



Fall Conference

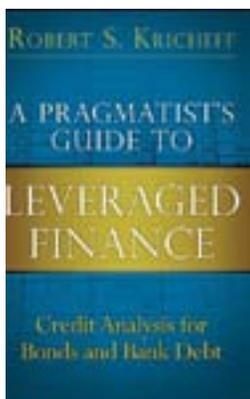
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BOOK REVIEW

Leveraged Finance



Anyone interested in an education covering leveraged finance analysis should consider reading, **A Pragmatist's Guide to Leveraged Finance**, by Credit Suisse managing director Bob Kricheff.

This is not a "textbook" offering theory. It's more of a tutorial. Kricheff takes readers by the hand and first makes a case for why textbook analysis most learn on the job or at an educational institution does not work when evaluating leveraged instruments. See **BOOK** next page.

SCHOOL FUNDING & THE MICHIGAN LOAN FUND

Michigan school districts first received funding beginning at statehood in 1837. And up to 1973-1974 Michigan utilized a "foundation" system of aid to distribute monies to local schools and it guaranteed a level of spending per pupil in all local school districts. In 1973 things changed because the highest spending district's expenditures increased by 300% over the lowest spending school district. The disparity led to discussion and resulted in the guaranteed tax base formula (GTB) replacing the "foundation" formula after 1973. See **SCHOOL** Page 12

FRACKING in Michigan *What Municipalities Need to Know*

Michigan state environmental regulators will put the finishing touches on some new rules regarding "fracking" now that public hearings have ended. New rules adoption is expected by the end of the year, but discussions covering the drilling process sometimes described as controversial will continue into the foreseeable future.

By now most citizens are aware of fracking; it's been discussed in the headlines numerous times. The term refers to the pushing of water and chemicals into wells which creates or enlarges fractures in the rock that allow oil or gas to move into the wellbore. Recent hearings in Michigan specifically in Gaylord and Lansing have included resident complaints that proposed rules are not enough to protect land and water. Some in the state want a complete fracking ban, and a ballot initiative to ban the practice is in the works for 2016.

A University of Michigan report echoes increasing skepticism about fracking. The Center for Local, State, and Urban Policy (CLOSUP) surveyed local government leaders on issues related to high-volume horizontal fracking in communities; leaders from 1,353 Michigan counties, cities, townships, and villages answered questions. See **FRACKING** page 3.



BOOK from page 1

Later he discusses what "you need to know" to arrive at proper pricing—the data that should be on-hand. The book does not stop there. It offers real-world applications as examples through worksheets and graphs.

Terms used in the text: Do these terms sound familiar: yields, spreads, modeling, interest rate effects? He covers them, along with how to assess equity, and the proper evaluation of credit. While the book should appeal to any seasoned professional involved in underwriting—yes, accountants and lawyers and advisors, its sound principles are also valuable for new analysts. The book is better described as a "teacher" than a guide.

The book really does avoid theory. Despite graphs, charts and data, there is no technical talk of credit derivatives or statistics. And you won't find the "details" of Monte Carlo or other modeling techniques explained within the pages though he touches on them. Instead, the reader is expected to handle it on his [her] own.

What can you learn: Do you want to learn how to evaluate loan documents? Want a primer on modeling cash flows? In Chapter 13 which covers Structural Issues: Coupons and the next chapter which covers maturities and both calls and puts (together they don't reach 30 pages) Kricheff hits a home run. And he doesn't write a tome. It's short and to the point.

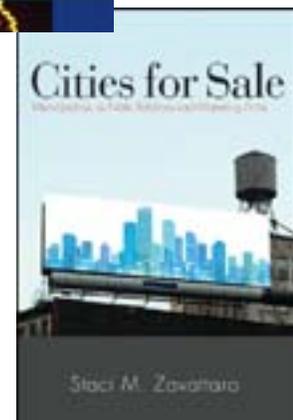
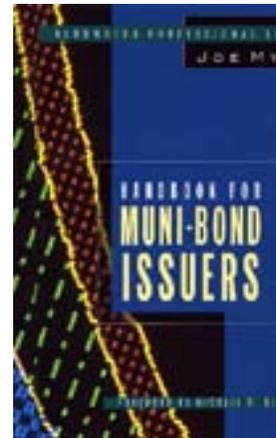
What the book does well: The book deals with the real-world, for example how to evaluate a financial statement when pressed for time and unable to read it carefully. There are copious examples sprinkled throughout that he uses to make his points.

Kricheff adeptly walks readers through the issuance of new debt and explains what information is important to evaluate—and how to prioritize and rank information. Sure, like other texts, the book states what a bond

is, how it is priced in the market and delves into analyzing a company. Then he covers: when and how to do modeling, how to modify the model when there's updated market news and more.

In a nutshell: A minor drawback in the text is the simplicity in the problems at the end of each chapter—perhaps aimed at a junior analyst more than a senior team member. Still, it is worthy of sitting on the bookshelf beside other texts within a practice. Anyone involved as an analyst, investor or underwriter should enjoy reading the text. Its high-on-information and low-on-theory approach is what makes it such a good read.

