Basic Facts

Claim-Patent System
- Hardrock mining: gold, silver, etc.
- NV (45%), AZ, CA, MT, WY (35% combined)
- About 290,000 existing claims (1998)
- 3.3 million acres have been patented

Leasing System
- Fossil fuels, fertilizer and chemical, outer continental shelf, geothermal resources
- About 570 million acres open for oil/gas leasing in all 50 states; 301 million in 12 western states

General Patterns
- Open access and local miner institutions
- Increasing corporatization of mining, as minerals become more scarce (e.g., placer to lode)
- Restrictions on allowable minerals (patent versus leasing)
- Restrictions on types of land
- Restrictions on allowable activities
Early Years

- Sutter’s Mill, 1848: American River placer discovery starts gold rush (’49ers)
- Mining major component of Western economy in mid- to late-1800s
- Miner’s Code: Some type of property security required to provide incentives for investments
- Development of local regulations is example of closing an open access regime
- Miner’s Codes written into state law, and eventually into Federal law
Hardrock Mining

General Mining Law of 1872

- Location: Establishing physical boundaries of claims; $25 location fee
- Discovery: Proving existence of a “valuable” mineral deposit (Courts have decided meaning)
- Pedis possessio: Location activities serve as claim as long as they are not abandoned
- Unpatented mining claims: Real property interests, mining activities allowed; most mining occurs on unpatented claims
- Diligence requirement: Unpatented mining claims require $100 annual maintenance fee (BLM administrative policy); goes to $125 in 2004
- Patent: Obtaining title to the land; $250 application fee; $2.50/acre for placer; $5/acre for Lode (Pombo proposal changes to $1000/acre)
- 1989 GAO study: 20 patents issued since 1970 generated $4500 of gov’t revenue, but worth over $20 million
- Current Congressional riders place moratorium on issuance of new patents (Pombo proposal ends this)
- Hardrock mining operations pay ZERO royalties to the gov’t
- Milling site debate: How much land is allowed?
- Reclamation
Controversy: New World Gold Mine in Montana

- 3 miles east of Yellowstone, next to Absaroka-Beartooth Wilderness area
- Crown Butte's New World mine would have produced an estimated 1,800 tons of gold/silver/copper ore per day (500,000 tons annually), valued at nearly $800 million over a 10-15 year period
- Project planned on a mixture of public (Forest Service, which must approve mining operations) and private land (patented under 1872 law)
- Project abandoned in face of public opposition
- Land exchange where Federal government acquires New World public AND private land interests, in exchange for $65 million dollars of public land elsewhere
Energy Supplies on Federal Lands

- 2005: US consumed 7.7 billion barrels in 2005; 60% imported; 5% of domestic supply from onshore Fed lands; approximately 20 million barrels per day
- 21.2 billion barrels of oil are estimated to be undeveloped on Federal land; 17.1 Bbbl in Alaska=2.7 years of supply
- 2005: US consumed 22 tcf of natural gas; 18% imported; onshore public lands provided 16% of domestic production
- 186.9 trillion cubic feet of undeveloped natural gas estimated to be on Federal land=8.5 years of undeveloped supply
- All of this refers to technically recoverable resources, which is always higher than economically recoverable
Leasing System

Mineral Leasing Act of 1920

- Embodies basics of most leasing systems
- Government permit required for prospecting, development, production
- Government decides what minerals and lands are available
- Mineral leases contain stipulations for environmental protection
- Leases can be terminated
- Leases offers up for competitive bid, with a minimum royalty payment (12.5%), bonus bids (where much of competition happens), and acreage rental rates
- States receive 50% of leasing revenues, creating incentive for resource extraction
- Leasing system managed by BLM, but must obtain consent from Forest Service
Leased Land that has not produced

Leased Land that has produced

Land Offered but not leased

Land Available for Lease

Lease Activity Since 1982
Table 8. Oil and Natural Gas Production in U.S. Onshore Federal Lands, 1991-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Oil in million barrels</th>
<th>Gas tcf</th>
<th>Royalties $ (millions)</th>
<th>Bonus Bids ($ millions)</th>
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</tbody>
</table>

Environmental Protections

Withdrawals
- Many federal lands withdrawn from prospecting; e.g. National Parks and Wilderness
- Mining activities may still occur on prior patented claims (grandfathering)

