THE ENERGY CHALLENGE WEEK

MON, SEPT 25th – FRI, SEPT 29th

WORKSHOPS TO INFORM AND INSPIRE

AND

17th ANNUAL GREEN TOUR

SAT, SEPT 30th 10:00 - 5:00

FREE TOUR OF GREEN HOMES IN CENTRAL OREGON

BROUGHT TO YOU BY:

EnergyTrust of Oregon

CYPRESS CREEK RENEWABLES

TheEnergyChallenge.org/tour

A PROJECT OF THE ENVIRONMENTAL CENTER

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2017 Energy Challenge Week and Green Tour Guide

It's that time of year again!

Fall means bundling up and learning how you can make your home even cozier on the Green Tour. For the 17th year in a row, innovative homes across our community are opening their doors and welcoming us to come and explore what energy efficiency and conservation means to them.

There's a whole word of solutions out there. We just have to find and implement them. That is what the Green Tour is all about: helping all of us find new ways to save energy at home and showing us that the solutions are within reach.

This year, you will be able to tour homes new and old. No matter where you on your home journey, whether you're about to design and build a new home or have lived in the same ranch-style house for the past 30 years, there is something for all of us to learn. You'll get a chance to talk to all sorts of experts: designers, builders, solar contractors, and home performance contractors and they'll help you find the energy-savings potential in your very own home.

We hope this week of workshops, hands-on education, and community discussion will help you find your inner energy hero and inspire that energy hero to get to work to affect real change for our community, our planet, and our tomorrow.

The world needs more heroes like you. Come out and join us and you'll see—local action really can make a world of difference.

See you on the tour,

Lindsey Hardy

Lindsey Hardy
Program Director
The Energy Challenge

THE ENERGY CHALLENGE WEEK
AND 17th ANNUAL GREEN TOUR

Thanks to Our Green Sponsors!

ENERGY CHALLENGE WEEK AND GREEN TOUR SPONSORS

TITLE
EnergyTrust of Oregon

GOLD
CYPRESS CREEK RENEWABLES

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Miller Lumber
Oregon Department of Energy
STEMACH
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BRONZE
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MOTHER'S
NorthWest Crossing

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Neil Kelly
GreenSavers
BEND HEATING

CHAMPION
SUNLIGHT SOLAR energy

DEAR CENTRAL OREGONIAN:

We're thrilled to bring you the 17th annual Green Tour, now including a week of education about energy and the built environment.

The Environmental Center was born to inspire locals to change the world and preserve our spectacular local landscape. Since 1988, we've brought people and businesses together to nurture lasting change that everyone can be proud of.

We're a hub. A resource. A connector and unifier. We educate kids, inspire adults and advance change that limits pollution, safeguards resources, and promotes environmentally responsible behavior.

CONSIDER US YOUR GO-TO RESOURCE.

Just like you, we choose to live here. To enjoy everything our unique and amazing community has to offer. That's why our work is grassroots, organic and most importantly, authentic. We work closely with our community to create opportunities that help us all live, work, play and learn in a way that will sustain our way of life.

You'll find us in the heart of Downtown Bend — and at the heart of important initiatives that create meaningful change in our community. We'd love for you to drop by and meet us! Take a walk in our garden. Ask us recycling questions and get signed up to hear about upcoming events. Our door is open — we're here to get you connected.

PUTTING OUR PASSION TO WORK

We put enthusiasm to work every day to protect our planet, her people and the future our children will inherit. Take a peek at our programs, then jump right in and join us.

BUILDING COMMUNITY By bringing people together, we create new ideas and forge new possibilities. We host many public events, including Green Drinks, the Earth Day Fair and Parade, the Sustainability Awards and the Green Tour.

EDUCATING KIDS We empower future leaders to create a sustainable tomorrow with hands-on educational programs in local classrooms and outside in our garden and on public lands.

REVOLUTIONIZING ENERGY Central Oregon can — and should — be a leader in a clean energy future. We've taken the lead to help local families, businesses and governments use less energy and make the shift to solar.

RETHINKING WASTE Don't throw away the future. We'll help you rethink what — and how — you toss with local tools and resources that will get you reducing, reusing, recycling and composting. Again and again.

ADVOCATING CHANGE We believe in speaking up! We advocate for climate action, smart growth, walking, biking and transit — all important to improving our quality of life and protecting our landscape.

GET INVOLVED TODAY.

As you can see, we're all about harnessing the power of local change to make a world of difference. We believe the quest for a better world starts right here in Central Oregon, in our homes, local schools and businesses. It starts with YOU.

Join forces with the Environmental Center today. www.envirocenter.org

Sign up for our newsletter. Volunteer. Make a donation. Let us drop some knowledge on you (or vice-versa). Help us keep the place we love the place we love.

Enjoy Energy Challenge Week+Green Tour and have a great fall season.

the environmental center

Mike Riley
Executive Director

www.envirocenter.org

LOCAL CHANGE. A WORLD OF DIFFERENCE.

Energy Challenge Week Kick Off

The Science, The Solutions, and Taking Action

A multi-generational presentation

Monday, September 25
6:30 pm - 8:00 pm
The Old Stone, 157 NW Franklin Ave
Admission: Free ($5 donation suggested)

VENUE AND BEVERAGE SPONSORS:

THE OLD STONE

CABOOSE KOMBUCHA

Join us for this kick-off presentation that will put Energy Challenge Week+Green Tour in context. You'll learn about:

- The current science of climate change;
- The global impacts of climate change and its effects here in the Pacific Northwest;
- What is being done in energy efficiency and the built environment to reduce emissions; and
- How you can be an agent of change.

AJ (13) at Climate Reality Training

Energy is the leading source of greenhouse gas emissions—we need to radically reduce how much energy we use and make the shift to renewables. A great place to start is in the homes and apartments we live in, and in the local policies that shape them.

Our presenters: **Team Skidmore!**

Come learn from the multi-generational team of Caroline Skidmore, her two teenage sons Jack (15) and AJ (13), and Caroline's father David Sandborg. All four have all been trained as Climate Leaders by Al Gore's Climate Realty Project. Hear why this family is committed to helping our community leave a healthy climate for future generations.

Jack and Caroline at Climate Reality Training

Energy Challenge Week Schedule

MONDAY, SEPTEMBER 25TH

Energy Challenge Week Kick-Off with Keynote Address

FOR: Everyone
WHEN: 6:30 - 8:00pm
WHERE: Old Stone, 157 NW Franklin
WHO: Carline, AJ (13), and Jack (15) Skidmore, and David Sandborg

Come learn from the multi-generational Skidmore family. All four have all been trained as Climate Leaders by Al Gore's Climate Realty Project. Hear why this family is committed to helping our community leave a healthy climate for future generations, what is already happening in the building industry in Central Oregon, and how you can make a difference, starting in your very own home.

TUESDAY, SEPTEMBER 26TH

Oregon Residential Energy Code and Home Energy Score Update

FOR: Appraisers, Architects, Builders, Designers, HVAC contractors, Mechanical Engineers, Realtors, Remodelers
WHEN: 8:30 - 10:30am (RSVP preferred, breakfast provided, $5)
WHERE: The Environmental Center 16 NW Kansas Ave, Bend
WHO: Blake Shelide & Roger Kainu, Energy Planning and Innovation, Oregon Department of Energy

Get a complete update on all Oregon residential code changes that go into effect October 1, 2017. ODOE will review the upcoming code changes and give you the tools you need to get involved in future code change processes.

Attendees will also get an overview of the new statewide Home Energy Score program, how to become a state certified assessor, and recent progress in Portland with their mandatory energy scoring policy.

Electric Cars for Business Fleets

FOR: Business owners, Green Teams
WHEN: 11:30am - 1:00pm (RSVP preferred, lunch provided, $5)
WHERE: The Environmental Center 16 NW Kansas Ave, Bend
WHO: Zach Henkin, Forth Mobility; Henry Abel, Pine Mountain Sports

Electric cars are the least expensive vehicles to own and operate, great for the environment, and becoming the focus of every major automaker. Learn about incentives, charging, and if a plug-in vehicle is right for your team and hear from a business who has already incorporated an electric car into their fleet.

Electrify Your Ride: Is an electric car in your future?

FOR: Everyone
WHEN: 5:15 - 6:15pm
WHERE: The Environmental Center 16 NW Kansas Ave, Bend
WHO: Lindsey Hardy, The Energy Challenge; Jason Bradley, Smolich Nissan

We all still have a lot of questions about electric cars– that's why we want to help you answer your questions and demystify electric vehicles. Learn how easy it is to charge at home and save on your fueling costs, plan a trip, and maybe even take one for a spin.

Driving on Sunshine: Pairing solar and electric vehicles

FOR: Homeowners
WHEN: 6:30 - 7:30pm
WHERE: The Environmental Center 16 NW Kansas Ave, Bend
WHO: Laurel Hamilton, Elemental Energy

Going solar in sunny Central Oregon makes sense. Come learn what it takes to get solar on your rooftop, including what makes your home and good fit and the available incentives , and see what it takes to send that power to the blacktop to power your electric car.

