

## What you need to know about solar energy treatment as your jurisdiction updates to newer versions of the International Energy Conservation Code (IECC)

Smart adoption of the 2015 IECC or 2018 IECC will enhance housing affordability and reduce the home's energy footprint.

The cost of solar photovoltaic (PV) systems has come down dramatically over the past ten years. Adding solar at the time of new construction may be the lowest-cost residential solar option available. The 2015 IECC made solar available as a measure to help new residential construction meet code requirements. These changes can help make new homes more affordable in your communities in terms of total cost of ownership.

If your jurisdiction is on an earlier version of the IECC, there are many benefits to updating to the 2015 or 2018 code. However, if your jurisdiction updates to the 2018 code, **you need to take special care to ensure solar remains a viable option.**

### What you need to know:

1. The Energy Rating Index (ERI) compliance pathway was added in the 2015 edition of the IECC. ERI is a modeled building performance method for determining compliance with the code and allows the use of on-site renewable energy generation to offset on-site energy consumption. In the ERI method, lower scores are more desirable, with a score of “zero” representing zero net energy.
2. The 2015 version of the IECC requires homes using the ERI pathway to also meet the 2009 IECC prescriptive envelope requirements.
3. The 2018 version adds a footnote disadvantaging on-site PV to Table R406.4 that requires homes using on-site renewable energy to meet a higher envelope backstop than homes without on-site renewable energy. That is, even if the same home would get the same ERI score with and without PV, it would be required to install more insulation with PV than without.

### What you can do:

To ensure homebuilders and home buyers have the most flexibility and options, either adopt the 2015 code without amendment or adopt the 2018 but **delete footnote A of table R406.4.**



Photo courtesy of PetersenDean Roofing and Solar

## More background on solar in new construction:

Because the IECC has been so effective at reducing new home energy consumption from space conditioning even before the 2015 version of the code, regulated loads represent a shrinking share of household energy consumption. Solar is well poised to meet the needs of further advances in energy codes.

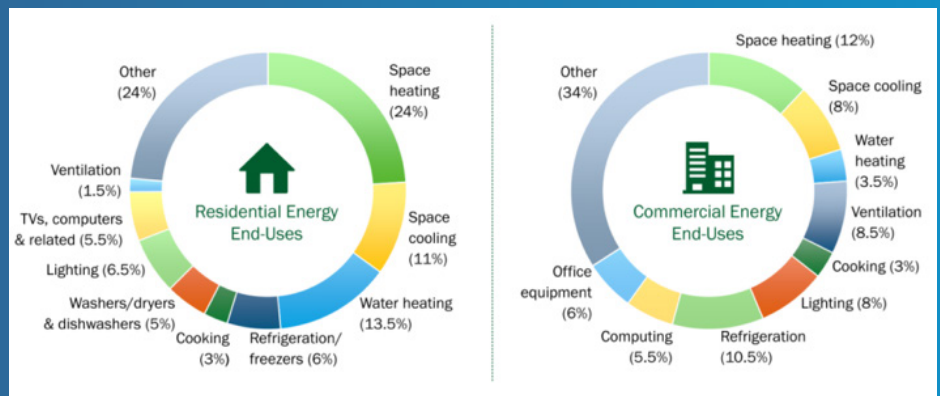
Solar costs are falling and exhibit economies of scale. Efficiency has come a long way and is still critical but exhibits diminishing marginal benefits. That is, as you add more insulation, each additional unit of insulation provides less efficiency benefits than the last unit of insulation. Eventually, a marginal dollar is better spent on adding solar than on an additional unit of insulation.

Because efficiency improvements in a building envelope impact only space conditioning energy use, spring and fall energy use is largely unaffected, as are all appliance usage and other plug loads. Solar energy systems can offset grid-supplied energy for all uses in a home, including space conditioning, electric water heaters (preferably heat pumps), lighting, refrigerators, ventilation, electric stoves and ovens, and even electric vehicles.

Because of the way the ERI method models the energy performance of a home, two homes with the same score will have the same energy footprint but there are several ways to get to that score and there is no need for a stricter envelope backstop for homes using PV to achieve a target ERI score. PV should be adopted and encouraged to reach IECC compliance to improve the energy performance of houses in the U.S. and move closer to net zero energy homes throughout the country.

### Energy Consumption in Homes & Commercial Buildings

We consume energy in our homes & buildings in many ways, ranging from appliances, lighting and mechanical equipment to personal electronics



Source: U.S. Energy Information Administration AEO 2018

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