

Assessing the Potential for Self-Regulation in the Shale Gas Industry

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Presentation Outline

- *What firms are involved in developing shale gas resources, and what is their potential to self-regulate?*
- Focus on Pennsylvania
 - Operators
 - Service providers
- A few potentially interesting examples:
 - API best practice standards and certification programs
 - Center for Offshore Safety
 - Responsible Care Partnership Program

Self-regulation should engage businesses whose activities pose the greatest health and environmental risk

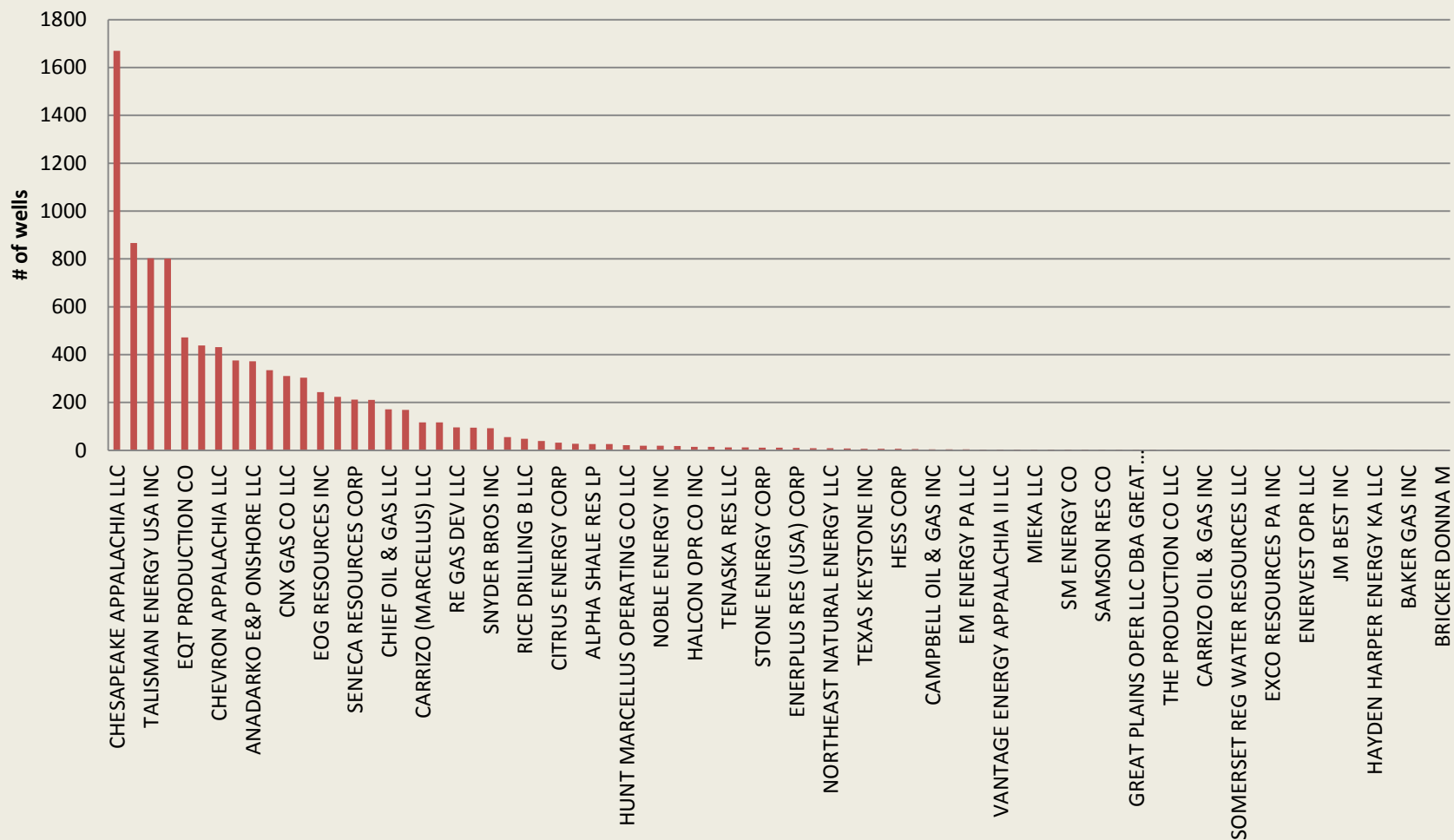
- Operators
- Service and supply companies
- Gas processors and pipeline companies
- Purchasers of oil and gas
- Gas utility companies
- Marketers
- Professionals

