

Todd Hansen Network engineer, HPWREN

While it can be said that most Southern California residents worship the sun to a certain extent, Todd Hansen has taken the concept to a whole new level. It was his bright idea to harness solar energy to power high-speed wireless data capabilities in remote geographic areas.

Hansen is a network engineer for UC San Diego's High Performance Wireless Research and Education Network (HPWREN) team, which builds and connects 802.11b networks across San Diego County's rough terrain. The networks have a broad mix of users, ranging from seismologists to remote American Indian tribes who surf the Internet. And because Wi-Fi networks require line-of-sight to operate, antennas are sometimes constructed on mountaintops—often where no electricity exists.

So two years ago, a seismologist suggested that Hansen look into adapting solar-powered seismic monitoring technology as a means to generate juice. With the aid of Hans-Werner Braun, HPWREN's head research scientist, Hansen began exploring the possibilities.

"We were able to take the [seismic monitor] design and increase it by many orders of magnitude," Hansen said. "The next step was to run out to Hans-Werner's house and build a solar panel relay in his back

yard. And his wife didn't seem to mind, which surprised me."

Hansen's design was intended only to solve the power problems facing one mountaintop site. But with a flood of other engineers running into the same dilemmas, soon he was helping colleagues construct their own solar panels as well.

While excited about the idea's potential—a panel can power 802.11b systems for up to five days without sunshine—Hansen admitted that widespread deployment is not yet cost-effective: A complete system, including all the panels, batteries, enclosure, radios and antennas, costs \$1700. But that price is already significantly lower than the \$6000 each system used to cost.

There's one more benefit to creating solar-powered networks: All that exposure to the sun gives you a great tan. How many other network-engineering gigs can claim that? —LYNNETTE LUNA

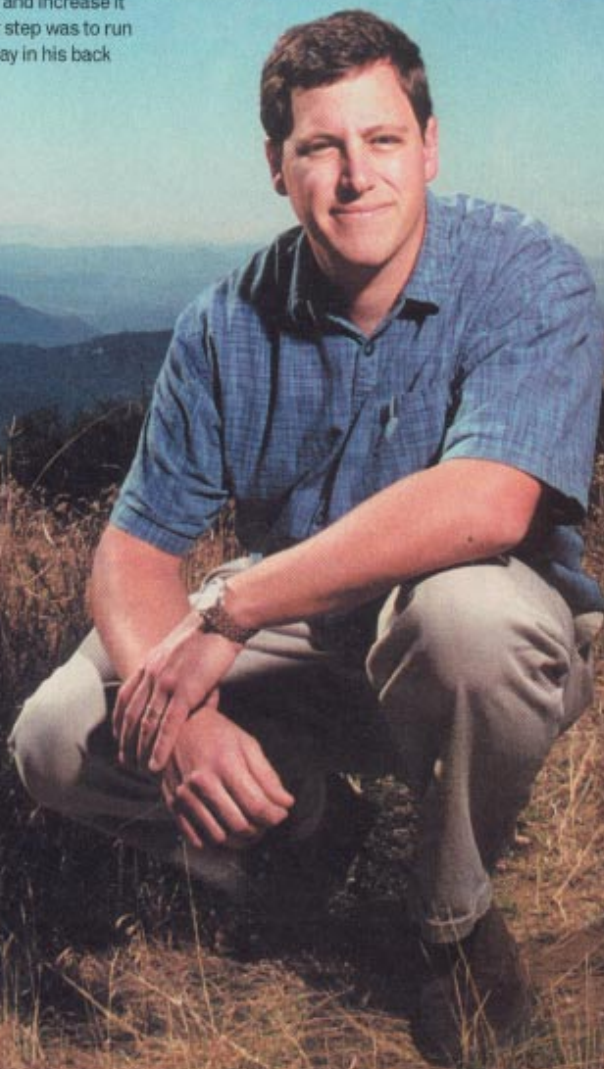


Photo by James D. Hayes