

GREENING NEWSLETTER

Your Next Home or Business Could Run on Batteries

A combination of solar power and the rise of residential energy storage pave the way for a new kind of cable cutting

In the near future, your home or business could be battery operated. This is especially true if you live in New York, California, Massachusetts, Hawaii, Vermont, Arizona or a growing roster of other states and municipalities experimenting with revamping their electrical grids for the 21st century. You might not even know your lights are being kept on by the same chemical process that powers your smartphone, since the batteries could be tucked into what looks like a neighborhood junction box or behind a fence in a substation. But now, thanks to efforts by startups and the utility companies, they sell to (and sometimes battle) you, who might get one right inside your home or business.

The rise of these batteries isn't just a product of our collective obsession with new tech. Their adoption is being driven by a powerful need, says Ravi Manghani of GTM Research: renewable energy. Without batteries and other means of energy storage, the ability of utility companies to deliver power could eventually be threatened.

Solar power, especially, tends to generate electricity only at certain times—and it's rarely in sync with our needs. In some states, such as California and Arizona, there's an overabundance of solar power in the middle of the day during cool times of the year, then a sudden crash in the evenings, when people get home and energy use spikes. For utilities, it's a headache. The price of electricity on interstate markets can go negative at certain times, forcing them to dump excess electricity or pay others to take it.

"This is not a long-term theoretical issue that might happen—this is now," says Marc Romito, director of customer technology at Arizona Public Service, the state's largest electric utility. There's something ruggedly individualistic and inherently American about having batteries in your home. They're good for keeping power going in a disaster, as customers of the



two biggest firms by sales volume in this field, Sonnen and Tesla, demonstrated in the aftermath of Hurricane Irma. And in combination with rooftop solar panels, they free people from total dependence on the grid—a kind of energy cable-cutting that works call "grid defection." The very real possibility of grid defection is changing the power dynamics between utilities and their customers.

Last week, real-estate developer Mandalay Homes announced a plan to build up to 4,000 ultra-energy-efficient homes—including

2,900 in Prescott, AZ—that will feature 8 kilowatt-hour batteries from German maker Sonnen. It could eventually be the biggest home energy-storage project in the US, says Blake Richetta, senior vice president at Sonnen. The homes, which will come with the Sonnen battery preinstalled, will be part of a Sonnen-managed "virtual power plant for demand response" that could allow the houses to stabilize the grid, lower its carbon footprint and decrease peak load, says Mr. Richetta. While the Mandalay Homes project is still in the blueprint stage, with only one test home built so far, this kind of radical, battery-enabled rethink of the grid is already happening in Vermont.

In partnership with Tesla Energy, Green Mountain Power is offering 2,000 of its customers the opportunity to have a Tesla Powerwall in their home for \$15 a month. The 13.5 kilowatt-hour batteries retail for \$5,500, but the utility can afford to put them in homes because they help the company save on other grid infrastructure, says Mary Powell, GMP's chief executive and president.

"Peaker plants," for instance, are fired up only when the grid is strained to maximum capacity, saving the utility from using one of its most expensive forms of electricity.



GMP also uses batteries from Sonnen, SimpliPhi and Sunverge. Ms. Powell says the larger battle for home battery storage will be over how each of these companies—and dozens of others—differentiates itself, selling different size batteries adapted for different uses in homes, businesses and utilities. Arizona Public Service's Mr. Romito says not all of these batteries are created equal—though he wouldn't name names.

The biggest challenge to home battery storage remains economics. Utilities' current rate structures don't charge most homeowners for using excess power, nor do they change the price based on time of day. For the overwhelming majority of homeowners, the payback on a solar power system with battery storage could take decades.

Batteries aren't the only way to reduce the need for short-order energy, or so-called "demand response," says Mr. Romito. Smart thermostats, managed by the utility company, can pre-cool homes when solar power is at peak production, reducing load on the grid in the evening.

This cannot only be as useful as batteries in certain cases; it can be more cost effective. Other possibilities include remotely determining when electric vehicles charge and even shifting large industrial loads to different times of year.

In states where electricity is more affordable, it's still early days

for batteries in homes. But Mr. Romito says users and utilities will continue to move toward them with the inexorable addition of more and more renewables to the grid.

Mr. Manghani of GTM Research agrees. His battery storage adoption forecasts track closely with states and regions where renewable energy is being generated.

Falling prices also help. Battery pack prices have decreased, on average 24% a year since 2010. Cheaper batteries shorten the resulting payback period, which in turn makes renewable energy more attractive to home owners. In 2016, solar grew faster than any other energy source, according to the International Energy Agency. At the intersection of these and other trends is a simple fact: For the first time since the discovery of fire, the way humans get energy is set to fundamentally change.

Mims, Christopher, Your Next Home Could Run on Batteries, The Wall Street Journal, October 15, 2017

Not Just Rooms, Hotels Offer One-of-a-Kind Experiences

With competitors like Airbnb nipping at their heels, hotels are rolling out experiences to their most faithful customers that go far beyond extra nights and room upgrades.

