

# CASE STUDY

## Near Net Zero



### PROJECT OVERVIEW

**PROJECT**

Residential Home

**BUILDER**

Mandalay Homes

**LOCATION**

Prescott, Arizona

**RESULTS**

Pre-leakage: >1.4

Post-Leakage: 0.6

Can now achieve net zero with only 8 solar panels on a typical 2,000 sq ft home compared to 60 solar panels. Savings of \$50k.

## Constructing 3,500 Carbon-Neutral Homes in Arizona

Mandalay's Founder, Dave Everson, is on a mission to scale carbon-neutral (or zero-energy) homes, and offer them as a standard feature on every home they sell. The challenge is making such homes economically feasible and scalable.

The zero-energy formula typically involves loading a rooftop full of solar panels – for a typical code-built, 2000 square foot home, approximately 60 solar panels are needed to achieve net-zero, at a cost of \$60,000

Everson was able to perfect the building envelope with advanced framing and insulation techniques. In 2012, a typical Mandalay home tested at a 74 HERS Index. By 2016, Everson had pushed the performance of a typical home to a 50 HERS Index. But, no matter how disciplined Mandalay was on insulation and envelope sealing strategies, they could not attain better than a 1.4 ACH.

Although this number is significantly better than code, it would still mean 30 solar panels would be required to attain net-zero. At a cost of almost \$30,000, the price tag would not allow Everson to offer a net-zero home as a standard feature.



## Advanced Sealing Technology – a Lower ACH

When Everson learned about AeroBarrier, he was intrigued. The process seemed perfect for his needs – quick to apply, easily scheduled, economically feasible, and produced consistent results.

The AeroBarrier system reduced the typical Mandalay home from an ACH of 1.4 to .6. With this, Everson had cracked the energy plus homebuilding conundrum, coming one step closer to offering net-zero homes as a standard feature.

## The Birth of a Carbon Neutral Community

After five years of Everson's determination, and with the help of technology advancements and market competitiveness, Mandalay has broken ground on 3,500 carbon-neutral homes in the master-planned community of Jasper. Everson states, "At Mandalay, we believe the catalyst to the carbon-neutral community is AeroBarrier and it will be used on every home we build."

## Battery Storage

Around the time of applying AeroBarrier to the first Mandalay home, Everson was experimenting with battery storage. Impressed by their market presence in Germany, high storage capacity, and 28-year battery life, Everson selected sonnenBatterie for his energy storage partner. The result of marrying AeroBarrier technology sonnenBatterie's solution reduced the number of solar panels necessary to achieve net-zero to only eight, at a cost savings of \$50,000.



AeroBarrier may be the most important innovation to hit the building community in years. We were seeking a tighter building envelope and AeroBarrier answered the call. The technology is easily deploy-able in the field, delivers results immediately which is invaluable, and works well in a fast paced production environment.

You may be able to overcome the inefficiencies of manual sealing by repeating the process over and over, but it would require more expensive labor hours and still no guarantee. AeroBarrier is fast and you know the results before you are even finished.

**Geoff Ferrell** – Chief Technology Officer  
Mandalay Homes