WESTERN STATES PETROLEUM ASSOCIATION

The Transparent State of Energy Regulation

Energy, Ingenuity, Prosperity
Western States Petroleum Association 2013

Interstate Oil & Gas Compact Commission
2013 Annual Meeting, Long Beach, California

November 4-6, 2013

WE PROVIDE WE PERFORM WE PRODUCE

California Energy Production

- California is 3rd largest crude oil producer in US at 580,000 barrels per day, behind Texas and North Dakota
- 13th largest natural gas producer at 685 million cubic feet per day
- 92% of oil is produced onshore, 8% offshore (including OCS)
- California produces 9% of US oil
- Petroleum industry generates 94,860 direct jobs, 238,108 indirect jobs in California
- Generates $5.8 billion in state and local tax revenues, not including property taxes

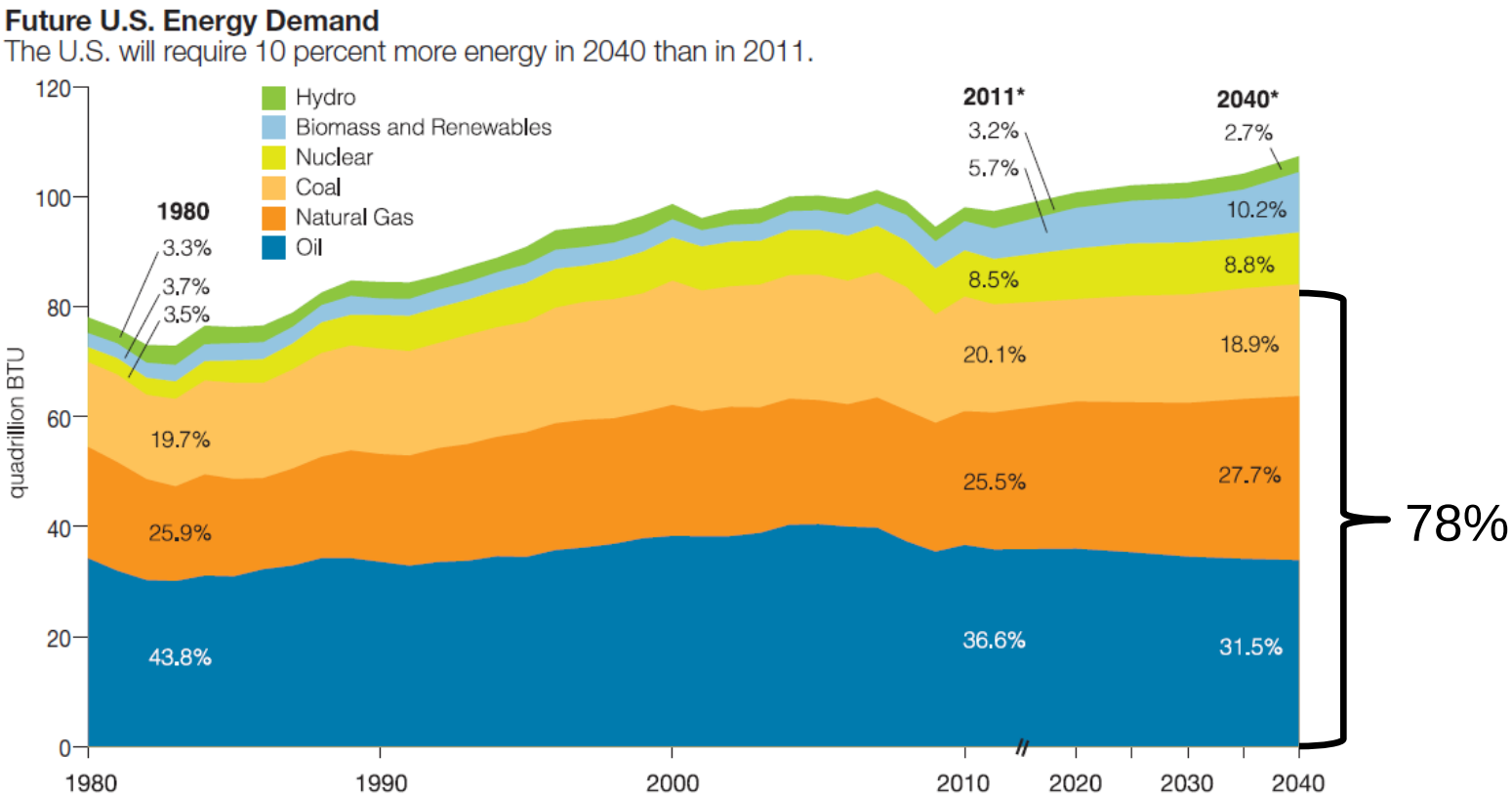
Source: Purvin & Gertz, Assessment of Petroleum Industry Economic Impact to the State of California, June 2011, based on 2009 data; U.S. Energy Information Administration

