Oil Shale Development
Presented by

Mitchell Leverette,
Bureau of Land Management
Washington, DC

31th Annual Oil Shale Symposium
October 17, 2011
Click on the state jurisdiction to see an enlarged, more detailed jurisdiction map of the state.

For more information on this data, contact Keith Francis at NSTC, keith_francis@blm.gov or 303-236-0113.

- BLM State Jurisdiction
- BLM-Administered Lands
Public Lands held by BLM and FS

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage of Total Land Area</th>
<th>NFS Land in Million Acres (1,000 sq km)</th>
<th>BLM Land in Million Acres (1,000 sq km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>76.1%</td>
<td>5.9 (24)</td>
<td>48.0 (194)</td>
</tr>
<tr>
<td>Utah</td>
<td>70.2%</td>
<td>8.2 (33)</td>
<td>29.9 (121)</td>
</tr>
<tr>
<td>Idaho</td>
<td>60.5%</td>
<td>20.5 (83)</td>
<td>11.9 (48)</td>
</tr>
<tr>
<td>Oregon</td>
<td>46.2%</td>
<td>15.7 (64)</td>
<td>15.7 (64)</td>
</tr>
<tr>
<td>California</td>
<td>35.4%</td>
<td>20.8 (84)</td>
<td>15.2 (62)</td>
</tr>
<tr>
<td>Colorado</td>
<td>34.4%</td>
<td>14.5 (59)</td>
<td>8.4 (34)</td>
</tr>
<tr>
<td>Arizona</td>
<td>32.2%</td>
<td>11.3 (46)</td>
<td>12.2 (49)</td>
</tr>
<tr>
<td>Wyoming</td>
<td>29.5%</td>
<td>9.2 (37)</td>
<td>18.4 (75)</td>
</tr>
<tr>
<td>New Mexico</td>
<td>29.4%</td>
<td>9.4 (38)</td>
<td>13.5 (55)</td>
</tr>
<tr>
<td>Montana</td>
<td>26.5%</td>
<td>17.0 (69)</td>
<td>8.0 (32)</td>
</tr>
<tr>
<td>Alaska</td>
<td>25.7%</td>
<td>22.0 (89)</td>
<td>87.0 (352)</td>
</tr>
<tr>
<td>Washington</td>
<td>22.7%</td>
<td>9.3 (37)</td>
<td>0.4 (1.6)</td>
</tr>
</tbody>
</table>

PUBLIC LANDS HELD BY THE NATIONAL FOREST SERVICE AND THE BUREAU OF LAND MANAGEMENT

Location of the Green River Formation Oil Shale and Its Main Basins
Oil Shale & Tar Sand
Global Oil Shale Estimates

Major World Oil Shale Reserves

Note: This slide is taken from a November 18, 2003 DOE briefing on the Oil Shale Feasibility Study.
World Consumption and U.S. Energy Production and Consumption
1980-2030 (quadrillion Btu)

EIA/IEA Data
U.S. Primary Energy Production by Fuel, 1980-2030 (quadrillion Btu)

History

Projections

Total Energy Consumption

Total Energy Imports

Coal
Natural Gas
Petroleum
Nuclear
Renewables

Annual Energy Outlook 2007 Data
Genesis of BLM’s Current Oil Shale Program

• The President’s Energy Policy (Bush Administration)

• Secretarial Initiative

• Energy Policy Act of 2005
BLM’s Oil Shale Program
(3 Components)

• Research, Development, and Demonstration Leases

• Oil Shale and Tar Sands Regulations

• Planning and Environmental Review
Authorities for Leasing Oil Shale & Tar Sands

- **Mineral Leasing Act of 1920**
  - Provides for leasing specific minerals from public lands

- **Energy Policy Act of 2005**
  - Provides for RD&D oil shale leases
  - Provides for the commercial leasing of oil shale and tar sands
Energy Policy Act (EPAAct) 2005

