The California Solar Mandate Rolls Out in 2020. Here's What Developers and Homebuyers Need to Know.

By Phil Taylor-Parker on February 6, 2019 in WholesaleSolar.com

California Solar Mandate: Quick Facts

https://www.wholesalesolar.com/blog/california-solar-mandate-compliance-guide

- New homes built in CA after Jan 1, 2020 must be equipped with a solar electric system
- Solar systems must be sized to offset 100% of the home's electricity usage – but homes can still use energy from other sources, like gas
- The size of the solar array can be reduced if other energy efficiency improvements are made elsewhere, like the inclusion of energy storage or green building materials
- The CEC expects the mandate to add roughly $9,500 to up-front development costs, but save the homeowner $19,500 over the life of the system
- Housing developers can save money on solar installation by sourcing wholesale materials and employing their own contractors to build the systems

Update (5/31/19): We've just published our 2020 CA Solar Mandate Calculator to help you figure out what size solar system you will need under the new requirements. Take a look!

By now you might have heard that California passed a law requiring all newly-built homes to be equipped with a solar power system. The California solar mandate is part of an initiative by the California Energy Commission to have at least 50% of the state's energy produced from clean energy sources by 2030.

This article will focus on what we do best as a distributor of solar equipment: helping you design and price out your system with the new CA solar mandate in mind.

Our focus is helping housing developers and contractors comply with the new requirements. But the same rules apply to individual buyers who are shopping development work to a private contractor, or building the home themselves as a DIY project.

If you live in California, and plan to build or buy a new home after this law goes into effect, this article will tell you everything you need to know to get started.

Let’s answer the most pressing questions on your mind:

When does California’s solar mandate go into effect?

January 1, 2020. If you file for your building permit on or after this date, the dwelling must be outfitted with a PV system.

According to Greentech Media, homes which are granted a permit in 2019 and built in 2020 are not required to comply with this mandate.

Which buildings must be outfitted with PV arrays under the new code?

The mandate only applies to buildings under three stories tall. Larger developments, like a new highrise apartment building, will be exempt from these requirements.

Do I need to offset 100% of the building's energy usage?

Not quite. New dwellings don't need to be **zero net energy** (with 100% of the home's energy use offset by PV production). Instead, they must be designed to achieve **zero net electricity**, with 100% of the unit's electricity production offset by solar.

The home's total energy budget accounts for mixed-fuel energy usage, which means it's still ok to rely on other energy sources (typically gas) to power a certain portion of your home. You can still use a gas stove or central heat, for example, and that usage does not need to be offset by solar.

Under the mandate, each property is assigned an "energy budget" based on its square footage. The budget varies based on climate zone and other factors.

The responsibility for hitting these budgets will fall on housing developers, who can use the CEC's compliance software to calculate the requirements for new homes.

Are there any exemptions to the sizing requirements?

The new mandate was built with flexibility in mind, and contains certain exemptions. For example, in buildings with multiple dwellings (like an apartment complex), common areas are exempt from the regulations. That lowers the burden on the size of the solar electric system.

There's also a compliance credit for adding energy storage to your system. Storing energy in a battery bank reduces the burden on the utility grid, which gives providers a reason to incentivize the inclusion of energy storage.