California Fuel Facts

- 96 percent of California's transportation fuels are petroleum based
- We consume 43 million gallons of gasoline and 14 million gallons of diesel fuel every day
- More than 2 million gallons of gasoline and diesel fuel every hour, 365 days a year
- We are the third largest fuel consuming entity on earth, behind the US as a whole and all of China

Source: California Energy Commission

Petroleum is a Fuel for the Future

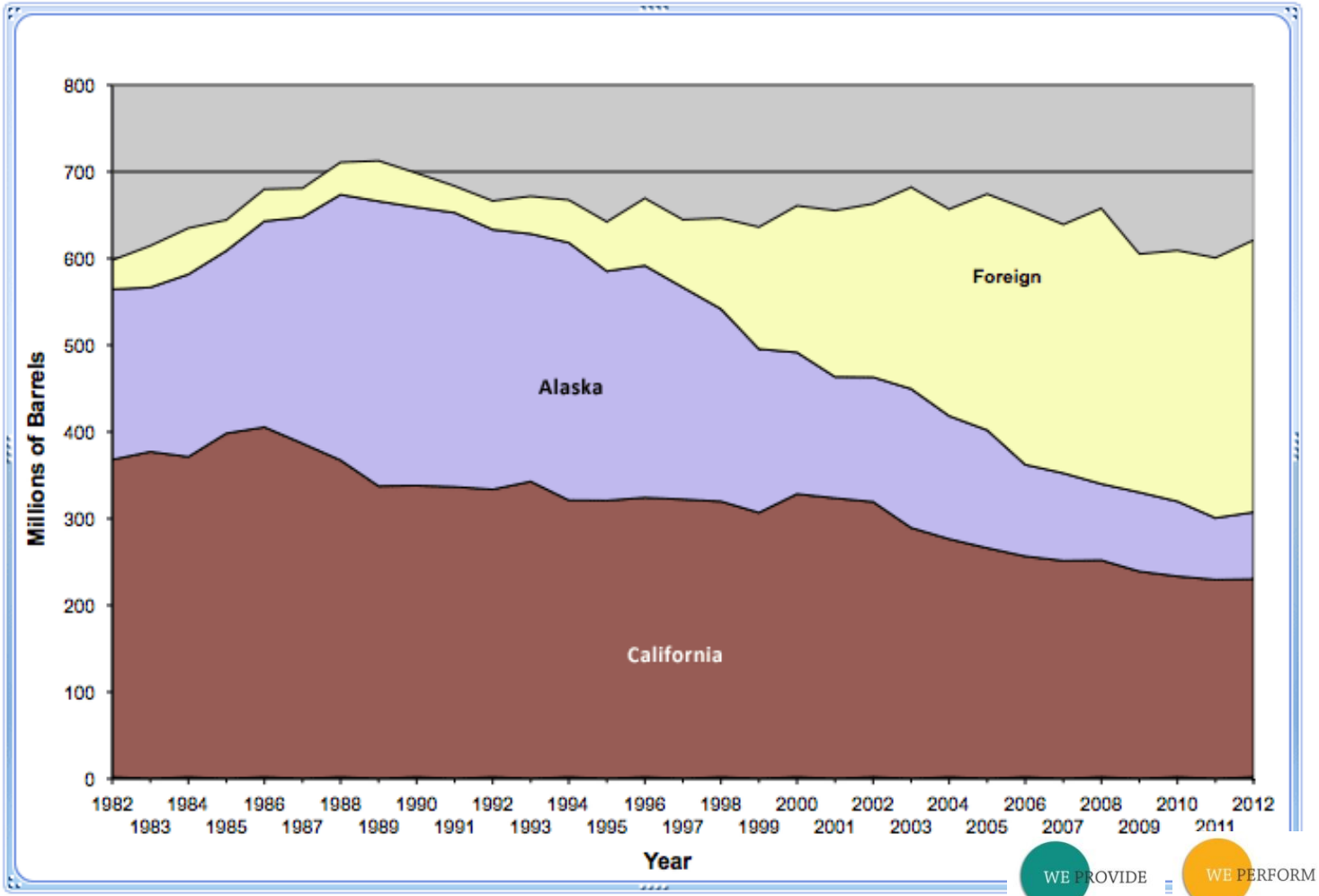


*Excludes non-biogenic municipal waste and net electricity imports. Source: EIA, *Annual Energy Outlook 2013*, Tables A1 and A17.