Sec 369 Oil Shale, Tar Sands and Other Strategic Unconventional Fuels

- Sec 369(c) Establish leasing program for Research and Development of Oil Shale and Tar Sands

- Sec 369(d) Complete Programmatic Environmental Impact Statement and Commercial Leasing Program for Oil Shale and Tar Sands

- Sec 369(e) Commencement of Commercial Leasing of Oil Shale and Tar Sands
Oil Shale RD&D
The Research, Development and Demonstration (RD&D) (1st Round)

- *June 2005* - Call for nominations under FRN

- Received 20 nominations for tracts in Colorado, Utah, and Wyoming

- Screening and review by Interagency team

- Six proposals selected, NEPA completed, 6 leases issued
<table>
<thead>
<tr>
<th>Company</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell Frontier Oil &amp; Gas</td>
<td>69167</td>
</tr>
<tr>
<td>Shell Frontier Oil &amp; Gas</td>
<td>69194</td>
</tr>
<tr>
<td>Shell Frontier Oil &amp; Gas</td>
<td>69166</td>
</tr>
<tr>
<td>Chevron Shale Oil Co</td>
<td></td>
</tr>
<tr>
<td>Oil Shale Exploration, LLC</td>
<td></td>
</tr>
<tr>
<td>now Enefit American Oil</td>
<td></td>
</tr>
<tr>
<td>EGL Resources, Inc.</td>
<td></td>
</tr>
<tr>
<td>now American Shale Oil, LLC</td>
<td></td>
</tr>
</tbody>
</table>
2008 - 2009 Decisions

November 17, 2008
Record of Decision for PEIS signed by ASLM

November 18, 2008
Oil Shale Regulations published in the Federal Register

November 2009
Federal Register Notice published for 2nd Round RD&D
Round of RD&D (2nd Round)

- **November 2009** Federal Register Notice announcing the second round of RD&D

- **May 2010** Interdisciplinary Review Team (IDRT) meets to evaluate technical merits of the three applications received and forwards recommendations to BLM Washington Office

- **October, 2010** BLM send letter to applicants notifying them of the advancement of their applications.
Proposals that Advanced in 2\textsuperscript{nd} Round RD&D

<table>
<thead>
<tr>
<th>AuraSource</th>
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</thead>
<tbody>
<tr>
<td>ExxonMobil</td>
</tr>
<tr>
<td>Natural Soda</td>
</tr>
</tbody>
</table>
Oil Shale RD&D Provisions

RD&D (1st Round)

- 160 acre lease with a Preference Right to an additional 4,960 acres
- $2,000 application fee
- 10 year term with a potential 5 year extension
- Lease addendum-determines which set of regulations conversion will occur under, if there are new regulations published
- Multiple applications per entity

RD&D (2nd Round)

- 160 acre lease with a Preference Right to an additional 480 acres
- $6,500 application fee
- 10 year term, no extension
- Rents and royalties will be paid in accordance with regulations in effect at the time of conversion
- One application per entity
Status of the Six Selected RD&D Projects

- Currently gathering baseline data
- Further engineering study/design
- Acquiring Federal, state and local permits
Oil Shale PEIS (2008)
Record of Decision was first step to establish a commercial oil shale and tar sands leasing program

Decision was an allocation decision (makes lands available or open for the potential future leasing)

Amended 10 land use plans where oil shale and tar sands are present opening approximately 2 million acres for potential leasing of oil shale
Purpose and Need

- The Purpose was:
  - To identify areas where oil shale and tar sands resources are present
  - To decide which area will be open to application for commercial leasing, exploration and development
  - To amend the applicable land use plans

- The Need is:
  - To increase the nation’s domestic production of energy through development in the most geologically prospective areas
Defining the Oil Shale Study Area

