

Energy Pioneers JPL and Sunlaw

My goal:

A clean environment, energy independence and prosperity.

Where are we now:

You can't put 8 billion billion tons of crap into the air every year and not expect something bad to happen.

The person doing the first analysis of the impact of fossil fuel emissions on the environment worked on the same floor as me at Jet Propulsion Lab. After studying the question for a year, this was his conclusion – and I have never heard a clearer statement.

The reason for the 8 billion number is that is the amount of CO₂ the earth can absorb in a given year. Some people think it may be as high as 13.2 billion tons.

We are currently around 40 billion tons.

How do you finance new energy technology that helps solve this problem?

When I went to my first meeting with a bank to try to get financing for a large solar and wind project, he told me:

There are three risks in any energy project – completion risk, operation risk and marketing risk. Completion risk is that the project is completed within a certain period of time, at the projected cost, and that when you turn it on it works as promised. Operation risk is that the project continues to perform as projected, does not unduly degrade, and that operations costs are as projected. Marketing risk is that the net income is high enough to pay off the loan, and with a good margin of error.

So, if you have developed something new that can really help the world, and need bank financing, you need the right story and contracts to show you have addressed all of these issues.

I have offered the “Closing Bibles” of the Sunlaw project financing to the CSUMB Library archive. They are 7 volumes each a few inches thick of contracts, legal opinions, permits, investor materials, etc. It was a lot of work, but it’s what it takes.

When I began work at JPL solar energy cost 100 times more than fossil energy. In 1979, we projected that the cost would have to fall more than 99% to be cost-competitive. Then we put together a plan to make that happen. In 2018 the cost of solar photovoltaic panels fell to 50 cents per watt – exactly the goal.

JPL goal – reduce cost of PV to 50 cents/watt = done

[Transcript of Bob Danziger’s Honorary DFA Speech](#)

Energy Excerpts

PART I

I appreciate all the kind things being said about me. But I do have one big regret: I did not accomplish one of the most important goals I had set for myself. This was to achieve, in my lifetime a kind of universal prosperity, coupled with energy independence and a clean environment, of the sort we enjoy here in Monterey.

Sunlaw Energy Corporation, the company I founded, did build and run a real-world commercial, unsubsidized powerplant, where the air coming out was virtually cleaner than the air going in – the first and still the only such plant to do so. I composed the music for a documentary about [building] the plant and amazingly won the New York Film Festival Best Original Music Award. Sunlaw had a perfect safety record, hosted a wildly successful kids and professional mural program, was the first plant ever to achieve 100% reliability – availability, all while sponsoring the groundbreaking Shades of LA program that collected pre-1960 photographs of all the different ethnic communities in Los Angeles. We made good paying jobs that didn't cannibalize other jobs. We set an example that has yet to be equaled, and cannot be bettered.

To achieve this we had to take on opposition from all points of the political compass, and the determined, often threatening opposition of commercial, governmental and activist entities.

The next generation you are training will hopefully have a chance to make this kind of performance commonplace, although partisanship is the enemy of prosperity, the enemy of energy independence, and most certainly the enemy of a clean environment. For these and many other reasons, I hope our current political situation changes to make such things prudent and possible.

Like many in this room, almost all of us in this room, my goals are a tad high. I know that. I clearly wanted, though, to be a positive footnote in the history of our time for having achieved a universal dream – prosperity, coupled with energy independence and a clean environment. I wish I could've done that.

Maybe my biggest break was getting the job at California Institute of Technology's Jet Propulsion Laboratory. JPL at Cal-tech was a truly elite think tank that I'm

told had, and I believe still has, more triple PhD's than anywhere else in the world, and at the time was the Lead Center for all alternative energy research in the United States. I had no undergraduate degree, a second level law degree, and had only gotten through high school by the grace of God and the tolerance of the school administration. I want to thank Mr. Tunney who is here today, and thank you for overlooking a few of those things, I appreciate it. [audience laughs] – That's a knowing laugh from my sister.

Because of my law review articles on solar energy I was invited to give a seminar at JPL – the first step in their hiring practices. I prepared my talk "The Legal Implications of a 1 Megawatt Solar Power Plant" very much like the one up the hill here at CSUMB. Unbeknownst to me JPL had just received a contract to write a report for Congress on "The Legal Implications of a 1 Megawatt Solar Power Plant." The same exact title, it was

a pure coincidence, but they decided to overlook my relative lack of credentials and hire me. When I got the job Dean Friesen of my law school told me, “When one of these guys is telling you the nature of the universe or predicting the future, if they are not floating 6 inches above the ground it’s just an opinion.” He told me my opinion was as good as anybody else’s. That was really great advice.

