

Impacts of the Shale Gas Revolution on Regulatory Agencies



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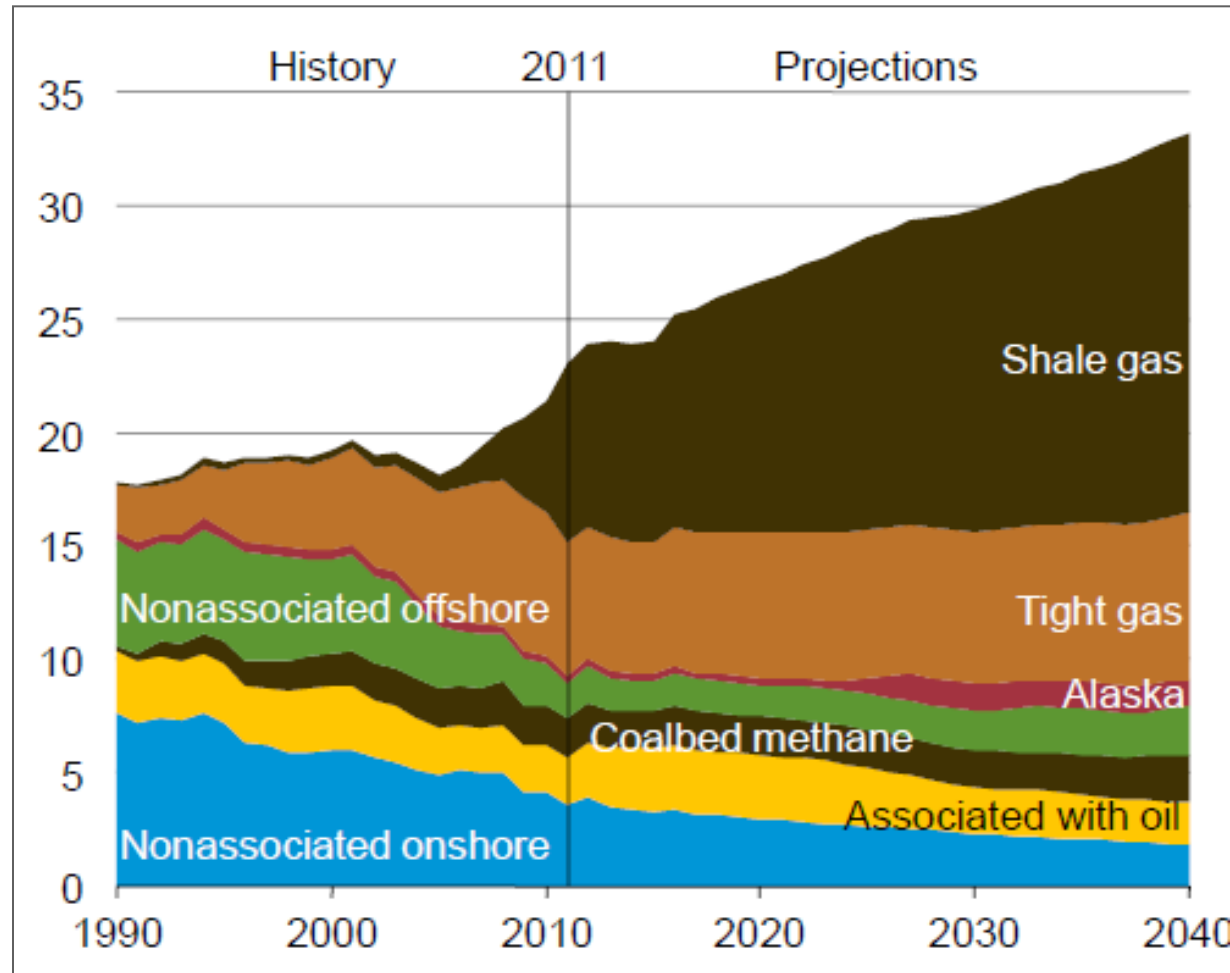
Topics for Discussion

- Importance of shale oil and gas to U.S.
- What does it mean for agencies?