Other Books to Consider



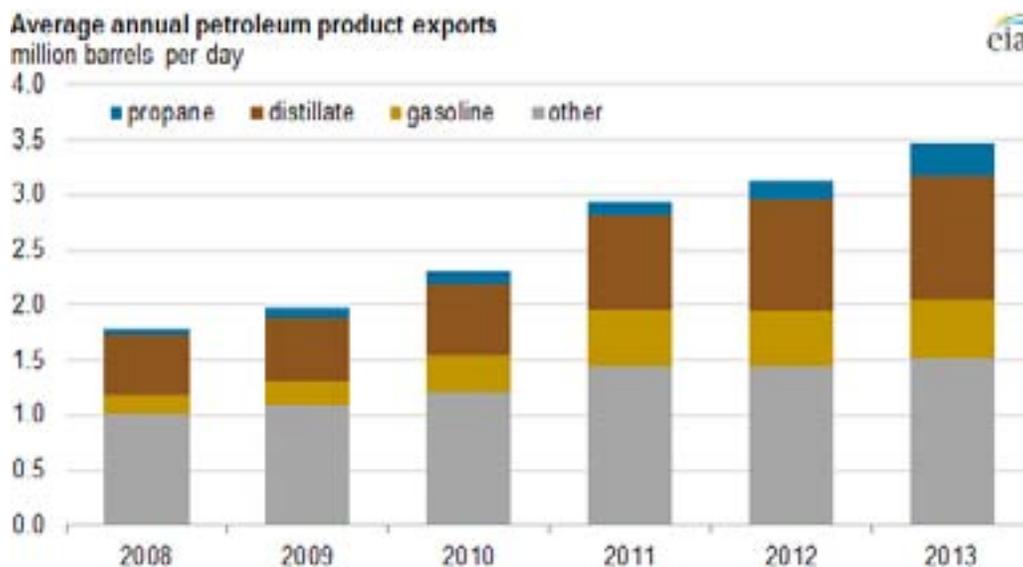


Image Source: <http://www.eia.gov/todayinenergy/detail.cfm?id=15951>

FRACKING from page 1

The survey reported that about 6% of local jurisdictions currently have fracking operations or efforts to add them, and 13% of survey respondents said they or neighbors are somehow affected by it. Today, conversations are occurring in Michigan, and Pennsylvania, and Texas and elsewhere. The entire CLOSUP study can be accessed here: <http://closup.umich.edu/michigan-public-policy-survey/33/fracking-as-a-community-issue-in-michigan/>.

A separate Pew Research Study published last year said slightly more Americans opposed fracturing than favored it, 49% to 44%.

Anything controversial makes the headlines, and oil and gas drilling versus environmental concern is no different. The controversy exists because of the impact both have on life and leisure. Oil and gas enable citizens to commute to work, to vacation and to heat homes. And they play a big role in international trade. The US exports and imports

natural gas and oil—and some are now arguing for less movement of “our” natural resources to distant lands believing the right course is to protect what belongs to the US.

Others argue to open borders as it promotes trade and improves the standard of living: the rising tide lifts all boats theory. It’s no different in Michigan. Waterways and wetlands are important here, for residents and tourists alike; trade is important

too. But underneath all the controversy lies a bigger issue: who owns the rights to land—and who owns that which sits below it? According to the Department of Environmental Quality principles of ownership and the associated rights to develop are well-established in Michigan and other states.

Some experts point to the argument for cleaner burning gas versus coal as justification to increase fracking in Michigan and beyond. Revenue for land owners and potential for increases in property value have also been listed as incentives for the practice in articles and interviews. But today, according to the Michigan study, many jurisdictions want more control, more power to regulate the practice, to oversee it. There is also growing concern about: noise, truck traffic (for hauling water to and from the sites and estimates suggest up to 100 trips per day are conceivable), technology employed, how land is used, chemical disclosure and disposal of flowback water—contaminated in the process of fracking. See next page.



Hal Fitch Michigan's chief of the office of oil, gas and minerals, said, "There are well over 12,000 wells that have been hydraulically fractured in Michigan and there has not been one incident of environmental impact directly associated with fracturing." He added, "And today there's new technology available. It's important to distinguish between 100,000 gallon and up high-volume fracturing and older types. This new type dates back to 1987 and we now have many wells using the technology with no incidents."

Michigan Safeguards

In Michigan specific safeguards are in place to protect citizens with regard to the construction, maintenance, and management of oil and gas wells. Fitch explained, "We regulate oil and gas from cradle to grave and look at specific sites to approve them, to verify environmental protections and to protect groundwater. It involves utilizing a good casing and safeguards to prevent any intrusion of gas from deeper down, and monitoring for spills. We even specify how to plug the well at the end of its life."

When asked about environmental concerns with possible ground water contamination voiced at town-halls, Fitch said, "Fracking does not affect ground water. Fresh water in Michigan sits at 50 to 100 feet below

the ground and in the deepest parts, might reach 1000 feet. But it never reaches to the depth of a fracking well, which is 5000 to 6000 feet below the surface. What is fractured has no fresh water in it. It sits well below any ground water, and regulations are strict regarding how well casings must be built, to prevent any contamination." As a side note Fitch added that in the western Upper Peninsula the process of "fracturing" has actually been used to extract ground water, to make water wells viable.

There are critics opposed to the fracturing process but according to Fitch, the DEQ believes, "Proposed rules and regulations do not favor oil and gas or environmentalists. The rules strike a balance. Drilling and production of oil and gas is not risk free. People like to pull up old problems and legacy issues, but today our regulations are very protective. There have been over 14,000 wells drilled since 1989 and there have been no instances of contamination of water supply wells or surface water associated with them. Yes there have been some spills, mostly soil contamination which we took care of, but so far from the newer era of regulation, there have been no water well or surface water problems." Continued next page.

