



# Draft Programmatic EIS for Geothermal Leasing in the Western U.S.

Bureau of Land Management (BLM)  
Forest Service (FS)



Public Meetings – July 2008



# Four steps of geothermal development

1. Exploration
2. Drilling
3. Utilization and production
4. Reclamation and abandonment

A lease is need prior to conducting steps 2 -4



# Why is the project needed?

Respond to requirements of the  
Energy Policy Act 2005 & Executive  
Order 13212

1. Reduce 90% of backlogged leases that existed prior to Jan 1, 2005
2. Improve the effectiveness of geothermal leasing in the 12 Western US, including Alaska

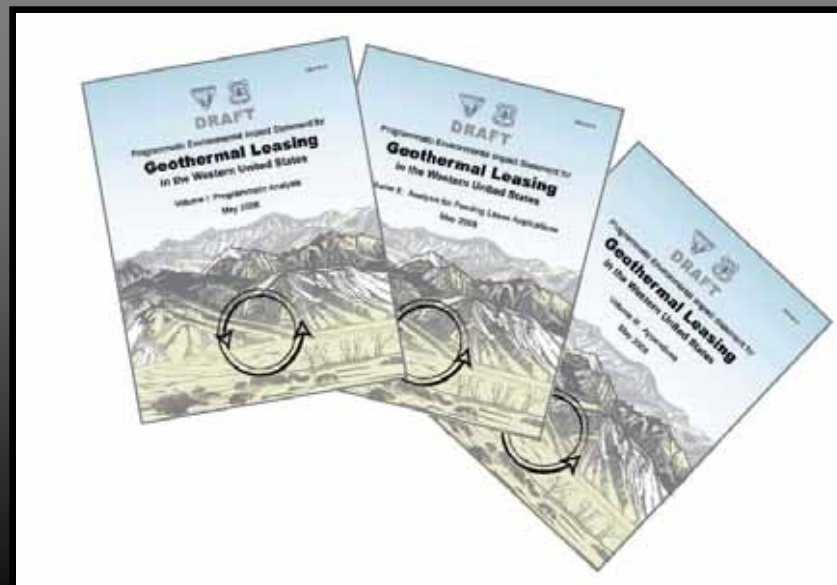


# Organization of the PEIS

Volume I: Programmatic Analysis

Volume II: Analysis of Pending  
Lease Applications

Volume III: Appendices



# Benefits of Geothermal PEIS

- Issue decisions on pending lease applications
- Enable future leasing decisions to be made on public lands
- Ensure consistency and transparency in the leasing process
- Minimize delays
- Reduce costs



# Programmatic Analysis

- ✓ Identify and analyze the effects of public and NFS lands with geothermal potential as being opened or closed to leasing.
- ✓ Develop a comprehensive list of stipulations, BMPs and procedures to serve as consistent guidance for future geothermal leasing and development.
- ✓ Amend BLM land use plans to adopt land use allocations, stipulations, BMPs, and procedures.
- ✓ Provide analysis to facilitate consent determinations from the FS.



# 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



# Scope: Geothermal Potential

Where are areas of potential?

How to address direct and indirect use?

How to account for changes in technology and uses?

**SOLUTION:** Develop a map of geothermal potential using an intensive, collaborative, and scientific approach.

DOE and USGS peer review and approval





# Collaborative Partners for Map

## Federal Agencies

- Joel Renner, Idaho National Engineering and Environmental Laboratory (INEEL)
- Marshall Reid, US Geological Survey
- Colin Williams, US Geological Survey
- Joe Moore, Department of Energy / University of Utah
- Steve Fechner, US Forest Service

## State Agencies

- State of Idaho
- State of Nevada
- Colorado Geologic Survey
- State of Montana, DEQ
- State of Utah Energy Program
- Alaska Energy Authority
- California: Energy Commission and Dept of Oil, Gas, and Geothermal