Importance of Shale Gas to the USA

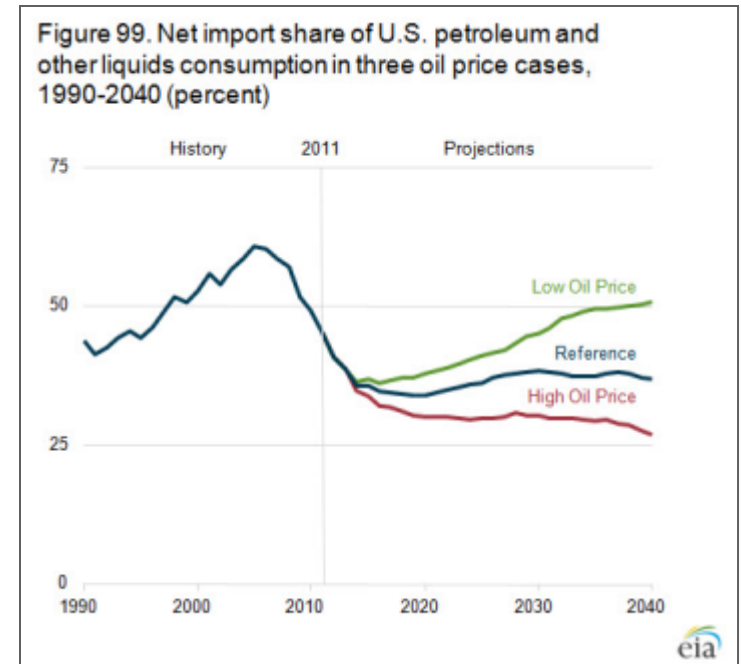
- Natural gas is an important energy source for the United States. Shale formations represent a growing source of natural gas for the nation and are among the busiest oil and gas plays in the country.



Source: DOE/EIA Annual Energy Outlook 2013

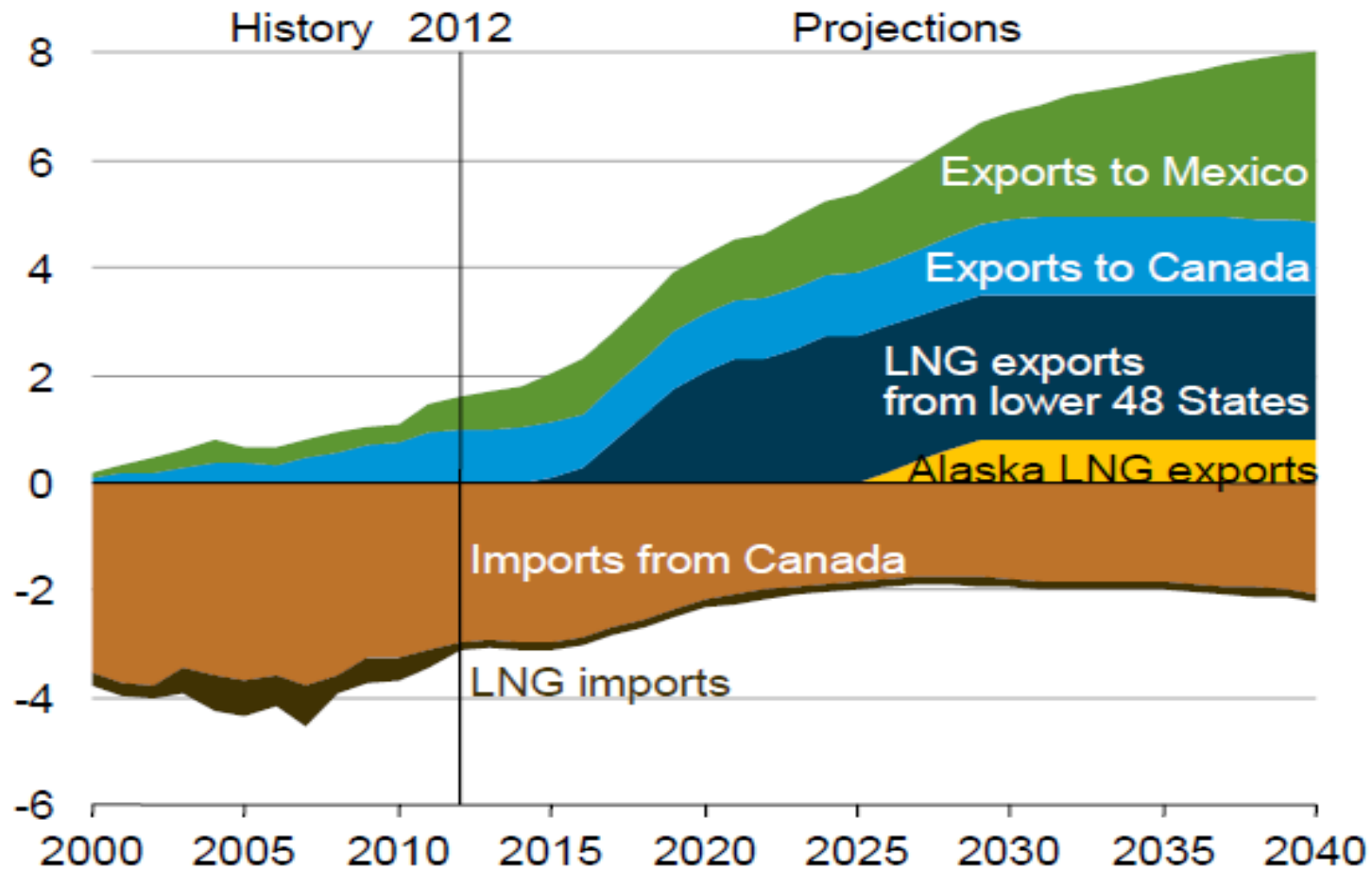
Implications of Shale Oil and Gas Production for the USA

