The Fracking Issue:
A report to the Butte County Board of Supervisors
and to the Butte County Planning Commission

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Updated October 22\textsuperscript{nd}, 2014

DISCLOSURE:
I have no interests, funds, ownership, business arrangements, or any connection of any kind to
any activist or political group, nor any industry that relies on oil or gas exploration, drilling, or
production.

I produced this report of my own volition, simply to help educate you on the issues as I have
done for myself over the past few years. The outcome of your vote will not affect me in any
way, personally or financially.

The opinions expressed are my own, the facts expressed stand on their own merit and are
referenced by source.
Introduction

As many of you know, I was once a candidate for county Supervisor, so I can relate to the position many of you find yourself in with this issue.

I had considered speaking before you, but in the emotionally charged venue of your chambers it is often difficult for a rational voice to be heard without being shouted down. Plus, I have a hearing impairment that makes interaction difficult. Therefore I thought I’d prepare a document.

My intent here is to help you make the most enlightened decision possible, by sorting through the hyperbole, political agendas, and emotions which have presented themselves in this debate by providing a factual guide that is based on reality, and not on any viewpoint from any vested interest.

The history of hydraulic fracturing aka “fracking”

Modern hydraulic fracturing technologies started on April 25th, 1865, when Civil War veteran Col. Edward A. L. Roberts received the first of his many patents for an “exploding torpedo.” Nitroglycerine and later Dynamite was used back then to provide the force. Roberts was awarded U.S. Patent (No. 59,936) in November 1866 for what would become known as the Roberts Torpedo. The new technology would revolutionize the young oil and natural gas industry by vastly increasing production from individual wells.

On March 17, 1949, a team of petroleum production experts tried a new technique on an oil well about 12 miles east of Duncan, Oklahoma – to perform the first commercial application of hydraulic fracturing. This began the modernized process that is still in use today.

Since 1949, hydraulic fracturing has done more to increase recoverable reserves than any other technique. In the more than 60 years following those first treatments, more than two million fracking treatments have been drilled and pumped with not a single documented case of any fracking treatment polluting an aquifer.

Reference: American Oil and Gas Historical Society

RELEVANCE: Hydraulic fracking is not a “new” technique. History of use shows it has not polluted groundwater/aquifers.
How does “fracking” actually work?

Fracking is simply a technique use to increase the surface area of a drilled well. By having an enlarged surface area of cracks, crevices, and seam splits, more oil or natural gas can be recovered. It improves the production of a new well or an existing well.

In virtually every case, the shale seams are far below the water table, as seen in this cross section below showing how shale is fractured to increase surface area to retrieve more natural gas.

The gas is pulled from the ground through a process called hydraulic fracturing, or fracking, in which large volumes of water, plus sand and chemicals, are injected deep underground to break shale apart and free the gas.

Figure 1: Cross section of a fracked shale gas well Source: US. Dept. of Energy
**RELEVANCE:** most fracking is conducted well below the water table.

**What is in fracking fluid?** Water, sand, and some common chemicals.

Water accounts for about 90 percent of the fracturing mixture and sand accounts for about 9.5 percent. Chemicals account for the remaining one half of one percent of the mixture. This graphic illustrates the breakdown.

**RELEVANCE:** Traditional fracking fluid is mostly water & sand, with 0.5% common household chemicals. There are no large amounts of “highly toxic” chemicals as some activists claim.
Why the worry over fracking water?

Many people worried about what chemicals are used in fracking cite the potential danger of a hypothetical scenario where fracking fluids leaking into the groundwater as the primary reason for their concern. However, there are many misconceptions about how fracking water is collected and disposed of after it has been pumped into the shale to release natural gas trapped inside.

Once the fracturing process is completed, the water rises back to the surface, forced upward by the geologic formation’s natural pressure. Then, the fluids are stored in pits or tanks to be treated – if the water is to be discharged into surface water – or is injected deep underground.

Spent or used fracturing fluids are normally recovered at the initial stage of well production and recycled in a closed system for future use or disposed of under regulation, either by surface discharge where authorized under the Clean Water Act or by injection into Class II wells as authorized under the Safe Drinking Water Act. Regulation may also allow recovered fracturing fluids to be disposed of at appropriate commercial facilities. Not all fracturing fluid returns to the surface. Over the life of the well, some is left behind and confined by thousands of feet of rock layers.