- The gray areas represent the maximum extent of the Green River Formation Basins.
- Study area focuses on evaluating leasing within the most geologically prospective oil shale resources (shown in green) because they are likely to be the first targets for development.
  - In Colorado and Utah: yield is >25 gal/ton and thickness is >25 ft.
  - In Wyoming: yield is >15 gal/ton and thickness is >15 ft.
Main Scoping Issues

• Air quality
• Water quality and quantity
• Socio-economic concerns
• Ecological concerns
• Cumulative Impacts
## Acre Allocations by State for Potential Future Leasing

**Record of Decision (2008)**

<table>
<thead>
<tr>
<th>State</th>
<th>BLM-Administered Lands</th>
<th>Split Estate Lands (Federal Minerals only)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>317,882</td>
<td>41,916</td>
<td>359,798</td>
</tr>
<tr>
<td>Wyoming</td>
<td>992,682</td>
<td>7,771</td>
<td>1,000,453</td>
</tr>
<tr>
<td>Utah</td>
<td>554,977</td>
<td>75,995</td>
<td>630,971</td>
</tr>
<tr>
<td><strong>Total – Alternative B</strong></td>
<td><strong>1,865,542</strong></td>
<td><strong>125,681</strong></td>
<td><strong>1,991,222</strong></td>
</tr>
</tbody>
</table>

**Oil Shale**
Alternative B - Oil Shale (2008)

Colorado – 359,798 acres
Utah – 630,971 acres
Wyoming – 1,000,453 acres
Final Oil Shale Regulations (2008)
Goal was to create a program that:

- Hybrid of the Fluids and Solid Minerals Regulations
- Adopt best aspects of both programs
- Easy to understand, administer and monitor
- Flexible enough to adjust to new technology and issues as they emerge
- Provide adequate protection to the environment and other the resources
- Prevent land speculation
Oil Shale Regulations (2008)

Include processes:

- Leasing
- NEPA
- Bonding
- Royalty, Bonus Bids, Fair Market Value
- Diligent Development Milestones
- Lease Conversion
# Oil Shale Regulations

## Royalty Rate

5% for first 5 years of production, increasing 1% a year until reaching a rate of 12 ½%.

<table>
<thead>
<tr>
<th>Lease terms</th>
<th>20 years</th>
<th>Reg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rental</td>
<td>$ 2 acre</td>
<td>Stat.</td>
</tr>
<tr>
<td>Max. lease size</td>
<td>5,760 acres</td>
<td>Stat.</td>
</tr>
<tr>
<td>Max. allowed acres</td>
<td>50,000 acres entity</td>
<td>Stat.</td>
</tr>
<tr>
<td>Minimum Bid</td>
<td>$1,000 acre</td>
<td>Reg.</td>
</tr>
<tr>
<td>Bonding</td>
<td>Full Reclamation</td>
<td>Reg.</td>
</tr>
</tbody>
</table>
PEIS and Regulation Lawsuits

Civil Action No. 09-cv-00085-JLK and No. 09-cv-00091-JLK
(2009)

Colorado Environmental Coalition
Western Colorado Congress
Wilderness Workshop
Biodiversity Conservation Alliance
Southern Utah Wilderness Alliance
Red Rock Forests

Western Resource Advocates
National Wildlife Federation
Center for Biological Diversity
The Wilderness Society
Natural Resources Defense Council
Defenders of Wildlife Sierra Club
Allegations from Lawsuits

Two lawsuits filed - allegations include:

PEIS Lawsuit
- No Public protest period
- APA – ESA Consultation
- No Protection for lands with Wilderness Characteristics
- No Analysis of Climate Change and Air Pollution Issues

Regulations Lawsuit
- Royalty Rate violate the EPA 2005 and FLPMA
- Violation of the NEPA for failure to prepare an EIS
- Endangered Species Act Violation
Settlement Terms - PEIS

• BLM agrees to complete additional planning for oil shale/tar sands leasing in the original 12 plans (CO, UT, WY). ROD to be signed by 12/31/12.

