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Posted at 10:15 AM ET, 08/26/2011

Hold off on those shale gas obituaries

By Brad Plumer

This week's natural gas headlines are awfully gloomy: "U.S. to Slash Marcellus Shale Gas Estimate 80%," writes Bloomberg. "Geologists Sharply Cut Estimate of Shale Gas," declares the New York Times. The stories, based on a new report from the U.S. Geological Survey, all suggest that the United States might have far, far less natural gas — which is expected to provide a cheap, abundant energy source in the decades to come — than previously thought. Terrible news, right?

Well, hold up. As it turns out, some of those stories may have been somewhat premature — and appear to be based on a slight misunderstanding of the USGS survey.

Here's some rough background:

Ten years ago, few people believed that much natural gas could ever be extracted from the hard shale rock in the Marcellus formation that spans much of the Northeast. A 2002 USGS survey estimated there was only about 2 trillion feet of recoverable gas. Then, hydraulic fracturing technology got dramatically better, and experts realized a great deal more gas was in play. In 2008, Penn State geologist Terry Engelder began publishing estimates suggesting that the Marcellus contained a jaw-dropping amount of natural gas out there — his 2009 study suggested 489 trillion cubic feet, enough to satiate the country's gas needs for the next 20 years. That, in turn, set off a drilling frenzy in the region. Earlier this year, the Energy Information Administration echoed Engelder's work by estimating that the Marcellus contained 410 trillion cubic feet of recoverable gas.



(The Washington Post)

Now along comes Tuesday's USGS survey with a new topline number: 84 trillion cubic feet. That's a lot of gas, by any measure. But it's also far less than 410 trillion or 489 trillion. So doesn't this vindicate earlier (and oft-criticized) reporting by Ian Urbina of the New York Times that both the government and the gas industry have been exaggerating shale gas resources?



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A few caveats. As Brenda Pierce, program coordinator for the USGS energy resources program told me, it's important to do an apples-to-apples comparison here. The USGS and EIA aren't measuring the same thing, exactly: The USGS offered an estimate of *undiscovered* resources that can be recovered with current technology, whereas the EIA report looked at both "active" and "undeveloped" reserves together. "Ours is additive to what's already in production," explains Pierce.

So the USGS only surveyed a subset of what the EIA had been measuring. Although the comparison isn't perfect, USGS's figure of 84 trillion cubic feet can be lined up against the EIA's 232 trillion cubic feet of "undeveloped" reserves. What's more, Pierce notes, the 84 trillion cubic feet is a mean estimate—the USGS survey's estimates ranged from 43 trillion to 144 trillion cubic feet. So the downward revision could end up being less stark than early media reports implied. Currently, USGS and EIA are working to reconcile the two studies, which will take a few weeks, and we'll have to await the end result.

Meanwhile, Penn State's Terry Engelder says that the new USGS report wasn't necessarily incompatible with his own research. "They have only included part of the sum, so of course it's going to be smaller," he says. He also pointed to differences in modeling for how production at gas wells decline over time: Engelder's study uses a more optimistic curve than the USGS's conservative model. "It's important to note that gas yield production is still very immature. We don't know for sure what the truth is here," Engelder explains. "It's possibly between the optimistic and conservative projections."

In any case, there's a lot more work to be done in figuring out just how much gas is out there — and how much can be drilled at a profit (the USGS focused on how much gas could technically be extracted, not how much gas could be *profitably* extracted, an important distinction). Estimating reserves [is a rough art](#), and the New York Times has raised sharp questions about how the government calculates its numbers. And it's crucial that those numbers are as firm as possible, given the giant role shale gas is likely to play in energy policy for years to come.

(Meanwhile, there's the separate — but no less controversial — question of whether hydraulic fracturing can be pursued in a safe and ecologically sound manner. Bryan Walsh recently wrote a [nice piece](#) on that topic in Time.)