## Non-Profit

- Renewable Alaska Energy Project

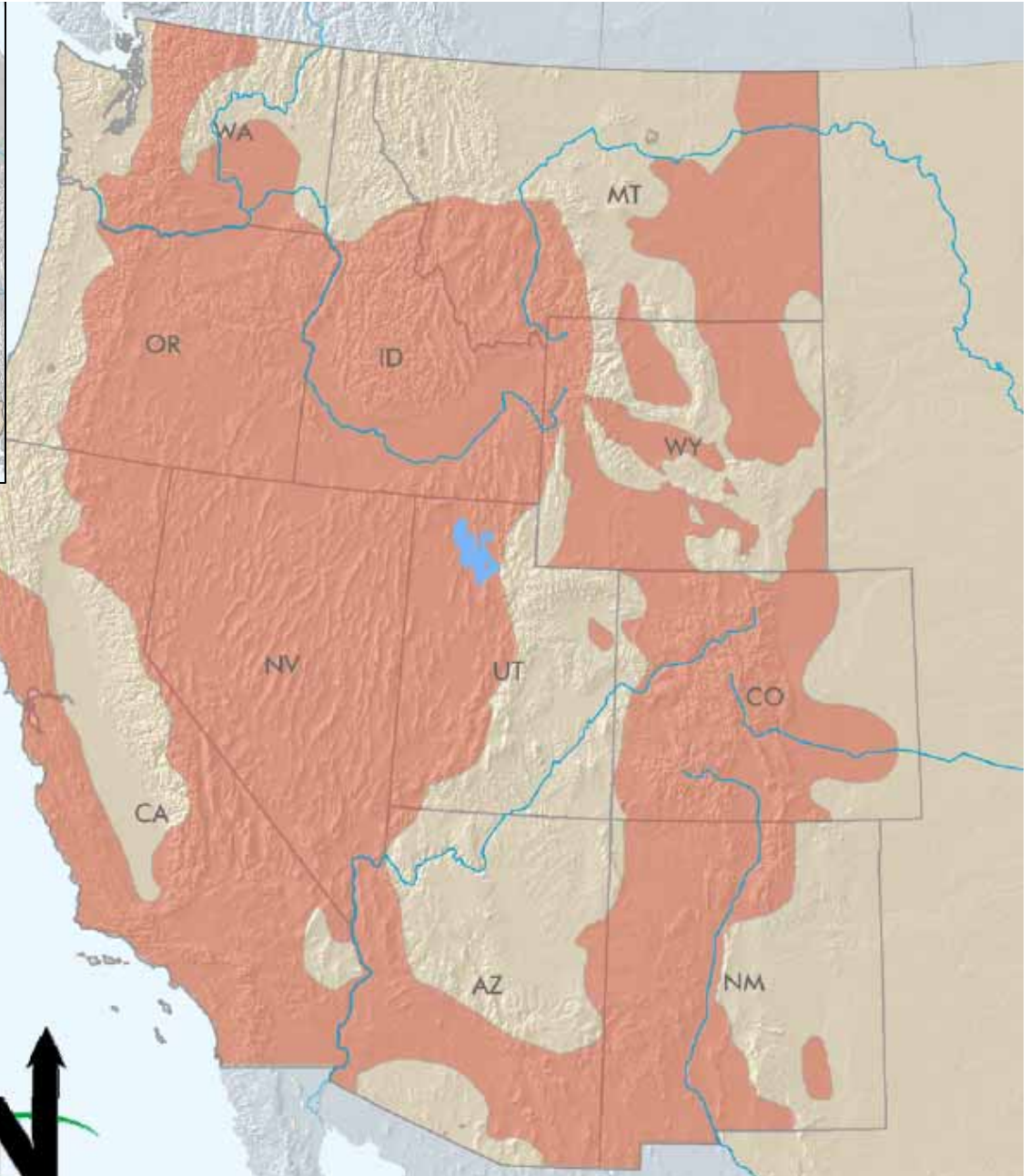
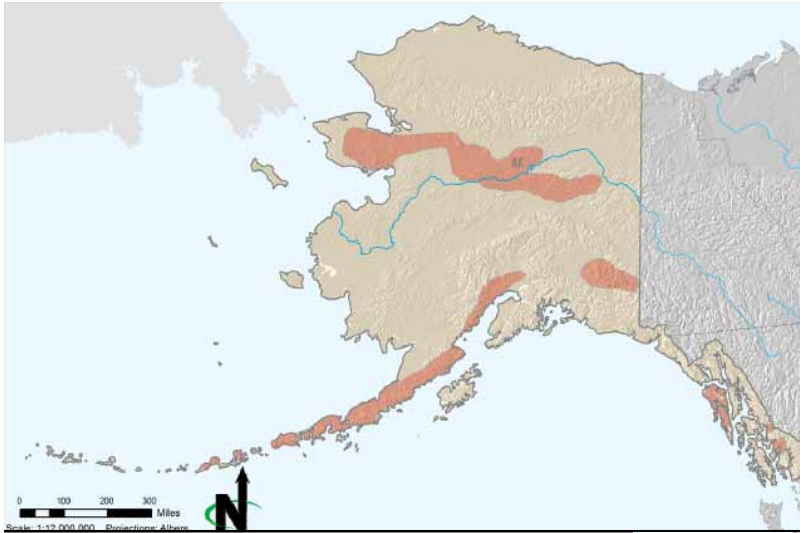
## Research Institutes

