

# AESTHETIC SOLAR FOR HISTORIC DISTRICTS

The Definitive Style Guide



**PREPARED BY SISTINE SOLAR**

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# Introduction: Solar in Historic Districts

## ***A growing consideration***

Solar is one of the fastest growing energy sources in the US today, with nearly 2 million households having installed a system. It is environmentally friendly, increasingly affordable, and offers energy independence and security for the nation. As solar makes its transition into the mainstream, it is becoming a key consideration in the 2,300 historic districts around the country. With over 46% of U.S. homeowners seriously considering adding solar to their homes (according to a Pew Research Center Survey from 2019), chances are the question about how to include solar in your district will arise sooner or later. As a resident in a historic district, you might consider solar for yourself. Or, you might have a neighbor thinking about one for her home. If you are a Historic Preservation Review Board member, you might find yourself evaluating a solar approval request from one of your residents. If you are part of the Architectural Review Board, your expertise might be called upon to assess the merit of an application.

How will the solar system sit with the historic aesthetic of your district? This question often creates an unfortunate tussle within the community. A classic situation sees a resident or residents pitted against the Preservation Board. The resident desires to go solar to do her or his bit for the planet – a perfectly understandable desire. The Board worries that the look of the solar panels could be an eyesore and negatively affect the cherished historic aesthetic of the neighborhood – an equally understandable concern. The result is often difficult discussions, fraught relationships with one's neighbors, and compromises that leave one or both parties feeling aggrieved – for instance, being required to place panels on the back roof when that might not be the optimal orientation, resulting in substantially reduced energy production.

## ***The Issue of Aesthetics***

***Fortunately, solar and aesthetics can go hand in hand. This guide takes you through how to do so.***

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# Breaking Down Solar Aesthetics: The 4 Key Elements

It helps to think in a structured manner about what makes up solar aesthetics. There are essentially 4 key elements and associated considerations.



## Color

How does the color of the panels work with that of the surrounding roof color?



## Profile

How well is the offset of the panels from the roof visually minimized ?



## Layout

How pleasing is the arrangement of the panels on the roof?



## Wiring

How neatly are the wiring and conduit runs tucked out of view?



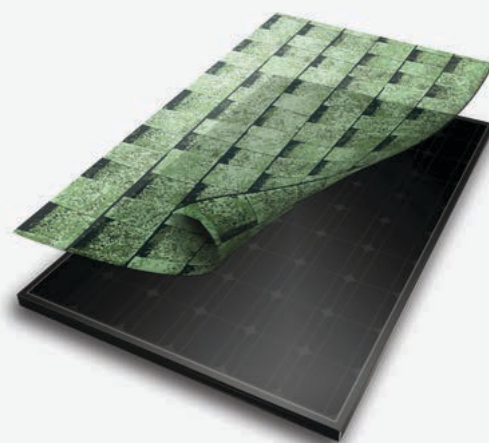
# Element 1: Color



The biggest and most visible consideration is the color of the panels. Traditionally, solar panels have come in blue or black color. Roof colors are typically earth tones; superimposing a blue or black color on them creates an unsightly clash.

## SolarSkin Technology

Fortunately, there is now a solution to this. **Sistine Solar's SolarSkin is a novel aesthetic overlay that can transform traditional panels into ones that can blend in with the surrounding roof aesthetic - any color, pattern, or style.** The overlay can be imprinted with graphic of any color. Furthermore, detailed patterning can also be achieved, making the skins work with any type of roof, be it shingle, tile, concrete, metal, or slate.



5.3KW SolarSkin installation on a log cabin home in Hubbardston, MA (installed 2016)

SolarSkin allows a strong degree of customization and comes in three aesthetic levels, ranging from maximum vibrancy that maintains 80% of the underlying panel's production to high efficiency that maintains 90% of the panel production, with a balanced blend in between preserving 85% of panel production.



These options allow for a reasonable and well-parametered discussion between the Board and residents to arrive upon what is optimal for the community and individual.

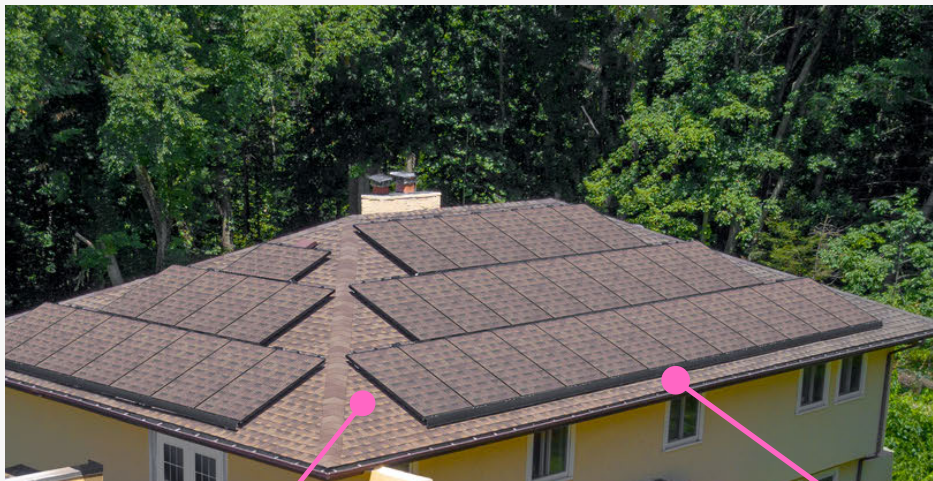


## Element 2: Profile



*Notice the gap from the roof surface, along with the protruding rails that create a visual disjointment from the roof.*

