

Peering into a post-petroleum world

As protests in Egypt underscore the hazards of relying on imported oil, a bus and bike-riding scientist at UCLA is working on clean fusion energy that could wean us from foreign fuel.

Steve Lopez, Los Angeles Times, 2-2-11

The story of how I ended up in the basement of a UCLA physics building, getting a tour of a plasma facility with a young scientist working on the development of clean fusion energy, begins with the uprisings in the Middle East.

On Monday morning, I headed west on Wilshire Boulevard with a couple of items on the agenda. First, I wanted to see if I could find any demonstrators left over from the weekend. People were still marching in the streets of Cairo, demanding the ouster of longtime U.S. ally Hosni Mubarak, so I thought there might still be a few protesters carrying signs in front of the West L.A. federal building.

I also wanted to meet with a UCLA student who had e-mailed me to say that he was ticked off about opposition to the proposed bus-only lane for Wilshire Boulevard. David Auerbach, a doctoral candidate who has no car and commutes by bicycle and bus, called the piecemeal scaling back of the bus plan "a great example of the typical L.A. governance." He didn't mean that as a compliment.

The more I thought about it, the demonstrations and Auerbach's issues seemed to have more in common than just Wilshire Boulevard. We don't get much of our oil from Egypt, but we get it from a part of the world made more complicated by the events of the last week. Our addiction to cars — and the oil they consume — complicates our role in a region with more than its share of corrupt and oppressive rulers.

When I finally got to Westwood, there wasn't a demonstrator in sight, so I headed straight to Auerbach's lab. At 32, Auerbach is about to get his doctorate after working on a project to create fusion energy using a plasma of heated gas.

But before we got to unlocking the secrets of the universe, we talked about unlocking the streets of Los Angeles. Santa Monica, Brentwood and the "condo canyon" area in Westwood have said no thanks to the Wilshire bus plan, which would move bus riders more quickly but slow down cars at times and irritate merchants. Beverly Hills and Century City, meanwhile, have issues with the location of stations on the subway-not-quite-to-the-sea, which, you may recall, will stop a few miles short of the water if it is ever built, just like the Green Line that stops well short of the airport.

We're not complete troglodytes, of course, when it comes to energy and environment. Kristen Eberhard, a proud bus rider who works for the Natural Resources Defense Council in Los Angeles, noted that Californians overwhelmingly backed the Global Warming Solutions Act. And in 2008, L.A. County residents overwhelmingly approved a sales tax increase to pay for \$40 billion worth of traffic relief and transit projects.

But decades of irresponsible planning, half-hearted public transportation efforts and provincial interests have kept us riding alone in our cars, fuming about traffic and smog.

"You want to see my toy?" Auerbach asked before giving me a tour of the LAPD — Large Plasma Device. It's a

hollow contraption as long as a submarine, and while peering into the core, I saw a flash of light.

Auerbach later e-mailed me to explain what I had been looking at, because I couldn't have told you otherwise:

"The flashing light was the cold helium gas being turned into hot helium plasma, at about 50,000 degrees, which lasted for about 1/100th of a second before cooling off again. It's that same process of heating gas to very high temperatures (hydrogen, in fusion's case), that would lead to fusion energy, if we can only figure out how to do it well enough."

Auerbach guesses we're 20 years away from figuring it out well enough to make electricity that will power cars and houses. If and when it happens, he said, clean fusion will produce no greenhouse gases or nuclear waste, and there will be enough hydrogen to last millions of years.

But rather than wait two decades to shrink his carbon footprint, Auerbach does what he can now. He lives just west of downtown L.A. at Eco-Village, a co-op of ecology-minded crusaders for low-impact, sustainable living. With no car, he gets around by riding his bike and taking the bus, and the piece-by-piece dismantling of the proposed Wilshire busway has made him an unhappy scientist.

Glen M. MacDonald, director of the UCLA Institute of the Environment and Sustainability, said alternative power sources like solar, geothermal and fusion energy are a long way from becoming practical and widely available. (And even when they are, they won't solve our traffic problems).

But citizen uprisings in the Middle East have "got to be a wake-up call" for the United States, MacDonald said, because of the potential effect on global economic, foreign and energy policy.

Even though Egypt produces and controls access to only a small portion of the oil we import, MacDonald said, oppressed citizens of corrupt neighboring countries may feel emboldened and spawn their own revolutions.

"What if this really goes off the rails and we have movements sweep across the main sources of our oil — Saudi Arabia and the gulf states — and the regimes in their place are not friendly to us?" MacDonald asked. "We cannot control, and in some ways can't even properly anticipate, what's going to happen in some of those countries."

No, but we can gradually wean ourselves from oil. We can vow to quit losing green jobs to China. And we can wake up and realize that energy independence, national security and environmental survivability are close cousins.