The State of State Shale Gas Regulation: Maps of State Regulations

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Experts in RFF’s Center for Energy Economics and Policy are analyzing regulations and surveying regulators in the 31 states in the continental United States that have significant shale gas reserves or where industry has shown interest in shale gas development. The following maps show the preliminary results of these efforts for approximately 20 important regulatory elements in each state.

A final report that includes all updated maps, tables, and additional analysis is available at www.rff.org/shalemaps. In the meantime, suggestions and comments are welcome and can be sent to richardson@rff.org.

States Surveyed

- **In study (31 states)**
- **Not in study (19 states)**
- **Top 5 states by number of natural gas wells (2011)**
- **States with no natural gas wells (2011)**

Source: US Energy Information Administration. Number of Producing Gas Wells. [http://www.eia.gov/dnav/ng/ng_prod_wells_s1_a.htm](http://www.eia.gov/dnav/ng/ng_prod_wells_s1_a.htm)
Setback Restrictions from Buildings

Top 5 states by number of natural gas wells (2011)
- Texas
- Pennsylvania
- New York
- Ohio
- Louisiana

States with no natural gas wells (2011)
- Alaska
- Arkansas
- Hawaii
- Idaho
- Massachusetts

Source: US Energy Information Administration. Number of Producing Gas Wells.
http://www.eia.gov/dnav/ng/ng_prod_wells_s1_a.htm
Setback Restrictions from Water Sources

Water supply setback restriction (ft.)
(12 states)

No evidence of regulation found
(18 states)

Discretionary standard
(1 state)

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

Pre-drilling Water Well Testing Requirements

- Testing required (miles from well): 8 states
- Liability rule: 1 state
- No evidence of regulation found: 22 states
- Not in study: 22 states

Top 5 states by number of natural gas wells (2011):
- Texas
- Oklahoma
- Pennsylvania
- West Virginia
- Ohio

States with no natural gas wells (2011):
- Wyoming
- New Mexico

Casing and Cementing Depth Regulations

- Min. casing/cementing depth (ft. below fresh water) (21 states)
  - 50
  - 100
  - 120

- Performance standard (5 states)
  - 30
  - 50
  - 75

- Addressed in permit (3 states)
  - 30
  - 50
  - 100

- No evidence of regulation found (2 states)
  - 50

- Not in study

Cement Type Regulations

Specified cement type requirements
(11 states)

Addressed in permit
(6 states)

No evidence of regulation found
(14 states)

Not in study

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

Surface Casing Cement Circulation Regulations

- Cementing to surface required (28 states)
- No evidence of regulation found (3 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

Intermediate Casing Cement Circulation Regulations

Cementing required to surface (4 states)
No evidence of regulation found (12 states)
Cementing required to specified distance above shoe/hydrocarbon zone (ft.) (6 states)
Addressed in permit (8 states)
Performance standard (1 state)

Top 5 states by number of natural gas wells (2011)
States with no natural gas wells (2011)

Production Casing Cement Circulation Regulations

- Cementing required to surface (2 states)
- Cementing required to specified distance above shoe/hydrocarbon zone (ft.) (12 states)
- Addressed in permit (10 states)
- No evidence of regulation found (7 states)
- Not in study

Top 5 states by number of natural gas wells (2011):
- Texas: 600
- Pennsylvania: 500
- Ohio: 500
- New Mexico: 500
- West Virginia: 500

States with no natural gas wells (2011):
- AK, DE, HI, MT, WY

Source: US Energy Information Administration. Number of Producing Gas Wells.
http://www.eia.gov/dnav/ng/ng_prod_wells_s1_a.htm
Water Withdrawal Regulations

No evidence of regulation found (1 state)

Not in study

Permit required over threshold shown (1,000 gal/day) (21 states)

Permit, registration & reporting required over threshold shown (1,000 gal/day) (5 states)

Registration & reporting required over threshold shown (1,000 gal/day) (4 states)

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)


Resources for the future. Last updated 4/7/2011. Based on a revised USGS national well inventory.
Fracturing Fluid Disclosure Requirements

Disclosure required (14 states)
No evidence of regulation found (13 states)
Not in study