- Great Basin Center for Geothermal Energy, University of Nevada, Reno
- Oregon Institute of Technology, GeoHeat Center
- Energy and Geoscience Institute, University of Utah
- Intermountain West Geothermal Consortium
- David Blackwell, Southern Methodist University

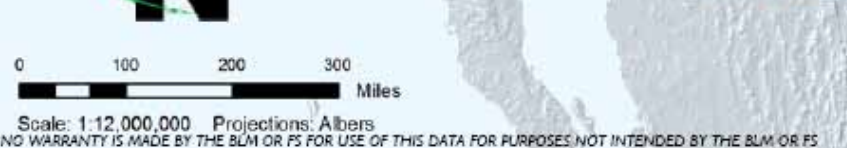
## Private Industry

- Ormat Technologies, Inc.
- Iceland America Energy, Inc.
- Caithness Energy, LLC
- Enel North America, Inc.
- Calpine Corporation
- TG Power LLC

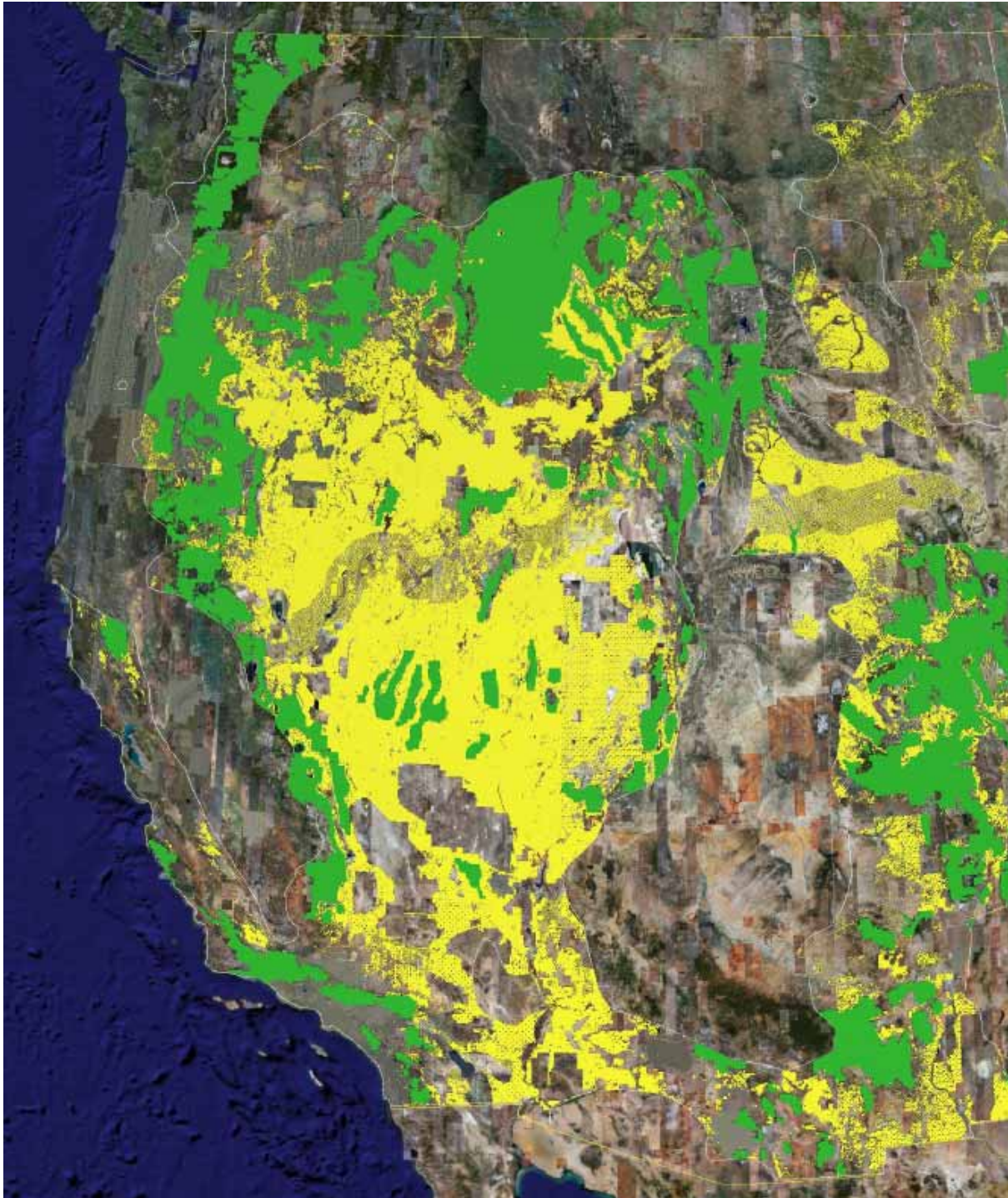




**Planning Area**  
**Geothermal**  
**Potential Area =**  
**530M acres**







# Decision Area 248M Acres

## BLM Public Land

- 142M Acres
- Administered by 103 Field Offices

## NFS Land

- 106M Acres = NFS Lands
- 68 Nat'l. Forests
- >250 Ranger Dists

# Alternatives Considered

- No Action Alternative
  - Continue to allow leasing on a case-by-case basis with requisite NEPA and plan amendments
- Proposed Action
- Leasing Lands only near Transmission Lines
- No Leasing of Geothermal Resources
  - Dropped from detailed study



# Proposed Action

1. Identify and analyze the effects of public and NFS lands with geothermal potential as being opened or closed to leasing;
2. Develop a comprehensive list of stipulations, best management practices, and procedures to serve as consistent guidance for future geothermal leasing and development;
3. Amend BLM Resource Management Plans (RMPs) to adopt the land use allocations and list of stipulations, BMPs, and procedures; and



