

Fast Forward

2019 DOE
Energy Codes
Conference
Denver, CO



Image: Jonlin



Seattle Department of
Construction & Inspections

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IECC: Maybe half survived this round

- Commercial + residential: 1,220 pages, pretty impressive results this time
- Some “approved” proposals will die in online voting
- “Disapproved” proposals could reappear w/ 2/3 vote
- But, will states adopt a really strong energy code?

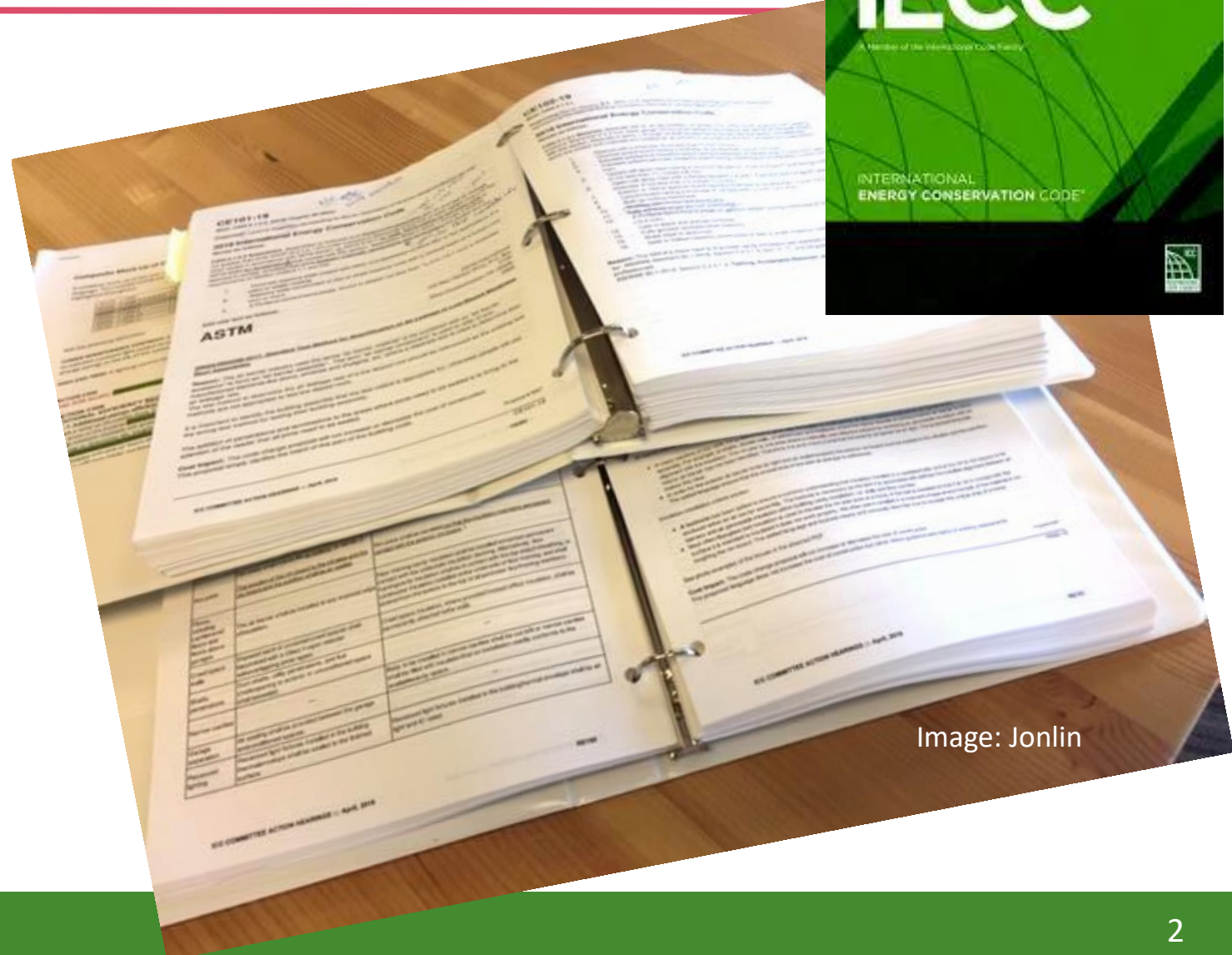


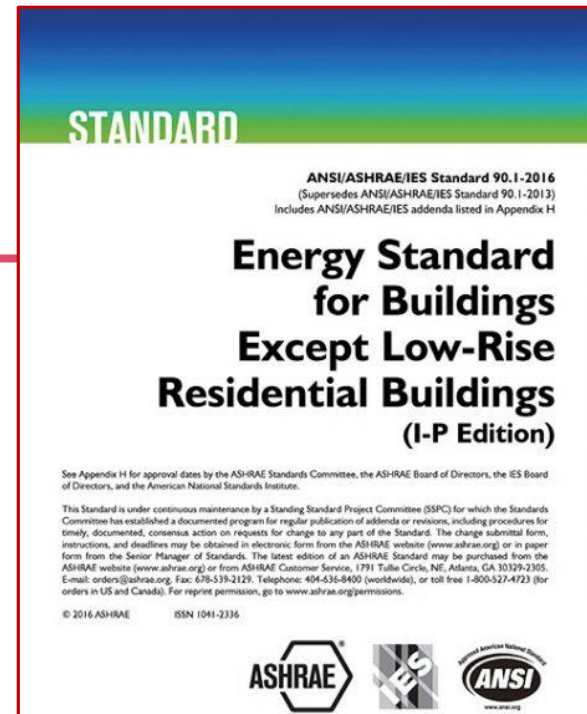
Image: Jonlin

ASHRAE: “Continuous maintenance”

- 90.1 committee meets four times a year
- Long hours in subcommittees
- Then full committee debates and votes
- Then, public comments & responses
- Then more votes...
- Rinse and repeat



Image: ASHRAE



Scope

- “Sites” in both IECC *and* ASHRAE (maybe)
- So, parking lot lighting, fountain pumps...
- Some scope changes failed:
 - “Life safety code”
 - ~~energy conservation~~
 - “Human comfort” only
- Use of code for business & politics



Image: Wikimedia Commons Kim Hansen

Definitions and more Admin proposals

- Next 30 proposals: Most failed
 - Attempts to sneak new requirements into definitions
- But a few did pass:
- Change “accessible” to “with ready access”
- Adopt new ASHRAE climate zone map (finally)
- List “mandatory” & ~~“prescriptive”~~ in C407
- ASHRAE: opaque door not “fenestration” **3.1**



Renewable energy

- ASHRAE: 0.25 watts/sf of 3 largest floors
 - Except shaded or congested roof
- IECC: Similar proposal failed
 - Sunk by technical problems
 - A “learning opportunity”?
- “Storage-ready” proposal failed



Image: Wikimedia Commons RoofJockey

Building Envelope

- IECC: Misc U-values from ASHRAE
 - Cherry-picked the values lower than IECC