Want to improve your cooking skills? How about a class with a Michelin-starred chef? Or snorkeling in Hawaii with Jean-Michel Cousteau? Or basketball tips from the NBA standout Dwyane Wade?

Marriott, with 30 hotel brands, including Starwood and Ritz-Carlton, and other hotel companies are marshaling their clout to attract sports stars, including professional surfers, and even a National Geographic photographer to create one-of-a-kind enticements.

Dan and Ginger Roberts of El Dorado Hills, CA, were drawn to Marriott's offer of a two-day clinic at the Old Greenwood Golf Course in Lake Tahoe with Annika Sorenstam, a member of the World Golf Hall of Fame. They used accumulated points from their travels and joined a small group of rewards members in late July to see Ms. Sorenstam in action. They were also hoping to get some expert tips on how to improve their golf games. "I'm an avid golfer," said Mr. Roberts, a retired information technology executive. "I've loved golf since I was a child and played since I was a teenager, and I dream of being a great golfer." He added that he was struggling with his



drive, and that "this was a chance to get one-on-one guidance from someone at Annika's level."

In offering such exclusive experiences, hotels are looking to establish deeper connections with their customers in the face of growing competition from start-ups. So far, home rental services like Airbnb claim 12% of the traveler accommodations market, according to a report this year by the market research firm Mintel Research. But that share is expected to grow, especially among travelers who are 40 and younger, and that

has prompted hotel brands to rework their rewards programs to cement loyalty with their frequent customers.

"Hotels have started to feel the pinch from encroachment," said Gina Cavato, an analyst for lifestyles and leisure at Mintel. "They are trying to boost loyalty programs by offering unique rewards options."

Marriott is trying to differentiate itself by focusing on self-improvement activities, in part because its own research suggests this is how people will increasingly spend their money when traveling. According to Marriott's consumer research, younger travelers are willing to spend twice as much—or nearly \$300 a month—on self-improvement, including bettering their sports or cooking skills. Such experiences not only increased travelers' self-worth and satisfaction, the research found, but travelers sought to share the interactions with experts on their social channels.

"We're taking the best of Marriott's loyalty programs—including our partnerships and extraordinary portfolio of hotels—and stepping it up with master classes that provide transformative experiences travelers cannot get anywhere else," said David Flueck, Marriott International's senior vice president for global loyalty. The master classes, he said, allow the 100 million members of Marriott Rewards and the Starwood rewards program, SPG, to redeem their loyalty points for sessions with top athletes. In addition to golf sessions, the classes include basketball skills training at the JW Marriott in Miami. Mr. Wade, who has just joined the Cleveland Cavaliers, will conduct hands-on skills and drills on the hotel's association-size indoor basketball court next summer as part of a two-night package at the hotel.

The big-wave surfer Laird Hamilton will teach a master surfing lesson on a standing wave machine at the Sawgrass Marriott Golf Resort & Spa in Florida next spring. It will also be part of a two-night stay. At the end of the month, there will be a workshop with Ralph Lee Hopkins, a National Geographic photographer, at the Gramercy Hotel in Manhattan. Marriott is also offering a tutorial on underwater conservation taught by Mr. Cousteau, at the Ritz-Carlton in Kapalua, HI. Participants must bid for the classes with rewards points and some of the most coveted packages are well beyond 300,000 points—which equal a lot of hotel stays.



But Marriott is not just counting on well-known or celebrity experts. The chain also recently took a stake in PlacePass, which provides bookings for a variety of activities, like a private tour of the filming locations of "Downton Abbey" or a camel safari on Dubai's red dunes. Those are not necessarily connected to staying at a Marriott or one of its properties.

Other hotel brands are also changing their enticements. Hyatt, for instance, is offering for the first time an opportunity for its World of Hyatt loyalty members to participate in an excursion in November to Tokyo. The trip will include lessons from experts at the Mori Art Museum about Japan's pop culture, as well as from other experts on the Shinto religion, the progress made in cleaning up the devastating Fukushima earthquake and even sake. Hilton Worldwide last year introduced a "Behind the Wheel" program that allows car-loving guests to drive a Lamborghini—with an accompanying instructor—at its

Waldorf Astoria hotels properties. "It offers guests the unique opportunity to test drive Lamborghini's latest models," said John Walls, Hilton Worldwide's director of public relations, luxury and lifestyle brands. Since the program was unveiled—in locations as varied as Edinburgh, Scotland, and the Boca Raton Resort & Club in Florida, Mr. Walls said more than 200 guests have driven the vehicles.

The Waldorf Astoria brand is also working with the James Beard Foundation to allow participating guests to have culinary adventures, including a chef-led tour of the Mahane Yehuda Market for guests at the Waldorf Astoria Jerusalem and a date-themed cooking class at its Ras Al Khaimah property in the United Arab Emirates.

