



Sustainability Report

2020

**deltec
homes**



From Our



President

Often times annual reports become stories of incremental gains or steps taken that build off the previous year. In contrast, 2020 was a story of extremes. It was a year that no one (or too few) anticipated and no one wanted. It required us to fundamentally rethink many things. First and foremost how to keep our employees safe, keep our operation going, and then continue to serve our customers.

It was also a reminder of how fragile many things in our world are--a health crisis that disrupted millions of lives, a social system that was up-ended. It was also a world that saw a record high hurricane and wildfire season, with many people being displaced and having limited safe facilities to go to. Some of these homeowners cleaned up only to be hit by yet another storm.

2020 reminded us of the importance of resilience.

Resilience internally as we had to shift how we do business. Overnight, we had to shift our operation in most ways. We went from working in an office, to working remotely for most of our employees. We staggered our production while implementing safety protocols for our factory workers. We extended our sales hours to accommodate our customers who were suddenly teachers, chefs, dog walkers, and childcare providers as well as being workers during the day. Our seminars in Asheville became webinars around the world.

Resilience externally as people suddenly forced their homes to do much more than before. Suddenly, their homes became schools, restaurants, gyms, childcare facilities, and offices. Spending much more time in them, interest in the concept of healthy homes increased, we saw a rise in biophilic design as a way to express peoples' need for sanctuary and we experienced many more inquiries about off-grid and sustainable living along with multi-generational homes and hurricane resistant homes.

It also forced us to rethink how we approach sustainability in this report. You might see some of our traditional numbers slightly different this year. When our employees work in our office, we know where the energy comes from and can measure it. While we have seen a net ecological benefit from the lack of commuting from employees (think about the air quality of LA or Beijing for example), we can no longer measure where the energy from each employee's home come from. So, we have captured 2020 in the best way we can within the historical context of how we have traditionally measured sustainability—but like many things in 2020, it requires a level of flexibility to put it in context.

With so many bad things to come out of 2020, it is also important to recognize the opportunity it provided (lemonade out of lemons, perhaps). We have seen people coming together in ways never before. We have seen a huge increase in interest in sustainability and a better understanding of the importance of a healthy home. We have seen people's desire to create a home sanctuary in nature that protects them from her harshest elements, while embracing those elements that make our lives more peaceful, calm and healthy.

Our movement continues to call for a future with low energy, net-zero, or net-positive energy buildings. Toward a future where every home is a healthy home and indoor air quality is exceptional. Toward a future where buildings have regenerative energy and water systems, and are built of carbon neutral or carbon sequestering materials. We hope you will join us as we continue to push toward these lofty goals in our own homes, and as examples for the home building community at large. May 2020 be the year that took so much away, but also gave us something to make our future better.

**Steve Linton, President
Deltec Homes**



Our Mission:
*Design with
ingenuity, deliver
The experience*



Our Vision:
*Change the way the world
builds*



Our Values:
*Excellence, Ingenuity,
Listening, Family, Simplicity,
and Stewardship*

Stewardship is one of our core values. We are committed to having a positive effect on our natural world. We achieve this through the three pillars of our sustainability strategy:

Building Science Excellence

Setting the example with our products and services for attributes that positively impact our planet and our client's lives, such as low energy use, air quality, and durability.

Stewardship

Bringing positive impact to the environment and to our local community.

Extreme Resiliency

Leading the industry in homes and buildings that withstand extreme weather events.

How our Work Is Addressing The United Nations' Sustainable Development Goals:

SUSTAINABLE DEVELOPMENT GOALS



Building homes with dramatically lower energy consumption (pages 8-11), advocating for better energy codes and cleaner energy policies (page 24), helping our clients incorporate renewable energy systems into their projects (page 23).

Building resilient homes designed to withstand strong storms (page 14-15), operating our facility with renewable electricity (pages 26-27) and offsetting carbon emissions from shipping (page 25), setting a strategy for waste reduction (page 31-32), energy use reduction, and a sustainable supply chain (page 28-29).

An Imperative for Action

Why sustainability matters in the built environment, and how our products and services tackle big issues.

Building Science Excellence

Energy use in buildings accounts for almost 40% of yearly global carbon emissions. In most homes, the majority of energy bills are spent on heating and cooling. (US Energy Information Agency.)

A super-insulated, air-tight building envelope (page 10), a passive solar design (pages 12-13), and one that uses high efficiency heating, cooling, and water heating equipment, can greatly reduce a home's energy use (pages 8-9).

Americans spend 90% of their hours inside buildings (pre-covid), the concentrations of many air pollutants are higher indoors than outdoors. (US EPA.)

Deltec offers fresh air ventilation systems as part of our kit, and expert guidance to homeowners on healthy home practices, as part of our free consulting services (page 22.)

A home that has been third-party verified according to industry standard testing procedures performs better.

Deltec has a rebate program to support green certification and has won a DOE Housing Innovation Award for our first Zero Energy Ready Home certified home (page 18-20.)



Stewardship

Healthy, abundant forests are a key strategy for mitigating climate change.

Deltec homes are constructed of sustainably harvested lumber from growers in the southeast with whom we have maintained a strong relationship for 40 years. (page 28-29.)

Businesses can be a force for good.

Deltec homes is a certified BCorp and Living Wage employer (page 34.)

More inclusive teams deliver greater innovation and offer more authentic ways to connect with customers and solve their problems.

Deltec is 75% woman-owned and has 30% women and minorities in management, exceeding our industry average. In 2020 we convened a Justice, Equity, Diversity, and Inclusion (JEDI) team to actively engage Deltec on all levels of management (page 35.)

The embodied carbon in buildings accounts for 11% of global carbon emissions (US Energy Information Agency.)

Deltec has used 100% renewable electricity since 2007, diverts an average of 80% of our production waste from the landfill, and purchases carbon offsets to fund local renewable energy and energy efficiency initiatives to offset our domestic shipping. We select products for our home packages that have reduced climate and carbon impacts (page 26-32.)

Extreme Resilience

Currently, 31 million people in the US live in counties facing substantial damage from hurricanes (Core Logic.)

Deltec Homes can be engineered for the strongest hurricanes. Our homes have a 99.9% storm survival rate (pages 14-15.)

Big rain and big fire are increasing across the US (NOAA.)

Deltec products are engineered for moisture durability, and our design expertise helps our clients make product selections that match their local climactic extremes.