WEDNESDAY, SEPTEMBER 27TH

Solar Farm Tour

FOR: Everyone
WHEN: 10:00am (RSVP required, 6 spots available)
WHERE: 21836 Neff Rd
WHO: Eric Prezzi and Amy Birg Pickett, Cypress Creek Renewables;

Almost 14 MW of solar has been installed on 6 acres off of Neff Rd that is now supplying Pacific Power clean, renewable, solar energy. Come learn about the project, take a walking tour, and learn what it takes to develop a solar farm.

Remodeling for Efficiency

FOR: Homeowners, Remodel Contractors
WHEN: 2:00 - 3:30pm (RSVP preferred, refreshments provided)
WHERE: 107 SE Cessna Dr, Bend
WHO: Matt Douglas, Earth Advantage; Louise Palmer, homeowner

This workshop will take you through the steps of a whole house retrofit of a 1971 home by walking through first Earth Advantage remodel project in Central Oregon. Using the motto "build tight, ventilate right," this community demonstration project showcases the products and techniques to make your home healthy and efficient at the same time.

RSVP for required workshops at theenergychallenge.org/RSVP

THURSDAY, SEPTEMBER 28TH

DIY Heat Pump Water Heaters

FOR: Anyone with an electric hot water heater
WHEN: 5:30 - 6:30pm
WHERE: Habitat ReStore
WHO: Neil Baunsgard, The Energy Challenge

Electric water heaters are the second biggest energy user in the house. Heat pump water heaters use 2-3 times less energy. Come learn if your house is a good fit and get the tools and know-how to install one yourself.

ADU Happy Hour

FOR: Homeowners, Builders, Architects, & Realtors
WHEN: 6:00 - 7:30pm
WHERE: Habitat ReStore
WHO: Kol Peterson, Accessory Dwelling Strategies LLC

If you're starting to think about building an ADU, come grab a pint and listen to renowned ADU expert, Kol Peterson, who will be our special guest and will provide a brief introduction to ADUs before turning it over to the audience to answer your burning ADU questions.

FRIDAY, SEPTEMBER 29TH

All About ADUs

FOR: Real Estate, Design, and Building Professions (1.5 CE available)
WHEN: 8:00am - 12:00pm (RSVP required, breakfast provided)
WHERE: McMenamins, 700 NW Bond
WHO: Kol Peterson, Accessory Dwelling Strategies

The number of ADUs being developed in Bend is on the rise thanks to a 2016 measure that makes it easier to build an ADU. Realtors, builders and designers on the cutting edge of this emerging development trend will be able to help homeowners/developers understand site selection, development process, costs of development, and the return on investment of ADUs.

Zero Energy ADU site tour

FOR: Real Estate, Design, and Building Professions
WHEN: 12:00 - 1:30pm (RSVP required)
WHERE: 1234 NW Union St
WHO: Kol Peterson, Accessory Dwelling Strategies

Optional tour proceeding the morning ADU session.

Efficient Market-Rate Housing

FOR: Commercial designers, architects, and builders (1.5 AIA credit available for in-person attendees,)
WHEN: 4:00 - 5:00pm, Building tour: 5–5:30 pm (RSVP required, light refreshments provided)
WHERE: Bellevue Crossing, Clubhouse 488 NE Bellevue Drive

Join Energy Trust New Buildings to discover the benefits of energy efficiency in a market-rate multifamily housing project, Bellevue Crossing. Learn about the design team's methods to achieve efficiency goals, then tour the units to see for yourself!

SATURDAY, SEPTEMBER 30TH - 2017 GREEN TOUR

Fuel Up

FOR: Tour Goers
WHEN: 10:00am - 2:00pm
WHERE: The Environmental Center
WHO: The Energy Challenge staff and sponsors

Pick up a free cup of coffee compliments of Strictly Organic, let us know what you're hoping to learn about and we'll help you plan your route, and free level 2 charging for electric vehicles.

Green Tour Commuting Options

FOR: Everyone
WHEN: Bike tour departs 12:00 for Sites 1 - 3; departs 3:00 for sites 5&7
WHERE: The Environmental Center
WHO: Bend Bikes

Meet your carpool partner at the Fuel Up station before heading out on the Green Tour. Learn how to set up a carpool with DriveLessConnect.org on page 8 or find a new friend to carpool with. Join the biking tour lead by Bend Bikes (details on page 9)

THE ENERGY CHALLENGE WEEK SPONSORS

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Denfeld
Mother's
NorthWest Crossing

Travel Smart on the Green Tour:
Your commuting options

2017 is an exciting year for the tour because we have sites on the tour in Bend, Sisters, Terrebonne, and Sunriver! We want to make it as easy to get to the homes and do so with the smallest impact as possible.

Please consider one of the following options:

- ✓ Invite friends to join you so you can all carpool!
- ✓ Join the bike tour. Guided by Bend Bikes. Details on page 9
- ✓ Post a trip for others to join at DriveLessConnect.org
  - Login or Register for a new account
  - Look for the Green Tour event in the Ride Match
  - Post a trip or look for someone else's carpool. You will find the Green Tour listed in "View Events."
- ✓ Grab a free cup of coffee and meet a new friend to carpool with at The Environmental Center from 10:00 – 2:00 on the morning of the tour.

17th ANNUAL GREEN TOUR

SAT, SEPT 30th 10:00-5:00

ALL EVENTS ARE FREE AND OPEN TO THE PUBLIC

Get Fueled Up

The Environmental Center, 16 NW Kansas Ave, Bend 10:00 – 2:00

Come pick up a free cup of coffee provided by Strictly Organic Coffee Co.

Free Level 2 charging for electric vehicles.

Pick up your Tour Guide. Let us know what you're hoping to learn about and we'll help you plan your route.

Go on Tour

See map on page 16 for home locations or view in Google maps at: TheEnergyChallenge.org/tourmap

Homes open from 10:00 – 5:00

Pick up a passport and visit 5 or more sites to get your free LED bulb and vote for your favorite home on the tour.

Tour by Bike

See TheEnergyChallenge.org/bike for a bike route.

Join the bike tour guided by Bend Bikes: Meet at The Environmental Center at 12:00 to visit sites 1-3 (9.2 miles) or at 2:30 to visit sites 5-7 (11.9 miles). Bend Bikes will show you the safest ways to get there. The second tour will end at the Green Tour After Party.

Go Electric

Site #3 - 19460 Randall Ct:
Take an electric bike from Bend Electric Bikes for a spin!

Site #7 – 1307 NE Hoover Lp:
Take the all-electric 2017 Nissan LEAF for a spin!

Come Party!

Site # 5 – 107 SE Cessna Dr, Bend, 5:30 – 8:00

Join us for the Green Tour After Party and chat with your community about what you were inspired by—maybe you'll even learn some more. Of course, a little beer and food always helps to get the conversation going. We'll be honoring the favorite house of the Tour with the People's Choice Award, so be sure to cast your vote!

FOOD AND BEVERAGE SPONSORS:

GREEN AT A GLANCE

AN OVERVIEW OF THE TOUR HOMES

SITE #	1	2	3	4	5	6	7	8	9
Retrofit projects	✓				✓				
New Construction	✓	✓	✓	✓			✓	✓	✓
Multifamily		✓				✓			
Year built	1973/ 2017	2017	2017	2016	1971	2017	2017	2017	2016
Energy Performance Score	0		91		58		68	69	42.9
Earth Advantage: Platinum (P), Gold (G), Silver(S), Remodel (R), Targeting (*)	P	P*	P*		P		G*	G	
Building Envelope									
Square footage	600	630-900	3053	2362	1404		1888	1214	1850
Wall R-value	30	23	33	28	22		21	23	48
Ceiling R-value	60	58	48	65	45		49	49	60
Floor/ slab R-value	38		38	15	32		38	38	38
Window average U-value	.25	.27	.26	.12	.35		.30	.30	.23
Blower Door Test ACH@50	1.9		2.5		3.1		2.6	4	2
Ducts inside conditioned space	N/A	N/A	✓	N/A	N/A		✓		N/A
Systems									
Photovoltaic (PV) System kW or Solar Ready (SR)	6.4 kW		SR	SR		10MW			3.3 kW
Heating System: High Efficiency (HE), Heat Pump (HP), Ductless Heat Pump (DHP)	DHP	HE	DHP/ HP	DHP	DHP		HE	HP	
Passive Solar Design				✓					✓
High Efficiency (HE), Tankless (T), Solar Thermal (ST), or Heat Pump water heater(HP)	HE	HE	HPWH	HE			T		S
LED Lighting	100%	100%	100%	100%	75%		80%	80%	90%
Designed for Daylighting	✓		✓	✓					✓
ENERGY STAR® Appliances	✓			✓	✓		✓	✓	✓

17th ANNUAL GREEN TOUR

SAT, SEPT 30th
10:00-5:00

SITE #	1	2	3	4	5	6	7	8	9
Indoor Air Quality & Health									
Ventilation System (ERV - Energy Recovery Ventilator or HRV - Heat Recovery Ventilator)	ERV		ERV	HRV	HRV			HRV	HRV
Low/No -VOC products	✓	✓	✓	✓	✓			✓	✓
Hard Surface Flooring	100%		75%	100%	99%			75%	100%
Formaldehyde-free materials	✓	✓			✓				✓
Water Conservation									
Low Flow fixtures	✓	✓	✓	✓	✓		✓	✓	✓
Xeriscaping/No Lawn	✓	✓	✓	✓	✓			✓	✓
Rainwater Retention/Harvesting		✓	✓		✓			✓	✓
Permeable landscaping and pavement					✓				✓
Resource Conservation									
Salvaged / Sustainable Material				✓	✓				✓
Rapidly Renewable Resources			✓	✓	✓				✓
FSC Certified Wood				✓					
Construction Waste Reduction	✓		✓	✓	✓		✓	✓	
Tree and Soil preservation				✓				✓	✓
Community									
Pedestrian friendly	✓	✓			✓			✓	
Promote public transportation	✓	✓			✓				
Infill Development	✓	✓			✓		✓		
Promotes aging in place			✓	✓				✓	