Treatment of fracking water is highly regulated by EPA rules, and many states are working to revise or create their own laws overseeing gas drilling operations in their areas. So, there is a huge financial incentive for drilling companies to do it right, otherwise they are faced with fines, and possible shutdowns.

A 2004 study from the EPA investigating the environmental impact of disposing what chemicals are used in fracking into coal bed methane production wells found no confirmed cases of drinking water wells’ quality being compromised as a result. The study noted that:

“Where fluids are injected, EPA believes that groundwater production, combined with mitigating effects of dilution and dispersion, absorption, and biodegradation, minimize the possibility that chemicals included in fracturing fluids would adversely affect [underground sources of drinking water].”


It's our experience in Pennsylvania that we have not had one case in which the fluids used to break off the gas from 5,000 to 8,000 feet (1,500-2,400 m) underground have returned to contaminate ground water.

John Hanger, former secretary of the Pennsylvania Department of Environmental Protection
Fracking fluid is now going through a change to make the small 0.5% portion of chemicals even safer.

As The Associated Press reported in August 2011, one Halliburton executive drank a new recipe for hydraulic fracking fluid at a conference by the Colorado Oil and Gas Association. The intent was to quash fears about what is hydraulic fracturing and the chemicals that are used – Halliburton's development uses food industry materials – by showing how safe they can be.

“During a keynote lunch speech at the conference presented by the Colorado Oil and Gas Association, Halliburton Co. CEO Dave Lesar talked about addressing public concerns about hydraulic fracturing, which extracts natural gas by blasting a mix of water, chemicals and sand underground.

He raised a container of Halliburton’s new fracking fluid made from materials sourced from the food industry, then called up a fellow executive to demonstrate how safe it was by drinking it, according to two attendees. The executive mocked reluctance, then took a swig.

The thing I took away is the industry is stepping up to plate and taking these concerns seriously," Ken Carlson, a Colorado State University environmental engineering professor, told the AP. “Halliburton is showing they can get the same economic benefits or close to that by putting a little effort into reformulating the fluids.”


The process is safe, and continues to be proven as such.

For example, on May 13th 2011, the New York Times reported:

Hydraulic fracturing, or “fracking,” got a clean bill of health this week in the first scientific look at the safety of the oil and production practice.


In a May 6th 2011 story on a senate hearing, E&E Newswires reported:
The debate about hydraulic fracturing has intensified as advances in the technology have opened vast gas-bearing formations in densely populated areas, like the Northeast. Critics say fracturing could cause some of the hazardous chemicals in the fluid to find its way into groundwater, but industry representatives say the fluid would have to travel upward through thousands of feet of rock, and there has never been a proven case of that happening.

Source: http://www.eenews.net/public/eenewspm/2011/05/06/2

The British also aren't worried about it:

The British government's health agency is the latest body to give fracking a clean bill of health, in a move that should galvanize the country to act on its considerable reserves of shale gas. Reuters reports:

Public Health England (PHE) said in a review that any health impacts were likely to be minimal from hydraulic fracturing, or fracking, which involves the pumping of water and chemicals into dense shale formations deep underground....

“The currently available evidence indicates that the potential risks to public health from exposure to emissions associated with the shale gas extraction process are low if operations are properly run and regulated,” said John Harrison, director of PHE's center for radiation, chemical and environmental hazards.

Source: http://www.reuters.com/article/2013/10/31/us-britain-health-fracking-idUSBRE99U0KX20131031

RELEVANCE: The EPA sees no threat to drinking water in studies they have conducted. Neither do the British.

There is a huge financial incentive by drilling companies to manage fracking water properly or face fines. Newer formulations of fracking fluid are safe enough to actually drink.

Scientific studies show the process is safe.
If fracking is safe, and has been in use since 1949, with it used in over 2 million wells, how did it get such a bad reputation?

The answer lies in an activist movie known as “Gasland”, seen on HBO in 2010 and also shown in “alternative” theatres in the USA, such as the Pageant Theater in downtown Chico.

