

## **A Colorado Viewpoint on the Development of Oil Shale Resources**

Bob Randall

*Assistant Director for Energy & Minerals  
Colorado Department of Natural Resources  
Denver CO*

President Scoggins and Dr. Boak, thank you for inviting me to join you here today at the 29th Oil Shale Symposium, at the Colorado School of Mines. Thanks to all of you for being here. I am honored to have the opportunity to speak with you today on behalf of the Colorado Department of Natural Resources.

For nearly 30 years, this has been the pre-eminent gathering of scientists to discuss the scientific and policy issues concerning this enormous potential energy source, and I congratulate you on your staying power and on your continued efforts to explore this fascinating and ever-evolving important topic.

Development of a sound domestic energy policy is a vitally important topic these days. It is key to both our national security and our continued economic prosperity. On the State and national levels, policy-makers are exploring all options to meet our current and future energy demands. And in the private sector, there has been an explosion of interest and investment in solving our energy problem. I think everyone agrees that all options need to be on the table, in order to craft a 21st century approach to energy in the United States.

In Colorado, we are embracing the challenge of responding to an evolving energy landscape. I know I speak for the Governor when I say that we are proud of the work Colorado is doing to build a 21<sup>st</sup> century new energy economy and lead Colorado to a new energy future.

Over the last 150 years, Colorado has become one of this country's greatest producers of energy -- from oil to coal to natural gas to wind, sun, geothermal, and biomass. Colorado enjoys world-class oil and natural gas resources. Colorado, as

many of you know, has a long, venerable history in the oil industry. In fact, the second oil field in the United States was discovered at Oil Creek near Canon City, just 13 months after Drake's discovery in 1859 at Oil Creek in Pennsylvania.

Oil production is still important to Colorado's economy 147 years later, having generated \$1.5 billion in revenues in 2007. We are 11th in the nation in proved reserves of oil. Colorado also has some of the most abundant supplies of clean-burning natural gas in the world. Colorado is the seventh largest gas producer in the nation. We have the country's fifth largest gas reserves. And we have all, or parts of, 7 of the top 50 natural gas fields in the nation.

This has obviously been a challenging year for the energy industry. Natural gas is selling for its lowest price in more than 7 years -- a fraction of what it was a year ago. The number of rigs operating in Colorado is about half of what it was last year. The meltdown of credit markets has hurt the energy industry as much as everyone else is, and it will be a while before things get better.

These are reasons why Governor Ritter has been working with the oil and gas industry, to realize the full promise of natural gas, to expand pipeline capacity, to increase natural gas as both a transportation fuel and as a baseload energy fuel.

Colorado is also aggressively pursuing a modern energy revolution -- the new energy economy -- which is diversifying our energy portfolio. Within Governor Ritter's first 100 days in office, Colorado's renewable portfolio standard was doubled from what was first passed by the citizens in

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2004 to require 20% renewable-generated electricity by 2020.

Over the past 2 years, Colorado has quadrupled the amount of WIND POWER on the grid, and we could double that by 2015. Colorado now ranks 8th in wind-power capacity, third in solar photo-voltaic capacity, and we're among the top states for geothermal. Energy is obviously one of the Colorado's economic sweet spots.

Colorado is also home to world-class oil shale resources -- obviously, or else you all wouldn't be here. Northwest Colorado's oil shale resources are among the richest in the world, said to yield an average of 2 million barrels per acre -- with some areas yielding much more than this. The United States Geologic Survey recently estimated that the area holds over 1.5 trillion barrels of in-place oil shale resources. Successful development of this resource could provide a substantial new source of domestic oil for the United States. This would have positive implications for our national energy policy and national security.

Because oil shale development creates potential opportunities for all Coloradans, and all Americans, with respect to energy security, energy affordability, economic security, and economic development, the State of Colorado has consistently supported research and development efforts. The potential for oil shale development in Colorado is huge.

But the prospect of commercial-scale activities raises significant questions about how oil shale can be successfully integrated into our State's economy. Colorado must have answers to several questions before research and development can yield to commercial production:

- What are the technology's water demands?
- What are the potential effects on the quality of surface and ground water resources?
- What are the energy requirements, and how would they be met?

- What are the costs of development of the technology?
- What is the likely recovery rate of the technology?
- How would commercialization of the technology affect wildlife?
- What are the potential employment and infrastructure needs associated with the technology?
- What are the environmental and health effects of the technology?
- What are the processing requirements for the shale oil produced by the technology, and how would this be done?
- How would shale oil be transported from the proposed site to market?

I know from past experience here at the Oil Shale Symposium that there are those in the audience convinced, beyond a doubt, that these questions can be answered and any concerns can be addressed. And we are anxious for you to succeed, and to provide these answers. You are investing in research to develop technologies for the future. Technology has provided advancements in every part of our lives, and energy is no exception.

