The Fracking Debate

SIerria Club on Fracking presented January 13, 2014, and
Dr. Paul Henshaw and Dr. Linda Swift on A Geologic Perspective on Fracking, presented April 21, 2014

April 2014 Environmental Concerns Speaker Series welcomed oil and gas specialists presenting geologic and industry perspectives on "fracking" counterpoint to a January presentation by the Sierra Club East Bay Chapter advocating against it. The contrast is indicative of growing polarization between industry and environmentalists on the subject of hydraulic fracturing or "fracking," a process of drilling wells into shale formations deep underground, then injecting water, chemicals, and sand at high pressure to break open rock fissures to release oil or natural gas.

On the one hand, gas produced by "fracking" emits less CO_2 than petroleum or coal so helps abate global warming and aid the transition to a low-carbon energy economy; keeps energy prices low due to its abundance; helps us to meet growing energy demands; and allows the U.S. to realize greater energy independence. On the other hand, regulations and their enforcement are not strong; a single frack job may use up to 3 million gallons of fresh water; some chemicals poison the water therefore requiring water treatment (some water is reused for further fracking); and may contaminate air and groundwater with toxics and other natural substances (e.g., methane, metals, radioactive materials) mobilized during the fracking process although definitive scientific studies are needed..

What is the truth? All of the above. Meanwhile, both sides agree: There are no "clean" fossil fuels yet they continue to dominate global energy consumption. Prevailing climate science agrees that we must rapidly decrease fossil fuel use to avert disastrous climate disruption. According to the U.S. Environmental Protection Agency (EPA), the largest source of greenhouse gas emissions (GHGs) in the U.S. is from burning fossil fuels for electricity, heat and transportation. With GHGs determined to be the primary cause for global warming, the industry must look to find new sources for energy consumption. According to the U.S. Energy Information Administration (EIA), renewable energy and nuclear power are the world's fastest growing energy sources, each increasing by two percent per year, but fossil fuels will continue to supply almost 80 percent of world energy use through 2040.

Recent advances in fracturing technology with other forms of "well stimulation" such as acidization coupled with horizontal drilling (rather than conventional vertical drilling) have made it easier to reach previously inaccessible oil and natural gas reserves, leading to a rapid expansion in domestic production, according to the Union of Concerned Scientists. Natural gas from shale has grown to about 35 percent of the U.S. gas production over the last decade, according to Chevron's 2013 Supplement to the Annual Report. The EIA estimates that of the 2,300 trillion cubic feet of technically recoverable natural gas resources in the U.S., almost one-quarter is held in shale rock formations and could account for nearly 50 percent of U.S. production by 2035.

A GEOLOGIC PERSPECTIVE ON FRACKING

At the April meeting, Geologist and founding LWVBAE Climate Team member, Dr. Linda Swift and colleague Dr. Paul Henshaw, a Visiting Professor at UC Berkeley, both former oil and gas employees, explained the need to meet growing energy demand, the methods used in fracking, and how fracking is regulated in California. See their slides at this link. They stressed that enforcement is inconsistent. Dr. Henshaw pointed out that, from his perspective, a regulation problem is the effect on the land above which the fracking occurs. It is the truck traffic, the disposal areas for water, the disturbance to the ecosystem that most needs to be regulated.

Further, the geologic feasibility of fracking as a major benefit to extracting oil from the Monterey Formation is in doubt. To quote Business Week,

"Fracking California's Monterey Shale was always going to be politically difficult. Now it looks as if it's physically impossible. This week, the Energy Information Agency cut its estimates for the amount of recoverable oil in the Monterey Shale by 96 percent, from 13.7 billion barrels to 600 million.

"The key word here is *recoverable*. Those 13 billion barrels didn't disappear; it's just that the EIA has decided that getting to them is a lot harder than it first thought. This is the second time in two years that the EIA has cut its estimate for the amount of oil it thinks can be produced from the Monterey Shale. In 2012, it cut its forecast from 15.4 billion barrels."

On the national level, fracking for oil and gas is still sometimes exempt from many environmental laws like the Clean Air and Clean Water acts, with protection of air and water quality only possible at the state and local levels. The industry maintains that fracking has been done safely for 50 years.

FRACKING IN CALIFORNIA

In the January talk, Sierra Club speakers stressed that oil and gas developers should not be allowed to proceed with development until safeguards are put in place to assure protection of communities and ecosystems. Examples of good fracking intentions gone bad abound, from water and ground contamination from leaking wells and holding ponds to human health hazards evident near drilling areas nationwide, notably the Marcellus Shale in the Northeast and The Barnett shale in Texas. The Sierra Club demands that all natural gas and oil extraction be subject to robust and effective regulations to protect the environment and public health. Their policy may be found here.

In California the Monterey Shale oil deposit formation stretches from northern San Joaquin into Los Angeles County. By the industry's estimate, more than 600 oil wells have been fracked in the last decade. Fracking operations in California's Monterey Shale uses about 300,000 gallons of water per well vs. up to 3 million gallons used for fracking in the Utica and Marcellus in the northeastern U.S.

In California, leases on 17,000 acres of federal land were auctioned for fracking in Monterey, San Benito, and Fresno Counties. In April 2013 The Sierra Club and the Center for Biological Diversity sued the Bureau of Land Management to cancel California leases.

THE LEAGUE OF WOMEN VOTERS' POSITION

The League of Women Voters of California joined a coalition of 100 groups to halt leases on California on public lands until further studies are done. Also, the League supports CA-SB 4 (Pavley) passed by the legislature and signed by Governor Jerry Brown in September 2013 to establish a comprehensive statutory framework -- the strongest in the country -- for regulating hydraulic fracturing and acidization of oil and gas wells. The bill requires state permissions for fracking; disclosures of chemicals and amounts of water used; groundwater testing; notice to property owners/tenants; agency coordination, and further study while local jurisdictions may opt for a ban or moratorium. However, well stimulation continues until permanent regulations are adopted on or before
January 1, 2015.

Senate bill 1132 by Sens. Holly Mitchell and Mark Leno would establish a moratorium that could be lifted only after completion of extensive studies of the dangers of fracking and other forms of well stimulation, including economic costs, effects on private property and land use, and risks to worker safety. The bill would require more scientific study extended until June 2016. A panel would have to determine if existing regulations and laws can protect against fracking's negative impacts. The governor must use the study outcome to determine whether to lift the moratorium on fracking and well stimulation. The bill failed to pass the Senate in late May.

Under existing law, the Division of Oil, Gas, and Geothermal Resources (DOGGR) in the Department of Conservation regulates the drilling, operation, maintenance, stimulation, and abandonment of oil and gas wells in the state.

According to the EPA, studies show that if we take part in energy efficiency efforts available to us today, we could reduce our nation's total energy demand by 20 percent by 2025, cutting the expected growth in electricity demand and natural gas use in half, save billions of dollars in energy costs, delay the need for new power plants, and create jobs while reducing GHG emissions and air pollution.