In that movie, a claim is made that fracking caused groundwater to become flammable, due to methane gas leaking into the water table. This frame from the dramatic scene in that film shows a Colorado resident igniting his tap water with a cigarette lighter.

Source: GASLAND trailer, 2010  https://www.youtube.com/watch?v=dZe1AeH0Qz8

The implication made by the director/producer (Josh Fox) in the film is that this was caused by the recent increased in fracked wells in that part of Colorado, Weld County. To the untrained and uncurious, this certainly seems like a valid conclusion.

However, research shows that a few inconvenient facts about that movie. A 1976 study by the Colorado Division of Water found that this area was plagued with gas in the water problems back then. And it was naturally occurring.

As the report stated there was “troublesome amounts of methane” in the water decades before fracking began. It seems that in geographical areas gas has always been in the water.

But Josh Fox knew this and chose not to put it in Gasland anyway.
Another filmmaker asked Fox about this omission at a screening at Northwestern University in Chicago. You can watch that video here:

https://www.youtube.com/watch?v=e9CfUm0QeOk

And as way of verification of the Gasland’s claim of fracking causing methane in groundwater was based on a fabricated claim or not, I went looking for the 1976 report that McAleer cited. I didn’t find it, but I did find another report from the American Association of Petroleum Geologists (AAPG) which was equally damning:

DOI: 10.1306/03B5B46B-16D1-11D7-8645000102C1865D

**Distinction Between In-Situ Biogenic Gas and Migrated Thermogenic Gas in Ground Water, Denver Basin, Colorado:**

**ABSTRACT**

Dudley D. Rice, Lewis R. Ladwig

*AAPG Bulletin*

Volume 67 (1983)

*Methane-rich gas commonly occurs in ground water in the Denver basin, southern Weld County, Colorado. The gas generally is in solution in the ground water of the aquifer. However, exsolution resulting from reduction to hydrostatic pressure during water production may create free gas, which can accumulate in wells and buildings and pose an explosion and fire hazard.*

Source: [http://search.datapages.com/data/doi/10.1306/03B5B46B-16D1-11D7-8645000102C1865D](http://search.datapages.com/data/doi/10.1306/03B5B46B-16D1-11D7-8645000102C1865D)

Also, the state of Colorado Department of Natural Resources came to a similar conclusion in a report they produced about the Gasland movie, saying that the methane came from nearby coal seams (biogenic) and what not from fracking operations, and had been present for quite some time:

...we concluded that Mike Markham’s and Renee McClure’s wells contained biogenic gas that was not related to oil and gas activity. Unfortunately, Gasland does not mention our McClure finding and dismisses our Markham finding out of hand.

*The Markham and McClure water wells are both located in the Denver-Julesburg Basin in Weld County. They and other water wells in this area draw water from the Laramie-Fox Hills Aquifer, which is composed of interbedded sandstones, shales, and coals. Indeed, the water well completion report for Mr. Markham’s well shows that it penetrated at least four different coal beds. The occurrence of methane in the coals of the Laramie Formation has been well documented in numerous publications by the Colorado Geological Survey, the United States*
Geological Survey, and the Rocky Mountain Association of Geologists dating back more than 30 years. For example, a 1976 publication by the Colorado Division of Water Resources states that the aquifer contains “troublesome amounts of . . . methane.” A 1983 publication by the United States Geological Survey similarly states that “[m]ethane-rich gas commonly occurs in ground water in the Denver Basin, southern Weld County, Colorado.” And a 2001 report by the Colorado Geological Survey discusses the methane potential of this formation and cites approximately 30 publications on this subject.

Finally, it should be understood that the COGCC Director, Dave Neslin, offered to speak with Gasland’s producer, Josh Fox, on camera during the filming of the movie. Because the issues are technical and complex and arouse concerns in many people, Director Neslin asked that he be allowed to review any material from the interview that would be included in the final film. Unfortunately, Mr. Fox declined. Such a discussion might have prevented the inaccuracies noted above.

