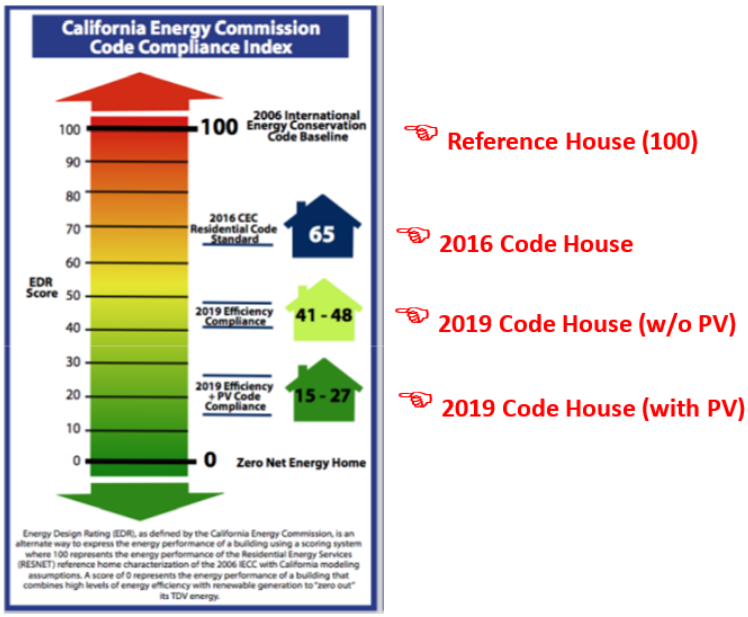
Technical Bulletin: What is an EDR?

One of the biggest changes for the 2019 code cycle is a new metric on how homes demonstrate compliance utilizing the performance approach. Prior to the 2019 code, a home demonstrated compliance by comparing the "standard home" energy use to the "proposed home" energy use. The standard home is based on a prescribed set of measures (i.e., how much energy the house would use if it were built to the prescriptive measures). The proposed home is the house with whatever measures the builder chose to use.

For the 2019 code cycle, there is still a standard house and a proposed house, but instead of comparing two straight energy use values ($kBtu_{TDV}$ /ft^2.yr), we have to compare two values after they have been "normalized" to a fixed reference house. "Fixed" means fixed in time such that it doesn't change as the code changes – which is not true of the standard design. In other words, they take the two energy uses and divide them by a third energy use that is based on a set of features from a past code cycle. That code cycle from the past just happens to be the 2006 IECC code, which is what the rest of the country uses as the main rating system.



When you take the proposed energy use and divide it by the 2006 IECC energy use then multiply by 100, you get a value called a Proposed Energy Design Rating, or Proposed EDR; the process is the same for the Standard EDR. A lower number is better for EDR. You can think of the EDR as a percentage; an EDR score of 85 means your house uses 15% less than a 2006 IECC house would use. A score of 135 means your

house uses 35% more than a 2006 IECC house would use. A score of zero means that the house is a "net zero energy home".

The other big change for 2019 is the requirement for PV (renewables). There is a separate EDR reduction value for a PV system to reflect the improvement of your EDR based on the renewables. The bigger the PV system, the bigger the EDR reduction value for PV. It also gives credit for batteries systems. Generally speaking, it is not smart to build an inefficient house and then put tons of PV panels on it to make it comply. It's better to build a very efficient house and put fewer PV panels on it. To accomplish this goal, your house has to pass two criteria: 1) It must pass a target EDR for the house alone (left red arrow in diagram). This ensures that the house is efficient *before* you put PV on it. 2) Then it must pass a ***total*** EDR target for the house after the PV has been added (right red arrow in diagram). The net result of this is that you cannot put more PV on a less efficient house, but you can build a more efficient house which would reduce the amount of PV on the home.

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details

EDR of Standard Efficiency: 44.0 - EDR of Standard Design PV: 18.9 = Total Std Design EDR: 25.1
Std Design PV: 3.24 kW (not current)
EDR of Proposed Efficiency: 43.2 - EDR of Prop PV + Flexibility: 28.1 = Total Proposed EDR: **15.1**

End Use	Reference Design Site (kWh)	Reference Design Site (therms)	Reference Design (kTDV/ft²-yr)	Proposed Design Site (kWh)	Proposed Design Site (therms)	Proposed Design (kTDV/ft²-yr)	Design Rating Margin (kTDV/ft²-yr)
Space Heating	601	499	48.97	144	212.2	18.71	3[illegible]6
Space Cooling	1,769		61.13	422		21.01	4[illegible]2
IAQ Ventilation	243		2.49	243		2.49	0.00
Other HVAC			0.00			0.00	0.00
Water Heating		184.0	30.91	90	122.8	10.03	20.88
Self Utilization Credit						0.00	0.00
Photovoltaics				-5,179		-47.96	47.96
Battery				250		-17.40	17.40
Inside Lighting	2,615		30.42	616		6.98	23.44
Appl. & Cooking	989	73.4	19.70	1,042	45.1	14.49	5.21
Plug Loads	3,267		35.06	2,371		25.03	10.03
Exterior	328		3.54	152		1.61	1.93
TOTAL	9,811	757.2	232.22	150	380.2	34.99	197.23

Some final notes on EDR. It only applies to new construction, not additions or alterations. It is notable that a "rating" is now used to demonstrate compliance to the energy code. This makes it a lot easier to explain why HERS Raters are critical to the energy code compliance process.

Additional questions about EDR may be directed to CalCERTS support: support@calcerts.com or (916) 985-3400, ext.*