 (LPD)	505.5.2 same as 2006, except new footnotes in Table 505.5.2 allow additional power in retail, based on product categories.	C405.5.2 optional Space-by-Space method added to calculate lighting power allowance to "more closely represent(s) the proposed use...", and permitting tradeoffs between spaces.	

Exterior building lighting power 505.6.2/505.6.2/C405.6.2	505.6.2 allowances per Table 505.6.2 (LPD), plus 5% unrestricted. Tradeoffs allowed only among listed Tradable applications. Exceptions (separate controls req'd) for signaling/directionsl transportation lighting, advertising signage, mfgr-installed equipment/instrumentation lighting, theatrical, athletic playing areas, temporary lighting, industrial production and associated storage, theme park "theme" elements, public monuments and historic structures.	505.6.2 allowance per "...sum of base site allowance..." (per lighting zone in Table 505.6.2(1))plus the LPDs in Table 505.6.2(2), with the 5% unrestricted deleted.	same as 2009	Note - 60 lumens/W efficacy required for all lamps >100W
Exterior lighting controls 505.2.4/505.2.4/C405.2.4	505.2.4 Automatic controls req'd for all exterior applications. Photosensor, time switch, or astronomical time switch reqs	505.2.4 scoping removed (?) but reqs retained.	same as 2009	
Total building performance 506.1/506.1/C407.1	506.1 meet mandatory measures, plus annual energy costs of proposed design not to exceed standard design.	506.1 new scoping for systems included. Mandatory measures moved to 506.2.	C407.1 same as 2009	
Mandatory reqs 506.1 (above)/506.2/C407.2	see 506.1	506.2 new section numbers	C407.2 new section numbers	
Performance-based compliance NA/506.3/C407.3	see 506.1	506.3 proposed v. standard, with exception for energy usage to be substituted for energy cost, as approved. On-site renewables pro[illegible] moved from 506.2.4	same as 2009	

Documentation 506.5/506.4/C407.4	506.5 RDP req'd (if by statute) to provide 1)annual energy use and costs, 2)energy-related features of proposed design, 3)simulation input/output reports, and 4)narrative explanation of output errors.	506.4 requires a compliance report with project information and inspection checklist (506.4.1), and other documentation as required (506.4.2). RDP language deleted.	same as 2009	
Calculation procedure NA/506.5/C407.5	N/A - procedures summarized in 506.2 - no direction to Table 506.4l	506.5 per Table 506.5.1(1), with specific reference to thermal block (zone) methodology. Table 506.5.1(1) revised extensively from 506.4 (2006)	same as 2009	
Calculation software tools NA/506.6/C407.6	N/A	506.6 listed capabilities for simulation software. ASHRAE 140-compliant software "shall be permitted to be approved", or others as approved. Input values must be as approved.	same as 2009	
Additional efficiency package options NA/NA/C406.1 & C406.2	N/A	N/A	C406.1 & C406.2 increased efficiency req'd in one of three categories: HVAC (C406.2), lighting (C406.3), or on-site renewable (C406.4)	applicable to all projects except ASHRAE 90.1 or Section C407 Total Building Performance designs.