

# RESOURCE TECHNOLOGIES OUTLOOK

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## Welcome

Resource Technologies Corporation is pleased to unveil the first edition of our latest project – a newsletter providing helpful information to our clients and any other interested readers.

We hope you come to rely on us as a source for knowledgeable summaries of the latest events related to our industries:

- Mineral Appraisal
- Oil & Gas
- Coal
- Aggregates
- Sand & Gravel
- Granite, Marble, and Bluestone
- Geology
- GIS Technology

Please don't hesitate to contact the editor, Lauren Kern Acquaviva, at [Lauren@resourcetec.com](mailto:Lauren@resourcetec.com) with comments, suggestions, or questions.

## INSIDE THIS ISSUE

Welcome	1
Marcellus Shale Taxation in PA	1
House Debates Coal Ash Designation	2
Terms, Definitions, and Regulations	2
Pricing Indexes	3
Marcellus Shale Appraisals	5
Court Rejects Indefinite Lease Claims	6
RTC Staff Biography	8
Map: PA Drill Rigs by County	8
Contact Information	9

## Marcellus Shale Taxation in Pennsylvania

Pennsylvania has recently seen a boom in Marcellus Shale drilling activity – due to technological innovations that have allowed drillers to bore horizontally into the Marcellus Shale and extract natural gas.

As drilling ramps up, taxation has become a divisive issue. Pennsylvania Governor Tom Corbett has stated that he does not support a tax on drilling, but there are several proposals circulating in the PA House of Representatives. The following are the most popular proposals:

**THE HARPER PLAN** – a plan by Representative Kate Harper, H.B. 1406, calls for a 1.5 percent tax for

the first five years of production and 5 percent thereafter. The five-year timeframe would include wells already drilled. The revenue would be split, with 36 percent going to environmental programs, including Growing Greener, the Hazardous Sites Cleanup Fund, the Fish and Boat Commission and other agencies; 32 percent to counties and municipalities impacted by natural gas drilling, with part going to the state Emergency Management Agency; and 32 percent to an education account, with two-thirds for basic education and the other third for community colleges and higher education.

Please see *Marcellus Taxation* on page 4

## House Debates Coal Ash Designation

Over two years since the coal ash spill in Tennessee that brought ash disposal to the nation's attention, the U.S. House of Representatives has held hearings pertaining to coal ash use and disposal.

EPA officials issued proposed coal ash regulations in June 2010 that included two options: One would designate the substance as a hazardous waste and mandate federal oversight; the other would allow voluntary compliance and put states in charge.

The most recent House hearing on coal ash, held April 14, focused on legislation that would ban the EPA from regulating coal combustion waste as a hazardous substance.



*Pieces of Wallboard made from coal ash*

Rep. John Shimkus, R-III, who chaired the hearing, handed out samples of wallboard and other products made with coal combustion waste.

Republicans are concerned that a hazardous waste designation would cost jobs by stigmatizing the use of coal ash in wallboard, concrete, and other commercial products.

Please see *Coal Ash* on page 3

## Terms, Definitions, and Regulations

This section will highlight various terms, definitions, or regulations that can be confusing – even to the experts! If you have any suggestions for future material to cover, please contact the editor at [Lauren@resourcetec.com](mailto:Lauren@resourcetec.com).

In this issue: Appraisal Definitions

HIGHEST AND BEST USE – According to The Appraisal of Real Estate Thirteenth Edition, Highest and Best Use is defined as: "*the reasonably probable and legal use of vacant land or an*

*improved property, that is physically possible, legally permissible, appropriately supported, financially feasible, and that results in the highest value.*"

In the determination of Highest and Best Use, five factors are considered:

- The use must be likely (i.e. not speculative),
- The use must be legal,
- There must be a demand for such use,
- The use must be profitable, and
- The use must provide the highest net return to the property as a whole, and the land in particular.

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"Practical Solutions for the Information Age"*

Please see *Terms* on page 3

*Coal Ash from page 2*

Dawn Santoianni, an engineer with Veritas Economic Consulting, testified that about 15 million to 20 million tons of coal waste would have to be sent to landfills each year if the waste is designated a hazardous substance. This would exhaust the remaining storage space in two years, she said.

