

## Oil and Gas Issues Road Map

In the coming months, the Department of Conservation (Department) and the Division of Oil, Gas, and Geothermal Resources (Division) must develop plans to address the following issues. Each will require different levels of resolution, potentially requiring changes in regulation and/or statute. Two categories of issues are identified – Regulatory Issues and Program Implementation Issues.

### REGULATORY ISSUES

#### 1. Hydraulic fracturing for well stimulation -- "Fracking"

Hydraulic fracturing for well stimulation (fracking) has been in use in California for many years. Existing Division regulations that protect well casings, hydrocarbon-bearing geologic formation, and groundwater all apply to wells through which fracking was conducted. The Department is beginning a series of workshops to scope regulations that would:

- Specify steps required to ensure well integrity.
- Specify well integrity testing.
- Ensure resource protection.
- Detail reporting requirements.

Following the input received from workshops, in the summer of 2012, the Department intends to release draft regulations for review and comment through the Administrative Procedures Act's Rulemaking Process. In addition, the Department has asked that all operators begin reporting their fracking activities on FracFocus.org, a nationally-recognized clearinghouse, sponsored by the Groundwater Protection Council and the Interstate Oil and Gas Compact Commission (IOGCC). The Department also is seeking to commission an independent study of fracking in California to identify the actual impacts of fracking. This will be vital information in identifying risks to protect public health, safety, and the environment and evaluating how regulations might change to address identified risks.

#### Considerations:

- a) Determine how pending legislation affects the ultimate rulemaking process to ensure that two rounds of regulation do not become necessary.
- b) Evaluate how the information provided as a result of reporting on FracFocus.org will help to evaluate in-state fracking operations.
- c) Ensure independence of study, as well as timely completion of study to inform the regulatory process.
- d) Any appropriate additional limitations for fracking.

#### 2. Underground Injection Control Program

The Division has a Memorandum of Agreement with the U.S. Environmental Protection Agency (US EPA) granting the Division primary regulatory authority over Class II wells in California. The primacy agreement is based on a demonstration that the State UIC Program is compatible with the U.S. Safe Drinking Water Act and that the Division regulates Class II injection wells in a manner that effectively protects underground sources of drinking water. An audit by the US EPA identified deficiencies in the Department's oversight of those wells. The current trend in oil field production is toward increased use of water injection, for enhanced oil recovery and/or for disposal of waters produced with oil and natural gas. The Department must ensure it conducts appropriate reviews consistent with the primacy agreement, and also keeps pace with the trends in oil and gas production.

**Considerations:**

- a) Ensure the Department has sufficient staffing to implement the UIC program in California, a question presently before the Legislature in the form of a BCP in the Governor's FY 2012-13 Budget.
- b) Update existing regulations – most of which are more than 30 years old – to identify any changes needed to reflect developments in engineering and production practices.
- c) Ensure the Department can address all of the issues raised by the US EPA audit and that it can process all UIC permits expeditiously.

**3. Cyclic steam – Shallow Diatomite**

The use of cyclic steam in the production of heavy and tight oil resources from diatomite formations has been growing. Division rules and regulations for well construction and operation in cyclic steam conditions should be examined to determine if and how they should be modified to reflect the different conditions and forces exerted on production wells and on the subsurface geology.

**Considerations:**

- a) Draw distinctions and identify similarities between cyclic steam production and underground injection operations.
- b) Identify how depth of formation (shallow diatomite vs. deeper formations) impacts the ability of operators to manage safe and efficient production.
- c) Identify whether existing well casing requirements/regulations can meet cyclic steam injection/production challenges and, if not, identify changes needed in well construction regulations.

**4. Carbon Dioxide Capture and Storage (CCS) vs. Enhanced Oil Recovery (EOR) – When is practice EOR and when is it CCS?**

The Department is aware of growing interest in using carbon dioxide (CO<sub>2</sub>) as an enhanced oil recovery (EOR) tool, in combination with CCS goals. DOC has authority to oversee EOR projects, as reflected in its Underground Injection Control (UIC) Program. That UIC program has been granted primacy to satisfy federal Safe Drinking Water Act requirements for Class II wells. Department expertise in this field is limited because in California water and steam are used far more extensively as EOR injection material than CO<sub>2</sub>. CO<sub>2</sub> does have different properties in a subsurface environment, and the Department needs to make sure that any projects involving CO<sub>2</sub> injection receive appropriate review by professionals with competency in subsurface CO<sub>2</sub> dynamics. The US EPA considers CCS wells to be Class VI wells, over which the Department has no current authority.

