

GEO THERMAL 101

Geothermal Leasing

Geothermal Leasing & Implementation Workshops

April, May and June 2009

Overview of Presentation

- Overview
- Laws, Regulations, and Policy
- Land Use Planning
- Leasing



Geothermal Resources in the Western US

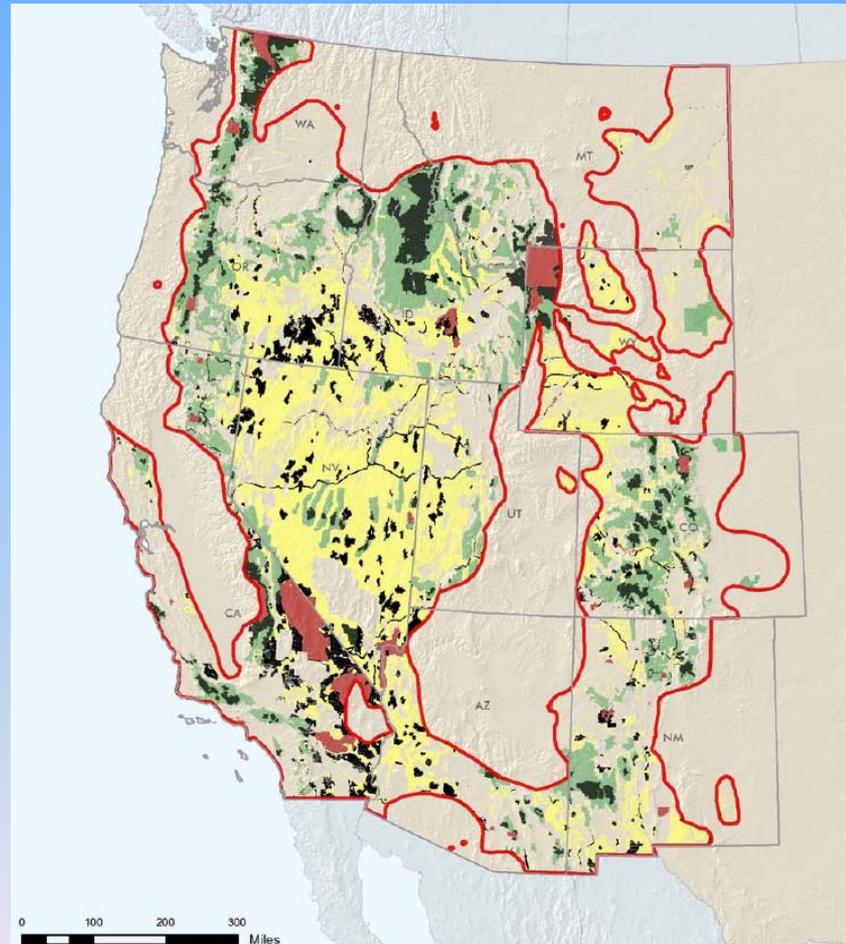
Geothermal Potential Areas

Yellow: BLM

Green: USFS

Orange: NPS

Black: Closed to Leasing



BLM Statistics

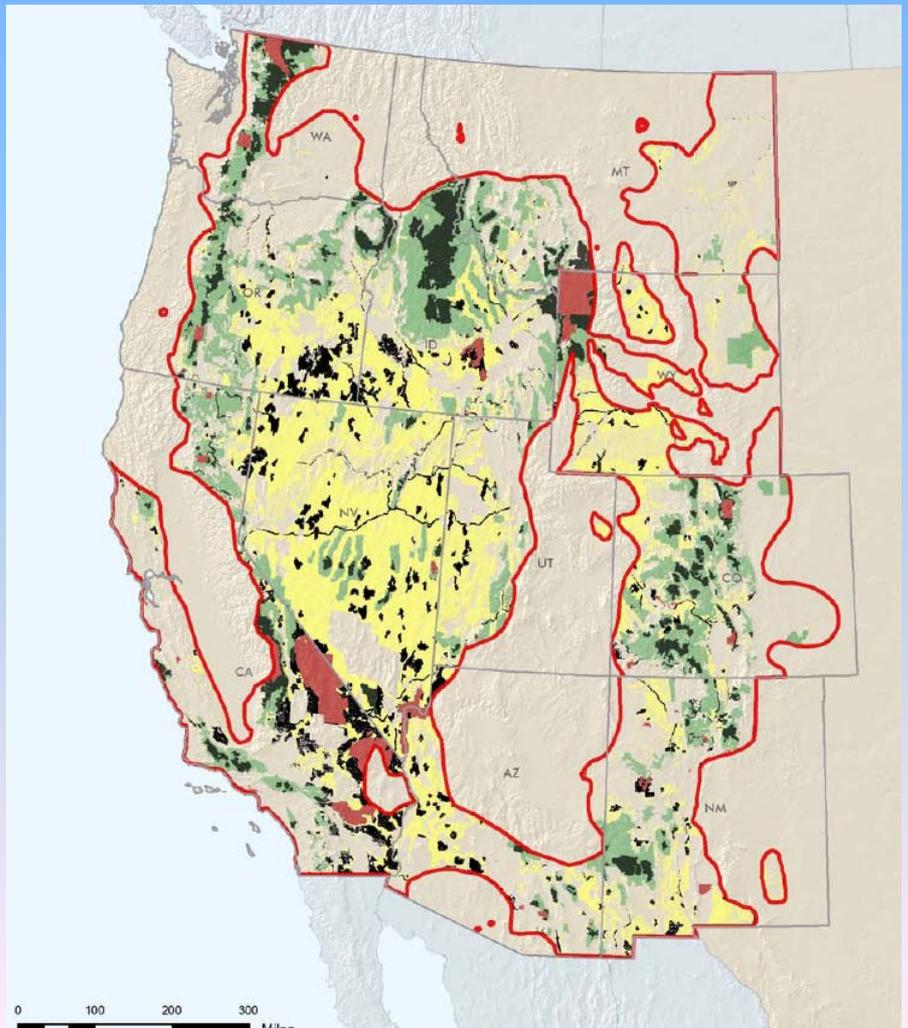
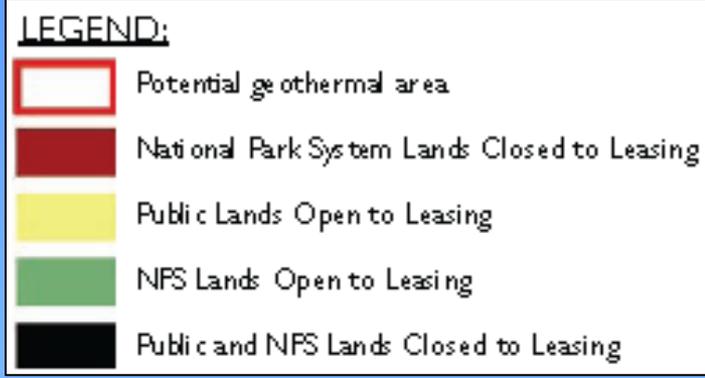
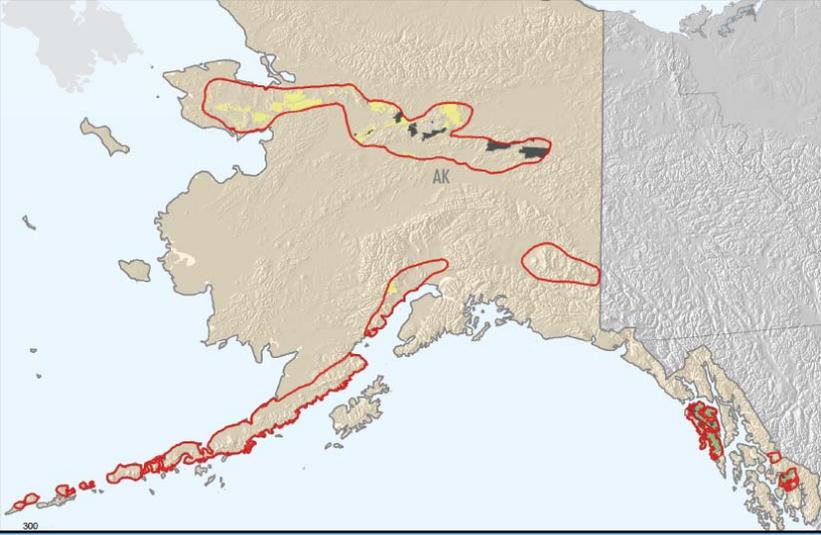
BLM administers **258 million acres** of surface and **700 million acres of Federal mineral estate**

(BLM, Forest Service, Privately Owned, etc.)

USGS estimates that **90%** of the Geothermal resource occurs on Federally managed lands

End of FY 2008

- 530 geothermal leases – 821,379 acres
- 58 leases in producing status
- 1,275 MW capacity – electrical generation to supply about 1.2 million homes
- Royalty \$ 14 million (FY 2008)



Programmatic EIS

Open to Leasing (77% - BLM and Forest Service managed lands)

