

Energy solution begins with greater efficiency

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Solar energy has clear economic and environmental benefits — but even before shifting to renewables, we should take steps to eliminate waste.

Because energy has been cheap, in past decades we have constructed buildings, designed industrial processes and manufactured vehicles in the fastest, least expensive way possible. The result is huge amounts of wasted energy, wasted water and wasted money. Climate-damaging greenhouse gases are just one side effect.

The need to reduce emissions by 80 percent or more in rapid order to avoid dangerous climate change, combined with rising fossil fuel prices and other factors, have altered the basis of our thinking. Waste elimination — that is, increased efficiency — should now be a top priority for everyone.

Many experts believe a seven-fold increase in U.S. gross domestic product is possible without any growth in energy use. In fact, energy use can be substantially reduced while the economy grows.

Using existing designs and technologies, for example, residential and commercial buildings can be constructed today that use just a fraction of the energy per square foot of current designs. Less energy use means lower monthly payments for homeowners and businesses. It also means fewer greenhouse gas emissions.

The Pepsi Cola Co. recently installed skylights, more efficient lighting and motion sensors in its new headquarters on McVay Highway in Eugene. The Eugene Water & Electric Board said these steps would save 200,000 kilowatt-hours of electricity a year and prevent the release of about 100 tons of greenhouse gas emissions annually.

Company Co-President Eric Forrest told me that the improvements should pay for themselves in about five years. “If business owners keep their minds open, our area has multiple opportunities that make good sense for the environment and good sense for the business.” Similar win-win benefits are available for homeowners.

For years EWEB has been one of the nation’s most aggressive utilities in promoting energy efficiency. EWEB believes its investments have reduced the amount of energy needed to meet local demand by about 13 percent. Yet after 25 years of effort, EWEB believes it has captured only about half of the efficiency improvements that are possible locally.

The amount still available is based on current energy prices. As prices rise, even more

efficiency will become cost effective.

The savings also do not account for behavioral changes that can reduce energy use with little to no investments. Turning off lights, computers and monitors when not in use, or putting on warmer clothing in the winter and lighter clothing in hot weather rather than cranking up the heat or air conditioning, can substantially reduce energy use and emissions.

In addition to EWEB, the Springfield Utility Board, the Emerald People's Utility District and other local utilities have for years had energy efficiency programs. I suspect they also have at least as much efficiency to gain as has already been achieved.

Similar savings are possible with passenger vehicles. About 15 percent of the energy contained in petroleum actually ends up as mechanical energy to move a vehicle. When the payload is added, meaning the people and freight, only about 1 percent of the energy in petroleum ends up moving a vehicle.

Pushing automakers to use lighter, stronger materials, along with regenerative braking, automatic engine cut-off when the car is stopped, electric-gas hybrids and more efficient engines — all available today — will substantially increase fuel efficiency and reduce emissions. Lithium-ion batteries, which seem likely to become commercialized within the decade, would make plug-in hybrids and all-electric cars economical and further increase efficiency (although they will also increase electricity demand). Better driving habits boost fuel efficiency at no cost.

So it is technically feasible to cost-effectively reduce waste and related greenhouse gasses by substantial amounts. The major drawbacks tend to be political and economic. For example, builders don't pay the energy bill of the people who use the buildings, and automakers don't pay the gas bills of drivers. Both consequently have little incentive to build super-high-efficiency products.

I'm not suggesting these are easy problems to fix. But it's important to remember that these are policy problems. There are no inherent technological obstacles to dramatically increasing efficiency and reducing waste and related greenhouse gasses.

Correction:

In my March 4 column I incorrectly said state Rep. Scott Bruun, R-West Linn, sponsored the bill that expanded the state credits for solar manufacturing. State Rep. Phil Barnhart, D-Eugene, was the key proponent.

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