- Significantly lowered our imports (often from unsettled parts of the world)
- Less than a decade ago, the U.S. planned to open a series of LNG import terminals. Now those are no longer being planned. Instead, there are plans for LNG exports (pending political approval).
- Natural gas prices remain low for home owners and factories.
- Energy policy is shifting to rely more heavily on gas-fired power plants and vehicles.
- Jobs are brought to previously depressed areas
- Tax revenue make substantial contributions to state and local governments



Natural Gas - Transition from Imports to Exports

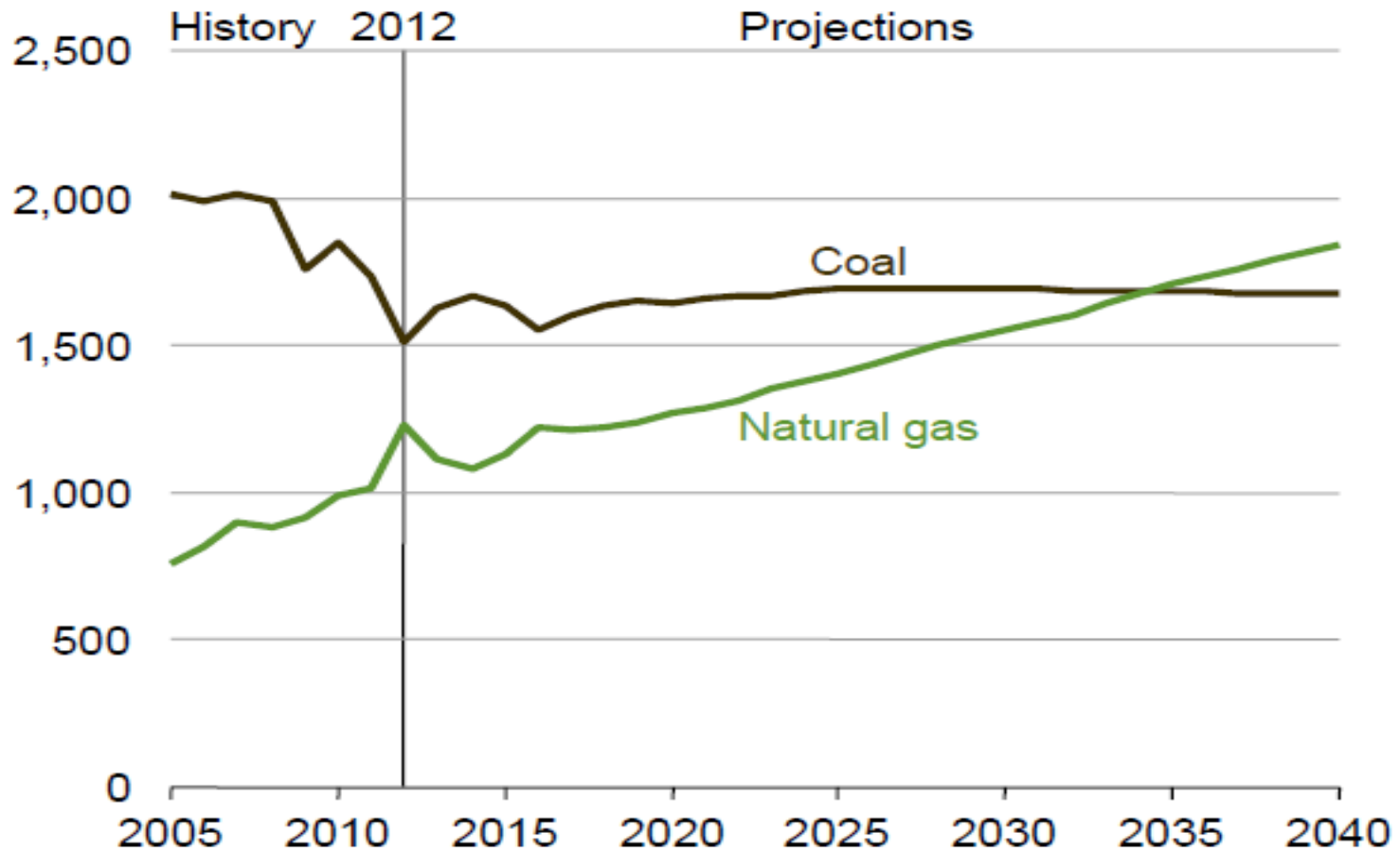
Figure 4. U.S. natural gas imports and exports, 2000-40 (trillion cubic feet)