# Areas Open/Closed to Leasing

## 43 CFR 3201.11: Lands Not Available

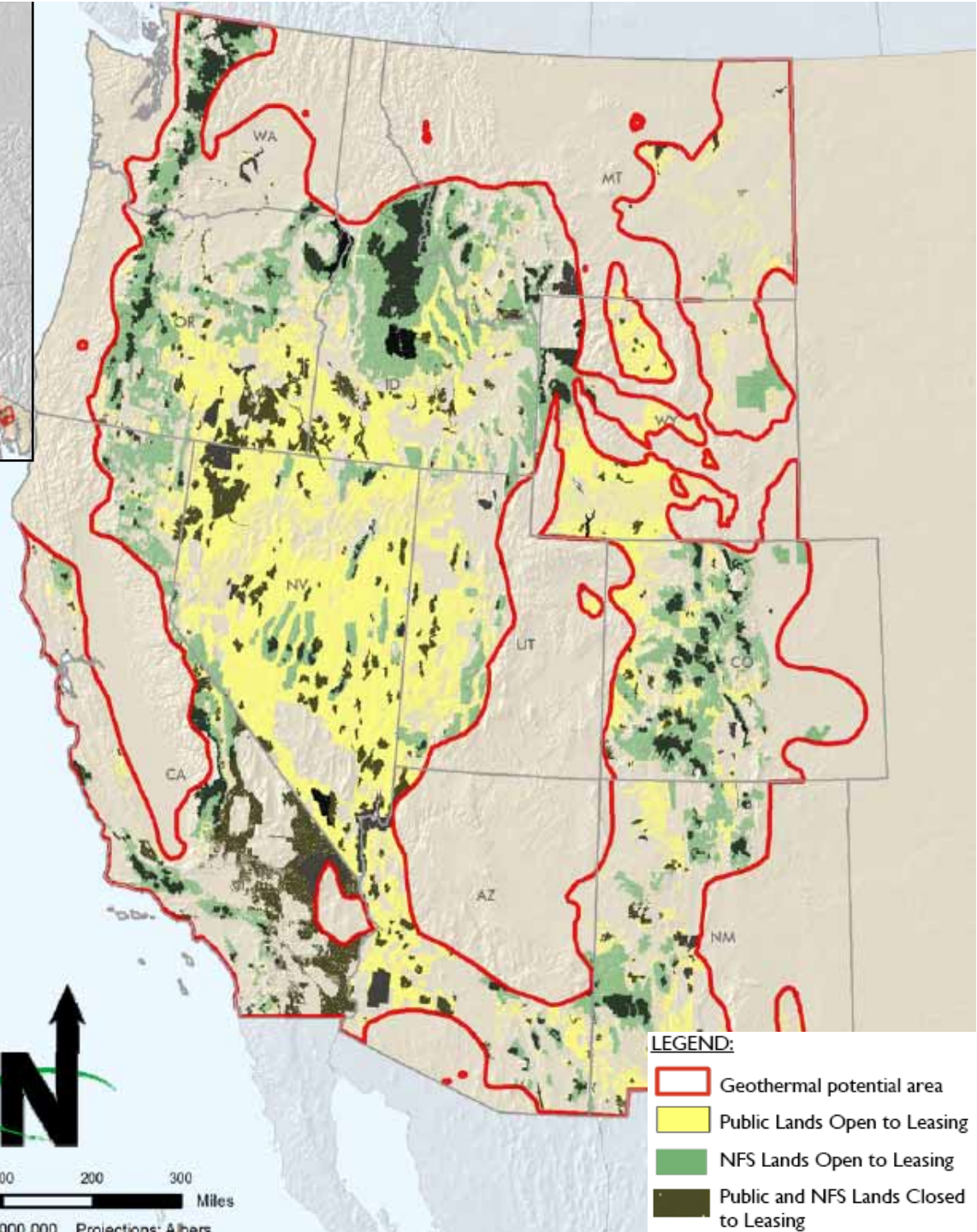
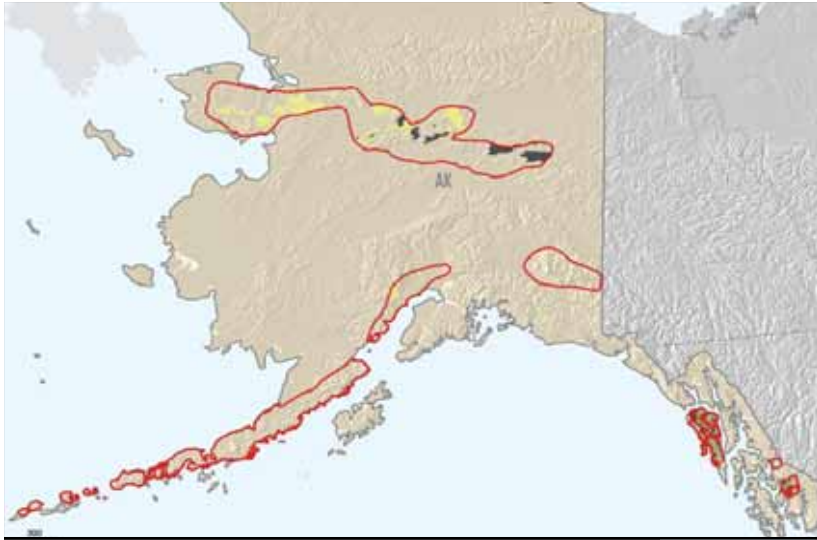
- Wilderness Areas and WSAs
- National Recreation Areas
- Lands within the National Park System
- Areas where geothermal can significantly impact NPS thermal features
- Fish hatcheries or wildlife management areas administered by the Secretary
- Indian trust or restricted lands outside the boundaries of Indian reservations
- The Island Park Geothermal Area
- Lands where the Secretary has determined that issuing the lease would cause unnecessary or undue degradation of public lands and resources;