Agency Regulations
- BLM (3809 regulations) and Forest Service have regulations governing mining operations
- Miners must submit notice-of-intent and operations plan; both reviewable by land managers
- Some differences between USFS and BLM regs; e.g., BLM exempts mines of less than 5 acres, which constitute 80% of mines
- BLM often grants oil/gas operations exceptions from environmental requirements
- Bonding: Leasees must put up bond money to cover reclamation

Environmental Protection Laws
- NEPA analysis required
- Clean Water Act, Clean Air Act
Surface Mining Control and Reclamation Act of 1977

Overview

- Applies almost exclusively to strip-mining coal operations removing more than 250 tons/year from private or public lands
- Performance standards; uses of “best technology currently available”
- Reclamation to approximate original contour
- Implemented by Office of Surface Mining in DOI
- States can acquire “primacy”; all major Western coal mining states have primacy
- Appalachian Mountaintop Mining
Kayford Mountain, WV: Mountaintop Coalmine
Controversy: Rocky Mountain Front, Montana

- Acres leased: 111,922 of 425,000 total acres in the front
- Oil in Two Rocky Mountain Front areas could supply U.S. for: less than 20 minutes (Wilderness society figures based on economically recoverable)
- Gas in Two Rocky Mountain Front areas could supply U.S. for: less than 3 days
- Issue is proposed drilling on pre-existing leases; Lewis and Clark National forest currently closed to new exploration and leasing
- 99% of 49,000 comments on draft EIS opposed drilling; lots from hunters/anglers
- 10/2004: DOI says no allow oil and gas development on the Rocky Mountain Front in Montana until completion of landscape-wide study of the area beginning in 2007
- Fish and Wildlife Service supposed to start a large-scale conservation easement program for private lands
- Senator Max Baucus (D-MT) is trying to pass legislation that would allow trading of leases in Rocky Mountain Front
Three wells proposed here by Startech Energy on existing leases pre-dating Outstanding Natural Area designation.
Controversy: Powder River Basin, Wyoming

- Acres leased: 3,497,851, about 10% of leased lands in Western US
- Oil in Powder River Basin (WY and MT) could supply U.S. for: 50 days (Energy Inventory 2003, EIA Petroleum Products 2002)
- Gas in Powder River Basin (WY and MT) could supply U.S. for: 129 days (Energy Inventory 2003, USDOE Natural Gas 2004)
- Current BLM resource management plan has approved 51,000 coalbed-methane wells over 10 years (2003 ROD)
- Split-estate lands: Energy companies only required to post at least $1000 bond to gain entry into the land; landowner consent not required
- Recent court decision invalidate EIS(2007) and enjoins production...to be continued
Coalbed Methane Wells in the Powder River Basin
(as of February 15, 2001)

Total Wells 14,714
Wells below the Wyodak-Anderson Coalbed Methane Play (Fort Union Formation)
USGS Water Samples from Coalbed Methane Wells
BLM/USGS/Gas Operators Cored Wells

Figure 5
Controversy: Artic National Wildlife Refuge

- Managed by the FWS; 19 million acres in NE corner of AK (the size of SC)
- Development pressure centered on coastal plain (1.5 million acres), which is richest in biodiversity and also adjacent to Prudhoe oilfield
- Possibly 11 billion barrels (maybe more) of oil in coastal plain; at peak production estimates about 4% of US oil demand per day (EPCA estimate says 7.7 Bbbl)
- Complex mixture of lands: Wilderness area, “1002” study area, Native American lands
- Original Congressional designation as Wildlife Refuge forbids oil and gas drilling (Section 2003); FWS as manager
- Artic Slope Regional Corporation (oil producer) signed agreement with natives for their lands (approx. 100,000 acres)
- FWS authorized to determine compatible uses of land; H.R. 6 states that oil and gas leasing is compatible (this is what media is referring to when talking about “opening” ANWR)
- Development “footprint” supposedly limited to 2000 acres on coastal plain, but fragmentation, BLM/FWS jurisdiction, native lands, and future expansion are open questions
Porcupine Caribou Herd Calving
Figure 2. Domestic Crude Oil Production for Three ANWR Resource Cases and the AEO2004 Reference Case, 2000-2025 (million barrels per day)

- Alaskan production, no ANWR (AEO2004 Reference Case)
- Additional Alaskan production, mean ANWR resources
- Additional Alaskan production, low ANWR resources
- Additional Alaskan production, high ANWR resources

639,000 bbl/day
876,000 bbl/day
1.5 million bbl/day