Source: U.S. Energy Information Administration

WE PROVIDE WE PERFORM WE PRODUCE

Crude Oil Supplies to California Refineries

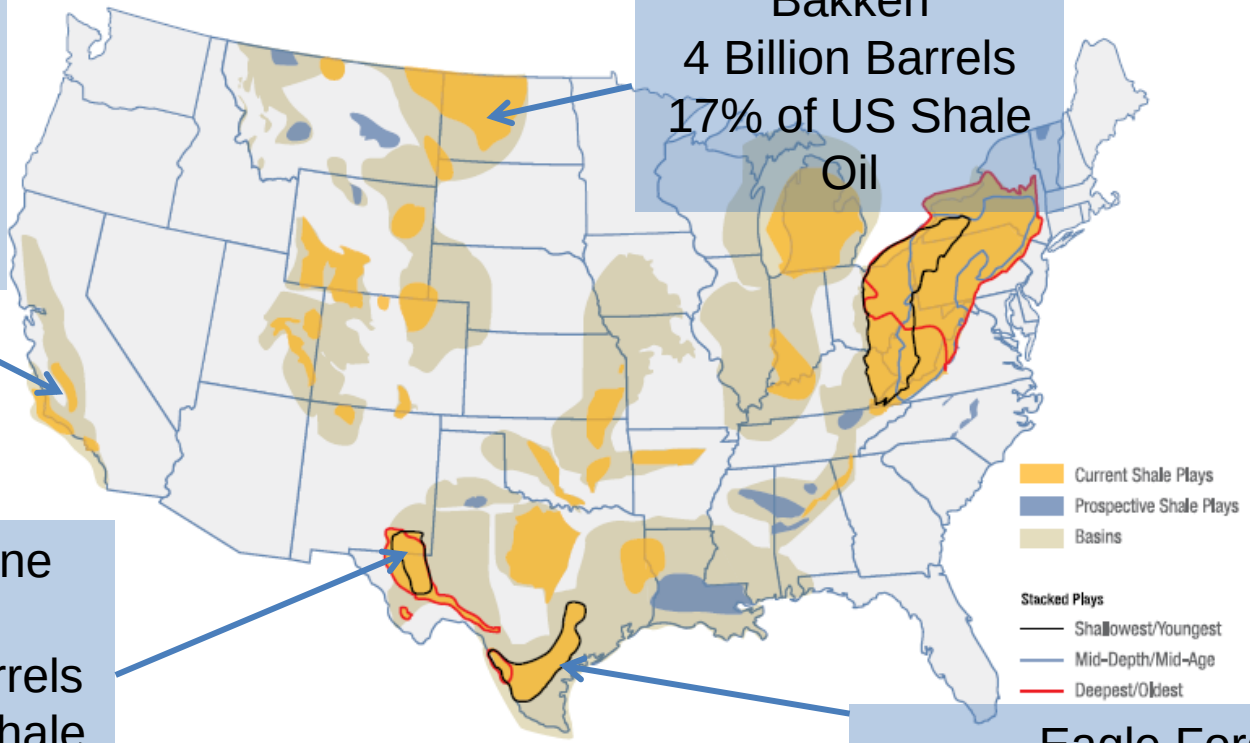


WE PROVIDE WE PERFORM WE PRODUCE

Shale Oil Resources in the United States

Monterey
15.4 Billion Barrels
63% of US Shale Oil

Bakken
4 Billion Barrels
17% of US Shale Oil



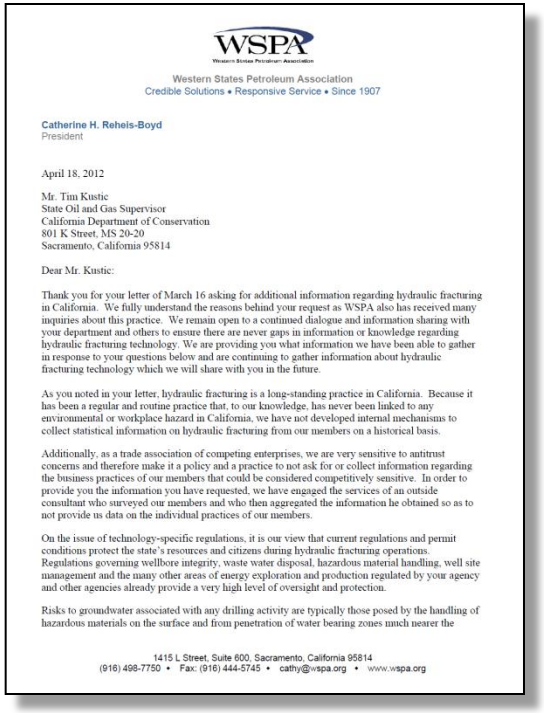
Avalon/Bone Springs
2 Billion Barrels
8% of US Shale Oil

Eagle Ford
3 Billion Barrels
12% of US Shale Oil

Source: EIA, based on data from various published studies - updated May 9, 2011

Hydraulic Fracturing: How Much, Where

- 568 wells fractured in 2012 according to FracFocus
- 2,705 well permits issued in 2012
- 48,970 wells currently producing oil and/or gas in CA
- 97 percent of hydraulic fracturing operations in 2012 were in Kern County



WSPA

Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Catherine H. Reheis-Boyd
President

April 18, 2012

Mr. Tim Kustic
State Oil and Gas Supervisor
California Department of Conservation
801 K Street, MS 20-20
Sacramento, California 95814

Dear Mr. Kustic:

Thank you for your letter of March 16 asking for additional information regarding hydraulic fracturing in California. We fully understand the reasons behind your request as WSPA also has received many inquiries about this practice. We remain open to a continued dialogue and information sharing with your department and others to ensure there are never gaps in information or knowledge regarding hydraulic fracturing technology. We are providing you what information we have been able to gather in response to your questions below and are continuing to gather information about hydraulic fracturing technology which we will share with you in the future.

As you noted in your letter, hydraulic fracturing is a long-standing practice in California. Because it has been a regular and routine practice that, to our knowledge, has never been linked to any environmental or workplace hazard in California, we have not developed internal mechanisms to collect statistical information on hydraulic fracturing from our members on a historical basis.

Additionally, as a trade association of competing enterprises, we are very sensitive to antitrust concerns and therefore make it a policy and a practice to not ask for or collect information regarding the business practices of our members that could be considered competitively sensitive. In order to provide you the information you have requested, we have engaged the services of an outside consultant who surveyed our members and who then aggregated the information he obtained so as to not provide us data on the individual practices of our members.

On the issue of technology-specific regulations, it is our view that current regulations and permit conditions protect the state's resources and citizens during hydraulic fracturing operations. Regulations governing wellbore integrity, waste water disposal, hazardous material handling, well site management and the many other areas of energy exploration and production regulated by your agency and other agencies already provide a very high level of oversight and protection.