## Other Lands Closed to Leasing

- National Monuments
- Designated National Wild Rivers segments
- Areas previously withdrawn from fluid minerals development
- National Conservation Areas
- Other NLCS lands
- National Historic and Scenic Trails
- Designated National Scenic and Recreational Rivers
- Eligible WSR







**Proposed Action**

*Open to Leasing (77%)*

**BLM: 117M acres**

**NFS: 75M acres**

*Closed to Leasing*

**BLM: 25M acres**

**NFS: 32M acres**

100 200 300 Miles  
1:12,000,000 Projections: Albers

- LEGEND:**
- Geothermal potential area
  - Public Lands Open to Leasing
  - NFS Lands Open to Leasing
  - Public and NFS Lands Closed to Leasing

# Stipulations and BMPs

- Stipulations
  - Stipulations developed from review of land use plans and from existing geothermal and oil and gas stipulations
  - Types: No Surface Occupancy (NSO) / Controlled Surface Use (CSU) / Timing Limitations (TL) / resource specific
  - Applied only if no other protection measures are available





# Stipulations and BMPs

- BMPs
  - Developed from comprehensive review of LUP and from existing geothermal and oil and gas guidance
  - Provided BMPs for all four phases of geothermal development (exploration, drilling, utilization, and reclamation)
  - Applied as part of permits for post leasing development



