

Energy's Real Costs

Allison Bruce, Ventura County Star February 11, 2007

A sea change is coming in how people think about **energy**, where it comes from and its actual costs. Facing these **energy** challenges and taking steps toward a truly sustainable future were part of the discussion at the Concept to Commerce: Emerging **Energy** Technologies **Summit** at UC Santa Barbara, which wrapped up on Saturday.

"People's behaviors are about to change very dramatically," said Gary Barsley, director of commercial projects for SolarWorld Industries, where he leads a group responsible for solar electric projects for commercial customers.

There's a growing understanding that "we can't keep doing things the way we're doing them," he said. As a society, the United States is tremendously wasteful. People have to understand the true costs of what they're buying to truly drive change, he said.

In California and around the world, these changes have already begun. Speakers at the **summit** described model communities being planned in San Diego promoting sound land use, environmental protection and **energy** conservation show that sustainable communities can be both efficient and marketable. Meanwhile, countries such as Germany have shown that public support and political will can lead to policy changes that encourage more renewable **energy** and more efficiency.

One problem with the current system is that prices don't reflect true costs. A car buyer only thinks of the upfront cost, often ignoring the cost to operate the vehicle, said Michal Moore, senior fellow at the Institute for Sustainable **Energy**, Environment and Economy at the University of Calgary. Adding in those costs will help drive people to make more sustainable decisions, he said. 'Out of tune, out of date'

Moore suggested that perhaps large appliances should no longer be bought outright, but instead leased - with the **energy** costs built into that lease price as a reminder and deterrent against more **energy**-hungry appliances.

There has to be a better understanding of the costs for change to take place, Moore said. Those in politics who don't listen are "about to get run over by a very big train," he said. "They're out of tune, out of date and, hopefully, they'll be out of office before too long," he said. Sometimes changes in the way things are done can have as big an effect as any technological advance that creates more efficiency.

Ernst von Weizsäcker, dean of UCSB's Bren School of Environmental Science and Management, offered examples of where increased "**energy** productivity" came from new approaches.

For example, a company that examines its shipping routes and rearranges and reschedules to get fewer trucks on the road cuts down **energy** use without having more efficient trucks. The use of teleconferencing instead of a cross-country flight for a meeting is another example. With the addition of new efficiency technology, the outlook is even more optimistic that large enough reductions in **energy** use can be achieved, he said.

It comes down to how people live their lives, said David Rohy of Rohy Consulting Associates, an **energy** consulting practice. "It's the way each one of us leads our own life, not how we tell the other guy to live," he said.

The real costs of a modern life...

People stick to inefficient habits: using a dryer instead of a clothesline, leaving TVs on in the house for background noise or buying dozens of bottles of water instead of refilling a bottle with tap water. Sure, the bottles can be recycled, but there is **energy** that goes into producing, filling and shipping those bottles, and then in recycling them as well, he said.

Sometimes, it's hard for people to understand the effects of their actions.

When people drive their cars, they pump in the gasoline and have an idea of where it's coming from and the environmental effects, said Tim Appenzeller, assistant executive editor of National Geographic. But electricity consumption continues to rise as people take on more gadgets and bigger homes. Appenzeller said a 10-megabyte download's **energy** use is equivalent to the **energy** supplied by 2 pounds of coal. About 32 percent of the carbon dioxide emissions in the U.S. come from coal-fired electricity generation.

"We think of electricity as a clean source of **energy**," said Sally Benson, a scientist at Lawrence Berkeley National Laboratory. "We put a plug in the wall and out comes a miracle." There is an expectation that coal use will rise. There's plenty of it, but it's also one of the dirtiest sources of power out there.

China's **energy** use soaring...

China, which has a large supply of coal, is increasing use to power its development. The country adds a new coal-fired plant about every 10 days, Appenzeller said. Though the U.S. use of coal is expected to grow by about half of the current rate by 2025, China's use is expected to double. China is expected to overtake the U.S. in greenhouse emissions in two years, he said. "The biggest **energy** challenge today is not the oil peak," he said, referring to the dwindling supply of oil. "It is an abundant source of **energy** that we just can't afford to burn the way we have."

There is some hope to cut down on emissions from coal.

More attention is being paid to "carbon sequestration." Basically, this would capture the carbon dioxide from the coal-powered plant, compress it into a liquid form and then pump it deep into the earth. In certain locations, such as unminable coal seams, deep saltwater-filled rocks or spent

oil and natural gas fields, the carbon could be trapped below. Shale, a very dense rock, would act as a natural seal that would not allow the carbon to escape upward.

The approach holds promise and has worked in some test cases, Benson said. The greatest challenge is cost, which could run from 20 percent to 100 percent more than simply burning the coal and releasing the carbon dioxide into the atmosphere.

Benson said her first priority when talking about **energy** is to stress efficiency, whether it be compact fluorescent lightbulbs or special coatings on windows to cut down **energy** use. Renewable sources of **energy** also will play an important role in determining the future of power.

But, given the plentiful nature of coal, those measures won't be enough, she said. "Somehow, we have to figure out what we're going to do with coal," she said.