- "Fracking" began in 1952 and oil and gas companies have used it for years.
- New concern stems from methods using "high volume hydraulic fracturing" which involves drilling 5k below ground level and then extending horizontally once an ideal depth is reached.
- Issues surround land rights, water use, and the chemicals used in hydraulic fracturing.
- A vertical well might use 100k gallons maximum but horizontal drilling uses up to 20 million gallons.



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Even with all the regulations in place in Michigan, many are not convinced that oil and gas fracturing is safe. Fitch said that the new rule proposed will require that a company doing “high volume fracturing conduct baseline testing of wells before any testing is done. Right now it’s not necessary to do it, but it has been proposed.”

He said ongoing monitoring will also ensure nothing happens after the well is dug and that the water is tested. Baseline testing within 1/4 of a mile of a drill site is done before operations start.

And he further explained the Pennsylvania controversy [more on this later in the article] discussed in documentary and press forums. “Their water and materials were sent through a waste water treatment plant which does not remove dissolved salts. Those salts flowed into rivers which raised the salinity.”

He emphasized, “We would never do that in Michigan.” Regulation prohibits it. In Michigan waterways and citizens are protected by, “an excellent program, statutes and rules. The DEQ has 25 field inspectors and 18 staff in Lansing who issue permits and monitor the records, “ said Fitch in closing.

The History of Fracking

Fracking has been around since 1952 and oil and gas companies have used it for years. New concerns stem from methods involving high volume hydraulic fracturing, with wells dug 5k feet below ground level then extending horizontally once they reach an ideal depth.

The motivation for this is to extract bigger quantities of oil and gas; it’s more efficient. The main controversy surrounds the chemicals used, names most people cannot pronounce, and the water usage which is part of the drilling process along with where and how flowback is stored.

A vertical well might use 100,000 gallons maximum, but horizontal drilling uses up to 20 million gallons, in some cases. At the Michigan DEQ site, a water resource tool including both proposed water usage and actual water withdrawn is available. *DEQ Water Usage Table 2008-Present; Proposed and Actual Water Usage - Hydraulic Fracturing.*

There are recycling efforts underway to conserve water where possible and there are drillers who recycle at the well site or send water to a special facility where it can be filtered, later distilled then reused again. And some companies do dilute the salts in the waste water and

reuse it, or store it. Still the massive amount of water used in operations, and concerns about environmental safety remain controversial.

A Possible Crack in the Frack? Efforts to Ban Fracking

National Cases / Legal Issues

The Marcellus Shale is in New York and on June 30, 2014, the NY Supreme Court held that two rural home-rule towns sitting on Marcellus shale can ban fracking, by zoning ordinance. This comes despite a New York statute stating that oil-gas law “shall supersede all local laws or ordinances relating to the regulation of the oil, gas and solution mining industries...” The towns believed gas drilling would impact their town character in a negative way.

The NY Case History

A developer in New York picked up oil and gas leases in Dryden and the town held a public hearing in 2011. The town prohibited oil-gas exploration on its land (including extraction/storage and the like). Middlefield, another town, learned leases had been executed and they too zoned “out” oil and gas exploration. They argued it affected scenic views, recreation, town villages and water quality. The town’s board ruled fracking would forever alter the town vibe, its character.



In the Middlefield case, local laws regulating how mining activity was conducted were preempted; this meant state and federal statute took precedence, but laws regulating where it could take place were not. In short: communities had a voice.

...in Pennsylvania:

More Legal History

A decision in Pennsylvania by the Supreme Court a year ago, in *Robinson Township v. Pennsylvania* struck down Act 13.

About Act 13: Enacted in 2012, it supported the development of wells, pipelines, and seismic-testing explosives to “take place of right” in every zoning district, even residential ones. The law also stated, that oil and gas laws “occupy the entire field of regulation, to the exclusion of all local ordinances.”

Well, several townships decided to sue. Four justices agreed to strike Act 13 and three disagreed. The public trust doctrine in the Pennsylvania Constitution requires that all branches of government consider in advance what the environmental effect of proposed action is potentially going to be. Pennsylvania believes natural resources, a public commodity are the common property of all the people, including those not yet born (yes, future generations).

The result: townships and boroughs in Pennsylvania can now ban fracking.

At the National Level

According to Stephanie Meadows, senior policy advisor at Upstream, American Petroleum Institute, issues surrounding federal laws heated up beginning in the early 2000s because that’s when fracturing coupled with horizontal drilling began in the *Barnett Shale* region of the county. By 2007 it was brought to the attention of Congress because operations were occurring in the eastern part of the country (in areas not typically known for oil and gas development) and people were concerned about whether hydraulic fracturing could impact water quantity and quality and whether it could contaminate ground water.”

A document published in 2007, by the Oil and Gas Accountability Project, called *Drilling Down* accused the “industry of being exempt from regulation on all fronts . This is when the industry started receiving numerous media inquiries about hydraulic fracturing,” she said. Keep in mind, “They had been doing this for 60 years and all of a sudden something changed. The claims about industry not being subject to regulation were simply wrong, but fracturing became a very hot topic by 2008. she said.

“Hydraulic fracturing operations are subject to a number of federal laws including the Clean Water Act, the Safe Drinking Water Act, Occupational Safety and Health Administration regulations and more. However, because major environ-

mental laws were not on the books until the 1970s, states were the primary regulatory authority for oil and gas operations,” Meadows said, then further explained, “But that’s where the knowledge of geologic formations, hydrology, climatology, and local water conditions are better managed. It does not belong at the federal level. States are much more nimble than the government when it comes to looking at the issues.”