SITE 1 The Powerhouse on Union St

EPS SCORE 0

1234 NW Union St – *New Construction + Energy Retrofit*

Builder: WH Hull Company
Designer/Architect: Allen Design Studio
Home Performance Contractor: Green Savers
Energy Performance Score (EPS): 70
Main home: 504s sq ft, 1 bedroom, 1 bath
ADU: 600 Sq ft, 1 bedroom, 1 bath

Solar Contractor: E2 Solar
Size: 6.4 kW
Modules: 20 LG NeON 320 Watt panels
Inverter: SolarEdge

CERTIFIED BY earth advantage

EPS EnergyPerformanceScore

A Creative Path To Zero Energy for Two Small Homes

The accessory dwelling unit (ADU) on this property is a powerhouse. Literally. The solar panels on the roof of this small one bed, one bath ADU, produce a "net positive" amount of energy. This means that it at the end of the year, this ADU produces enough energy to power itself and the main house!

This project is remarkable in that it preserved the original home on the property that was built in 1926, transforming it into a model of energy efficiency in its own right. The owners worked with Green Savers, a local home performance contractor to complete an energy assessment to see where the home was losing energy and created an action plan to make the home as energy efficient as possible. They air sealed the building envelope to get rid of drafts, added insulation to the ceiling and crawl space, blew insulation into the walls, installed an efficient ductless heat pump to heat and cool the home, installed new windows and upgraded the water heater. Then, they built the new ADU and added solar.

The new ADU was designed to match the style of the original home and is open and bright. Getting to zero energy with the right design is simple: air tight envelope, lots of insulation, and super efficient appliances. One of the biggest energy saving features is the Mitsubishi ductless heat pump that heats and cools the home using 50% less energy than a typical electric heating system.

Make sure to ask about: What is takes to design a zero energy home and how to create an energy savings plan for your existing home.

Miller Lumber

OPEN THE DOOR
TO ENERGY SAVINGS WITH EPS

Experience the beauty of energy efficiency at this year's Central Oregon Green Tour. You'll find homes built for quality, comfort and efficiency, with an EPS™ to prove it. EPS, brought to you by Energy Trust of Oregon, is an energy performance scoring system that gives you an inside look at the energy impact of a newly built home and how much it costs to operate.

With EPS, you can easily compare homes based on efficiency and find those that offer superior comfort and savings. Qualified homes are built to be at least 10 percent more energy efficient than required by current building codes. When you buy a home with an EPS, you know you're getting a higher level of performance.

"EPS homes have better insulation, they're properly sealed, they have highly efficient HVAC systems and windows, so there's improved efficiency and energy-cost savings," says Andrew Shepard, a program manager with Energy Trust. "As a result of these higher efficiency and thermal requirements, EPS homes deliver a high level of comfort. "

The benefits don't stop there. Shepard notes that EPS-rated homes deliver health advantages as well: "Requiring fresh air systems in EPS homes creates a healthier living environment for everyone in the home."

The Central Oregon Green Tour is a great opportunity to learn first hand about the benefits of EPS homes. Here's a closer look at some of the key attributes you'll find when you step inside an EPS home on this year's tour:

1. An energy score that includes estimated utility costs, so you know what to expect before you buy.

2. Energy-saving lighting solutions and efficient built-in appliances such as dishwashers and water heaters.

3. High-performance windows that help to deflect heat in the summer and retain it in the winter, with well-sealed window frames that make for a quieter home.

4. Special framing techniques that allow for extra insulation join forces with energy-efficient heating and cooling equipment to enhance comfort, improve indoor air quality and lower utility bills.

5. Tight construction helps prevent unwanted pollutants and drafts. Plus, mechanical ventilation systems bring fresh air into the home for healthier indoor air quality.

Be sure to ask about EPS as you explore the featured tour homes, and remember to bring it up with your builder or real estate professional as your home search continues. An EPS home can save you money and energy for years to come. Pick up a Smart Homebuyer Checklist on the tour to get the conversation started, and learn more about EPS at: **www.energytrust.org/smarthomebuyer.**

SITE 2 Range Apartments

3001 NW Clearwater Dr – *New Construction*

Developer: project^
Builder: Walsh Construction
Designer: Lever Architecture
6 floor plans, 630 – 900 sq ft

CERTIFIED BY earth advantage.

Modern design meets walkability in NW Crossing

Good looks. Smart design. Open floor plans. Light-filled spaces. It's everything a homes need to be–in less than 1,000 square feet. Welcome to the Range Apartments in the heart of Northwest Crossing.

These apartments were designed to offer wide-open living. Each unit has oversized windows and an outdoor deck to naturally daylight the home and let the outside in. A high efficiency heating and cooling system, paired with programmable thermostats, and a high efficiency water heater, allow residents to take control of their utility costs and keep their cost of living much lower. Each unit's electricity consumption is individually metered which encourages and rewards energy conservation.

The spacious clubhouse, open to all residents, is great for community functions and events. Residents are invited to gather here and use the community firepit, grill, and hot tub. By centralizing these resources, residents can comfortably live in a smaller footprint while still having all the amenities of a much larger home.

You would never know that this site, soon to be home to 132 units, was once a pumice mine. Just blocks from the central hub of Northwest Crossing, these apartments have restaurants, shops, and services within walking or biking distance. With Discovery Park just across the street and complete sidewalks and bike paths to connect to trails, new adventures await at each unit's doorstep.

Make sure to ask about: The estimated utility bills for these apartments and the other amenities on site.

SITE 3 Dream Home Building Showcase Home

EPS SCORE 91

19460 Randall Ct., Bend, OR – *New Construction*

Builder: Dream Home Building and Design
Designer/Architect: Mount Bachelor Design Studio
For Sale: 4 Bedrooms, 3 Bathrooms, 3,053 sq ft

CERTIFIED BY earth advantage

EPS EnergyPerformanceScore

Intentional design for comfort and health

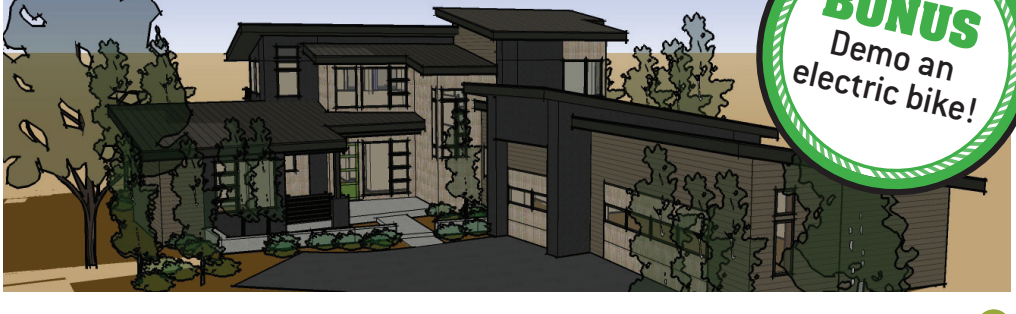
This contemporary, high-performance home reflects modern styling with clean lines and shed roofs. An unobstructed southern access is optimized for natural light and passive solar heating. The roof was also designed to be solar ready. This means that it is positioned for optimum efficiency for solar electric panels when they are added at a later date.

The home envelope incorporates the best practices in building science with additional insulation, a complete thermal break, and fully vented rainscreen. Since the envelope of this home is so tight, (this is what you want – no heated or cooled air being lost!) fresh air needs to be brought into the home through mechanical ventilation.

A Lifebreath energy recovery ventilator offers mechanical ventilation and brings in fresh outside air and exchanges the energy from the heated or cooled air that is leaving the home. This gives the home superior and controlled indoor air quality, without compromising the efficiency of the HVAC system. The home is heated and cooled with an efficient Mitsubishi ducted mini split system, providing year-round comfort and multi zone control.