BLM: 118M acres

NFS: 79M acres

Closed to Leasing

BLM: 25M acres

NFS: 24M acres



Statistics

Geothermal Energy

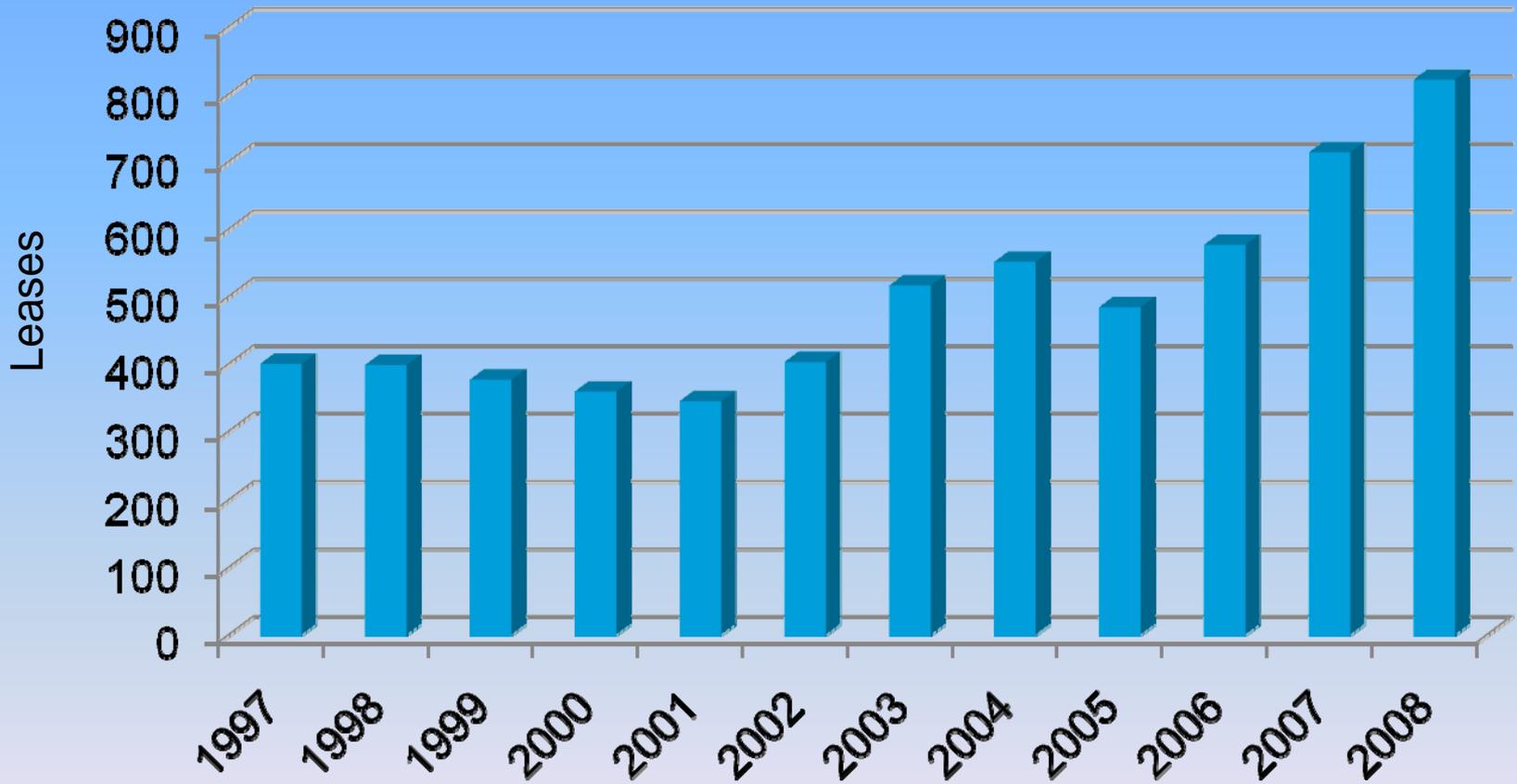
- 17% of U.S. renewable electricity generation
- 0.4% total U.S. electricity supply
- 2,875 MW total installed capacity in U.S.
- 1,275 MW capacity from Federal leases

Geothermal Leases

State	Leases	Acres
Nevada	358	635,357
California	85	101,647
Utah	38	97,894
Oregon	65	56,102
Idaho	7	9,628
New Mexico	4	4,581
Arizona	1	2,084
Total	530	821,379