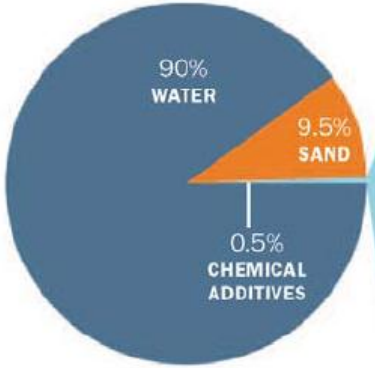
Risks to groundwater associated with any drilling activity are typically those posed by the handling of hazardous materials on the surface and from penetration of water bearing zones much nearer the

1415 L Street, Suite 600, Sacramento, California 95814
(916) 498-7750 • Fax: (916) 444-5745 • cathy@wspa.org • www.wspa.org

Source: WSPA survey of FracFocus website 2012 data

Hydraulic Fracturing Fluid

Typical Shale Fracturing Mixture Makeup



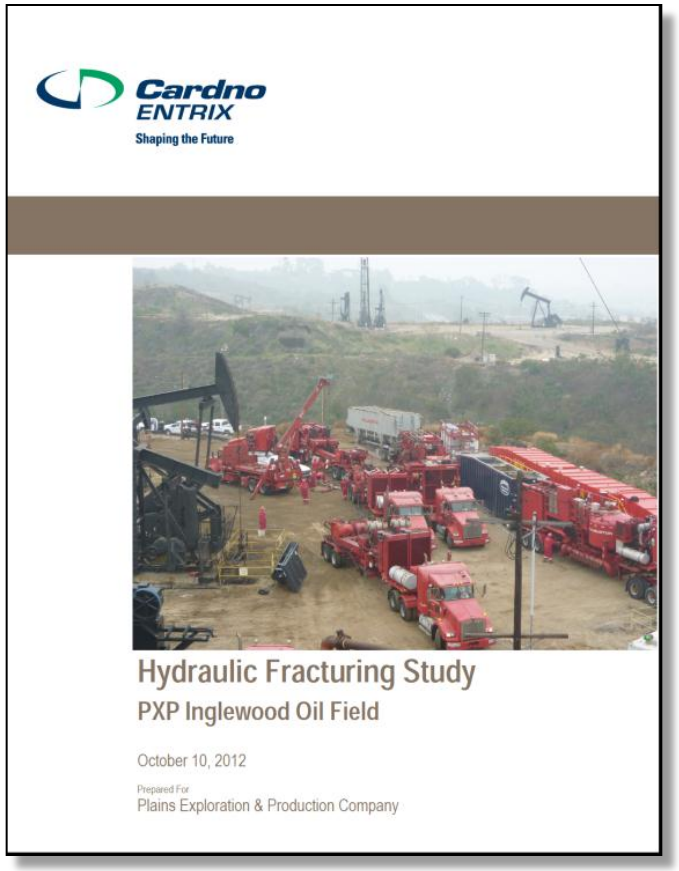
Typical Chemical Additives Used in Frac Water

Compound	Purpose	Common application
Acids	Helps dissolve minerals and initiate fissure in rock (pre-fracture)	Swimming pool cleaner
Sodium Chloride	Allows a delayed breakdown of the gel polymer chains	Table salt
Polyacrylamide	Minimizes the friction between fluid and pipe	Water treatment, soil conditioner
Ethylene Glycol	Prevents scale deposits in the pipe	Automotive anti-freeze, deicing agent, household cleaners
Borate Salts	Maintains fluid viscosity as temperature increases	Laundry detergent, hand soap, cosmetics
Sodium/Potassium Carbonate	Maintains effectiveness of other components, such as crosslinkers	Washing soda, detergent, soap, water softener, glass, ceramics
Glutaraldehyde	Eliminates bacteria in the water	Disinfectant, sterilization of medical and dental equipment
Guar Gum	Thickens the water to suspend the sand	Thickener in cosmetics, baked goods, ice cream, toothpaste, sauces
Citric Acid	Prevents precipitation of metal oxides	Food additive; food and beverages; lemon juice
Isopropanol	Used to increase the viscosity of the fracture fluid	Glass cleaner, antiperspirant, hair coloring

Source: Department of Energy, Ground Water Protection Council, Modern Gas Shale Development in the United States; A Primer (2009)

