PREPARED FOR THE SAN MIGUEL COUNTY OIL AND GAS ORDINANCE TASK FORCE

The Other Side of the Coin

An Analysis of Socioeconomic Impacts of Oil and Gas Development on Small Communities

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A discussion of research findings regarding the social and economic impacts on small communities hosting an oil and gas development boom. Income potential, hard and soft costs accruing to the host community, and impacts on community cohesion are discussed. Mitigation and preventive measures are recommended.

The Other Side of the Coin

Socio-Economic Impacts of Oil and Gas Development on Small Communities

Executive Summary of Findings

An analysis of socio-economic studies on the effects of oil and gas development on small communities shows that the economic and social impacts of O&G development are decidedly mixed, with positive effects being offset by negative impacts. In all cases, the socio-economic effects resulting from O&G development have much greater impacts on small communities than large ones; therefore, extra vigilance is required by residents and administrators of such communities. Most importantly, the *negative* impacts of such development are experienced to a much greater degree in small communities than in larger ones. Therefore, just as no thoughtful person makes decisions based solely on expected financial gain without regard to any other considerations, no community should make decisions regarding the hosting of O&G activity based solely on the income aspect of such development without careful consideration of the potential consequences, which are many. These socio-economic impacts are seen most strongly as the activities of the industry commence, before the industry becomes well-established in a community. Therefore, it is essential to have mitigating measures in place, in the form of a thorough and protective ordinance, prior to the commencement of any development. In addition, these effects will continue for many years, and over time, the impacts evolve. Ordinance deliberations must take into account time horizons spanning decades, rather than years.

It is vitally important to understand this one fact: to the Oil and Gas (O&G) industry, we are not their partners, nor are we their beneficiaries. Because our desire to protect our communities and environment causes inconvenience - and fees, taxes and royalties must be paid - ***to the O&G industry, we are a cost of doing business***. Like any successful business, they will strive to reduce these costs as much as possible, so that their profits can be maximized as much as possible. But reducing costs can mean taking short cuts, which can increase the dangers to the community. If, while deliberating aspects of an O&G development ordinance, we hold this one idea in mind– that we, individually and collectively, are a cost of doing business and nothing more - then we will be able to reach wise decisions that serve our enlightened self-interests as a community. We must understand that the O & G industry's decision whether or not to develop a particular resource is *always* based on *market economics*. It is extremely unlikely that any county regulation would prevent the development of a viable gas field. The costs to industry resulting from legally defensible requirements simply are not that great in proportion to the potential profits, the industry's profit-maximizing protests notwithstanding. Vermejo Park Ranch in northeastern New Mexico is a clear proof of this assertion; it is a fully-developed, productive gas field with many strict protective environmental requirements.

It must be recognized that San Miguel County (SMC) has, at the present time, substantial wealth within its boundaries. Valuing only the land surface at $1,000 per acre, exclusive of any improvements whatsoever, results in a land value of approximately *3 billion dollars*. Therefore, the perception that SMC is a poor county is in error. San Miguel County suffers from a *yield deficit*, not a lack of wealth. This existing wealth must be preserved even while pursuing higher yields in the form of O&G development. If this existing wealth is not protected, and is allowed to be diminished - which is very likely if the integration of O&G activity into the county is not properly managed - the county will suffer a *net loss* as the result of this activity.

Until the O&G industry becomes established in a community, the vast majority of job growth in the local area comes from the *importation* of labor. The O&G industry is *capital* and *equipment*-intensive, rather than *labor*-intensive. This means that relatively few jobs are created in proportion to the profits generated. The only local jobs derived directly from O&G activity are usually low-paying ones, such as security guards and low-level maintenance workers. Eventually, the increased population requires more jobs to serve it and, again, these jobs are likely to be in the various low-paying service industries. McDonald's will probably be hiring. Enhanced county revenues will result from an increase in ad valorem taxes collected from production sites, but unfortunately, this increase will be offset by deteriorating property values and direct costs to the county.

If oil and gas development is merely lightly regulated, the only net winners will be the industry itself and the small minority of County residents who own their mineral rights. All others, *including* the County, will be net losers. If San Miguel County's *existing* tangible wealth is not recognized and preserved, this wealth will be lost, further exacerbating the negative impacts of O&G development. Adverse effects can be expected in the following areas: community cohesion and traditional values, crime (including DWI rates and drug use), property values, air quality, general health of the population, medical facilities, schools, the "working poor," housing, roads, emergency response, social conflict, ranching, and tourism. Studies have shown that small communities and their cultures can be overwhelmed by the influx of large numbers of transient workers who do not share the culture and values of the existing population. The community can become virtually unrecognizable to long-term residents. *Catastrophic effects can impact the county's already limited water supply, polluting and depleting it to such an extent that the County will lose its ability to survive in its current state*. The relatively stable economy that San Miguel County has traditionally enjoyed will give way to the roller-coaster ride of a boom-bust economy. Stability will disappear. Studies have shown that the economies of small communities that 'hook their wagons' to the O&G industry - linking their growth and prosperity with that of the industry – perform more poorly than those that enjoy a more diverse economic base. Such communities become, in effect, economic hostages, *losing the freedom of economic self-determination.* Since the ability to determine their economic futures is vital to the success of home rule, such communities essentially abdicate their power and *surrender control of their destinies to the O&G industry*.

Lightly-regulated oil and gas development is in stark opposition to the will and wishes of the citizens and elected – and unelected - officials of the County as clearly and repeatedly expressed in the San Miguel County Comprehensive Plan.

After careful study, it is evident that while monetary benefits can accrue due to oil and gas development within a locality, this economic benefit is both fickle and relatively short-term, rising and falling with the fortunes of the industry itself. Furthermore, O&G development comes with a substantial cost to the economic balance and social cohesiveness within the affected community. The supply of gas is finite, and the productivity of individual fields can be much shorter than initially predicted. One can only imagine what the economies of the gas/oil producing counties will look like in, say, 50 years or less, when the nearby resource supplies are exhausted. With the balance to their local economies destroyed by inordinate reliance on a self-depleting industry, these communities will be hard pressed to even survive, let alone regenerate. Think of "Rust Belt" towns and Detroit in particular for a current-day image of what a community dependent on a single industry suffers when that industry goes into decline or shuts down. For this reason, the time horizon addressed during ordinance deliberations must span decades rather than years.

Our county leadership must be diligent in anticipating the negative effects – economic as well as environmental – of gas-field development in San Miguel County and implement policies that minimize these negative effects. Actually, it is misleading to separate these effects under the labels of "environmental" and "economic." Environmental effects have a very direct impact on economic factors, as will be seen in the body of this report.

The choice is not between 'drilling' and 'no drilling.' The choice is between keeping what we have and adding O&G into the mix, or losing what we hold dear as our culture and communities are overwhelmed by the impacts of lightly-regulated O&G development. *San Miguel County must not fall into the trap of subsidizing the profits of the Oil and Gas industry.*

The Other Side of the Coin

Socio-Economic impacts of Oil and Gas Development on Small Communities

An Analysis of Findings

"The only thing more important to your survival than oil is oxygen."

-The Independent Petroleum Association of New Mexico

From this statement, it is clear why there is such a divergence between the viewpoint of the Oil and Gas (O&G) industry and that of the concerned citizens of San Miguel County (SMC). How many of us would agree with this sentence "Oil [and gas] are more important to our lives than clean air, pure water, a loving family, the health of our loved ones, the stability of our communities, and the safety of our children?" The answer is probably "very few." Who would trade these things for oil and gas production in their community? This difference underscores the difficulty of arriving at a consensus with the O&G industry. While the O&G industry places its product and its monetary value above virtually all other needs, it is likely that the majority of San Miguel County residents value more highly those things which can't be purchased, things we consider to be beyond price - in other words, *priceless*. While humanity has survived and prospered for thousands of years without oil and gas, most would agree that life would not be worth living without the "priceless" components. O&G make daily tasks more convenient and easier; we all are tremendously grateful for its uses and the prosperity it facilitates. However, how far this gratitude should extend as self-sacrifice is an open question. Is it rational to put the O&G industry's needs above our own? An analysis shows that the socio-economic impacts of O&G development on small communities are decidedly mixed, with positive effects being offset by negative ones. Just as no thoughtful person makes decisions based solely on financial gain without regard for the resulting consequences, no community should base decisions on hosting O&G activity only on the expectation of positive financial impacts without understanding the consequences of doing so. There must be a clear recognition of San Miguel County's current tangible and intangible wealth, so that this existing wealth is not inadvertently sacrificed in the process of embracing new industrial activity. Not recognizing this existing wealth and its potential – then taking steps to preserve it – will result in a transfer of wealth from San Miguel County to the O&G industry, as the County bears direct and indirect costs that should rightfully be borne by the industry itself.