The large hotel brands are mindful that right over their shoulder, Airbnb, in particular, is reinventing what travelers expect from a local stay by introducing smaller-scale experiences and classes, which people can bid on through its site even if they are not staying in an Airbnb rental. One in Paris, for example, offers to teach patrons how to sculpt a head from clay, taught by an artist who studied at the Louvre museum. Another offers a class in San Francisco on creating a French macaron.

No nationally-known experts are on tap, but the class drew 6,300 views on Airbnb's website over a recent week—no match for a pool of millions of hotel rewards members, but still an audience big enough to be desirable for any planned event.

Olson, Elizabeth, Not Just Rooms, Hotels Offer One-of-a-Kind Experiences, <https://www.nytimes.com/2017/10/09/business/not-just-rooms-hotels-offer-one-of-a-kind-experiences.html>, October 9, 2017

Why mini-bars are disappearing from hotel rooms

It hums, it purrs, sometimes it dribbles onto the carpet, but the refrigerated mini-bar is disappearing from hotel rooms. Mini-bars have become a tiny fraction of hotel revenue and many have decided they're just not worth the bother. They take up space, each costs \$200 or so to install and they consume energy. It takes staff time to re-stock the mini-bar and monitor its



use, it's a debt burden that the hotel must bear to maintain inventory and cunning guests game the system.

They drink the contents of the miniature Scotch bottle and replace them with weak tea. Water will do fine for the vodka. The Toblerone?

Slit open the box with care and you can put it back empty. If the item appears on the guest's bill at check-out, "That wasn't me, honest, must have been a previous guest did that." And no front-desk receptionist wants to have a "yes, you did; no, I didn't" discussion with a departing guest.

Why should they? In most hotels the mini-bar is checked daily by a staff member who counts the number of Mars bars, cans of Coke and bottles of wine, marks any missing items on a chart and then inputs the total onto the guest's bill. The possibilities for human error are enormous.

Armed with the knowledge that everything in the mini-bar is a rip-off, they're a source of irritation for guests. Why pay \$6 for a can of soft drink that sells for \$1.50 in a convenience store? Or \$17 for a half bottle of bad wine? Prices like these are enough to blunt even the sublime pleasure of consuming a

whole package of peanut M&M's by yourself in your bathrobe while sprawled on the bed.

Another problem—the mini-bar is way down the list of guests' priorities. When the InterContinental Hotels Group surveyed guests to find out what was most important in a hotel room, 61% said Wi-Fi; just 1% said a mini-bar. In another survey by TripAdvisor, hotel guests also reported that the mini-bar was the least important amenity.



In an attempt to streamline the process of monitoring consumption from the mini-bar, and eliminate the possibility of erroneous charges, some hotels have installed motion-sensor technology.

The instant a guest moves the can of Perrier or the chocolate bar, bingo, it gets charged to their account. Even if it's taken out, inspected and replaced, the charge lives on.

In other hotels, the empty mini-bar will be filled only at a guest's request, with a charge for the full value of the contents debited against the guest's credit card, and any non-consumed items to be credited to the guest's account in the fullness of time. As if.

I'll miss it. How am I going to keep cool the real milk that is my preferred whitener in tea and coffee, bought from the nearest convenience store? Where I will discover that Lindt chocolate is about a quarter the price of the item in my hotel room, and who can resist a bargain like that?

Gebicki, Michael, Why mini-bars are disappearing from hotel rooms, traveller.com.au/why-mini-bars-are-disappearing-from-hotel-rooms-gz8fzk#ixzz4xP0l98dm, October 27, 2017

The hotel industry's next round of disruptors is here

Sometimes it's a good idea to stir the pot. Throughout most of history the hospitality industry was separated into two segments: **hotels and motels**. But one day in 1952, Kemmons Wilson opened the first Holiday Inn, creating the first **mid-priced hotel** concept available to travelers and, possibly, the industry's first true disruptor. Like all good disruptors, Holiday Inn was embraced by consumers and criticized by competitors, but the industry wasn't felled by this new segment. Instead, hospitality evolved around Holiday Inn, opening it up to more concepts than ever before.

Bjorn Hanson, clinical professor at the New York University Preston Robert Tisch Center for Hospitality, said that during his tenure in the industry he has seen a number of disruptors arise, from **limited-service and extended-stay hotels to Airbnb and home sharing**. Despite these expansions in the hospitality space, Hanson said **boutique hotels** are the most disruptive force in hospitality today, even more than home sharing, because boutiques have had the most influence over guest expectations at mainstream hotels.

"Because **Airbnb** grew so quickly, it was misunderstood by traditional lodging executives, who believed it wasn't relative to them or their business," Hanson said. "Now the company is getting a disproportionate amount of attention as a disruptor."