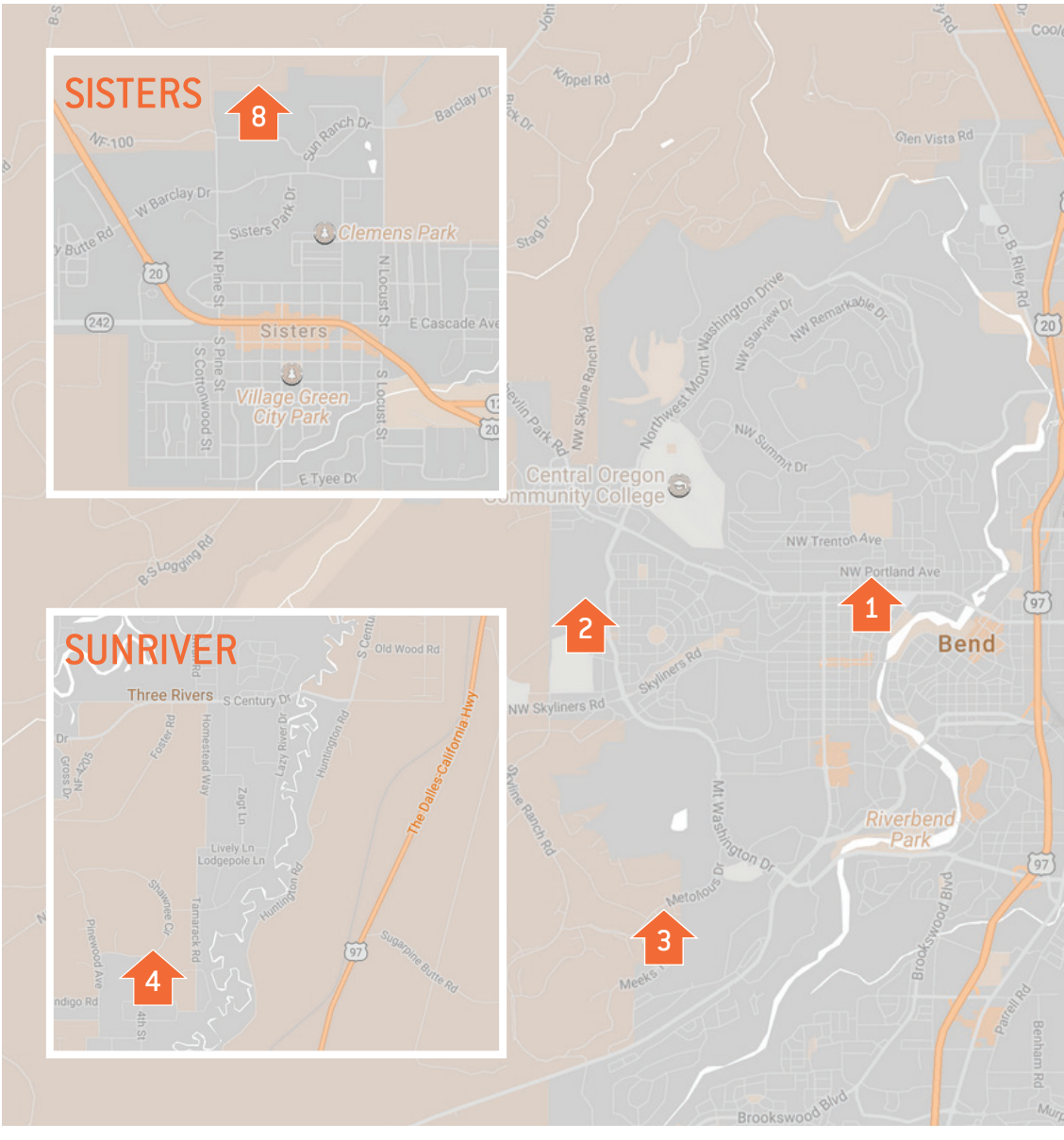
The home design also carefully incorporates the ability to age in place with the master suite and all primary functions on the main level. A private second suite on the main level allows for a home office, guest room, or live-in care. An oversize garage supplies lots of storage space outside of the conditioned space of the home, reducing the square footage that needs to be heated.

Make sure to ask about: The ducted mini split system, Dream Home's unique wall systems, and what it takes to design a solar ready home.



17th ANNUAL GREEN TOUR

PRESENTING 9 SITES PACKED WITH GREEN AND SOLAR FEATURES



Fuel up for your journey

The Environmental Center
230 NE 6th St 10:00am – 4:00pm

- Free coffee from Strictly Organic
- Free Level 2 charging for EVs
- 12:00 – Meet to tour sites 1 – 3 by bike (9 miles)
- 3:00 – Meet to tour sites 5 & 7 by bike (6 miles)

SITE 1: **The Powerhouse**
1234 NW Union St., Bend

SITE 2: **Range Apartments**
3001 NW Clearwater Dr., Bend

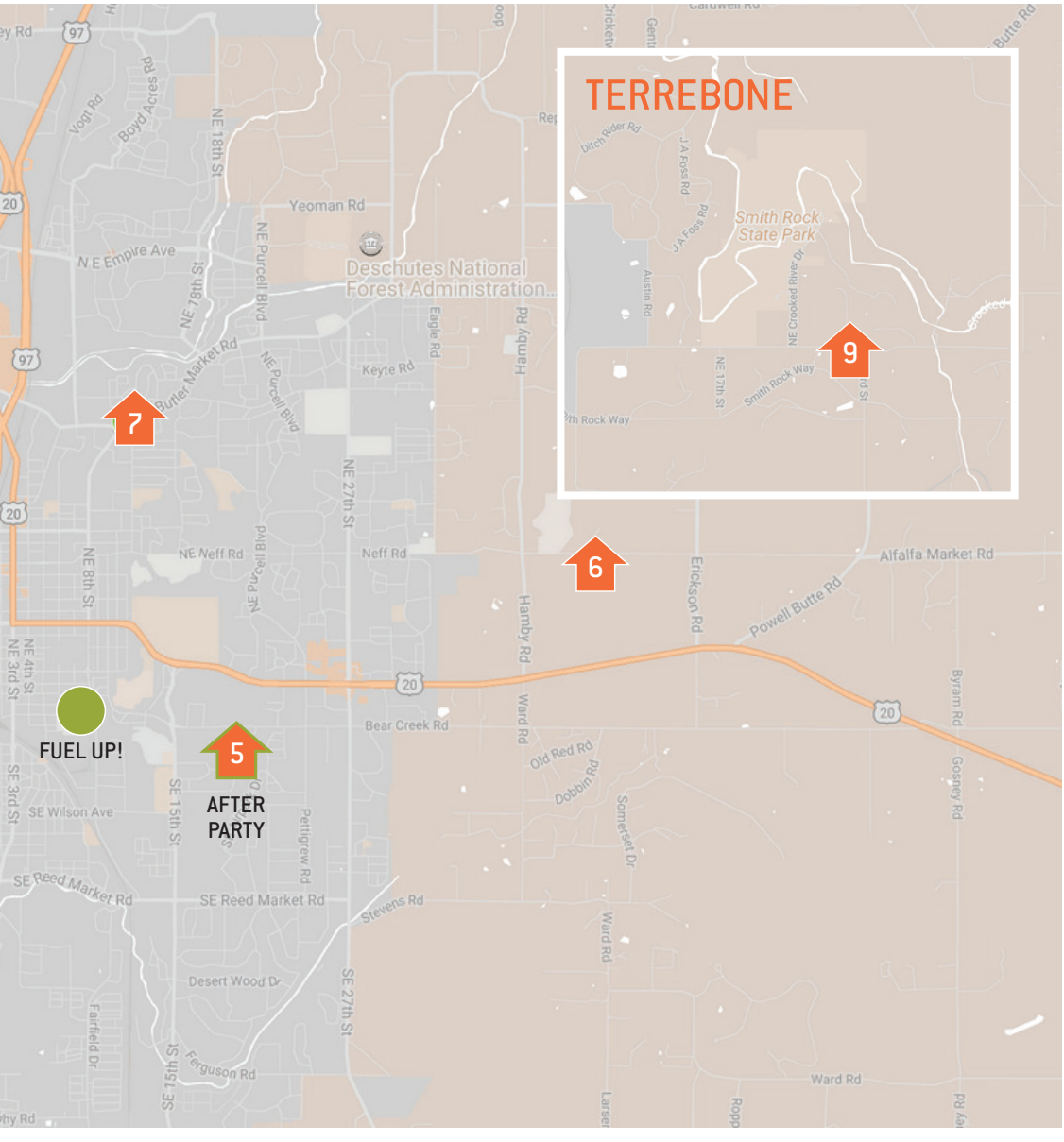
SITE 3: **Dream Home Building and Design**
19460 Randall Ct., Bend
Test ride an electric bike

SITE 4: **The Worden Residence**
54830 Wolf Street, Sunriver

SITE 5: **Earth Advantage Remodel**
107 SE Cessna Dr., Bend

SAT, SEPT 30th 10:00-5:00

TheEnergyChallenge.org/tour



SITE 6: **Cypress Creek Solar Farm**
21836 Neff Road, Bend

SITE 7: **Jones FarmBend**
1307 NE Hoover Lp
Test drive an electric car

SITE 8: **Cottages at ClearPineSite**
1098 N Wildflower Ln., Sisters

SITE 9: **The Ormond Residence**
3000 Wilcox Ave., Terrebonne

Green Tour After Party and People's Choice Award

Palmer Residence (SITE 5)
104 SE Cessna Dr, Bend
5:30pm – 8:00pm

Efficient Heating and Cooling with Ductless Heat Pumps

If you're heating your home with electricity, or are considering an addition or remodel, a ductless, a ductless heat pump is one of the most efficient ways that you can heat and cool your home.

They can reduce your electric heating costs by up to 50% while keeping you comfortable all year long.

A ductless heat pump is a highly efficient heating and cooling system that uses heat pump technology. They pull residual heat from the air and move it through refrigerant lines. This is one of the reasons that ductless heat pumps are so efficient. Rather than moving air (and then potentially losing that conditioned air through leaky ducts), they move refrigerant, which is then used to create conditioned air at the point of distribution.

When they are in air conditioning mode, they operate just like your refrigerator, and pull the heat from inside your house and move it outside.