The O&G industry and its media and governmental advocates do a good job of publicizing the financial contribution their industry makes to the State economy. This contribution is by no means insignificant, comprising anywhere from 15 - 20% of New Mexico's state revenues. Yet this is a profoundly incomplete picture, since the state itself bears virtually *none* of the cost burden for this revenue stream. *The cost burden is borne by the communities in which the drilling and production happen*. The unasked question is: other than money, what does this industry contribute to the well-being of its host communities? Let's face it: if it weren't for the promises of substantial amounts of money resulting from their activities, would we be eager for them to operate in our community? Would we embrace all of the risks inherent in being so close to dangerous industrial operations if there were no financial pay-off? There is no question that oil and gas development can result in increased revenues to a community. What are both in question and harder to quantify is the amount of *net* revenue gained on the one hand, and, on the other, the sacrifices a community must make in order to receive it.

At the most basic level, the discussion between San Miguel County and the O&G industry is simply a business negotiation. It's a negotiation to determine the rules under which the industry will be allowed to access resources within the County. However, *this is not a negotiation between equals*. This can be clearly seen when it's understood that while the O&G industry can *choose* whether or not to exploit resources within the County, SMC does not have the legal right to deny such access. Therefore, the County has *no choice*. This is not to say that such a denial would be in the best interests of the County. However, this inequality of choice relegates the County to an essentially defensive position. It's as if this were a football game, except that one team – the O&G industry – always has the ball, while the other team – San Miguel County – is always defending its end-zone.

Let's note that O&G operations bring exponentially more profits to the O&G industry than to the community where those operations take place. Even so, there's almost a sense among certain segments of the population that the O&G industry is doing us a 'favor' by coming here, as if a fairy godmother has arrived to bestow riches upon us. Let's be clear that this is *not* the case. We are not their beneficiaries. And we are definitely *not* their "partners" in this enterprise. In fact, the opposite is true. To the O&G companies, ***we are actually a cost of doing business***. What does this mean? It means that royalties paid to mineral owners, compensation amounts paid to surface owners, taxes and fees - although very small in relation to the industry's expected profits - are tangible costs to the industry. Furthermore, if local officials respond to their constituents' concerns regarding the preservation of an unpolluted environment and impacts on their quality of life by enacting protective regulations, then any regulations adopted will create minor hindrances to the unencumbered operations of the O&G industry. This can possibly increase their marginal costs somewhat. So, like any successful business, the O&G industry will strive to *reduce* these costs as much as possible, so that their profits can be *maximized* as much as possible. There's nothing wrong with this, and we'd be naïve not to expect it. Every successful business strives to reduce its costs. We'd likely do the same if we were in their shoes. But reducing costs can mean taking shortcuts, which will increase the dangers to the community. Often, when local governments propose regulations to ensure safer operations, the O&G industry responds with the threat that they will choose not to operate in that community and the community and its citizens will "lose out." This is simply not true.

It is extremely unlikely that any legally defensible regulation would prevent the development of an economically viable gas field. The costs to industry simply are not that great in proportion to the potential profits. For proof of this, we need only to look at Ted Turner's Vermejo Park Ranch in northern New Mexico. The environmental requirements for the development of the natural gas deposits are quite restrictive, including very wide spacing of wells, re-injection of 'found' water, sight and noise mitigation, pollution controls, types of fracking substances allowed, etc.; yet, the property is *fully* developed as a natural gas-producing site. El Paso Natural Gas, the site's operator, is rightfully proud of their accomplishments on this project, which has been developed largely in adherence to recommended Best Management Practices. However, industry executives have been very frank in their statements that they will not voluntarily undertake the practice of environmentally responsible development unless *required* to do so by local regulations.

> "Asked why his company pursued "green" drilling and fracturing fluid innovations for drilling in the North Sea -- products that it now sometimes uses onshore too -- BJ Services' [C.O.O. David] Dunlap was unequivocal: The law made him do it. 'It's because of local regulations,' Dunlap said. 'That's typically what drives us to develop and bring to market these environmentally friendly products.'"
>
> –ProPublica Article "Green Alternatives"

Undoubtedly, Ted Turner's financial resources and legal team were factors in compelling the industry to develop Vermejo Park Ranch in compliance with these strict requirements. It is essential to understand that the decision whether or not to develop a particular resource is *always* based on *economics*. If O&G market prices are too low, the industry will wait to develop a slightly more expensive source until prices rise enough to make it profitable to do so. Therefore, the decision to exploit a location is much more highly dependent on the market price of that resource than on any local regulations. Local regulations may make it less convenient for O&G developers, which can increase their *marginal* costs of production. Yet, how much difference will it make if the economic cost of a well is, say, $5.20/1000 cubic feet (mcf) instead of $5.05? Market prices can fluctuate many times this $0.15 amount in a single week! In addition, the industry does not hesitate to *close* production sites if the price of the commodity drops to the point where extraction is uneconomical - regardless of the impact on the local economy. This is the foundation of the infamous "boom – bust" cycle ravaging communities that become dependent on the O & G industry.

It's wise to remember the old adage about "no free lunches." There are substantial costs to small communities that embrace oil & gas development. If these costs are not placed squarely as the responsibility of the industry, then the County and its residents will bear the cost instead. This amounts to the County subsidizing the profits of the O&G industry. This is hardly fair.

It must be recognized that San Miguel County has - at the present - substantial wealth. While it's difficult to quantify, a start can be made simply by determining the market value for all the land contained within SMCs boundaries. This value, crudely approximated by multiplying the total acreage by $1000, is over *three billion* dollars. The value of this land surface is enhanced by – even dependent upon - the supply of fresh, potable water and unpolluted air. What is lacking is not this basic store of wealth, but rather the *yield* on this wealth. This is the reason that O&G development can seem so attractive, as it increases this yield. Yet, "chasing yield" is one of the biggest mistakes an investor can make. Within this context*, SMC must ensure that existing wealth is not lost, even as higher yields are pursued*. Therefore, we need to understand very clearly what San Miguel County - as a community and its individual citizens - are getting from this deal, and that's the purpose of this report. There is no shortage of information regarding the income potential of O&G development. Conversely, information regarding costs, expenses, and losses borne by *small* communities – those that experience the *effects* of this production, particularly in New Mexico - must be painstakingly researched and then extrapolated, deduced, and/or projected. These impacts have, however, been observed and documented in small communities in other states, such as Wyoming. It is important to understand that some of the conclusions drawn here will remain theoretical unless and until O&G development actually *happens* here and its full scope is known. Of course, by then it will be far too late to prevent the inevitable negative consequences from occurring, because these effects are seen most strongly as the industry develops its presence in a community - say, the first ten years - although the negative consequences will become the "new normal" and linger for decades. However, without understanding the full theoretical picture, it's difficult – if not impossible - to make informed decisions that will serve San Miguel County's enlightened self-interest as a community. In addition, this report makes no attempt to present the perspective of the O&G industry itself, since this view-point has been widely and thoroughly distributed by the industry and its legislative and media champions. Rather, this report is intended as a counter-balance to the incomplete, rosy economic picture painted by the industry's assertions; in other words, "the other side of the coin."

As stated previously, it is not possible to accurately and specifically predict economic impacts of Oil and Gas drilling in San Miguel County because such impacts depend on the productivity of any wells that are developed as well as the extent of such development. However, it is possible to enumerate and describe economic impacts experienced by other communities that have been subjected to such development, and to apply these impacts to if/when scenarios for San Miguel County (SMC) and its communities. **It bears repeating that all economic effects impact small communities to a much greater degree than larger ones**. Studies have shown that local governments both *overestimate* the amount of increased revenue that will accrue from resource development and *underestimate* the expenses and social disruption that will result from such development. This is to be expected, since the impact of O&G development is uncharted territory for locales that have never experienced it before, and each community is unique. Due to the changing nature of these impacts as the industry's presence evolves, the time horizon addressed during ordinance deliberations must span decades, rather than just a few years.

> "The impacts of energy extraction on small towns were extensively studied during the 1970s and 1980s, when rural areas of the western United States underwent a period of significant energy development. While more than 25 years old, these studies represent the most recent wide-scale analysis on the effects of energy development in the United States. A number of social and economic trends emerged from this work and a so-called "*Boomtown Impact Model"* took shape among researchers studying the development in these rural communities. The model posits that rural communities are often overwhelmed by rapid population influxes associated with the energy development and that energy development often provides a number of unique opportunities and challenges to communities and local governments." - The Northeast Regional Center for Rural Development, Pennsylvania State University NERCRD Rural Development Paper No. 43 January 2009

It is the understanding of these "unique opportunities and challenges" that, hopefully, will guide and inform the development of a comprehensive Oil and Gas drilling and production ordinance for San Miguel County. Without such an ordinance, the potentially catastrophic effects discussed in this report cannot be avoided.

I. Types of Economic Impacts on Local Communities

Economic impacts regarding the 'revenue' side of the equation can be divided into three types: direct, indirect, and induced.

