

Peak oil era will be hard on Hawaii

By Manfred Zapka and Jim Dator
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Editor's note: In the next decade or two, a global energy crisis will be thrust upon us; the changes it brings will be felt first in Hawaii, possibly with a more devastating effect here than in the rest of the world. Hawaii must begin preparations now to cushion the effects, say the authors of this cautionary essay. The writers are a University of Hawaii political scientist and a UH-educated civil engineer. In addition, it was signed by 21 others representing a range of scientific disciplines in Hawaii; three chose to sign as private citizens.

DURING the past months "peak oil" has been the subject of a heated discussion in the media, including in Hawaii. The state's energy security is too important for us to allow discussions of future energy options to become a battle about peak oil, pro or con.

Peak oil ought to be understood as a helpful scientific tool to model the depletion of conventional oil reserves and to develop a sense of urgency for taking steps to mitigate its effects. The peaking of individual oil fields and oil regions has been observed always to follow a similar production curve. Global peak oil is simply an extrapolation from what is known about individual field depletion.

The arrival of peak oil does not mean that we have run out of oil. Rather, it means that production rates will start an inevitable decline. When peak oil arrives there will still be a huge amount of oil in the ground, yet the ability to get it out at reasonable cost and energy will decrease as the reserve depletion accelerates. Peak oil does not signal the end of the world, but the start of a new chapter for the global community.

No serious oil analyst disputes the fact of peak oil. The debate is about when, not if. Most published peak oil dates are between 2010 and 2017, give or take a few years. There is near-universal agreement that our current production base of conventional oil is declining at a rate of 4 percent to 8 percent per year while demand is growing at a rate of about 2 percent per year. The evolving demand-supply gap has to be filled with new conventional oil, unconventional oil, nonpetroleum sources and conservation.

ALL OF THESE can play a role, but all take considerable time, money and effort -- and require prompt decisions and actions that have not yet been sufficiently contemplated, much less made. Moreover, any decisions about alternatives to oil need to be made after assessing their impact on everything else in Hawaii. For example, should we use our land for upscale housing for the rich, or for "affordable housing," or to grow food, or to grow biomass for fuel? Do we have enough land to satisfy all demands via the market, or do we need to develop policies that, together with the market, allocate uses?

The most promising response to peak oil is timely migration to new sources of energy supply and serious conservation. According to a U.S. Department of Energy-sponsored study, peak oil mitigation efforts need to start at least 20 years before peak oil occurs to avoid serious supply shortfalls. The study forecasts catastrophic economic and human consequences if mitigation is delayed until the fuel crunch arrives.

HAWAII HAS one of the highest rates of per capita oil consumption in the world. Our rate in Hawaii is twice that of the U.S. average; four times the average of Europe and 28 times that of China. Moreover, oil not only fuels our transportation and electricity-generating plants, it also fuels the airplanes that fuel our tourist-based economy and the ships that bring in almost all of our food and consumer goods. Un- or insufficiently mitigated oil supply shortfalls will hit Hawaii much harder than almost any other place in the world.

There are several supply and demand-side opportunities for Hawaii that are attractive and make economic sense. While some might appear to be "uneconomical" now under assumptions of ever-increasing energy supplies and a healthy economy, they will prove to be prudent and forward-looking remedies in the years and decades to come. Hawaii's hope for a sustainable future is best served through serious and meaningful plans to mitigate our over-dependence on oil before any supply shortfalls appear.

BUT LET'S pretend that there are "huge new oil resources" -- as yet undiscovered reserves or new revolutionary oil technologies for increased extraction rates (even though there actually is little chance that we will find the "10 new Saudi Arabias" that we urgently need in the next two decades).

With unabated carbon release through the burning of fossil fuels, global warming still threatens Hawaii in tangible forms. Rising sea levels within the currently anticipated range will inundate wide stretches of land that are home for many residents of Hawaii -- some of the most expensive real estate and beautiful coastline in the world. Critical transport infrastructure (airports, harbors) and fresh water also will be affected by significantly rising sea levels. Lowering our consumption of fossil fuels is one prudent and urgent response to global warming.

Developing technology and policies to lower oil dependence is a great opportunity for Hawaii. Not taking the peak oil seriously or adopting lukewarm mitigation measures might prove to be the most costly mistake we will ever make.

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Also signing this essay: Robert Brewer, private citizen; Jim Dator, UH Political Science; Roger Davis, UH Institute of Geophysics and Planetology; Fred Buennebie, UH Geology and Geophysics; Charles Helsley, UH Sea Grant; Garrett Ito, UH Geology and Geophysics; Adam Johnson, UH Geology and Geophysics; Barbara Keating, UH Hawaii Institute of Geophysics and Planetology; Jeremy Kowlasczyk, UH Physics; Hans Krock, UH Ocean Engineering and Energy Systems; Penny Larin, UH Geology and Geophysics; John Learned, UH Physics and Astronomy; Davidson Luehring, private citizen; Fred Mackenzie, UH Oceanography; Gary McMurtry, UH School of Ocean and Earth Science and Technology; Ralph Moberly, UH Geology and Geophysics; Michael Mottl, UH Oceanography; Tobia Owen, UH Institute for Astronomy; Mark Reese, Hawaii Natural Energy Institute; Alan Rowland, private citizen; Benjamin Sellers, UH Geology and Geophysics; Patrick Takahashi, Hawaii Natural Energy Institute; Manfred Zapka, Marc M. Siah & Associates, a civil engineering firm.