Ductless heat pumps are great for homes that are already heated with electricity (especially if you are looking at adding air conditioning). Since they are so efficient, you will also find them in a lot of new homes.

Go ductless and you'll get:

ENERGY AND MONEY SAVINGS EVERY MONTH
Ductless systems use 25%–50% less energy to heat homes.

COMFORT AND CONTROL
Ductless systems give you more control over your home's temperature and eliminate hot and cold spots with even, balanced heating.

AIR CONDITIONING COMES STANDARD
No need to install an additional cooling component.

UTILITY REBATES AND TAX CREDITS
Going ductless is simple and affordable with potential utility rebates and tax credits available for qualified units.

LOW-COST, EASY INSTALLATION
Installation is quick, simple and inexpensive, which means little or no disruption to your home.

See ductless heat pumps in action at sites: 1, 3, 4, 5.

SITE 4 Worden Residence

54830 Wolf Street, Sunriver, OR – *New Construction*

Builder/Contractor: Homeowner
Designer: Owner/ Garland Engineering/Szabo Landscape Architecture
2 Bedrooms, 2 Bathrooms, 2,362 sq ft

Efficient, Contemporary, Comfortable Forest Living

When designing this home, the owners had a clear set of priorities. The home must be affordable, then efficient, sustainable, and architecturally pleasing.

This home has 5 inch slab on grade with an insulated foundation which prevents heat loss from the edges of the slab. This slab also serves as a heat sink during colder months. When the sun gets lower in the sky (and the temperatures drop), the sun strategically starts to creep through the windows, heating up the concrete slab. Even with concrete floors, the owners say that bare feet are comfortable through the winter.

3.5-foot eaves ensure the sun does not hit the southern wall of the house between June and September, which helps to keep the home cool. The dual zoned ductless heat pump rarely gets used– for heating or cooling. This home uses 7,552 kWh per year and they are expecting to spend $42/month (or $500/ year) for all of their utilities combined.

On the east, west, and north sides of the house, quadruple paned windows compliment the advanced framing and high levels of insulation, completing a well designed and super efficient building envelope. The windows on the south side of the house have a higher SHGC value to allow sunlight to heat up the home in the winter months. In the evening, shades are lowered to increase the insulative value.

The appliances in this home are also super-efficient. The Haiku ceiling fans are 12 times more efficient than Energy Star standards. A heat pump dryer cuts the amount energy needed for a typical electric dryer in half. In the kitchen, a convection cook top saves energy by delivering shorter cook times and precise cooking temperatures so no heat is lost to the surrounding environment.

Make sure to ask about: How the homeowners did their own passive solar analysis, how they preheat their water with a tempering tank, and their creative use of upcycled materials (check out the dining room table!).

SITE 5 Earth Advantage Remodel

EPS SCORE 58

107 SE Cessna Rd, Bend – *Energy Retrofit and Remodel*

Owner: Louise Palmer
Studio: 1 bedroom, 1 bath
Main Home: 1404 Sq Ft, 2 bedrooms, 1 bath

A ranch home's tune up for efficiency and health

This home is a community demonstration project to showcase healthy homes and will be the first Earth Advantage certified Remodeled home in Central Oregon. The home has been retrofitted from 1971 code to 2020 standards which are much more stringent than our current building codes.

When retrofitting this home, the owner's motto was "Build Tight, Ventilate Right." This means that she made sure the shell of the house had as few leaks as possible and then calculated ventilation based on how much fresh air flow was needed. The air leakage was decreased from 17 air changes per hour (ACH) to 3.1 ACH which makes for a much less drafty house and a much healthier home!

Now that the house was tight she needed to ventilate right! It has a heat recovery ventilator which efficiently supplies fresh air that is preheated from heat harvested from the exhaust air. Indoor air quality is also improved by the use of non-VOC paints and low VOC stains and sealants. The new flooring in the home is formaldehyde-free.

In an effort to make this home as energy efficient as possible, electric baseboard heat was replaced by a ductless heat pump which will reduce heating costs by as much as 50%. The walls and floor were brought up to R 22 and 31.5, respectively. The garage was also converted to a studio and the walls were increased from a 4 inch cavity to 6 inches in order to allow for more insulation.

In order to address drainage problems around the foundation and walkway, the cement walkway removed and will be replaced with gravel. The cement from the walkway was used as pavers to build the patio. Throughout the remodel process all usable materials were salvaged.

Make sure to ask about: The newly planted native plant landscape and butterfly garden and the wiring and plumbing hurdles Louise overcame to get this project started.

SITE 6 Neff Road Solar Farm

RSVP Since this site is so large, tours will leave at the top of the hour and will take 30 – 45 minutes. Space on each tour is limited so RSVP to reserve your space. Please wear closed toed shoes. **TheEnergyChallenge.org/rsvp.**

21836 Neff Rd

Owner: NorWest Energy 7, LLC (Neff Solar Farm)
Developer: Cypress Creek Renewables

Locally generated renewable energy

Homegrown renewable energy is expanding in Central Oregon and rightfully so. We have some of the best solar potential in the US. This is an opportunity to visit one of these sites and get behind the scenes. Local Cypress Creek Renewables staff will be there to discuss the development process, the energy generation, give you a tour, and answer any questions you may have about utility-scale solar projects.

This 10 MW solar project covers 62 acres on Neff Road and just east of Big Sky Park. It produces enough energy to power 3,000homes. The power that is generated is sold to Pacific Power. With 67% of Pacific Power's current energy mix coming from coal, this is a really big and important step in the direction to creating a clean energy future here in Central Oregon.

Cypress Creek Renewables has been working on this project for 3 years and developed it from the ground up. During construction about 200 local Oregonians worked on the projects as electricians and civil contractors.

The project incorporates native landscaping and revegetation around the exterior and interior fence lines. Local plant specialists conducted site analysis to determine the appropriate native seed mixture and planting techniques for the project. Wax current and Sagebrush, grown by commercial grower in Redmond, was planted.

SITE 7 Jones Farm

EPS SCORE 68

1307 NE Hoover Lp, Bend – *New Construction*

Builder: Stone Bridge Homes NW
Designer: Stone Bridge Homes NW
For Sale: 1,888 ft, 3 bedroom, 2 bath
Earth Advantage Certification: Targeting

CERTIFIED BY earth advantage

EPS EnergyPerformanceScore

Midtown convenience meets affordable efficiency

The Jones Farm community, located just off of NE Jones Rd, offers walkability, convenience, and nearby access to Hollinshead Park. All schools, elementary through high school are less than 1.5 miles away.

There is a lot more to this contemporary farmhouse than just curb appeal. With a price point similar to many homes on the east side, this home offers efficiency features that will help its occupants save on monthly utility costs for decades to come – showing that the average homebuyer doesn't have to sacrifice efficiency for affordability. This homes uses 44% less energy than a similar sized home in Oregon with estimated utility bills for the entire year coming in around $1,000.

Energy efficiency features include above code insulation, air sealing, high performance windows, ENERGY STAR appliances, an efficient gas furnace, and 88% LED lighting. A tankless water heater, sometimes called on-demand water heaters, produces hot water only when it is needed which prevents energy loss associated with storing hot water in a standing tank. All this helps the home gain an Energy Performance Score from Energy Trust of Oregon and an Earth Advantage Gold certification. Both of these programs ensure that the home is built above and beyond code.

Make sure to ask about: How to easily charge your electric car in the garage and how easy it is to get to the closest brewery (it's a closer bike ride than you might think!).

A Hot Deal

on Heat Pump Water Heaters

A heat pump water heater is a smart upgrade from your standard electric water heater. It delivers the same reliable supply of hot water while saving up to 60% on your water heating costs. And that means you'll be saving money for many years to come.

How It Works

A standard electric water heater uses more energy than a refrigerator, dishwasher, clothes washer and dryer combined. A heat pump water heater uses electricity differently — moving heat rather than generating it, so you use 2-to-3 times less energy, and save more money.

Save Money

Compared to a standard electric water heater, a heat pump water heater uses 60% less energy. That can save you up to 10% on your energy bill — about $3,500 over the life of the water heater.

Get More Control

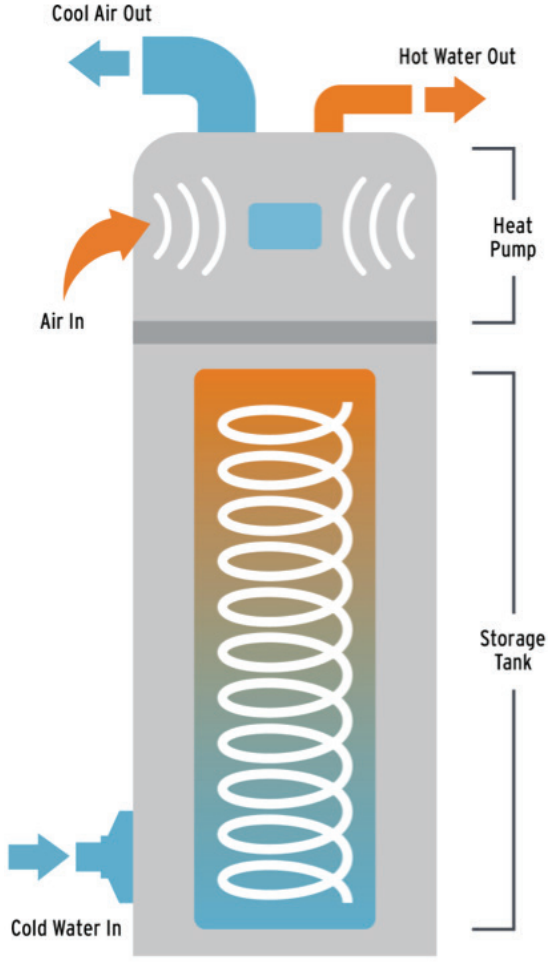
You can select a specific water temperature, choose different operating modes depending on demand, even set it to "vacation" when you're gone.