After a couple of years at Jet Propulsion Laboratory I started planning for my alternative energy company Sunlaw Energy Corporation. At that time there was not a single successful alternative energy company in the US, maybe the world. The 16 PhD economists who I worked with at JPL urged me not to be the first.

The cliché is that the pioneers get the arrows. The functional problem was the virtual non-existence of experienced banks, lawyers, accountants, insurance agents, libraries, training programs, college courses, engineers, builders, regulators, utilities, or ways to reliably measure ultra-low emissions. It all had to be created, it all had to be invented, and whoever was the first company had to lead these efforts. Who else can?

I waited as three companies got into the business, then JPL converted me to a consultant and I started Sunlaw. Within 6 months all three of the companies ahead of me had gone bankrupt. I was out there all alone. It was very naked and very windy.

But inventing all day, every day, felt completely natural to me, because of my background in music, and being taught to invent on a schedule at JPL. JPL gave me a front row seat to experience what might be judged the greatest invention and engineering achievement of the 20th century when they sent the Voyager spacecraft one billion miles to Saturn and were less than 1/10th of a second behind schedule and just a few feet off course. I challenge us to drive home that well. At a billion miles.

I lucked into a rare moment and became sought after by institutions that would never deal with someone like me as the industry matured. Sunlaw was jazz, sculpture, and performance art. I was 27, the youngest CEO in the alternative energy business anywhere in the world, and I was born to do this.

I do want to note for the record there were about 20 people on the front lines with me, I wasn’t truly alone, but I was the leader in the early days, and the key decisions were mine to make.

In conclusion I have many things to be grateful for. Such a long list.

- Founding and running an energy company that caused worldwide emissions and energy consumption to be reduced by billions of tons, has made the world cleaner than if I had not come along.
- I got to work with a great team, and be their leader.

- I got to build some really big stuff. I'm a guy, love big tools. What can I tell ya, I love stuff like that, love things that make big noises and go boom. I like that stuff. That was fun.
- And thank God I was given the inventiveness and determination to prosper despite my physical challenges.

