CALIFORNIA ENERGY COMMISSION

2008 Standards Proposed Residential Lighting Changes

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Section 150 (k) – Residential Lighting

Proposed:

Clarifications

- In response to inquiries
- Include information from 2005 Residential Manual, Blueprint

Additions

- Alternate exception for kitchens requested by custom home designers

Section 150 (k) – Residential Lighting

Proposed:

- Rearrange text for clarity
- Separate requirement for electronic ballast from High Efficacy Luminaires
- Add requirements for integral night light
- HID may be high efficacy for indoor applications
- Definition for Low Efficacy Luminaires
- Clarify switching control devices – exhaust fans, 3-way switching, address signs, certify controls to comply with §119

Lighting Internal to Cabinets

Proposed:

- Lighting internal to cabinets not counted toward installed wattage in kitchen
- Separate requirement for ≤ 20 watts per linear foot of internally illuminated cabinet
    - Under cabinet and over cabinet lighting not considered lighting internal to cabinet.

Proposed Kitchen Alternate Exceptions

Proposed:

Lighting in Kitchens – Alternate Option 1

- Additional 100 watts of permanently installed low efficacy wattage if
  - Low efficacy in kitchen controlled by one or more of the following lighting controls: dimmer, manual-on occupant sensor, energy management control system, multi-scene programmable control
  - Permanently installed luminaires in garages, laundry rooms, closets > 70 square feet, and utility rooms are high efficacy AND controlled by manual-on occupant sensors.

Proposed Kitchen Alternate Exceptions

Proposed:

Lighting in Kitchens – Alternate Option 2

- First install minimum of 1.25 W/ft^2 of high efficacy lighting
- Install no more than 3.0 W/ft^2 (may install up to 1.75 W/ft^2 low efficacy lighting) if
  - Low efficacy in kitchen controlled by one or more of the following lighting controls: dimmer, manual-on occupant sensor, energy management control system, multi-scene programmable control
  - Permanently installed luminaires in garages, laundry rooms, closets > 70 square feet, and utility rooms are high efficacy AND controlled by manual-on occupant sensors.

Proposed Kitchen Alternate Exceptions

Comparing Alternate Option 1 & 2

Square Feet	High efficacy @ 1.25 watts per square foot	Low efficacy Allowances	
		Option 1 (add 100 W)	Option 2 (1.75W/sf)
50	62.5	162.5	87.5
75	93.8	193.8	131.3
100	125.0	225.0	175.0
150	187.5	287.5	262.5
200	250.0	350.0	350.0
250	312.5	412.5	437.5
300	375.0	475.0	525.0

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Propose Exception 2 – Additional Savings

	2005		2008	
	Luminaire type	Watts	Luminaire Type	Watts
Kitchen (low efficacy)	10 Incandescent	500	+ Occupancy Sensor	500
Garage	2 fluor surface wraps	120	+ Occupancy Sensor	120
Laundry	1 fluor surface wraps	60	+ Occupancy Sensor	60
Utility Room	1 incandescent	60	1- 26 W CFL + Occupancy Sensor	26
Closest > 70 ft^2	1 incandescent	60	1 – 26 W CFL + Occupancy Sensor	26
Subtotals		800		732
Savings (watts)				68

Propose Exception 2 – Additional Savings

	Annual Hours	Watts	Annual kWh	Occupancy Sensor 20% Savings
Kitchen (low efficacy)	1241	500	621	496
Garage	730	120	88	70
Laundry	949	60	57	46
Utility Room	949	26	25	20
Closest > 70 ft^2	365	26	9	8
Subtotals		800		639
Savings (Annual kWh)				160

Custom Home Kitchen #1 = 352 square feet

Luminaire Type	Luminaire Wattage	Quantity	High Efficacy Wattage	Low Efficacy Wattage
Under Cabinet	8W/ ft^2	18’	144	
Over Cabinet				
Counter Downlights	50	10		500
Island Downlights	32	4	128	
General Downlights				
Decorative	108	2	216	
Uplights	42	4	168	
Total Wattage			656 1.87 W/ ft^2	500 1.42 W/ ft^2

Custom Home Kitchen #2 = 333.25 square feet

Luminaire Type	Luminaire Wattage	Quantity	High Efficacy Wattage	Low Efficacy Wattage
Under Cabinet	8W/ ft^2	15’	120	
Over Cabinet	15W/ ft^2	28’	420	
Counter Downlights	50	7		350
Island Downlights	32	4	128	
General Downlights	32	4	192	
Decorative	360	1		360
Uplights				
Total Wattage			860 2.58 W/ ft^2	710 2.13 W/ ft^2

Custom Home Kitchen #3 = 399 square feet

Luminaire Type	Luminaire Wattage	Quantity	High Efficacy Wattage	Low Efficacy Wattage
Under Cabinet	8W/ ft^2	16’	128	
Over Cabinet	15W/ ft^2	24’	360	
Counter Downlights	75	9		675
Island Downlights	75	4		300
General Downlights				
Decorative				
Uplights	15W/ ft^2	36’	540	
Total Wattage			1028 2.57 W/ ft^2	975 2.44 W/ ft^2

Comparison of Custom Home Kitchens 2005/2008

	2005		Propose Alternate Options for 2008			
			Option 1 (+ 100 Watts)		Option 2 (Maximum 3.0 W/sf)	
	Total Watts	W/ft^2	Total Watts	W/ft^2	Total Watts	W/ft^2
Kitchen #1	1156	3.28	1100 *(500 + 500 + 100)*	3.15	1056 (352 x 3.0)	3.0
Kitchen #2	1570	4.71	1520 *(710 + 710 + 100)*	4.56	1000 (333.25 x 3.0)	3.0
Kitchen #3	2003	5.02	2050 *(975 + 975 + 100)*	5.14	1197 (399 x 3.0)	3.0

Questions ?