Source: [http://cogcc.state.co.us/library/GASLAND%20DOC.pdf](http://cogcc.state.co.us/library/GASLAND%20DOC.pdf)

Essentially, what we have is an activist movie director making false claims that can be easily refuted with geologic studies done by the State of Colorado, refusing to have his work reviewed, and those false claims being used to incite and worry people who are otherwise unable to make distinctions themselves.

Despite this and many more inaccuracies being well documented, activist organizations like Greenpeace, with multi-million dollar budgets, include the “flaming faucets” claim in their own ant-fracking materials, such as this one from their website, seen below.

Item# 10 says: “Concentrated Methane gas create flammable water and poisonous fumes”
Despite the science being well known and well documented, anti-fracking activist groups simply don’t care; they’ll make the claims anyway. Their goal is to stifle energy development, more on that later.

This is what is happening in Butte County with the “Frack Free Butte County” activists. Much of the claims they are making can be easily refuted if you bother to do a modicum of research.

For example, one of their claims is:

*Fracking uses gross amounts of water. In a drought, the last thing we should rely on is fracking for purposes supplied by other sources.*
What they don’t seem to realize is that fracking is a closed water system, it does not use “millions of gallons of water” (a common citation to position fracking as a water hog), but instead uses water that it treats and recycles at the surface.

The shale gas industry uses water: 1-5 million gallons per well. However, its needs are not great in comparison with those of other industries, such as the power generation industry, or even the quantity used in domestic appliances. Gas drilling in Pennsylvania uses less than 60 million gallons per day, compared with 1,550 used in public water systems, 1,680 used in industry and 5,930 used in power generation in the state (US Geological Survey). A single shale gas well uses in total about the same amount of water as a golf course uses in three weeks.

**Sidenote:**

If you look at the amount of water used by the Sierra Nevada Brewery in Chico per year, you’ll find it far and regularly exceeds any expectation of water to be used for hydraulic fracturing in Butte County, should it ever occur in Butte County. For example in 2007, SNB used over 6 million barrels of water (31 US gallons/barrel) for a total of 186 million gallons of water.

Source: [http://www.sierranevada.com/sites/default/files/content/sustainability/reports/SN_SustainabilityReport2012_2.pdf](http://www.sierranevada.com/sites/default/files/content/sustainability/reports/SN_SustainabilityReport2012_2.pdf)

Approximately one-third of the water pumped down the well for fracking returns eventually to the surface together with gas during production. In the Marcellus Shale in Pennsylvania, this water is saline, because the shale rock was formed on the bed of an ancient sea. The water is extracted from the gas, collected in pools doubly lined with heavy-duty polythene, and either re-used for fracking in other wells or desalinated, treated and disposed of as waste. This is no different from the treatment of waste water in any other industrial process. Pollution incidents involving such ‘produced water’ are rare. A gas well operated by EOG Resources blew out in Clearfield County, Pennsylvania, in June 2010, spilling 35,000 gallons of slick water. The water was contained by berms and linings, and there were no injuries or significant damage to the environment.

**Another claim used by activists is that the water coming to the surface is radioactive.**

The returning water is also slightly more radioactive than surface water because of naturally occurring isotopes within the rocks. However, this radioactivity drops when the salt is removed and before the water is disposed of in the sewage system. In any case many granite rocks have higher natural radioactivity, so exposure to waste water from gas drilling is likely to be no more hazardous than exposure to some other kinds of rock. There is no evidence that either gets
close to being hazardous. Indeed the Pennsylvania Department of Environmental Protection has tested the water in seven rivers to which treated waste water from gas wells is discharged and found not only no elevation in radioactivity but:

All samples were at or below background levels of radioactivity; and all samples showed levels below the federal drinking water standard for Radium 226 and 228. -- Pennsylvania Department of Environmental Protection, 7 March 2011

All technologies have environmental risks. Press coverage that talks about ‘toxic’, ‘carcinogenic’ and ‘radioactive’ ‘chemicals’ is meaningless. Vitamin A is toxic. A single cup of coffee contains more known carcinogens than the average American ingests from pesticide residues in a whole year. Bananas are radioactive. Dihydrogen monoxide is a chemical (water, H2O).

RELEVANCE: As demonstrated above, the list of easy refutations to activist’s claims about fracking is quite long, if any of you want to have them specifically addressed, I’ll be happy to do so personally on request.