It takes forever to get things done at a federal level Meadows said. Meanwhile, state regulatory agencies which have the highest stakes in protecting state and local environments, water supplies and communities, are rigorously enforcing fracking rules designed specifically for the conditions and characteristics of their states.

There have been major changes in the last five years. Concerns are getting addressed “faster, and better, and state seismology is the next issue to be addressed,” she said. States are looking into after-effects of disposal of produced water, where seismic activity is present. In Oklahoma increased seismic activity has definitively been linked to underground injection of produced water. [See: K.M.Keranen, et al., *Science*, “Sharp increase in central Oklahoma seismicity since 2008 induced by massive wastewater injection,” 2014: <http://www.sciencemag.org/content/early/2014/07/02/science.1255802>]

According to Meadows, public disclosure became a hot topic around



2007 because the industry [oil and gas] was facing criticism about contaminating ground water sources with the chemicals used in the fracturing fluid. "We continue to educate the public that proper well design and construction are the key to protecting drinking water aquifers," she said.

In response to the concerns over the chemicals used as part of the fracking process, the Interstate Oil and Gas Compact Commission together with the Ground Water Protection Council developed *www.FracFocus.org*. It allows an individual or community to "track well progress and determine what is being pumped into a well within a community. It also provides important information regarding oil and gas regulations in an effort to inform and educate the public," she said.

There are now 15 states electing to use FracFocus for public disclosure. The Bureau of Land Management has put out a rule and the "word on the street is that they too will now use the same system to disclose," said Meadows.

How NY and PA Cases Might Affect MICHIGAN

Believe it or not, in Michigan, fracking is controlled at the state level. This makes it difficult for a city or town to stop nearby fracking. But according to Michigan polls, mu-

nicipalities want more local control over the practice. How can they apply the brakes?

In Michigan, oil-gas law is "Part 615 of the Natural Resources and Environmental Protection Act" or "NRE-PA Part 615" or simply "Part 615."

And Article III, Chapter 3, Subchapter 2, under 615 deals with oil and gas. Within the subsection is wording which allows DEQ to "enforce rules, issue orders and instructions," basically to do anything necessary to implement the subject matter of Part 615, hether that subject matter is explicitly stated in Part 615, or not.

There are also rules that come under the Administrative Procedures Act, which requires public hearings and public comment be allowed in advance.

The Michigan Department of Environmental Quality (MDEQ or DEQ) has authority over Part 615 and anything pertaining to waste prevention, and conservation of oil and gas in Michigan.

Did you know? In Michigan and most states, usurpation by the state of power to regulate oil and gas activities is called "preemption." (In New York the term is "supersession.").

What it generally means is that a Michigan township or county under "preemption" cannot pass an ordi-

nance if direct conflict exists with a state statutory scheme. What if there is no direct conflict? It is still precluded if the state method, "occupies the field of regulation..."

Every state's oil-and-gas law is a little bit different from every other. One Michigan expert said, though the New York and Pennsylvania decisions do not directly affect Michigan courts, they certainly might influence decisions going forward.

As Michigan has expanded along with energy demand, untouched rural areas and scenic spots may take a backseat to oil and gas exploration if left unchecked. Now eyes are watching. But looking at another state and comparing it to ours is hard: Michigan's Constitution differs from Pennsylvania's for example, as does the terrain.

Michigan's Constitution, unlike Pennsylvania's, does not spell out the "public trust" principles directly. What it does say is that the "conservation and development of the natural resources of the state are...paramount public concern in the interest of the health, safety and general welfare of the people. The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction." The rub is that in spite of all the words, no public trust doctrine wording in the constitution, might affect a ruling against fracking.



Another Subsection -- 205(2) Part of the Zoning Enabling Act.

Michigan's zoning law is called the Zoning Enabling Act. And it includes some clauses explicitly prescribing preemption:

1) 205(2)A county or township [1] shall not regulate or control the drilling, completion, or operation of oil or gas wells or other wells drilled for oil or gas exploration purposes and [2] shall not have jurisdiction with reference to the issuance of permits for the location, drilling, completion, operation, or abandonment of such wells.

2) 205(3) and subsequent subsections of 205 say a local ordinance shall not "prevent the extraction, by mining, of valuable natural resources from any property unless very serious consequences would result..." These subsections apply only to extraction by mining. *But, oil and gas are not "mined"*—they are removed by "drilling" and these activities are not treated the same under Michigan law, and fall under NREPA rules. Many years ago in the early 60s, when the Michigan Constitution was adopted, the convention said, "Home rule cities and villages already enjoy a broad construction of their powers...intention here to extend to counties and townships within the powers granted to them equivalent latitude in the interpretation of the constitution and statutes."

3) Within Section 205(2), the words "location" and "abandonment" used in the second clause are omitted from the first clause, and according to legal experts one might surmise that Michigan's legislature decided along similar lines with New York's Court.

Therefore, though the state might govern and "preempt" technical rules for how oil or gas operations function and occur, a county or township can (possibly) control where such operations occur. This could possibly provide citizens with a level of protection, a way to enjoy their surrounding community without seeing a drilling operation when they look outside, through a house window. However, this also may be a misinterpretation of Michigan law. DEQ noted that regulation of where an operation can occur is a zoning function; the Zone Enabling Act specifically preempts a township or county from regulating oil or gas well operations "through zoning".