These are serious questions, and we are anxious to see how you address them. These answers will assist federal, state, and local policymakers in making informed decisions regarding the economic, environmental and community impacts of oil shale development and potential commercial leasing.

Importantly, the ability to answer these questions is a vital function of research and development activities, in Colorado's view. This is why Colorado continues to support RD&D projects on the five federal oil shale research leases issued by the BLM in early 2007, totaling 800 acres. According to plans submitted with the RD&D nominations, these five 160-acre RD&D tracts contain an estimated 1.5 billion barrels of oil shale resources in place.

Additionally, nearly 25,000 acres in Colorado are held by RD&D lessees under pref-

erence right to obtain a commercial oil shale lease. These lands contain up to 48 billion barrels of in-place shale oil resources, the equivalent of about four Prudhoe Bay oilfields.

As I said, Colorado continues to strongly support these oil shale research efforts. Oil shale RD&D is important to understanding which oil shale technologies may prove viable and what the associated costs, impacts, and necessary mitigation measures will be. RD&D is thus a foundational first step towards any future commercialization of the resource. We are therefore anxious to obtain results from the five RD&D leases in Colorado.

Though issued nearly three years ago, however, to date none of the five RD&D leases in Colorado has been permitted for active mining or initiated construction activities. This is why Colorado this spring urged DOI -- in official comments on the RD&D leasing program -- to perform a mid-term assessment of the 5 RD&D leases to determine the status of the technology, the resource demands, and the obstacles preventing more substantial progress.

We felt that without this information and the answers to key questions regarding oil shale development, the State could not make an informed recommendation on, and DOI cannot make an informed decision about, the need for and the potential benefits of additional RD&D leasing – including the appropriate scope, terms, and focus of such leasing.

We believe that it is vital that DOI and Colorado officials obtain this information to ensure eventual commercialization of this important resource. We also felt that recent reports of oil shale research activities on non-federal oil shale resources in Colorado and elsewhere in the region showed that the availability of federal acreage was not the main factor limiting oil shale research.

Since that time, we have met with representatives from some of the companies holding federal RD&D leases, and we drove

out to the Piceance and visited the site of ongoing research on Shell's private land. These companies are actively pursuing research activities – groundwater monitoring, laboratory testing – that will be used in developing the RD&D projects.

I want to be clear here that Colorado supports their efforts to proceed cautiously. But we continue to believe that making more public oil shale resources available to the private sector for research is not the answer. Nonetheless, should DOI seek to offer additional RD&D leases at this time, we have urged DOI to offer leases conservative in size, scope, and terms so that RD&D leasing did not function as a back door to commercial leasing. Given the magnitude of the resource at stake and the potential benefits from its commercialization, any RD&D leasing should be targeted at proposals that are most likely to produce successful technologies and complement those at the existing RD&D sites.

We also urged the Interior Department to include lease provisions to ensure that RD&D activities did not result in unacceptable impacts to Colorado's environment, communities, and landscape. This includes requirements to perform baseline monitoring and analyses. It also includes requirements to conduct construction, operational, and post-operational monitoring and analyses to provide accurate information about the effects RD&D activities are having on the environment. It should also include provisions to ensure that additional RD&D leasing is not inconsistent with the need to conduct landscape-scale planning.

Because the oil shale resources of the Piceance Basin are largely unleased, DOI has a unique opportunity to plan development so that oil shale development:

- shares infrastructure,
- is clustered so as to minimize habitat fragmentation,
- continues to support multiple uses on public lands, and
- does not result in unacceptable pressures on the communities of the region.

Finally, we urged the Interior Department to consider whether RD&D activities had the potential to provide answers to some of the most persistent questions concerning commercialization of oil shale. These include the questions I mentioned earlier – about the potential for surface disturbance, the predicted water use, the amount of energy needed to run conversion processes, and so on. These questions should be asked regarding the technology's use at both an RD&D scale and at a commercial scale.

As most of you probably know, Colorado has been down this road before with oil shale. We feel that proceeding cautiously – getting answers to important questions, in order to avoid the boom and bust cycles of the past, and to avoid unacceptable impacts to our land, water, and communities -- is the way to really do it right.

As the Governor often says, our energy future is changing all around us -- our children will produce and consume energy far differently than we do today. We have the opportunity -- the obligation, in fact -- to lay the groundwork for a sustainable future, a strong economy, and a clean environment. And technology is our best friend on this journey. It might allow us to improve fuel efficiency in our cars and trucks, drill for oil or natural gas deeper and cleaner, or finally unlock the promise of the vast oil shale resources of western Colorado.

And that, of course, is where you all come in. This evolving technology is happening in private businesses, in public research laboratories, and in universities and colleges like the Colorado School of Mines. We absolutely must continue creating a new energy future for our children and grandchildren.

On behalf of the State, I urge you to continue this effort, and I thank you in advance for the progress you'll make in the coming years.

Thank you.