Be More Efficient

Heat pump water heaters are designed to be energy efficient and good for the planet. By cutting electricity use by up to 60%, a heat pump water heater has a direct effect on reducing greenhouse gas emissions.

How Much Do They Cost?

Top of the line 50-gallon units start at $699 and all sizes qualify for an additional 50% state tax credit! Learn more about this HOT deal at TheEnergyChallenge.org/HPWH



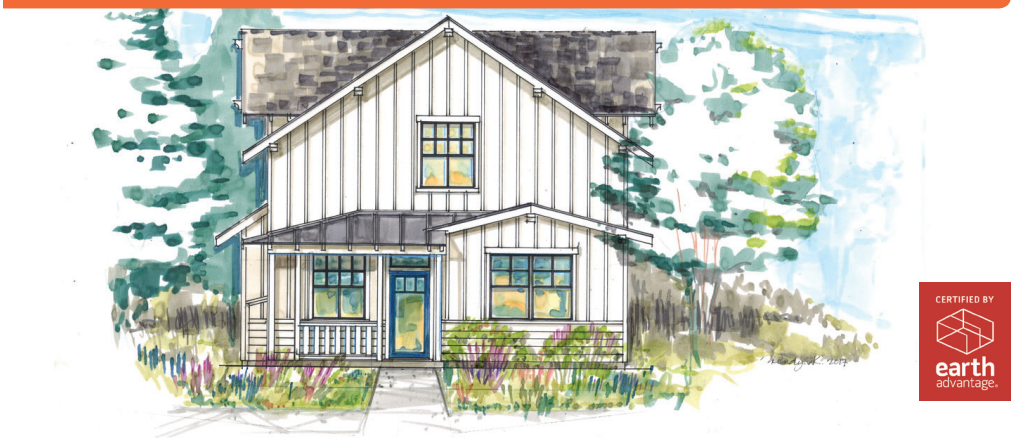
How Good of a Deal?

Top of the line 50-gallon units start at $699 which is already $600 off due to upstream incentives! There are even more ways to save that can add up to an even better deal:

- Oregon state tax credit covers 50% (up to $600) Hurry up because this expires at the end of 2017
- Central Electric Cooperative Customers may also be eligible for an additional $500 rebate!!
- **Learn more about this HOT deal at TheEnergyChallenge.org/HPWH**

SITE 8 Cottages at ClearPine

EPS SCORE 69



CERTIFIED BY earth advantage

1098 N. Wildflower Lane, Sisters – *New Construction*

Developer: Peter Hall, 3 Sisters Partners LLC
Builder: Simplicity Homes
Designer: Katherine Austin

4 floor plans, 1004 to 1162 sq ft, 9 total cottages
Tour Model: 1161 sq ft 2 story
Earth Advantage Certification: Gold

An innovative cottage development

60 years ago, the doors were shuttered on a 50-year old lumber mill on this site. After a fire, brown-field site designation, a long abandonment, and eventual remediation, it is now home to the ClearPine community. Nestled in this community is a cluster of 9 simple farmhouse style cottages built around a common area and community garden. They are within easy walking distance to all necessary services in downtown Sisters and the development will soon be home to a 1 acre community park.

The small cottages, ranging in size from 1004 sq. ft. to 1214 sq. ft, were a conscious decision to create right-sized homes to meet a need for greater affordability and use less land and building materials. All homes have a master downstairs to address the needs of those looking to age in place. The two story homes have 2 masters allowing for flexibility and potential for multiple generations to live together. Small spaces are as flexible as possible for multiple uses.

Each home will be Earth Advantage certified which means that they will be 20% more efficient than code. Energy Star appliances are used and heat pumps provide efficient heating and cooling. Since hot water can account for up to 20% of a home's energy use, water runs are central and short, decreasing hot water waste. Water Sense faucets and toilets are used, furthering decreasing energy and water demands. Low VOC interior paints and sealants and hard surfaced floors in high trafficked areas help to improve the indoor air quality of the home and a heat recovery ventilator provides fresh air.

Make sure to ask about: Their tree preservation plan and habitat restoration partnership with Upper Deschutes Watershed Council and how the development team worked with City of Sisters to re-write their cottage code.

Improving Indoor Air Quality:
Creating a truly healthy home .

Conversations about indoor air quality have long been part of building an energy efficient home. Now, increasing concerns around mold, radon, carbon monoxide, other allergens, and wild fire smoke are driving more attention to indoor air quality.

One way to improve indoor air quality is to build an airtight shell which will reduce how outside contaminants enter your home. This is a must when building an efficient home and ensures all the cracks and crevices for outside air, or even pests, to get into your home are sealed up.

Mechanical Ventilation

When a home is tightly sealed, it is important that occupants still have access to fresh air. This is where energy recovery ventilators (ERV) or heat recovery ventilators (HRV) come in. They bring fresh air into the home and reduce the need to heat or cool the incoming air.

HRVs and ERVs move incoming and outgoing air through a heat exchanger and recover the energy from the air leaving the home. When it is cold outside, they exchange the heat from the warm air leaving the house, to the cold incoming air. When it's hot outside the fresh incoming hot air, exchanges heat to the cold air leaving the home. An ERV also exchanges humidity.

Check out sites 1, 3, 4, 5, 8, and 9 to see an ERV or HRV in action.

Existing homes can also get an air quality upgrade.

Air sealing the envelope of a house is a common energy retrofit practice that will also help to improve indoor air quality. In some cases, if tests show that home has been made tight enough, mechanical ventilation will be recommended. During an energy assessment, contractors will also perform radon and carbon monoxide tests and check combustion appliances.

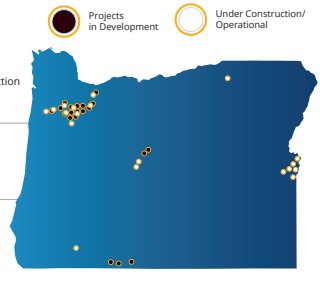
Check out site #5 for a home energy retrofit with an ERV

CYPRESS CREEK RENEWABLES

Oregon
Investing in Solar for Energy Independence

Projects under development represent $352.8M of investment and create 454 local construction jobs in Oregon.

Number of Projects[1]: 19	MW (Megawatts): 271.4	Total Investment: $352.8M	Local Spending During Construction: $178.8M
Local Annual Spending During Operational Period: $43.2M	Total Jobs Created During Construction and Installation[4]: 2,583	Local Construction and Installation Jobs[3]: 454	Local Maintenance Jobs (FTE)[3]: 22
Total Construction Wages: $29.4M	Tons of Domestic Steel Procured[5]: 6,214	Number of Homes Powered[2]: 74,634	



Achieved Local Investment – Projects Under Construction and Operational

Number of Projects[1]	MW (Megawatts)	Total Investment	Local Spending During Construction	Local Annual Spending During Operational Period	Total Jobs During Construction and Installation (FTE)[4]	Local Construction and Installation Jobs (FTE)[3]	Local Maintenance Jobs (FTE)[3]	Total Construction Wages	Tons of Domestic Steel Procured[5]	Number of Homes Powered[2]
20	147.2	$191.3M	$100.7M	$23.5M	1,445	236	13	$15.3M	1,416	43,848

Estimated projected investment is for projects under site control. Numbers are based on estimates by the National Renewable Energy Laboratory's Jobs and Economic Development Impact model

[1]Projects owned or contracted for development/EPC services [2]Average household electricity consumption based on the Environmental Protection Agency's eGRID database
[3]Provided local, qualified labor is available [4]Direct, indirect, and induced jobs [5]Pricing and Quantity from RBI Racking Manufacturer

SITE 9 Ormond Residence

EPS SCORE 43

3000 Wilcox Ave NE, Terrebonne – *New Construction*

Builder: WH Hull Company
Designer: Schechter Architect, LLC
Homeowners: Madeleine and Bob Ormond
1,850 sq ft, 2 bedroom, 2 bath

Solar Contractor: E2 Solar
Size: 4.2 kW
Modules: 14 SolarWord 300 Watt panels

A modern straw bale home

Despite being made out of straw, if you huff and you puff, you won't be able to blow this house down. This home has an extremely durable straw bale exterior. That means that thick straw bales provide the wall insulation for this home.

Why straw bales? They offer high insulation, and are often readily available as an agricultural waste product. They are an all-natural building material that has a low embodied energy and are rapidly renewable.

Lime plaster, made with local sand coats the entire house so there is no painting required which is great for indoor air quality and allows air to pass through it. The homeowners were very hands-on with this project and participated in the straw bale construction and stucco finishing.