She also said that utility costs would increase by about \$5.3 billion to \$7.6 billion per year, far higher than EPA estimates.

*Terms from page 2*

In all cases, the Highest and Best Use must be firmly grounded in the reality of market conditions. While various "hypothetical uses" may be considered (and may indeed reflect the considerations of willing sellers and buyers), the hypothetical use does not represent the market value of the property.

While the courts have consistently allowed significant latitude in the presentation of evidence to be considered in estimating the Highest and Best Use as well as the market value of a property, courts have emphasized that "*Elements affecting value that depend upon events or combinations of occurrences which, while within the realm of possibility, are not fairly shown to be reasonably probable, should be excluded from consideration, for that would be to allow mere speculation and conjecture to become a guide for the ascertainment of value--a thing to be condemned in business transactions as well as in judicial ascertainment of truth.*"

## Pricing Indexes

The most recent price index information for the raw materials that Resource Technologies Corporation frequently appraises, as of the date of this publication, is printed below.

### COAL PRICING

\$78.43/Ton (Central Appalachian Basin)

### NATURAL GAS

\$4.72/Mcf

### OIL

\$118.35/Bbl

### AGGREGATE

\$10.02/ton (East Coast)

### DIMENSION STONE

\$16.41/cubic foot

### BLUESTONE

Flagstone – \$1.75/ton

Pavers – \$3.00/square foot (1" thick)

*Marcellus Taxation from page 1*

**THE SCARNATI PLAN** – Jefferson County Republican and Senate President Pro Tempore Joe Scarnati has proposed a charge of \$10,000 per well, which would be adjusted based on volume and gas prices. The money collected is intended to off-set local impacts from drilling. This proposal is, of all of the proposals, the most like a fee rather than a tax – making it more likely to be approved by Governor Corbett.

**THE VITALI PLAN** – Rep. Greg Vitali, D-Delaware County, has proposed a 6% tax on the market value of natural gas. This proposal would collect \$200 million in 2011–12 and increase to \$420 million in 2015–16. One-third of the money would go to the state General Fund, one-third to local governments, and a third to environmental funds.

**THE FERLO PLAN** – Senator Jim Ferlo has introduced two bills pertaining to Marcellus Shale. The first, SB 906, calls for a one year moratorium on drilling.

## Oil and Gas Taxation in West Virginia

By Dave Falkenstern

RTC assists the West Virginia Department of Tax and Revenue with the valuation of Oil and Gas Properties as well as Coal Properties. Like Pennsylvania, West Virginia has a long history of oil and gas production and has seen a boom in the Marcellus Gas Play. Unlike Pennsylvania, West Virginia imposes a property tax on oil and gas wells (West Virginia Code 110-1J-1). Currently, there are over 55,000 active oil and gas wells in West Virginia, with over 600 producing gas from the Marcellus Shale.

For Property Taxes, West Virginia values both the Royalty Interest and the Working Interest of the well. Typically, the royalty interest is 12.5%. The Working Interest is the gross income of the well, less the expenses to run the well. On the high end, 30% of well income could be used to cover costs. This means at least 82.5% of a well's producing income is assigned to the property it is producing from. West Virginia Counties collect and utilize revenue generated from property taxes.

In addition to the property tax, West Virginia imposes a 5% tax on the gross value of the oil or gas produced which is distributed among all counties in West Virginia (West Virginia Code 11-13A-3a/5a).

The second, SB 680, calls for higher penalties for environmental violations, site safety regulations, and a severance tax that purportedly returns collected finances to local communities and environmental stewardship funds.

Despite the current lack of a “severance tax”, a recent Pennsylvania State University study showed that Marcellus Shale drillers generated \$785 million for the state last year. That figure includes corporate taxes, as well as income and sales taxes paid by employees. The study was funded by the Marcellus Shale Coalition.

Those in favor of a severance tax argue that it is needed to mitigate the environmental impact of drilling and hydraulic fracturing, or fracking, as well as the impact on local roads that comes from frequent use by heavy trucks moving drilling equipment and water.

