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Chris Huber photos, Journal staff

Don and Kim Kelley's home near Nemo is entirely solar powered, with a battery bank to store electricity produced each day. The house was originally designed to be a barn for milking cows. When they decided to live in it instead, they included many energy-saving elements like passive solar design and rock and concrete walls.

## Dark asphalt shingles not best

Dear Jim: My houses have always had typical dark asphalt shingles, but they don't seem to last more than 15 or 20 years. Now that my roof is leaking again, what are some of my options other than standard shingles? — Ron G.

Dear Ron: Fifteen years is a short life for even the least expensive asphalt shingles. Inspect the condition of the shingles. If the edges are not curled up and you do not see any breaks, the shingles may still be fine. Have a roofer inspect for other sources of the leak.

There are several alternative roofing materials which will last much longer than asphalt shingles. Many also reduce your air-conditioning costs during summer. From an energy efficiency standpoint, there really is nothing worse than your dark asphalt shingles.

Asphalt shingles get very hot in the summer sun and this heat radiates down into your house well into the evening. This heat also causes the degradation of the shingle base material and shortens its life. Although it may not look as good, white is the best choice for shingles.

Metal roofs are probably the most durable and energy efficient. I have a simulated wood shake roof on my own house. It is made from recycled aluminum beverage cans. It looks great, will have a longer life than I will and blocks the summer heat. Its only drawback, as with many alternative roofing materials, is it costs substantially more to install.

Other durable and attractive roofing materials are slate and tile. These materials will literally last forever. Both are relatively energy efficient because they are not attached tightly against the roof surface. This allows air flow underneath them to carry away some of the sun's heat.

Have an experienced roofer check the roofing structure before installing slate or tiles. These materials are very heavy and common trusses may not be designed to handle the weight including a snow load. These materials are typically used on houses with a fairly steep roof pitch.

If the weight is an issue but you really like the appearance of slate or tile, lightweight plastic simulated roofing is available. It



James Dulley

# Taking a shine to solar power

Couple's home relies on renewable energy

Ava Hennickson  
Journal staff

Don and Kim Kelley are slowly building their dream home on a small farm just across the Lawrence County line on North Bogus Jim Road.

It's a sprawling secluded place with large south-facing windows. It overlooks a meadow and a pond where the calm is only sometimes disturbed by a turf battle between bluebirds and swallows.

But there are a number of remarkable elements to their hand-built home, starting with the fact that it wasn't originally intended to be a house.

"We started out building a barn, that's why this building



Don Kelley looks out a skylight in what will be the couple's bedroom. "Ever since I was a kid, I always thought it would be cool to sleep under the stars," he said.

has such a huge footprint," explained Don, a 72-year-old retired pathologist who grew up in Grand Island, Neb. "It was going to be a barn for our milking cows and hay storage and an implement shed."

But a "perfect storm" of

reasons led the couple to sell their livestock and convert the partially built barn into a space they could call home.

In that process, they discovered that connecting to the electrical grid would cost about as much as a solar

power system, which they then saw as an opportunity to reduce their carbon footprint and live in a more self-reliant way.

"This is a mature technology and it's very reliable," Don said.

The Kelleys installed a stand-alone photovoltaic power system in 2007 at a cost of about \$30,000. The panels on the roof convert solar radiation into direct current (DC) electricity, which is sent to inverters that convert the DC to alternating current (AC) electricity, which is then sent to regular breakers.

DC electricity also charges a battery bank, while the inverter pulls power from either the panels or the battery bank, allowing the Kelleys to have electricity day and night, even when there isn't much sunshine.

» Solar, B2

## A little landscaping can attract new pollinators

Bees aren't the only helpers you can attract

Associated Press

The dramatic loss of honeybees to changing land use, viruses and pesticides is alarming, and they are irreplaceable as pollinators. But you can somewhat offset their loss by attracting alternative pollinators, such as beetles, butterflies and moths, dragonflies, feral bees, wasps and flower flies.

Attracting these beneficial insects requires a long-term landscaping commitment, however. They need a wide variety

of forage plants along with protected nesting sites to thrive.

