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HYDROGEN PROPONENT TOUTS MONTANA'S ALTERNATIVE ENERGY BOUNTY

By John Cramer

Paul Williamson conducts pioneering research into a range of alternative energies, including hydrogen, biomass, solar and wind.

He's a promoter of the hydrogen economy, a worldwide effort to power everything from trains to toasters with the most abundant chemical element in the universe rather than fossil fuels.

But in his daily life, Williamson's low-rider pickup truck - whose internal combustion engine he's replaced with electrical power - is what draws the most questions from the public.

"It's something everyone can relate to," said Williamson of the University of Montana's Alternative Energy Technologies program at the Montana Technology Enterprise Center in Missoula.

Williamson and his business partner, Brian Kerns, talk to community groups a dozen or so times a year about alternative energy, especially hydrogen. He recently discussed the research with Leadership Bitterroot, a Bitterroot Valley Chamber of Commerce program designed to develop community leaders.

Montana can be the perfect laboratory for making the United States energy-independent, given its supplies of oil, gas, coal, wind, water, solar, biomass, platinum, carbon and other energy sources, Williamson said.

But it's hydrogen that holds the greatest promise for supplying clean, efficient and inexhaustible energy for transportation, heat, electricity and other needs, including jobs in the new economy, he said.

"Hydrogen the only thing we have enough supply of to solve our energy needs in the United States or the world," he said.

Worldwide, thousands of stationary hydrogen fuel cell systems generate power for utilities, hospitals and other industrial and commercial applications.

Car manufacturers are developing vehicles powered by hydrogen fuel cells, but problems remain with costs, infrastructure and storage before they are practical and cost-effective, according to the Environmental Literacy Council.

A hydrogen fuel cell converts hydrogen and oxygen into water, producing electricity to power the motor.

Williamson has federal grants to research and develop practical and safe uses for hydrogen energy, including a magnetic levitation monorail system.

For now, though, he doesn't get around western Montana in a futuristic-looking rail pod. He travels by three kinds of wheels: a hybrid electric Toyota Prius, a bicycle and a 1996 Chevy S10.

Williamson combined his two interests - motor vehicles and alternative energy - when he decided to convert a truck to electrical power.

“I'm always tinkering with something, so I figured if I was going to talk the talk, I should walk the walk,” he said.

In 2007, he called all of Missoula's used car dealerships, looking for a junker pickup with no motor or a bad motor.

“They thought I was nuts,” he said, chuckling.

He found one, drove it home and removed its engine, radiator, gas tank, exhaust system and everything else related to internal combustion.

He bought a hydrogen fuel conversion kit, installed an electric motor and two dozen batteries and hooked them up to the five-speed transmission.

Six months later, he had one cool - and clean, cheap and quiet - ride that goes up to 90 miles before it needs recharging, which takes four to six hours of being plugged into a wall socket. It costs 10 kilowatts of electricity, or $1, to charge fully up.

He's scripted “Electrify Your Ride” on the tailgate, but the only way you'd know the difference between a greenhouse gas-emitting truck and his customized maroon hydrogen vehicle is by looking under the hood and the bed cover where the batteries generate enough power to squeal the tires.

“It operates like a regular truck except I don't spend anything on gas,” he said. “Electric cars aren't the answer, but they're part of the equation.”

About 300 demonstration and lease vehicles running on hydrogen fuel cell are in use in the United States.

Williamson plans to convert his electric pickup into a hydrogen-powered truck next year.

He thinks many more hydrogen-powered vehicles will be on U.S. roads in 10 to 15 years if the technology continues to advance, gas prices continue to rise and Americans

have the political will to demand change.

“People say Montanans are bull-headed, but I think they're very open to possible solutions to cleaning up their environment and adapting to new technologies,” Williamson said.