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Energy conservation at home won't do much to soften oil prices

By Barry Raleigh

Gasoline in Hawaii is not only expensive, the oil consumed represents an export of cash from our economy that literally just goes up in smoke.

Gasoline costs Hawaii drivers about a billion dollars per year -- more than our entire budget for higher education.

Of all our energy problems stemming from the coming oil crisis, however, gasoline is the easiest part of the problem to fix. The average sport utility vehicle or large luxury sedan gets about one-half the gas mileage of the new hybrid gas-electric vehicles or the small cars. When gasoline prices take another run up to several dollars a gallon, fuel efficiency will be the No. 1 selling point for car buyers. Over time, then, efficient fuel use can reduce

consumption to below 300 million gallons from its current 450 million gallons per year.

The higher price of gasoline will help to make ethanol, a renewable fuel, more competitive. With the phase-out of the octane enhancer MTBE, 10 percent ethanol enhances octane ratings -- albeit with some adjustment of the gasoline refinement. It is environmentally desirable because it is produced from green plants that consume the dominant greenhouse gas, carbon dioxide. Unfortunately, ethanol production from corn on the mainland consumes almost as much fossil fuel energy as resides in the finished product, so the net carbon dioxide production is almost as much as if a gallon of gasoline were burned instead of a gallon of ethanol.

Ethanol from sugar cane is a different story. Because of the energy return from burning the bagasse to generate heat for processing the sugar into ethanol and to generate electricity, the net fossil fuel consumption is actually negative!

Hawaii is capable of producing ethanol to displace 7 percent of our gasoline consumed, or 32 million gallons, from the 42,000 acres under cultivation. Depending on other factors not considered here, much more land could be returned to sugar cane with a commensurate reduction in fossil fuel imports. Hawaii's pre-1985 sugar production on 180,000 acres could have produced enough ethanol to cut gasoline consumption currently by 30 percent.

Hydrogen, while the cleanest burning of fuels, is not a primary fuel. That means that other fuels, natural gas or electricity are required to produce hydrogen. The subsequent energy yield is less, therefore, than if the primary fuel were used directly. Hydrogen is the energy source for fuel cells, however, and has applications in energy-storage technology and in pollution-free automobiles.

One other liquid renewable fuel -- biodiesel -- has considerable potential. Currently, waste fats from restaurants are converted easily to a diesel fuel, but plants offer the possibility of replacing a much larger fraction of fossil fuel diesel. Oil palms produce as much biodiesel per acre as sugar cane yields in ethanol, for example. In either case, however, the land needed to supply our ground transportation fuel requirements would consume nearly all that we cultivate.

Marine microalgae can yield biodiesel from much smaller areas than land plants, although the technology is several years from proof of cost-effectiveness. The University of Hawaii is a leader in this field and is seeking the research funding to develop the technology. If the R&D meet with success, we could achieve energy self-sufficiency for Hawaii.

The reduction in oil consumption brought about by fuel-efficient cars or ethanol might not, in the long term, save Hawaii much in the total cash we export for oil now. Because global oil production has either already reached its peak or is within a few years of reaching it, the price will rise substantially during the next few years. The

problem is that conservation at home won't do much toward satisfying the rapidly increasing worldwide demand for oil in the face of declining production. Unless we are wildly successful in developing new renewable fuels, a commitment to rail transit is the solution for Oahu. We need to do it now while oil is still relatively cheap and before inflation drives the cost out of sight.

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