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The Next Decade of Pennsylvania Shale Development

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Marcellus Shale oil and gas development began in 2004 with little fanfare except for the occasional 911 calls from local residents who saw fire burning from a flare stack in a farmer's field but didn't know why. A few drilling rigs and flares were the initial observed evidence of the oil and gas industry exploring to see if the hydraulic fracturing techniques used in the Barnett Shale could successfully unlock the Marcellus Shale. The upstream segment of the oil and gas industry is called the E&P industry because first the companies explore for natural gas and then, if they find it, they produce it. Nothing was certain in these first years of development, and bonus payments and royalties reflected that uncertainty.

As a lawyer who was actively involved with the companies that drilled the first Marcellus Shale wells, I was asked to help with virtually every issue these companies were facing. In the early days, I was meeting with local residents and elected officials to explain operations and why these huge flares were an indication there was

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much more natural gas than had been produced from the hundreds of thousands of conventional oil and gas wells that had been drilled in Pennsylvania since the Drake Well in 1859.

Because we knew this shale play had the potential to be enormous, we formed the Marcellus Shale Committee (which later became the Marcellus Shale Coalition) with four oil and gas company executives as the initial members. We recognized that open dialogue with the Governor's Office, the Pennsylvania Department of Environmental Protection, other agencies, municipalities and townships and the public was essential. We worked through new and revised permitting procedures with the DEP. We tackled the concerns regarding water withdrawals to be used for hydraulic fracturing with the Susquehanna River Basin Commission and the DEP. We explored methods of streamlining the DEP's and the Army Corps of Engineers' approval processes for pipelines, compressor stations and gas-processing plants so that produced natural gas and natural gas liquids could be transported to the marketplace. We brought together the growing number of upstream and midstream operators to address issues and coordinate outreach efforts.

Due primarily to misunderstandings about the industry, there was some amount of overreaction early on. Much of the concern that occurred in the first 10 years will die down with time as a result of the growth of a well-operated natural gas industry. But some concerns will continue and others will appear. The following is a prediction of what we can expect over the next years, based upon the views of experienced oil and gas executives and general counsel with whom I spoke.

With hundreds of trillions of cubic feet of natural gas available to be produced, drilling will continue for decades. Much of the ongoing focus of the natural gas industry will be on improvements in production techniques and controls for those practices, especially as drilling moves toward more populous areas, parks and public areas.

With the considerable activities occurring across Pennsylvania, there will be a continued emphasis on environmental improvement. The industry will work to further reduce air emissions, improve upon water management and recycling practices, eliminate spill potential, and minimize waste generation. While it is extremely important that operators continue to ensure best management practices are being implemented, in some cases additional environmental and other types of control requirements can increase costs. This, coupled with this country's heightened scrutiny of coal production and usage, may cause electricity prices to rise. Overall, increases in costs will cause investment to be driven from marginal areas of natural gas production and toward higher-return projects. Conventional natural gas operators will struggle to maintain profitable operations as these costs increase. Shale projects in marginal areas may fall victim as well.

As can be the case where large sums of money are at issue, there will certainly be disputes and litigation. The litigation will include disputes among lessors and potential lessors as to ownership interests. There will also be litigation between the owners of oil and gas rights and the lessees concerning royalties, lease term and termination, and other contractual issues found in leases, especially given the dearth of case law in Pennsylvania on these topics.

One of the bigger topics will be stranded tracts and pooling. At some point, there will need to be a way to have small tracts added to oil and gas units. The lack of a defined approach for pooling when there are significant areas of unknown or unsettled oil and gas rights ownership will cause friction and litigation among the various interests. Without full and clear establishment of pooled oil and gas rights, these stranded assets may be challenged by those seeking to reap the benefits of the majority of the acreage involved, or seeking to reap those benefits sooner than others might prefer. Also included in these oil and gas rights issues will be development questions involving the length of time considered "prudent development" and how much acreage can be held by development, and for how long.

It is certainly safe to expect that land use issues and zoning will continue to be potentially contentious issues and these issues will likely become more localized to focus on particular concerns. The Pennsylvania Supreme Court's decision in the Act 13 litigation has not provided much guidance with respect to local zoning. Nonetheless, oil and gas development continues to occur because, where provided for, E&P companies are obtaining zoning approvals and it appears that most municipalities, townships and counties are able to work with E&P companies most of the time. But with billions of dollars at stake in the development of multiple shale layers, there will certainly be disputes with respect to the need for and timing of approvals. And these challenges will not be limited to upstream E&P companies.

Infrastructure will continue to be a big issue. Without eminent domain power, midstream companies will continue to rely upon surface owners to agree to the locations of the thousands of miles of pipeline needed. Of course, produced natural gas and natural gas liquids rely upon these pipelines to transport the products. The issue of the siting of natural gas compressor stations will continue to be an element of development concern as a result of the midstream companies' necessary attempts to locate these stations for optimal logistical efficiency while local zoning seeks to protect the nature and character of the area. The likely growth of manufacturing facilities using the natural gas and natural gas liquids as downstream operations will add somewhat to the issues that will be important going forward.

As suggested earlier, some of the litigation will be important to establish principles that are currently unsettled, because there is no established case law or legislation on the topic. The legislature can act to settle these issues either ahead of such litigation or in response to judicial decisions that are so unpopular that they trigger legislative action on the topic. But as we have seen from the Act 13 litigation, legislative direction is not necessarily the final word.

The growth and expansion of the unconventional shale industry is continuing to bring about new jobs and revenue for Pennsylvanians. But the oil and gas industry must "follow the rock" in deciding where to locate their operations and, as such, activities will need to occur based upon subsurface geology. Since some of the most prolific shale resources are located a mile or so beneath populated areas—including beneath Pittsburgh—and under parks and rivers, the areas most suited for natural gas production may be areas where the surface interests do not align with the geologic interests. The ability to drill multiple natural gas wells on a single pad, using horizontal laterals to reach these gas resources, will allow development to occur in these areas. But other issues, including land use approvals, zoning restriction, inability to lease all of the areas and environmental concerns, may make such development difficult and prohibitively expensive.

An old joke seems to sum it up well. A Texas rancher is speaking with a Pennsylvania farmer. The Texan proudly states, "Sometimes it takes all day for me to drive my pickup truck to the end of my property." The Pennsylvania farmer replies, "Yeah, I have a truck like that, too."

With 2,500 municipalities and a populous state like Pennsylvania, the challenges may be more acute for the Marcellus Shale industry than they were for places like the Eagle Ford Shale or the Barnett Shale in Texas. But the global impact of these shale resources and the potential they represent will ensure that we will need to address these and other issues as the play expands and grows.

Ted Bosquez, Daniel Carmeli and Matthew Sepp contributed to this article. •