



A Note on Our Expert: As a founding partner of Kiss + Cathcart Architects, Colin Cathcart has worked on numerous residential and commercial projects, which include integrated photovoltaics as well as (surprise) windows. The windows of the New York City Transit terminal train shed in Coney Island (pictured) are coated with a photovoltaic film that not only creates shade as it darkens and absorbs sunlight but also produces the energy to power the station's lighting (which, Cathcart notes, "is equivalent to a whole street of houses").

Imagine, very briefly, a world without windows. It's almost as impossible to comprehend as a world without reality television. When it comes to basic importance in architecture, windows easily rank right up there with walls, ceilings, and floors. However, when it comes to sensuality (that is, inciting your senses), windows are a step ahead. As proof, look no further than your local record store. There's only one album about a wall, but the online All Music Guide points out over 600 songs with window in the title—chalk it up to windows offering views, light, and breezes, not electrical outlets.

Beyond the world of popular music, windows have long inspired technical achievements in building. Back in the Middle Ages, flying buttresses freed up wall space so unenlightened illiterates could look at larger, more colorful pictures of Bible stories in stained glass. More recently, steel-framed, glass-curtain-walled skyscrapers allow companies to stack workers into 100-story office cubes (reserving the greatest views for the top brass).

The good news is that when it comes to windows for our homes, there are a staggering number of possibilities—and the last 20 years have seen remarkable improvements in efficiency. To make sense of the world of frames, sashes, and panes (not to mention solar heat-gain coefficients), Dwell enlisted the help of architect Colin Cathcart. His firm, Kiss + Cathcart, which he describes as "early technology adopters," was among the first to experiment with photovoltaic window systems. "Windows should be part of the energy strategy

for any building," says Cathcart, "or you're missing a tremendous opportunity. It's free energy, free heat, and free enjoyment."

We also learned that function trumps aesthetics in window selection. As Cathcart points out, "There are almost invisible criteria that you have to put right up there with the lifestyle choices—energy management issues, material systems, environmental responsibility, and, frankly, maintenance." For a novice, perhaps the best place to start learning about some of windows' "invisible criteria" is by deciphering the National Fenestration Rating Council's label, which can be found on every window. The NFRC tests a window's U-factor (insulating value), solar heat-gain coefficient (how well a window blocks heat from the sun), and visible transmittance (how much light the window lets in). According to Cathcart, all of these factors can be positives or negatives depending on where you're building, or what direction the window is going to face, so study up.

To make our tests a little more manageable, we decided to focus on the casement window—a design that dates from the 11th century but will still meet the Sea Ranch's design guidelines. Of the casement, Cathcart concurs: "It's the window we all think of when we think of a window." Having selected a range of standard models, both affordable and formidable, Cathcart points out a difficulty in assessing specific products: "The companies all make competing windows so the rebuttal for each is going to be, 'We can make that, too.'"

Window Shopping

The humble window provides many of life's simple pleasures—from cooling breezes to the sun's radiant heat. But when it comes to looking at windows instead of through them, there's more than meets the eye. To make sense of it all, Dwell enlists the help of a techie 'tect to case out the latest in casements.

Anderson 400 Series Casement Window

Wood frame and interior constructed from water-treated clear pine, exterior clad in seamless vinyl. Glazing options include high-performance low-emittance double glazing with argon blend-filled interior. Sizes and hardware options vary.

Expert Opinion: This is a mass-produced window for a middle-class market. This one is vinyl clad, a questionable material considering it's a carcinogen when burned. I don't like the top of this window—it appears as though water could get in. That said,

the geometry of the detailing is not bad.

What We Think: This might not be the rose window at Notre Dame de Paris, but it's not the world's worst window either (in fact, even with average—according to Cathcart's stringent standards—NFRC ratings, it's most likely a far better insulator than its Gothic ancestor). The mechanisms, such as the crank and lock, seem solid and reliable, if a little pedestrian from a design perspective. Kind of like the Chevy your contractor rode in on. ►