Table of Contents

Changing the World: Our Homes

Energy Efficient Homes	8-11
Passive Solar Design	12-13
Exceptionally Resilient Homes	14-15
Green Building Certification Programs	16-17
Case Study: WNC's First Zero Energy Ready Home	18-19
Case Study: Mountain Getaway	20-21
Healthy Home Philosophy	22
Renewable Energy Use	23
Education and Advocacy	24

Changing the World: Our Operations

Site Energy	26-27
Supply Chain	28-29
Water and Shipping	30
Waste Reduction	31-32

Changing the World: Our Community

Community	33
Employees	34-35



Changing the World: Our Homes

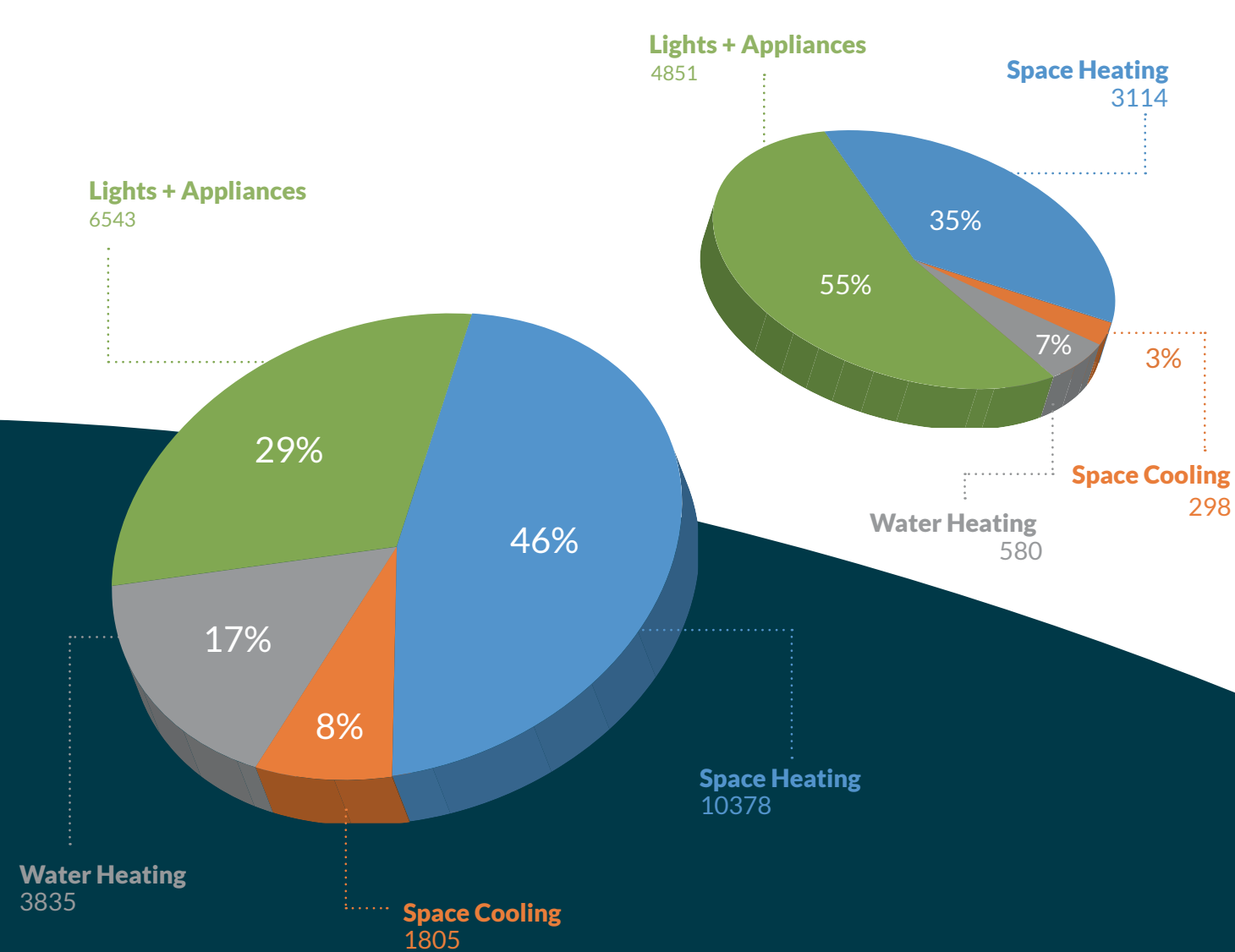
“Green building is not just better for the planet, it also makes people’s lives better. It helps **people build houses** that are more comfortable, more durable, and **makes people happier**”

Amy Musser, PhD

Energy Efficient Homes

In 2020, residential buildings contributed 19% of US greenhouse gas emissions, while buildings as a whole contributed 36%.¹ Yet high performing homes can use their design and systems to consume drastically less site energy.

Average US Home
Energy Usage (Kwh/year)²



Our building system allows our homeowners to practice the proven principles of super-insulation, air-tightness, reduced thermal bridging (see page 10-11) and third party verification (see page 16-17) through programs like the RESNET HERS Index and the DOE Zero Energy Ready Home, to bring down the energy use of their new home compared to standard new construction.

DELTEC AVERAGE BLOWER DOOR TEST SCORE: 1.6 ACH50
TYPICAL NEW HOME: 5-10 ACH50

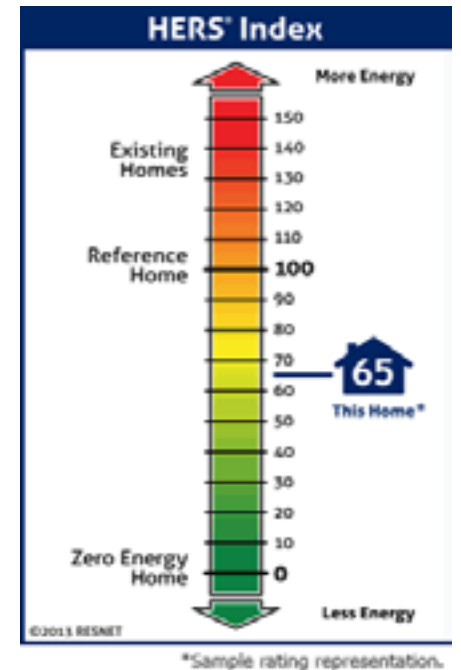
Lowest on record: 0.62 ACH50, achieved by our in-house building company

AVERAGE HERS INDEX OF A DELTEC HOME: 43
TYPICAL NEW HOME: 100

Our lowest on record, cumulative: -22
Our highest on record, cumulative: 66

BEATING CODE MINIMUMS

83% of Deltec homes shipped in 2020 contained insulation and air-tightness features that would exceed the 2009 IECC (International Energy Conservation Code) by 20% or more, while 42% of our shipped homes would exceed the 2015 IECC by the same margin.



The HERS Index is a tool used by green building certification programs, and increasingly by energy codes, to scale a home's efficiency. The lower the score, the more energy efficient, with a score of 100 indicating a basic new home built to code, while a HERS of 0 indicates a net-zero energy home.

1-US Energy Information Administration, 2020 US Energy Use by Sector
2-US Energy Information Administration, 2015 Energy Use of Homes
3-Energy use projections from the energy model of the home featured on pages 12-13 of this report

Energy Efficient Homes

Shape and Design: A round home has less exterior surface area than a same-sized rectangular home, reducing heating and cooling loss through the exterior shell. Simple shapes are easier to build and usually outperform complex ones in the execution of the details on site. Meanwhile, lay outs that incorporate **passive solar design** (see next pages) increase natural lighting and can reduce heating and cooling demand by up to 2/3rds compared to a home without passive features.