By [Brad Plumer](#) | 10:15 AM ET, 08/26/2011

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RobertHarrisGardner wrote:

I'm not so sure about some of this article. It is in the interest of the natural gas industry to speculate as highly as possible about the resources that they can economically recover. EIA is in the same boat there. The more we learn about the amounts of gas out there and what we can recover without completely destroying our water supplies, the more natural gas looks like a bad option. Why are we basing our future on reports generate by those that stand to benefit mostly by fudging the numbers?

Before we let the driller loose throughout the Marcellus, let's get a more complete story of exactly what the potential costs of drilling are.

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8/26/2011 5:29:50 PM EDT

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VWWV wrote:

they're allowed to pollute water supplies. Legally allowed

8/26/2011 5:37:13 PM EDT

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Report



postmoderator wrote:

This comment has been deleted by a moderator for violating the site's [discussion policy](#).

8/26/2011 4:54:44 PM EDT



riposter55 wrote:

I agree with thomas001, this is a disappointing article. Oil and gas reporting is difficult but the Post needs to take more time in understanding the issues. First of all you need to understand that reserves, (not resources) are the important metric in natural gas. Resources are the amount of gas in the ground, reserves are the amount you can actually get to economically. Investors count on reserve numbers because they factor in more information than the resource estimates (like the cost of extraction). The EIA has been rightly criticized by the Times because they made huge miscalculations, as the new USGS numbers show. Jon Cogan, spokesman for EIA said :

"Incorporating the new USGS resource assessment will lower the assumptions about the technically recoverable natural gas resources in the Marcellus that will be used in the next Annual Energy Outlook."

Bottom line, the industry and EIA have exaggerated the amount of gas they can extract, which calls in to question the bright n' shiney gas fueled future they have invested so heavily in. EIA has tacitly admitted this by dropping their estimates. Like Engelder said: " We don't know for sure what the truth is here."

8/26/2011 4:54:19 PM EDT

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jglasson wrote:

The recent This "Fracking" American Life episode seemed to question the neutrality of the Penn State position on fracking. Environmental arguments get discounted quickly. Economic ones seem to fare better. A large group of investors recently filed a lawsuit against a major gas developer over misrepresenting the economic viability of the shale drilling operations.

8/26/2011 4:43:10 PM EDT

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Report



RockDoc2 wrote:

This article is highly misleading. It implies that the EIA's 232 Tcf of "undeveloped resources" is additive or somehow comparable to the USGS 84 Tcf of undiscovered resources. In reality, the actual discovered "reserves" booked for the SEC by companies are very small compared to the undiscovered resources quantified by the USGS - so the 84 Tcf is only a slight understatement of the potential resource. Engelder's statement that "they have only included part of the sum" is true, yet the part that is not included is very small - hence Engelder's estimates are vastly overstated. Engelder's grossly overstated technically recoverable resources are also "P50" numbers, as is the 84 Tcf estimate of the USGS.

With regard to the credibility of resource estimates coming out of the EIA, one is reminded of the statement of senior EIA analyst David Morehouse in April of this year who states in the NYTimes emails released as part of its "drilling down" series that the "EIA is "NOT TECHNICALLY COMPETENT to estimate the undiscovered resources of anything made by Mother Nature, period".

The USGS estimates are without doubt the most rigorous released to

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date, and the amount of discovered reserves in the Marcellus not included in the 84 Tcf USGS estimate is perhaps a couple of Tcf at most, not the huge discrepancy implied by this article.

8/26/2011 3:41:13 PM EDT

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Thomas001 wrote:

I fear you may have conflated two categories relating to natural gas drilling. And this conflation has led to much of the confusion surrounding the topic. After pointing out the new numbers from the USGS, you write: "So doesn't this vindicate earlier (and oft-criticized) reporting by Ian Urbina of the New York Times that both the government and the gas industry have been exaggerating shale gas resources?"

It is actually a pretty clear vindication of The Times' reporting. The Times heavily criticized the EIA for depending on data supplied by contractors, when internal agency emails showed strong doubts about those numbers. The USGS numbers indicate that the very numbers that were supplied by an industry-tied contractor -- the very contractor named in the Times story -- turned out to have been massively optimistic.

