SECOND NATURE
Sustainability in Action

Pacific Northwest NATIONAL LABORATORY
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Our people make it possible—sustainable research, operations and community stewardship.

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On Being Sustainable—Joanie's Story

Joanie Walker, an administrator for Nigel Browning and Materials staff in EMSL, wants to go sustainable in all ways that she possibly can—both at home and at work. Why? Because she is determined that her six children will feel empowered, be self-sufficient and have a healthy respect for the environment. It's her legacy to them.

Joanie's inspiration began when she was a young girl. She had a lot of farming friends and saw a beautiful lifestyle she fell in love with and wants to get back to. In 2008, two years after joining PNNL, she began noticing a spike in the Lab's sustainability efforts. This encouraged her to learn all she could about sustainable living—in between studying for her bachelor's degree, working and taking the kids to soccer practice.

Going sustainable isn't necessarily cheap, but Joanie knows it's an investment in a lifestyle and their family's future. She and her husband Richard are in the third year of their 10-year plan to create a self-sustaining farm. It began with the purchase of a 2.5-acre parcel of land in Badger Canyon in 2010. They fenced it, bought a tractor, put in a garden and got some alpacas. They're currently building a loafing shed for chickens. After the grazing grass and sprinklers are complete next year, they will get some cows and goats that they will raise for food and to allow their kids to participate in 4H. She cans fresh produce from their garden, and they compost and recycle for zero-waste. Eventually they hope to be able to afford a big greenhouse, wind and solar power, and a water cistern.

Joanie says, "Becoming self-sufficient is a lifelong process, so I will never feel done. It's certainly been an adventure already!" Joanie plans to finish her B.A. in business economics and accounting with Ashford University and has less than a year to go.

As much as PNNL inspired Joanie to pursue her dream, she is also an inspiration to others. Do you think twice about throwing recyclables in the trash can instead of taking the extra steps it takes to use the recycling bins and composters located throughout our campus?

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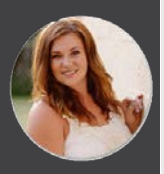
PNNL Teleworks



Working remotely and avoiding a commute helps PNNL reduce greenhouse gas emissions. It also helps employees strike a better work-life balance. PNNL launched a telework option in 2012. Today 5.2% of employees telework once a week on average. If you have telework or alternative commuting success stories, lessons learned, questions or suggestions, please reach out to Sadie Bender.

Single-Stream Recycling Takes Off

Blue recycle bins are being replaced with green "single-stream" bins at PNNL, making recycling easier than ever. Employees no longer need to separate common recyclables into different bins—mixed paper, all plastic (except Styrofoam, packing peanuts, and soft plastic bags/film), aluminum, tin, and glass can be cleaned/gently rinsed and placed into the new green bins.

Single-stream recycling will not include office paper, trash, hardbound books, toner, media, batteries, shredded paper, or corrugated cardboard. These items will continue to be sorted into their designated bins. The Lab-wide transition should be completed by the end of 2016.

What's Driving Electric Cars Into the Mainstream? Plenty

At PNNL we encourage alternative commuting methods, such as biking, bussing and carpooling. We even provide a way for employees with electric vehicles (EVs) to charge while on campus. EV charging stations are available at MATH, EMSL, SEB and BSF/CSF. Great strides are being made to make charging stations more convenient for those who support sustainability through EV ownership. Look for the next charging stations to be installed in the east side ETB parking lot**.**

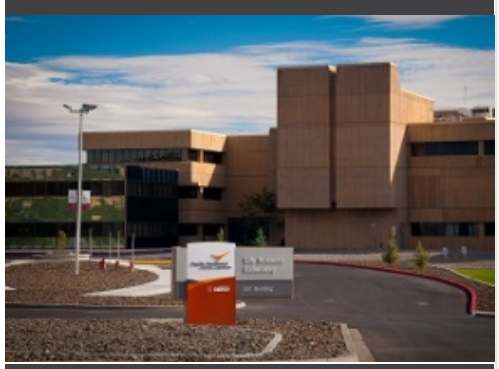
Despite all the people who are fans of EVs, these cars have yet to merge into the mainstream. According to a study by PNNL, the country's electric grid could support more than 150 million pure electric vehicles—equivalent to 75% of vehicles on the road today. >> Read more

Fostering the Next Generation of Scientists and Engineers

Laboratory Director Steve Ashby's monthly column "PNNL gives students hands-on experience" appeared in the Aug. 22 *Tri-City Herald*. It describes how students and interns spend time at PNNL working side-by-side with researchers on real-world science and engineering challenges. PNNL offers these opportunities and supports STEM (science, technology, engineering and mathematics) education to inspire future scientists and inventors who may one day join PNNL in helping address some of the nation's most critical needs.

