

Rhone Resch
Solar Energy Industries Association

On April 12, Rhone Resch, President of the Solar Energy Industries Association spoke at a meeting of the UN NGO Committee on Sustainable Development at the UN about the potential of solar energy in the US, the forecast of the market, and potential constraints. The Solar Energy Industries Association represents around 500 different companies, ranging from end users to installers. Their goal is to make solar mainstream. He began by asking audience members if they had solar power in their homes. Although only one person answered “yes”, the rest of the audience expressed interested in having solar on their house.

He addressed three main issues: solar water heating, concentrating solar power, and photovoltaics. With regards to concentrating solar power, 9 power plants were built in the 1980's in California using this technology. However, since then federal research and development funds, and tax deductions, were cut and renewable energy programs were gutted. With the Energy Bill passed by Congress in 2005, giving a two year long rebate on renewable energy installations, and with many states and municipalities legislating renewable energy benefits and standards there is a new momentum. For example, in California 20% of all electricity must be renewable by 2015. This can include wind and geothermal, but the best resource there is solar. Another example of the new momentum is that the first power plant in 15 years is coming online next month outside of Las Vegas, Nevada.

With regards to solar-heated water for heating, cleaning, and cooking, this can displace electricity or natural gas with a “no-brainer” technology that pays for itself in 6 years or less. In the late 1970's there was a tax credit for solar on homes, and most people installed water heaters to receive this credit. Now, all panels must be certified. In the US, 8,000 are installed each year. This number is 80,000 a year in Germany and 250,000 a year in China, where they are realizing the cost benefits. Spain has also mandated this technology, and this is the trend in Europe generally.

With regards to photovoltaics, this technology uses polysilicon-based wafers (similar to what is inside computers) for all kinds of panels. They used to cost \$100 per watt, but today they cost \$3 per watt. So even without government support in the US, there were applications in the military, oil, and telecommunications industries. The US used to be the lead in solar manufacturing, composing 47% of the solar industry, but has been surpassed by Germany and Japan, and is only at 7% now.

In the US, the largest market is in California, followed by New Jersey. California uses solar power for environmental and security reasons, and in New Jersey it is exclusively for energy security reasons. The state is highly vulnerable and stressed, with peak demand during the day and decreased demand at night, which solar follows almost perfectly. The grid can be stabilized by “peak sharing.”

The photovoltaics industry is growing at a sustainable rate of 40% each year. With regards to feed-in tariffs, France, Italy, and Portugal use this policy in which power generated in homes that is not used can be sold back to the grid. In the US, 6 states have similar legislation of

homeowners selling back unused energy from solar. Many states mandate that 2 percent of energy must come from solar. In the US, only 1/20 of 1% of electricity comes from solar, so it is a big jump to 2%. Additionally, these long-term policy mechanisms provide investors with a sense of insurance for the industry.

The California Solar Initiative, the Governor's 11-year program, requires installation of 3,000 megawatts in the next 10 years. In Arizona, 1,000 megawatts are to be installed, and in Maryland, 1400 megawatts will be installed. While the US total is currently at 140 megawatts per year, it will jump to 7,000 over the course of 10 years, so many companies will be looking to enter the industry. The federal government also included solar as part of the most recent energy bill, with the first residential tax credit in 20 years (\$2,000) and a commercial tax credit of 30%. Congress is now working with HR 550, which will improve energy independence and include a 1500 per half kilowatt credit. The goal is to push this bill through by July 4 of this year. Another bill in Congress, the Solar Act, would require states to provide retail net metering.

With regards to research and development, which many people ask about, the answer is that the technology is here today. It is designed to last a long time, some for longer than 25 years. Just think about satellites, which all have solar power, as it is the only completely reliable source of energy. The Department of Energy created the Solar America Initiative, which will bring down the cost of the system, making solar the lowest cost option for electricity by 2015, without even taking into account electricity price increases in the future.

Rhone reviewed the numerous benefits of solar energy: it is clean—there are no air pollutants, no greenhouse gases; no radiation; no sound—operates silently; it doesn't use water—this is very important, especially in an area like the southwest US, where 40% of water is used in electricity generation; solar has great potential for developing nations, especially in remote areas for medicine refrigeration, education, solar cookers, etc. In areas like Darfur, where often women are assaulted while gathering firewood for cooking outside of their villages, it is critical for the UN to promote these technologies.

Questions:

What are the best solar thermal companies?

It is best to look for SRCC certification. Energy Star will also soon start to label solar water heaters and photovoltaics. Additionally, a good installer is key.

What about a constraint on the supply of silicon?

95% of all solar panels use polysilicon. Traditionally, solar panels would receive the "scraps" of the industry, but after the Japanese and German market took off, it now consumes over 50% of polysilicon in the world. Producers could not keep up, which has made it difficult for the solar industry. However the good news is that the manufacturers are increasing capacity, set to triple by the end of 2004.

Is the amount of space needed for concentrated solar industries a constraint?

For the Las Vegas, Nevada plant, space is not a constraint. Rhone pointed out that if you wanted to use solar energy to power all of the US, it would only take 10,000 square miles. In the southwest, the federal government owns 1.2 million square miles. And, you don't even need more land, because you can use photovoltaics on existing roofs.

Are there any downside issues in photovoltaic manufacturing?

There are some more sophisticated technologies, such as fluid bed reactors, but Rhone did not know of any negative environmental impacts.

What about the feed-in tariffs issue?

Because of the way the electricity laws are structured, feed-in tariffs are not possible in the US. However, individual states can, such as public utility commissions, as is being done in Washington, North Carolina, and New Mexico.

What about interests groups that traditionally oppose solar programs, for example, the oil industry?

With regards to energy, all energy is solar energy—oil, plant matter, it is all stored solar energy. As a globe, we are living off our savings account by using oil, when in effect we should be using solar energy.

In the developing world fair distribution and consumption should be considered—for example indigenous towns have to pay the same even though they use less energy than cities

Time of use rates—different energy costs at different times of the day, are higher at peak times. In southern California, costs can jump from 11 to 42 cents at peak times, sending a strong signal for energy efficiency.

What about the traditional use of solar energy, for example indigenous peoples' experiences?

Anthropologically, many civilizations have worshipped the sun. In the US, solar energy was only thought of in the environmental movement, rather than energy. However, now several energy companies such as BP and Shell have invested in solar., and General Electric has its Ecomagination portfolio.

What about the misperception that solar cars are inferior?

With transportation the US trend is electric vehicles. The renewable fuels bill is being discussed in the senate now, and they are trying to get solar included.

What about solar energy for small island nations?

Hawaii imports all their fuel, so solar would be perfect there and stabilize energy costs for 20-30

years. This is optimal for lower-income areas. There are solar installations in Culebra and Vieques in Puerto Rico, which are two good examples for the US.

If your solar energy system is connected to the grid and the system fails, does your system fail?

If you don't have storage capacity, then yes, your system will fail. You can solve this by getting a storage device and battery back-up system. They are working with Homeland Security to get this for fire stations and hospitals.