



## Department of Energy

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Dear *Nature* editors,

The December 4 news feature "The Fracking Fallacy" (*Nature*, Volume 516, pages 28-30) and a related editorial (*Nature*, Volume 516, page 7) focus on an imagined "battle of forecasts" of shale gas production developed by the U.S. Energy Information Administration (EIA) and the Bureau of Economic Geology at the University of Texas at Austin (BEG/UT). The article badly misconstrues the actual relationship between EIA and BEG/UT research efforts, which are complementary rather than competitive. It also provides a very misleading view of this very important subject matter to readers of *Nature*, most of who will lack field-specific knowledge and rely on the *Nature* brand to assure they are getting accurate reporting in an appropriate context.

We agree with *Nature* on some points, including that the rapid growth of shale gas production since 2007 was not anticipated in earlier projections by EIA or most others, that U.S. shale gas production in recent years has generally surprised to the upside, and that the outlook for future U.S. shale gas production is uncertain. EIA's recognition of uncertainty is one of our key motivations for providing a variety of scenarios for shale gas production (Reference, Low Resource, and High Resource cases) in its Annual Energy Outlook. Contrary to the presentation in the *Nature* article, EIA does not characterize any of its long run projection scenarios as a forecast.

In addition to repeatedly misconstruing EIA's Reference case projection as a forecast, the article is filled with inaccurate and distorted reporting. For example, the figure in the "Battle of the Forecasts" box shows a year 2030 value for EIA about 130 to 140 billion cubic meters above the value shown for "UT total of 4 plays" and about the same amount below the two industry analyst estimates shown. It is unclear how the same gap represents a battle between BEG/UT and EIA projections while industry forecasts are characterized as "generally falling in the neighborhood of the EIA assessment." It is also unlikely that readers will understand that the line for the BEG/UT scenario that is presented in the same figure is not actually derived from the published papers cited in the article, but reflects the work of the reporter based on his interpretation of ongoing work-in-progress.

The article relies heavily on Professor Patzek in describing the work of the BEG/UT team and its implications. He is quoted 6 times, including a statement that "we're setting ourselves up for a fiasco" that *Nature* presents in giant typeface on the third page of the article. From our interactions with the



BEG/UT team; we understand that Patzek, who is listed as an author of only one of the five BEG/UT papers included in the references, has a relatively small role in the BEG/UT project funded by the Sloan Foundation featured in the article. Towards the end of the article, there is a brief mention of (Scott) Tinker, identified as another member of the BEG/UT team, who is described as having argued “that the team’s estimates are conservative, so actual production could turn out to be higher.” Professor Tinker and Dr. Svetlana Ikonnikova, who is not quoted in the article, are actually the two co-Principal Investigators on the Sloan-funded BEG/UT project. Given the presentation in *Nature*, I doubt that readers would understand the relative roles of Patzek and Tinker, who clearly have different perspectives, in the BEG/UT work being discussed.

Since opinions expressed on the availability of shale gas in the article may reflect views beyond the specific content of the BEG/UT and EIA studies that are its focus, it might also be appropriate for the article to inform readers that Patzek is a leading figure in the peak oil community, which emphasizes concerns related to limitations on the availability of hydrocarbon resources. Patzek’s personal website ([gaia.pge.utexas.edu](http://gaia.pge.utexas.edu)) notes that he currently serves as President of the Association for the Study of Peak Oil.

EIA would expect a journal of *Nature’s* reputation to adopt a scientific approach to journalism, pursuing information and having the story follow where the information leads, rather than selectively collecting information and sources to fill what appears to be a dramatized story line built around the journalistic device of a (false) conflict meme. Specific concerns include:

- The article radically oversimplifies the matter at hand through its exclusive focus on the use of larger or smaller areas (county vs. square mile) in the EIA and BEG/UT studies. In fact, many other factors, including well-spacing, rates of technology improvement, drilling costs, price scenarios and shared infrastructure across plays (for example, the key Marcellus play overlaps the Utica play, which was not part of the BEG/UT model but is accounted for in EIA modeling) that can significantly affect future production.
- The article cites unpublished information obtained from EIA as if it was somehow hidden or sensational, despite the fact that this more disaggregated information is routinely made available upon request, with EIA staff having provided it 30 to 40 times since the publication of our 2014 projections.
- The article implies that what it sees as deficiencies in EIA’s work can be traced to funding shortfalls. To be clear, EIA stands behind its work, which will continue to evolve over time, and does not plead poverty, notwithstanding the author’s repeated and unsuccessful efforts to solicit EIA staff for statements that the agency lacked adequate resources.
- The article cites an October 2014 EIA staff working paper (*Improving Well Productivity Based Modeling with the Incorporation of Geologic Dependencies*) as a case in which “two EIA analysts acknowledge problems with the agency’s methods so far.” The characterization of efforts to evaluate new methods as evidence of problems with existing EIA methods (and, as evident in the article, with current results) is somewhat troublesome given that the pursuit of improved methods by EIA, by BEG/UT, and by researchers across broad areas of inquiry is a key part of the scientific process.

- The article inaccurately states that a study of international shale resource commissioned by EIA “does not state a range of uncertainty on its estimates, nor how much gas might be economical to extract.” That study, which was intended to place new information on shale resources into the public domain to spur a continuing process of ongoing improvement and refinement of knowledge, actually devotes a full chapter to methodology, lists the assumed risk factors (i.e. uncertainty) for each formation (in Attachment B of the study), and explains why estimates of economically recoverable volumes are not provided.
- *Nature* chose a sensational title “The Fracking Fallacy,” but fails to ever identify that fallacy.

While recognizing that different standards apply to editorial opinions and news features, the article and the accompanying editorial (*The uncertain dash for gas*) appear to function as an integrated newsatorial. The editorial portion of this duet makes some very sweeping assertions that merit close scrutiny. For example, it laments the fact that governments and companies wager billions of dollars on dubious bets (on shale gas). But what exactly should industry be doing to meet energy needs? It frets about technological lock-in, oblivious to the fact that natural gas development entails relatively low levels of lock-in, as demonstrated by the titanic shifts that have occurred in the United States over the past decade, including the repurposing of terminals for liquefied natural gas (LNG) imports for proposed LNG export facilities, reversals and repurposing of pipelines to accommodate shifting production. While there will undoubtedly be losing investments in natural gas (and in other energy technologies such as nuclear, biofuels, and renewables), does *Nature* really suggest that we take a time out until uncertainty is resolved? And, despite the views expressed by writers of the feature and the editorial, uncertainty regarding prospects for natural gas supply will continue to be two-sided, with upside as well as downside possibilities.

From EIA’s perspective, the situation has an element of what Yogi Berra, the American baseball player famed for his catchy phraseology, once described as “déjà vu all over again.” In June 2011, the New York Times (NYT), published two articles “Insiders Sound Alarm Amid a natural Gas Rush” (June 26) and “Behind Veneer, Doubt on the Future of Natural Gas” (June 27). The NYT’s public editor, who acts as an ombudsman on behalf of the readers, responded to these articles with two columns (July 16 and July 30, 2011) that found both the content of the articles and the reporting methods to be deeply flawed, in many instances for the same reasons that motivated this response to *Nature*’s December 4 article.

In light of the above concerns and those of our BEG/UT colleagues, we respectfully suggest that *Nature* should recognize the shortcomings of the December 4 news feature on shale gas supply in the United States and provide its readers more insightful and scientific coverage of this important topic. Publication of this letter by *Nature* will be only a first step in this direction.

Sincerely,



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