- Direct revenue consists of the industry's need for services, labor, and locally supplied goods. It includes such things as drilling/production equipment, pipeline installation, exploration activities, transport of water, workers, legal services, royalty and tax revenue, and other capital and service expenditures. The industry, however, relies on specialized companies to meet these needs, and because there are no oil industry companies located in San Miguel County, companies from outside San Miguel County (possibly those in Raton and/or Texas) will profit from this activity and may subsequently open satellite operations here. If qualified workers can be found locally to staff these satellites, a few jobs will be created benefitting SMC residents. Some local supply companies may benefit in a relatively small way. Until the industry becomes established in San Miguel County, the only significant direct economic benefit would likely be increased tax revenue.
- Indirect economic impact occurs when companies serving the natural gas extraction companies buy services and goods from yet other companies. The same situation as with the direct revenue impact applies here: since there are no local industry service companies located in San Miguel County, this revenue stream will also flow mainly to non-local economies. It is possible that some local companies might benefit, but due to economies of scale, it is more likely that established drilling companies will already have suppliers in place. As the industry matures within the County, this impact should increase.
- Induced economic impacts occur when wages earned by employees are spent in the local economy. This revenue segment is the one most likely to immediately benefit San Miguel County. It is a net gain if these wages are paid by companies located out of area, since the money for these wages is essentially 'imported' to SMC.

These economic impacts describe only the income side of the equation. The costs to the host community will be examined later in this report. There is no dispute that in the development phase the majority of direct and indirect revenues accrue to established, specialized O&G service companies located elsewhere. However, it is at the local level, here in San Miguel County, where the costs – the negative effects – of significant drilling activity will be most pronounced.

II. Winners and Losers

Who in SMC benefits directly from oil and gas leasing/production activity?

- The relatively small minority of property owners in the county who own their mineral rights. These owners receive a yearly lease fee, plus royalties once a well is producing. These landowners have one very significant reason to be supportive of the O&G industry: money in their pockets. Who can blame them? It's the opportunity of a lifetime. However, it *is* disturbing to note that a common refrain from this segment of the population in other states, in response to those who raise environmental concerns, has been, "so what? I'll be rich, so I can just move." This is, at the very least, a destabilizing and demoralizing influence on the community. However, these beneficiaries need to realize that even though a Land-man says "you'll never even know we're here," or "this is a standard lease," these assurances must not be believed. As an example, when someone owns a house and rents it out, the owner doesn't get to keep using the house; it belongs to the renter. Similarly, when leasing one's mineral rights, one also gives up the vast majority of surface rights, unless specific restrictions are incorporated into the lease. Interference with ranching or other activities does not concern the industry, since avoiding these interferences potentially increases marginal costs. When the O&G activity ceases, the land will not fully recover for many, many years, unless strict environmental regulations are in place at the beginning to mitigate the effects of such activity. As long as landowners who lease their property for O&G development are fully informed of the negative effects along with the profit potential and negotiate a comprehensive agreement, they may be satisfied with their arrangement.
- The county where the O&G development takes place. It receives increased revenue, some of it in a trickle-down fashion, as the *state* receives the majority of O&G tax revenue and redistributes it. For example, Sublette County, WY, received only 5.86% of the total taxes paid by the O&G industry for their activity *in* Sublette County. So the County bears the majority of the economic costs, but receives less than 6% of the state taxes paid by the industry. The County does receive some additional sales tax revenues, due to the influx of new consumers. The primary source of County revenue from O&G, however, is ad valorem taxes. These taxes are applied to the about-to-be-extracted gas and production equipment, and the revenues can be significant. The county must be alert to the likelihood of ad valorem taxes from other properties declining due to negative impacts on property values; this will reduce or eliminate the net gain.

The increase in County revenue can seem welcome, but it comes with a cost:

Who loses?

- The majority of property owners in the county who do *not* own their mineral rights. Under the system of property rights known as "Split Estate," these property owners are required to allow O&G development on their properties, even if they do not wish to do so. Without adequate regulations and oversight, their properties can become, quite literally, unlivable. Their property values plummet, reducing their wealth even as the few beneficiaries gain it. Many residents who can afford to abandon their properties and move away will do so; others will stay because they have no choice. (More on this topic is found later in this report.) **The dramatic decline in property values is a strong offset to the increased ad valorem taxes collected from O&G activity**.

- Split-estate ranch operators. In the 1980s, a study on the benefits and costs of oil and gas development to ranchers in New Mexico was conducted. Although the study is dated, adjusting dollar amounts for inflation will give us an approximation of the current impacts. (Prices have slightly more than doubled over the elapsed period.) The authors of the study discussed the fact that almost all of the cash benefits (an average of$28,000 - $56,000 in 2010** - over the life of the well) occurred early in the exploration and development process, and that most were one-time payments. Meanwhile, the costs to ranchers of dealing with the effects of the development averaged $5,750 per year (2010 = $11,500) for the life of the oil or gas operation. The report concluded that for ranchers not receiving annual royalty payments (i.e. those under a Split-Estate), *the rancher is a net income loser if the life of the oil/gas field exceeds six years.* The following chart shows the costs and benefits to Split Estate ranch owners as determined in the study:

Examples of benefits received by ranchers	**Examples of costs to ranchers**
Lease payments to those who own their mineral rights	Long term loss of carrying capacity
Direct compensation payments for the disturbance of the land surface (e.g. loss of grazing land, roads, right-of-way easements, pipelines)	Inadequate compensation for land disturbance
Payments for seismic tests	Additional labor hours
Purchase of fresh and brine water used for drilling	Increased cattle deaths
Subcontracting ranch labor, e.g. to reseed, build fence	Reduced average market weight of cattle
Year-round road network	
Cattle guard and gate installation	
Conversion of dry oil and gas holes into productive wells for watering livestock	

New Mexico State University. 1985. *Oil and Gas Interactions with the Ranching Industry in New Mexico*. Agricultural Experiment Station, Bulletin 715. (Emphasis added)

How many San Miguel County property owners supplement their income by raising cow/calf pairs? What will be the impact on their income and taxes if this study's findings are repeated here?

*(**The inflation-adjusted figure of $56,000 is highly suspect in this context, since a driller has to post only a $10,000 bond before commencing drilling. It's unlikely that significantly more than this amount would be paid to a surface owner.)*

"Cleaning up oil spills isn't like picking up a rock you dropped on the ground. It's more like cleaning up a glass of water you spilled in the sand." – Santa Fe New Mexican, "Drilling's Hidden Costs," 03/02/08

The above costs to ranchers do not take into account losses that result from pollution. As one example, two ranchers within a very small geographic area in Colorado are now out of business due to the pollution of two different creeks caused by the practice of dumping waste water from drilling onto the land surface, from where it migrated into surface waters. These ranchers had relied on these creeks for generations. How can a permanent 100% loss of two families' livelihoods be reconciled as a "cost of doing business?" How much "collateral damage" should be tolerated? How many more of these occurrences remain unreported or worse, unacknowledged? As will become increasingly clear, pollution both directly and indirectly causes economic loss.

- Other losers: Anyone whose land or water experiences the effects of drilling yet derives no income from it. A severe degradation in the quality of life for any landowner with nearby gas operations is to be expected, if for no other reasons than high levels of noise, traffic, and dust. Pollution is a real and constant threat. Hundreds of anecdotal stories abound, ranging from severe health effects to the loss of livestock, the destruction of previously fertile land, the death of generational livelihoods. The economic impact of this latter loss is impossible to measure, as is the degradation of quality of life.

State regulations do not protect SMC residents. Many times, it is cheaper for a drilling/production company to pay the state's fines than it is to comply with regulations. In an article in the Santa Fe New Mexican, Mark Fesmire - director in 2010 of the New Mexico's Oil Conservation Division, which regulates oil and gas production - described the fines for violating the regulations as "a little anemic. It's the same fine structure as in the 1935 statues." He went on to say, "You could really get compliance with a $1,000 fine in 1935. Not now." (If this $1000 fine is adjusted for inflation, the 2010 fine amount would be $15,916.) The article described the Division's work this way: "The division issues fines for violations such as failure to plug wells, failure to file production reports, false production reports and failure to report or remediate leaks or spills. According to documents provided by the Oil Conservation Division, $850,750 in fines was collected in 2007, not including settlement agreements." (Santa Fe New Mexican, "Drilling's Hidden Costs," 03/02/08). Mr. Fesmire was right to describe this as "anemic": this aggregate fine amount is but a tiny *fraction of one percent* of the *billions* of dollars the annual oil and gas production in New Mexico is worth in profits to the industry. As an aside, if the total collected fines had been adjusted for inflation rather than kept the same, the total fine amount in 2007 would have been $13,540,537. Maybe "you could really get compliance" with this inflation-adjusted fine amount of over 13 million dollars.

The New Mexico Oil Conservation Division published a 12-page document in 2008 entitled "Cases Where Pit Substances Contaminated New Mexico's Ground Water." The document simply lists documented occurrences. Twelve single-spaced pages of groundwater contamination events! The industry says that new regulations (The "Pit" Rule) designed to help mitigate these occurrences are "bad for New Mexico." What if one of these spills contaminated the Rio Gallinas? The Pecos River? The Sapello River? Would that be "bad" for San Miguel County?

In addition, some of the proponents of the "State regulations are sufficient to protect host communities" are - at the time of this writing - meeting in closed task force meetings determining the best ways to undermine, weaken, or dissolve these very protections. This task force was appointed and given its mandate by Governor Martinez. Relying on State regulations to protect San Miguel County is an abdication of power. SMC must retain control of its local laws, of which an O&G ordinance is a part.