## Marcellus Shale Appraisals

By Jeffrey R. Kern

The development of the Marcellus Shale as a viable horizon for the production of natural gas is a recent development in parts of Maryland, New York, Pennsylvania, Ohio, and West Virginia. The dense shale – generally located four to six thousand feet below the surface – is a rich source of natural gas. Geologic maps show that the shale lies beneath roughly 60 million acres across the five states. Recent estimates by geologists at SUNY and at Penn State place the total volumes of gas that might be economically produced from the Marcellus between 49 trillion cubic feet and more than 1,300 trillion cubic feet.



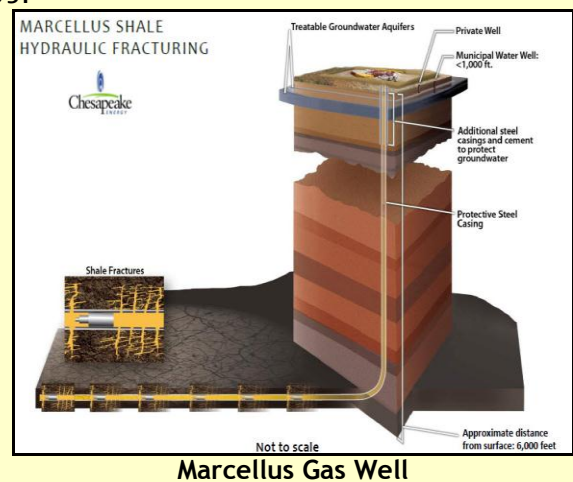
Marcellus Gas Map

Using the low-end estimate, the producible gas from the Marcellus represents about two years of U.S. gas consumption; at the high-end the horizon could contribute more than 50 years at current rates of consumption.

Why such variation? The Marcellus is still an "unknown" quantity, and estimates of the volume of gas that can be produced are not only

dependent on geologic and engineering knowledge, but also on predictions of the economics of oil and gas production and oil and gas markets. Estimates of how much of any mineral quantity may be produced are always delineated by the market as well as the geology.

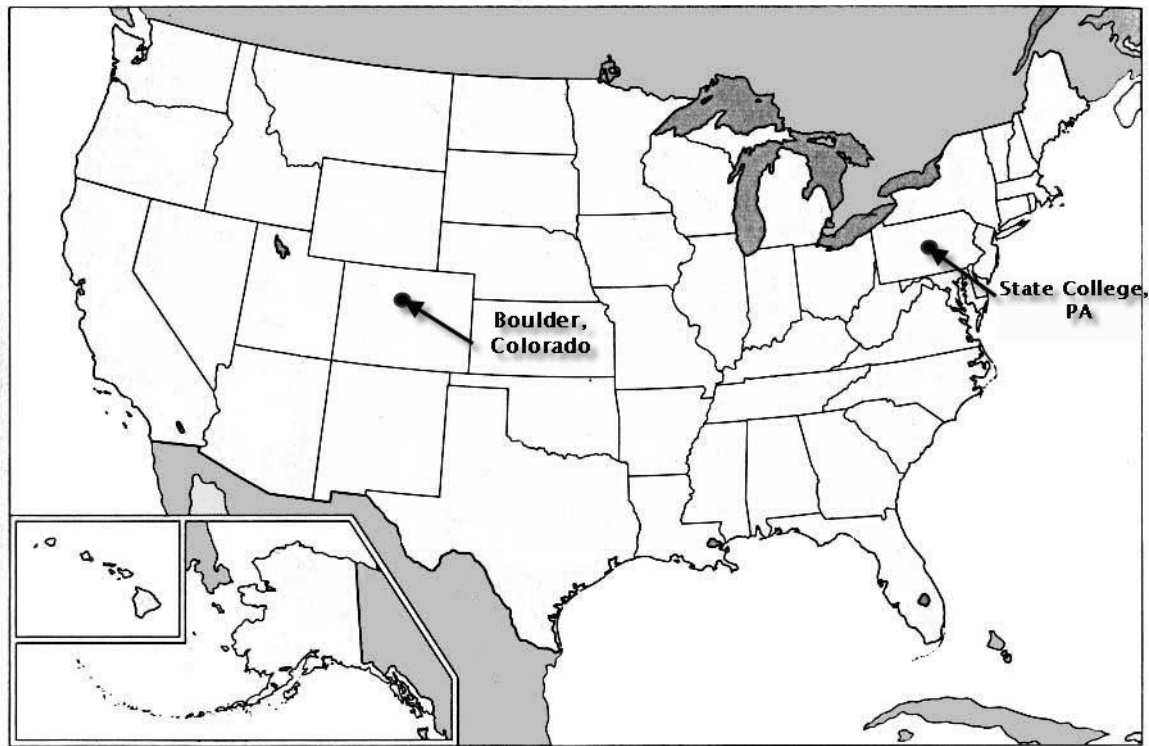
Access to the Marcellus is through the application of directional drilling and advanced hydrofracturing. While neither technology is new, the combined application to deep, dense shale was only perfected in the late 1990's and early 2000's. The technology, developed in Texas and Oklahoma, was first used to commercially produce gas in Pennsylvania around 2005.