In colder climates, more advanced methods of framing walls to increase space for insulation is needed. Our double-stud wall uses two layers of 2x4 studs, staggered to reduce thermal bridging, which more than doubles the typical wall space for insulation. Higher ceiling R-values, high performing triple pane windows, and highly insulative floor or foundation materials would also be used. This principle is called **super-insulation**.



Air Tight Construction:

Our Airblock gasket (left), part of our Energy Wall and Double Stud Wall packages, is a feature installed in our plant that improves panel tightness. A panelized shell, by virtue of tight tolerances, offers a notably air-tight way to build, as tested by a blower door tester (Below)



Exterior Insulation:

Such as the graphite-infused EPS product shown in the photo in the middle, reduces *thermal bridging*, the process of extra heat transfer that happens through materials that form gaps in conventional insulation, such as wood studs. The exterior foam insulates structural wood and other framing materials as well as just the cavity, while 2x6 framing wall allows above-industry-standard space for cavity insulation.



Efficiency Beyond the Building Shell

Heating and cooling are the biggest energy expenditure in a typical home, and increased R-values, reduced thermal bridging, and verified air-tightness have the biggest impact on bringing this energy demand down. After that, the efficiency of heating and cooling equipment should be addressed, and after heating and cooling energy the next biggest energy expenditure in most homes is water heating, followed by lights and appliances. Although we do not provide these systems, our building science consultant works closely with our clients on these topics. (Above) A Deltec home takes advantage of our consulting on high performance HVAC systems. See pages 18-19 for a case study of a home with high efficiency heating and water heating systems, and see page 24 for more information on our green building consulting program.

CHANGING THE WAY THE WORLD BUILDS

Passive Solar Design

At the intersection of resiliency and energy efficiency sits passive solar design: a strategy for laying out a home to reduce heating and cooling needs, simply based on the home's shape and movement of the sun throughout the year. Ancient design principles of window orientation, shape, insulation and shading, when paired with modern construction methods, building materials, and technologies available to build a very energy efficient and durable home, offer significant opportunities to reduce site energy. A passive solar home also offers unparalleled resilience and comfort.

12% of Deltec projects shipped in 2020

Incorporated passive solar or natural comfort design principles into their total energy-efficient design strategy, often working with our green building consulting services to achieve this design (see page 20 for more about these services)

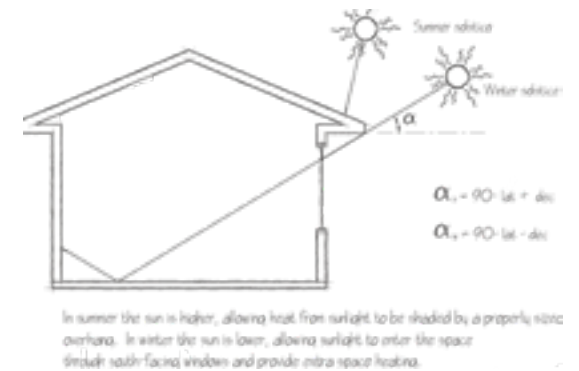
Deep in northwest Minnesota, these homeowners faced extreme conditions. Working with Deltec and with a local builder very familiar with passive solar design, they optimized their south-facing window areas to harness light and heat, while minimizing windows on all other sides of the home. A double stud wall, high performance triple pane windows, and raised heel truss contributed to a super-insulation strategy for this very cold climate to help hold heat in that is harvested from the south-facing sunspace.



Since the beginning of time, people have used the shape and placement of their homes to maximize comfort and minimize energy use. Using the guiding principles of **passive solar design**, you can take advantage of the sun's movement throughout the year to reduce heating and cooling bills.

Orientation

Large, south-facing windows in an open living area allow direct sunlight to heat the space in winter, reducing the demand on the heating system. The appropriate area of south-facing glass is calculated as a ratio of the floor area of the home, based on climate zone and level of passive solar being pursued.



Shading

The overhang is thoughtfully selected to shade the south-facing windows in the summer, reducing demand on the cooling system, and leave them unshaded in the winter, allowing heat gain. The length is determined based on the home's wall height, window size, and latitude.

Thermal Mass

Dense material inside the living space, such as stained concrete or tile floors, slate wall tile, or other thermal mass absorbs the sun's heat from the windows and stores it, keeping the room at a more constant temperature throughout the day, and the year. The required surface area of thermal mass is calculated according to the square footage of south-facing glass.

Super-Insulation

The level of insulation in the walls, ceiling, and foundation should go well above local code requirements to take advantage of the heat gained from the passive solar sunspace. Slab foundations in particular should be insulated to isolate concrete temperatures from the ground.

CHANGING THE WAY THE WORLD BUILDS

Exceptionally Resilient Homes

Surviving a hurricane is one of the most profound durability benefits of living in a Deltec home, as our signature round design is engineered specifically for hurricane force winds. In a changing climate with even more powerful storms, deliberately designed resilient structures have become more important for human survival than ever before. But even our clients who don't live in high wind or high seismic zones benefit from an incredibly durable home made of high quality, long-lasting materials. We believe all homes should be built only once, last for generations, and allow homeowners to reduce time and money spent on maintenance.



Track Record: The round Deltec home was engineered for high winds. We have a 99.9 survival rate--which means no structural impact--for all hurricanes over our company's entire 50+ year history. In 2018 and 2019, some of our homes withstood direct hits from hurricanes Florence, Maria, Michael, and Dorian. In some cases our homes were among only a few structures in an area to remain intact.

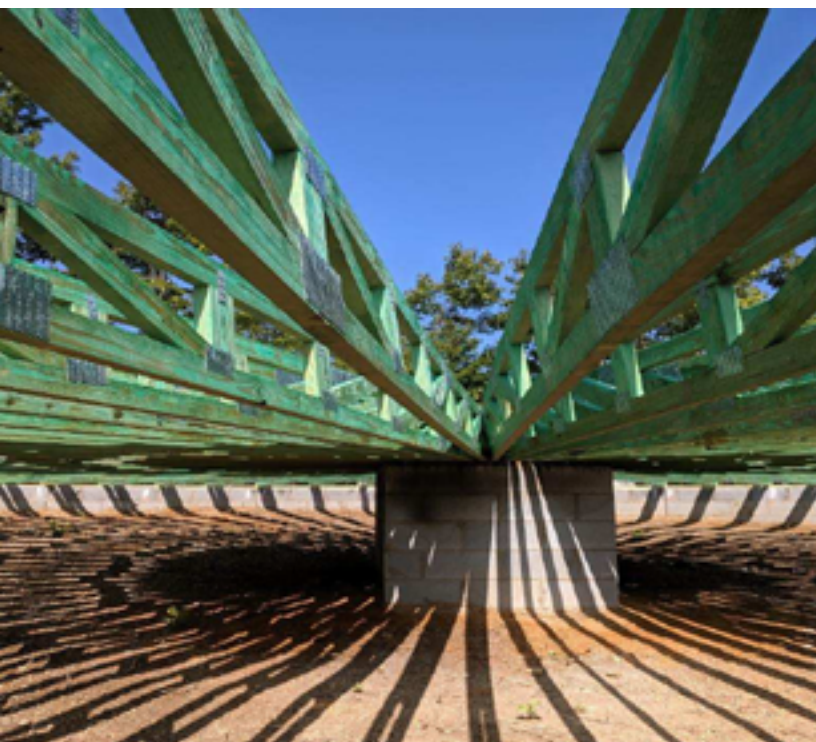
Radial Engineering: A circular shape more efficiently transfers environmental loads, while the radial engineering of our floor and roof system further spreads the forces of high winds throughout the structure instead of allowing it to build up in one area.