Proposed disclosure requirement (3 states)

Top 5 states by number of natural gas wells (2011)
States with no natural gas wells (2011)

Fluid Storage Options

- Sealed tanks required for some fluids (10 states)
- Pits allowed & regulated for all fluids (16 states)
- Permit required for all pits/tanks (3 states)
- No evidence of regulation found (2 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

Source: US Energy Information Administration. Number of Producing Gas Wells.
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Freeboard Requirements

- Freeboard requirement (ft.) (17 states)
- Limited freeboard requirement (ft.) (1 state)
- Addressed in permit (1 state)
- No evidence of regulation found (12 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

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States with no natural gas wells (2011)
Pit Liner Requirements

- Pit liner thickness requirement (mils) (21 states)
- No evidence of regulation found (5 states)
- Not in study (1 state)
- Discretionary standard (1 state)
- Addressed in permit (4 states)

Top 5 states by number of natural gas wells (2011):

- Texas: 40
- North Dakota: 24
- Colorado: 20
- Oklahoma: 20
- Ohio: 20

States with no natural gas wells (2011):

Underground Fluid Injection Requirements

- Statewide ban (1 state)
- Allowed, but regulated by state, some local bans/moratoria (3 states)
- Allowed, but regulated by state (27 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

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Wastewater Transportation Tracking Regulations

Permit or approval required (2 states)
No evidence of regulation found (14 states)
Recordkeeping required (years) (4 states)
Permit/approval & recordkeeping required (years) (11 states)

Source: US Energy Information Administration. Number of Producing Gas Wells.
http://www.eia.gov/dnav/ng/ng_prod_wells_s1_a.htm
Venting Regulations

Venting restricted (11 states)
No evidence of regulation found (9 states)
Discretionary standard (4 states)
Venting banned (6 states)
Notice and approval required (1 state)

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States with no natural gas wells (2011)

Source: US Energy Information Administration. Number of Producing Gas Wells.
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Flaring Regulations

- Flaring restricted (15 states)
- Discretionary standard (4 states)
- Notice and approval required (1 state)
- No evidence of regulation found (11 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

Severance Tax Calculation Method

- % of extracted gas value (18 states)
- Fixed amount per unit of extracted gas (5 states)
- Hybrid fixed amount/percentage calculation (3 states)
- No severance tax (5 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

- States with no natural gas wells (2011)

Severance Taxes at $2.46/Mcf Gas Price

No severance tax
Not in study
6% 14.76¢
9% 22.14¢
5% 12.3¢
3.82% 9.4¢
4.5% 11.07¢
3% 7.38¢
8% 19.68¢
3.78% 9.3¢
9% 22.14¢
2% 5.2¢
6% 14.76¢
3% 7.38¢
8% 19.68¢
0.1% 0.25¢
1% 2.46¢
0.02% 0.05¢
1% 2.46¢
7% 17.22¢
7% 17.22¢
0.53% 1.3¢
7-14¢/Mcf
14-21¢/Mcf
21-28¢/Mcf
28-35¢/Mcf
35-42¢/Mcf
>42¢/Mcf

Top 5 states by number of natural gas wells (2011)
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Well Idle Time Regulations

- Idle time permitted (months) (28 states)
- No evidence of regulation found (3 states)
- Not in study

Top 5 states by number of natural gas wells (2011)

- States with no natural gas wells (2011)

Temporary Abandonment Regulations

Temporary abandonment permitted (months) (22 states)
No evidence of regulation found (3 states)
Not in study

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States with no natural gas wells (2011)

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Accident Reporting Requirements

Accident reporting required (maximum hours after accident) (26 states)
No evidence of regulation found (5 states)
Not in study

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

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Fracking Bans and Moratoria

Statewide moratorium (de jure/de facto) (3 states)

No ban/moratorium (18 states)

Past statewide moratorium (1 state)

Local bans/moratoria (8 states)

Statewide ban (1 state)

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)

Number of State Regulating Agencies

- 3-6 (6 states)
- 2 (16 states)
- 1 (8 states)
- 0 (1 state)
- Not in study

Top 5 states by number of natural gas wells (2011)

States with no natural gas wells (2011)