



A NoCo couple builds an energy efficient mountain getaway in a surprising place—just a short drive from home.

REINVENTED

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For the homeowners, it all started about 20 years ago. A Northern Colorado couple and their two children were living busy lives, building their careers, putting kids through college, and spending weekends making the most of the Rocky Mountain lifestyle from their NoCo in-town home. But the desire had always been there: to have a remote getaway from which to hike or ski without making a lengthy trek to do so. When they found the site, located in the shadow of a 13,000-foot peak near a grove of lodgepole pines near Estes Park, they knew.

The setting was ideal—no long trek on I-70 needed, it was just a short drive away and surrounded by the peaks they loved to climb. It even had a house, a 1970s-built cabin that left something to be desired in the energy-efficiency department, among others, but it suited them for those first several years. Still, the time was coming to build something sustainable, something that fit both the family and the homesite. All they needed was a partner who shared both their design sensibilities and their commitment to the environment.

For architect E.J.

Meade, now a principal at Boulder firm Arch 11, it started during a lecture he attended in graduate school. The speaker was Mario Botta, an Italian Swiss architect who worked frequently in the Alps—terrain that can be compared to the Rocky Mountains—who told his students that architecture can “build a site.” Meade had worked as a carpenter between his undergraduate philosophy degree and enrolling for his masters in architecture and had learned to appreciate traditional craftsmanship and the use of materials in ways that are true to their nature. The Botta lecture ignited in Meade the idea that architecture, rather than resulting in a man-made structure that overwhelms its location, could amplify the character of the site.

“Architecture is bound to place and time; our work is a response to context,” says Meade. “Context is both physical and cultural. Our work attempts to reveal the site, to allow users to discover aspects of it that they might not otherwise notice without the architecture there.” This approach is especially poignant in light of this home, which sits in a mountain meadow nearly 9,000 feet above sea level nestled in the shadow of 12,000- and 13,000-foot mountains.

Authenticity plays an equally important role, something equally important to the clients. “We want to develop projects that elicit an authentic response to place and materials,” says Meade, adding, “That is also a reason that we do not get caught up in style. Style itself suggests something foreign or external brought to the project.” While it’s true that this home references the mining cabins that dotted this very landscape more than 100 years ago, it does not purport to be or to imitate those practical, workaday structures.

The clients wanted to feel like they were in the meadow and able to bask in 180-degree mountain views. They also planned to use the cabin nearly every weekend all year long, so low maintenance was important. Plus they request-

ed it be as near net-zero energy use as possible while still being easy to close up between visits. Third, it had to be small enough for low impact and high efficiency, but large enough to host their now grown children and their families for visits.

Meade’s team spent time analyzing the location, about 35 acres of meadow and forest. “We intensely investigate the site before we put pencil to paper or mouse to pad,” he says. “We record the physical aspects of a place, search out the microclimates, views, wind and sun paths. We look at the history of the place and the vernacular of the buildings. So much about a response to climate can be read in the simple utilitarian structures that have lasted 50 or 100 years.”





The altitude was

the least of the many issues waiting to be addressed by the architects. The weather—the owners use the home year-round—as well as the clients' desire to fully experience the surrounding natural beauty while coming as close as possible to net zero energy usage were challenges. "The house really wanted to 'disappear' and allow the sense that while inside, you can inhabit the mountain meadow and peaks surrounding it," says Meade. "This meant large expanses of glass that not only had to withstand 140 mile per hour wind loads but also frame the views and provide a high level of performance and comfort."

All this while allowing the house to surpass International Energy Conservation Code requirements, which address a variety of topics, including cost savings, energy usage, environmental impact and conservation of natural resources. The house, as built, surpasses the code by nearly 40%.

The home's remote location was a factor as well. For each proposed solution, Meade and his group also had to evaluate the feasibility of getting the assembly to the site via the only access: a long, winding, dirt road.

The standing cabin, according to Meade, was on its last legs, so to speak, in terms of usability, not to mention entirely failing to allow an appreciation of the beautiful views. "We were able to use the existing cabin site," says Meade, "which limited our impact on the land. We developed a simple platform raised above the meadow and protected by an over-scaled, sloped roof. The

slope opens to the views, sheds the snowfall, and houses a 10-Kw photovoltaic system that runs the heat and electrical needs of the house."

The techniques

and materials that contribute to the near net zero energy usage of the home include triple-paned glazing, water-efficient fixtures, a high-efficiency electric boiler, in-floor radiant heat, and LED lighting throughout the home. The exterior is wrapped in two-inch extruded foam insulation to eliminate thermal bridging. This is in addition to the soy-based foam insulation that expanded to fill the walls and roof; the combination resulted

in excellent R-values (a measure of thermal resistance). The rooftop photovoltaic system feeds unused electricity back to the grid. The electric hot water heater is supplemented by an air-to-air heat exchanger.

Another key system involves a device called a heat recovery ventilator. "Because the building envelope is so tight, we needed to introduce fresh, clean air at a regular rate to the interior," says Meade. The ventilator draws off the stale air and pulls in clean, exterior air. "The trick of this device is that it heats the incoming air with the latent heat of the outgoing stale air, thus not increasing the heating load of the house."

Throughout his work, Meade remains grounded in the present while looking to the future: "Our work is a response to the time in which we live. We embrace current technology and work hard to produce assemblies that will reflect the technology of our time 100 years from now."

The result is a 2,000-square-foot home with three bedrooms and a glassed-in great room that invites togetherness and features the spectacular vistas of the location. The shared spaces are all located under the tallest part of the wedge; two bedrooms face the woods at the rear of the house with the master suite situated in between. The open plan offers the alfresco sensibility that the clients specifically requested, and in addition, each private space has carefully framed views of the alpine setting. Plus, the property can be remotely monitored by the homeowners from their iPad, so they are never very far away from their private aerie. 📶