Focus on Critical Connections: Each job is specified to maintain critical connections between the roof, exterior walls, floor system, and foundation. Oversized truss hangers, continuous strapping, and other details may be specified as appropriate based on wind or seismic zone.

Material Excellence: Machine stress rated 2400 psi pine framing lumber used in trusses and walls is twice as strong as typical wood framing material. Five-ply 5/8" plywood sheathing used exclusively in our walls, roof, and floor sheathing, rather than the 7/16" OSB (oriented strand board) sheathing used by most of the industry, strengthens the home and prevents flying debris from penetrating the structure while also offering superior moisture durability. Yet building a hurricane resistant structure out of wood has a reduced carbon footprint over building one out of steel or concrete.

Fortified Homes Program: Round Deltec homes are able to be certified through a local Rater with the Fortified Homes program, recognized by the insurance industry in some states for exceptional wind resistance and reduced risk of home loss.

Durable by Design: We use a drainable weather resistive barrier (WRB) with an extra drainage gap to facilitate structure drying more effectively than standard housewraps can. We also offer exterior finish products with excellent warranties, including fiber cement siding pre-painted in our factory with a 50 year siding warranty and a 25 year warranty on the paint and a metal shingle roofing product with a 50 year lifetime warranty.



A Deltec home in Mexico Beach, FL
after Hurricane Michael



TOTAL: 38
SINCE 2009



Energy Star Certified homes are 15-30% more energy efficient than standard new construction. They're also designed and tested to use the most cost-effective and practical energy efficiency features.



TOTAL: 9
SINCE 2007



Comprehensive green building programs such as LEED for Homes, Green Built NC, Earthcraft (Virginia and Georgia), and the National Green Building Standard, look at green building from multiple dimensions. Points are rewarded for practices in everything from energy efficiency and durability to material sustainability.



TOTAL: 2
SINCE 2018



The DOE Zero Energy Ready Home requires using only the most advanced green building practices in energy efficiency, air quality, durability, water efficiency, and solar-ready design. See case study on the following pages.

CHANGING THE WAY THE WORLD BUILDS

Green Building Certification

Third party verification programs, often called green certification programs, are a critical component of quality building. These programs bring building science best practices into a construction project in a systematic way, and participating in a green certification program typically results in a higher performing home than is achieved by a home that merely incorporates some green features without following the rules of a specific program to do so. Certification requires physical, on-site testing of the home's performance, and inspections conducted by a green building professional. Many Deltec homes are built with features that easily meet or exceed common residential green building programs.

*That we know about. Some homeowners never tell us what they end up doing to finish out their home, and it's quite possible these numbers are under-counting the number of Deltec throughout our 53 year history of building that have received one of these, or other, green certifications.

Deltec Rewards Green Building Program Participation

Too few custom clients choose to go through the process of green certification, despite having a home that would easily qualify. Clients cite confusion about the many different certification programs available, the general overwhelming nature of the building process, extra cost, and lack of rebates and incentives as common reasons for skipping this important step in their projects. Deltec has responded by creating a rebate program of our own. We now offer a tiered financial incentive, based on the level of certification achieved, to customers and their builders who submit to us their final green building program certificate.

CHANGING THE WAY THE WORLD BUILDS

WNC's First Zero Energy Ready Home

After speaking with multiple Deltec Homeowners, John and Barry knew they wanted one of our Ridgeline models. And after attending one of our home building seminars, we knew we wanted John and Barry as clients! Creative, patient, thoughtful, and thorough, they were a pleasure to work with. In addition, their home helped expand Deltec Building Company's repertoire, achieving the Department of Energy's rigorous Zero Energy Ready Home Certification.



Insulation: Deltec Energy Wall with 2x6 framing insulated with R19 fiberglass batt insulation +R5 exterior continuous insulation for R24 total, R30 open cell spray foam in the roof, Energy Star windows, 1763 square feet, with detached garage, covered screen porch, and breezeway.

Systems: Mitsubishi hyper-heat mini-split heat pump and AC system, Heat Recovery Ventilator (HRV) fresh air ventilation system, 6.8KW grid-tied solar array, heat pump water heater, condensing dryer, induction range, direct-vent propane fireplace, and hot water recirculation pump with manual control (a new feature required by the ZERH program in this floor plan.)

Other: Energy Star for Homes, Indoor Air Plus and DOE Zero Energy Ready Home Certifications, HERSO



WHAT'S SO SPECIAL ABOUT A ZERO ENERGY READY HOME?

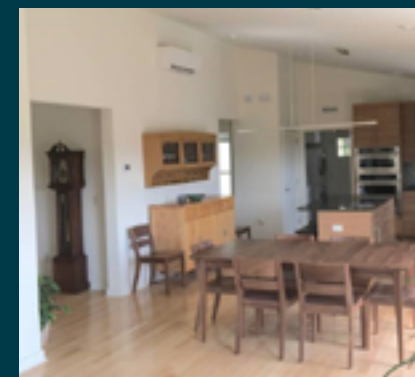
The DOE Zero Energy Ready Home program requires builders to up their game. Earning this certification goes a step above other green certifications, requiring some of the best of what building science has to offer homeowners for energy efficiency, durability, water efficiency, solar energy use and indoor air quality.



Energy Star Certified Homes are already notably efficient due to above code insulation levels, superior air-tightness, efficient LED lighting and Energy Star Certified appliances. Zero Energy Ready Home requires that and more, with a lower target HERS score and a requirement that all ductwork be kept inside the heated space, where it will operate much more efficiently.



Water must not only be heated efficiently, like with this highly efficient heat pump water heater, but delivered to distant fixtures with minimal waste of water or energy while waiting on hot water to arrive. This was achieved with a hot water recirculation pump: homeowners simply hit the button, wait about 40 seconds, then turn their tap on for water that's already hot.



Zero Energy Ready Homes must also meet EPA Indoor Air Plus Certification, requiring mechanical fresh air ventilation, passive radon mitigation, higher levels of filtration, ultra-low emitting paints, stains, carpet and wood products, and safe and clean burning combustion appliances. It also requires that steps be taken to reduce pollutants during construction such as covering all registers and flushing out the home prior to occupancy.



It wouldn't be "zero energy ready" without the "zero energy"—in this case, a 6.5 kilowatt grid-tied solar array, sized to meet the home's electricity needs with a net energy bill of 0. HERS score: 0.