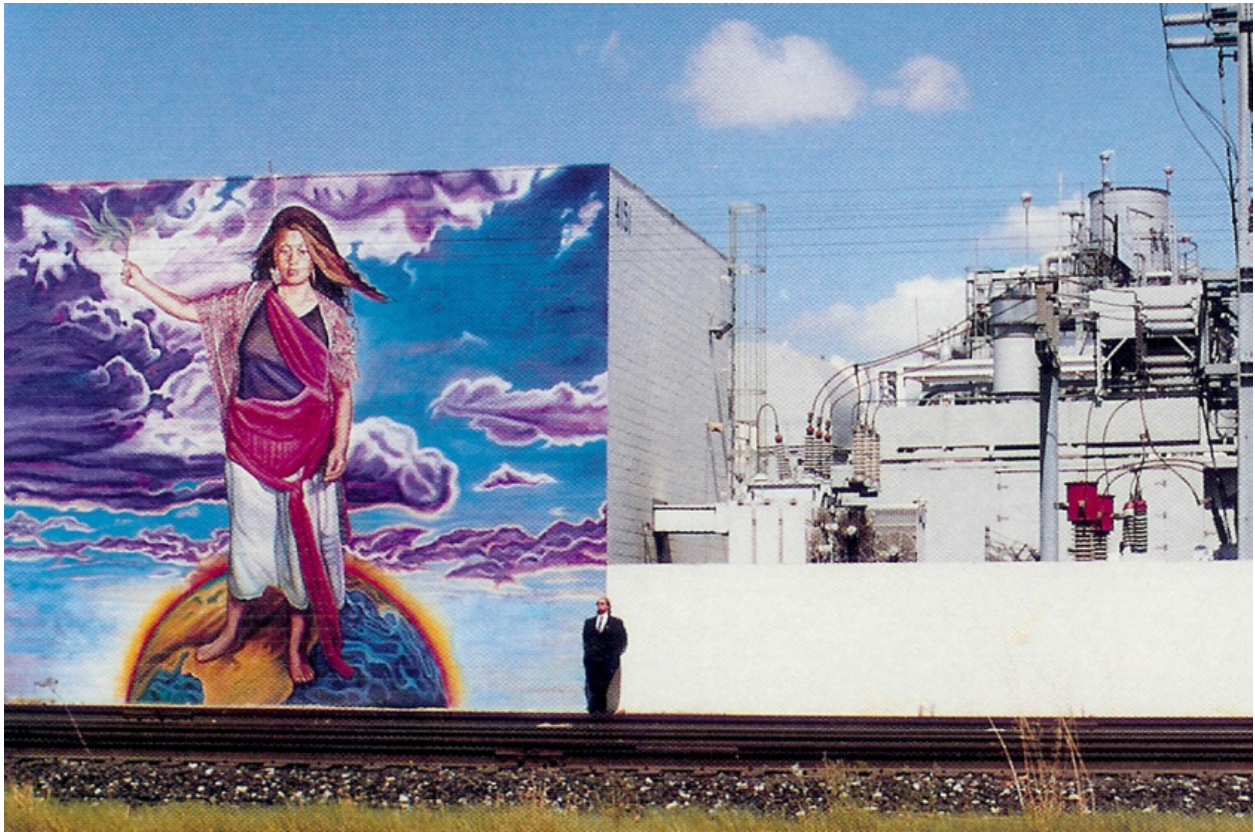


Figure 1 Bob Danziger in front of Federal Cogeneration Plant by "Aztec Princess" mural by Eloy Torrez



Figure 2 Federal Cogeneration Plant at night



Figure 3 Control room at Growers Cogeneration Plant with friends from Vernon Elementary School and plant operators

"A funny thing
happened on the
way to energy
independence.."

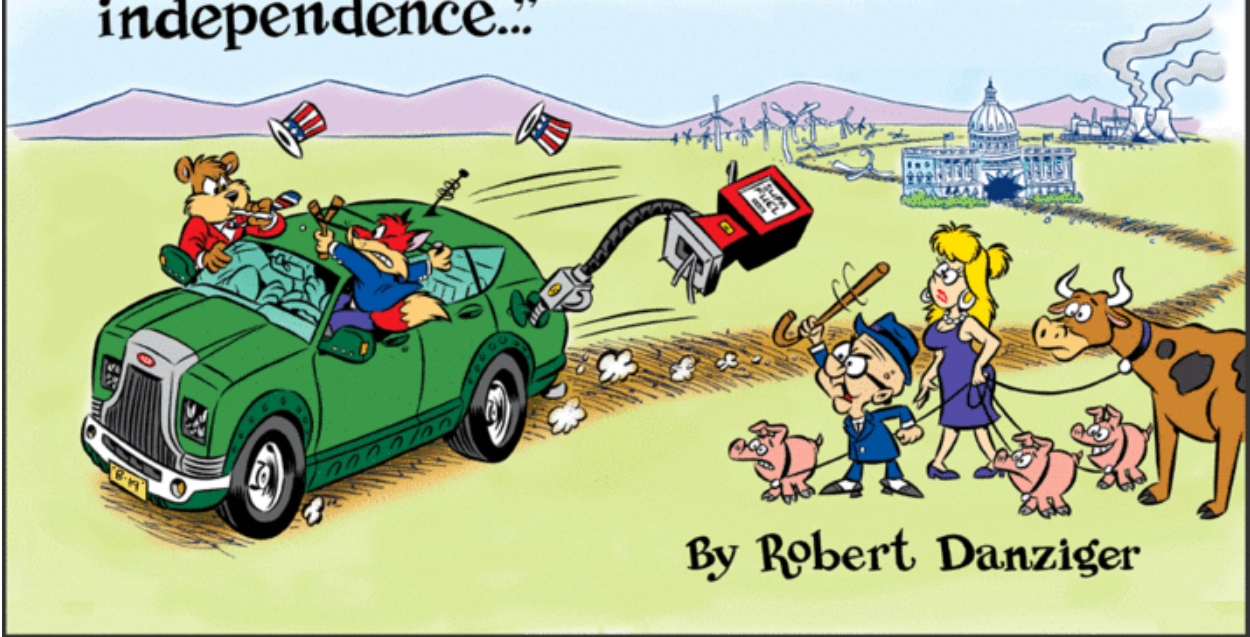


Figure 4 book cover