Back-to-School: Let's Learn About Energy @Energy.Gov

It's hard to believe, but summer is already drawing to a close. Millions of students across the U.S. are going back to school to boost their brainpower in subjects like science, technology, engineering and math—or STEM. A favorite STEM topic is energy, which plays a vital role in nearly everything we do.



>> Five resources (w/video)

Buildings of the Future

A collaboration project between operations, research and external partners involves the installation of HVAC sensors in buildings—and much more. From the data collected at the Building Operations Control Center, building operators can make real-time decisions to improve efficiencies. As more buildings come "on-line," the water and energy savings from creating these so-called "smart" buildings is significant. And the research outcomes can be widely applied in a variety of settings.

Researchers have also defined an achievable vision for future buildings. Funded by the U.S. Department of Energy and guided by the collective views of our forward-thinking partners, the newly developed framework will help guide the evolution of American buildings.
>> Read more

In other efficiency news, Facilities & Operations installed two new chillers in the Life Sciences Laboratory (331). They also optimized the staging of the chiller plant and reconfigured the piping. Significant energy savings have been realized since the installation, with July 2016 usage down 31% from July 2015.

Landscaping for Water Conservation

Over the next few months, portions of the PNNL landscaping will undergo dramatic changes geared toward water and labor conservation. Crews will be guided by a water plan developed by Energy & Environment Directorate staff, ensuring its

Local Wind Powering More U.S. Companies

PNNL report provides detailed look at distributed wind in America

This 7.5-megawatt distributed wind project generates energy for the Whirlpool and Ball corporations in Findlay, Ohio. Courtesy of Lauren Powell/One Energy

The 2015 *Distributed Wind Market Report*, released by PNNL in August, offers the fourth annual analysis of a growing field called distributed wind, which involves generating wind power near where it will be used instead of purchasing power from large, centralized wind farms. Distributed wind can range from a small, solitary turbine at a remote cabin to several large turbines powering an entire neighborhood. “Although distributed wind is not as widespread as distributed solar, new third-party financing options similar to the lease model that spurred growth in the residential solar market could also grow distributed wind,” said energy analyst **Nik Foster**, EED, a co-author.
>> Read more

Doing Business with PNNL

PNNL helping make hydro power cheaper, more fish-friendly

Click thumbnail to watch the video on YouTube.

Enabling fish to migrate past dams could cost a fraction of conventional fish ladders with the help of a new study of the so-called Salmon Cannon. The Salmon Cannon transports fish through a flexible tube, which works by creating a small difference in pressure across fish. The pressure difference helps gently move fish through the tube. PNNL will evaluate Seattle-based Whooshh Innovations' technology, officially known as the Whooshh Fish Transport System, with a $300,000 grant from DOE's Small Business Vouchers Pilot. The company will provide PNNL an additional $60,000 of in-kind support for the study.

PNNL fisheries biologist Alison Colotelo and her colleagues will compare the performance of the Whooshh system and fish ladders to move Pacific Coast salmon around barriers in the Columbia River. The results could help the technology obtain federal approval to transport Endangered Species Act-listed Pacific salmon around dams.

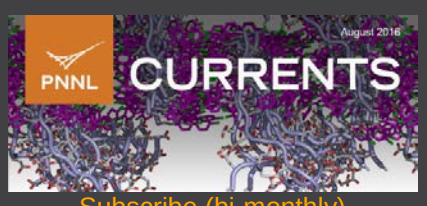
This is the fourth project PNNL has been awarded under the Small Business Vouchers, which enable small clean energy firms to receive technology assistance from DOE's national laboratory system. PNNL is among five national labs leading the pilot and is specifically supporting small businesses in three areas: bioenergy, water power and buildings. The full list of all 43 winning projects is available on the Small Business Vouchers Pilot website.

consistency with executing our established campus strategy.

In order to reduce our water usage, crews will be removing some grass from around the Physical Sciences Laboratory and EMSL, and replacing it with xeriscape. Crews will also begin landscaping around our newly constructed Building 3850, General Process Chemistry Laboratory and outside of the Physical Sciences Facility. Because the grass will be removed during the upcoming Collaboration Center Project, crews will no longer water and maintain the staked-off area. These re-landscaping projects will allow PNNL to showcase native plants and further beautify the campus, while decreasing our water usage and landscaping costs by up to 80%.

Stay on Top of Scientific Discovery

Don't miss any of PNNL's amazing research and discoveries—subscribe to both of these newsletters today!



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