EAR-1(6)

EAR Committee

From: Daniel Grantham <dannygr@hawaiiantel.net>
Sent: Monday, August 29, 2016 1:17 PM
To: EAR Committee
Subject: Economic Development, Energy, Agriculture, and Recreation Committee Meeting Tuesday, August 30, 2016

Aloha Chair Guzman and members,

The following testimony is submitted as comments from the Sierra Club Maui Group Energy Education Committee for your Aug. 30 hearing on presentations for Maui's future energy options.

Mahalo for your attention to these important questions.

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"The proposed decision about replacing our reliance on oil purchased for a stored supply of grid electric power with a reliance on LNG (liquified natural gas) is missing an opportunity to solve a deeper problem.

LNG does indeed burn cleaner than oil, because it has more hydrogen atoms per carbon atom; however, it still produces large amounts of CO2. LNG, unfortunately, also relies on fracking, which means poisoning underground water aquifers and lots of methane releases, thereby causing more environmental damage in the short run than burning tankers full of carbon.

Basically, the reason we still need oil or LNG at all is because we don't have enough utility level storage for solar and wind power. Our utilities are unable to provide sufficient "firm" power without using fossil fuels. They have already felt the need to curtail use of renewables above a certain point. The real question then is, "How can we store large, renewable power resources economically so they are available as "firm" power when needed?"

A number of practical alternatives have been proposed:

• Biodiesel from sunflower seeds grown on former cane land, which recycles carbon instead of just releasing it. (The pressed seeds also have value as nutrition, for starters.)

• Windmill pumping of water to high elevation reservoirs for fast ramp-up hydropower, at a minimum efficiency equivalent to diesel generators. As Holland has demonstrated for centuries, windy coastal regions are ideal locations for mills pumping large volumes of water. (The mills also sometimes double as tourist attractions.)

• Geothermal heat and solar heat storage in melted salts can provide power for steam driven turbine generators, although they do have potential environmental downsides.

• Solar and wind power electrolysis of water to make hydrogen, as a zero carbon replacement fuel for fossil fuel engines that run cars and generators, has been well demonstrated. We already have many electric cars, although the promise of inexpensive fuel cells and powerful light weight batteries at low cost has not been fulfilled yet.
But the virtue of hydrogen as a fuel is undeniable. Clean, safer than fossil fuels, and no exhaust besides hot water.

Electrolysis is a relatively simple process that is steadily becoming cheaper, more efficient and faster as new catalysts replace expensive platinum and rare metal electrodes. High efficiencies are also possible with old technology by using steam and high pressure, qualities readily attained with focusing solar reflectors.

All these proposals are better for the environment, climate and sea level rise than the fossil fuel options. Once machinery and infrastructure are in place, all are produced locally and sustainably.

We have choices; we can try some or all of these methods at small scales, and ramp up the ones that work best for our needs. We already have lots of fossil fuel generation, and we know how its costs and dependence on outside sources can put us in a weak position as the world changes.

The other options would require some outside hardware to get us started, but we would use it to harvest our own energy wealth. Sounds good to me, and would likely sound good as public investment instead of sending not just millions, but billions of dollars up in carbon smoke that the world has too much of already.

It is even possible we could see a new kind of tourism in Hawaii, one that comes to witness and understand how nature and technology can work together to make something truly renewable and self sufficient, technology that helps preserve the Aina we love."