This will surprise you - fracking has actually helped solve the “global warming” problem

The same people who complain that fracking will kill the planet also say similar things about carbon dioxide emissions related to “global warming”.

The great irony of fracking to produce more natural gas is that it has helped make a shift from coal to natural gas in energy production, actually reducing carbon dioxide emissions in the USA.

As demonstrated in this article, carbon dioxide emissions in the U.S. are at their lowest level in 20 years thanks to fracking.

Source: http://www.slate.com/articles/health_and_science/project_syndicate/2012/09/thanks_to_fracking_u_s_carbon_emissions_are_at_the_lowest_levels_in_20_years_.html

The EIA data shows natural gas on the rise:
So many activists want us to get off “dirty coal” as an energy source, yet they seem unwilling and unable to accept a much cleaner burning fuel, natural gas, because it involves “fracking”.

But, you shouldn’t take my word for it, read what they say at U.C. Berkeley about Natural Gas in their August 2014 report:

**Climate Impacts of Coal and Natural Gas**

_In a world where a cost-competitive near-zero carbon energy source is not readily available, particularly in developing countries, replacing coal electric generation with natural gas could provide an effective strategy to mitigate climate change and reduce harmful air pollution._


Just as surprising, the leader of the group that produced that report, _Berkeley Earth_, is an _advocate of fracking_ to produce more natural gas.

Deadly particulate pollution known as PM2.5 (highly regulated in California) is currently killing over three million people each year, primarily in the developing world, demonstrates Richard Muller (Professor of Physics at the University of California, Berkeley since 1980) in _Why Every Serious Environmentalist should favour Fracking_. His co-author, Elizabeth Muller, is his daughter and co-founder (with him) of Berkeley Earth, a non-profit working on environmental issues.
The summary from that report:

WHY EVERY SERIOUS ENVIRONMENTALIST SHOULD FAVOUR FRACKING

RICHARD A. MULLER AND ELIZABETH A. MULLER

SUMMARY

- Environmentalists who oppose the development of shale gas and fracking are making a tragic mistake.

- Some oppose shale gas because it is a fossil fuel, a source of carbon dioxide. Some are concerned by accounts of the fresh water it needs, by flaming faucets, by leaked “fugitive methane”, by pollution of the ground with fracking fluid and by damaging earthquakes.

- These concerns are either largely false or can be addressed by appropriate regulation.

- For shale gas is a wonderful gift that has arrived just in time. It can not only reduce greenhouse gas emissions, but also reduce a deadly pollution known as PM2.5 that is currently killing over three million people each year, primarily in the developing world.

- This air pollution has been largely ignored because PM2.5 was an unrecognised danger until recently; only in 1997 did it become part of the US National Ambient Air Quality Standards. It is still not monitored in much of the world.

- Greenhouse warming is widely acknowledged as a serious long-term threat, but PM2.5 is currently harming more people.

- Europe shares an ironic advantage with China – the high price paid for imported natural gas, typically US$10 per million BTU (compared to US$3.50 in the US). At those prices, the cost of shale drilling and completion can be much higher and still be profitable. Europe can therefore be the testing and proving ground where innovative technology can be tried and perfected while still profitable.

- As both global warming and air pollution can be mitigated by the development and utilisation of shale gas, developed economies should help emerging economies switch from coal to natural gas. Shale gas technology should be advanced as rapidly as possible and shared freely.

- Finally, environmentalists should recognise the shale gas revolution as beneficial to society – and lend their full support to helping it advance.

Study: Fracked shale gas impacts have positive and negative benefits, but there’s no reason not to make it part of the energy mix - September 22, 2014

From The University of Manchester: Fracking’s environmental impacts scrutinised

Greenhouse gas emissions from the production and use of shale gas would be comparable to conventional natural gas, but the controversial energy source actually fared better than renewables on some environmental impacts, according to new research.

The UK holds enough shale gas to supply its entire gas demand for 470 years, promising to solve the country’s energy crisis and end its reliance on fossil-fuel imports from unstable markets. But for many, including climate scientists and environmental groups, shale gas exploitation is viewed as environmentally dangerous and would result in the UK reneging on its greenhouse gas reduction obligations under the Climate Change Act.