- ASHRAE: Weaker fenestration U-values
 - for non-metal frames
 - But IECC already does it this way
- Failed: “Dynamic shades” replace SHGC
- **IECC: Mandatory air barrier testin**
- ASHRAE, “**verified**” OK instead of tested
- Testing routine for apartments allows sampling of units
 - But, is this about energy?
- ASHRAE: Complicated thermal bridge rule
 - Allows extensive concrete balconies

Lookin' Good
Air Barrier Verification
Just \$49.95

Official-looking 10-page Report

We'll put your project name and address right on the front. Includes responsible-looking corrections, written by a recovering building official.

Tired of
to make
that'll ke
someone
but don
good!



Sign In →

<https://www.cdpassess.com/live/cah/>
Look 'em up for yourself

CAH Proposals and Online Mods

Subject Matter

Number

Part Number

Hearing Committees

CE - Energy -

108

- All -

2018 Group A

- International Building Code - Egress
- International Building Code - Fire Safety
- International Building Code - General

Refreshing continuously

Refresh now

CE108-19

CAH Action: As Modified mod 4

Assembly Motion: None

Online Mods

View

Committee Chair Ruling

Final Status

CE108-19-O'NEIL-1

Download PDF

View

None

None

CE108-19-O'NEIL-2

Download PDF

View

None

None

Mechanical: Examples

- IECC: Data centers use *modified* 90.4 **108**
- ASHRAE: Data centers us 90.4 straight up
- Sensible little controls changes:
 - Exempt VRF from economizers **124**
 - Changed supply air reset rules **125**
 - Clarified garage ventilation detectors **129**
 - Change fan metric from FEG to FEI **139**
- IECC & ASHRAE: ERV required for apts **133**
- FDD required over 100,000 sf **110**
- Removable protection for ext pipe insul **150**
 - Is this a sales pitch?