Hydraulic Fracturing Safety Concerns

- All fractures separated from fresh water by at least 7,700 feet (1.5 miles) or more
- Studies 14 environmental issues, including public health, groundwater, air quality, seismic, noise, vibration
- No impacts to any of the 14 areas studies

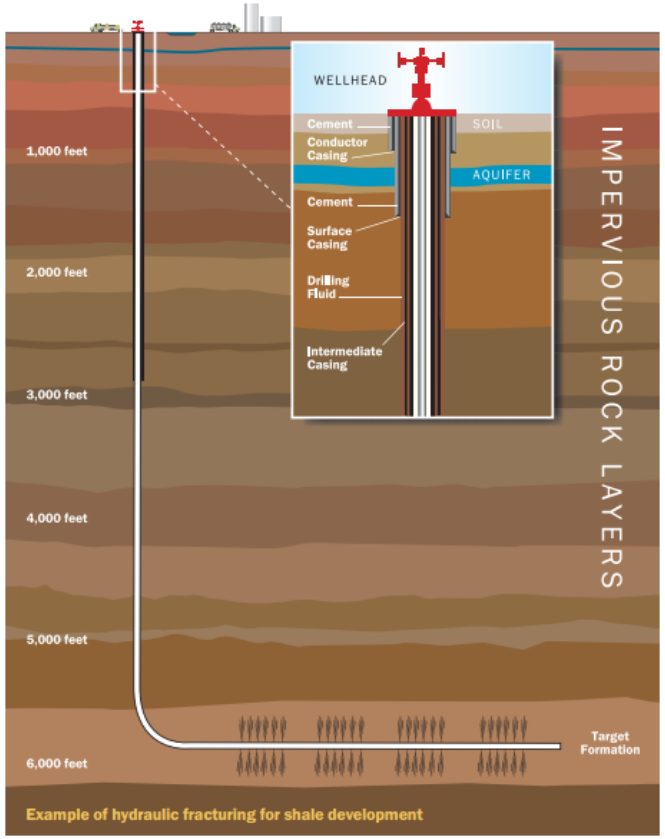


October 10, 2012

Hydraulic Fracturing and Water Use

- In 2012, the average amount of water used during hydraulic fracturing operations was 116,000 gallons of water
- The average golf course requires 312,000 gallons per day
- The total amount of water used in the 568 wells that were hydraulically fractured in 2012 was 202 acre feet
- Farming in California 2012 uses approximately 34 million acre feet of water annually

Well Construction Protects Groundwater



- Steel pipe known as surface casing is cemented into place at the uppermost portion of a well for the explicit purpose of protecting the groundwater
- The depth of the surface casing is generally determined based on groundwater protection
- Today's well designs isolate the formation where natural gas is to be produced, further protecting groundwater

Produced Water

- Oil and gas companies have tremendous amount of skill and expertise handling, using, and disposing “produced water.”
- Both hydraulic fracturing fluids and produced water are handled in accordance with California’s water quality regulations.
- Stored water must be tested regularly to determine if they meet state and federal hazardous material criteria.
- 60 percent of produced water is disposed of in sealed injection wells regulated by DOGGR. Remaining amount is treated and sold for agricultural use.

Senate Bill 4 Signed

- Governor Brown signed SB 4 September 20, 2014
- The toughest regulations of hydraulic fracturing and other energy production activities in the country
- SB 4's requirements went significantly farther than the petroleum industry felt was necessary
- Provides an environmental platform to responsibly develop the Monterey Shale formation
- A great deal of work still to be done to clarify and implement the requirements of SB 4
- Oil industry will work with the Administration, Department of Conservation and other stakeholders to ensure SB 4 is implemented effectively and fairly

Hydraulic Fracturing Legislation & Regulations

Stages of SB 4 Implementation

By January 1, 2014

- Operators must “certify” compliance with all operational, reporting, and disclosure aspects of SB 4
- DOC/DOGGR considering emergency rulemaking

By January 1, 2015

- Completion of a comprehensive independent scientific study on well stimulation treatments
- DOGGR to adopt well stimulation rules and regulations
- DOGGR to enter into formal agreement with other agencies to delineate regulatory authority
- State Water Resources Control Board to develop groundwater monitoring model criteria