The house layout is classic passive solar—primary daytime activity spaces are located on the south and east to provide optimum passive solar heating and daylighting from the sun during the day. A 24" roof overhang ensures optimum summer shading. When the sun is low in the sky in the winter, direct sunlight shines through the windows, passively heating the home with heat from the sun. Thick Mexican clay floor tiles serve as a thermal mass in the Great Room and help to soak up heat in the winter. A small back-up pellet stove will provide back up heat on overcast days.

Solar electric panels are located directly above the main portion of the house on the unshaded south facing roof, with space for future array expansion. A heat recovery ventilator (HRV) maintains fresh indoor air quality. An HRV transfers heat from the air leaving and entering the house to pre-heat incoming outside air in the winter and pre-cool air in the summer which helps to save a lot of energy.

Make sure to ask about: How the orientation of this homes helps it save energy and what the Ormond's favorite things are about living in a straw bale home.

GREEN BUILDING DIRECTORY

ENERGY EFFICIENCY AND HOME PERFORMANCE

Bend Heating

Phone: 541.382.1231
Contact: Randall Marchington
Email: info@bendheating.com
Web: **bendheating.com**

Founded in 1953, Bend Heating & Sheet Metal is the oldest air conditioning and heating company in Central OR. We get the job done right no matter what. Your HVAC system is one of the biggest home investments you'll make so we help you choose wisely with our top-quality products.

Central Electric Cooperative

Phone: 541.312.7742
Contact: Ryan Davies
Email: rdavies@cec.coop
Web: **cec.coop**

Central Electric Cooperative serves over 31,000 accounts in Central Oregon. CEC has 9 programs specific to residential energy efficiency, including low income and no-cost offerings. We promote, educate and assist our members in meeting their energy efficiency goals and saving kilowatt-hours.

Earth Advantage

Phone: 503.968.7160 ext. 46
Contact: Matt Douglas
Email: mdouglas@earthadvantage.org
Web: **earthadvantage.org**

Earth Advantage is a nonprofit who accelerates the creation of better buildings. We provide knowledge to building professionals and information to consumers through certification, research, education, and product development to move the building industry towards more sustainable practices.

Energy Trust of Oregon

Phone: 1.866.368.7878
Email: info@energytrust.org
Web: **energytrust.org**

Energy Trust of Oregon is an independent nonprofit organization dedicated to providing utility customers with low-cost, clean energy solutions. Our on-the-ground outreach, technical services, cash-back incentives and connections to local contractors have helped participating customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista save $2.7 billion on their energy bills, so far. Our work helps keep energy costs as low as possible, and accelerates economic and environmental benefits throughout Oregon.

GreenSavers

Phone: 541.330.8767
Contact: Sara Holman
Email: sara.holman@greensaversusa.com
Web: **greensaversusa.com**

GreenSavers takes a whole-home approach to find and fix issues concerning comfort, safety, and energy efficiency while offering great service and a fair price. We do the work in-house from HVAC systems, insulation, and windows to helping clients file incentive and tax credit paperwork.

Mitsubishi Electric

Phone: 360.450.1407
Contact: David James
Email: info@mtviewheating.com
Web: **mitsubishicomfort.com**

Mitsubishi Electric is a leading marketer of air-conditioning and heating technology. In 1982, Mitsubishi Electric introduced its state-of-the-art, ductless air conditioners and heat pumps in America and later expanded its product line with VRF zoning heat pumps using INVERTER technology.

Mountain View Heating

Phone: 541.389.6714
Email: info@mtviewheating.com
Web: **mtviewheating.com**

Mountain View Heating strives for 100% customer satisfaction. We have served Central OR's residential and commercial comfort needs for over 35 years and back those products with trained and certified technicians to ensure safety, comfort, and energy savings.

Neil Kelly

Phone: 541.382.7580
Contact: Steve Coughran
Email: Steve.Coughran@neilkelly.com
Web: **neilkellyenergy.com**

Neil Kelly Company, a certified B corporation, is an innovative design-build remodeling firm with locations in Portland, Lake Oswego, Eugene, Bend and Seattle. Services include award-winning design-build remodeling, custom homes, energy upgrades, solar energy systems, and home repairs big and small.

Oregon Department of Energy

Phone: 800.221.8035
Email: askenergy@oregon.gov
Web: **oregon.gov/energy**

The Oregon Department of Energy is helping shape Oregon's energy future. ODOE is dedicated to keeping Oregon on the leading edge of renewable energy and energy efficiency while supporting innovation, investment, and resilience.

GREEN BUILDING DIRECTORY

TRANSPORTATION

Bend Electric Bikes

Phone: 541.410.7408
Contact: Courtney Van Fossan
Email: courtney@bendelectricbikes.com
Web: **bendelectricbikes.com**

Since 2008, BEB has been selling, repairing and converting electric and cargo bikes that help locals get around town. Whether you ride for fun, as your primary mode of transportation, or for the planet, Bend Electric Bikes can help you learn more about what's possible with an e-bike.

Smolich Nissan

Phone: 541.389.1178
Contact: Jason Bradley
Email: jbradley@smolichmotors.com
Web: **smolichnissan.com**

Smolich Nissan is a family owned business and has been serving the Bend community since 1968. We feature best in class fuel efficiency vehicles and the 100% Electric Nissan LEAF Plug in.

Forth Mobility

Phone: 503.724.8670
Contact: Zach Henkin
Email: zachh@forthmobility.org
Web: **forthmobility.org**

Forth is a nonprofit that works to advance electric, smart, and shared transportation in the Pacific Northwest and beyond through innovation and industry development; demonstration and pilot projects; policy advocacy; and consumer engagement.

SOLAR

Cypress Creek Renewables

Phone: 503.447.3142
Contact: Amy Bert Picket
Email: bend@ccrenew.com
Web: **ccrenew.com**

Cypress Creek Renewables is a national provider of solar with over 5 gigawatts of local solar farms deployed or in development. We partner with communities and utilities to provide access to clean energy at or below market costs.

Elemental Energy

Phone: 541.316.5786
Contact: Laurel Hamilton
Email: info@elementalenergy.net
Web: **elementalenergy.net**

Elemental Energy specializes in creative, high quality beautiful solutions to your energy needs. Locally owned and operated, we design, install, and service solar electric systems for businesses, homes, and mobile units throughout the state of OR and abroad.

Neil Kelly

Phone: 541.382.7580
Contact: Steve Coughran
Email: Steve.Coughran@neilkelly.com
Web: **neilkellyenergy.com**

See previous listing in Energy Efficiency and Home Performance. Services include award-winning design-build remodeling, custom homes, energy upgrades, solar energy systems, and home repairs big and small.

Sunlight Solar

Phone: 541 322-1910 ext. 306
Contact: Kelly Riley
Email: Kelly.Riley@sunlightsolar.com
Web: **sunlightsolar.com**

With over 25 years of solar installation experience, and as one of Oregon's oldest, grid-tied solar installers, we bring you high quality turn-key installations. We have homegrown roots right in OR and take pride in supporting our communities.

INTERIOR & MATERIALS

Denfeld Miller Paint

Phone: 541.382.4171
Email: bend@millerpaint.com
Web: **millerpaint.com**

Denfeld Miller Paints, stirring up the perfect colors for you since 1975, is a full service, employee-owned and operated business with 3 convenient locations in the Bend/Redmond area. We are staffed with trained professionals to help make your next painting project a success.

Miller Lumber

Phone: 541.382.4301
Web: **mlumber.com**

The Miller Lumber Company, supplying lumber and building materials to all of Central Oregon since 1911.

Solar Light Inc.

Phone: 541.306.4141
Contact: Brenan, Melody, and Ann
Email: Ann@solarlight.me
Web: **solarlight.me**

Locally owned & operated with over 11 years of bringing light to Central Oregon homes & businesses with Solatube Tubular Skylights. Also offering Solar Star Attic Fans & Solatube whole house fans.

DESIGNERS AND BUILDINGS

Dream Home Building and Design

Phone: 541.788.7851
Contact: Peter Grube
Email: peter@dreamhomebend.com
Web: **dreamhomebuildinganddesign.com**

Design, Craftsmanship, Performance. Offering unique in-house design and build services with expertise in superior home performance, Dream Home visualizes homes from plan to completion, ensuring your custom home reflects all of your personality and values.

Northwest Crossing

Phone: 541.312.6473
Contact: Valerie Yost
Email: valerie@brooksresources.com
Web: **brooksresources.com**

NorthWest Crossing is an award-winning, mixed-use community on Bend's westside with mature trees, wide sidewalks, beautiful parks, connectivity and streetscapes filled with character. The neighborhood offers dining, shopping and hosts the Saturday Farmers Market during the summer.

Stemach Design + Architecture

Phone: 541.647.5661
Contact: Stacey or Rachel Stemach
Email: stacey@stemachdesign.com; rachel@stemachdesign.com;
Web: **stemachdesign.com**

Stemach Design implements thoughtful, innovative design based on the core values of economic, environmental and equitable sustainability. We are dedicated to projects embodying careful, coordinated designs that have positive impacts on each project's surroundings.

GREEN REALTORS

Mike Tucker

Phone: 503.939.6155
Contact: Mike Tucker
Email: mike@highdesertdwelling.com
Web: **highdesertdwelling.com**
Agency: Windermere Real Estate

I specialize in GREEN real estate, home technology, great design and unique spaces. I delight in helping my clients find value and those hard to find special homes.

Certifications: GREEN; Energy Trust of Oregon Trade Ally.