Solar panels have to be installed with a ~6" gap from the roof surface, a necessity that allows for air flow under the panels to cool them and thus reduce heat-induced efficiency degradation. Aesthetically, this gap results in the panels appearing disjointed from the roof face. This is amplified when the underlying mounting rails protrude from the edges of the array, as seen in the photo on the left.



Railless mount means no attachments stick out into view

Decorative front skirt makes the panels appear flusher with the roof

To minimize the visual disruption, residents can use a **railless system with a decorative front skirt**. In these installations, there are no substructures that stick out into view, while a gently sloping front lip (skirt) makes the panels appear flusher with the roof line when viewed from the street.

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## Element 3: Layout

The arrangement of panels on the roof also has an impact on how pleasing the system looks from curbside. A thoughtful layout from the installer can create a marked difference.



*NOT how you want to arrange panels*



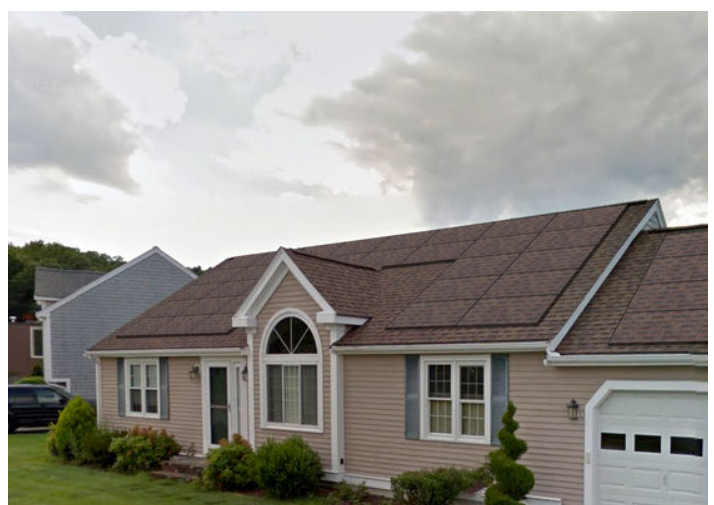
*SolarSkin installation in Holbrook, MA (Apr 2018)*

### **Contiguous Block**

Wherever possible, laying the panels in one continuous array that covers nearly all of the roof face and keeps in line with the roof geometry would be preferable.

### **Symmetrical Layout**

Where the roof geometry might not allow for a contiguous block (for example, if a dormer interrupts the roof face), a symmetrical arrangement is more pleasing to the eye.





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## Element 4: Wiring



*This installation is made instantly unsightly by the metallic conduit run.*

The aesthetic of a system is determined not just by the solar panels, but also the other components that make up the system – the conduit wires and inverters. A poorly executed job is one where the conduit runs on the roof face, creating an immediately sub-par appearance.

Often, the solution is as simple as running the conduit internally through the attic and then down a section of the wall that is not visible from outside.



*On this SolarSkin installation in Weymouth, MA, the conduit was run through the attic and out to the inverter on a side of the home not visible from the street.*

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# Bringing It All Together: Guidelines For Your HPRB

Aesthetics is an important consideration when assessing solar, and solutions in the market today allow for very elegant installations that ooze curb appeal. If you are a member of a Historic Preservation Review Board, one way you can make it easy for residents to go solar is to provide **a simple set of guidelines** around what would qualify for aesthetically approved solar. For example, you might consider guidelines that specifically hone in on the 4 elements of solar aesthetics:

- 1 Stipulate accepted colors and patterns for the solar panels
- 2 Recommend railless installation with decorative front skirt
- 3 Provide visual examples of layouts that are acceptable and not acceptable
- 4 Ask for all wiring and conduit runs to be tucked away from view

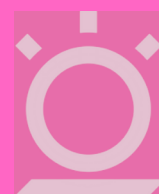
The bottomline: There are solutions in the market that allow for solar to be included in historic districts without detracting from the aesthetic of the community. Encouraging residents to incorporate those solutions can lead to a win-win for all.

# sistine solar

If you are considering solar for your home or historic district, we can supply photo-realistic renderings of site-specific SolarSkin designs .

Get in touch with us:

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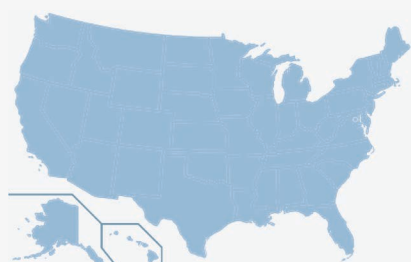
Technology designed and created by MIT engineers



Supported by the US Department of Energy



Tested and commercialized at the world's leading solar lab



Available nationwide, with installations in 10 states