Catskill Citizens
FOR SAFE ENERGY

P.O. Box 103
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January 2, 2013

Jonathan Levy, Policy Advisor
Domestic Policy Council
The White House
Washington, D.C. 20502

Dear Mr. Levy:

I appreciate your taking time to meet with us to discuss the procedure DOE will use to formulate a policy on liquefied natural gas exports. I also appreciate the fact that the public has an opportunity to comment on the recently released macroeconomic study by NERA consultants, but I remain concerned that the administration may not address the full spectrum of issues that needs to be considered if we are to develop a responsible export policy. While I intend to use the appropriate forum to comment on the NERA study, I would also like to call your attention to some other issues that deserve as much attention as economic impacts.

As you know, the United States has always been a net importer of natural gas; we can become a net exporter only if we ramp up production of shale gas—and that means increasing drilling and hydraulic fracturing here at home. The health and environmental impacts of these extraction activities must be weighed in the balance to determine if exporting gas is really in the national interest. Moreover, the administration needs to carefully consider whether or not an increasing reliance on shale gas will contribute to climate change.

In recent weeks, two regional EPA offices and the state of Oregon joined scientists, medical professionals, environmental organizations, and other stakeholders in calling for a thorough review of so-called "upstream" impacts before licenses are granted for the construction of liquefaction plants, export terminals, and associated pipelines.

- In scoping comments submitted to FERC regarding the Cove Point Liquefaction Project in Maryland, EPA Region 3 recommends *". . . assessing the cumulative environmental effects from implementation of the proposed project . . . focusing on communities of concern or resources 'at risk'. . . ."*

- Similarly, EPA Region 6 stated that a whole host of environmental impacts should be considered in evaluating the license application of the Lake Charles LNG Liquefaction Project in Louisiana.

- On December 19, 2012, the state of Oregon, in scoping comments to FERC regarding a pipeline project and LNG terminal, called for *a "full and fair look at environmental impacts."* It also pointedly called on USDOE to *"abandon their previous practice of issuing conditional orders before receiving authorizations delegated to the state under the Clean Water Act (CWA), the Coastal Zone Management Act (CMZA), and the Clean Air Act*

> *(CAA)."* It went on to say that such conditional orders *"violate substantive provisions of those federal laws"* and *"are arbitrary and capricious, because no balancing of the public interest can be made regarding the construction of the proposed LNG export terminal and pipeline before the Commission has quantified and considered the full extent of the benefits and adverse impacts, including socioeconomic impact on landowners and public safety risks associated with the overall project."*

No one who has taken even a cursory look at gas extraction can honestly claim that the process is well regulated at either the state or federal level. Under a provision of the Bush-Cheney 2005 Energy Act, hydraulic fracturing is exempt from the Safe Drinking Water Act (SDWA), but that's just the tip of the iceberg. The industry is also exempt from important provisions of the CWA, the National Environmental Policy Act (NEPA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and dozens of other federal statutes and regulations. All too often these federal exemptions have their counterparts in exemptions from state laws.

This lack of adequate regulation makes it even more important that the administration carefully consider the health and environmental impacts of gas extraction before permitting gas to be shipped overseas. Major areas of concern include the following known risks:

Water Contamination

EPA first discovered that drinking water had been contaminated by hydraulic fracturing in 1984, before the advent of high-volume "slickwater" fracturing, which is now the prevailing technology. Today, developing even a single slickwater, high-volume, hydraulically fractured (HVHF) horizontal well requires injection into the ground of millions of gallons of toxic fluid.

Last year, EPA found fracking chemicals in drinking water in Wyoming, and fracking has been linked to more than a thousand instances of water contamination around the country. The full extent of contamination incidents is unknown, because the gas industry typically settles damage claims by requiring victims to sign nondisclosure agreements (NDAs). Carla Greathouse, author of the EPA report describing the 1984 contamination incident, expressed concern about NDAs, saying, *"I still don't understand why industry should be allowed to hide problems when public safety is at stake. . . . [I]f it's so safe, let the public review all the cases."*

Earlier this year, a peer-reviewed study[1] conducted by scientists at Duke University and California State Polytechnic University and published in the *Proceedings of the National Academy of Sciences* found *"geochemical evidence from northeastern Pennsylvania showing that pathways, unrelated to recent drilling activities, exist in some locations between deep underlying formations and shallow drinking water aquifers."* Of course, if existing pathways between target drilling formations and water aquifers exist naturally, then water supplies can become contaminated even if drilling and fracking do not create new migratory channels.

Yet another recent peer-reviewed study[2] found *"systematic evidence for methane contamination of drinking water associated with shale gas extraction."*

An ongoing EPA study is assessing the impact of fracking on water supplies according to a number of criteria, including the impact of large-scale water withdrawals, contamination from surface spills, underground fluid migration, and wastewater disposal. Until the results of this study are known, it would be foolhardy to increase shale gas production merely to satisfy overseas markets.