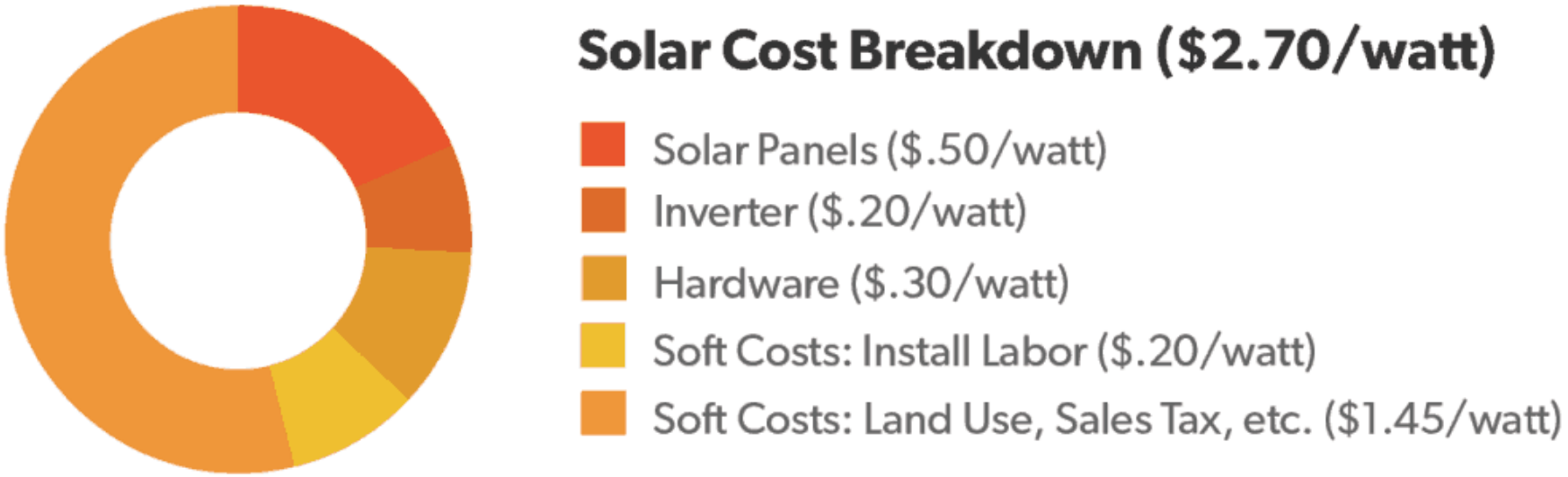
Homeowners who opt into energy storage are allowed to reduce the size of their PV array by 25%. So if you're on the hook for 4 kW of solar, you could build a 3 kW system with energy storage to satisfy the requirements.

How much does it cost to install solar?

According to this NREL report (PDF) published in early 2018, the benchmark cost of a residential solar system is $2.70 per watt (fully installed).

Cost Breakdown:

- Solar Panels: 50 cents per watt
- Inverter: 20 cents per watt
- Hardware (structural and electrical components): 30 cents per watt
- Soft Costs – Install labor: 25 cents per watt
- Soft Costs – Land Use, Sales Tax, Overhead, and Profit: $1.45 per watt



This benchmark figure assumes you turn to a full-service solar provider for design and installation—a factor that most frequently applies to residential end-users.

Housing developers are much more equipped to minimize these costs, because they can use their in-house workforce to complete the labor. You'll be able to source the equipment from a wholesaler, cutting out the third-party installer who makes a profit by marking up their installation services.

If you're a housing developer, you can apply to become a Wholesale Solar partner and receive discounts on solar equipment, then perform the installation in-house.

Though NABCEP certification is nice to have, it's not required to perform a solar installation. The work is straightforward enough that it can be performed by roofers, electricians and/or general contractors on your team who are competent and qualified enough to do construction work.

Many of our residential customers also choose to perform the installation themselves, using our DIY solar resources as guidance. The other option is to source the equipment directly, then turn to a local contractor to perform part or all of the installation.

This drives down installation costs significantly, as local contractors tend to be far more affordable than national providers: somewhere in the range of 75 cents/watt for installation services, vs. $1.60/watt from a large solar installer.

How to estimate the cost of solar based on expected energy usage

Looking for an estimate tailored to your home's target energy usage? Here's how to find an estimate based on your current usage:

Dig up a recent electric bill and look for your monthly kilowatt-hour usage. Then, plug that figure into our solar cost calculator to see how much it will cost to build a system that covers your usage patterns.