University of Manchester scientists have now conducted one of the most thorough examinations of the likely environmental impacts of shale gas exploitation in the UK in a bid to inform the debate. Their research has just been published in the leading academic journal Applied Energy and study lead author, Professor Adisa Azapagic, will outline the findings at the Labour Party Conference in Manchester on Monday (22 September).

“While exploration is currently ongoing in the UK, commercial extraction of shale gas has not yet begun, yet its potential has stirred controversy over its environmental impacts, its safety and the difficulty of justifying its use to a nation conscious of climate change,” said Professor Azapagic.

“There are many unknowns in the debate surrounding shale gas, so we have attempted to address some of these unknowns by estimating its life cycle environmental impacts from ‘cradle to grave’. We looked at 11 different impacts from the extraction of shale gas using hydraulic fracturing – known as ‘fracking’– as well as from its processing and use to generate electricity.”

The researchers compared shale gas to other fossil-fuel alternatives, such as conventional natural gas and coal, as well as low-carbon options, including nuclear, offshore wind and solar power (solar photovoltaics).

The results of the research suggest that the average emissions of greenhouse gases from shale gas over its entire life cycle are about 460 grams of carbon dioxide-equivalent per kilowatt-hour of electricity generated. This, the authors say, is comparable to the emissions from conventional natural gas. For most of the other life-cycle environmental impacts considered by the team, shale gas was also comparable to conventional natural gas.

But the study also found that shale gas was better than offshore wind and solar for four out of 11 impacts: depletion of natural resources, toxicity to humans, as well as the impact on freshwater and marine organisms. Additionally, shale gas was better than solar (but not wind)
for ozone layer depletion and eutrophication (the effect of nutrients such as phosphates, on natural ecosystems).

On the other hand, shale gas was worse than coal for three impacts: ozone layer depletion, summer smog and terrestrial eco-toxicity.

Professor Azapagic said:

“Some of the impacts of solar power are actually relatively high, so it is not a complete surprise that shale gas is better in a few cases. This is mainly because manufacturing solar panels is very energy and resource-intensive, while their electrical output is quite low in a country like the UK, as we don’t have as much sunshine. However, our research shows that the environmental impacts of shale gas can vary widely, depending on the assumptions for various parameters, including the composition and volume of the fracking fluid used, disposal routes for the drilling waste and the amount of shale gas that can be recovered from a well.

“Assuming the worst case conditions, several of the environmental impacts from shale gas could be worse than from any other options considered in the research, including coal. But, under the best-case conditions, shale gas may be preferable to imported liquefied natural gas.”

The authors say their results highlight the need for tight regulation of shale gas exploration – weak regulation, they claim, may result in shale gas having higher impacts than coal power, resulting in a failure to meet climate change and sustainability imperatives and undermining the deployment of low-carbon technologies.

Professor Azapagic added:

“Whether shale gas is an environmentally sound option depends on the perceived importance of different environmental impacts and the regulatory structure under which shale gas operates.

“From the government policy perspective – focusing mainly on economic growth and energy security – it appears likely that shale gas represents a good option for the UK energy sector, assuming that it can be extracted at reasonable cost.

“However, a wider view must also consider other aspects of widespread use of shale gas, including the impact on climate change, as well as many other environmental considerations addressed in our study. Ultimately, the environmental impacts from shale gas will depend on which options it is displacing and how tight the regulation is.”

Study co-author Dr Laurence Stamford, from Manchester’s School of Chemical Engineering and Analytical Science, said: “Appropriate regulation should introduce stringent controls on the emissions from shale gas extraction and disposal of drilling waste. It should also discourage
extraction from sites where there is little shale gas in order to avoid the high emissions associated with a low-output well.

He continued:

“If shale gas is extracted under tight regulations and is reasonably cheap, there is no obvious reason, as yet, why it should not make some contribution to our energy mix. However, regulation should also ensure that investment in sustainable technologies is not reduced at the expense of shale gas.”