At root, the problem here, I think is that you misunderstand the difference between reserves and resources and the focus of the Times' fairly ground-breaking investigative reporting. The Times investigative reporting did not challenge the resource numbers. They focused on reserve numbers. To remind: Resources = how much gas in the ground. Reserves = how much gas can profitably be pulled from the ground.

In particular, the Times reported on doubts about the way gas companies are estimating their reserves. It's important to realize: reserves are far more important than resources not only because investors count on those numbers, but also because they're supposed to account for more variables, like the costs of production and whether companies can afford to pull the gas from the ground. That there is a lot of gas in the ground only really matters if it can be affordably extracted, right?

As Brenda Pierce rightly pointed out in your post, it's important to avoid an apples-to-oranges comparison. But the bigger point you seem to miss is that the EIA has decided to abandon its oranges so as to instead use the USGS' apples. By that I mean: the EIA plans to drastically drop not only its own resource numbers for the Marcellus, but also to update its estimates for how much of a role shale gas can play in the nation's energy portfolio. Isn't that an important development? Neither Bloomberg nor the Times said that the USGS were measuring the same thing or in the same way as the EIA. Both stories simply said that the EIA was having to drastically alter the stats it was going to use for the Marcellus.

It all goes to show that there is major uncertainty in the estimates that EIA has used and their resource estimates may have been overstated. It also goes to show that there should be more discussion of the difference between reserves and resources going forward.

8/26/2011 2:44:34 PM EDT

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Report



BradPlumer wrote:

I'm not sure we disagree on much here. You're right that I could've (and should've) been clearer on stating the difference between resources and reserves, but the main point is that comparing the 84 trillion to the 410 trillion, as most of the early stories did, is not quite the way to go. I agree that there's likely going to be a revision downwards, but 80% seems unlikely--at least according to USGS (though, as noted, they need to take a few weeks to reconcile the two reports)

8/26/2011 5:39:48 PM EDT

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VWVV wrote:

Fracking technology didn't suddenly improve, it was exempted from the Clean Water Act reporting standards. Their liability for their own pollution was wiped off their books so suddenly it became feasible.

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Being from West Virginia, I'm pretty familiar with who ends up paying the costs.

8/26/2011 2:13:08 PM EDT

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bannedagain5446 wrote:

Brad:

If you look into it you will find that the EIA estimates in all areas are considered to be so optimistic as to worthless for anything but media purposes, and never used by people who work in the business among themselves. This isn't a comment on how much nat gas is available, but rather where not to look for information.

How much nat gas is available as with every other commodity, is a function of price.

8/26/2011 11:01:07 AM EDT

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Report



BradPlumer wrote:

That could be (and probably is) true, but the early stories that reserves have been slashed 80% were slightly offbase. It's going to take a bit of time to get a better sense for the numbers.

8/26/2011 11:06:19 AM EDT

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bannedagain5446 wrote:

You probably already have too much reading on your plate, but two more or less opposing bookends are *The End of Oil*, by Paul Roberts, and *Power Hungry* by Robert Bryce.

Twilight in the Desert by the late Matthew Simmons is also a must read. For sheer heft though, nothing beats Daniel Yergin's classic *The Prize*, which I am sure you have already read.

8/26/2011 11:20:58 AM EDT

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3 more (expand)



LowlyVigneron wrote:

Regardless of whether the better number is 82tcf or some other number far less than 232 tcf, as RockDoc and Thomas001 make clear here, the Saudi Arabia of NG, America is not.

I am curious what effect the lowered estimates will have, for instance, on the way utility managers think about "switching over" to NG for electricity generation right now with new EPA impacts pending? Industry would like us to "start a conversation" about the switch-over, as their current TV ad blitz desperately recommends. But don't utilities need reliable supply at, most of all, predictable prices?

8/26/2011 9:46:00 PM EDT

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