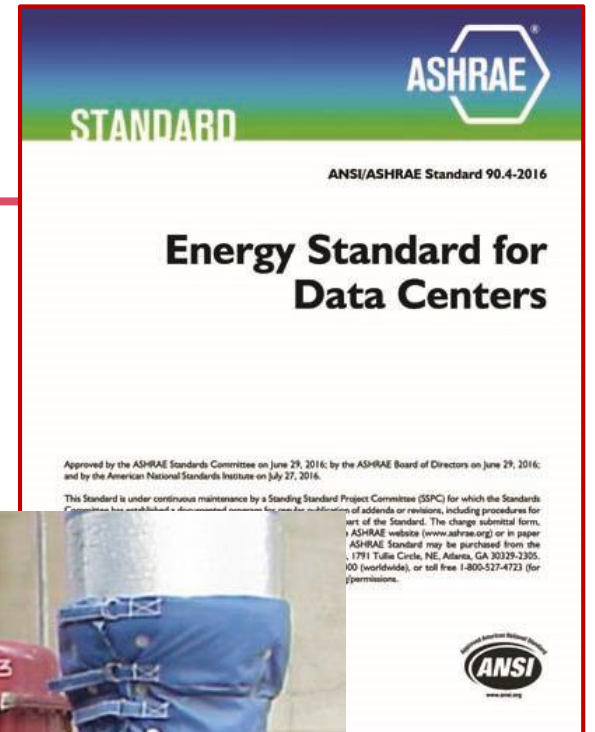


Image: Advance Thermal Group

More mechanical from ASHRAE

- Commissioning required if over 10,000 sf and combined heat/cool/SHW over 960 KBTU/h
- Hotel guest room temp setbacks***
 - This also made it into IECC
- “Occupied standby” controls:
 - Expand deadband *1 degree* up & down
 - Shut off ventilation air
- Exhaust air ERV bypass for economizer

Award

Worst Code Language of the Year

“The HVAC setpoints in the unrented and unoccupied guest room modes shall be initiated **within 16 hours of the guest room being continuously unoccupied or within 20 minutes of the guest room being continuously unoccupied where a *networked guest room control system* indicates the guest room is unrented.”**”

Large-scale refrigeration

- Good clean-up to rules for
 - ~~Packaged coolers & freezers~~
 - Site-built walk-in coolers & freezers
 - Refrigerated and frozen warehouses
- Several competing proposals merged
 - Kumbaya



Image: Wikimedia Commons
Joeseph 2691

A public service announcement from
the New Buildings Institute:

22.6

...OR DIE



“That which exists, must be possible.”
Mark Frankel, NBI



Interior lighting: Great clarifications

Mostly from Jack Bailey and Glenn Heinmiller, representing IALD

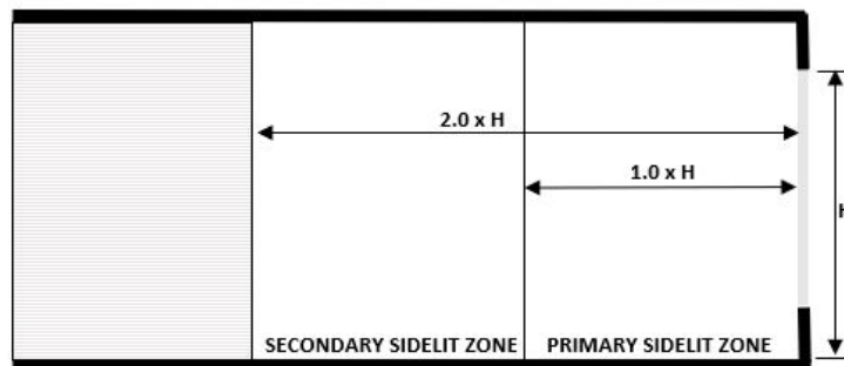
- Untangles occ sensor & daylight sensor **170**
- Untangles rules for open-plan office **171 & 172**
- Clarifies stepped dimming rules **181**
- **Occ sensors required for corridors 169**
 - turn lights down 50% after 20 minutes
- **Reduce lighting power per ASHRAE 206 & 208**
- “Horticultural” lighting standard **209**
- ASHRAE: Nifty table **(9.2.2.3)** consolidates all the rules for lighting power and controls