In step 7, if you choose the "Buy Direct" option (selected by default), please note that the system price estimate only includes the cost of equipment. To factor in installation costs, take the "System Ballpark Size" and multiply by 75 cents/watt, then add the two figures together for a total project estimate.

Once you have a target system size, you can also take a look at our grid-tied system packages for up-to-date pricing.

What financing options do I have?

Individual home buyers have a variety of options to finance the addition of solar to their new home. Developers can roll these options into the purchase contract, offering community solar or lease/PPA agreements for more flexibility.

The best long-term value comes when the homeowner pays for the system up front and owns it outright. But that also requires the highest up-front investment, adding costs that may not fit within every budget.

If buying the system up front isn't an option, there are other ways you can comply with the new law. These include:

- Finance the system through a bank loan or FHA title 1 loan
- Rent the system through a lease or PPA (power purchasing agreement)

- Invest in community solar, a central solar system that distributes power to multiple dwellings in a neighborhood, apartment complex, etc.

Though loans, leases, PPAs and community solar arrangements don't offer as much return on the investment into solar, they also require less up-front investment into the system. If the buyer doesn't want to stretch their budget, these options are an enticing alternative.

Learn more about common financing options in the solar industry.

Do I need to offset 100% of my energy usage?

Not quite. Each property is assigned an energy budget based on its square footage, and the regulations are tailored to mixed-fuel homes. That means the energy budget is built on the assumption that the home will run off a mix of electricity and gas, with the latter powering your heating, for example.

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Does solar add to the value of my home?

Yes. While the up-front cost of solar is expected to add roughly $9,500 to the price of a new home, the resident is expected to save around $19,000 on energy costs over the life of ownership. (Source: CEC 2019 Building Energy Efficiency Standards FAQ)

Grid-tied solar systems almost always provide a net-positive return on investment over the life of the warranty.

In addition, solar systems improve property value by an average of 3.74%, according to a paper published by the Lawrence Berkeley National Library. Homes with solar energy systems are more desirable to buyers, with solar-equipped homes fetching an average of $14,329 than their non-solar counterparts tracked by this study.

While those numbers fluctuate based on the size of the system (and the value of the home itself), the data suggests that homebuyers are willing to pay more up front in order to save money on utility bills in the long run.

Should you decide to sell your home in the future, you'll be able to make back some (or all) of the original cost of the system at closing. This benefit comes in addition to the money you will save on energy bills while living in the home.

What system components will I need to buy?

Aside from the panels themselves, you need additional parts to build a complete solar power system. The essential components are:

- Solar panels, to capture energy from the sun
- An inverter, to convert that energy to a format that can power your appliances
- Racking, the foundation on which you mount your system

These are connected by smaller components like wiring, fuses, and disconnects. You can also add equipment to monitor your system's output online, which helps troubleshoot any issues with shading or defective equipment.

To eliminate guesswork, we offer several pre-sized packages with everything you need to get your system up and running.

What are the best solar brands and products on the market?

If you'd like to have a hand in the research process and pick your equipment yourself, we've got you covered. Take a look at our reviews of the best solar products on the market:

- Best Solar Panels
- Best Solar Mounts & Racking Accessories
- Best Inverters (Grid-Tied)
- Best Inverters (Off-Grid)
- Best Batteries

We regularly re-evaluate and update these articles as prices change and new options become available. This is a great jumping-off point to help you design the best possible system for your specific needs.

More Resources

California's solar mandate doesn't go into effect until 2020, but it's never a bad idea to start the planning process early. Here are some of our most valuable resources to help you plan your solar project:

- Solar 101: An Introduction to Solar Power
- Solar Cost Calculator: Get a custom estimate based on your energy use.
- Free Buying Guides (PDFs):
  - Getting Started With Solar
  - Solar Panels
  - Mounts
  - Inverters
  - Batteries
  - Federal Tax Credit
  - Permitting
- Calculating Solar ROI (Return on Investment)

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