• Areas that would be considered for exclusion are:

  – Areas BLM identifies or may identify in the planning process that contain wilderness characteristics;
  – The whole of Adobe Town “Very Rare or Uncommon” area;
  – Core or priority sage grouse habitat;
  – All ACECs located within the areas analyzed in the original 2008 OSTS programmatic EIS for oil shale/tar sands;
  – All areas identified as excluded from commercial oil sale/tar sands leasing in Alternative C of the 2008 OSTS programmatic EIS.
Settlement Terms - PEIS

• BLM will analyze at least the following three alternatives:
  
  – Alternative that removes all of the above lands from application for OSTS leasing;
  – Alternative that removes some, but not all, of the lands described above;
  – No action Alternative.

• During the planning process BLM commits to not issue a call for expression of leasing interest for commercial OSTS leases.

• Nothing in the settlement prohibits BLM from soliciting the nomination of parcels to be leased for RD&D in CO, UT and WY.
Alternative B - Oil Shale (2008)

Colorado – 359,798 acres

Utah – 630,971 acres

Wyoming – 1,000,453 acres
2008 Alternative C – Oil Shale

Colorado-40,325 acres  Utah-490,460 acres  Wyoming-299,511 acres
Scoping Meetings
(Feb/March 2011)

• 392 people registered their attendance
• 133 people provided comments
• 28,250 comments
• 27,472 form campaigns
• Comments from
  – 5 State Agencies
  – 4 Federal agencies
  – 14 local government organizations
  – 80 other organizations
New Planning - PEIS

• Opportunity for BLM to reconsider the 2008 decisions.
• Update based on new information.
• Alternatives developed based on settlement agreement, as well as issues and concerns identified during scoping.
• Effort will continue to be controversial.
• Secretary stated that Department is committed to a robust program of research and development to advance technologies for the recovery of oil-shale resources.
# PEIS Schedule (estimate)

<table>
<thead>
<tr>
<th>Draft PEIS</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>BLM and Cooperating Agency Review</td>
<td>October –November, 2011</td>
</tr>
<tr>
<td>Draft PEIS Released</td>
<td>December, 2011</td>
</tr>
<tr>
<td>90-day Comment period</td>
<td>December, 2011-March, 2012</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preliminary Final PEIS</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>BLM Review</td>
<td>August-September, 2012</td>
</tr>
<tr>
<td>Final PEIS Released</td>
<td>October 26, 2012</td>
</tr>
<tr>
<td>30-day Protest Period</td>
<td>October 26-November 26, 2012</td>
</tr>
<tr>
<td>Governor’s Consistency Review</td>
<td>October 26-December 26, 2012</td>
</tr>
<tr>
<td>Record of Decision</td>
<td>December 31, 2012</td>
</tr>
</tbody>
</table>
Settlement Terms - Regulations

- BLM will publish a notice of proposed rulemaking to address the royalty rate and environmental protection requirements applicable to oil shale leasing, no later than 11/18/12.

- Rule will propose to remove the royalty rate for oil shale pending development by BLM of additional information concerning the costs and profitability of oil shale operations.

- Rule will propose several changes to the environmental protection requirements applicable to oil shale commercial leasing.
New Regulations

• The Oil Shale Regulation Team has prepared:
  – Draft regulation text revisions
  – Draft Preamble language
# Regulation Schedule (estimate)

<table>
<thead>
<tr>
<th>Task</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft of Proposed Rule</td>
<td>October 2011</td>
</tr>
<tr>
<td>Publish Proposed Rule</td>
<td>January 2012</td>
</tr>
<tr>
<td>End Comment Period</td>
<td>March 2012</td>
</tr>
<tr>
<td>Publish Final Rule</td>
<td>By November 18, 2012</td>
</tr>
</tbody>
</table>
Looking Ahead

• RD&D – Conversion to Commercial

• New Regulations

• New Planning and Information

• Federal or Private Development