III. What jobs are created?

Until the O&G industry becomes established in a community, the vast majority of job growth in a community comes from the *importation* of labor. Oil field work is a skilled specialty. The O&G industry is *capital* and *equipment*-intensive, rather than *labor*- intensive. This means that relatively few jobs are created in proportion to the profits generated. The employees of this industry are migratory; they go where the work is. The only local jobs created directly from O&G activity for the existing population are most likely to be low-paying ones, such as security guards and low-level maintenance workers. Eventually, the increased population requires more jobs to serve it and, again, these jobs are likely to be in the various low-paying service industries. McDonalds will probably be hiring. Because there apparently are no established oil-industry services in San Miguel County, both direct and indirect employment gains will be minimal within the current population. Induced employment will be largely in the general service industry, as noted previously. It is also worth noting that even now, if local workers are interested in obtaining a job in the O&G industry, they can pursue their interest by obtaining the necessary training and seeking employment in the field. Having oil/gas fields nearby won't facilitate this process.

On their website, Shell oil implicitly advises communities not to anticipate significant local job opportunities:

"Local employment and supply chain opportunities provide income-generating opportunities for local stakeholders and an accompanying sense of ownership in the project. However, *expectations for employment often far exceed the actual requirements*, and meeting particular requirements for skilled labor is often a great challenge for small communities." - Shell Oil Website (emphasis added)

- Community colleges increase their revenue by offering certification classes for people who want to work in the industry. Luna could benefit.

"Lovejoy and Little (1977; 1979) found that in many instances employment opportunities are ill-matched for local residents and employment gains may be, while moderate in real terms, far less than the expectations of residents and the promises made by developers. For example, a series of studies in the Four-Corners region found that the numbers of residents who indicated a desire to work in the energy industry was actually much smaller than the community expectations (Lovejoy and Little 1979). Many workers simply lack the requisite skills and are reluctant to be trained because the training period doesn't offer compensation or because they are uninterested in changing careers." - The Northeast Regional Center for Rural Development, Pennsylvania State University NERCRD Rural Development Paper No. 43 January 2009

"Since the shale gas industry is resource-based, employment opportunities will vary as the industry evolves. Analysts in Sublette County, Wyoming, projected that the largest number of jobs will occur in the first twelve years, or the development phase. The number of jobs will fall off dramatically during the following six years. During the production phase fewer, but more permanent, jobs will emerge. With closure of the industry, even fewer reclamation jobs will be available. Jobs will be gone when the reserve of natural gas is gone"

- *Marcellus Shale Natural Gas: Its Economic Impact* – 2009 League of Women Voters Of Pennsylvania, Study Guide III

And any industry jobs are inherently high-risk:
"Over 30 workers for every 100,000 died in an accident relating to their work in the oil industry from 2003 to 2006. This statistic is *more than five times the fatality rate for all workers in US occupations*…... Among the states where most of the fatalities occurred, *New Mexico* (45.2 per 100,000) and Wyoming (58.5 per 100,000) had the highest average annual fatality rates, compared with Oklahoma (33.3 per 100,000), Louisiana (29.2 per 100,000), and Texas (25.3 per 100,000)."
From http://www.lawyersandsettlements.com/case/oil-and-gas-accidents.html

IV. Real Estate
Property values can go both ways.
First, residential property values can *increase*, due to the large numbers of incoming workers and their demand for housing. In this instance, taxes would likely also rise with the property value.

Who wins?

- Those who willingly sell their property at the newly inflated values and move away to less expensive property.
- County property tax receipts.

Who loses?

- Those who cannot afford to pay the higher taxes and are forced to sell. Some might say, "so what? You're making a ton of money on your property." But what if you don't want to leave the community where you grew up, your family, and friends?
- Everyone who must pay the higher taxes.

That these taxes can become burdensome to property owners is evident by the fact that San Juan County chose to implement a County Gross Receipts Tax:

"San Juan County chose to implement gross receipts taxes to relieve the burden on the property owner and spread the taxes equitably among all citizens and visitors to San Juan County."
– San Juan County Website

Second, property values can *decline*. Many mortgage lenders refuse to lend in an area with extensive O&G activity, likely due to the boom/bust nature of the industry and its effect on property values. In addition, according to a number of sources, many property insurance companies will not insure a home that is near O&G production, presumably due to the risks of damage from explosions, flaring, and leaks. Ranch property will likely become extremely difficult to sell if the mineral rights have been severed and drilling is occurring locally; who would want to buy a piece of property knowing that it comes with a potentially disastrous encumbrance? Real-estate salespeople will be required to reveal this information. If property values decline, then ironically, taxes will likely rise to make up for the new shortfall in County revenues. This hits those who can least afford it the hardest. In addition, local community lenders - who invest in our community and who rely on stable real estate prices for the integrity of their balance-sheets - could be devastated. This will dry up locally available capital for loans of all types.

- **Who wins**? No one.
- **Who loses**? Everyone.

"DECATUR — One year to the day after a company set up its drilling rigs on their land in eastern Wise County, Tim and Christine Ruggiero confirmed the depth of their loss. Originally on the 2010 tax rolls for $257,330, their home and 10-acre horse property are now worth $75,240. The Wise County Central Appraisal District Appraisal Review Board — five community members with varying expertise in real estate — agreed that the drilling company's use of the Ruggieros' land warranted the extraordinary reduction. "It's the biggest cut I've ever seen," said Bob Boughton, board chairman, at the conclusion of a nearly two-hour hearing Thursday afternoon." --excerpted from the Denton Record-Chronicle 09/18/2010 (this home is located in the Barnett Shale, Texas)

Visions Federal Credit Union Policy Regarding Oil and Gas Leases:
"If there is an oil and gas lease on your property, Visions Federal Credit Union will not give you a mortgage loan secured by your property. If someone other than you has the oil, gas, or mineral rights to your property, then Visions Federal Credit Union will not give you a mortgage loan secured by your property. If you presently have a mortgage with Visions Federal Credit Union and you subsequently enter into an oil or gas lease after September 14, 2009, then Visions Federal Credit Union may require you to pay the balance of the loan in full pursuant to the terms of your existing note and mortgage. Please note that Visions Federal Credit Union will not sign a subordination agreement or other consent to lease with an oil and gas company."
-Visions Federal Credit Union, New York State, 09/14/09

And:
HUD Handbook 4150.2, page 2.7 states that: "No existing dwelling may be located closer than 300 feet from an active or planned drilling site. *Note that this applies to the site boundary*, not to the actual well site." (Emphasis added) This eliminates the possibility of FHA mortgage loans for these properties.

"All residents should be concerned about this information received from a local realtor: 'I had a customer inform me two days ago that the home equity loan they were obtaining in order to purchase a small investment piece near them was turned down by GMAC because their home property was under a gas lease. I dug a little further and found through mortgage brokers that that they are encountering the same reluctance on the part of some local and some bigger banks to lend on leased properties. I hope those who have signed leases have figured this into the equation. A similar example would be as in the case of Flood Zone properties for whom the Flood Insurance program was withdrawn, banks would also not lend on those. In the real estate world, things like this are a huge consideration in factoring property values. Just thought some people might not be aware of this trend by lenders.'" And:

"Here are the names of banks [that] will not fund leased properties, based upon environmental risk, as per information gained from a mortgage broker who is still looking further into the situation: First Place Bank, Provident Funding, GMAC, Wells Fargo, FNCB, Fidelity, FHA, First Liberty, Bank of America. **"**
--http://gdacc.wordpress.com/resources/impact-on-property-values-mortgages-insurance/

From The Pike County Courier: Northeast PA 11/20/2010. "There are a lot of properties with leases in this area," Rudalavage notes. She adds, when it comes down to obtaining a mortgage on those properties, "more and more of [the banks] are saying, 'no, no, no.'" …Wells Fargo would not be inclined to fund a property with a gas lease. In a memo, a top executive at the bank writes it would be "very difficult to obtain financing due to the potential hazard." The memo continues, "*Also if the Gas Leasing is new to the area there are too many unknowns*." One of the unknowns, according to the executive, is what the lease would do to "the marketability of a property." (emphasis added)
-- http://gdacc.wordpress.com/resources/impact-on-property-values-mortgages-insurance/

When this is the situation for properties where the mineral rights belong to the surface owner, policies are likely to be even more restrictive for split-estate surface holdings. As in the previous discussion of the immeasurable losses due to pollution, the forgoing examples do not take into account direct losses caused by pollution due to O&G activity. In addition to impacts on property values due to the "hard" costs of visible pollution, air pollution caused by the escape of toxic chemicals during drilling and processing will amount to a "soft" cost, as an area suffering "unexplained" illnesses that show symptoms attributable to O&G activity becomes increasingly unattractive and unlivable. This impact will be discussed later in this report.

In all cases, *private property rights are lost to the surface owner unless there is a clear, written, enforceable agreement* between the parties, as mineral rights are superior. This means that all landowners who host O&G development on their property lose their surface property rights when there is any disagreement with a driller and no written record of terms governing the development exists. The only difference is that the lease-holder receives royalties while all others do not. The governing factor is always the written agreement between the land-owner and the developer, either a mineral-rights lease or a Surface Owner's Protection Agreement (SOPA). Yet State law allows a driller to post a $10,000 bond and proceed with operations on split-estate land *without* a SOPA, so a surface owner really has no protection at all, especially, as noted previously, that a split-estate ranch owner can be expected to incur costs of over $11,000/year for the duration of O&G activity. No land owner who leases mineral rights should believe a Land-man when he says, "you won't even know we're here," or "this is mailbox money." As mentioned previously, disrupting the surface owner's rights is simply not their concern, and we must understand that legally, it doesn't have to be. Strong protective regulations are required to mitigate this loss of property rights in order to help preserve property values.

