

How to Succeed at Energy Management

by Rob Schasel

AT A GLANCE

Frito Lay has achieved "big, hairy, audacious goals" by

- setting goals that challenge rather than just annoy
- looking at all parts of the process to find savings opportunities
- doing the easy and obvious things first

Frito Lay spends about a hundred and ten million dollars a year for its energy needs. This includes natural gas (everything we operate is natural gas fueled), electricity, water and wastewater. While this is well under five percent of our manufacturing cost, it is a substantial outlay. Saving any fraction of that cost is worthwhile, and energy-cost improvement projects turn out to be fairly reliable investments compared to other investments.

For example, we spend a lot of money developing new products and concepts. Sometimes these products, such as our Nacho-Cheese Dorito, do very well. Sometimes, however, they don't do well at all. Those investments are unreliable in the sense that we can't be sure what return we will get or if we will get any return at all.

With energy-conserving investments, however, if we spend a hundred thousand dollars improving, say, a steam system, and we expect to get thirty thousand dollars in savings per year out of it, we can rely on getting those thirty-thousand dollar savings, year in and year out.

There is a community-relations aspect as well. In the communities where we operate, we are one of the larger energy consumers. When a curtailment happens, such as fuel shortages in cold winters or electricity curtailments in hot summers, it is critical for us to be able to show that we are making significant strides to reduce our consumption. We need to be seen as doing our best to alleviate the situation rather than exacerbating it.

We put together our energy management team in late 2000, and started tracking our results in 2001 versus a 1999 baseline. We adjust our results for volume growth because we do grow our sales volume and our production volume every year. Essentially, what we track is energy cost per unit production.

We achieved savings of 10 to 12 percent in the first two years of the program, and we are targeting about double that in year three! We expect to have continued improvement in the next couple of years as well.

Aim High to Achieve High

In early 2001, just as our program was getting started, we had internal projections of how effective we could be and how much savings we could derive. We projected that we could get up to about a 10 percent savings improvement within five years. Our upper management, however, challenged us to hit what they called our "big, hairy, audacious goals."

Big, hairy, audacious goals (BHAG) is a theory for setting management goals that challenge folks to maximum effort. According to the theory, incrementalizing your way to improvement doesn't excite anybody. If you walk up to a line operator and say, "I want you to do one to three percent better this year," that's just annoying. But, if you walk up and say, "I want you to do 20 percent better or 50 percent better," that's challenging.

As a result, our energy-cost-management team set our

own big, hairy, audacious goals: to achieve a 50 percent reduction in water usage, a 30 percent reduction in natural gas usage, and a 25 percent reduction in electricity usage per pound of product, and to do it within five-years.

The first round of programs focused on doing what we were doing better. That is, making our present facilities run as energy efficiently as possible.

Some programs focused on heat recovery. For example, using waste heat to preheat combustion air and washbox water, and using high grade heat for electric generation. Another example is more tightly controlling excess air for all parts of the process. Controlling excess air also helps enable programs for heat recovery.

Controlling the way water flows through our processes is also important. We have programs to reduce entrained moisture because every bit of added moisture means that much more moisture we have to remove from the product at the other end. We are also working with a new low-water corn process for our corn-based products.

We look to natural-gas technologies to provide a large part of our energy savings. We installed, for example, a number of gas-powered air compressors to avoid high electric rates at plants in several geographic areas.

Self-generation or distributed generation projects are another way we expect to reduce our electric bills. For example, we are looking at expanding an existing 5 MW gas-fired steam turbine installation in Bakersfield, Calif., where the facility's electric output is currently limited by the steam availability. In Visalia, Calif. we have approved funds to install a 1.5 MW gas-fueled generator. We are also installing a gas microturbine generator in Queens, N.Y. to address both energy cost and reliability concerns.

Technology itself is not the whole story, either. An important component of the energy-cost formula is how you do your purchasing, as well as on-site storage and transportation issues. Here, careful planning and an effective hedging strategy can make a big difference.

So far, our actual performance has exceeded even our BHAG in the first two years of the program. We saved \$9.9M in 2001 and \$11.8M in 2002, and we project savings of \$22.1M for 2003.

At the end of 2002, we had achieved a 19 percent reduction in water, an 11 percent reduction in natural gas, and about a seven percent reduction in electricity from our 1999 baseline data—far more than we envisioned with our original incremental goals.

Our challenge for the future is that we've done all of the easy and obvious things already, so we need to get creative to keep achieving BHAG performance. We need new ideas to make the \$101 M cumulative savings we projected for year 5.

Rob Schasel is Senior Group Manager of Energy and Utilities at Frito Lay, Plano, Tex