Hydraulic Fracturing Legislation & Regulations

Stages of SB 4 Implementation (Continued)

By July 1, 2015

- DOGGR shall certify an environmental impact report (EIR) as lead agency, regarding any potential impacts of well stimulation in the state

By January 1, 2016

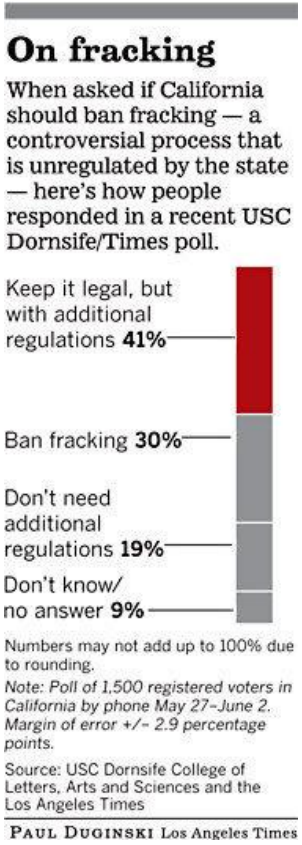
- State Water Resources Control Board shall implement regional groundwater monitoring programs
- DOGGR to have Internet Web site operational for operators to report specific information related to well stimulation treatment

Kern County Regulations - CEQA EIR Development

- Kern County is preparing an Environmental Impact Report that provides oil producers extended CEQA coverage
- Oil industry is supporting and financing the process
- Project completion expected within 18 months
- Process will assist in development of a statewide EIR

Public Support for Regulated Hydraulic Fracturing

- USC Dornsife/LA Times poll, June 7, 2013
- Californians support hydraulic fracturing if properly regulated
  - ✓ 41% of poll respondents said they supported hydraulic fracturing with additional regulations
  - ✓ 19% said hydraulic fracturing was already regulated enough
  - ✓ 30% opposed hydraulic fracturing under any circumstance



WSPA Supports Comprehensive, Balanced Regulation

- With the passage of Senate Bill 4, California is now home to the strictest regulations on hydraulic fracturing in the country
- All parties have a responsibility to acknowledge that:
  - ✓ There are legitimate issues related to hydraulic fracturing that must be addressed by regulators and the Legislature
  - ✓ Production of petroleum energy is a vital and necessary part of the California economy
- Implementation of SB 4 must offer direction to ensure that our state's environmental health and natural resources are protected while safely using hydraulic fracturing technologies for energy production in California