Construction activity may increase as demand for housing increases. This will be a benefit for as long as the extraction activity lasts. When gas supplies run out, demand for housing will plummet, leaving the area with a glut of vacant housing. This will in turn cause a crash in housing prices, with the dire effects noted above.

Of particular concern is what happens to **rental rates** in a community that experiences an influx of O&G workers. When such an influx occurs, *rental rates soar*. In Trinidad, CO, for example, an apartment that was leased at $450 per month was offered to the tenant at renewal time six months later for $1200! When the tenant explained that he couldn't afford this rent and asked for a reduction, the owner replied that $1200 *was* a reduction; he had prospective tenants lining up to rent the apartment for $1800! The effect of this dramatic increase was that the majority of local tenants in Trinidad were forced to move elsewhere because they could not afford the rental housing prices. This dislocation of existing residents has happened in many other places and is particularly evident in smaller communities, due to the limited supply of rental housing relative to larger markets. With the emphasis on trying to grow the local economy so that young people *stay* here instead of going elsewhere, wouldn't it be especially painful to have them driven out because they can't afford to live here? What will happen to enrollment at Highlands University if there is no affordable off-campus housing for its students? It is important to recognize that the NMHU student body is a significant contributor to the Las Vegas economy, since non-local students transfer wealth from their home community and spend it here, in the local economy.

- **Who wins**? Landlords and County Property-Tax Revenues.
- **Who loses**? Every renter. Every disrupted family. NMHU.

"The average cost per month of a detached, single-family rental house in Sublette County has risen more than 90% since 2000, which was *60% higher than the average rental price for similar homes* across Wyoming in 2006." – Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008 (emphasis added)

"According to the town of Big Piney (2007), "The vacancy rate for rentals is essentially 0%. It is difficult for the high paid gas industry workers to relocate here, making it nearly impossible for lower-paid service industry workers to move here and afford a place to live." Similarly, the town of Marbleton (2007) states, "The increases in both the permanent and 'transient' workforce have strongly affected the lack of affordable housing and the lack of rentals available. The lack of housing has driven the market to an all time high with prices out of reach for most." – Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008 (emphasis added)

V. Boom-Bust economy

San Miguel County has tended to have a relatively stable economy over the years. Even though this stability has been viewed as a 'problem' by growth proponents, it has enabled San Miguel County to fare somewhat better than other counties during periods of recession. Generational residents describe this resilience with a sense of great pride. But this stability will disappear if O&G production becomes a prominent revenue source. This is a fact of life for every O&G developed region.

> "An independent study of the experience in Western states is "Fossil Fuel Extraction as a County Economic Development Strategy: Are Energy-focusing Counties Benefiting?" prepared by the firm, Headwater Economics. It was released in September 2008. (Note that Headwater Economics is an independent non-profit firm, not supported by the gas industry or by advocates of stopping gas drilling.) This study analyzed the economic health of counties in Western states in order to compare the economies of counties that focused on fossil fuel extraction as a strategy of economic development to

the economies of counties that did not focus on such industries. The conclusions are that "while energy-focused counties race forward and then falter, the non-energy peer counties continue to grow steadily…*Counties that have focused on broader development choices are better off, with higher rates of growth, more diverse economies, better-educated populations, a smaller gap between high and low income households, and more retirement and investment income*."“
– Report by Jannette M. Barth, PhD, JM Barth & Associates (emphasis added)

"Oil and gas production generally brings a flow of money into a local area, which can mean, for example, that house prices rise while availability of accommodation falls. This can happen in the construction phase of projects, when the economic impact of a project is large, relative to the regional or national economy as a whole. Local costs of products and services can increase, and traditional economic activities such as agriculture can be marginalized. If this happens, *livelihood opportunities and related standards of living for those individuals or groups not directly benefiting from oil and gas activities can decline*." – Shell Oil Website (emphasis added)

"Areas like New Mexico, Texas, Oklahoma, and Alaska are tied closely to the world energy market and the *scars of the boom-bust cycle are evident in the economic performance of these communities* over time and in the physical infrastructure of the areas. Anyone who has traveled through the oil producing areas of New Mexico, Texas and Oklahoma can see the growth of the communities between the 1960s-1980s (with some stagnation in the 1970s), and the exodus of population and income during the bust of the 1980s and 1990s, and the renewed activity resulting from the price increase of the 2000s. The rise and fall of the industry is physically written in the architecture and economic infrastructure of the oil producing counties in the US." - The Economic Impact of Oil and Gas Extraction in New Mexico – New Mexico State University, Principal Authors: James Peach, Leo Delgado, and C. Meghan Starbuck, Date Issued: September 2009 (emphasis added).

"The bust is a tremendously important factor of energy development, especially in the context of boomtown communities. Almost all of the boomtown communities that were researched during the 1970s and early 1980s went through a severe economic downturn as the construction or development phase of the industrialization process was completed and entered into a much less labor intensive phase of energy production (in a smaller array of cases, the commodity price simply collapsed and the energy project was shuttered)." - Northeast Regional Center for Rural Development, Pennsylvania State University NERCRD Rural Development Paper No. 43 January 2009

Please note, in the above quote, that the "bust" phase happens even if production rates remain high.

VI. Economic Hostages

When economies small or large 'hook their wagons' to the O&G industry - linking their growth and prosperity with that of the industry - they become, in effect, economic hostages, *losing the freedom of economic self-determination*. The industry crowds out other economic enterprises, except those that are connected with it. It becomes 'the only game in town.' Then, any attempts to regulate the industry for the benefit of the population-at-large are met with the threat from the industry, "We'll leave and go elsewhere. Then where will you be?" (Of course, once the local economy is substantially dependent on the industry, the answer is unthinkable.) This posture assumed by the industry is, at the least, disingenuous and at the most, extortion based on disinformation. As one example out of many, the New Mexico Business Weekly reported the following on January 29, 2010, with the headline **"Industry: Blame State's Budget Woes on Regs…."** the gist being that the new "Pit Rules" and greenhouse gas emission regulations are hurting the industry and driving it out of New Mexico.

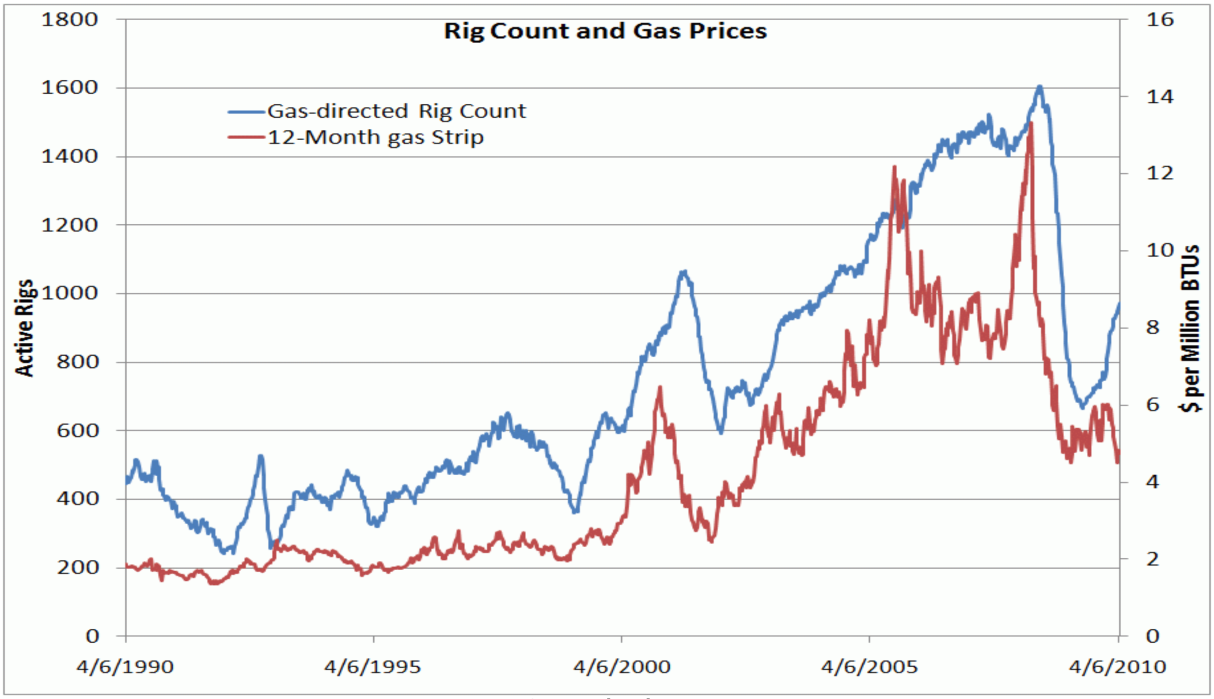
> "A year ago in Farmington, there were 21 rigs, now there are eight," said Karin Foster, executive director of the Independent Petroleum Producers of New Mexico. "Operators are making financial decisions not to operate in New Mexico."
>
> "The oil and gas industry is being run out of town in this state because of the regulatory environment," said state Sen. Sue Wilson Beffort, R-Sandia Park. "We are in a dire financial situation and we are reaping what we have sown."
>
> "Nevertheless, Oil Conservation Division Director Mark Fesmire said *the plunge in fuel prices that occurred in late 2008 is responsible for depressed oil and gas production*, not the state's pit regulations. According to drilling rig data compiled by Baker-Hughes, Inc. – a Houston-based petroleum industry service company that closely tracks rig activity in Western states – the rig count in New Mexico *continued to grow* after the new pit rules took effect in June 2008. The number of active drilling rigs rose from 79 in mid-June to a peak of 97 by early September. The count remained above 90 for two more months, until early November 2009, and then began to decline as the bottom fell out of the oil and gas market, Fesmire said. 'Even with the pit rules, the industry continued to push the rig count up,' Fesmire said. '*The drop in activity was the result of prices, not state regulations*.'" (Emphasis added)