Case Study: A Mountain Paradise

Tyler and Chelsea moved to WNC to live their dream. On a beautiful, secluded piece of land atop a mountain amid an idyllic valley, they wanted a home and office that would capture amazing views every day. They also wanted to be as sustainable as possible. Off-grid, nearly all-electric, and with EV charging as well. Our track record of building high performance homes, and our values as a BCorp, drew them to Deltec. The power of our 360 collection home to capture a view like no other put them in a round home.

THE HOME:

A two-level 1200 model from our 360 collection, with a stair wing and attached garage. Machine finished fiber cement siding and pre-installed Marvin Integrity windows.

THE ENVELOPE:

Deltec Energy Wall with R19 fiberglass cavity insulation, plus R5 exterior graphite-infused EPS insulation, for R24 total. R30 spray foam in an unvented/conditioned attic. Slab-on-grade construction with R10 insulation underneath the entire slab.



THE SYSTEMS:



Heated and cooled with two single-zone vertical-ducted mini-splits per level, backed up by a wood stove. (Didn't realize mini-splits could be ducted? Absolutely, and they deliver some important technological benefits when doing so that made them desirable for pairing with a potentially off-grid system). Water heating provided by a high efficiency heat pump water heater, with intake and exhaust ducted to the outside to improve performance and reduce noise. All electric appliances with an induction range. Energy Recovery fresh air ventilation system with continuous indoor air quality monitoring. Powered (without a grid connection) by a 10KW solar array with 5 KiloValt HAB Batteries and 13KW Generac backup generator.

THE VIEW:



The south-facing open room is full of windows to allow in plenty of light and passively reduces winter heating needs. Well-placed windows in the stairwell, and over the master tub, provide a treehouse feel even when moving throughout the house. And the wraparound deck offers nearly 300 degrees of treehouse-style outdoor space.

Healthy Home Philosophy

Good green building is concerned with the indoor environment just as much as the outdoor one. Deltec works with clients to understand and incorporate the best available practices for reducing indoor air pollutants and providing proper ventilation and moisture control to their homes, based on building science. Strategy highlights:

According to the US EPA, Americans spend 70% of their time inside their home.

Source Control

- All products included in the Deltec shell package comply with LEED 2008 VOC emissions standards, CARB II, and contain no urea formaldehyde.
- Any combustion appliances used in our homes should be direct-vent, with outside air intake. We recommend only EPA Phase II certified wood burning stoves or fireplaces. Unvented combustion appliances should never be used.
- Kitchens and bathrooms should incorporate local exhaust systems according to Energy Star for Homes and ASHRAE 62.2 standards, and should be tested to verify performance.
- All interior paints, stains, carpets, wood flooring, cabinetry, countertops, and composite wood products should be non-toxic and Low-VOC, such as those that are GreenGuard Certified, CARB II Compliant, or GreenSeal Plus labeled.



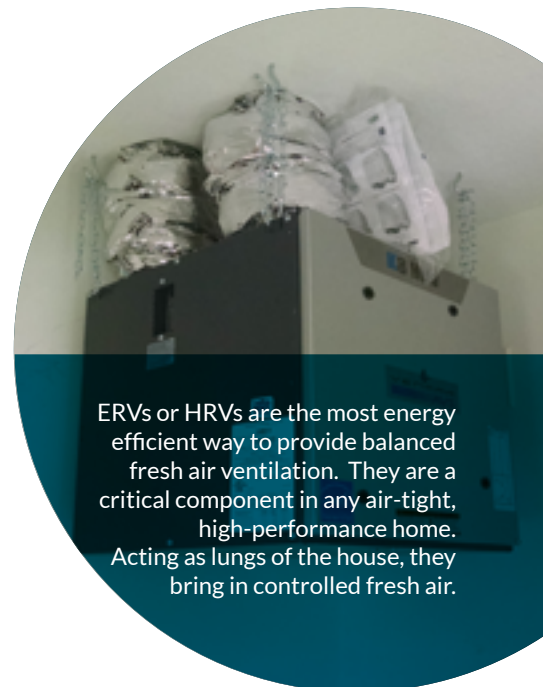
The inside of this Solar Farmhouse uses Interior finish products chosen to reduce VOC offgassing, and a wood stove selected to meet EPA Phase II emissions limits, with an outside air intake to reduce backdrafting.

Fresh Air Ventilation and Filtration

- We recommend balanced ERV (Energy Recovery Ventilation) or HRV (Heat Recovering Ventilation) fresh air ventilation systems designed to provide ASHRAE62.2 recommended whole-house ventilation levels. We offer ERV and HRV products designed to meet the ASHRAE standard for any job shipped. Over 47% of projects shipped in 2019 incorporated one of our ERV or HRV systems.
- Clients with sensitivities to particular allergens should consider upgraded air filtration (MERV 8 or better).

Radon Control

- We recommend clients install a passive sub-foundation radon system if building in areas at risk for radon. If testing after move-in reveals elevated radon levels, the passive system should be activated.



ERVs or HRVs are the most energy efficient way to provide balanced fresh air ventilation. They are a critical component in any air-tight, high-performance home. Acting as lungs of the house, they bring in controlled fresh air.

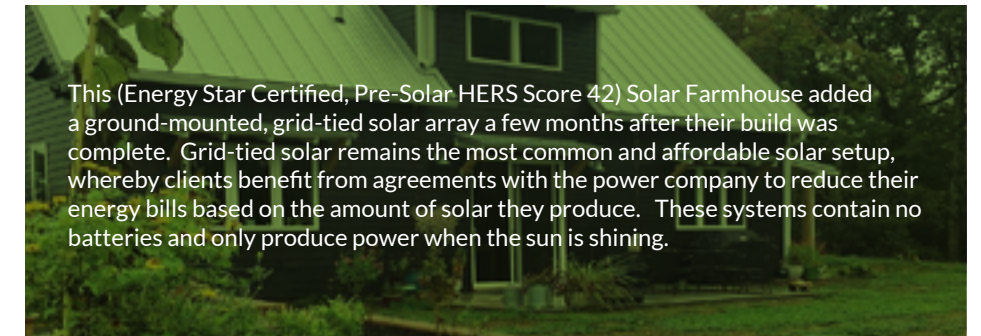
Renewable Energy

Many Deltec homeowners dream of reducing the environmental impact of their home and increasing their independence through on-site renewable energy. Active solar systems are the most common form of renewable energy available for individual residential projects, and quite a few Deltec clients incorporate active solar systems, either as part of their build or as an add-on after their home has been built. Rooftop solar has huge potential to reduce our society's carbon footprint; an estimated 24.6 gigatons of carbon dioxide emissions could be reduced if distributed solar projects grew to **7% of worldwide electrical generation by 2050**. Any active solar project is made more effective when integrated with a structure already optimized for energy efficiency.