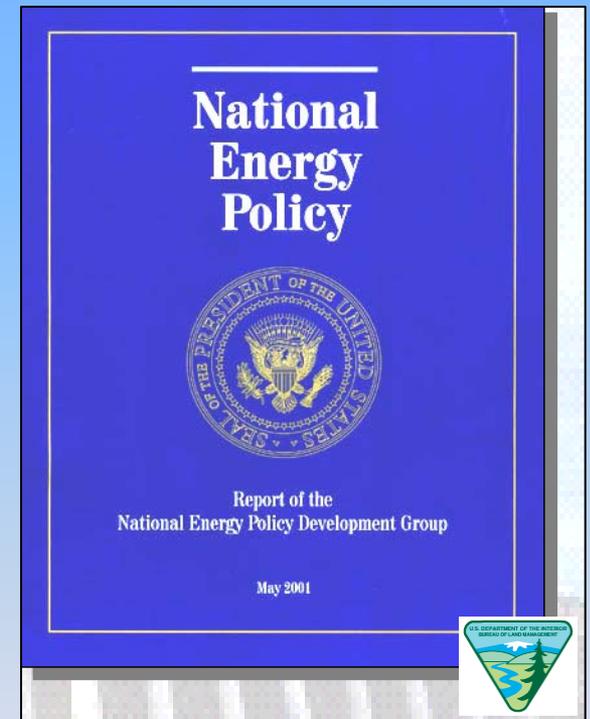
GEOHERMAL LEASE ACREAGE

FY 1997 - 2008



Laws & Policy Related to Energy Leasing and Development

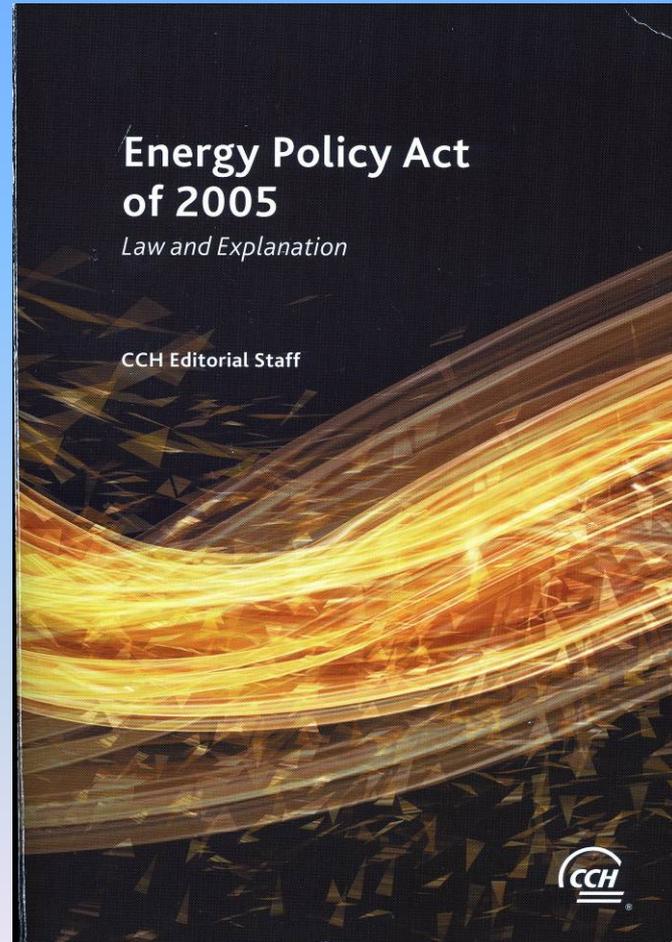
- Geothermal Steam Act of 1970
- National Energy Policy of 2001
- Energy Policy Act of 2005



**Environmentally responsible energy development
is a high priority for the BLM.**

Geothermal Tasks – Energy Act

- Coordination of Leasing & Permitting (Sec 225) BLM/FS MOU, 4/14/2006
- Published Final Geothermal Rule (Sec 221-236) May 2, 2007
- Conducted 1st Lease Sale 6/20/2007
- Revenue Distribution: 50% paid to State, 25% paid to County (Sec 224) and 25% to DOI for 5 years to implement EAct (Sec. 234)
- Prepared Programmatic Geothermal EIS - BLM/FS, DOE Cooperator, ROD 12/2008



Regulations & Orders

- 43 CFR Part 3200 (May 2, 2007)
 - Addressing leasing, exploration, operations, utilization & unitization
- Geothermal Resource Orders (1979)
 - Originally seven orders specifying minimum standards for all aspects of operations
 - Some provisions have been incorporated into 3200 regs.
 - GRO 2 - Drilling Operations
 - GRO 3 - Abandonment

Manuals & IMs

- Manuals
 - Currently only the 3203 Manual & Handbook Exist
 - Outdated by the EPAct - slated for revision
- Instruction Memos
 - 2005-247, NEPA compliance for...Geothermal Development
 - 2006-071, Process Improvements for Geothermal Approvals
 - 2006-192, Gold Book – Fourth Edition, Fluid Minerals Standards
 - 2007-021, Use of Best Management Practices
 - 2008-068, LR2000 Codes for new Geothermal Lease Types
 - 2009-022, Geothermal Leasing under EPAct
 - 2009-044, New CX for Geophysical Exploration
- Gold Book
 - Revised 2007

NEPA Compliance

Typical Stages Where BLM Conducts Environmental Analysis Required Under The National Environmental Policy Act (NEPA)