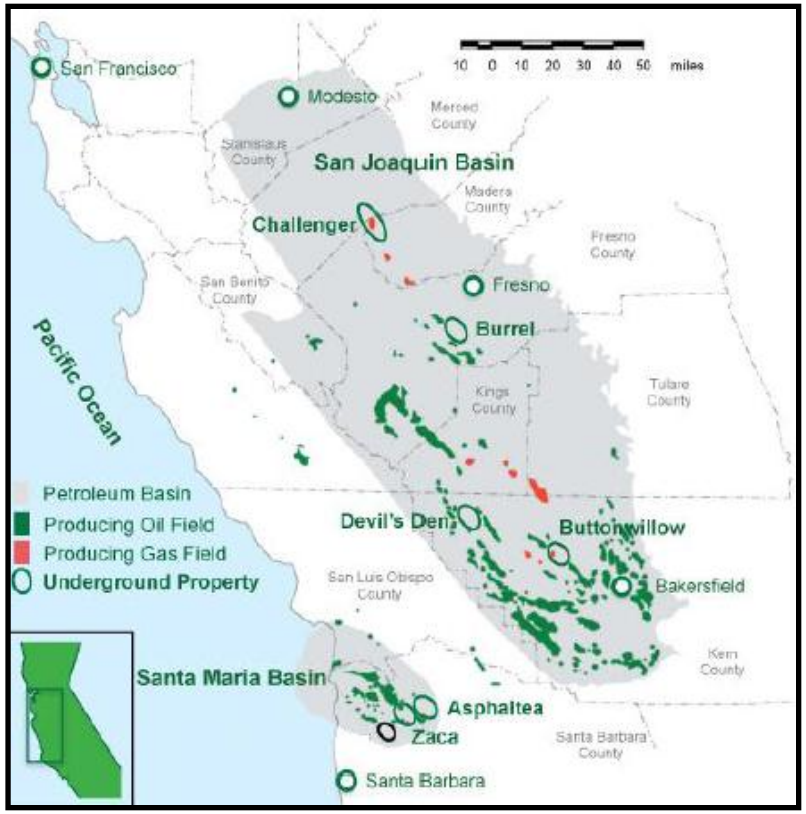
An Extraordinary Opportunity

- "The fossil fuel deposits in California are incredible. " Governor Jerry Brown

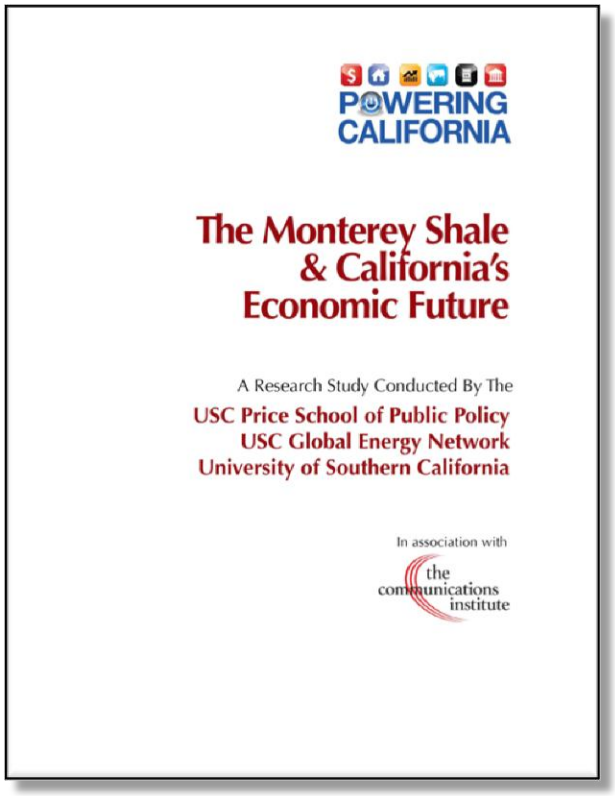
- "The potential is extraordinary, but between now and their development lies a lot of questions that need to be answered." Governor Jerry Brown.

A San Joaquin Valley California Opportunity

- According to the EIA, 15.4 billion barrels of oil trapped in the pores of shale rocks in the San Joaquin Valley
- Advanced-extraction oil technology: potential in CA
- 1750 square mile area represents 2/3rds of U.S. shale resources
- Hydraulic fracturing used extensively in other states and in California for 60 years without harm to the environment



The Monterey Shale & California's Economic Future


POWERING CALIFORNIA

The Monterey Shale & California's Economic Future

A Research Study Conducted By The
USC Price School of Public Policy
USC Global Energy Network
University of Southern California

In association with
the communications institute

- 512,000 Jobs by 2015 and 2.8 million by 2020
- 2.6% to 14.3% State GDP Increase
- $40.6 billion to $222.3 billion personal income increase
- $4.5 - $24.6 billion state and local tax revenues increase

New Report Outlines Economic Future of San Joaquin Valley and Impacts of Monterey Shale

By 2030, depending on the pace of development, the Monterey Shale Formation could represent major economic growth in the San Joaquin Valley:

- As many as 195,000 new jobs
- Personal income could top $22 billion
- Taxable sales valued as high as $6.7 billion

Source: The Petroleum Industry and Monterey Shale: Current Economic Impact and Economic Future of the San Joaquin Valley, Antonio Avalos and David Vera, Craig School of Business, California State University Fresno, August 31, 2013

The Monterey Shale & Job Skills Training

WSPA is working with CSU Bakersfield to:

- Assess current job skill inventory
- Identify job skills required by expanded oil production
- Create opportunities for enhance training programs

Follow Us on Twitter
@WSPAPrez

www.wspa.org