Energy in Depth

New Report: Texas Oil and Gas Being Developed Responsibly, With Positive Economic Impacts

7:07am EDT June 19, 2017

 **by Amy Brown**
amy@energyindepth.org, Houston, TX

The Academy of Medicine, Engineering and Science of Texas (TAMEST) on Monday released its two-year study analyzing the overall impacts oil and gas development has had on Texas. And while the study does identify some data gaps and areas of concern – most of which are being addressed by state and federal regulators – the bulk of the report is positive in tone, showing that fracking is being done in a safe, environmentally friendly manner and having tremendous positive economic impacts in the Lone Star State.

Task Force Chair Dr. Christine Economides from the University of Houston explains on the group's website:

"The development of vast deposits of oil and gas in the Lone Star State has had a tremendous impact on the state's economy and the lives of everyday Texans, and provides an opportunity to learn. This task force will report findings from studies in Texas, and identify the missing gaps in our knowledge. This will help improve practices for the industry, inform our society and improve policies for the regulators and lawmakers that oversee it."

The TAMEST team was comprised of academics from a wide range of universities, industry experts and state regulators. Here are some of the top findings from the report:

Water Quality & Quantity

This TAMEST study joins a growing body of research demonstrating that fracking is not a significant threat to drinking water supplies, explaining:

"Direct migration of contaminants from targeted injection zones is **highly unlikely to lead to contamination of potential drinking water aquifers**." (pg. 128)

The study also states,

"In a study of 211 ground water contamination incidents in Texas associated with oil and gas activity (Kell, 2011) only 10 incidents were associated with well drilling and completion and **none were associated with stimulation (hydraulic fracturing)**." (pg. 123)

This study adds to a list of reputable studies by no fewer than seven government agencies and several academic institutions have concluded fracking is not a major threat to drinking water. Most notable is the U.S. Environmental Protection Agency's (EPA) recent five-year study that found "the overall incidence of impacts is low" from fracking across the country.

Most recently, a Natural Resources Defense Council-funded Duke University study and a United States Geological Survey (USGS) study found fracking is not contaminating groundwater in West Virginia and significant portions of the Eagle Ford, Fayetteville and Haynesville shale plays, respectively. Here is a more comprehensive list of similar studies:

- **Environmental Protection Agency (EPA), 2016** (study link/EID blog).
- **Wyoming Department of Environmental Quality, 2016** (study link/EID blog).
- **Townsend et al., 2016** (study abstract link/EID blog).
- **Ladage et al., 2016** (study link/EID blog).
- **Bureau of Economic Geology, University of Texas at Austin, 2016** (study link/EID blog).
- **Siegel et al., 2016** (study link/EID blog)
- **Jackson et al., 2015** (study link/EID blog)
- **Drollette et al., 2015** (study link/EID blog)
- **Siegel et al., 2015** (study link/EID blog)
- **Birkholzer et al. 2015** (study link/EID blog)
- **Hammack et al., 2014** (study link/EID blog)
- **Kresse et al., 2013** (study link/EID blog)
- **Flewwelling et al.**, 2013 (study link/EID blog)
- **Molofsky et al., 2013** (study link/EID blog)
- **U.S. Government Accountability Office, 2012** (report link/EID blog)
- **Cardno Entrix, 2012** (study link)
- **Massachusetts Institute of Technology (MIT) Energy Initiative, 2010** (study link)

In addition to water quality, the TAMEST study also explains that fracking represents only a small fraction of the water used in Texas. From the study,

"The average annual water use for hydraulic fracturing activities in 2011 and 2012 in Texas was about 20 billion gallons of waters (EPA, 2016). Because **this volume represents on 0.2 percent of total water use in the state, and 0.7 percent of total state consumptive use, it might be considered small**." (pg. 115)

In fact, Texans for Natural Gas released a report in 2015 showing Texas fracking operations not only use a relatively small amount of water, but that natural gas actually helps save water in Texas, explaining,

"For every gallon of water used to produce natural gas through hydraulic fracturing, **Texas saved 33 gallons of water** by generating electricity with that natural gas instead of coal."

Air Quality

The TAMEST study also notes that increased natural gas use for electricity generation offsets potential air pollution from oil and gas development, explaining that:

"Shale resource development both directly and indirectly impacts air quality. Indirect impacts include **reductions in emissions associated with the substitution of natural gas for coal** in electricity generation." (pg. 20)