PA Operators

- Responsible for management and day-to-day operation of well site. Point of PA DEP regulation
- In PA, 79 companies operate 9458 unconventional wells (July 2013)
- Five companies operate nearly half (49%) of all wells
- 21 companies operate just one or two wells

Source: PADEP. 2013. Permitted Well Inventory

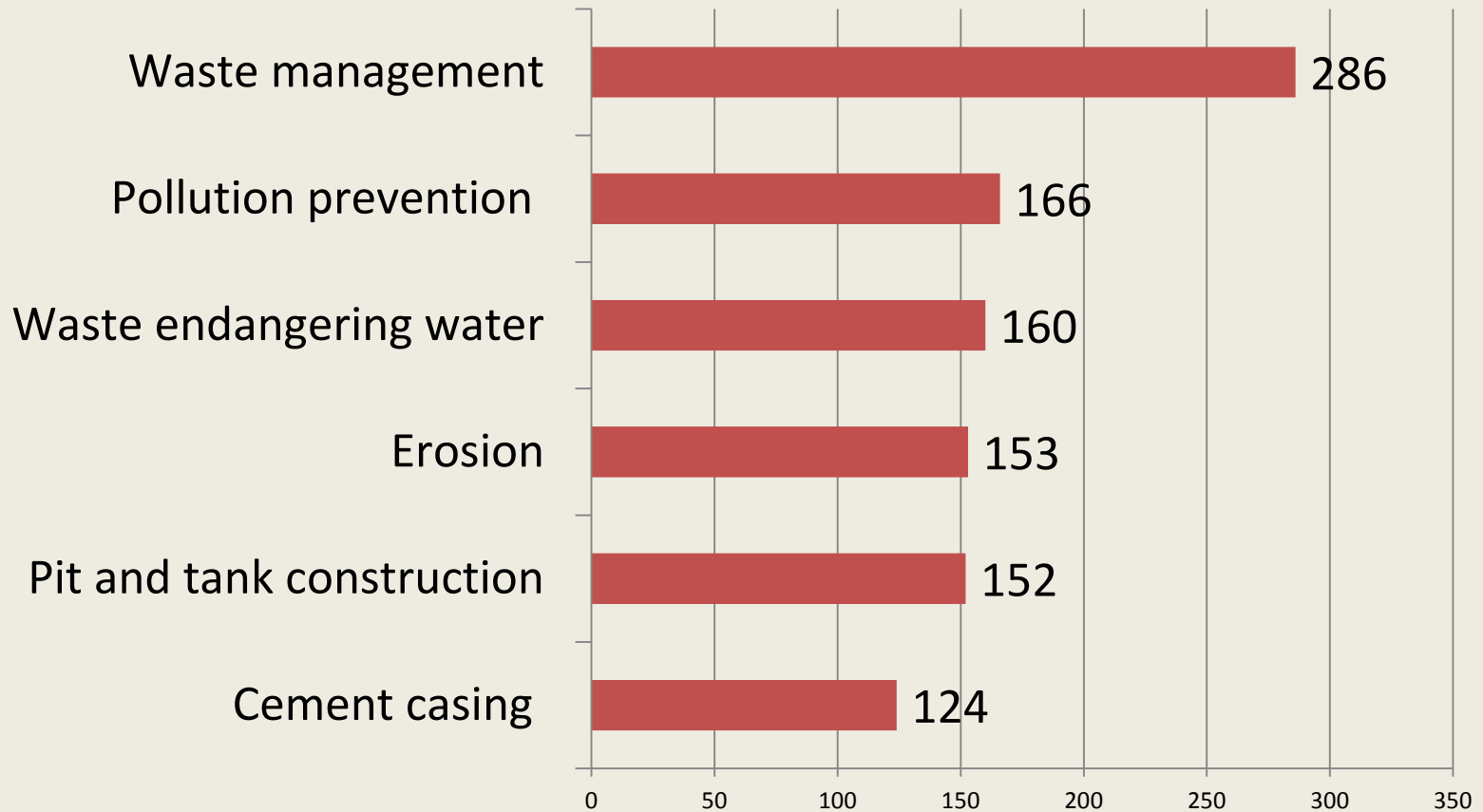
While a handful of firms operate most of the wells, a much larger number engage in shale gas production