There have been some important Michigan cases decided by the Michigan Supreme Court. See *Addison Township v. Gout*. A comprehensive paper is available here and describes the case in full: <http://flowforwater.org/wp-content/uploads/2013/04/Final-Report-Fracking-Local-Township-Ordinance-Project.pdf>. It also discusses hydraulic fracturing specific to Michigan.

A second *Addison Township v. Gout*, in 1990, said a township could, "prohibit land use for a [an above-ground]

processing facility," in entirety. What the court was trying to determine was whether a township could regulate land use as it related to oil and gas extraction, mainly processing. What the court said: yes, the township could regulate processing because no statute prohibited it. But, production was also differentiated from "extraction" of the resource.

The court considered production moveable but extraction fixed. Fitch noted that actually a zoning authority is prohibited from exercising exclusionary zoning, meaning it cannot totally exclude a land use from its jurisdiction if there is demonstrated need for the use.

The "catch" today is that with horizontal drilling the idea of a having a fixed location is a bit murky, especially when actual drilling can be horizontally a mile or more from where operations are set up at the ground level. According to information from the DEQ site, a well's location is where it resides on the surface, not where the actual oil or gas sits below. Odds are more discussion to consider preemption will follow as the debate heats up.

In Michigan it may be possible for local government units to potentially ban fracking. What happened in NY and Pennsylvania may alter outcomes here. But regulation of fracking by Michigan's counties and townships is limited by the Michigan Zoning Enabling Act (Public Act



110 of 2006). Counties and townships cannot regulate location, drilling, or operation of oil and gas wells within their borders. While not “preempted” cities/villages can only regulate wells if their local ordinances do not conflict with state and federal requirements and are not exclusionary in nature.

Fitch believes local governments in Michigan could not ban fracking. He noted that a local ordinance to ban hydraulic fracturing in Michigan would be unlikely to stand up against a court challenge; and even if it did, the municipality could be liable for large cash judgments for taking of property without compensation. It has happened to communities in other states.

Some believe counties and townships could attempt to circumvent PA 110 and limit fracking by perhaps regulating the construction of roads or the accessory buildings needed for a fracking operation, and accomplish it using methods other than zoning; it might also be possible to limit operations that relate to processing, refining, and transportation that is part of the “fracking” operation and that happen elsewhere, at locations far removed from the well site.

Just a few weeks ago, Connecticut’s Governor Dannel Malloy signed a law placing a three-year moratorium on the waste handling from hydraulic fracturing. He cited the need for research into the environmental impact.

Some of the concern in Michigan centers on where the drilling is occurring. Shallow vertical drilling has been conducted since 1955 in Michigan with the vast majority in the Upper Peninsula said Jim Nash, Oakland County Michigan’s water resource commissioner. “The issue now is that it’s being done in heavily populated areas, water filled areas like Oakland County. Though the risk of an accident remains the same, what results should it occur does not. If there is a spill there are major ramifications in heavily populated areas, and given that property values in a water-filled area are higher [on a lake] than elsewhere, one spill will significantly affect

municipalities and surrounding areas. Property values will plunge and revenue will decline,” he said.

He added that in Bloomfield Hills and other western Oakland County communities, more than half the community sits on or near water. If an accident occurred, “that killed a lot of fish on Cass Lake, for example, whether a spill or any underground leak, it has potential to get into the water at the surface and it will have a massive impact on the community and the economy far beyond what anyone can see right now,” Nash said.

Nash said despite regulations to address safety, “When the water [for fracking] is pumped in and hits a salt vein, it comes up through the vein. It it eats [dissolves] the salt. There is potential for problems, according to the Sustainability Institute of Michigan. If an underground leak occurs because it’s part of an aquifer it can come up elsewhere and then it gets hard to assign blame to anyone.” That’s why there’s now talk about instituting catastrophe bonds as part of an insurance risk pool he said.

John Griffin, of API responded to questions about water safety. He said, “In Michigan regulations require that when you go in, you must drill 100 feet into competent bedrock meaning nothing can flow through it. There are casing requirements, steel as thick as a bank vault.”

Hydraulic fracturing (fracking) is a drilling technique where highly pressurized water and chemicals are injected into very hard (low permeability) rock/ geologic formations to free natural gas encapsulated therein along with oil, by creating fractures or expanding those already there.



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Griffin has often been spotted at town-hall events with Nash. He stressed that the area, “near the surface, where the ground water resides, is where the job must be done right. At 7k or 8k feet [below] there is no water. Fracking itself is less of a concern. It’s the environmental impact near the surface that is being questioned,” he said. He added that there are more than one million wells drilled nationwide.

Yet, in Michigan, there are concerns. In Oakland County one third of residents get water from individual wells. The rest use community wells or city water. According to a study by the National Bureau of Economic Research out of Washington DC, Nash said, “If you have city water you will have a safe drinking supply, and property values should stay stable, but if you have a well, and there is fracking nearby, because of risk of an incident, your property values will go down.” It affects more than Michigan residents; Colorado is affected too [see: http://www.boulderweekly.com/article-12047-the-fracking_real-estate-conundrum.html].

Concern is not just with water sitting directly below the surface; it runs deeper. Millions of gallons of water are used in fracking. And while it’s 99.5% sand and water, the remaining 0.5% is the “trademark secret recipe”, chemicals considered proprietary but part of the fracking process; and some are known carcin-

ogens. “And even 0.5% [by volume] of chemicals, if it’s part of 22 million gallons of water and sand, is a lot of contamination being pumped into the ground,” said Nash. Fitch noted that only a minority of chemicals are considered proprietary under trade secret law and the remainder are required to be disclosed.