# Alternative: Lands near Transmission Lines

*Open to leasing for  
commercial electrical  
generation*

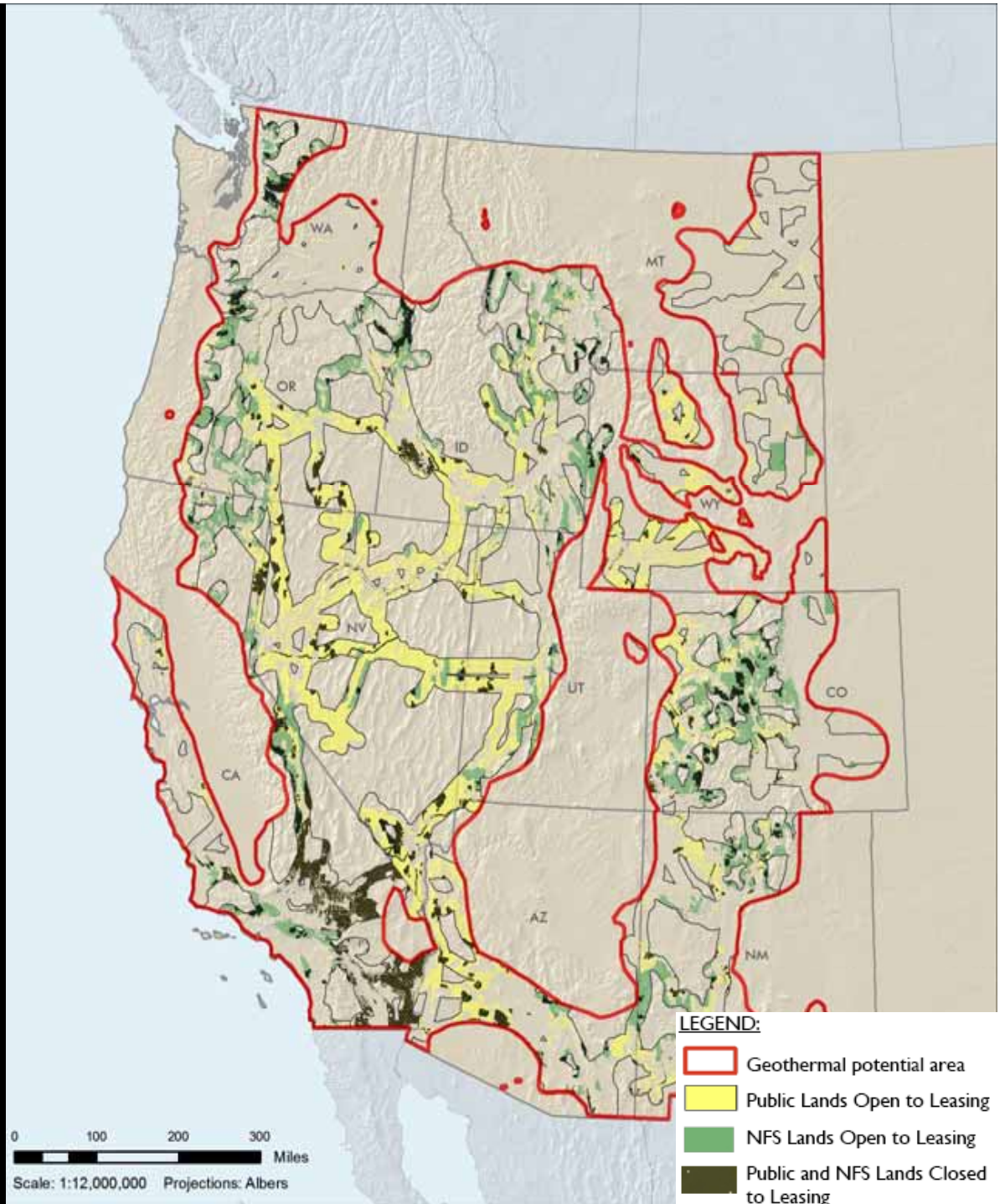
**BLM: 61M acres**

**NFS: 31M acres**

*Closed to leasing*

**BLM: 80M acres**

**NFS: 75M acres**



# Pending Lease Applications

*submitted prior to 1/1/05*

As of Jan. 1, 2005: 194 lease applications

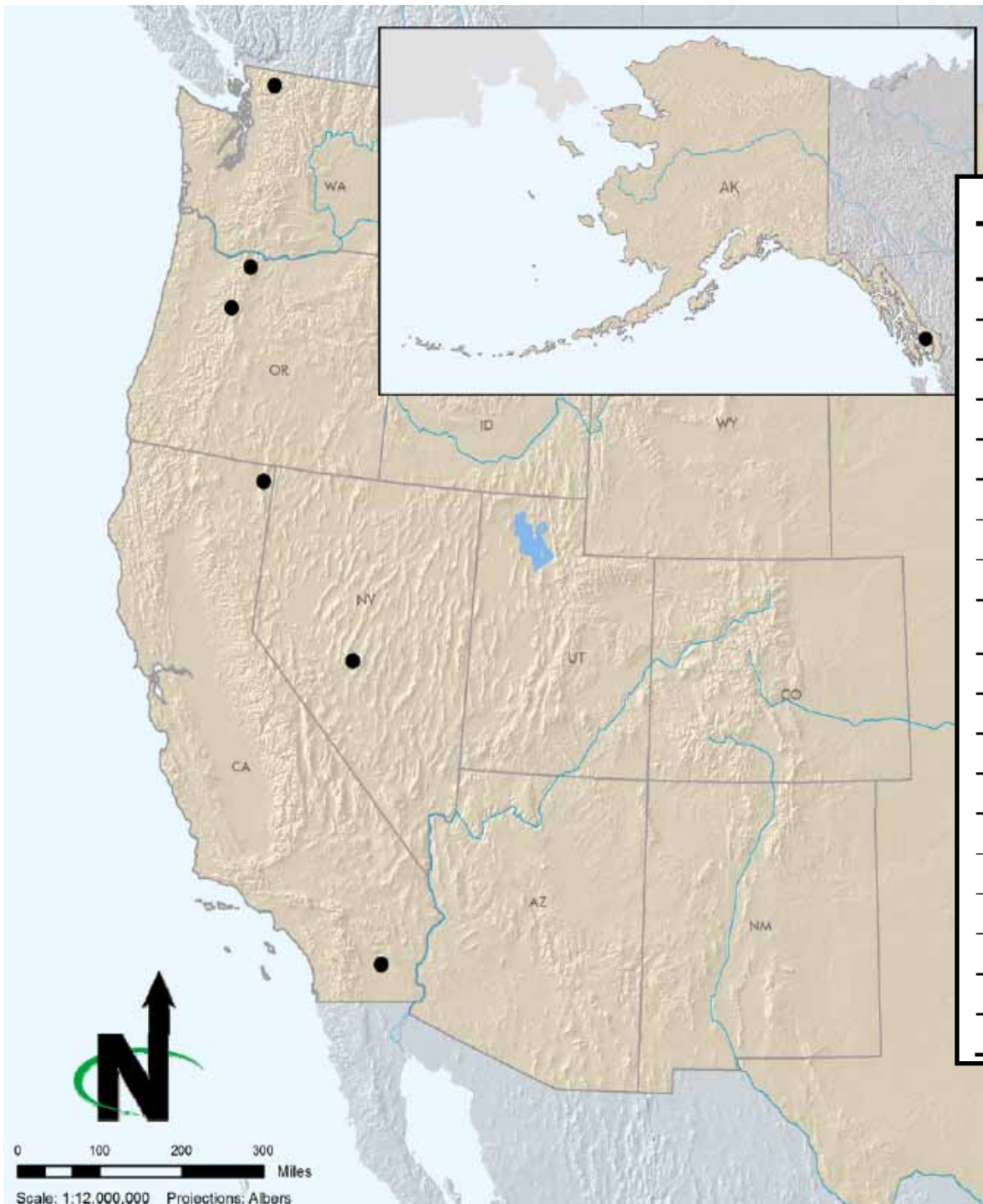
– 134 BLM and 60 FS

Rigorous vetting process of pending lease applications

– As of June 5, 2008: 34 still pending

- 19 pending applications in 7 groups are assessed in the PEIS (1 BLM and 18 FS)