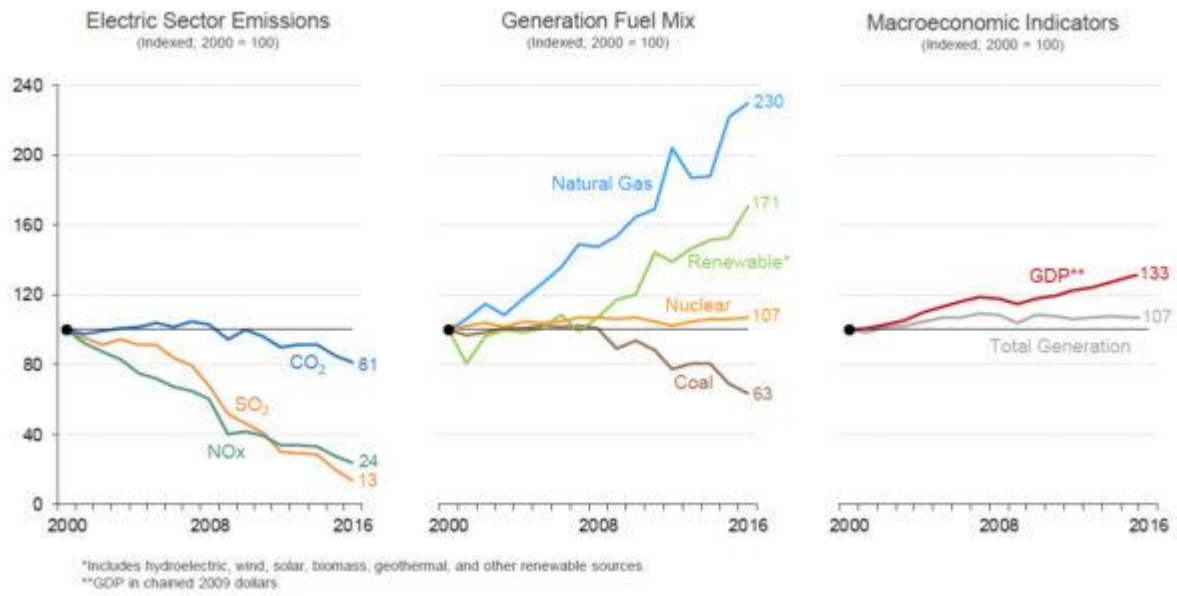
"In the Texas grid, the substitution of natural gas for coal in electricity generation results in reductions in the emissions of carbon dioxide (CO2) and criteria air pollutants including sulfur dioxide and nitrogen oxides, or NOx. **Reductions in downstream emissions are, in the case of CO2, sulfur dioxide, and NOx, greater than the increases in emissions due to production**." (pg. 92)

This is a common phenomenon happening across the country, as was explained in a recent Ceres report that found America's top 100 power producers had dramatically reduced emissions thanks in large part to conversions to natural gas-fired electricity. The CERES report explained that,

"Increased natural gas generation and a decrease in coal generation, driven in large part by low natural gas prices, have contributed to the reduction in emissions. Over the last decade and a half, natural gas generation has more than doubled, while coal generation decreased by nearly 40 percent."

Specifically, the CERES report found:

- CO2 emissions from these producers are down 20 percent since 2005.
- SO2 emissions have declined 87 percent since 1990.
- NOX emissions are down 79 percent since 1990.
- Mercury emissions are down 69 percent since 2000.



Seismic Activity

TAMEST also found that in Texas "the vast majority of earthquakes are tectonic – **due to natural stresses**" and that those earthquakes that are potentially induced and felt at the surface "have been associated with fluid disposal in Class II disposal wells, **not with the hydraulic fracturing process**."

In fact, the study explains that Texas is leading the way in research surrounding induced seismic activity that may be related to oil and gas development:

"Government, industry, and academic representatives from Texas have all been active participants in these studies, **putting Texas on the forefront of exploring, assessing, and mitigating the relationships between induced seismicity and oil and gas operations**." (pg. 45)

It is partly because of research like this that USGS was able to report earlier this year that there has been a **50 percent reduction in the number of Americans living in an area with a significant risk (1-12 percent) of experiencing a damaging manmade earthquake in 2017**, down to 3.5 million compared to its 2016 forecast of seven million. As USGS National Seismic Hazard Mapping Project chief Mark Peterson told *Buzzfeed* about this new data,

"**There's been a dramatic decline in the number** — we attribute that to probably a reduction in injection rates. **This is good news. This is a success story**." (emphasis added)

Economic Impact

Finally, the impact that Texas' oil and gas industry has had on all aspects of the state's economy can not be discussed enough, as TAMEST explains:

"Energy exploration and development activities in Texas' shale plays have resulted in **primarily positive effects on local, regional, and state economies**." (pg. 149)

Here are some of the numbers given within the report that show just how true that statement is:

- "The oil and gas industry in Texas accounts for an **annual gross product of $473 billion** as well as nearly **3.8 million jobs**." (pg. 30)

- "In 2014 alone, production in the Permian, Eagle Ford, and Haynesville shale play areas accounted for more than **$27 billion in royalty payments to private landowners,** or more than two-thirds of the royalties from America's leading shale oil and gas plays." (pg. 31)

- "The Texas portion of the Permian Basin-related oil and gas activity sustained **over 444,000 jobs**, generated **$113.6 billion in economic output**, and contributed **over $60.2 billion to the state of Texas**." (pg. 149)

- "Since 2001, the cumulative effects of Barnett Shale-related activities have been **$110.7 billion in gross product** and about **993,600 person-years of employment** (the Perryman Group, 2014). Tax revenues within the region were estimated at roughly **$4.5 billion for local governments** and more than **$6 billion for the state**." (pg. 149)

As this latest study of the nation's largest oil and gas producing state shows, it is absolutely possible to manage the risks of oil and gas development while reaping the benefits that it brings.

Blog