The process allows the driller to liberate significant quantities of gas – between three and eight billion cubic feet – from one well bore. The well bore is usually drilled to a depth of four to six thousand feet and then is turned to drill horizontally through the Marcellus for a length of four to six thousand feet. A vast quantity of high pressure water carrying sand and various chemicals is then used to prop open fissures created in the shale – allowing the gas to escape into the well. The total cost of the site development, well drilling, hydrofracturing, and connecting to the gas transmission system varies from \$3.5 to more than \$5 million per well. The typical well exploits between 80 and 120 acres along the length of the horizontal well bore.

Please see *Marcellus Appraisal* on page 7  
*Marcellus Appraisal* from page 5

## Resource Technologies Office Locations



### PA Superior Court Rejects Indefinite Marcellus Gas Lease Clauses

The Pennsylvania Superior Court ruled, on January 11, 2011, that an oil and gas exploration's indefinite lease clause was invalid. The case, *Hite v. Falcon*, dealt with the following excerpt from a 2007 Falcon Partners lease:

“Lessee has the right to enter upon the Property to drill for oil and gas at any time [within one] year from the date hereof and as long thereafter as oil or gas or either of them is produced from the Property, or as operations continue for the production of oil or gas, or as Lessee shall continue to pay Lessors two (\$2.00) dollars per acre as delay rentals, or until all oil and gas has been removed from the Property, whichever shall last occur.”

Generally, oil and gas leases consist of two terms: a primary term and a secondary term. The primary term is typically fixed, and ranges from one to three years in most cases. The secondary term is generally indefinite, as long as gas is being produced “in paying quantities.” Unlike the secondary term, during the primary term a gas company has no obligation to

produce gas from the property. Instead, “delay rentals” have been used to extend the length of the primary term indefinitely – effectively extending the period of time that a company can hold a lease without actually producing gas.

This “delay rental” technique of holding a lease was employed due to the application of the “automatic termination rule.” Said rule mandates that if, at the end of a primary term, a property is still undeveloped/not producing, a lease is automatically terminated. See *Brown v. Haight*, 255 A.2d 508 (Pa. 1969) (“...when oil and gas were not produced in paying quantities, the grantee’s fee interest terminated automatically...”); *White v. Young*, 186 A.2d 919 (Pa. 1963).

From a landowner’s perspective, the sooner a company begins producing gas from their lease, the better: landowners and lessors are paid royalty payments based on gas production. Hence, if there is no production, the lessor has no income.

Please see *Indefinite Lease* on page 9

Typically, a well is drilled into a gas horizon that is not owned by the developer. The developer instead has a lease. The lease can be viewed as an option which, for a fee, gives the developer a set number of years to drill and produce. If a well is not drilled and produced during this time period, control of the gas reverts to the land owner. If the well is drilled and produced, the lease becomes perpetual, thus transferring the ownership of the gas (working interest) to the developer. The land owner is then paid a royalty, usually a percentage of the income (royalty interest) produced from a well (typically between 15 and 20% of adjusted gross income).