- 15 pending applications are being handled in separate decision processes by BLM and FS office





**Pending Lease Applications (Prior to January 1, 2005)**

Group	State	BLM or FS Office	Serial Number	Acres
1	AK	Tongass NF	AKAA 084543	2560
1	AK	Tongass NF	AKAA 084544	2560
1	AK	Tongass NF	AKAA 084545	2560
2	CA	El Centro FO	CACA 046142	2161
2	CA	El Centro FO	CACA 043965	1160
3	CA	Modoc NF	CACA 042989	480
3	CA	Modoc NF	CACA 043744	2560
3	CA	Modoc NF	CACA 043745	2560
4	NV	Battle Mtn FO and Toiyabe NF	NVN 074289	605
5	OR	Mount Hood NF	OROR 017049	1538
5	OR	Mount Hood NF	OROR 017051	2480
5	OR	Mount Hood NF	OROR 017052	2480
5	OR	Mount Hood NF	OROR 017053	1376
5	OR	Mount Hood NF	OROR 017327	1294
6	OR	Willamette NF	OROR 054587	1115
7	WA	Mt Baker NF	WAOR 056025	2403
7	WA	Mt Baker NF	WAOR 056027	2560
7	WA	Mt Baker NF	WAOR 056028	2544
7	WA	Mt Baker NF	WAOR 056029	1941

# Schedule and Next Steps

- Draft PEIS out for public review.
- Public meetings July 2008
- Comment period closes Sept. 19<sup>th</sup>.
- Final PEIS = October 2008
- Record of Decision = December 2008





# For More Information

[www.blm.gov/geothermal\\_eis](http://www.blm.gov/geothermal_eis)

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