

# From the Editor:

As the summer wears on and the price of gasoline goes up even faster than your electric bills, no doubt you worry from time to time about our nation's, and the world's, energy future. (If you don't, go re-read "Powering the Planet" by Nathan S. Lewis in the 2007, Number 2, issue of E&S.) Our current global energy consumption is some 13 tera (trillion) thermal watts, a number that's projected to at least double by 2050. If we're going to meet that demand in a sustainable, carbon-neutral way, where is the energy going to come from?

In this special issue on alternative energy, you'll see some of the avenues Caltech faculty are pursuing. The first feature article describes a way of making butanol, a better motor fuel than ethanol, without using food crops. The next two articles deal with transforming sunlight—far and away the most plentiful source of energy available to us—into hydrogen, a chemical fuel that can be stored and used after dark. The final one discusses fuel cells, which liberate that energy by turning the hydrogen back into water. These articles were drawn from last fall and winter's NRG 0.1 lecture series, which looked at energy options from carbon sequestration to nuclear fusion. (Streaming videos of the entire series can be found at <http://nrg.caltech.edu/>.)

Caltech is working to make a difference in other ways as well. Up front in Random Walk, you'll find out how the campus is becoming a greener place, and read about a new laboratory to be devoted to studying climate change.

It's a long haul from a tabletop demonstration (or a rooftop of solar cells) to changing the world, but the journey of 1,000 miles begins with a single step.

—Douglas L. Smith

A view of the 210 freeway (and the Lake Avenue Metro Rail station) at 11:30 p.m. If we are going to become a solar-powered society, we're going to have to figure out how to run our civilization at night.