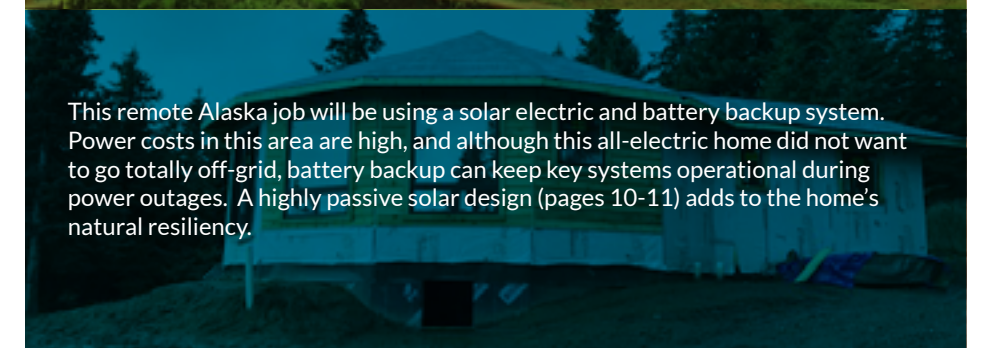
OVER 10% OF 2020 DELTEC PROJECTS

INCORPORATED ACTIVE SOLAR ENERGY SYSTEMS

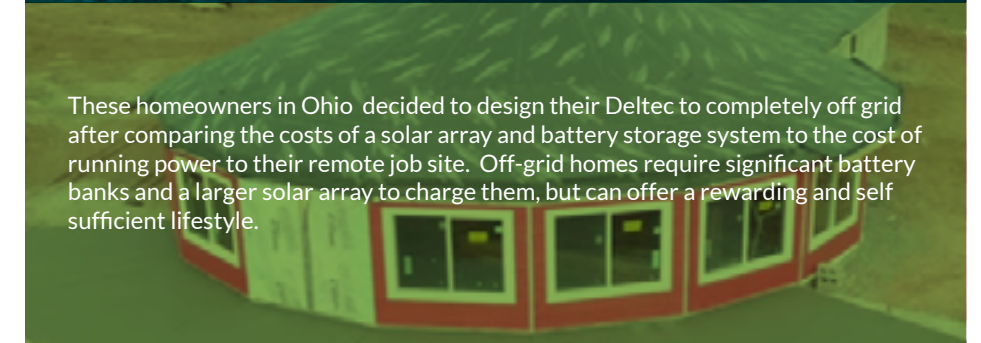
Solar Energy Design Types



This (Energy Star Certified, Pre-Solar HERS Score 42) Solar Farmhouse added a ground-mounted, grid-tied solar array a few months after their build was complete. Grid-tied solar remains the most common and affordable solar setup, whereby clients benefit from agreements with the power company to reduce their energy bills based on the amount of solar they produce. These systems contain no batteries and only produce power when the sun is shining.



This remote Alaska job will be using a solar electric and battery backup system. Power costs in this area are high, and although this all-electric home did not want to go totally off-grid, battery backup can keep key systems operational during power outages. A highly passive solar design (pages 10-11) adds to the home's natural resiliency.



These homeowners in Ohio decided to design their Deltec to completely off grid after comparing the costs of a solar array and battery storage system to the cost of running power to their remote job site. Off-grid homes require significant battery banks and a larger solar array to charge them, but can offer a rewarding and self sufficient lifestyle.

Education and Advocacy

Part of our aim to change the way the world builds means that we work to spread awareness on green building, and support organizations that advocate for more energy efficient, healthy, and sustainable buildings.

Deltec Homes has a building scientist and HERS Rater on staff who is available to consult with clients on green building strategies for free. This has been a popular service of our company since 2006. We are available to work with clients on:

- Building science best practices, including insulation strategies, & HVAC strategies
- Indoor air quality best practices
- Projected energy use modeling for a proposed home design
- Green building certification planning
- Passive solar design analysis
- Active solar system planning
- Material sustainability product research

182

people educated on green building through our webinars.

75%

of clients shipped in 2020 of our green building consulting services, and 75% of our 2020 clients received education on green building practices.

16%

of clients shipped in 2020 used energy modeling during the design process to guide their choices



Deltec Homes is a proud member of the Green Built Alliance, WNC's premier non-profit for promoting green building in our region, and the NC Building Performance Association, a non-profit advocating for more energy efficient buildings in our home state of North Carolina. Through these organizations we have written articles, letters to policy makers, held educational workshops, and volunteered time for fund raising efforts to help these organizations continue their missions. In 2019, we assisted the GBA in updating their **Green Built Homes** program (see page 18), including a new **Regenerative Home** certification program.



Changing the World: Our Operations

"Panelized building is an inherently green way to build. Factory assembly means **reduced construction material waste**, less job site disturbance, and easier cleanup."