Yet state legislators continue to take the side of the O&G industry against the interests of their constituents:

> "Two thousand people have lost their jobs or moved out of state because of the pit rules," State Sen. Bill Sharer, R-Farmington said. "We need some regulatory sanity. State regulators should not have the authority to bankrupt the state."

If state regulations are so onerous that the O&G industry is leaving New Mexico, as these State senators claim, then it's unlikely that the state's rig count would keep pace with national rig-count growth. In fact, since the lows in 2009, rig counts are up by 86.5%% in New Mexico, while they are up 75.8% nationally, *an outperformance of over 14%.*

In addition, let's note that rig counts were declining in *all* other oil and gas-producing states during the period cited in this article. It appears that the industry's spokespersons were using the hardship of the national recession and a falling gas price to undermine New Mexico's attempts to protect its citizens and environment. The chart on the next page makes this clear:



Source: *Bloomberg*

Decision makers in San Miguel County must not be misled by O&G industry statements that protecting SMC's environment and citizens creates an unfair burden on its business. As we've just seen, making this claim is standard practice for this industry and it is an effective, if disingenuous, negotiating strategy.

In fact, industry analysts generally say that, on average, *shale gas needs an approximate market price of* at least *$5/mcf in order to be profitable*. (Some investment analysts believe this number is too low by a significant amount, placing the economic cost at around $8-9/mcf. However, some gas fields are profitable even at today's lower market prices.) The price of natural gas crashed from a high of $13.67 in July of '08 to a low of $2.62 in August of '09 – an 81% decline! The price at the time of this writing sits at around $4.16/mcf. Is it really regulations that are impacting the drilling and production decisions of the industry? Or would the fact that the current price sits below the economic price of shale gas be a more likely explanation? ***The natural cycle for all commodities is that when over-production drives the price below the level that is profitable, production will cease until prices rise enough to render it economically feasible to resume production***. This is the source of the infamous "Boom-Bust" cycle. Amidst all of this lies the fact that when natural gas was hitting its extreme low price, the industry was unable to store what was being produced because all storage facilities were filled to capacity! This is overproduction so obvious that even a neophyte can see it. Why would an industry use its self-caused business conditions to threaten its hosts? Decision makers in SMC need to be aware of these tactics, because they are applied locally, as well as at the state and national levels.

"Two weeks ago, Chevron came out and said U.S. gas prices need to rise. *The Financial Times* reported: 'George Kirkland, Chevron's head of oil and gas exploration and production, said the industry needed prices 'in the $6s and $7s' in the long term to cover the cost of investment.'"

Quoted in "Capital and Crisis" Newsletter, 03/25/11, Chris Mayer, author.

Revisiting the "boom-bust" pricing cycle mentioned above, the market price of natural gas is well below its economic production cost. Yet drilling is still increasing. This is abnormal behavior, since the normal response to low market prices is to curtail production, not increase it. What could be the explanation? One obvious explanation is that gas producers are anticipating a lucrative export market. There is a technology - called Liquefied Natural Gas (LNG) - that allows gas to be changed into a liquid so that it can be shipped in tankers, the same way oil is transported. Many countries in the world have no natural gas supplies within their borders and must import all of the natural gas they use. Japan is one such country. In these markets, natural gas sells for $14/mcf and above, compared to less than $5/mcf in the US. With international prices like these, current domestic over-production begins to make sense if the product can be exported. In addition, many foreign countries, especially China, are buying substantial stakes in US domestic production. This gas will all leave the country, destined for use as fuel for the growth of overseas economies. The argument that 'it's patriotic to encourage gas production and unpatriotic to regulate it' simply falls flat in the face of the reality that as exports increase, domestic supplies will fall, and the price of natural gas for US consumers will rise substantially. Should San Miguel County suffer the potentially catastrophic consequences of unregulated natural gas development so that China can gain access to US natural gas supplies?

> "Something has to be done with all of this gas production, so for now a move is on to create LNG facilities for export. Export of LNG to the UK has already begun. While several import facilities were planned and built (before unconventional gas even came into the picture) in anticipation of high LNG imports in the coming decades, the U.S. has very limited LNG export capability. That could be about to change. There are two LNG export facilities announced this year--Freeport LNG and Australia's Macquarie Bank have agreed to build one in Texas to export 1.4 billion cubic feet per day of gas, and Cheniere Energy's will be on the site of its Sabine Pass facility to export 16 million metric tons per year. Both plan to produce and export LNG by 2015." In addition, the existing LNG import terminals are being retrofitted for export and are expected to be on line by 2012.
>
> Credited excerpt from: http://oilprice.com/Energy/Natural-Gas/US-Natural-Gas-Supplies-Exploding-Without-Apparent-End.html

Furthermore, it is vital to understand that any decision to *halt* production due to market conditions will be made *without regard to the impact on the affected local economy*. It's a simple business decision.

VII. Other Miscellaneous Costs to Local Economies

> "The BLM clearly recognizes key issues in these counties related to rapid population growth as a result of economic development. Most notable are the current housing crisis, the increasing demand for emergency services, increased traffic and traffic infractions, and growth in the crime rate." - Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008

> "The local governments of Big Piney, Marbleton, Pinedale, and Sublette County saw large increases in both revenues and expenditures due to royalties from natural gas development and the mitigation of impacts from the development. The towns of Big Piney and Marbleton saw revenues increase enough to match needed infrastructure projects although with little money left over, while significant revenues to the town of Pinedale *have not been enough to meet infrastructure*, *maintenance, and administration demands*." - The Northeast Regional Center for Rural Development, Pennsylvania State University, NERCRD Rural Development Paper No. 43 January 2009 (emphasis added)

Water Usage
The fracking process by which gas wells are drilled uses an enormous quantity of water. Where does this water come from? "You get it from wherever you can," said Bob Gallagher, (former) president of the New Mexico Oil and Gas Association, a trade organization that represents the industry. "You might drill a water well specifically for that lease. It depends." This brings up an interesting point: water wells for domestic use have a right to use 1 acre-foot of water per year. Compare this to the water used to frack just *one* gas well: from 8 to 17 acre-feet (2.6 to 5.5 million gallons)! Nevertheless, Gallagher is adamant: "I don't accept the thought process that we are using too much water. Let's get real — if water is one of the products that is needed, we have a right to use water just like anybody else." (Quoted in the Santa Fe New Mexican 03/02/08)

Most people will probably agree that there is a qualitative as well as quantitative difference between water used for agricultural irrigation – which, here in San Miguel County, returns virtually unpolluted water to the ground to be eventually reabsorbed by the aquifer it came from – and water used for gas extraction, where the water used is polluted by toxic chemicals used in the fracking process, rendering it unfit for any other uses. If a 400-acre property is developed to the maximum density allowed by state law, there will be 10 gas wells on this property. If water use is not regulated, then at the lower water use figure, *over26 million gallons of water* will be used in just the first fracking, and wells are fracked *many* times during their life span. This water is polluted with toxic chemicals and cannot be recycled. *It is lost forever*.

The price consumers pay for water delivered to their homes does not reflect its true value. We can better understand the economic value of water by looking at its impact on land prices. Un-irrigated land sells for two to three thousand dollars per acre, while irrigated land commands well over ten thousand dollars per acre. Land that sits in a dry basin - where attempts to drill even marginally producing water wells have not been successful - is extremely cheap. The wisdom of the oft-repeated maxim cannot be denied: “El agua es la vida” – “Water is life.” When the oil and gas industry claims that “the only thing more important to your survival than oil is oxygen,” we have to wonder: how many people irrigate their crops and quench their thirst with oil?

Roads
Bonds must be required in amounts sufficient to repair/replace existing roadways at current, - to say nothing of future - prices. To access drill sites, particularly in rural counties, more roads will be needed. Existing roads are not capable of sustaining the heavy pounding of drilling industry trucks. We are talking about hundreds - likely thousands - of round-trips by heavy industrial vehicles on an annual basis. On roads that have only seen the occasional hay truck as heavy traffic, the deterioration and damage will be severe. Otherwise, the County will be responsible for funding repairs to county roads, repairs that should be expected to be much more extensive than in the past. In addition, it should be required that roads constructed by O&G operators must be maintained to minimize the large amounts of dust that will result from steady use. This dust in itself is an environmental hazard.