To Hanson, a disruptor is not simply an alternative to an existing product but something that causes consumers to think differently about a product they will continue to use. Most often this results in raising expectations in ways that previously weren't being considered. Online travel agencies, for ex-

ample, changed the rules of distribution at a time when hotels were concerned about amenities. While hotels were trying to figure out a way to attract guests without OTAs, **boutique and lifestyle hotels** gained traction with travelers looking to experience something new.

"A new disruptor for hotels is **shared accommodation**, similar to what a hostel is," Hanson said. "This is popular in urban markets due to the nature of tourism there, where [developers] can fit four beds or bunk beds into a room. It's a new price model for a new generation of travelers that are now college age. They are looking for a different adventure at a higher price point, and it's not a hostel, but there are no other terms for it right now."



Personal Shakeup

These are large-scale disruptors changing the rules for what a hotel is or what hospitality can mean, but disruption is also taking place throughout the industry on a smaller scale. The most obvious example would be the **guestroom TV's changing purpose** as guests bring personal media with them on the road. Another example, **guestroom phones**, used to be a profit center for hotels, Hanson said. Now they are required for zoning and safety purposes, but some companies are stepping up to provide alternatives as guests scale back their use. The Society Hotel in Portland, OR, is a property that combines traditional hotel accommodations with shared living spaces similar to a hostel.

One such company is Volara, which provides **voice-engagement software on in-room hardware**, such as an Amazon Echo or similar products. Volara allows voice-recognition technology to listen for verbal cues and respond with custom recorded messages unique to each hotel, or connect guests with the front desk in a manner similar to guestroom phones, but on guests' terms.

"Most people you can only ask for something and get recommendations, but there is a lot of room for creativity here," said Dave Berger, CEO of Volara. "We launched a **sleep solution and we have a book component**, so it can read you a bedtime story or play music, so we're only limited by creativity."

Replacement Race

Berger said hotels often approach Volara with questions about what existing technologies the company can replace with voice. Today, Volara is running on mirrors, lamps, clock radios and even art. SoundWall, a company formed to provide high-quality art integrated with voice-enabled technology and a speaker system, is just one of those companies. However, this kind of product is replacing more than just art and sound systems. "SoundWall has a **motion sensor and can perform trilateration** through [Bluetooth Low Energy]," said Adam Goodman, president of SoundWall. This means the fixture would also potentially be able to serve as an interactive thermostat, and would be positioned in such a way to view the guestroom from a beneficial vantage point compared to where many guestroom thermostats are positioned.

As technology continues to evolve in this manner, a consolidation of products used throughout the industry is inevitable. Hanson said this could be uncomfortable initially, but previous innovations have resulted in net benefits for hotels across the industry. One example he gave is the **shrinking hotel guestroom**, which seems to grow smaller and smaller in average

size each year. What can be thanked for this? Flat-screen TVs.

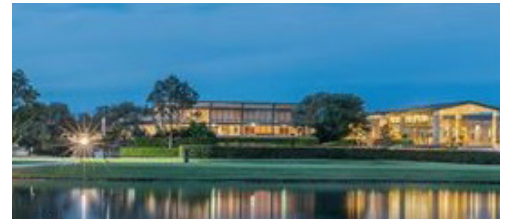
"Hotel companies across the industry are pushing for smaller rooms since there are no longer credenzas holding up TVs," Hanson said. "Rooms just look larger without them, and all travelers are spending less time in their rooms anyway. The majority of travelers are ambivalent toward this since their relationship with the guestroom is growing more casual."

Mest, Elliott, The hotel industry's next round of disruptors is here, hotelmanagement.net/operate/industry-s-next-round-disruptors-here October 9, 2017

Crowne Plaza Hunter Valley adds mobile access

Mobile access eases congestion at check-in at peak periods, improving staff efficiency and the overall guest experience. The Crowne Plaza Hunter Valley, a luxury resort in Australia, has implemented several of Assa Abloy Hospitality's security technologies, including [Assa Abloy Hospitality mobile access](#), [VingCard Signature RFID electronic locks](#) and the [Visionline online platform](#). The property, which is situated in the heart of the Hunter Valley wine region, is home to a variety of luxurious amenities, including a golf course, leisure activities and views of local vineyards.

Prior to the recent upgrade, Crowne Plaza Hunter Valley had a competitor's door lock system installed. As part of an initiative designed to reposition the property as a technologically advanced resort, management sought out innovative technologies that utilize mobile solutions to allow for keyless entry. After conducting research on Assa Abloy Hospitality and several other lock providers, hotel leadership opted for Assa Abloy Hospitality's innovative electronic locks and mobile solutions.



"Assa Abloy Hospitality's solutions have been at the forefront of the industry for years, allowing hoteliers to create innovative experiences while utilizing the latest technologies," said Paul Bullock, chief engineer at Crowne Plaza Hunter Valley. "We knew its mobile solutions would be able to go to work for us in a way that positioned our property as technologically advanced in order to create a new type of customer experience while increasing property security."