5 Largest Operators in PA

Name (# of wells)	Characteristics
Chesapeake Appalachia LLC (1669)	<ul style="list-style-type: none"> •Subsidiary of Chesapeake Energy: large exploration and production co. with some service assets. HQ in Oklahoma •\$11.6 bil revenue (2011)
Range Resources Appalachia LLC (866)	<ul style="list-style-type: none"> •Subsidiary of Range Resources: independent exploration and production co. HQ in Texas •\$907 mil revenue (2009)
Talisman Energy USA Inc. (803)	<ul style="list-style-type: none"> •Subsidiary of Talisman Energy: independent exploration and production co. HQ in Alberta, CN • \$7.5 bil revenue (2009)
SWEPI LP (Shell Western E&P Inc.) (801)	<ul style="list-style-type: none"> •Subsidiary of Royal Dutch Shell: operates as independent exploration and production co. HQ in TX
EQT Production Co. (472)	<ul style="list-style-type: none"> •Subsidiary of EQT : integrated co. with production, pipeline, and marketing businesses. HQ in Pittsburgh, PA •\$1.32 bil revenue (2010)

Most Common Regulatory Violations 2011-2012

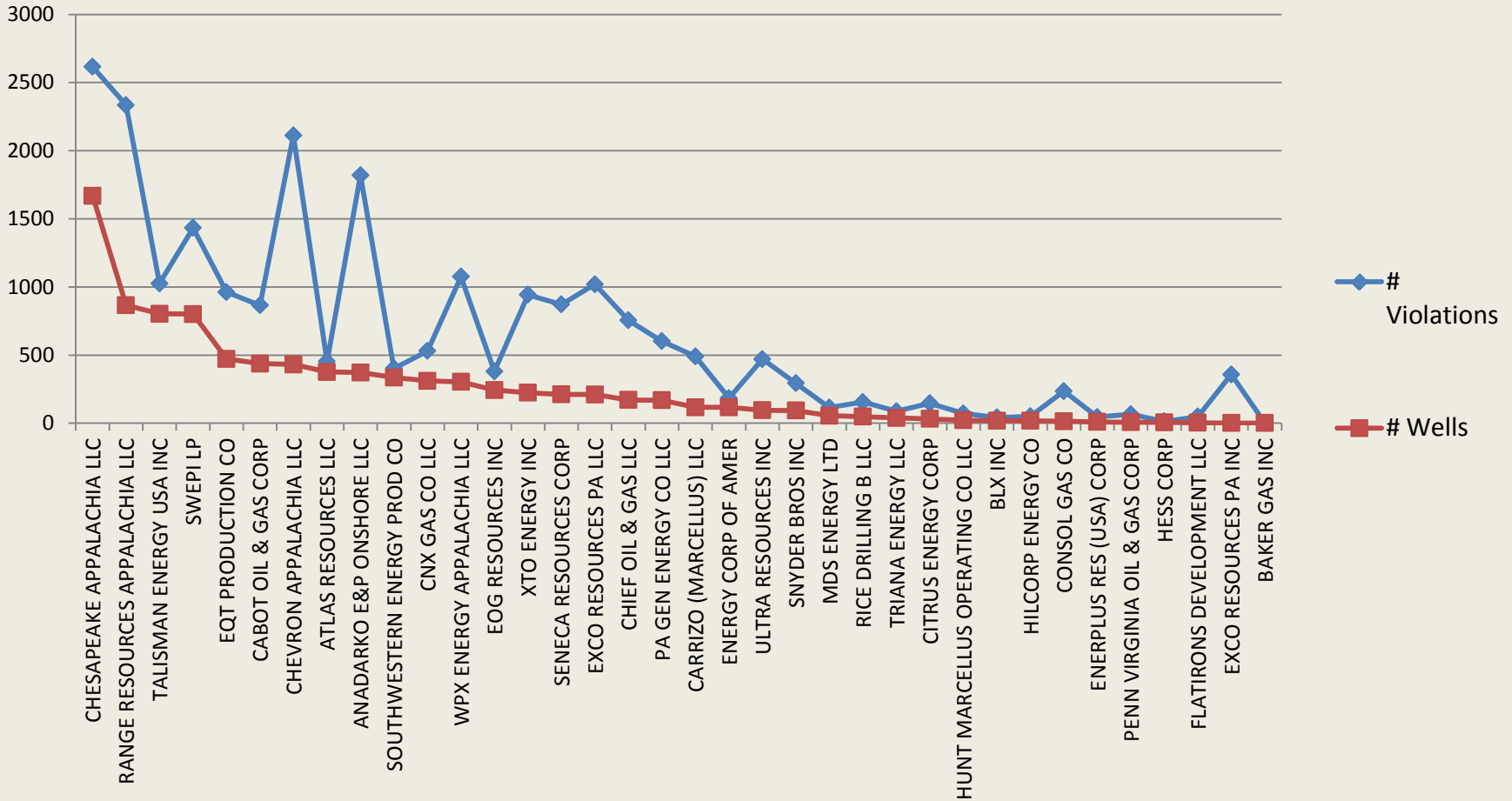


Source: PADEP. 2013. Oil and Gas Compliance Report

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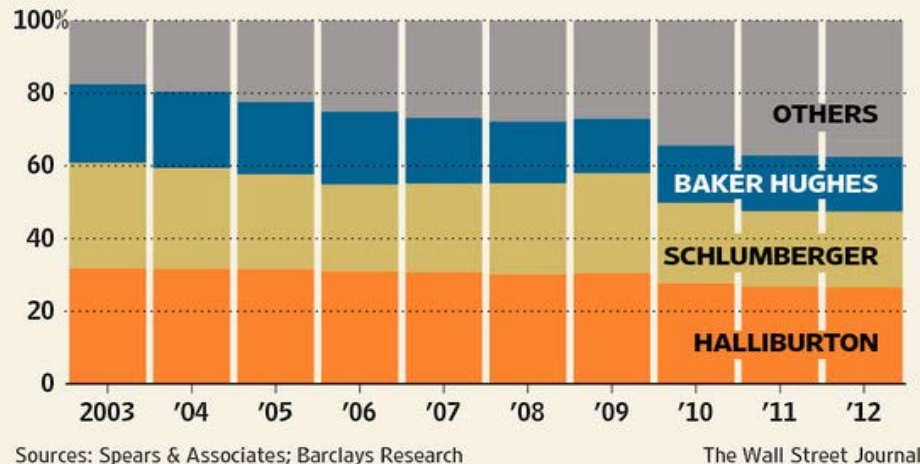
Performance is uneven

Source: PADEP. 2013. Oil and Gas Compliance Report



Service companies

- Operators contract out many activities that pose environmental risk, including drilling and fracturing
- Service companies work behind the scenes
 - Operators, not service companies, hold environmental permits
 - Operators, not service companies, report to FracFocus
- Many new firms entering service business





pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

Completion Report

DEP USE ONLY	
Site ID	Primary Facility ID
Client ID	Sub Facility ID

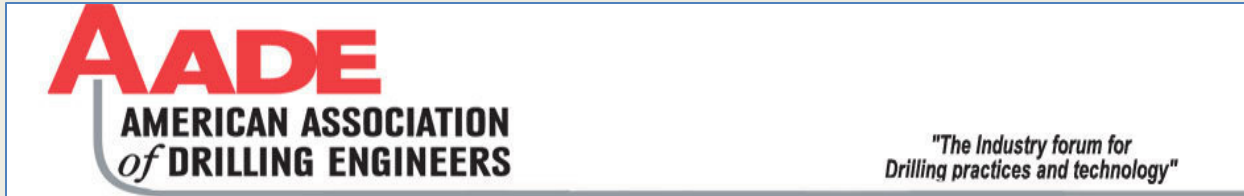
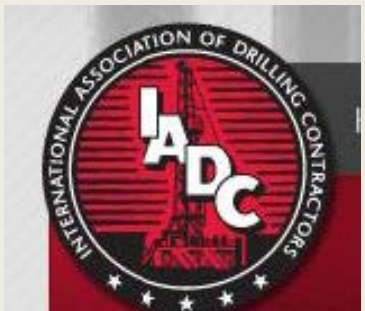
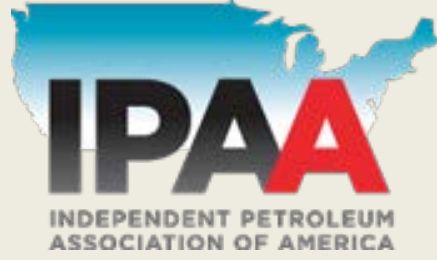
Well Information					
Well Operator Range Resources-Appalachia, LLC	DEP ID# 141142	Well API # 37 - 125-24726-00-01	Well Farm Name Hanes Donald Et Al Unit	Well # 3H	
Address 3000 Town Center Blvd		LAT - 40° 10' 9.88"	NAD 83	Project Number	Serial #
LONG - 80° 21' 2.39"		Municipality Buffalo		County Washington	
City Canton	State PA	Zip Code 15317	Email	USGS 7.5 min. quadrangle map Washington West	Section 4
Phone 724-670-6700	Fax 724-743-6490				
Check the appropriate submission: <input checked="" type="checkbox"/> Original Completion Report <input type="checkbox"/> Amended Completion Report					

WELL SERVICE COMPANIES		
Perforation Company	Frac Company	Plug Drill Out/Flow Back Company
Name Titan Wireline	Name FracTech	Name RockWater
Address PO Box 286	Address 16858 IH20	Address 777 Main St, Suite 2790
City - State - Zip Elderton, PA 15736	City - State - Zip Cisco, TX 76437	City - State - Zip Fort Worth, TX 76102-5369
Phone 724-354-4400	Phone 817-850-1008	Phone 817-320-2445

I do hereby certify to the best of my knowledge, information and belief that the information contained on this Completion Report is true and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature	DEP USE ONLY	
	Reviewed by:	Date:

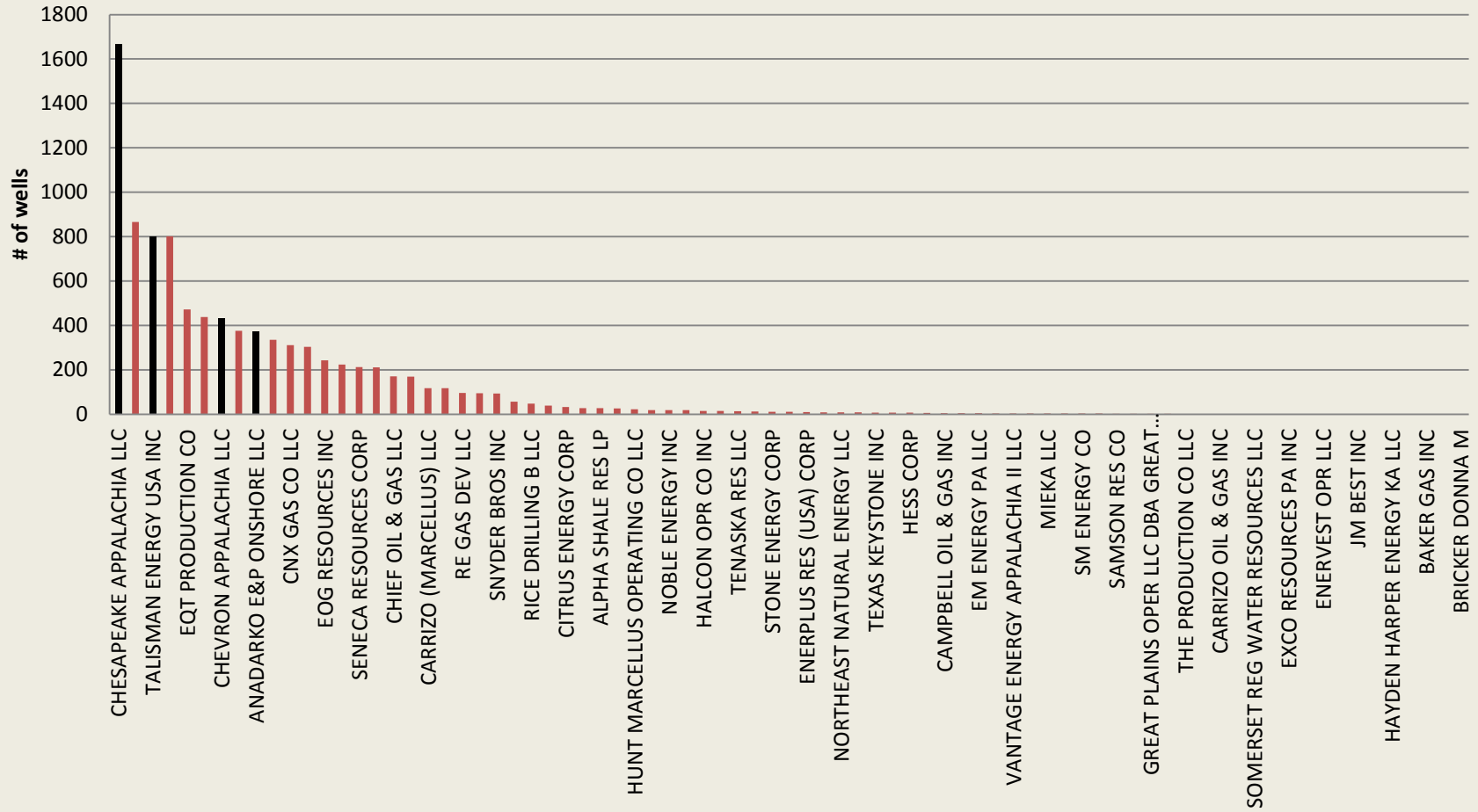
How is the fracking “industry” organized?



American Petroleum Institute

- Offers a menu of self-regulatory approaches from which members choose
 - Product certifications
 - Management system standards
- Voluntary best practice standards for hydraulic fracturing
 - Well construction and integrity
 - Water management
 - Practices for mitigating surface impacts
 - Isolating flow zones during construction
 - Environmental protection for onshore oil and gas operations
 - Coming soon: Community engagement
- Soon will offer quality management standard for service companies
- At least 12 PA operators are subsidiaries of companies that hold API memberships.
 - Collectively, they operate more than 1/3rd of all PA wells

PA Operators: API membership



Center for Offshore Safety

- Created by API to meet 2010 federal requirement that offshore drilling companies implement safety and environmental management systems— formerly a voluntary API management standard
 - Governed by board of operators, drillers, and service cos.
- Emphasis on establishing a “pervasive culture of safety” within offshore industry
- Requirement for third-party auditing and certification
- Toolkit includes sample contracts for service companies

ACC Partnership Program

- Extends Responsible Care to supply chain partners: firms that distribute, transport, store, use, treat, and dispose of ACC-member products
- Partners must adopt RCMS and have operations independently audited and certified. Report performance to ACC

Factors inhibiting self-regulation

- Diverse set of players from small “mom & pop” companies to large, global businesses
- No clear best practice leaders
- Service companies undertake environmentally risky activities, mostly behind the scenes
- Existing self-regulatory programs are purely voluntary
- No established collective identity among firms
- No galvanizing event to shape identity

Factors enabling self-regulation

- Increasing attention to fracking risks among the public, lawmakers, and firms
- Operators with strong performance may seek to avoid “tarnish” from bad actors
- Industry has taken some first steps by developing best practice standards, management standards, and performance standards
- Models from COS, ACC partners program, CSSD—which emphasize third-party auditing and certification—are worth a closer look

Thank you

Please direct comments and questions to
jennifer_nash@harvard.edu

Questions for discussion

- Given what we know about firms engaged in shale gas development in Pennsylvania, is self-regulation feasible?
- Is it advisable?
- What design elements are most important?
- What existing mechanisms might serve as a foundation?
- What's the best way to involve service companies?