1. Land Use Plan: EIS

- Broad landscape level analysis focused on planning area

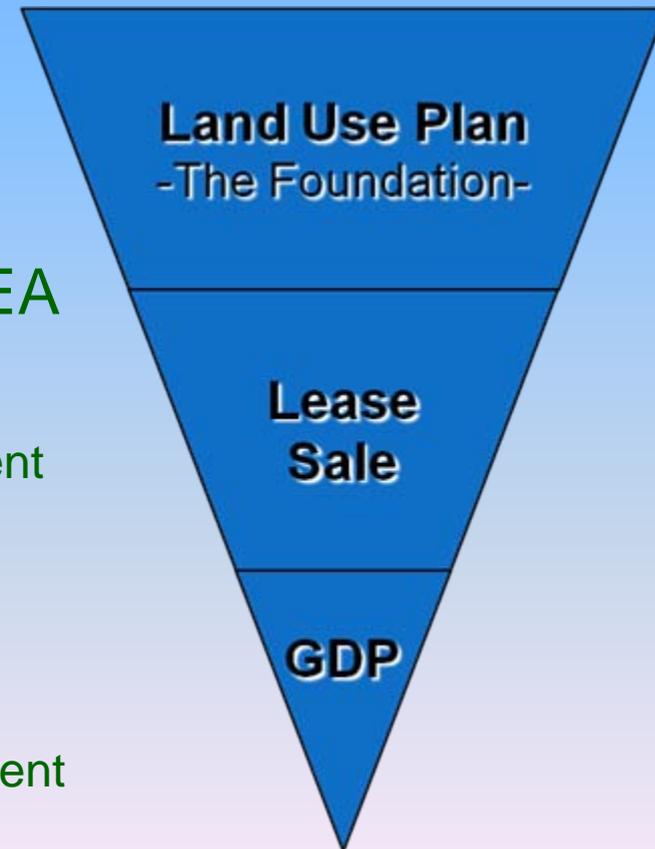
2. Leasing: DNA (based on LUP) or EA

3. Field Development: EIS or EA

- Analysis focused on large scale development proposal

4. Drilling Permit: EIS, EA, or DNA

- Site-specific analysis focused on development proposals



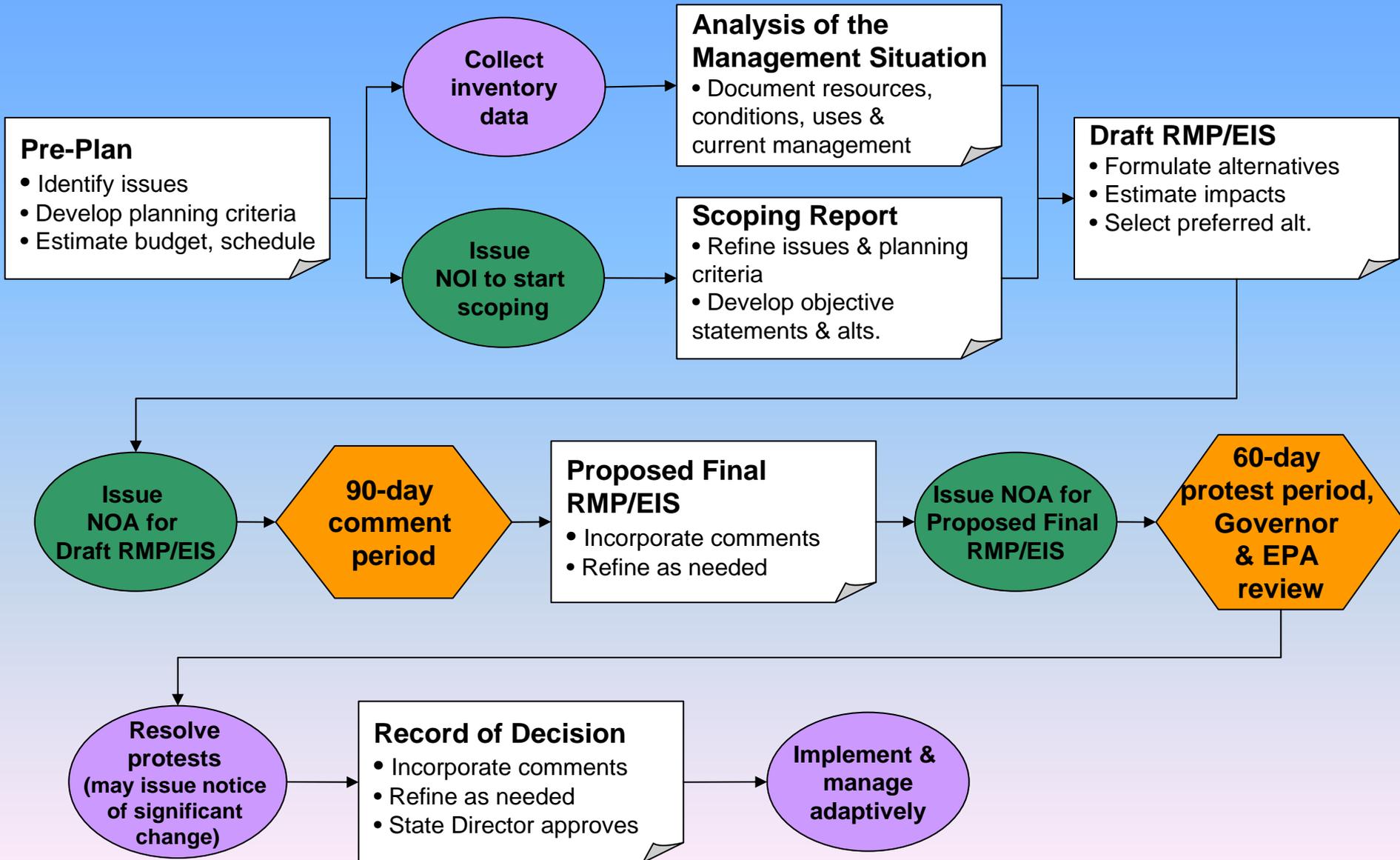
Land Use Planning

- Laying the Foundation for Land Management
- Balancing Resource Use and Protection
- Resolving Resource Conflicts
- Identifying Lands Open or Closed to Leasing

BLM lands and resources are managed in conformance with approximately 150 land use plans.



Planning Process



The Resource Management Plan/ Environmental Impact Statement (RMP/EIS)

- The RMP/EIS is the basis for all resource allocations and decisions including geothermal.
- Planning for energy development is conducted through an open, public process and takes several years to complete.



Leasing Decisions are made in the RMP/EIS

- Areas **Closed** to Geothermal Leasing
- Areas **Open** to Geothermal Leasing
 - Subject to: **Standard Terms and Conditions**
 - ...minimize adverse impacts...
 - Subject to: **Lease Stipulations**
 - No Surface Occupancy
 - Controlled Surface Use
 - Timing Limitation



Programmatic Geothermal EIS

The Bureau of Land Management (BLM) and the USDA Forest Service (FS) prepared a joint Programmatic Environmental Impact Statement (PEIS) to analyze and expedite the leasing of BLM- and FS-administered lands with high potential for renewable geothermal resources in 11 Western States and Alaska. The ROD was signed by the ASLM on 12/17/2008.

The ROD amends 114 BLM land use plans

Spring 2009 – The BLM and FS will host a series of instructional workshops for local BLM and FS offices, State Agencies, and stakeholders.