There is an obvious incentive for the developer to develop at least some gas from each lease. This may be accomplished with a well on a lease or a well that addresses a collection (unit or pool) of leases. Because of size, some properties can only support a portion of a well's production; large properties may be able to host multiple wells. The driller decides how, when, and to what extent to exploit each property based on lease requirements as well as technical, investment, capital, and other factors.

Well production is not stable – it decreases over time. When the well area is first drilled and stimulated, gas rushes to the well. Some wells produce more than one billion cubic feet (one million mcf) of gas in the first year. Production rapidly declines each year thereafter – by 35 to 55% by the second year, 20 to 30% in the third year, and at declining rates in subsequent years.

The well remains in production until the annual production no longer covers the operating and selling costs. For the Marcellus, production statistics and predictions (including total volume in place, ultimate producible amounts, and rates of probable production) are difficult to estimate. This is because, when compared to the extent of the field (60 million acres), only a few wells have been completed and none of them have produced for more than a few years.

Simple math shows that a well into the Marcellus can be a highly profitable endeavor, with gross incomes and royalty payments potentially exceeding \$25,000,000 and \$3,750,000, respectively. Of course, these incomes occur only when the well is producing. Most importantly, these gross incomes are the summation of payments that are predicted to occur over time. Because of the uncertainty of the market and of lack of certainty in the production and income flow, the income stream must be discounted significantly to estimate a present worth.

The Security and Exchange Commission requires that hydrocarbon reserves be reported as Proven Producing and Proven Non-Producing. Other classifications included Probable, Possible, and Speculative. These classifications are based on the quantity and quality of the geologic and engineering data available to describe the site. The commission requires that a different level of reserves be discounted by each classification. The IRS uses a similar approach to define the levels of probability of reserves to be brought on line.

Most importantly, not all leases (proven or otherwise) will be drilled today and not all properties will be fully developed. Given the number of drill rigs available in Pennsylvania (Figure 4, from Baker Hughes Rig Count<sup>1</sup>) and the length of time needed to obtain and prepare a site, drill a well, stimulate production, and tie the well into a transmission system, there is enough undrilled land to sustain drilling into the Marcellus for at least 50 years. Statistically, each property has a 2% chance of being drilled. The question to be addressed is: which site will be drilled when?

In estimating when a property is likely to be drilled, it is useful to look to the market:

- Are there capital investments nearby that can be amortized through local production (compressor stations, processing facilities, etc)?
- Are there transmission pipelines or gathering systems available to ship the gas

to market?

- Has production proven to be higher or lower than average in this geographic area?
- Is the lease about to expire? In other words, if drilling is delayed will the option revert to the land owner exposing the lease to competitive renegotiation? Many drilling companies are frantically in the process of attempting to hold as many leases as possible by drilling and producing throughout the state.

In short, not all properties are the same. Because of the recent nature of the effort, the appraiser must look to other shales that have been developed (Texas and Oklahoma). Because of the sheer size of the Marcellus area, the appraiser must emphasize time in developing cash flows and related discounts. Because of the uncertain nature of the unseen resources, the appraiser must rely upon geologic and engineering tests as referenced by the SEC and the IRS. Finally, given the vast quantity of Marcellus and the vast quantity of other shales below the Marcellus and located in other regions of the U.S. the appraiser must recognize that this new technology has resulted in a flood of natural gas that is likely to hold down prices for the foreseeable future.

*[Further installments of this article will appear in subsequent issues of the newsletter.]*