"The plant community and the bee community are intimately related," said David Gordon, an associate professor of entomology at Pittsburg State University in Pittsburg, Kan. "Habitat is everything to pollinators."

Start by observing, protecting and enhancing what's already on your property.

"Know what's out there in the way of beneficial insects and forage plants," Gordon said.

"If you have some bees present, you can generally increase their numbers by providing them the resources they need to

proliferate.

"The smaller the size of your operation, the more likely that such a strategy will be successful and in a shorter time," he said.

Eric Maeder, assistant director of The Xerces Society's pollinator program and lead author of its new guide, "Farming With Native Beneficial Insects," says, "Honeybees always will be needed for almonds and larger, industrial-size agriculture crops."

"They'll always be part of the equation. But for many crops native to the United States, like blueberries and pumpkins, that

» Pollinators, B2



Associated Press

A bumble bee searching for nectar from a Rosemary plant near Langley, Wash. Honeybees are irreplaceable as pollinators but you can somewhat offset their loss by attracting beetles, butterflies and moths, dragonflies, feral bees, bumblebees and wasps, among others.

### INSIDE

## Pond plan for patios

It doesn't take a lot of space to add aquatic life. Page B2



### HOT PROPERTY: OCEAN VIEWS

Producer Michael Manheim has listed his home for sale in Los Angeles County's Malibu neighborhood at \$10.25 million.

### Handy at home?

Are you or someone you know planning on tackling a home-improvement project soon? If so, we would like to learn more about those plans. Email us at features@rapidcityjournal.com

# Fish ponds can make a big splash on small patios

Associated Press

When Ann and Glen Gage downsized from their expansive home and garden in Switzerland to a San Francisco town house, one of the things they missed most was the koi pond they'd built and tended for years. It was brimming with elegant plants, fish and its own ecosystem.

So they built not one but two new ponds, this time city-style: one for their balcony overlooking San Francisco and the other for their leafy entryway.

"If you have limited space or want an interesting water feature... patio or container ponds are an easy option, and the only limits are your creativity," said Marc Hachadourian, Director of the Urban Greenhouses for Living Collections at the New York Botanical Garden.

The Gages assembled their container ponds

using large planters, which they made water-tight by caulking any drainage holes. Then they added gravel and a few larger rocks, and filled the container with water. They added an electric bubbler and filter, "to make the fish happy." Next came a few floating aquatic plants, which they harvested from a pond in the area, and finally a variety of "rescue fish" from a pet store.

"We have a really small space and Ann said, wouldn't it be cool to have a pond here? It couldn't have been easier," said Glen Gage. "It's way less work to maintain than a big aquarium — no cleaning the tank or syphoning out the dirty water — and there's a relaxing zen quality to the gently bubbling water and swimming fish."

Maintenance involves only refilling the container to replace water lost to evaporation.

Although some people put mosquito-killing tablets in the water, experts say a few small fish are sufficient to take care of insect larvae.

"You can go crazy with really fancy fish, but our local pet store is super nice and they just let us reach in for feeder fish and choose some with pretty markings that make them look unique. It's like going to the pound. You feel like you've done something really good. They're basically just goldfish and are pretty hardy," Gage said.

Although the patio ponds can look and feel like miniature koi ponds, koi experts strongly suggest goldfish as the better choice.

Unlike koi, which grow large and need plenty of oxygen and moving water to thrive, goldfish and some other smaller fish are hardier and better suited to patio ponds.

# Living large with less space

The Seattle Times

There are many reasons to downsize. For interior designer Paula Devon Raso it was a bum knee and a Pekingese with a bad back.

So, in 2003 Raso sold her two-story, 1,000-square-foot townhouse in the 98 Union building in downtown Seattle and took a 750-square-foot one-bedroom, one-floor unit there.

She gutted it and set about doing what interior designers do, carving out space and storage where none seemed possible, disguising ductwork and throwing light into even the deepest passages.

