California Green Building Standard (Title 24, Part 11)

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Art Rosenfeld Room
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Appendix A4– Residential Voluntary Measures

- Section A4.201, General
  - Minor edits
  - Clarification that local jurisdictions adopting these voluntary measures must receive the approval of the Energy Commission.

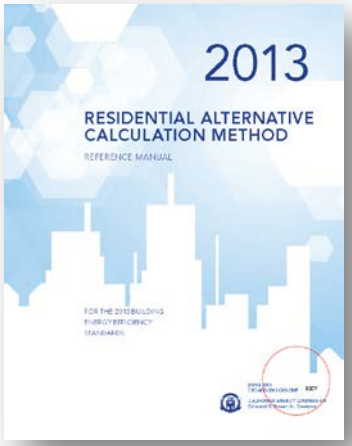
Appendix A4– Residential Voluntary Measures

- Section A4.203, Performance Approach for Newly Constructed Buildings
  - A4.203.1.1.3- Revisions to the lighting prerequisites
    - Closets now included in rooms that require high efficacy lighting and controls
    - All permanently installed lighting in closets, kitchens, bathrooms, utility rooms and private garages shall be controlled by vacancy sensors.
    - In single family and multi-family residences, all permanently installed outdoor lighting shall be high efficacy, including residential parking lots.

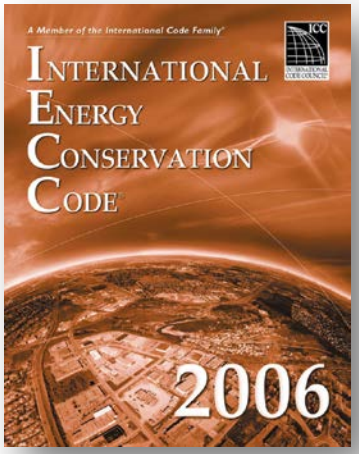
Appendix A4.203.1- Performance Approach for Newly Constructed Buildings

- Current Language
  - **A4.203.1.2.1 Tier 1:** Buildings complying with the first level of advanced energy efficiency shall have an Energy Budget that is no greater than **85** percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.
  - **A4.203.1.2.2 Tier 2:** Buildings complying with the second level of advanced energy efficiency shall have an Energy Budget that is no greater than **70** percent of the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the Energy Commission.
- Proposing to change percentage based minimum requirements to Energy Design Rating based minimums for both Tier 1 and 2.

Appendix A4.203.1
Energy Design Ratings



- Score is based on CEC approved ACM calculations and assumptions
- Includes energy used for space heating, space cooling, water heating, lighting, plug and appliance energy use
- Uses a reference home compliant with the 2006 International Energy Conservation Code (IECC)
  - Goal is to better align with RESNET
- Energy Design Rating $= \frac{TDV\ of\ Proposed\ Home}{TDV\ of\ Reference\ Home}$ x 100
- A home exactly compliant with the 2006 IECC has a score of 100
- Will be calculated by CEC approved residential software



How Ratings for Tiers are Set

- Uses the same framework used for standard development with 2016 TDV values
- Assume prototypes have exactly the 2016 features including staff proposed changes
- Establish Tier 1 and Tier 2 at 85% and 70% of space heating, space cooling and water heating energy
- Identify individual measures that go above the 2016 prescriptive features – QII, lower infiltration, improved walls, etc.
- Combine individual measures to achieve the Tier 1 and Tier 2 savings on an weighted statewide basis

Tier Energy Design Ratings

- Tier 1 sample features
  - Quality Insulation Installation (QII)
  - 3 ACH50 building air leakage
  - 2x6 R23 cavity with R5 sheathing on walls
  - Compact Distribution System for water heating
- Tier 2 sample features
  - All Tier I features
  - 50% solar water heating system
  - Verified low leakage ducts in conditioned space
- Many other combinations of measures can meet the Tier ratings

Energy Design Rating		
Climate	Tier 1	Tier 2
1	72	65
2	62	57
3	62	57
4	61	56
5	59	54
6	69	63
7	74	69
8	59	54
9	53	48
10	52	47
11	49	45
12	49	45
13	50	45
14	50	45
15	49	45
16	64	58
Weighted	55	50

Zero Net Energy Tier

- Proposed Language
  - A4.203.1.2.3 – Tier 3 (Zero Net Energy)
    - The building shall be shown to be in compliance with Section A4.203.1.2.2 (Tier 2 requirements).
    - The building shall have an Energy Design Rating of zero (0) or less as shown on the CF-1R produced by Compliance Software certified by the Energy Commission.
- Need a new section name as CalGreen currently has no Tier 3 designation
    - Tier 2 Enhanced
    - Tier 2 plus Renewables
    - Zero Net Energy Tier

Appendix A4– Residential Voluntary Measures

- Section A4.204, Performance Approach for Additions
  - Alterations to low-rise buildings no longer need to comply with these requirements
  - A4.204.1 – Energy Efficiency – Language cleanup
  - A4.204.1.1 – Tier 1 and Tier 2 Prerequisites – Language cleanup
  - A4.204.1.2– Tier 1 and Tier 2 Performance Standard
    - New exception: These requirements may be met by getting a whole house rating prior to the proposed modification

Appendix A4– Residential Voluntary Measures

- Section A4.204, Performance Approach for Additions
  - A4.204.1.1.1 – Lighting
    - All permanently installed lighting in closets, kitchens, bathrooms, utility rooms and private garages shall be controlled by vacancy sensors.
    - In single family residences, all permanently installed outdoor lighting shall be high efficacy
    - In multi-family residential buildings, all outdoor lighting shall be high efficacy
    - All outdoor lighting for residential parking lots shall be high efficacy and have controls compliant with Title 24, Part 6, Section 150.0(k)3D

Appendix A4– Residential Voluntary Measures

- Section A4.602 – Residential Occupancies Application Checklist
  - Minor edits to the checklist

Appendix A5– Nonresidential Voluntary Measures

- Section A5.201, General
  - Minor edits
  - Clarification that local jurisdictions adopting these voluntary measures must receive the approval of the Energy Commission.

Appendix A5– Nonresidential Voluntary Measures

- Section A5.203, Performance Approach
  - A5.203.1 Energy Efficiency
    - A5.203.1.1 Tier 1 and Tier 2 Prerequisites
      - A4.203.1.1.1 - Revisions to the outdoor lighting prerequisites
        - » Outdoor lighting must be no greater than 90% of the allowed outdoor lighting power as defined in Title 24 Part 6, Section 140.7
    - A4.203.1.1.3 – Revisions to the interior lighting prerequisites
      - Interior lighting power density shall be no greater than 90% of the total allowed indoor lighting power density as defined in Title 24, Part 6, Section 140.6
      - Removed interior lighting requirements for additions and alterations to high-rise residential dwelling units and hotel/motel guest rooms

Appendix A5– Nonresidential Voluntary Measures

- Section A5.602, Nonresidential Occupancies Application Checklist
  - Minor edits to the checklist