Developing Oil and Gas in Colorado

Tom Hunt, Policy Programs Manager
March 7, 2013
The Colorado Energy Office promotes sustainable economic development in Colorado through advancing the state’s energy market and industry to create jobs, increase energy security, lower long term consumer costs, and protect our environment.
1. Outline and Introduction

1. Introduction and agencies involved.

2. History of production; main benefits and concerns.

3. Developing the right way – two case studies and significant recent policies.

4. Accessing the benefits of Colorado’s natural gas production.

5. Conclusions and wrap-up.
Office reorganized in 2012 legislative session

- Changed name of the office to “Colorado Energy Office”
- Established two funds directing work in both renewable and traditional energy sectors.
- Office given the mission of promoting economic development through the energy market and;
- The Office will encourage clean and innovative energy solutions.
Created to “Foster the responsible, balanced development...of oil and gas” in a way that:

| Protects public health and the environment | Safeguards mineral ownership rights | Prevents waste of resources | Balances development with wildlife conservation |
2. History and Impacts of Production

What have we done to ensure development is done safely and responsibly? What else needs to be done?

- **Ancient history**
  - Production is not new to Colorado

- **Not-so-ancient history**
  - Recent growth of production and the benefits provided

- **Two sides of the coin**
  - Many issues are still controversial
Beginning of Production in Colorado

First oil found in a seep near Florence in 1860

• Attempts to drill not successful until 1881

First refinery built in 1885 – 200 barrels per day

• Many built, merged, and closed until one main refinery left in Commerce City

Production over 2 million barrels per year in late 1920s

• Most production from western CO by end of 1920s
Oil production has grown 124% since 1999, a 6.4% CAGR

Gas production has grown 83% since 1999, a 4.8% CAGR
Why is this important to Colorado?

Jobs
- The oil and gas industry employs over 40,000 people in Colorado.

Security
- Colorado exports more than ¾ of the natural gas it produces; oil production offsets around 1/3 of petroleum consumption.

Cost
- Mid-continent crude prices lower than global markets lead to lower gasoline prices; natural gas prices have dropped dramatically since 2008.

Environment
- The U.S. is at its lowest per capita carbon emissions since the Eisenhower administration, with NG fuel switching playing a prominent role in that.
Two Sides of the Story

Headlines from the Denver Post, in one week in February:

- “La Plata County considers time-out on drilling” 2/14/2013
- “Water fouled with fracking chemicals spews near Windsor” 2/14/2013
- “BLM deferring Dinosaur-area oil, gas leasing” 2/13/2013
- “Colorado oil and gas well setback fight headed to state legislature” 2/11/2013
- “BLM drops controversial western Colorado parcels from oil and gas sale” 2/6/2013
3. Development that is right for Colorado

What have we done to ensure development is done safely and responsibly? What else needs to be done?

Recent rulemakings

- Why they occurred and what they produced, as case studies of two Colorado counties

Public perception

- Disclosure and level of control

Future studies

- Many important issues still face uncertainties
Are We on the Right Path?

IEA’s 2012 report looked at how to develop natural gas both profitably and responsibly.

The report’s annex contained 20 reference rules that aligned with IEA’s best principles. 9 were from CO.

Areas covered included open access to records, permitting requirements, and technical specifications.
What Matters is What the State Thinks

Tourism, Agriculture, Recreation Industries

Over 5 Million People

Extensive Urban Corridor

National Parks & Wilderness

Mountains, Plains, Rivers
Multiple Fields Across the State

Weld County (D-J Basin)
- Colorado’s top oil producing county
  - Population of 258,000
  - Almost 4,000 square miles
  - Nearly 20,000 active wells

Garfield County (Piceance Basin)
- Colorado’s top gas producing county
  - Population of 56,000
  - Almost 3,000 square miles
  - Over 10,000 active wells
Garfield County

- Much of population situated along main rivers; production extends into mountainous areas and mesas
- Home to multiple national forests, wilderness areas, and parks
- Recreation and outdoor activities are another big industry
2008 COGCC Rulemaking

Focus on Environmental Protection – selected rules include:

### Reclamation
- New rules for interim and final land reclamation
- Also included new requirements for initial site preparation

### Water systems
- Development limited in proximity to surface water
- Pit requirements tightened

### Wildlife
- Greater consultation requirements to examine wildlife impacts
- Surface water impacts proximity also examined for wildlife impacts
Weld County

- Colorado’s biggest agricultural county
- Wells focused in SW corner of county, close to Denver, Boulder, Ft. Collins, and associated suburbs
- Contains city of Greeley as well as many fast-growing towns
2012/13 Setbacks Rulemaking – 3 Legs

1. Setbacks
   • No operations within exception zone 500 feet from occupied buildings, unless specially approved;
   • BMPs required for operations within buffer zone 500-1000 feet from occupied buildings

2. Mitigation:
   • Increased focus on noise abatement
   • Lighting abatement requirement extended
   • Dust and odor regulations applied statewide
   • Berms, liners, and other strategies required in buffer/exception zones

3. Communication:
   • Public comment period extended to 40 days
   • Operator required to meet with residents of buffer and exception zones if requested
Demonstrates groundwater quality before and after development of oil and gas resources
Commission receives more water quality complaints than any other type.

**Before:**
Up to 4 available water sources within ½ mile radius.
Initial sampling within 12 months prior to drilling.

**After:**
Next sample 6 to 12 months after commencement.
Another sample 5 to 6 years after commencement.

**Placement:**
Testing can be at existing groundwater wells or drilled monitoring wells (which are not required).
Fluid Disclosure

“…the fairest and most transparent set of fracking regulations in the country.”