> “Increasing traffic is a statewide matter in Wyoming, but the increases in Sublette County far surpass the State-wide average. From 2000 to 2006, traffic increased 16.2% across Wyoming, but in Sublette County the increase was 79% (Wyoming Department of Transportation 2007).” - Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008

Crime
> “Studies have shown that as the number of oil and gas wells increased, non-violent crime increased modestly. This can necessitate the need for more law enforcement in both rural and urban counties.

Costs for additional police personnel are proportionately greater, in terms of budgetary impact, in small towns than in urban areas." (Kelsey, 2009; Murray & Ooms, 2008b; Ecosystem Research Group)

"Between 2000 and 2005, violent crimes increased by 106%, and property crimes increased by 56%." "The number of juvenile offenses rose 233% between 2000 and 2006." "Furthermore, according to Dayle Read-Hudson of Pine Creek Family Counseling in Pinedale, the last few years have produced more accounts of children bearing witness to violent crimes." - Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008

Drug Use

"In additional to straining existing services, the introduction of oilfield workers to the community has affected local drug use and distribution. The high pay that workers receive gives them great incentive to work as many hours as they can. It is a common practice for workers to use methamphetamine to increase the length of time they work each day (U.S. Department of Justice 2006; Urbigkit 2003). Unfortunately, methamphetamine use has spread to other parts of the community and has emerged in the general population as well as on school grounds (Urbigkit 2003). [As shown earlier in Table 3.4.4-1,] drug abuse violations are up 209% for adult males and 400% for juvenile males from 2000 to 2006. Responding to this issue has increased the workload of law enforcement and will likely require the addition of another officer to address the issue." - Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008

DUIs

An increase in DUI arrests has accompanied the advent of oil and gas industry into communities. Should drilling start here in SMC, more police officers and patrol vehicles will likely be needed to address the increased danger on our roads.

Poverty levels

"The number of people living below the poverty line has increased in more populated areas (as opposed to the sparsely populated Sublette County, Wyoming). This places a larger financial burden on social services." (Murray & Ooms, 2008b; Kelsey, 2009; Rodger et al., 2009) "As the need for service industry workers increases, the number of working poor in an area also increases." This will likely be a tiered effect in San Miguel County, with the towns experiencing the increase in working poor and rural areas remaining mostly unaffected, assuming that traditional livelihoods are not extinguished by the industrial nature of O&G activity.. - Credited excerpts from *Marcellus Shale Natural Gas: Its Economic Impact* – 2009 League of Women Voters of Pennsylvania, Study Guide III

Facilities

"Health Care Services: An increase in population expands the need for health care. Small rural medical centers in Wyoming have reported the demands for medical care exceed their ability to provide services both in terms of personnel and finances (Ecosystem Research Group, 2008)." In addition, there could be an increase in numbers of students at local public schools, placing stress on the educational system as well. - Credited excerpts from *Marcellus Shale Natural Gas: Its Economic Impact* – 2009 League of Women Voters of Pennsylvania, Study Guide III

Health effects from natural gas drilling and processing are well-documented, even if they tend to be anecdotal. Dozens of chemicals used in the process and the volatile organic compounds vented during processing can and do cause severe health effects among those who are exposed to them. The health effects of these chemicals are undisputed, as is the prevalence of these chemicals in O&G operations. The O&G industry is able to deny responsibility because generally the air quality is not tested prior to drilling and production activity beginning in a community, nor afterwards. The widespread impact of these chemicals on the local population's health and wellbeing will undoubtedly be another expense the county must bear, especially in the case of indigent people contracting illnesses due to inadvertent chemical exposure. An indirect cost will be the loss of desirability as a place to live for the areas that experience these effects.

"I'm not an activist, an alarmist, a Democrat, environmentalist or anything like that. I'm just a person who isn't able to manage the health of my family because of all this drilling." KELLY GANT, whose says her children have had severe asthma attacks and headaches since a gas well was set up near her house in Bartonville, Tex. – Quoted in the New York Times, 02/27/11

"Throughout the gas fields of western Garfield County, dozens of residents have complained of health problems they believe are caused by the wells that have spread across the rolling sagebrush landscape. Complaints include dizziness, nausea, difficulty breathing, sinus problems, eye and skin irritation and blistering. More severe concerns have included cancer, neurological disorders and acute chemical sensitivities.

- Chris Mobaldi felt burning pains across her body for months, worsening until she could no longer dress herself. She became weak, chronically nauseous and developed a string of debilitating health problems culminating in a pair of pituitary gland tumors. In two years, friends said she aged 20 years. Most puzzling, a rare brain condition called foreign accent syndrome has left her speech sounding like she's from another country, or sometimes reduced to total gibberish. She said she had smelled fumes from the surrounding gas wells for months and complained of tainted well water. [She died last year.]
- Karen Trulove began complaining of constant fatigue at her home south of Silt, and closed up her framing shop in town when she could no longer go to work. On the well pad above her home, a petroleum smell still fills the air, and on bad days she says the air around their home shares the same odor, accumulating in gullies and valleys on her land. Among her neighbors south of Silt, Karen Trulove counts a half-dozen who have removed the batteries from their smoke alarms after they tired of hearing them mysteriously activated. She believes they were tripped by unseen chemicals in the air.
- Dee Hoffmeister said the constant rumbling of diesel engines at a well site near her home south of Silt filled her home with fumes. She returned from a month-long family visit to find a gray cloud filling her front porch, she said, and the fumes caused her to pass out."

--*Aspen Daily News*, May 3, 2006, David Frey

"Farmington, NM has one of the fastest growing rates of childhood asthma in the nation. 84ppb (parts per billion) is the legal limit for ozone. 50-60ppb can cause serious health problems. In the summer of 2000, Farmington had 9 days where the ozone level was *less* than 50ppb. In 2001, it was 4 days. In 2002, 0 days. ….. a 1ppb increase in ozone can add $20/year/person to a communities (sic) health cost….."--www.unbossed.com

"Children living in communities with higher concentrations of acid vapor, ozone, NO_2 and particulate matter have significantly reduced lung growth and development."
- NM Dept. of Health, 2005 -- www.unbossed.com

"Still, in the Upper Green River Basin, where at least one daycare center called off outdoor recess and state officials have urged the elderly to avoid strenuous outdoor activity, some wonder if they've made a bargain with the devil. Two days last week, ozone levels in the gas-rich basin rose above the highest levels recorded in the biggest U.S. cities last year." -- Mead Gruver, Associated Press, March 8, 2011 on air pollution resulting from gas development in Pinedale, WY

The real tragedy with regard to the severe health effects being experienced is that these effects are almost entirely avoidable. By requiring the O&G industry to use practices that mitigate the risks to land surface, air quality and water purity these effects can be largely, if not entirely, eliminated.

Emergency Responders:
"In all cases, as the number of wells increased, the number of emergency runs directly increased. This requires more emergency vehicles and crews. In rural areas, new emergency vehicles with high clearance are often required to access the back roads. Emergency Management plans require modifications to deal with natural gas well emergencies and with the toxic substances that are used in - or result from - drilling and frac[k]ing." (Kelsey, 2009; Murray & Ooms, 2008b; Rodgers et al., 2008). Municipalities that operate their own fire and ambulance services see a direct increase in costs. In areas where private services and volunteer fire departments operate, costs accrue to those services that are, in turn, passed on to local citizens and service users via necessary funding increases. The need for all volunteer fire companies to be trained in HazMat protocols, along with the purchase of expensive protective equipment will also add to costs. Many, if not most, SMC volunteer fire companies normally experience so few calls that it's an open question as to whether they could ever be sufficiently qualified to deal with a toxic emergency. These volunteer companies are also thinly staffed, especially during working hours, as many members hold full-time jobs. This will require the hiring of paid, well-trained responders to serve as additional staff within the volunteer departments. Unfortunately, oil and gas well fires are not uncommon; (a Google search returned 6,410,000 hits). They happen with terrifying suddenness, often due to an explosion. What if one happens here on a Red Flag Day?