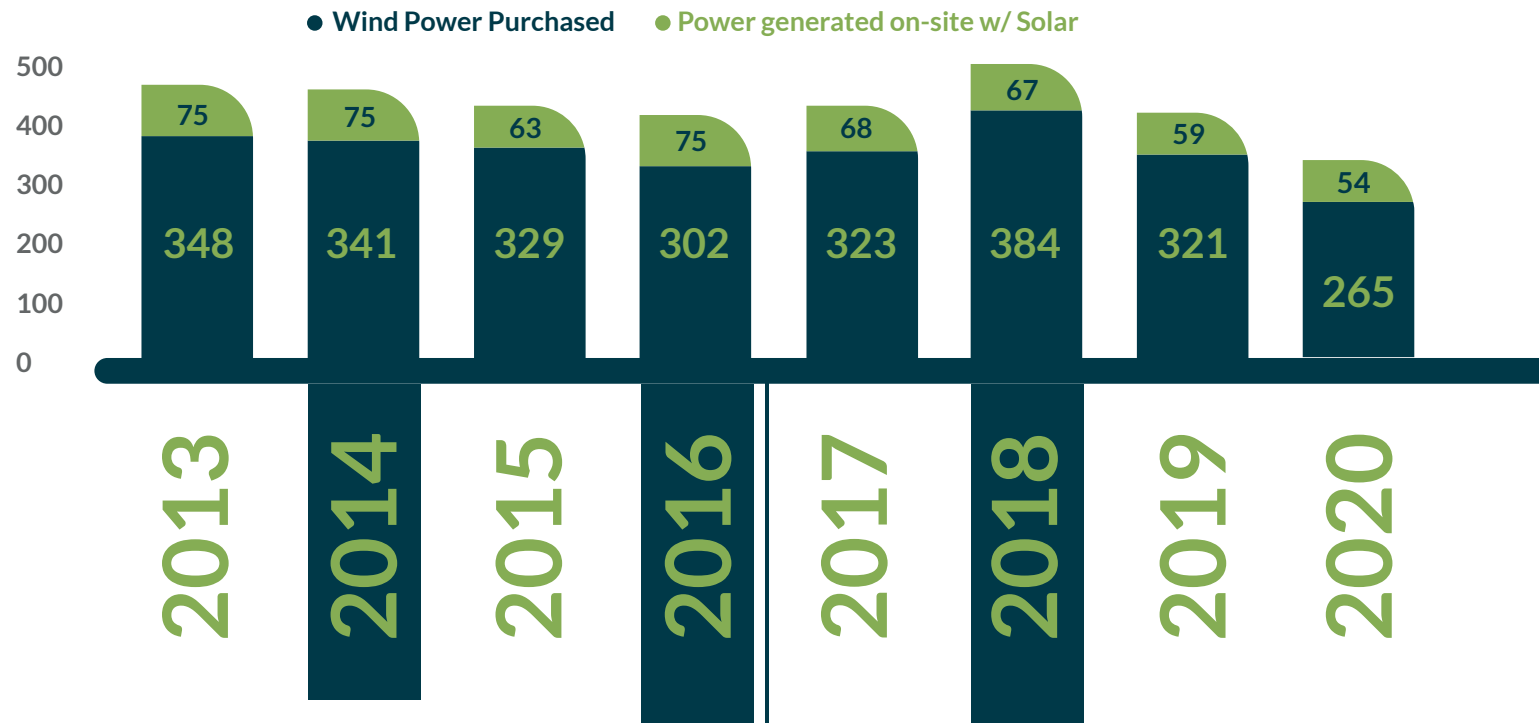
National Association of Homebuilders

Site Energy

Deltec Homes has operated with 100% renewable site electricity since 2007

A combination of purchased wind power and a 55 KW rooftop solar array allows us to build every home using 100% renewable energy. With that, we understand that a reduction in energy use is still critical to reducing our total energy impact. Therefore, we've identified energy efficiency improvements to our 100+ year old building and continue to seek ways to reduce our conventional electric energy use footprint.

Electricity Used (Megawatt-Hours)



2013

2014

2015

2016

2017

2018

2019

2020

A major lighting improvement to our facility in late 2014 resulted in a 6% drop in electricity use the following year.

Building envelope improvements, including a new reflective roof and roof insulation, dropped energy use even further, mostly through cooling load reductions.

In 2018, we had a 28% increase in our home production. In addition, we moved our pre-finishing operation in-house. This increased overall energy use, though only by 47% of the energy used by the operation's previous facility.

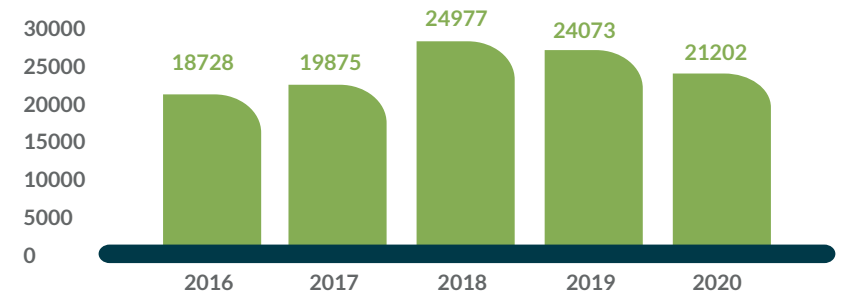
In 2016, we added a new model home, increasing our facility count, and ramped up production significantly from past years, resulting in more total energy use.



(Top)
A 55KW solar array, installed in 2007, provides a portion of our on-site electrical use in our manufacturing facility. The other portion comes from wind power purchased through a green energy provider.

(Right) Our Model Home and Innovation Center, built in 2016, is a Green Built NC Certified Net-Zero Facility, utilizing a 5.12KW grid-tied solar electric system.

Natural Gas (Therms)



We use natural gas to heat our 100+ year old manufacturing facility. Heating energy use fluctuates as Asheville's winters fluctuate. In 2015, we improved our facility's insulation, but 2018 and 2019 saw harsher winters than average.



Site Energy Areas for Improvement

- Compressed air, used for most of our powered nail guns, saws, and other tools, is another source of energy use that we are determined to improve.
- We are considering a demand response program with our local power company to remotely shut off our AC systems for up to 15 minutes at a time during times of peak demand to reduce grid impact.
- Natural gas use is fixed based on heating costs and building envelope improvements have not made a significant impact to this number. We're exploring carbon footprint and carbon offset potential for natural gas use.
- Other small scale site energy sources that are more difficult to track need to be accounted for. Site energy impact from forklift use and mileage with company fleet vehicles need to be quantified—shipping of our product is considered separately (see page 31.)

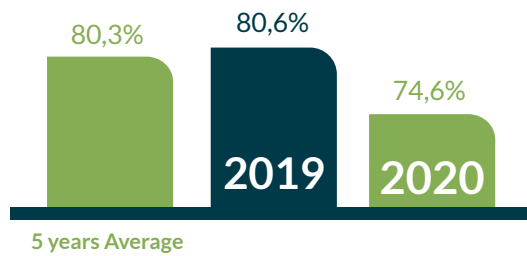


OUR OPERATIONS

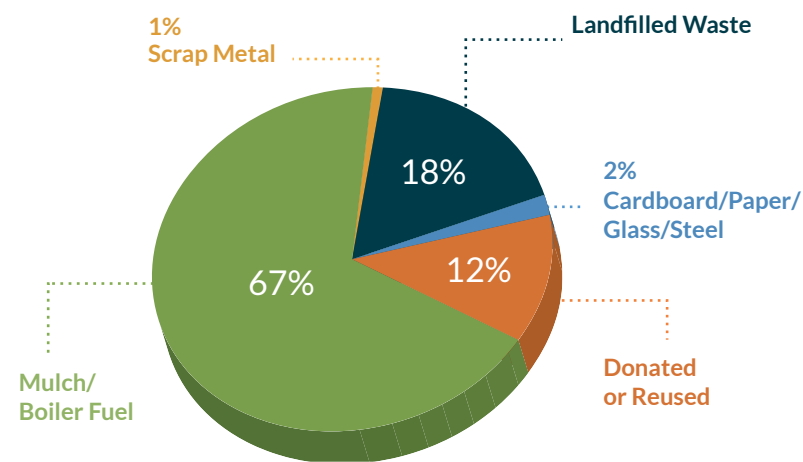
Waste Reduction

Our manufacturing process produces no hazardous wastes. Through comprehensive re-use, donation, and recycling programs, we are able to divert an average of over 80% of our manufacturing waste by volume from the landfill.

Manufacturing Waste Diverted from Landfill



Waste Streams



Waste Reduction Program Highlights



Habitat for Humanity collects pallets of our usable scrap plywood, usable scrap insulating foam board, and lengths of fiber cement siding to sell in their local Re-Store, whose proceeds benefit Asheville area habitat projects.



Local Artists and Woodworkers collect our scrap foam or wood for their own projects. A local wood-working collective has recently turned some of our scrap southern yellow pine into high quality toys for a Christmas fund drive.

North Carolina Wildlife Commission, in partnership with Wild South, has hosted barn owl and northern flying squirrel box building nights in our plant, turning some of our otherwise unusable scrap plywood into nest boxes for endangered and threatened species.



Northern flying squirrel in a nest box built by Deltec employees with our scrap plywood. Photo courtesy C. Kelly. Nest boxes allow NC Wildlife staff to monitor squirrel populations in areas of critical habitat.