Since the installation, Crowne Plaza Hunter Valley has already seen significant positive results. With keyless entry, guests are now able to conveniently enter their rooms or private villas with their mobile phones without having to keep track of a physical key. Hotel staff has also seen fewer guests requesting physical keys now that they have the ability to enter their rooms with a swipe of their personal mobile devices.

"Mobile access is already making a difference in the guest experience, offering an innovative way for guests to access their room," Bullock adds. "It also eases congestion at check-in at peak periods, improving staff efficiency and the overall guest experience. Being among the first hotels in Australia to partner with Assa Abloy Hospitality in launching mobile key solutions means that we are at the cutting edge of hotel technology."

Likewise, placing a priority on guest safety with the installa-

tion of Visionline online locking solution, resort staff also now has the capability to remotely monitor all entry activity from one central location. With this feature, management can control who has access to certain areas and when. If it is ever suspected that unauthorized entry has occurred, management can remotely deactivate or restrict access, further increasing property security.

Hertzfeld, Esther, Crowne Plaza Hunter Valley adds mobile access, crownplazahuntervalley.com.au/first-hotel-australia-keyless-guest-room-entry/, October 12, 2017

Balloons can be dangerous for animals

Birds are most at risk for choking on a balloon, or having the balloon clog the stomach, causing starvation.

I can remember in grade school how we all attached notes to balloons before letting them go in hopes that the balloon would be found by someone far, far away. It was exciting to think that maybe someone from New York or California would find it and contact me. It never happened. I've been to weddings and graduations where helium balloons were let go as part of the celebration. What I didn't know is the enormous amount of damage these balloons can do to our environment. I know now. If you think about it, helium balloons are nothing more than floating litter. Would you throw a deflated balloon with string on the ground?



Most people would not. It makes for ugly trash, especially on our beaches. According to an article on the Huffington Post website, balloons are among the top 3 most harmful pollutants threatening marine wildlife, but they also harm domestic animals such as cattle, dogs and sheep.

Seabirds are most at risk. Deflated balloons are mistaken for jellyfish or squid and are eaten by the birds. Not able to digest the balloon, it will clog the bird's stomach and the bird will eventually die of starvation. Choking is also a threat.

The ribbons or strings that are attached to the balloon are a hazard to birds because they can become entangled in them when the balloon lands in a tree. They may also use the materials to build a nest causing a risk factor for the hatchlings.

In its natural state, latex is biodegradable, but when processed for balloons and treated with chemicals, plasticizers and dyes, it can no longer be classified as natural. It can take a balloon six months to four years to decompose. Shiny Mylar balloons can take even longer. Think of the damage it can cause in that time.

How can you help? Explain the dangers of releasing helium balloons to your children. Don't plan balloon releases at any of your celebrations, and if you know of someone who is planning this, please discourage them from doing so.

Conley, Cheryl, Balloons can be dangerous for animals, TWRC Wildlife Center, July 25, 2017

6 Steps to Healthier Meetings

Meeting planner Melissa Mongoven has a few simple suggestions to keep attendees healthy, happy and productive during meetings and events.

- ▶ Offer various classes first thing in the morning such as

yoga, fitness and meditation. Offer a motivational company incentive to those who attend. If attendees learn an exercise onsite, they may continue it in their daily lives.

- ▶ Use one of the breakout rooms as a meditation or quiet room, and make it available throughout the entire meeting.
- ▶ Provide healthy food options at every meal. Remove sodas and replace them with fruit-infused water stations.
- ▶ Offer a fresh juice and mocktail station at evening functions. This way people do not have to choose between alcohol and soda. They can have a healthy beverage instead, and still be able to drink something other than water.
- ▶ Implement guided movement breaks throughout the day. Attendees can stay active and recharge with movement versus with soda, caffeine and sugar.
- ▶ Break menus should consist of protein, whole foods and fruit instead of carbohydrates and sweets. That will help keep attendees alert instead of crashing in the afternoon.

Ramakrishnan, Meena, Meet Mindfully, Smart Meetings, February 2017, p. 61

Crowne Plaza Makes Flexible Meeting Spaces Part of Brand Standard

In June 2018, InterContinental Hotels Group's Crowne Plaza brand will make its Plaza Workspace flexible meeting solution a brand standard for hotels to implement during renovation.

The news comes after Crowne Plaza wrapped a conference with owners and general managers. The conference highlighted new programs and initiatives that grew out of the hotel company's three-year, \$200 million Crowne Plaza Accelerate program, which launched in June 2016. The decision to make the meeting spaces a brand standard came after a pilot that delivered an ROI for property owners within two years, according to the company.

Plaza Workspace studio

Plaza Workspace includes two flexible meeting space options. The first is a studio rented by the hour with a table that seats six, sofas and chairs, a whiteboard, a TV that can project presentations and ample electrical outlets. The second option is a "huddle spot" in the lobby with a flat screen TV for presentations. The brand standard calls for two huddle spots in every hotel, and these spaces don't require a rental. The rest of the lobby will feature various individual workspaces.