GLOSSARY

Accessory Dwelling Unit (ADU) A secondary house or apartment with its own kitchen, living area and separate entrance that shares the lot of the primary, larger house.

Advanced framing Technique that significantly reduces the amount of material used to frame a building. Includes strategies such as studs placed 24 inches on center; fully insulated corners; insulated headers; engineered wood products; and roof or floor trusses

Annual Fuel Utilization Efficiency (AFUE) Widely-used measure of the fuel efficiency of a heating system. Furnaces sold in the United States must have a minimum AFUE of 78%. High ratings indicate more efficient equipment.

Air Changes per Hour (ACH) The total volume of air in a space that is exchanged over in hour.

Blackwater Household wastewater containing human waste and waste from a dishwasher.

Blower Door Test Used to measure air tightness and identify areas of air infiltration in a home. This multi-part system uses a large fan that fits in your door frame to create negative pressure and pull air through your home.

Building envelope A building's shell, including exterior walls, windows, doors, roof and the bottom floor.

Conditioned space An enclosed space supplied with conditioned air from a heating and/or cooling system.

Daylighting Utilizing light from the sun to help illuminate a room.

Double-glazed window A window with two panes of glass separated by an air space. Compared to single-glazed windows, double-glazed windows significantly reduce heat and sound transmission.

Ductless Heat Pump An efficient heating and cooling system that doesn't require any ductwork. Also called " mini-splits" these systems have an outside heat pump with 1 or more inside units, or heads, that can be located throughout the house. **See Page 18.**

Energy Recovery Ventilator (ERV) A ventilator that recovers energy from the exhaust airstream and transfers it to the incoming airstream. Heat is transferred from the warmer to the cooler airstream and moisture is transferred from the wetter to the dryer airstream. **See Page 25.**

ENERGY STAR® A program sponsored jointly by the U.S. Environmental Protection Agency and the U.S. Department of Energy that promotes energy-efficient products, homes and technologies for consumers and businesses. Products and new homes are ten to thirty percent more efficient than their conventional counterparts.

EnergyGuide label A yellow sticker required by U.S. law on common new household appliances. The label provides information on the amount of energy the appliance will use in one year.

Energy Performance Score EPS ™, brought to you by Energy Trust of Oregon, is an energy performance score that helps you assess a home's energy consumption, energy costs and carbon footprint.

FSC Certified Wood Forest Stewardship Council certification tells whether a wood product is from a forest that is sustainably managed, including protecting fragile ecosystems, preventing illegal logging, and restricting clear-cutting.

Graywater Household wastewater that doesn't contain sewage and can be reused for toilet flushing. Graywater typically comes from showers, lavatories, and clothes washing machines.

Heat gain Heat from the sun, people, electric lights or appliances that causes the temperature in a space to rise.

Heat island effect The tendency of large areas of roofs, asphalt, concrete and paved surfaces to absorb the heat, making urban areas considerably hotter than nearby rural areas.

Heat pump water heater A tanked water heater that uses 60% less energy than an electric hot water heater by using a heat pump to move heat from the surrounding air into the tank. **See page 23.**

Indoor air quality The level of air pollutants inside a building. Indoor air pollution sources include certain building materials and furnishings; certain cleaning and personal care products; dust mites; pet dander; mold; radon; pesticides; and outdoor air pollution. Inadequate ventilation and high humidity levels can also contribute to indoor air quality problems.

Infill development Building on empty or underutilized lots in cities or older suburban areas, instead of building in a previously undeveloped area.

Infiltration The uncontrolled movement of outdoor air into a building through cracks and other defects around plumbing, floor cavities, soffits, chimneys, ducts. Accompanied by an equal outflow of air from indoors to the outdoors.

Insulated Concrete Form (ICF) Plastic foam shaped into hollow blocks, panels or planks and used as a form to create a concrete wall. After positioning the foam forms, rebar is typically inserted into the cavities to reinforce the walls, and then concrete is poured in. Once the concrete cures, the foam remains in place to insulate the walls.

Insulation A material that has a high resistance to heat flow. Used to keep a home comfortable and reduce the energy needed to heat and cool the home.

Inverter A device used to convert DC electricity (such as that produced by solar panels) into AC electricity to power standard household equipment and appliances.

Kilowatt-hour (kWh) A unit of electric energy equal to 3600 kilojoules or 3412 BTUs. (relates to usage).

LED light bulb LEDs (Light emitting diode) are extremely long-lasting (up to 25 years) and are 85% more efficient than standard bulbs.

Lighting controls System or devices used to manually or automatically dim electric lights, or switch them on or off. These devices, which include dimmers, timers, motion sensors and photocell controls, provide convenience and energy savings.

Low-e (low-emissivity) window A very thin metallic coating on window glazing that allows daylight to enter a building but reduces the flow of heat. The appropriate type of low-e glazing for a home will depend on the climate and the window's orientation.

Net metering This is an agreement with you utility that allows you to feed excess directly to the utility grid any electricity that is generated in excess of your demand. This causes the electricity meter to spin backwards and give you a credit for the excess energy that you can later use to offset your electricity demand.

Net Zero or Zero Energy Building A building that creates at least as much energy as it uses. Homes are designed to take advantage of passive solar design, and focus on reducing energy demand with super-insulation and an air-tight envelope. On-site electricity generation, such as photovoltaic (PV or solar) panels, is essential to achieve net-zero energy use. Use in areas with no utility access are "off grid".

Passive solar design A building specifically designed to collect and store the sun's heat, and release that heat into the interior spaces to help warm the rooms naturally. Depending on the design and climate, passive solar heating can be the sole source of heat for the building or can be supplemented with a heating system.

Phantom load The small amounts of electricity consumed by many appliances and equipment—such as TVs and stereos with remotes, ovens with digital clocks, cell phone chargers —even when they're not in use.

Photovoltaic (PV) system Converts sunlight directly into electricity. Consists of solar panels made up of PV cells and in inverter. Systems range from small rooftop systems on residences to solar farms that produce enough energy for thousands of homes.

Polyvinyl chloride (PVC) Also known as vinyl. A family of plastics with a wide range of forms and uses. PVC is used extensively in building products, consumer goods and industrial applications. PVC contains or releases many dangerous chemicals and there is no safe way to manufacture, use or dispose of PVC.

Post-consumer recycled content Products that have been used and discarded by a consumer and are then reprocessed and recycled as raw material for a new product.

Rainwater harvesting Collecting rainwater from a catchment area, such as a roof, and storing it in cisterns or other containers to use for watering a garden or other purposes.

Rapidly Renewable Materials Natural and non-petroleum-based building materials that are made from agricultural products that are typically harvested within a 10-year or shorter cycle. i.e. bamboo, cork, straw bales.

Reclaimed material A material that's put to a new beneficial use after it's no longer needed for its original use, such as wood removed from an abandoned building and used to construct a new building.

R-value A measure of a material's resistance to the passage of heat through it. The higher the R-value, the more effective the material is as insulation.

Smart thermostat A device that can be used with home automation and is responsible for controlling a home's heating and/or air conditioning. These often can be controlled remotely and adjust based on occupancy and weather forecasts to save energy.

Solar heat gain coefficient (SHGC) An indication of how much of the sun's heat will enter through a window. An SHGC of 0.40, for example, means that forty percent of the sun's heat gets through the window.

Solar thermal or Solar water heating systems The use of concentrated sunlight to heat or preheat water for domestic use and /or space heating. A closed system of Flat-plate or Evacuated-tube solar collector moves hot water from roof to store in a tank in the building.

Stack effect The air flow established in a building from air infiltrating low and exiting high. The pressures created are greatest at the highest and lowest points in the building.

Stormwater retention Generally refers to the collection of stormwater, with no discharge point. Water is collected and then is allowed to percolate into the ground or evaporate.

Stormwater runoff Water that flows off of buildings and paved surfaces and over land during a rainstorm.

Tankless water heater A water heater that saves energy by heating water as it is needed, rather than storing hot water in a tank. Also known as an instantaneous or on-demand water heater.

Thermal bridge A highly conductive material within a building envelope, such as a steel or wood framing member, that allows heat to bypass the insulation.

Thermal mass The ability of a material to absorb and retain heat. Materials with a high thermal mass, such as rocks, earth and concrete, have the capacity to absorb heat during the day and release it when temperatures cool.

Solatube A circular skylight that's much smaller than typical skylights, designed to illuminate interiors with daylight while keeping out excessive heat. It consists of a small, roof-mounted dome attached to a tube lined with reflective material. Light is reflected down the tube, and is transmitted into the room through a translucent ceiling fixture.

U-factor Indicates how easily heat will pass through a construction assembly, such as a window. The lower the U-factor, the lower the rate of heat flow so the more efficient the material is.

Ventilation The movement of air through an area for the purpose of removing moisture, air pollutants, or unwanted heat.

Volatile organic compound (VOC) A class of organic chemicals that readily release gaseous vapors at room temperature. VOCs occur naturally in many materials, and can also be manufactured and added to materials and products. VOCs are released ("offgassed") into a home by common furnishings and building materials, including many types of particleboard, paint, solvents, carpets and synthetic fabrics.

Xeriscape Landscaping design that conserves water by using native or drought-tolerant plants, mulch, and limited or no irrigation.

Glossary adapted from
Good Green Homes: Creating Better Homes for a Healthier Planet,

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