**From Stanford University – Stanford-led study assesses the environmental costs and benefits of fracking** - September 13, 2014

A strange thing happened on the way to dealing with climate change: Advances in hydraulic fracturing put trillions of dollars’ worth of previously unreachable oil and natural gas within humanity’s grasp.

The environmental costs – and benefits – from “fracking,” which requires blasting huge amounts of water, sand and chemicals deep into underground rock formations, are the subject of new research that synthesizes 165 academic studies and government databases. The survey covers not only greenhouse gas impacts but also fracking’s influence on local air pollution, earthquakes and, especially, supplies of clean water.

The authors are seven environmental scientists who underscore the real consequences of policy decisions on people who live near the wells, as well as some important remaining questions.

“Society is certain to extract more gas and oil due to fracking,” said Stanford environmental scientist Robert Jackson, who led the new study. “The key is to reduce the environmental costs as much as possible, while making the most of the environmental benefits.”

Fracking’s consumption of water is rising quickly at a time when much of the United States is suffering from drought, but extracting natural gas with hydraulic fracturing and horizontal drilling compares well with conventional energy sources, the study finds. Fracking requires more water than conventional gas drilling; but when natural gas is used in place of coal or nuclear fuel to generate electricity, it saves water. From mining to generation, coal power
consumes more than twice the water per megawatt-hour generated than unconventional gas does.

Unconventional drilling’s water demand can be better or worse than alternative energy sources, the study finds. Photovoltaic solar and wind power use almost no water and emit no greenhouse gas, but cheap, abundant natural gas may limit their deployment as new sources of electricity. On the other hand, fracked gas requires less than a hundredth the water of corn ethanol per unit of energy.

Fracking’s impact on both climate change and local air pollution is similar to its impact on water, finds the study “The Environmental Costs and Benefits of Fracking,” published in the Annual Review of Environment and Resources.

Getting a fractured well going is more intense than for conventional oil and gas drilling, with potential health threats arising from increases in volatile organic compounds and air toxics.

But when natural gas replaces coal as a fuel for generating electricity, the benefits to air quality include lower carbon dioxide emissions than coal and almost none of the mercury, sulfur dioxide or ash.

The study highlights several policies and practices that could optimize fracking’s environmental cost-benefit balance, and it highlights the need for further research. For example, the direct impact on the health of nearby residents is virtually unknown. “Almost no comprehensive research has been done on health effects,” said Jackson, “but decisions about drilling – both approvals and bans on fracking – are made all the time based on assumptions about health risks.”

And finally, from a political perspective, just how much support does the anti-fracking movement in Butte County have?

The “Frack Free Butte County” group tried to get their fellow citizens to fund their efforts via a crowd sourcing campaign. They only raised 9% of their expected goal:
That speaks loudly when the citizenry can’t get behind it. It also suggests that the people who did contribute money (just 72 people) are limited to their friends and peers.

Source: https://www.indiegogo.com/projects/frack-free-butte-county
Summary and my best advice

- Fracking is not something that just started, it is a long and well proven process
- Fracking is safe, despite activist claims of flaming faucets and other nonsense
- Fracking is not a water hog in comparison to other industries
- Fracking has benefits, including reduced carbon dioxide and reduced PM2.5 particulates
- Fracking is an emotional issue that is soundly refuted by government and scientific studies
- Fracking is a tool being used improperly by activists to stifle energy production

If you pass a fracking ban, will it affect me? No. However it may affect landowners who may wish to develop or improve wells in the small pockets of natural gas near Willows. A ban may render their mineral rights moot.

But, as we already know, there is only a small amount of gas wells in Butte County, and some of those were enhanced with fracking (check well logs) though owners don’t want to admit it for fear of activists chaining themselves to well or other such things.

A ban probably won’t matter much in the scheme of production, but if passed it will be used as a political bandwagon tool.

A fracking ban will be just about as useless as the infamous “nuclear weapons ban” in Chico, but it will make some emotional folks feel good about themselves.

If I were to be in your position, I’d put it up to a vote of the people of Butte County, rather than approve a ban outright. I think you’ll find it has about as much support in the citizenry as the ill-fated attempt to ban Genetically Modified Food (GMO’s) a few years back.

Thank you for your consideration.