### Staff Corner:

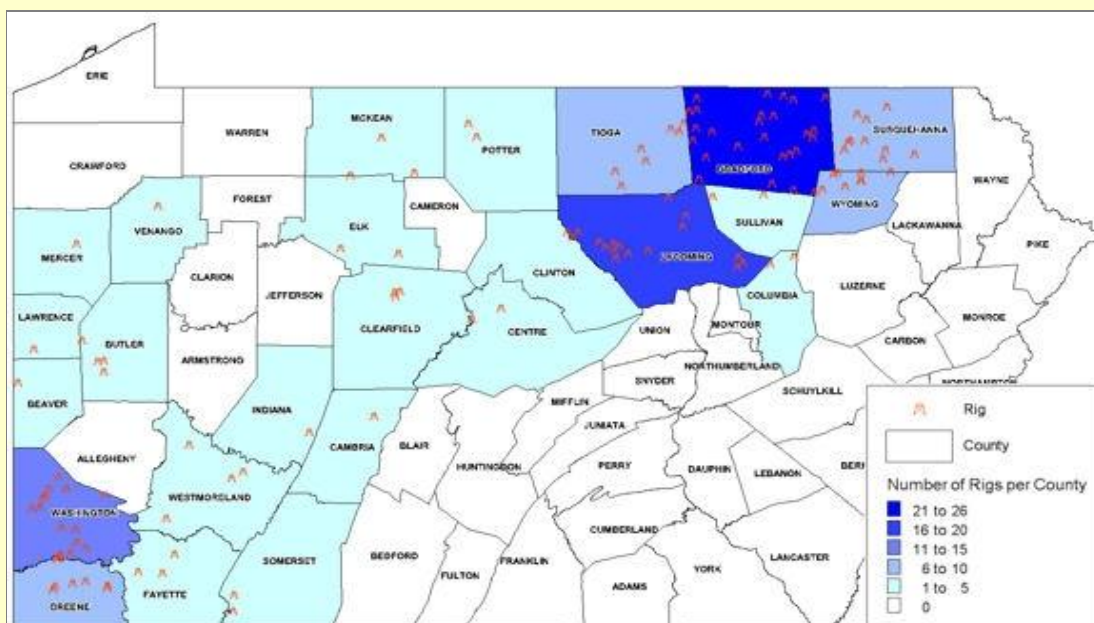
Each month a different key member of our staff will be featured, detailing their education, expertise, and interests. To start off, we'll introduce you to the founder, owner, and chief appraiser of Resource Technologies Corporation, Jeffrey R. Kern.

Jeffrey R. Kern received his bachelor's degree in Political Science and Geology from Dickinson College in 1973. He went on to receive a Graduate degree from the Pennsylvania State University in Regional Planning, with an emphasis on Resource Economics and Public Administration.

Mr. Kern founded Resource Technologies Corporation over 30 years ago after working for an appraisal firm and deciding that natural resource appraisals could be tackled a different and better way.

He currently holds several professional certifications, and is a Senior member of the American Society of Appraisers, a Certified General Appraiser in many states, a designated member of the American Institute of Mineral Appraisers, and has been on the Board of Directors of the International Mineral Economics and Management Society.

Mr. Kern lives in State College, Pennsylvania with his wife, Jerrilyn. He is also blessed with two children (Joshua and Lauren), two children-in-law (Tara and Michael), and one grandson - named Jeffrey, after his grandfather.



Marcellus Shale Rig Count (by county)

*Indefinite Leases from page 6*

The disputed issue between Hite and Falcon was whether the plaintiffs were permitted to terminate the leases, despite a provision in the leases that allowed Falcon to continue to pay \$2 per acre, per year, as delay rental.

The court determined that it was the parties' original intention to accomplish certain drilling operations on the land owners' properties within the first year of the lease — not for the properties to sit idle for six to seven years. The court reasoned that if the parties originally intended for a lease to extend indefinitely for \$2 per acre per year, there would be little need for the parties to agree to the initial one-year lease term in addition to the delay rental. Furthermore, the Superior Court stated that since the intention of a delay rental is to "spur the lessee toward development," it would be contradictory to the opinion of the courts of Pennsylvania to allow Falcon to pay delay rental indefinitely.

Hite v. Falcon Partners may have a significant impact on present and future oil and gas leases for Marcellus Shale drillers and land owners alike. Lessees who have not initiated exploratory or



drilling operations, and who are beyond an initial lease term, may be in jeopardy of losing their property rights if owners are successful in terminating leases before production commences. Lessors and lessees that intend to use a delay rental provision to extend their lease term must take this ruling into account when drafting their new agreements, explaining clearly their intentions, to avoid an unintended termination. Lessees may also consider drilling sooner, rather than later, to preserve their gas rights. The case may be subject to appeal to the Pennsylvania Supreme Court.

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