Scope: Reasonably Foreseeable Development Scenario

1. Electrical Generation (indirect use)
 - 3,000 MW in US
 - 5,500 MW from 110 plants by 2015
 - An additional 6,600 MW from 132 plants by 2025
2. Direct Use
 - RFD: Over 270 communities near geothermal resources

Geothermal Leasing: How are Lands Offered?

- Customer request
 - Nomination (requires nomination fee: \$100 + \$0.10/acre)
- BLM Motion
 - Drainage
 - Un-leased Federal minerals within an agreement (unit or communitization)

Lease Sale Process

- Mandated by Statute to Conduct a Lease Sale at least every 2 years when parcels are available
- BLM conducts an Internal interdisciplinary review.
- Typically coordinates review with State Fish and Game Agencies
- BLM determines whether there is:
 - Relevant and substantial new information ;
 - and the proposal is in conformance with the plan.
- Provides an opportunity for Public protest.



Energy Policy Act of 2005 - Competitive Leasing

- Posting of lands to be offered for sale – 45 day prior to sale
- Lease Sale – Oral auction, awarded to highest bidder
- Parcels not sold – Available for noncompetitive offers for a period of 2 years
- Competitive lease sales must be held at least every 2 years (if parcels are available)

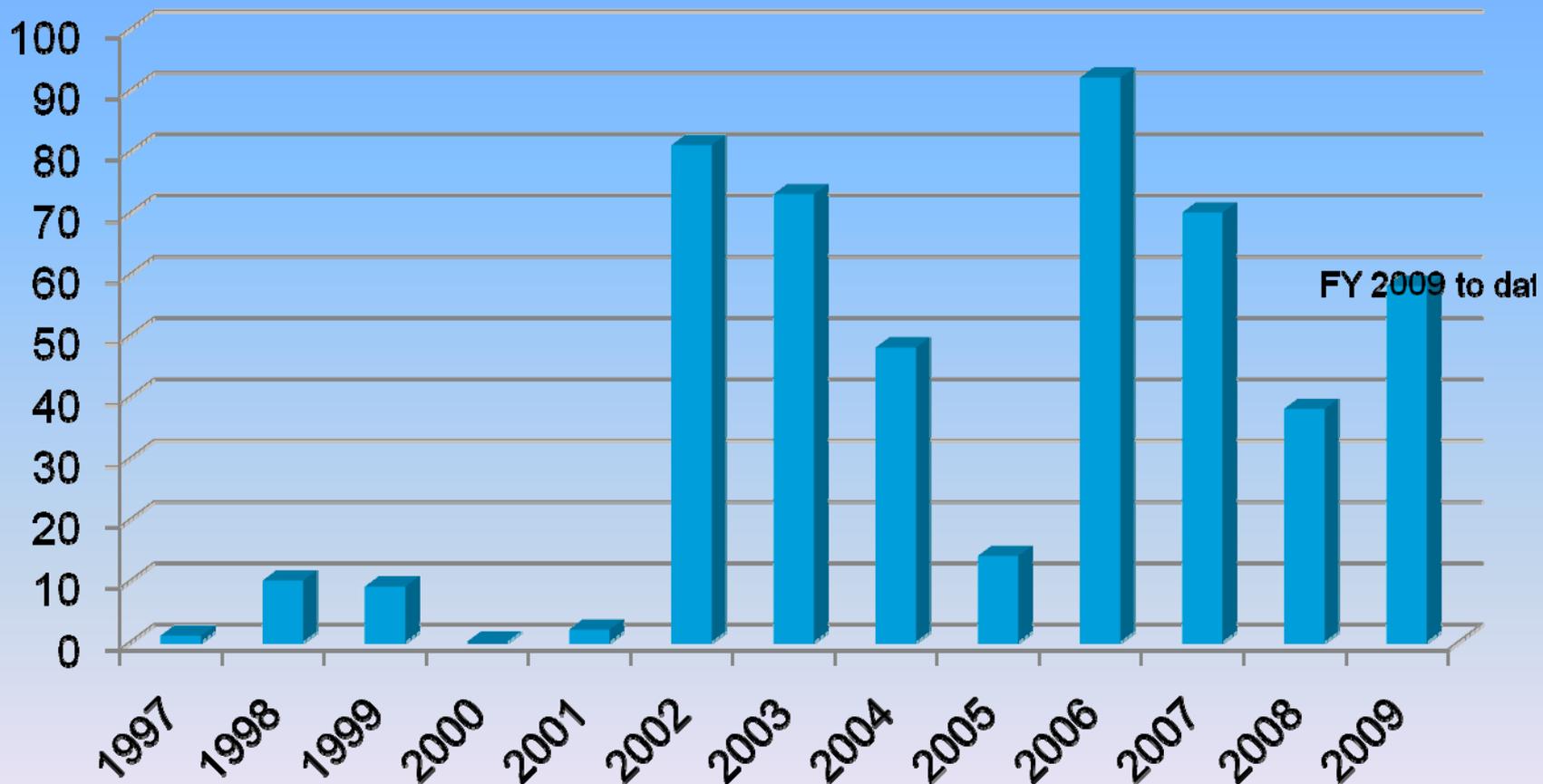
Geothermal Lease Sales FY 2007 – FY2009



First Competitive Sale - June 20, 2007, Salt Lake City

State	Number of Leases	Acres	Accepted Bonus Bids (\$)
California	6	2,711	8,006,800
Idaho	8	17,578	5,749,804
Nevada	78	228,061	39,410,973
Utah	47	150,394	9,074,298
Oregon	11	41,362	702,755
Total	150	440,106	\$ 62,944,630