The proprietary chemicals must have information provided under federal law on the health and environmental risks and emergency response. A report available at API noted that many of the [0.5%] ingredients are commonly used today in household cleaners, cosmetics, soil conditioners, antifreeze and the like.

Within Oakland County in particular, the most pressing issue is the

“fight for local control,” said Nash. Additionally Nash said Michigan’s water resource tool which indicates how local water supplies hold up in a fracking area, are not accurate. In some communities local water wells have run dry or been depleted, he said, and it concerns residents. Encana in northern Michigan is using

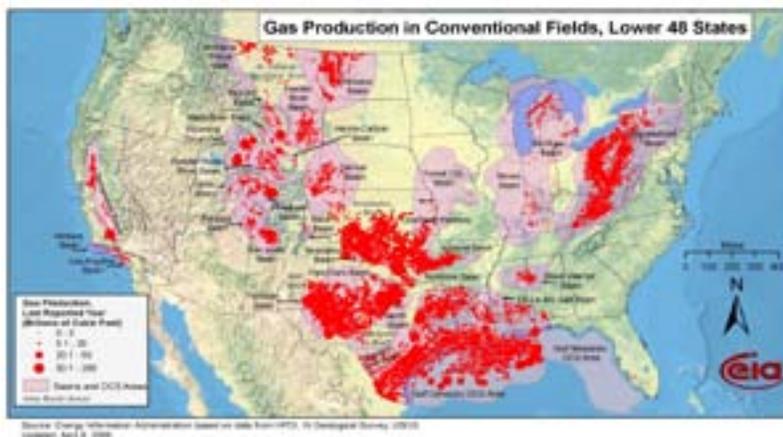


Image Source: http://www.eia.gov/oil_gas/rpd/conventional_gas.jpg



Image from U.S. Energy Information Administration (2012). Annual Energy Outlook - for natural gas. Retrieved July 1, 2014, [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2012\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2012).pdf).



up to 20 million gallons of water per well and more are planned.

Nash added that horizontal fracturing here in Michigan has raised concern over both property rights and water usage. What happens in your neighbor's yard can affect you. If a company drills for industrial use there are limits on how much water can be removed, but there is no charge for sending that water away he said.

The limits are key. "But in Wyoming and elsewhere," he said, "They are pulling out water that is used for crops and that water does not ever return. It's gone. Once that occurs, the remainder, what is left for a community to use as drinking water, has diminished." It has potential to affect people where they live, work and play, and Michigan is not immune, he said.

There will always be two sides to the fracking issue. Movies like Gasland (I & II) portray the evils of the practice. And documentaries like Fracknation support the opposite. Only with an educated public and honest evaluation of the practice can intelligent decisions to use or not use the technology be made. A few years ago the documentary Gasland surfaced and today some of it has been debunked.

For example, Josh Fox, who created the film, said fracking caused methane in the groundwater in Colorado.

Here's what he did not say: Methane already existed in the ground water, prior to the start of fracking operations. And a New York Times article on May 13, 2011 reported that fracking had been scientifically evaluated and was considered a safe production practice.

See the link *NY Times - Fracking*, where the full article appears.

DOI: 10.1306/03858468-16D1-11D7-864500102C1865D
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 in hydrostatic pressure during water production may create free gas, which can accumulate in wells and buildings and pose an explosion and fire hazard.



Photo: Oil Rig U.S. Geological Survey Department of the Interior/USGS U.S. Geological Survey. Photo Credit: Doug Duncan, USGS, Marcellus Shale, PA.

DID YOU KNOW?

According to a Michigan study, over 60% of local officials wanted authority over regulation of fracking. Most didn't want federal or state government to be in control, in fact just 16% and 45% wanted federal or state power to take precedence. Under current law, most power is in state hands.

Questions to Ask

How does a nation balance energy independence and the need to ensure stable commerce, against individual and property rights when two limited natural resources are at play, water and oil-gas?

*Who wins and who loses?
Who gets to decide?*

The graphic at the top of page 10 illustrates shale plays in the lower 48 states.

What's Next, CAT BONDS (Catastrophe Bonds) for Fracking? For an answer, **click *More On Fracking*** to continue article at page 14.



SCHOOL from page 1

That year 90% of Michigan's school districts received GTB aid. But fast forward to 1993-1994 and despite changes, only ~66% received it, and the ratio between high and low per pupil spending within districts also expanded back to the 1970s levels as well. Compounding the issue, "school property tax rates were far too high and 122 districts were within 4 mills of the state's constitutional limit of 50 mills," according to the Michigan funding report written by Michael Addonizio of Wayne State and Elaine Mills of the Michigan Department of Education and others.

A series of failed statewide ballot initiatives from the 1980s to 1990s echoed voter angst about the Michigan property tax and school funding methods. In the mid-1990s the Michigan legislature passed and Governor John Engler signed, PA 145 which eliminated the local property tax as a source of revenue for public schools. As part of the package, the Michigan sales tax increased from 4 to 6% and the income tax was reduced to 4.4% from 4.6% ...and a cigarette tax was included, which increased from 25 cents a pack to 75 cents a pack.

Then there were liquor taxes added and a few others. Another cap was put on property, with assessments

limited to 5% or inflation, which ever was less. Then at sale, it was reassessed at 50% of the market value.

After Proposal A enactment in March 1994 average operating mills decreased to 6 mills levied on homeowners by the State of Education Tax and 24 mills on non-homesteads (6 for the SET and the remaining 18 levied by schools). Doing this changed the mix for funding to 80% by the state and 20% local funding.