She painted and primed and made it her own; walls the color of a child's blush in the bathroom, the rest of it old gold. There are cherubs on those walls and hanging from the bathroom chandelier, candles glimmering from tall holders set on the floor, antique silver trays, cups and bowls out and about, antique mirrors, etchings, drapes that

puddle. Whitewashed oak floors cede to the kitchen's honed limestone, substantial marble counters there adding old-world splendor to that compact space.

Outside, Raso turned the narrow wrap deck into a formal hedge garden, bay trees as green exclamation points. Beyond, in front-row views, lie Puget Sound, Alki Point, the Olympic Mountains, Pike Place Market and much of the city.

When Raso finished, she thought her place was just about perfect, European glamour wrapped in a small gift box.

And then it was 2007. Everything shifted.

"Once I got the bed in here, that was something," Raso says. And by "in here" she means the living room. "I brought the office home during the recession. It's in the bedroom. And the bedroom came out here. It took quite a bit of juggling around."

Doesn't show. The double bed (she sold her antique French number and bought this one at

Restoration Hardware) next to the antique Italian dresser seems like the most natural thing in the world.

"The silk curtains had been on the bedroom windows," she says of her technique for separating but not hiding the sleeping space.

"It's been really tricky," she says, a little weariness in her voice and Nico, the current house Pekingese, in her lap.

She takes it all in and says, "I wouldn't call it French. The reason I hesitate is I think my love of European antiques ruins people's perception of what I do."

There are a few well-placed modern touches here, too. The dining table, Raso designed it; metal legs, MDF top, all treated to an antiqued golden finish.

She moved a daybed before the windows to serve as the sofa, and it does, while also keeping the view to the water wide open. Shifted, it becomes seating for three at the table.

» From B1

## Solar

"It was a learning experience for us," Don said. "We did have some reservations about whether it would be a problem. You hear from folks early on in the history of solar electricity that they had to change their lifestyle quite a bit in order to accommodate to the fact that when the sun doesn't shine, you don't have much power. But for us, it just hasn't been a problem."

The couple included other design elements to reduce their energy consumption, including using thermal mass to reduce temperature fluctuations, passive solar design that allows sunshine in in the winter but provides shade in the summer, energy-efficient appliances, a supplementary heating masonry stove that uses gases that normally escape from the chimney to provide radiant heat, sun tunnels and skylights to let light into the deeper spaces, and plans for a solar hot water heater with roof collectors.

Renewable energy, like solar power, and self-reliance are important to the Kelleys.

"Renewable energy is going to have to be a long-term solution for the whole planet," Don said. "I'm encouraged that with a combination of energy conservation and electricity-storage technology, we can meet our energy needs without any more unsustainable energy sources, including nuclear and fossil fuels."

His wife, meanwhile, has cared about the environment since she was a child growing up in Rapid City.

"I am passionate about food and energy self-sufficiency for our region. I got it from my grandparents who ranched and farmed in South Dakota," said Kim, 56, a retired registered nurse.

And it's a cause they are willing to fight for as members of the grass roots group Dakota Rural Action, which has tried for the past two years to get what's called a net metering bill passed in the state Legislature.

"If we were connected to the grid, which we aren't, and we had excess electricity, which we do every day, then we could send that electricity to the utility and get reimbursed for it," Don said. "With net metering, the idea is that reimbursement for that excess electricity would be at the same rate that you buy electricity from the utility."

The bill failed both years. In addition, no incentives or rebates exist for state residents wanting to switch to a renewable

## Kelley home electrical loads

Terms:	6.048Wh/wk
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5. Microwave oven: 1500W for 1/2hr/day, 7 days/wk= 5.250Wh/wk	
6. CFL and LED lamps: 136W for 4-1/2hr/day, 7 days/wk= 4.284 Wh/wk	
7. TV w/ DVD player: 200W for 2-1/2hr/day, 7 days/wk= 3.500Wh/wk	
8. Sun Frost refrigerator/freezer: 40W for 12hr/day (duty cycle), 7 days/wk= 3.360Wh/wk	
9. MacBook charger: 24W for 14hr/day, 7 days/wk= 2.352Wh/wk	
10. Dishwasher: 1400W for 1/2hr/day, 3 days/wk= 2100Wh/wk	
11. Power tools: 1000W for 1/2hr/day, 2 days/wk= 1000Wh/wk	
12. Vacuum cleaner: 600W for 1/4hr/day, 3 days/wk= 450Wh/wk	
13. Boombox radio: 13W for 4 hr/day, 7 days/wk= 364Wh/wk	
14. Staber clothes washer: 540W for 1/3hr/day, 2 days/wk= 356Wh/wk	
15. Ceiling fans: 25W for 1/4hr/day, 1 day/wk= 6.25Wh/wk	
TOTAL: ~48 kWh/wk	