Geothermal Leases Issued FY 1997-2009



Energy Policy Act of 2005 - Direct Use Leasing

- Secretary of Interior may identify lands exclusively for direct use
- File noncompetitive lease application (Form 3200-24a)
- Acreage no larger than reasonably necessary to accommodate intended use
- BLM posts application for 90 days
- If competitive interest or nomination is received for competitive leasing, lands will be offered for competitive sale
- State, Tribal, or Local Governments use resource without sale and for public purposes other than commercial generation of electricity – nominal fee for use

Lessee Qualification

- Leases or interests in leases – acquired and held by only citizens of U.S., associations (trusts and partnerships) of such citizens, U.S. corporations, and municipals
- Aliens may hold interests through stock ownership

Lease Issuance

- Applicant must:
 - Accept all lease terms
 - Make all required payments
 - Sign joinder or waiver for Unitization (if applicable)
 - Comply with maximum limit on acreage holdings
 - 51,200 acres in any one state
 - Acreage included in an approved unit agreement, drilling contract, or development contract is not counted
- BLM must:
 - Determine land is available (Non-competitive direct use lease)
 - Determine that lease will not have a significant adverse impact on any significant thermal feature in specific units of the National Park Service
- Lease issued:
 - Day BLM signs lease, goes into effect first day of following month.

Acreage Limitations

- No person or entity shall take, hold, own, or control more than 51,200 acres of Federal geothermal leases in any one state at any one time.
- Leases held by production shall not be included in computing allowable acreage.
- Leases committed to any unit or cooperative plan approved by the Secretary of the Interior shall not be included in computing allowable acreage.
- Excess Acreage: 180 days to divest excess acreage

Lease Terms & Conditions

- Rental
 - Competitive Lease
 - \$2.00 Acre 1st Yr,
 - \$3.00 Acre 2nd – 10th Yr,
 - \$5.00 Acre 10+ Yrs
 - Noncompetitive Lease
 - \$1.00 Acre Yrs 1-10,
 - \$5.00 Acre 10+ Yrs
- Royalty
 - 1.75% Yrs 1-10, 3.50% Yrs 10+ (of Gross Proceeds)
 - 10% sale of resource
 - Direct Use Fees (based on inlet Temperature and either pressure or gallons)

Lease Terms & Conditions

- Lease size – minimum 640 acres - maximum 5,120 acres.
- Exclusive Rights to develop geothermal resources, build and maintain improvements
- Subject to
 - Laws, regulations, & orders
 - Lease terms, including stipulations
- Lease Duration and Work Commitment
 - 10-year primary term,
 - 5-year initial extension,
 - 5-year additional extension (must satisfy minimum work requirements for extensions)

Bond Obligations

- Required prior to commencement of surface disturbing activities to cover plugging of the well(s), reclamation of lease area(s), restoration of any lands or surface waters adversely affected
- Exploration Bond
 - Posted by lessee, operating rights holder, or operator
 - \$5,000 minimum/single operation, \$25,000 minimum statewide, or \$50,000 minimum nationwide
- Drilling bonds
 - Posted by lessee, operating rights holder, or operator
 - \$10,000 minimum lease bond, \$50,000 minimum statewide
 - \$150,000 minimum nationwide
- Unit bond
 - Operator post bond to cover drilling operations in an amount specified by BLM
 - A rider may be added to a statewide or nationwide bond in an amount specified by BLM

Inspection & Enforcement (I&E)

- Responsibility for ensuring compliance with:
 - All lease stipulations
 - COAs in the drilling permit
 - All other applicable laws and regulations
- Production accountability to ensure all production is accurately measured
- Protect surface and subsurface environment
- Public health and safety

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Incentives - PTC

- Production Tax Credit (PTC)
 - 1.9 cent / kilowatt-hour (kwh) for first 10 years a renewable energy facility is in operation
 - 2005 Act extended through December 31, 2008
 - Emergency Economic Stabilization Act of 2008 extended through 2010
 - The American Recovery and Reinvestment Act of 2009 (Stimulus Bill) extended through 2013

Incentives – Lease Conversion

Pre-2005	Pre-2005 with Conversion*	
10 – 15% of Value of Heat or Energy	Electrical Generation	Direct Use
	X% of Gross Proceeds from Sale of Electricity (revenue neutral rate established on a case- by-case basis)	MMS Fee Schedule

*Available only for leases in effect before August 8, 2005;

Conversion request must be received within 18 months of the final rule;

Conversion eliminates qualification for production incentives

Incentives – Royalty Reduction

- 50% reduction in royalty for “new” generation
- Two types of “new” generation:
 - New facility
 - Qualified expansion project
- Available only for leases in effect before August 8, 2005 that do not convert royalty terms
- Commercial operation by August 7, 2011
- In effect for 4 years after commercial operation

New Facility

Criteria include:

- Site license and/or Commercial Use Permit required
- At least one new turbine-generator unit
- New sales contract
- New or substantially larger footprint
- Not contiguous with existing projects