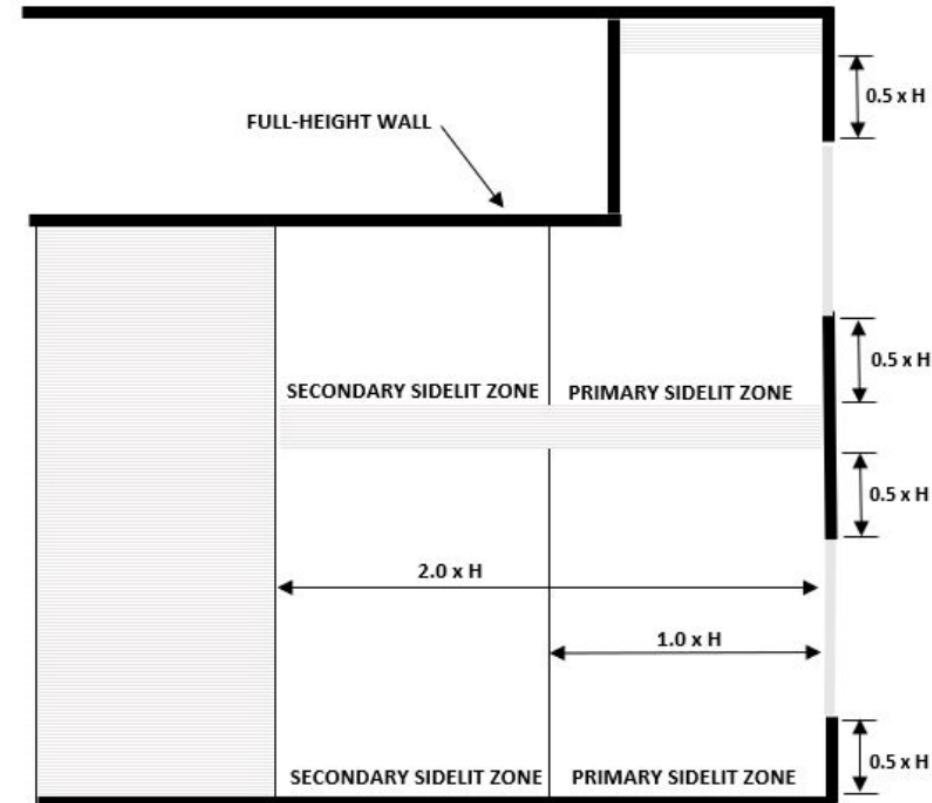
Image: Wikimedia Commons
insaphowetrust

Daylighting

- **Continuous dimming** req'd in all daylight zones **185**
- Daylighting language cleanup & diagrams **187**
- Zone extends 1/2 window height to sides **191**
- Add exception for deep overhangs **192**
- Clarify daylight zone in atriums **196**



(a) Section View



(b) Plan View

Exterior lighting

- Specify “façade and landscape” lighting, not “decorative” **197**
- Parking lot lights – **reduce 50% after 15 minutes 198**
 - Where light poles are max 24 feet high
 - Retails might not like this
- Spell out exterior lighting power calculation rules **211**