Source: DOE/EIA Annual Energy Outlook 2014 – Early Release

Natural Gas - Transition from Coal to Gas for Power Generation

Figure 3. Electricity generation from natural gas and coal, 2005-40 (trillion kilowatthours)

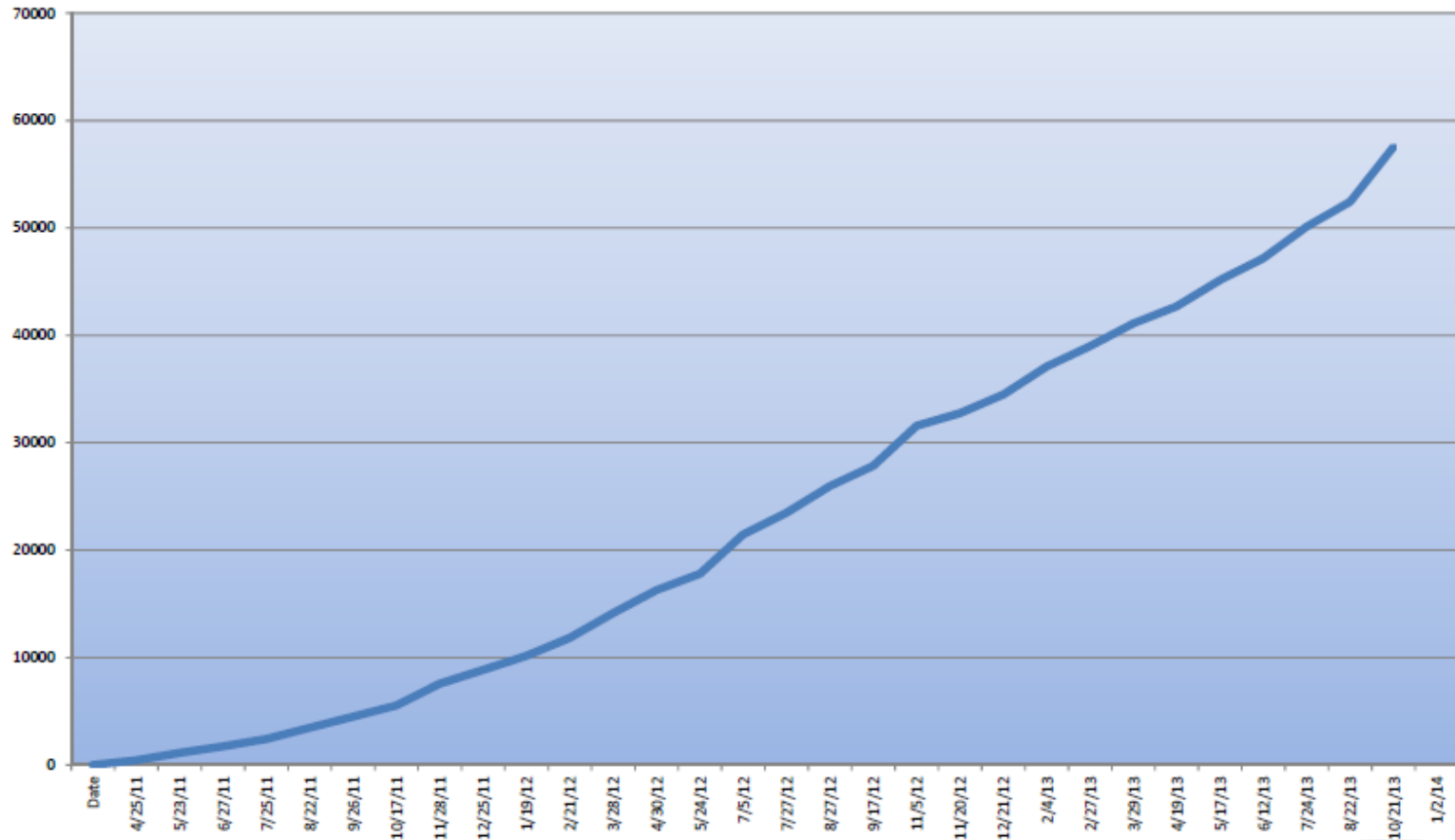


Source: DOE/EIA Annual Energy Outlook 2014 – Early Release

New Unconventional Wells - based on FracFocus

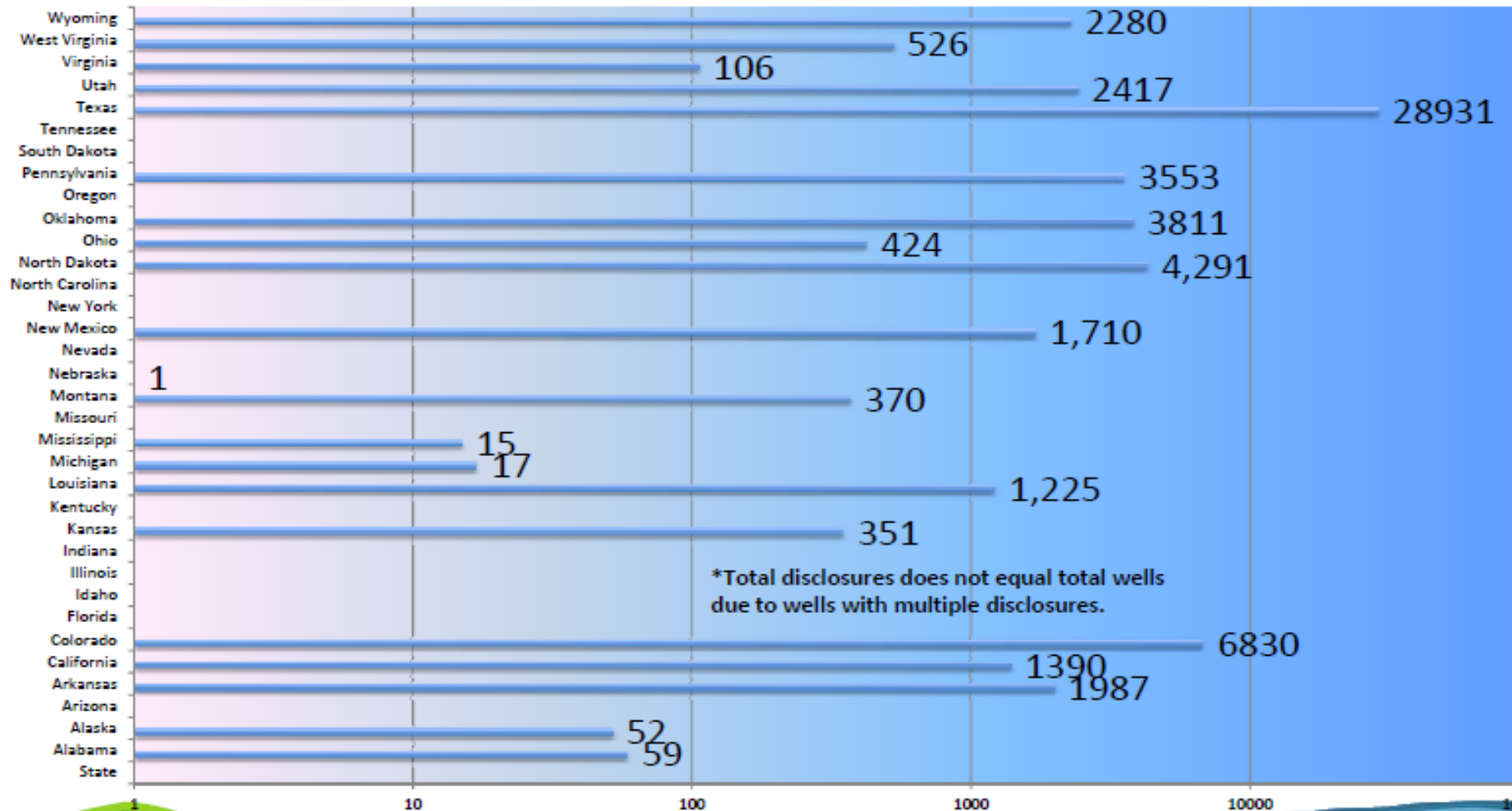
- About 25,000 wells per year entered into FracFocus

