Analysis of Produced and Imported Crude Oil in California

California Department of Conservation,
Division of Oil, Gas, and Geothermal Resources

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August 2018
Production and Price
% Change
### US Performance Measures

- **PRAC** = Proved Reserve Acquisition Cost
- **FDC** = Finding and Development Costs
- **RRC** = Reserve Replacement Cost
- **Revisions** = restating of booked reserves due to low oil prices
Permitting Trends
Permitting and Price

Relationship of:
- Permits Requested
- Permits Issued
- Wells Drilled
- Price of Oil
Well Stimulation and Price

Well Stimulation =
• Hydraulic Fracturing
• Acid Matrix Stimulation
• Acid Fracturing

* Statistics from FracFocus.
** Statistics from interim reporting period.
Permitting And Oil Operations Locations

Over 23,000 Permits requested in total since 2011
175 Permits requested outside of Oil & Gas Fields
81 of these were Cancelled
29 are currently Active
Total Active Oil & Gas wells in California: 71,999

Active Oil & Gas Well Permitted Since 2011 Outside an Oil & Gas Field
Notices Received
2008 - 2018

General Information Table:

<table>
<thead>
<tr>
<th>District</th>
<th>(Re) Abandon</th>
<th>Drill</th>
<th>Rework</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6,778</td>
<td>2,879</td>
<td>7,472</td>
<td>17,129</td>
</tr>
<tr>
<td>2</td>
<td>1,273</td>
<td>658</td>
<td>2,767</td>
<td>4,698</td>
</tr>
<tr>
<td>3</td>
<td>682</td>
<td>562</td>
<td>1,408</td>
<td>2,652</td>
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<tr>
<td>4</td>
<td>44,257</td>
<td>62,214</td>
<td>47,765</td>
<td>154,236</td>
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<tr>
<td>5</td>
<td>4,124</td>
<td>3,246</td>
<td>3,958</td>
<td>11,328</td>
</tr>
<tr>
<td>6</td>
<td>1,519</td>
<td>1,955</td>
<td>4,462</td>
<td>7,936</td>
</tr>
<tr>
<td>Total</td>
<td>58,633</td>
<td>71,514</td>
<td>67,832</td>
<td>197,979</td>
</tr>
</tbody>
</table>

Charts:

- **NoIs by Type**
  - (Re) Abandon: 59K
  - Drill: 68K
  - Rework: 72K

- **NoIs by Year**
  - 2008: (Re) Abandon: 7K, Drill: 5K, Rework: 3K
  - 2010: (Re) Abandon: 6K, Drill: 5K, Rework: 3K
  - 2012: (Re) Abandon: 7K, Drill: 5K, Rework: 3K
  - 2016: (Re) Abandon: 5K, Drill: 5K, Rework: 3K
  - 2018: (Re) Abandon: 4K, Drill: 5K, Rework: 3K

**Legend**:
- (Re) Abandon
- Drill
- Rework
Permits Issued
2008 - 2018

<table>
<thead>
<tr>
<th></th>
<th>(Re) Abandon</th>
<th>Drill</th>
<th>Rework</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 1</td>
<td>6,505</td>
<td>2,719</td>
<td>7,110</td>
<td>16,334</td>
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<tr>
<td>District 2</td>
<td>332</td>
<td>247</td>
<td>1,337</td>
<td>1,916</td>
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<tr>
<td>District 3</td>
<td>634</td>
<td>535</td>
<td>1,309</td>
<td>2,478</td>
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<tr>
<td>District 4</td>
<td>41,806</td>
<td>57,413</td>
<td>45,155</td>
<td>144,374</td>
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<tr>
<td>District 5</td>
<td>4,108</td>
<td>3,202</td>
<td>3,909</td>
<td>11,219</td>
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<tr>
<td>District 6</td>
<td>581</td>
<td>619</td>
<td>2,373</td>
<td>3,573</td>
</tr>
<tr>
<td>Total</td>
<td>53,966</td>
<td>64,735</td>
<td>61,193</td>
<td>179,894</td>
</tr>
</tbody>
</table>

Permits by Type
- Drill
- Rework
- (Re) Abandon

Permits by Year
- (Re) Abandon
- Drill
- Rework
Recent Regulatory Actions
• Well Stimulation
• Gas Storage Facility
• Underground Injection Control (in progress)
• Idle Well Regulations (in progress)
• Safe Drinking Water Act/Aquifer Exemptions (in progress)
Summary

- Declining production in-state
- Historically price increases have not driven CA production up
- Permits to maintain declining production likely to continue in existing fields
- Regulatory modernization is ongoing