- Regulations passed in December 2011, going in to effect April 2012
- Required disclosure of all chemicals, hazardous or not, used in hydraulic fracturing within 60 days of completion of job
- Information posted to fracfocus.org
- Protections for trade secrets require signed affidavit
- Final rules won support of both environmental and industry groups and stemmed from voluntary program supported by industry
Longmont as the focal point

- July 2012 – Longmont City Council passes ordinance implementing oil and gas regulations perceived to be more limiting than state regulations
  - State files lawsuit asserting ordinance pre-empted by state rules
- November 2012 – Longmont voters pass Question 300 (approximately 60%-40%) banning fracking
  - Colorado Oil and Gas Association files lawsuit on similar grounds
Local/State Jurisdiction – Why it Matters

State level regulation provides most consistent, effective, and productive

Cities can sign MOUs with companies establishing more restrictions

Cities can govern topics not covered by COGCC and work with state in other areas

Fort Collins, among others, is looking at a ban on fracturing
Future Efforts: Understanding of Emissions

Recent studies
• Petron et al. showed elevated methane emissions from D-J Basin
• Others have been more in line with lower numbers used as EPA standard

Future state testing
• CDPHE is currently partnering with CSU for a study of emissions in Garfield County
• The administration has proposed a large-scale study along Front Range as well

Proposals for control
• CDPHE has begun stakeholder process to look at emissions controls
• Potentially will include IR camera tests at a variety of sites
4. Accessing the benefits

Beyond the macro-level results, how do we utilize our natural gas boom?

**Natural Gas Vehicles**
- Diversifying our transportation fuel mix and using in-state fuel

**Fuel Switching**
- Air quality benefits at in-state power plants

**Local Impacts**
- Providing impacted communities with tangible benefits of energy production
Colorado is a net importer of oil but a net exporter of natural gas. We produce about 4 times the natural gas we consume.

Natural Gas in Colorado
Million GGE

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Consumption</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Oil in Colorado
Million GGE

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Consumption</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 2011 state consumption numbers not yet published—extrapolated from 2011 U.S. consumption and 2010 state share of U.S. consumption

Oil and gas consumption: EIA SEDS
Oil and gas production: COGCC
NGV Multi-State Effort

- Aggregate state vehicle procurement in a Joint RFP; utilize *local distribution networks*.
- Include *local governments* in procurement.
- Reach out to *OEM manufacturers* to engage participation and low prices.
- Encourage *private investment* in NGV infrastructure.
- Participation by *bipartisan* group of Governors

- More than 100 bids submitted
- Dealers in 28 states
- Notable price concessions
- Strong OEM involvement
Local Impact Fund

Energy and Mineral Impact Assistance Program

<table>
<thead>
<tr>
<th>Funded by state severance tax dollars and the state’s share of federal royalties</th>
<th>Administered by Department of Local Affairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goes to communities impacted by development of minerals and fuels</td>
<td>Allows communities to see direct benefits of the industries and address needs created</td>
</tr>
<tr>
<td>For projects like water systems, road improvements, community centers</td>
<td></td>
</tr>
</tbody>
</table>
The Clean Air Clean Jobs Act was passed in 2010. The bill proactively addressed emissions issues before EPA regulation and involved legislation and agency cooperation. As a result, utility resource plans were developed. The plans resulted in 443 MW of coal-powered generation being switched to natural gas and 1293 MW of coal being retired or controlled. This resulted in a long-term in-state natural gas contract. Using natural gas gives air quality benefits, while using in-state natural gas gives tangible, quantified economic benefits.
## Projects Announced

**Power Plant Supply Contract**
- Anadarko Petroleum won supply contract under Clean Air Clean Jobs
- 10 years of natural gas produced in Colorado

**Investment in the East**
- December 2012: Noble Energy plans to invest $1.7B in CO in 2013
- In D-J Basin, primarily Weld County

**Investment in the West**
- November 2012: Encana announces joint deal with Nucor for up to 4000 wells
- Primarily in Rio Blanco and Garfield Counties
5. Conclusion

1. Production looks strong moving forward
2. Colorado has continued to be proactive in addressing concerns associated with development
3. Economic impacts of production seen across many sectors
4. Do it right
Contact Us

Colorado Energy Office (CEO)
State of Colorado
John W. Hickenlooper, Governor
1580 Logan Street, Suite OL1
Denver, Colorado 80203

Tom Hunt
tom.hunt@state.co.us
www.colorado.gov/energy

The Colorado Energy Office
@coenergyoffice
References by slide number

5. CRS 34-60-102
7. High Altitude Energy, by Lee Scamehorn
8. cogcc.state.co.us, Database tab
9. Employment statistics – COGA; consumption/production – EIA SEDS;
10. www.denverpost.com
12. IEA, “Golden Rules for the Golden Age of Gas” and related “Annex of Regulation and Best Practice.”
14. Population: Colorado Department of Local Affairs, July 2011 estimates (rounded). See:
16. cogcc.state.co.us
18. cogcc.state.co.us
19. cogcc.state.co.us
20. cogcc.state.co.us; quote from Governor’s office press release at
   http://www.denverpost.com/breakingnews/ci_22692101/colorado-rule-change-may-relax-air-pollution-reporting
29. CACJ contract – same as slide 28. Investment announces – various news sources