Production Incentive:

- All generation is subject to 50% royalty reduction

Qualified Expansion Project

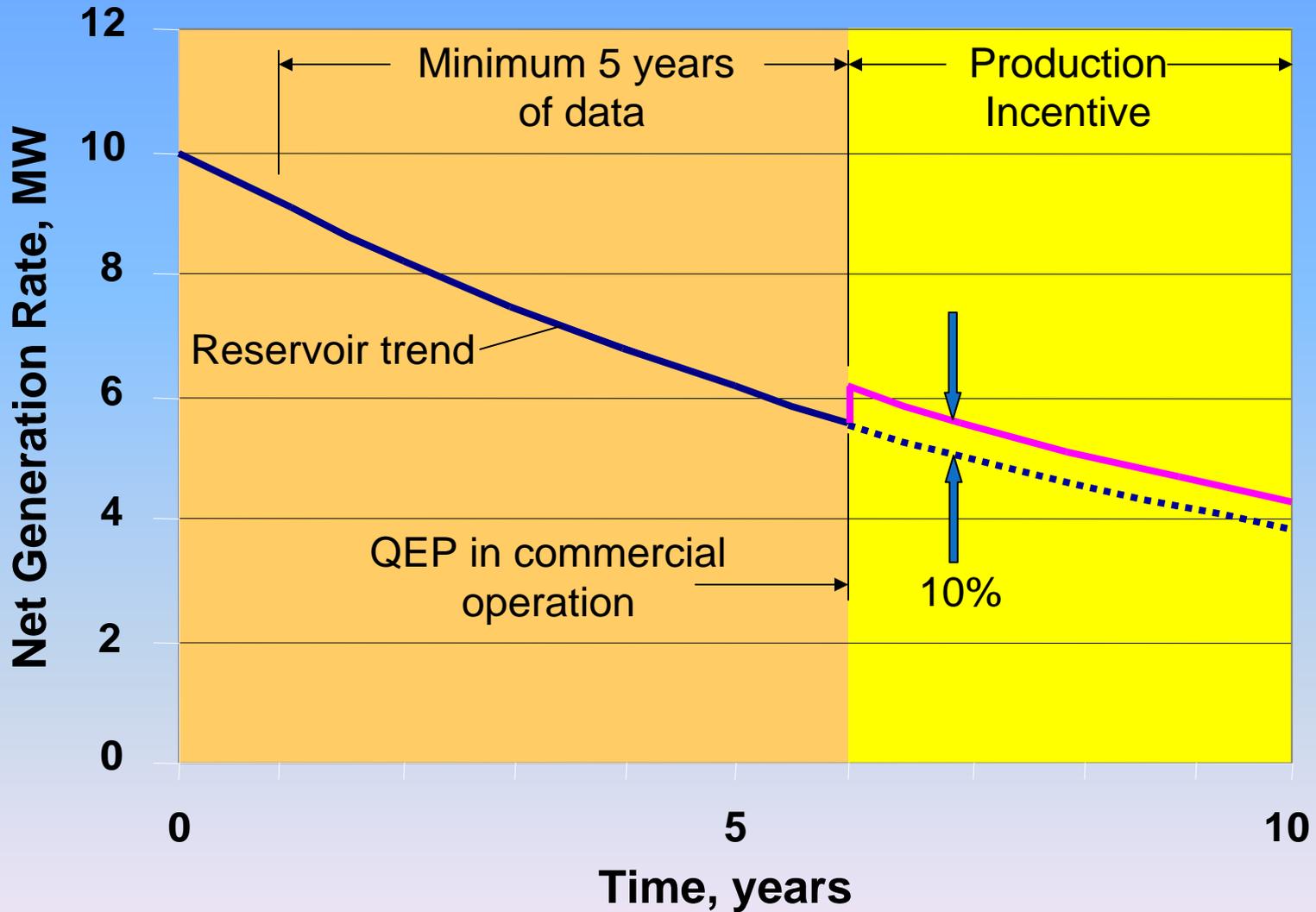
QEP must:

- Involve substantial capital expenditure
- increase net generation by at least 10%

Production Incentive:

- Increased generation is subject to 50% royalty reduction

Qualified Expansion Project Requirements

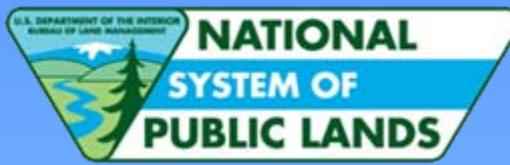


Reservoir Management

- Communitization or drilling agreements
- Cooperative or unit agreements
- Protect Federal minerals from being drained by non-Federal geothermal wells
 - Identify wells that could be draining Federal minerals
 - Notify lessees that a potential drainage well is present
 - If un-leased, place parcel on next geothermal lease sale
 - If lessee does not protect lease by drilling well determine if drainage is occurring and amount
 - Assess compensatory royalty

Unit Agreements

- BLM may initiate formation of a unit or require Federal lease to commit to unit
- Interest of conservation
- Size based on geology
- Logical unit area designation
- Leases segregated/extended
- Obligation well
- Paying well determination
- PA approvals (or revisions)
- Plans of Development
- BLM has final approval



Acknowledgements

Thanks to the BLM staff
for their assistance in
preparation of this
presentation

Any questions?