Air Contamination

Shale gas extraction contaminates the air in several ways. First, the huge volumes of fluid needed to develop hydrofracked wells often must be transported to the wellpad by diesel trucks.

Supplying fluid to a single wellpad can require hundreds or even thousands of truck trips. It's no exaggeration to say that some rural communities subjected to fracking have ozone levels higher than those of Los Angeles on a bad day.[3]

Second, extraction releases huge quantities of volatile organic compounds (VOCs) and other contaminants into the atmosphere at the wellhead. A recent peer-reviewed study[4] by Theo Colborn et al. detected thirty-nine VOCs, nine carbonyls, and thirteen polycylic aromatic hydrocarbons in air samples taken in the vicinity of drilling operations in western Colorado. Formaldehyde, toluene and napthalene were among the chemicals detected in every air sample. Each is known to affect the nervous system, the respiratory system, the kidneys, and the liver. Formaldehyde and naphthalene are carcinogens; all three are endocrine disruptors.

The Colborn study concludes by noting that

> … as natural gas development and production continues to spread across the land it is moving closer to homes, schools, and places of business. At the same time more and more raw gas will be released into the atmosphere on a steady, daily basis.

This trend would only be accelerated by shale gas exports, yet we still don't understand the full long-term health impacts associated with exposure to these airborne contaminants.

The Greenhouse Gas (GHG) Footprint of Shale Gas

The comfortable notion that relying on shale gas instead of coal will help slow climate change has been refuted by several recent scientific studies. An influential peer-reviewed study[5] by Robert Howarth et al. concluded that

> The footprint for shale gas is greater than that for conventional gas or oil when viewed on any time horizon, but particularly so over 20 years. Compared to coal, the footprint of shale gas is at least 20% greater and perhaps more than twice as great on the 20-year horizon and is comparable when compared over 100 years.

Scientists reached this conclusion because welhead emissions of methane (a potent GHG) are much greater from shale gas wells than from conventional wells, and also because there are significant fugitive emissions throughout the entire natural gas transmission, storage, and distribution system.

Another study[6] (also co-authored by Howarth) concludes that methane will be *"responsible for nearly half the warming impact of current U.S. emissions over the next 20 years*" and that *"methane emissions from natural gas systems contribute 17% of the entire GHG inventory of the U.S."*

These studies demonstrate the need for further research, not increased shale gas extraction.

Extraction Impacts on Local Economies

Another "upstream" impact to be considered is the effect that extraction will have on local economies. This was ignored in the NERA study. There is a considerable body of literature that indicates extractive industries cause a boom/bust cycle that often results in a net long-term negative economic impact on host communities. In some instances sustainable economic sectors such as tourism or agriculture may be irreversibly damaged, because dangerous and polluting high-impact industrial activity degrades air quality, water quality, and viewscapes.

Tens of millions of Americans live "on the shale"; tens of millions more rely on water supplies that flow from regions targeted for shale gas extraction. All Americans are liable to be harmed by

contaminated air and by extreme weather events precipitated by climate change. Before any decision is made regarding exporting LNG, Americans are entitled to a full and frank public discussion of *all* the probable impacts of extracting gas and shipping it overseas.

I thank you for your time and attention.

Sincerely,

Bruce Ferguson Catskill Citizens for Safe Energy (an all-volunteer grassroots organization)

Notes

1. “Geochemical evidence for possible natural gas migration of Marcellus Formation brine to shallow water aquifers,” by Nathaniel R. Warner, Robert B. Jackson, Thomas H. Darrah, Stephen G. Osborn, Adrian Down, Kaiguang Zhao, Alissa White, and Avner Vengosh in *PNAS,* July 9, 2012.

2. ”Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing,” by Stephen G. Osborn, Avner Vengosh, Nathaniel R. Warner, and Robert B. Jackson in *PNAS*, May 9, 2011.

3. ”Wyoming’s smog exceeds Los Angeles’ due to gas drilling,” *USA Today*, March 11, 2011.

4. “An exploratory study of air quality near natural gas operations,” by Theo Colborn, Kim Schultz, Lucille Herrick, and Carol Kwiatkowski.” Peer-reviewed and accepted for publication by *Human and Ecological Risk Assessment.*

5. “Methane and the greenhouse-gas footprint of natural gas from shale formations,” by Robert W. Howarth, Renee Santoro, and Anthony Ingraffea. *Climatic Change*, DOI 10.1007/s10584-011-0061-5, received November 12, 2010; accepted March 13, 2011.

6. “Methane emissions from natural gas systems,” *b*y Robert Howarth (Cornell University), Drew Shindell (NASA Goddard Space Institute), Renee Santoro (Cornell University), Anthony Ingraffea (Cornell University), Nathan Phillips (Boston University), and Amy Townsend-Small (University of Cincinnati). Background paper prepared for the National Climate Assessment, reference number 2011-0003, February 25, 2012.