Plaza Workspace huddle spot

The ROI for owners derives from the studio rental fee and incremental revenue from food and beverage sales. Each studio and huddle spot comes with an iPad that enables users to order from a menu. "You don't have to interrupt the flow of the meeting. You don't have to flag down the server," Crowne Plaza Americas head Meredith Latham told BTN. "You can actually utilize the tablet,



place the order and it will be delivered directly where you are." Each renovated Crown Plaza also will feature a marketplace with grab-and-go food and beverage.

Other initiatives coming as part of Accelerate include WorkLife guest rooms with amenities like a sofa workspace and outlets at every turn; a core dinner and bar menu that will be standard across the Americas portfolio, complemented by properties' ability to add local chef favorites; new service training for on-property staff; and a dedicated field team to work with sales operators to drive performance on the local level.

Sickel, Julie, Crowne Plaza Makes Flexible Meeting Spaces Part of Brand Standard, SHARE, November 1, 2017

BECOME A CITIZEN SCIENTIST

With the current administration cutting budgets for science, the need for accurate scientific data has never been greater. You can help by becoming a citizen scientist—and you don't need a Ph.D. to make a difference. Technological advances mean that from behind your computer, in your neighborhood or you on a trail, you can now count, measure, analyze, identify—and share. Here's how:

Monitor butterfly migration: Monarch butterfly populations are in steep decline. Help scientists collect data by tracking and tagging them along their migration route from North American to Mexico.

When? Mid-August to November

Where? The lower 48 states

Learn more: monarchwatch.org



Monitor mountain birds: The woodland hills of New England are magical on early spring mornings. Help Mountain Bird-watch and identify mountain breeding birds by learning their songs with the help of a training CD.

When? June mornings

Where? Specific trails in the mountains of New England

Learn more: bit.ly/2xRsXrx

Save the redwoods: Use your smartphone to report the plants and animals spotted among the California redwoods. The information helps scientists better understand species distribution and predict where future redwoods will thrive.

When? Year-round

Where? Redwood forests on the California coast

Learn more: bit.ly/2fka5tf



Test your local waterways: Residents of over 140 countries are testing water quality in their local streams, rivers and lakes for EarthEcho Water Challenge. Order testing kits and share your findings online.

When? March 22 to December 31

Where? Local water bodies

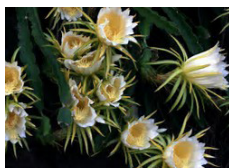
Learn more: worldwatermonitoringday.org

Observe growing plants: Project BudBurst needs you to collect data on the timings of the leafing, flowering and fruiting of plants. Scientists use the data to track how plants respond to climate change.

When? Year-round

Where? Countrywide

Learn more: budburst.org



Record historical weather data: Computers can't read the spidery handwriting in 19th and 20th century ships' logs, but you can. Help transcribe information on historic weather patterns and sea ice conditions to aid scientists with climate modeling.

When? Anytime

Where? From your computer

Learn more: oldweather.org

Track humpback whales: Boaters can help gather information about the population, health and movements of humpback whales by photographing their distinctive tails, which are then matched to those in a registry.

When? Year-round, depending on location

Where? Between the North Atlantic and the Caribbean

Learn more: caribbtails.org



These are only a few of the projects out there. Browse Scistarter.com and Zooinverse.org for hundreds more. Let us know your personal favorite at editor@edf.org.

Green Living, Become a citizen scientist, Solutions, Vol. 48, No. 4, fall 2017, p. 18

13 Proven Health Benefits of Cinnamon

1. High Source of Antioxidants - Cinnamon is packed with a variety of protective antioxidants that reduce free radical damage and slow the aging process; in fact researchers have identified 41 different protective compounds of cinnamon!

According to the OTAC scale, which is used to measure the concentration of antioxidants in different foods, cinnamon ranks #7 of all foods, spices and herbs. And in a study that compared the antioxidant activity of 26 spices, cinnamon was deemed the winner and proved to be higher in antioxidants than other powerful herbs and spices.

The health benefits of cinnamon are attributed to the type of antioxidants called polyphenols, phenolic acid and flavonoids. These are similar antioxidants to those that can be found in other "superfoods" including berries, red wine and dark chocolate. These compounds work to fight oxidative stress in the body, which can lead to disease formation when uncontrolled.

The different antioxidants present in cinnamon help to reduce a multitude of symptoms and diseases because they are free-radical-scavengers. The health benefits of cinnamon include its ability to reduce many forms of oxidative stress, including the ability to limit nitric oxide buildup in the blood and lipid (fat) peroxidation, which can both add to instances of brain disorders, cancer, heart disease and other conditions.

2. Contains Anti-inflammatory Properties - The antioxidants in cinnamon have anti-inflammatory effects, which may help lower the risk of heart disease, cancer, brain function decline and more. Researchers have identified over seven kinds of flavonoid compounds alone in cinnamon, which are highly effective at fighting dangerous inflammation levels.