Disclosures Reported By Month



Large Workload for States

Disclosures Reported By State*



*Total disclosures does not equal total wells due to wells with multiple disclosures.

State Programs Affected by Shale Development

- Oil and gas programs (drilling, fracturing, reporting, remediation)
 - Major water programs (UIC, NPDES, water allocation)
 - Related programs (waste management, air, noise)
 - Pipeline construction and management (may involve transportation agencies)
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- Which state agencies have the lead responsibility/burden (oil and gas, environmental protection, health, other)?

How Is Workload Increasing?

- More permits
- More inspections and data collection by staff
- More types and volume of data received from companies
- More time spent dealing with opponents to permits
- Need for revised regulations to deal with new situations

State Strategies and Mechanisms for Managing the Additional Workload

- Hire and train new staff (need net increase after losing staff to industry)
- Supplement staff with contractors (is this being done?)
- Create or increase permit fees or other types of fees generated from the regulated community
- Get dedicated revenue feeding back into program from royalties/taxes
- Look for options to automate or better manage data
- Legislative vs. regulatory vs. management solutions

Role of State Associations (e.g., GWPC)

- Sharing experiences and strategies
- Communication between states at different stages of growth of shale activity
- Examples of data management tools developed by associations (RBDMS, FracFocus)

Role of New Technologies and Research to Improving Efficiency of Shale Development

- Research leads to new technologies
- Shorten timeline from lease to production
- Develop shale resources using environmentally sustainable practices
- Minimize footprint of development

Collaboration with Industry and Other Stakeholders to Streamline Regulatory Development and Shale Production

- Let industry help with training and development of desirable practices
- Establish committees and working groups to discuss field practices and arising issues
- Work with communities and potential development opponents to get more buy-in up front
- Take advantage of capabilities and contacts from universities and local governments

Conclusions and Final Thoughts

- Shale oil and gas development is here and is a game changer
- Increased domestic development creates significant incremental workload for state agencies
- The situation continues to evolve
- Efforts will ideally strike a balance between safe and responsible development and the expectation to get permit approvals in a reasonable amount of time
 - This depends on adequate, well-trained staff
 - This in turn requires additional revenue source for agencies