**Considerations:**

- a) Ensure Department has expertise to oversee CO<sub>2</sub> injection for EOR.
- b) Determine components required for statutory changes if the State should seek US EPA state-level authority for Class VI injection wells / sequestration projects. Consider which agency of CA government most appropriately should have Class VI well primacy from US EPA.

**5. Waste Gas**

The Department's existing statutory authority to permit and regulate the re-injection of the gas component of produced fluids is ambiguous. Pending legislation (SB 711, Rubio) will clarify the Department's authority over these operations. Consistent implementation of the authority across the Division becomes the next step, and the Department will need to undertake a regulatory development process to implement SB 711 if it becomes law.

**Considerations:**

- a) Evaluate degree to which such gas is associated with produced fluids (usually brine) and practically and safely can be disposed of back into the zone from which it was produced or into other zones.
- b) Determine whether the Department permits injection fluid blends that bear little resemblance, in their content, to produced fluids, fluids that typically emerge from California's oil and gas fields.
- c) Consider different standards, for different oil and gas fields, given that sour gas (as a subset of "waste gas") is not uniformly present across the State.
- d) Determine whether existing staffing levels are sufficient for fluid disposal oversight.

**PROGRAM IMPLEMENTATION ISSUES**

**6. Worker safety**

Currently, Division staff receive worker safety training. However, tragic incidents remind the industry and regulators that oil and gas production operations have potential, attendant hazards. Safety trained and appropriately equipped staff is one of the Division's top goals.

**Considerations**

- a) Review the Department's use (and, as needed, supply) of personal protective gear to ensure appropriateness to the working environment.
- b) Review Department's safety and injury prevention training requirements to ensure consistency with worker safety rules and with the demands created by the workplace (e.g., oil field operations).

**7. CalWIMS statewide**

The Department's California Well Information Management System (CalWIMS) has been a work-in-progress for several years. Different district offices had different types of data recorded for wells, but also had common data fields across different districts. The Division needs to finalize this project so that all districts have well information available in a similar method of access, even if the data fields differ somewhat. This system will also provide the platform to pursue E-permitting, E-inspect, and on-line data. The Department's principal concern with this item is ensuring that it remains a high priority through completion and does not get sidelined or unreasonably delayed as new challenges arise.

**Considerations**

- a) Identify and overcome barriers to complete conversion by all six divisional offices and integrate Division headquarters information needs into CalWIMS.
- b) Determine whether resolution of district-specific requirements for CalWIMS can/should be developed under contract for IT services or by in-house development staff.

**8. E-Reporting**

Separate from CalWIMS, E-reporting by oil or natural gas producers could speed review and approval processes. Presently, Notices of Intent are most often submitted on paper form. Allowing E-permitting and reporting could speed report generation, oversight, and oil and gas assessment collections. Further evaluation would also be appropriate in determining how to balance the desire to speed reporting and collections with the cost imposed on operators to comply with E-reporting requirements.

**Considerations**

- a) Determine degree of technology capability across spectrum of reporting oil/gas field operators.

- b) Identify efficiencies (speed, cost savings, etc.) that could arise from E-reporting for both the Division and for industry operators/reporters.

### 9. Improve Information and Technology Sharing

Department mapping and modeling of subsurface geology and oil field operations are largely limited to two-dimensional rendering of well bores, construction, and of oil fields. Many oil operators, though, have the ability to track these two-dimensional details, but to *create three-dimensional models of the subsurface geology*. The Department is charged with regulating to ensure well integrity across ground water zones and hydrocarbon zones. Three-dimensional modeling of subsurface geology would give the Department access to similar information as used by the operators, potentially allowing the Division to anticipate proposals and problems that could arise around new drilling permits, as well as issues that could arise from operational or structural changes to existing wells.

#### Considerations

- a) Evaluate value of added analytical capability relative to oversight of oil and gas drilling, production, and injection operations.
- b) Identify required software, hardware, and staff training requirements.
- c) Initiate discussion with industry regarding partnerships to fund update of technologies.
- d) Initiate discussion with industry about possible sources of data for subsurface geology analysis.