Because cinnamon lowers swelling and inflammation, it can be beneficial in pain management, with studies showing that cinnamon helps to relieve muscle soreness, PMS pains, allergic reactions and other age-related symptoms of pain.

3. Protects Heart Health - Studies show that another health benefit of cinnamon is that it reduces several of the most common risk factors for heart disease, including high cholesterol levels, high triglyceride levels and high blood pressure.

The special compounds in cinnamon are able to help reduce levels of total cholesterol, LDL bad cholesterol and triglycerides, while HDL good cholesterol remains stable. Cinnamon has also been shown to reduce high blood pressure, which is another threat for causing heart disease or a stroke.

Research shows that cinnamon is a helpful blood coagulant and prevents bleeding by helping the body to form blood clots. Cinnamon also increases blood circulation and advances bodily tissue's ability to repair itself after it's been damaged. This includes heart tissue which is in need of regeneration in order to fight heart attacks, heart disease and stroke.

4. Fights Diabetes - Cinnamon is known to have an anti-diabetic effect. It helps lower blood sugar levels, and also can improve sensitivity to the hormone insulin, which is the vital hormone needed for keeping blood sugar levels balanced.

Diabetes is formed when insulin resistance occurs and poor glycemic control takes place, or someone develops the inability to manage how much sugar (glucose) enters the blood stream. The same problem with insulin resistance is also associated with other conditions like metabolic syndrome and weight gain.

These benefits of cinnamon exist because it plays a part in blocking certain enzymes called alanines which allows for glucose (sugar) to be absorbed into the blood. Therefore it has been shown to decrease the amount of glucose that enters the bloodstream after a high-sugar meal, which is especially important for those with diabetes.



For this reason, many studies have shown that people with type 2 diabetes can experience significant positive effects

on blood sugar markers by supplementing with cinnamon extract. Another benefit for those with diabetes is that cinnamon helps combat heart disease and lowers bad LDL cholesterol levels.

5. Helps Defend Against Cognitive Decline & Protects Brain Function - Research also shows that another benefit of cinnamon's protective antioxidant properties is that they can help defend the brain against developing neurological disorders, such as Parkinson's and Alzheimer's diseases.

One way that cinnamon protects cognitive function and brain health is because it activates neuro-protective proteins that protect brain cells from mutation and undergoing damage. This further reduces the negative effects of oxidative stress by stopping cells from morphing and self-destructing.

Because cinnamon contains so many antioxidants and anti-inflammatory compounds that reduce the effects of aging on the body and brain, in the future we may see it being used as a possible natural therapeutic treatment or prevention for age-related neuro-degenerative diseases.

6. May Help Lower Cancer Risk - Because of its antioxidant abilities, cinnamon can protect against DNA damage, cell mutation and cancerous tumor growth. Studies have revealed that the health benefits of cinnamon come from a compound called cinnamaldehyde include its ability to inhibit cancer tumor growth and protect DNA from damage, while also encouraging cancerous cells to self-destruct (called cell apoptosis). This is especially true in the colon; studies show that cinnamon can improve the health of the colon, thereby reducing the risk of colon cancer. Cinnamon is now being investigated as a natural anti-cancer agent because of its strong antioxidant

abilities, so in the future it may be useful to supplement with cinnamon extract for those who are at higher risks for cancer.

7. Fights Infections & Viruses - There are many benefits of cinnamon when it comes to defending the body from illnesses. Cinnamon is a natural anti-microbial, anti-biotic, anti-fungal and anti-viral agent. The immune-boosting abilities of cinnamon are found in cinnamon's essential oils.

Cinnamon is used in many cultures to naturally help fight harmful infections and viruses. Cinnamon oils also have protective abilities against various bacteria which can cause negative symptoms in the digestive tract, on the surface of the skin and can lead to colds or the flu. Cinnamon is so powerful at boosting immunity that some studies even show that it may be able to reduce the risk of contracting the HIV virus.

8. Protects Dental Health & Freshens Breath Naturally - In studies, the extracts found in cinnamon were shown to be protective against bacteria living in the oral microflora that could cause bad breath, tooth decay, cavities or mouth infections. The essential oil from cinnamon has been shown to be more potent than other tested plant extracts and can be used to naturally combat bacteria in the mouth, acting like a natural anti-bacterial mouthwash.

Similarly to peppermint, one of the health benefits of cinnamon is that it can also be used as a natural flavoring agent in chewing gums due to its mouth refreshing abilities. Because it removes oral bacteria, cinnamon has the ability to naturally remove bad breath without adding any chemicals to the body. For this reason cinnamon has also been traditionally used as tooth powder and to treat toothaches, dental problems, oral microbiota and mouth sores.

Cinnamon essential oil is also used in some beauty products, shampoos and perfumes for its many health benefits that can help with fighting infection while adding a pleasant smell.