School funding responsibility in Michigan was shifted away from the local level and toward the state level; property taxes were no longer a major source of funds. What happened? State revenues increased from 28% in 1993-94 to 66% in 1998-99 while local revenues dropped from 65% to 27% the Michigan school funding report said.

In a Post Proposal A World...

Today, school district voters must approve the mills assessed on non-homesteads. And there is no guarantee that they will renew the millages again and again. Districts can ask voters to levy mills for a variety of purposes, for debt to rebuild or renovate buildings for example, or to improve (enhance) operations on an intermediate school district wide basis, with a 3 mill maximum.

These so-called "enhancement"

millages are rare. In 2013 there were three for operations in the state at intermediate school districts, one in Monroe, and others in Midland and Kalamazoo.

Local Funding before Proposal A

Back then schools received state aid and local property tax revenue. Based on something called "in formula" if districts met criteria they received state funds guaranteeing dollars for each mill of tax levied. At that time there were 381 in formula districts and 177 out of formula. Other monies doled out to schools came under School Readiness programs, or "special education".

Where Heads "Count"

School funding with Proposal A became linked to pupil counts within districts. Districts collect an allowance (foundation) which is based on what was set back in 1994-1995 and is based per pupil. A minimum level was established at \$4200. And the cut-off level for state aid was set at \$6500. Anything above that, must be raised locally through millage proposals.

Continued on next page.



To read an overview about school funding, click this link: *"The Basics of School Funding"* by Kathryn Summers, Associate Director Senate Fiscal Agency www.Senate.Michigan.gov/SFA November 2013.

What is available in state funding helps determine what increase is paired with the basic foundation allowance. Today, every district above the basic allowance receives the same dollar increase that is given to the basic.

Between 1995 and 2000 districts at the minimum foundation level received double the increase of the basic foundation grant; the reasoning was that it was to close the funding gap at least partially.

Between 2001 and 2007 districts received the same dollar increase per pupil. The 2x formula was added back in for 2007-2008 and the basic level was reset to the hold harmless level of funding (basic was \$5000 and hold harmless \$6500).

Then in 2009 state aid payments to districts were reduced \$154 per pupil and in 2010 reduced \$170 per pupil, using 2009 as a baseline for funding. In 2011 an additional \$300 cut on top of the \$170 pulled from 2009 reduced state aid payments by \$470 total.

Charter schools receive their entire funding from state funds; there is no tax levy for mills. They receive the founda-

tion allowance, which is the lesser of the per pupil funding of the school district in which the PSA (Public School Academy) is located or the maximum foundation allowance of \$7168 for the 2013 school year. Charter schools *cannot* ask for millage (debt) in Michigan and any special projects must be funded from operating revenues.

Proposal A in Summary:

1. Lowered property taxes by raising other taxes
2. Raised funding levels in the lowest districts to a set minimum level
3. Tied funding to per pupil (headcount) basis, and removed property taxes from the equation.

What about now?

As of September 2013, the Michigan Department of Education estimated that 47 districts closed the prior year in the red. The districts sitting over the hold harmless limit have not received inflation-based increases, and their fund balances are a bit smaller. There are many questions about funding going forward, since it is tied to district enrollment. What happens to schools where populations are decreasing?

Based on studies, there is a set minimum per pupil funding fee required to keep operations "operating" in a district. Adding to the problem is

the fact that families are staying put more today. People no longer trade up their homes with the frequency of the 1990s, and with property taxes limited, it leads to smaller increases in funding and at times declining values depending on location, popularity (Ann Arbor versus a smaller town for example) and other factors.

Other concerns are the use of the school aid fund revenue to offset costs at community colleges and other higher learning institutions; as of 2013 it totalled about about \$400 million.

For 2013-2014, the K-12 budget for education was \$1.8 billion in Federal Aid and 11.6 billion in state funding (this does not include any local levies).

Foundation allowance payments account for 67% of the K-12 budget. Federal grants are 13%, special education funding 7%, at risk funding is 2%, debt service and pupil performance technology grants accounts for 1% and some other categories make up the difference.

School Loan Fund in Michigan \$1.8 Billion

In Michigan there's a cap on the School Revolving Loan Fund, \$1.8 billion. Back in May of this year, 32 school bond issue proposals were on the ballot in several districts totaling just over \$630 million. That money



was slated for renovations and new construction according to the Michigan Department of Treasury.

The **School Loan Revolving Fund** was set up to be “self-sustaining” and aimed at making loans to districts to help them make payments on state-qualified bonds used for improvements that are not part of their operating budgets. As the fund receives payments, the dollar amounts go back into the fund, to help other districts in the future. And school districts may borrow from the fund if the bond issue is qualified by the state and if they levy at least 7 mills for debt.

Back in 2012 with PA 437, legislators set the cap at \$1.8 billion. The basis for the change came from complaints about the way financings and finances were handled by districts.

In the past, districts could conceivably issue bonds, then more bonds and if their situations didn't improve, even more bonds, saddling communities with debt. PA 437 was aimed at stopping the practice which had led to paybacks sometimes getting stalled. By putting a maximum on the fund, districts are now limited; they need to pay to play. Many districts this year raced to get in under the cap as there are buildings, some 50 or 60, even 70 years old, in need of repair and renovation. There's also a real possibility that funding might not again be available until 2016 un-

less the fund is replenished through paybacks. Safety and security were listed in many of the proposals this year along with desire to improve overall operations efficiency.

