

## World Metrology Day 2014: Measurements and the Global Energy Challenge

The theme of this year's World Metrology Day, "[Measurements and the Global Energy Challenge](#)," speaks to one of the defining issues of our time. One that is as far-reaching as any challenge we have ever faced. Keeping pace with our ever-growing energy needs while protecting our environment will require a host of new technologies, and those technologies depend on a robust system of measurement and calibration if they are to be built and used economically and maintained in good working order.

With literally [hundreds of projects](#) covering nearly every aspect of energy from generation (by conventional and alternative means) to transmission, metering, conservation and sustainability, the National Institute of Standards and Technology (NIST) is doing all it can to help solve the energy challenge.

[Standards for the Smart Grid](#), [energy efficient lighting](#), [photovoltaics](#), [net-zero-energy buildings](#), and [software for "smart" building](#) are but a few of the many areas where NIST measurement research is having an impact.

For instance, the Nisters, the virtual family inhabiting [NIST's Net-Zero Energy Residential Test Facility \(NZERTF\)](#), earned about \$40 by exporting 328 kilowatt hours of electricity to the local grid while meeting all of their varied energy needs during their first six months of occupancy. (Embed [video](#))

NIST researchers' [survival-of-the-fittest computer simulation](#) uncovered a more efficient design for rooftop air-conditioning systems. The 3 percent improvement could be enough for a manufacturer to achieve compliance with increasingly stringent energy efficiency standards. The efficiency increase could also translate into material savings—a reduction in the amount of costly copper tubing in a heat exchanger without sacrificing performance.

A NIST [spectroscopy innovation](#) could improve the detection of greenhouse gases in the atmosphere. The high speed of the technique allows for very accurate measurements of atmospheric gases at rates that are faster than atmospheric changes in temperature and pressure due to turbulence and could potentially be used on a vehicle, aircraft or satellite.

And NIST will continue to work to address the pressing measurement and calibration needs of today while anticipating the needs of tomorrow.

World Metrology Day celebrates the signing of the Treaty of the Meter on May 20, 1875. By signing the treaty, representatives from 17 nations, including the United States, recognized the importance of worldwide uniformity of measurements and established a collaborative global framework for the advancement of measurement science.

Each year, World Metrology Day is organized and celebrated jointly by the [International Bureau of Weights and Measures](#) (BIPM), which serves as the hub of national metrology institutes such as the National Institute of Standards and Technology (NIST), and the [International Organization of Legal Metrology](#) (OIML), an intergovernmental treaty organization that promotes harmony in legal metrology.

From all of us at NIST, have a great World Metrology Day!

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