9. Can Help Prevent or Cure Candida - Certain studies have concluded that cinnamon's powerful anti-fungal properties may be effective in stopping or curing Candida overgrowth in the digestive tract. Cinnamon has been shown to lower amounts of dangerous Candida Albicans, which is the yeast that causes Candida overgrowth that can cause multiple digestive and autoimmune symptoms. Additionally, another health benefit of cinnamon is that it helps to control blood sugar levels, and too much sugar within the digestive tract is associated with increased candida risk.

According to researchers, when patients were given cinnamon extract or cinnamon essential oil, they showed improvements in candida yeast levels and a reduction in symptoms. Cinnamon helps to fight candida naturally by boosting immune health and fighting inflammation, auto immune-reactions and yeast within the gut.

10. Benefits Skin Health - Cinnamon has anti-biotic and anti-microbial effects that protect skin from irritations, rashes, allergic reactions and infections. Applying cinnamon essential oil directly to the skin can be helpful in reducing inflammation, swelling, pain and redness. Cinnamon and honey, another antimicrobial ingredient, are frequently used together to boost skin health for this reason and are beneficial for acne, rosacea and signs of skin allergies.

11. Helps Fight Allergies - Studies have concluded that those with allergies can find relief through cinnamon's compounds. Cinnamon has been shown to be helpful in fighting common allergy symptoms because it reduces inflammation

and fights histamine reactions in the body. For the same reason, it can also help to reduce symptoms of asthma attacks.

Cinnamon also has immune boosting abilities and is beneficial for digestive health, which helps to cut down on auto-immune reactions that can take place after consuming common allergen foods.

12. Can be Used to Sweeten Recipes without Added Sugar - Because of its naturally sweet taste, adding cinnamon to foods and recipes can help cut down on the amount of sugar normally used, thereby lowering the glycemic load of a meal. Cinnamon already has anti-diabetic effects that slow sugar from releasing into the blood stream which can help manage food cravings and weight gain, but using cinnamon for its taste is another added benefit.

One of the benefits of cinnamon over sugar is that it contains no sugar and no calories in amounts that it is used by most people, so it makes an extremely healthy addition to many meals, especially considering its many nutrients.

13. Can Be Used as a Natural Food Preservative - One of the less-known benefits of cinnamon is that it can be used to preserve food. Because cinnamon has anti-bacterial abilities and also acts as an antioxidant, it can be used as a preservative in many foods without the need for chemicals and artificial ingredients.

A recent study reported that when pectin from fruit was coated with cinnamon leaf extract it yielded high antioxidant and antibacterial activities and stayed fresh longer. Cinnamon plays a part in the action of tyrosinase inhibitors, which are useful in stopping discoloration on fruits and vegetables that appears as they oxidize and begin to rot.

<https://draxe.com/health-benefits-cinnamon/>

Making Tire Filler from Eggshells

Nobody uses the expression "where the carbon black meets the road," in part because tires are mostly rubber. But tires would be very different without this crucial additive. For one thing, they wouldn't be black: Natural rubber tends to come in shades that evoke maple syrup. More important, tires wouldn't be nearly as durable without carbon black, a powdery petro-

leum derivative that makes up 30% of a typical car tire. It has had this important "filler" role for more than a century.

Scientists have been hunting for a plentiful, sustainable substitute for some time, and researchers at the Ohio State University now think they have come up with an answer. They found that mixing carbon black with eggshells or tomato skins produces rubber that meets or exceeds real-world performance requirements. If they are correct, their solution will offer several advantages. Making tire filler from food waste is better for the environment than using pure carbon black, the scientists say, and has the added benefit of turning trash into treasure. The US produces around 100 billion eggs a year, about half of which are used by commercial food producers, who find themselves with a lot of shells to discard. If those shells, which mostly consist of calcium carbonate, can be used in tire-making, food firms might be able to turn an expense into a revenue source while diverting a large volume of material from landfills.

In one of several papers on the subject, Ohio State's Katrina Cornish and colleagues wrote that in 2012, the US generated 437,574 metric tons of waste tomato skins (usually discarded in the production of tomato sauce) and 596,754 metric tons of eggshells. The commercial origin of so much of this waste would make it relatively easy and economical to use. Dr. Cornish says that eggshells could replace up to 60% of carbon black in a filler mix; tomato peels could fill perhaps 30%. substituting 5-10% will make a real difference in the carbon black market.

That could help the world's growing tire industry diversify its sources of raw materials. Carbon black is used in tires as well as in gaskets, hoses and other rubber products, and it functions as an effective pigment in still more goods. Experts have predicted a shortage stemming from increased demand and stricter environmental regulations. Dr. Cornish says that swapping in some food waste could lower production costs, leading to cheaper tires for consumers, higher profits for shareholders or some combination of the two.

Akst, Daniel, Making Tire Filler from Eggshells, The Wall Street Journal, March 9, 2017

FINAL WORDS . . .

We will make electricity so cheap that only the rich will burn candles.

Thomas A. Edison