Because of PA 437, several Michigan districts participating in the loan program have been required to recalculate their computed millage rate. (For some detail about PA 437 Thrun Law offers a nice summary here: <http://www.thrunlaw.com/content/school-bond-program-altered>.) And if the rate was determined to be insufficient to repay bonds and loans by the listed repayment date, the district would be required to raise its debt millage rate. Hits were seen by taxpayers in Oxford, Milan and several other districts in Michigan.



US Geologic Survey Photo Marcellus Shale, PA. Hydraulic Fracturing Underway. Photo Credit: Doug Duncan USGS, Department of the Interior/USGS

FRACKING from page 11

In Fracking: Considerations for Risk Management and Financing Jason Kurtz and Bhavani Kamarshi discuss negative publicity, accidents and rising risk concerns embedded in the fracking debate and considerations and strategies to address those concerns, through insurance requirements aimed at protecting the public against pollution, health impairment and other costs.

In the United States shale gas, which primarily comes from fracking has increased substantially. See the image at the bottom of page 10, courtesy of the US Energy Information Administration (natural gas).

We do not live in a perfect world. Spills have been reported and there is concern about the fracking fluids used in the extraction process.

Controversy surrounds use of trade secret formulas likened to Coca-Cola's famous trademark recipe. Continued next page.



As mentioned oil and gas companies do not need to reveal all that's in the extraction fluids. And the fluids involved can include heavy metals, radioactive compounds, chemicals and even carcinogens. There have been hearings and articles written.

Details can be accessed here:

1) *Hearings before the Water and Power Subcommittee. 112th Congress (2011) (testimony of Cynthia C. Dougherty). Available from http://www.epa.gov/ocir/hearings/testimony/112_2011_2012/2011_1020_ccd.pdf.*

2) *Should fracking stop? Nature. From <http://www.bu.edu/energy/files/2011/07/Fracking-article-Sept-14-2011.pdf>.*

Groundwater is connected to other ground water aquifers and if contamination occurs, clean up can prove costly and take years. There have been some high-profile cases including large settlements. If fracking continues to ramp up, odds are a spill may occur, along with contamination despite copious safeguards put in place.

Back on May 4, 2012 the Obama administration announced proposed federal rules requiring companies to

Did You Know?

For 2014:

Investors snapped up \$6.316 billion of new catastrophe bonds this year Artemis the data research group reported. In Florida, a record \$1.5 billion transaction linked to potential hurricane damage was issued.

disclose the chemicals used during their fracking process but only after operations ceased. The new rules would strengthen well-bore integrity and address issues related to flow-back water. But the regulations only accounted for the natural gas and oil deposits on Bureau of Land Management property which is miniscule when compared to the total lands where fracking occurs. And those rules continued to allow limited exemptions on chemical disclosure for "legitimate trade secrets" which means oil and gas companies could potentially continue to avoid disclosing what is pumped into the ground.

A new proposal (amended) was announced May 16, 2013. It is available here: http://www.blm.gov/wo/st/en/info/newsroom/2013/may/nr_05_16_2013.html.

It provided for more guidance and "revises the array of tools operators may use to show that water is being protected, and provides more guidance on trade secret disclosure, while providing additional flexibility for meeting these objectives," the release said.

Concern for fracking surrounds the long-term impacts on public health through both air and water. Will there be lawsuits into the future? Nobody knows.

But if history is a bellwether of what is to come, beware. It's an issue that may surface gradually over many years.

Fracking-based energy production is expected to stick around as global demand rises. And insurers, policy makers and municipalities will need to address risk, and consider the possibility of loss. A balance must be struck between policy makers at the federal, state and local level—and communities and their citizens.

Today multiple firms might drill in the same general geographical area, and in the event of a catastrophe it will become harder to assign blame, particularly when drilling includes horizontal fracturing said Nash.

Continued on next page.



One remedy now being discussed is the creation of a pool created by regulators to group multiple similar risks—perhaps for enterprises engaged in shale production within an area. This isn't new. Insurance linked securities have historically been set up to mitigate risk associated with high cost, low occurrence events, things like earthquakes or major floods. They can be structured to transfer risk: by getting access to capital market investors and billions if not trillions of dollars in capacity Kamarshi and Kurtz said in their report.

A casualty bond set up in 2005 called Avalon Re, was issued to protect energy companies for loss amounts \$300 to \$750 million over three years.

Today there is ongoing discussion about using loss models to evaluate factors like pollution levels in partnership with some sort of monitoring system. Given a triggering event (detecting water pollution for example at a specified level), loss amounts would be determined and once a threshold is reached, monies would be released. This has been used for property catastrophes related to natural events like hurricanes. The model could potentially be adapted to fracking pollution risk evaluation.

The purpose of a CAT bond is to insure against low frequency high catastrophe occurrences. Nash said, the need for these types of insurances [bonds] shows that "there is a need for industry to try to protect itself but as regulators we must make sure we keep benefits to people in mind, always. We must do that." As more operations spring up closer to where people reside, "We need to consider this in a new light," added Nash.

Steve Evans, president of Artemis, said he doesn't believe CAT bands for fracking related incidents will come to market.

"No, to be honest I don't believe we'll see a specific fracking catastrophe bond as such. More likely is a bond which covers damage from certain events which may or may not be caused by fracking," he said.

Artemis is a news, analysis and data media service covering catastrophe bond and insurance linked securities, non-traditional reinsurance, and risk transfer. For a primer on catastrophe bonds, visit: *Artemis - Cat Bonds*.



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