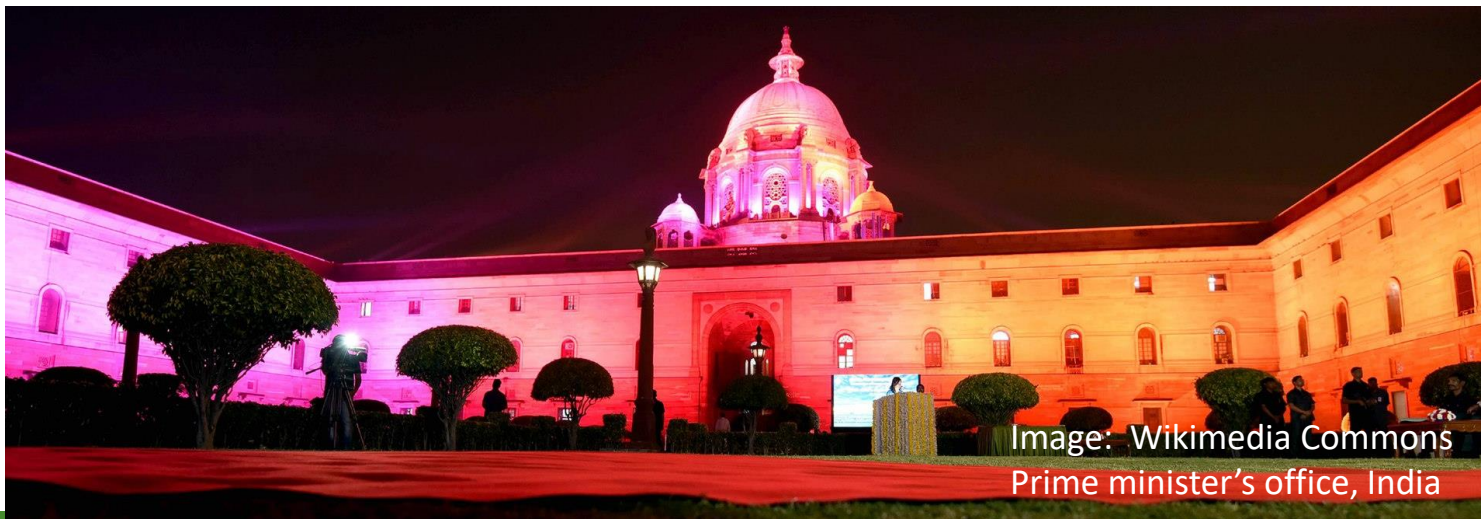


Image: Wikimedia Commons
Prime minister's office, India

Power! Try, try again

- **Electrical metering & sub-metering 215**
 - Similar to Seattle code
 - 6 submetering categories
 - Exempts apartments
- **Controlled receptacles 216**
 - Similar to Seattle code
 - 50% of outlets
 - Split receptacle or within 12"
- **EV-ready parking 217**
 - 2 spaces "EV ready" (wire *and* receptacle)
 - 20% of spaces "EV capable" (conduit only)
 - Doesn't differentiate residential



C406 Additional Efficiency Requirements

Points by occupancy & CZ 218

- Get 10 credits total
- Great work by Reid Hart of PNNL
- With NW Energy Codes Group

Plus additional credits:

- Dwelling units lighting **226**
- Metering where not req'd **237**
- FDD where not req'd **239**
- Commercial kitchen equip **240**

Table C406.1(3) Additional Energy Efficiency Credits for Group E Occupancies

Climate Zone:	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.2.1: 5% Heating	NA	NA	NA	NA	1	1	1	1	1	2	1	2	1	2	2	3	4
C406.2.2: 5% Cooling	4	4	3	3	2	2	2	2	1	1	1	1	NA	1	1	1	NA
C406.2.3: 10% Heating	NA	NA	NA	1	1	1	1	2	3	4	3	4	3	4	3	5	7
C406.2.4: 10% Cooling	7	8	7	6	5	4	3	4	3	1	2	2	1	2	2	2	1
C406.3.1: 10% LPA	8	8	8	9	8	9	9	8	9	9	8	9	8	7	8	7	7
C406.4: Digital Lt Ctrl	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	1
C406.5: Renewable	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5
C406.6: DOAS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C406.7.1: SWH HR*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C406.7.2: SWH NG eff*	NA	1	1	1	1	1	1	2	2	3	2	3	2	3	3	3	5
C406.7.3: SWH HPWH*	NA	NA	NA	NA	NA	NA	NA	1	NA	NA	1	1	NA	1	1	1	1
C406.8: 85% UA	3	7	3	4	2	4	1	1	3	1	2	3	NA	4	3	6	9
C406.9: Low Leak	1	1	1	2	NA	NA	NA	NA	NA	NA	1	NA	NA	4	1	4	3

And finally...

- Most C407 (performance path) changes voted down **244 – 248**
 - Except a couple of clarifications
- Most Chapter 5 (existing buildings) changes voted down **250 – 265**
 - Except a couple of clarifications
- The “Zero Code” Appendix survived **264**
 - From AIA & Architecture 2030
 - Optional appendix for ambitious cities
 - Requires RE (on or off-site) to offset energy
 - Strange values in EUI table
 - Attempt to handle off-site procurement
 - Will your city adopt this?

TABLE AX104.1 ENERGY UTILIZATION INTENSITY FOR BUILDING TYPES AND CLIMATES (kBtu/ft²-Y)

Building Area Type	Climate Zone																
	0A/ 1A	0B/ 1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
kBtu/ft ² -y																	
Multifamily (R-2)	43	45	41	41	43	42	36	45	43	41	47	46	41	53	48	53	59
Healthcare/hospital (I-2)	119	120	119	113	116	109	106	116	109	106	118	110	105	126	116	131	142
Hotel/motel (R-1)	73	76	73	68	70	67	65	69	66	65	71	68	65	77	72	81	89
Office (B)	31	32	30	29	29	28	25	28	27	25	29	28	25	33	30	32	36
Restaurant (A-2)	389	426	411	408	444	420	395	483	437	457	431	484	484	589	538	644	750
Retail (M)	46	50	45	46	44	44	37	48	44	44	52	50	46	60	52	64	77
School (E)	42	46	42	40	40	39	36	39	40	40	39	43	37	44	40	45	54
Warehouse (S)	9	12	9	11	12	11	10	17	13	14	23	17	15	32	23	32	32
All others	55	58	54	53	53	51	48	54	52	51	57	54	50	63	57	65	73

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Image: City of Seattle