Table A-2
Estimated Compliance Costs for Regulation of Hydraulic Fracturing
Compliance Cost Calculations[32]

The estimates below assume that the regulation of hydraulic fracturing as underground injection is applied to all hydraulically fractured wells nationwide, including fractured oil wells, tight gas, Devonian shale and coalbed methane.

Action	Estimated Cost	% Wells	Total Est. Cost	Comments
Obtain permit	60 hr/well x $75/hr = $4,500/well	1.00	$4,500	
Area of Review	$2,800/per AOR	1.00	$2,800	Assumes all wells will require AOR, but no corrective action if potential problems are found; assumes no drill or frac if potential problems found.
In-situ stress analysis from acoustic log or pump-in/fall off tests	$15,000/frac/well $5,000/frac/well	X 0.30 X 0.30	$4,500+$1,500= $6,000	Assumes 40% of wells already determine stress gradient
3-D Fracture Simulation	$10,000/frac	0.75	$7,500	Assumes 3-D model used for frac design in 25% of wells
Monitor, map fracture, or other post- frac analysis	$10,000/frac	0.60	$6,000	Assumes some frac monitoring or post-frac analysis already in 40% of fracs
State of art downhole fracture imaging e.g. microseismic or downhole tiltmeter	$375,000	0.10	$37,500	Assumes that state-of-art downhole fracture imaging requiring observation wells may be required in 10% of fractured wells
		Total Incremental Hydraulic Fracturing Cost	= $64,300	
Average incremental cost for additional cementing to ensure isolation of the target zone prior to fracture	$10,000	0.30	$3,000	
		Total Incremental Completion Cost	= $3,000	
Total Incremental Cost for New Well Receiving Hydraulic Fracture Treatment (1999 $) Fracture Treatment (2007 $)			= $67,300 = $100,505	

[32] Memo from Robin Petrusak, ICF Consulting to Nancy Johnson, U.S. Department of Energy, entitled "Documentation of Estimated Potential Cost of Compliance for Toxic Release Inventory (TRI) Reporting and Hydraulic Fracturing," August 19, 1999