energy source. "South Dakota is behind the rest of the country," Don said. "Right now, South Dakota is the state with the most expense involved with solar installation. The reason for that is a pretty coordinated opposition by the Legislature, PUC (Public Utilities Commission) and utility industry. They somehow see solar as a threat apparently."

Fellow Dakota Rural Action members Steve and Lynn Hammond of Rapid City, who also have solar power and do feed electricity back to the grid, are thankful for people like the Kelleys who want to reduce their ecological impact.

"We greatly admire

them and the fact that they think that this is a worthy cause and that they are willing to fight for it even though it won't affect them," said Lynn Hammond.

"They have no personal (financial) gain, but they are forward thinkers and think toward the future and future generations," Steve Hammond added.

Don Kelley said said he and his wife have no regrets about leaving the grid even if South Dakota lawmakers fail to see the light.

"Contrary to some myths, solar electricity is very affordable, it's very reliable, and it's just worked like a dream for us," he said. "We would never go back to grid electricity, I don't think."

## Dulley

is produced in panels so the installation is quick on the existing roofing structure.

Fiber-cement is another durable and attractive alternative to asphalt shingles. This compound can be molded into almost any contour to simulate other roofing materials. With the fibers in the cement, it is much lighter than slate or tiles.

High-quality real wood shakes can have a long life. They are pressure

treated for durability and fire resistance. Check your local fire/building codes. One final new option is solar shingles. The shingles are covered with solar cells to produce free electricity.

Dear Jim: We are leaving for a three-week vacation. We have an electric water heater and it seems wasteful to keep the water hot while we are gone. Is it OK to flip off the circuit breaker to the water heater? — Paul N.

Dear Paul: You are correct about it being wasteful to heat water when you are gone. As long

as a house does not get cold enough to freeze the water, there is no problem switching off the electricity to the water heater.

Many newer electric water heaters have a vacation mode which sets the temperature down, but protects it from freezing. If you travel during winter, this is a wise choice just in case the heat goes off.

Send inquiries to James Dulley, Newspaper Name, 6006 Royalgreen Dr., Cincinnati, OH 45244 or visit [www.dulley.com](http://www.dulley.com)

» From B1

## Pollinators

evolved prior to the introduction of (European) honeybees, native bees do a perfectly adequate job pollinating these plants," he said.

Syrphid flies are a good honeybee alternative. "These so-called 'flower flies' superficially resemble bees," Mader said. "They're predatory insects as larvae, primarily feeding on aphids. They then become important pollinators as adults."

"The next most important are solitary wasps," he said. "These are docile, gentle animals. They can be very small."

Crop-pollinating native bees and other beneficial insects have three basic habitat needs, according to the U.S. Department of Agriculture:

**Plant variety**  
Provide forage plants with overlapping blooming times so that flowers are available to provide pollen and

nectar throughout the insects' flight season, or from early spring until late fall. Native bees and other pollinators come in many sizes, so it also is important to provide flowers of various sizes, shapes and colors, the USDA said in a fact sheet.

**Nesting sites**  
Many bees nest underground, in tree cavities or snags — often clumps of leaves, branches and fallen grass. "That makes them vulnerable to

deep soil tillage or tree removal," the agency said.

**Protection from pesticides**

"Insecticides are primarily broad-spectrum and are therefore deadly to bees. Herbicide use also can remove many of the flowers that bees need for food," the USDA said.

"The goal should not be to eliminate your use of honeybees but to diversify and reduce your dependence upon them," Gordon said.

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