- Credited excerpts from *Marcellus Shale Natural Gas: Its Economic Impact* – 2009 League of Women Voters of Pennsylvania, Study Guide III

"Sublette County EMS runs increased by 168% between 2000 and 2006. The development phase of gas recovery has a high risk of injury, especially when placing rigs (Ring 2007). In2006, EMS runs to the oilfields accounted for 25% of all requests for medical aid. " - Sublette County Socioeconomic Impact Report, Ecosystem Research Group, 2008

Housing Infrastructure:
"An increased demand for more housing is a direct result of population growth. If there is inadequate housing, the influx of workers cannot find a place to live within a community and contribute to its tax base. On the other hand, the need for development phase workers will decrease significantly in the short term (10+) years. Some communities need to weigh the value of temporary housing to protect the value of long term resident housing. The building of "Man Camps" has been proposed in some areas to house transient workers. (Long, 2009) Kelsey noted that if new homes are built in response to an influx of workers, the municipalities may have a glut of housing after the drilling phase is over in ten to twelve years (Webinar presented in Indiana County, October 14, 2009). Demand for drinking water, sewage treatment, and waste management will increase and require appropriate governmental response." - *Marcellus Shale Natural Gas: Its Economic Impact* – 2009 League of Women Voters Of Pennsylvania, Study Guide III

Social Conflict:
"An influx of new people into well-established communities can create a "social cost." [Established] residents may like the community the way it was and resist change. Rig crews may enjoy a style of life that may be in conflict with traditionally accepted norms. When new costs to the community are

funded by existing revenue sources, people who have not benefited from the natural gas boom may resent paying the price of higher taxes." - *Marcellus Shale Natural Gas: Its Economic Impact* – 2009 League of Women Voters of Pennsylvania, Study Guide III

"By the late 1970s, a so-called "boomtown model" or "social disruption model" emerged as a prominent framework among researchers to describe the rapid growth that overwhelms local governments and permanently alters social relationships. The body of evidence tended to find a mix of positive and negative economic impacts to local residents, contrasted with highly negative social impacts. (Markussen, 1978; Freudenburg 1984; Merrifield, J. 1984; Seyfrit 1988; Perdue, et al 1999)." -The Northeast Regional Center for Rural Development, Pennsylvania State University NERCRD Rural Development Paper No. 43 January 2009

With the strong focus on family, heritage, and traditional values in San Miguel County, this could prove to be a significant source of conflict and disruption.

Impacts on Tourism:
Tourism is an important contributor to the economy of San Miguel County. From families owning second homes in the county to travelers enjoying the fishing, hunting, and State Parks, non-resident visitors provide a substantial net gain to County revenues, since they import money from their home locations and spend it in the SMC economy. Development of O&G production in these tourist-centric areas will likely severely impact these revenues, although no specific data could be found regarding the potential extent of the impact. Obviously, pollution and despoiled landscapes would decrease SMC's attraction to tourists.

Compatibility of Lightly-Regulated Oil and Gas Development with the San Miguel County Comprehensive Plan (SMCCP)
The following few excerpts from the Comprehensive Plan demonstrate unequivocally that poorly- or lightly-regulated oil and gas development is not compatible with the comprehensive plan developed by County officials in partnership with County residents:

"The community consensus is that economic development is essential. Furthermore, economic development *can and must* sustain rural communities, local culture, and ranching, farming and outdoor recreation as a way of life. When it comes to economic development, residents want County government to address local needs and quality-of-life concerns through heritage, "inspirational," and recreational tourism that provides good jobs and income producing opportunities while respecting local values and customs." (Page 10) emphasis added.

"Many residents see themselves as "weekend" farmers or ranchers - commuting to work at desk jobs in Santa Fe and Las Vegas during the week, and returning to manage family landholdings and care for elderly parents on their days off. It is a demanding lifestyle, but one which they warmly embrace out of love and respect for their elders, their cultural heritage, and for the land itself." (Page 11)

"Environmentally sensitive areas include rivers – their floodplains and valleys, valleys, arroyo corridors, steep slopes, prominent ridges, rock outcroppings, natural landmarks, vistas and forests." (Page 22)

"With the exception of the City of Las Vegas, all potable water supplied in San Miguel County comes from underground aquifers." (Page 40)

"Hispanic cultural traditions and social values remain strong in San Miguel County. A clear distinction can be anticipated between the values and economic pursuits of new immigrants into the county when compared with those of long-term County residents." (Page 50)

"According to Daniel B. Stephens & Associates, Inc. the County should consider the following water management alternatives:

- Reduce urban and agricultural water demand through conservation
- Develop new water supplies
- Protect or improve water quality" (page 53)

"Current domestic well users require protection from loss of supply due to drought and new development." (Page 61)

"The policies that follow necessarily flow from the community values expressed in an earlier chapter. The most over-arching of these is the value County residents place on preserving their rural way of life. Specifically, County residents want to sustain rural communities, local ranching, farming and outdoor recreation. Tourism, growth and development can be harnessed to support rural communities and enhance residents' quality-of-life by offering opportunities for better housing and jobs. *The question is one of balance and of sustainability*." (Page 67) emphasis added.

"Residents report declining water levels in domestic and community wells throughout San Miguel County." (Page 26)

The San Miguel County Comprehensive Plan is a clear and unambiguous statement of the will and wishes of San Miguel County citizens and their elected and unelected officials. Not to honor these expressed wishes when determining an Oil and Gas Development Policy would be a grave mistake.

Conclusion

From the foregoing discussion, it is evident that while monetary benefits can accrue due to oil and gas development within a locality, this benefit is both fickle and relatively short-term, rising and falling with the fortunes of the industry itself. Furthermore, O&G development comes with a substantial cost to the economic balance and cohesiveness within the affected community. The supply of gas is finite and individual fields' productivity can be much shorter than initially estimated. One can only imagine what the economies of the gas/oil producing counties will look like in, say, 50 years or less, when the nearby resource supplies are exhausted. With the balance to their local economies destroyed, these communities will be hard pressed to even survive, let alone regenerate. Think of "Rust Belt" towns and Detroit, in particular, for a current-day image of what a community dependent on a single industry suffers when that industry goes into decline or shuts down. For this reason, the time horizon addressed during ordinance deliberations must span decades rather than years. Our County leadership must be diligent in anticipating the negative effects of gas-field development - economic as well as environmental - in San Miguel County and implement policies that mitigate the negative effects. . It is actually misleading to separate such effects under the labels of "environmental" and "economic." Environmental effects have a strongly negative impact on economic factors. The choice is not between 'drilling' and 'no drilling.' The choice is between keeping what we have and adding O&G into the mix, or losing what we hold dear as our culture and communities are overwhelmed by the impacts of lightly-regulated O&G development. Our community must not fall into the trap of subsidizing the profits of the Oil and Gas industry.

Now the question is: how do we minimize these impacts? A few ideas:

- County revenues from any oil/gas development should be put into a local Reserve Fund and preserved. *Only the income from this fund should be spent*. This will help insulate the County from the boom-bust cycle. These funds could be used to fund local initiatives for economic diversity.
- To every statement by the oil industry "It's too expensive" SMC must reply, "Our health, happiness, and well-being are not on sale. You're going to profit; we deserve your cooperation, rather than your exploitation." ***Communities should not be forced to subsidize* the *profits of the O&G industry.***
- If the industry says "We'll just go elsewhere," SMC must not be intimidated by the threat. They will drill *every*where, when it is profitable to do so – a function of market economics.
- Require extensive environmental safeguards, including "comfort" parameters in any drilling ordinance. Require drillers and producers to adhere to recommended Best Management Practices. Mitigating the negative effects of being a Split Estate landowner will help preserve property values and keep our communities intact.
- Require baseline testing of water quality and supply, air quality, land vegetation and contour with annual/semi-annual quality testing thereafter.
- Restrict the use of local groundwater in oil and gas drilling and production. Water should be trucked in, as it is in many other locations.
- Require testing of well casing seal, verified by testing log.
- Require a signed Surface Owner's Protection Agreement as part of any permitting process. If there is no such agreement, both the industry representative and the landowner must be present for a hearing prior to the issuance of a permit. A special conditions permit can be issued for the driller to proceed if the surface owner's objections are deemed reasonable.
- Create a County position to inform landowners of their protections under the Surface Owner's Protection Act and assist them in writing Surface Use Agreements, leases, and royalty agreements. Those who are ill-informed are likely to experience significant losses, and these losses will accrue to the County's bottom line.
- Strongly encourage O&G developers to enter arbitration in land-use disputes with surface owners; arbitration is voluntary as suggested in the NM Surface Owners' Protection Act.
- Require O&G developers to provide housing for their workers. This will mitigate the increases in rent so that locals can afford to remain.
- Require substantial bonds of companies operating within the County. Under no circumstances must the county find itself liable for cleaning up damaged property or repairing roads.

For more information and investigative reports on the public impact of gas field development:
http://www.propublica.org/article/natural-gas-drilling-debate-heats-up-read-our-guide

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- Oil and Natural Gas Industry Contribution to the San Juan Basin - By Richard Zimmerman, Assisted by Jeremy Cook - University of New Mexico, 2005
- http://www.shell.com Managing the Social Impacts of Our Oil and Gas Operations
- Summary of Local Economic Impacts of Natural Gas Development in Valle Vidal, New Mexico, Prepared by William M. Brown, February 1, 2005
- San Miguel County Comprehensive Plan

Many other sources were consulted and may not be listed above, due to duplication of information. These websites were helpful for background information:

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http://sites.google.com/site/environmentallyfriendlyep/

http://www.naturalgas.org/environment/technology.asp

http://www.fossil.energy.gov/programs/oilgas/environment/index.html

http://www.shell.com/home/content/environment_society/

http://ipanm.org/

http://un-naturalgas.org/

http://www.city-data.com/county/San_Juan_County-NM.html

http://www.emnrd.state.nm.us/main/index.htm

http://www.sjcounty.net/Dpt/Finance/FastFacts.aspx http://www.drinkinganddriving.org/

http://www.city-data.com/county/San_Miguel_County-NM.html

http://www.energyindepth.org/

http://www.energyadvancesnewmexico.com/

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