Insulated Headers: We insulate the structural header in our Energy Wall with small pieces of foam board that would have otherwise been discarded. Insulating headers is not typical practice for most home builders, but it not only increases the efficiency of the home, it gives us an opportunity to reuse and recycle.



Optimized Saw: Our TCT saw uses sophisticated software to optimize cutting based on our inventory and the jobs loaded into the system. Waste pieces that can be converted into commonly used truss webs are marked for special recovery.



Waste Areas for Improvement

Small scrap plywood remains a large, capital-intensive challenge to recycle. Significant capital expenditures would be required to purchase chipping and re-selling equipment.

Constantly changing (and generally shrinking) regional markets for recyclable materials such as plastics, make finding new recycling streams and maintaining old ones challenging.

Building materials are often dense and composed of composite materials that are already down-cycled or else very hard to recycle. Better life-cycle assessments are needed and a shift to more materials with high recycled content may be the best path to greater reductions in life cycle costs of our manufacturing waste.

OUR OPERATIONS

Supply Chain

Our shell packages are composed of raw and manufactured building materials from various suppliers in the United States. Many of our suppliers must provide materials that meet our exacting standards for durability, strength, energy efficiency, and quality. We also vet our suppliers for their environmental, health, safety, and diversity practices, and consider many elements of environmental sustainability when selecting products.

Truss Lumber and Plywood:

Our exclusive supplier of truss lumber in north Georgia has achieved the Sustainable Forestry Initiative® (SFI) Certified Sourcing certification. We're proud to add them to the list of our other SFI Certified material: plywood by Georgia Pacific, used in our wall, roof and floor sheathing, and Huber Advantech, floor sheathing used in our Ridgeline and Solar Farmhouse models. The Sustainable Forestry Initiative® supports sustainable forest management.



Metal Shingle Roofing:

An optional upgrade on our round homes is an Energy Star Certified cool roof product, containing 90% recycled content. The shingle shape allows for reduced waste on our roof compared to sheet metal.



Windows:

Are by Marvin, a 100% US made and woman-owned company, with Energy Star Certification on most window options, and high efficiency Tripane available for cold climate and high energy performance projects.



Exterior Insulation:

Deltec uses graphite-based expanded polystyrene (EPS) product for our exterior foam insulation used to mitigate thermal bridging (see page 8). This product is manufactured using blowing agents with zero global warming potential (GWP) and uses less raw material than other types of plastic foam, while offering better moisture and insulation performance over time.

Locally Sourced Components:

Our fiber cement siding, plywood sheathing, and metal structural components are manufactured or fabricated and come from suppliers located within 150 miles of our manufacturing facility. Tyvar drainable housewrap and truss lumber come from facilities within 500 miles of our plant.

Composite Siding:

In 2020 we unveiled a new sustainable siding choice: Boral TrueExterior™ polyash siding. This product is Cradle to Cradle Certified™ Bronze, and contains a minimum of 70% recycled content. Cradle to Cradle Certified™ products are evaluated for material health, material re-utilization, renewable energy use and carbon management, water stewardship, and social fairness.

All Composite Wood Products:

in our shell package, including Plytanium plywood, Advantech sheathing, any structural LVL components, Miratek Trim, LP Smartside soffit material, are CARB II Compliant.

OUR OPERATIONS

Water

Our manufacturing process does not use a significant amount of water. Our water use is primarily from normal office operations and was well below average for a company of our size.



Used in our office and model homes, well below the average **920K gallons** per year for an office of our size. This is an 18% drop from the previous year.

Shipping

Every Deltec structural shell is manufactured in a facility in Asheville, NC, and shipped to the customer's job site. Sometimes the job site is right next door, often it is across the country. Shipping our homes, for now, still relies on fossil fuel energy, typically in the form of enclosed tractor trailers. In 2020, as in 2019 and 2018, we partnered with Appalachian Offsets, an Asheville-based non-profit, to offset our carbon emissions from our domestic shipping. These offsets fund local solar and energy efficiency initiatives.

Domestic Shipping miles offset 2020: 51,475





Changing the World: Our Community

“Society’s most challenging problems cannot be solved by government and non profits alone. The B Corp community works toward reduced inequality, lower levels of poverty, a healthier environment, stronger communities, and the creation of more high quality jobs with dignity and purpose.”

BLabs, Inc, the non-profit organization certifying
Benefit Corporations (BCorps)

Community



Certified B Corp

Deltec Homes remains a Certified B Corp, an honor given to companies who meet the highest standards of verified social and environmental performance. The process is rigorous and entails an assessment that weighed and scored our company on metrics of governance, workers, community, and environmental stewardship. We completed our re-certification for 2017 with a slight improvement in our overall score on the B-Impact assessment.



Living Wage Employer

A community is only as strong as we make it, and in order for a community to thrive, it is critical that its inhabitants earn enough money to be self-sustaining members. We are proud to be Living Wage Certified, an official recognition of our efforts to promote a just and sustainable local economy through the Living Wage program of Just Economics in Western North Carolina, the largest program of its kind in the United States.

Community Service Hours

Deltec employees give many hours to community service on company time, for projects ranging from a regular meals on wheels route, to community and student education on green building. At least **200** volunteer hours were put on record by our staff in 2020.



OUR COMMUNITY

Corporate Giving

In 2020 we were able to donate over 1% of our revenue to non-profit groups and causes that matter to our founders and employees:

- 🏠 Meals on Wheels of Buncombe County
- 🏠 UN Bahamas Relief Fund
- 🏠 Habitat for Humanity
- 🏠 The Green Built Alliance
- 🏠 One Buncombe Fund

Employees



57,836,912
STEPS

Taken by our employees in our walking wellness program, equivalent to 28,933 miles, or 1.2 trips around the globe.

JEDI (Justice, Equity, Diversity, and Inclusion)

As a leader in Sustainable building, Deltec recognizes the connection between Green building and social justice issues. Therefore, we have taken the initiative to look within our company in order to position ourselves as a role model within the building industry as not only Sustainable builders but also as an Inclusive and equitable company. In 2020, we created a JEDI (Justice, Equity, Diversity and Inclusion) team to develop our antiracism action plan with clear and transparent objectives and to keep us accountable to our commitments. We have built our action plan around four themes: community, education, policy, and supply chain.

2020 Initiatives:



Education

Continuous employee training. This includes each employee taking anti-bias assessments followed by bi-monthly diversity training.



Policy

Focus on employee hiring as a critical component. This includes a public commitment to hiring a diverse workforce, broader recruitment among marginalized communities and blind resume reviews, among others.

Understanding the ability of language and names to continue and validate the status quo, we are being intentional in our language and how we reference things during our design and building process. Something as simple as renaming the master bedroom to bedroom suite can have an impact.



Community

We will double down on working with our local community and other B-Corp organizations towards a more just world. It includes a commitment to increasing the majority of our charitable giving to those non-profits focused on providing housing to marginalized groups.



Supply Chain

Working with our suppliers provides an outsized impact. We are building a supplier recognition program as well as working with our suppliers to establish a code of ethics.



**deltec
homes**



Certified



Corporation