

# Air Quality Standards Subcommittee - Smoke Issues

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Washington, D.C.

Agricultural Air Quality Task Force

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# 1998 Interim Policy Revision

- EER stated revision by July 2007
- 1 face-to-face meeting and a couple of calls with federal agencies (last held spring 2011)
- EPA circulated internal draft, internal meeting fall 2012
- This winter EPA plans outreach to federal agencies, states and other stakeholders
- Federal land managers provided input
- Challenges:
  - Definitions of wildfire and prescribed fire

# 1998 Interim Policy Revision

- Challenges:

- Definitions of wildfire and prescribed fire
  - DOD, DOI, NRCS & FS joint definition submitted
- Agricultural Burning and definitions
- New Standards (particulate matter & ozone)
  - General Conformity and increasing nonattainment
- EER process (ozone & particulate matter)
- GHG and Black carbon
- Tiered Smoke Management Approaches:
  - Basic Smoke Management Practices
  - Smoke Management Programs (SMP) (state)
  - Enhanced Smoke Management Programs (ESMP)

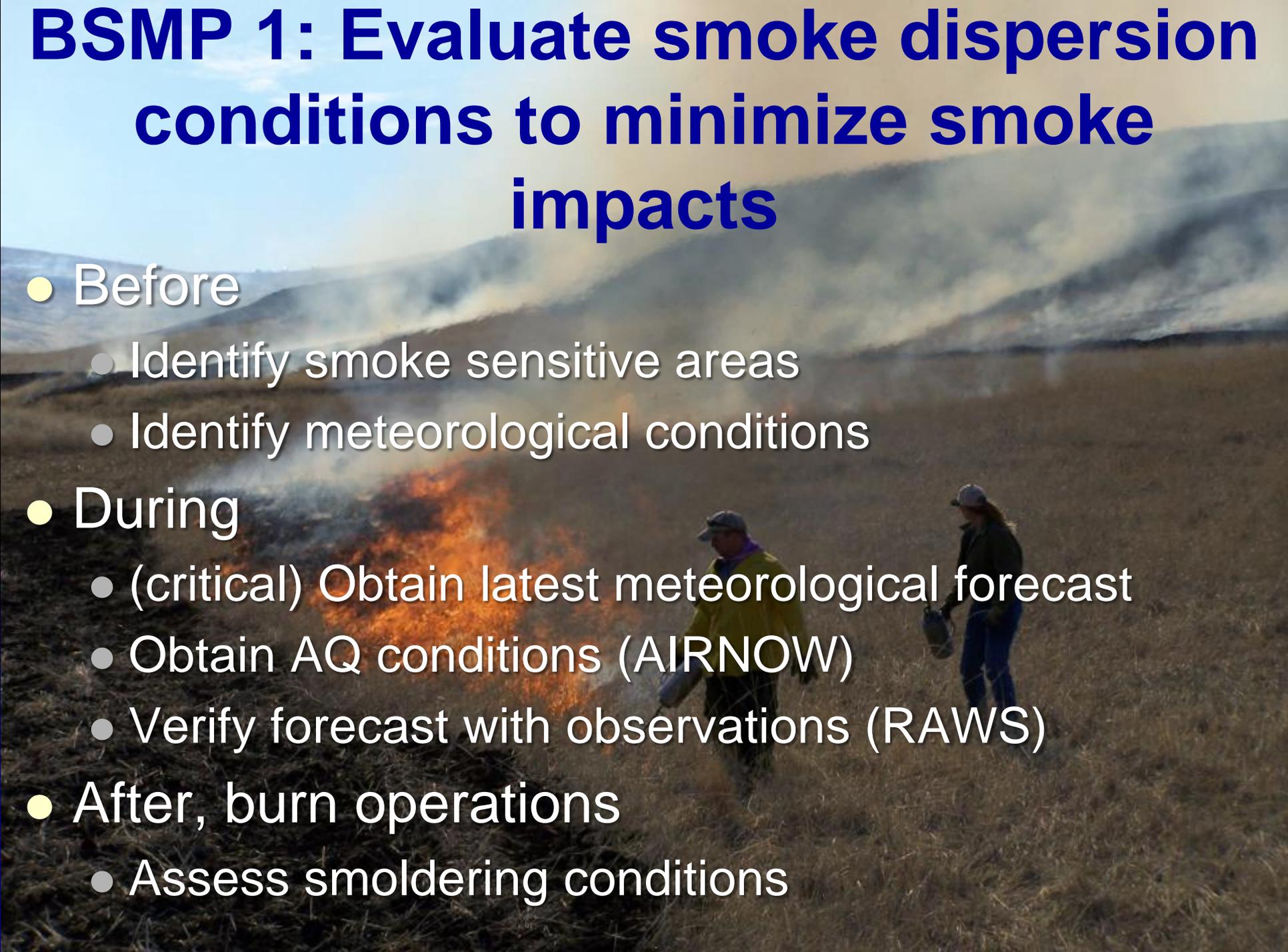
# Basic Smoke Management Practices

## NRCS and FS Tech Note

- **Six Basic Smoke Management Practices (BSMPs)**
- **Cited in Exceptional Event Rule (2007) and General Conformity Revision (2009)**
- **Basic level of effort managing smoke**
- **First level of a tiered Smoke Management Approach:  
BSMP → SMP → ESMP**



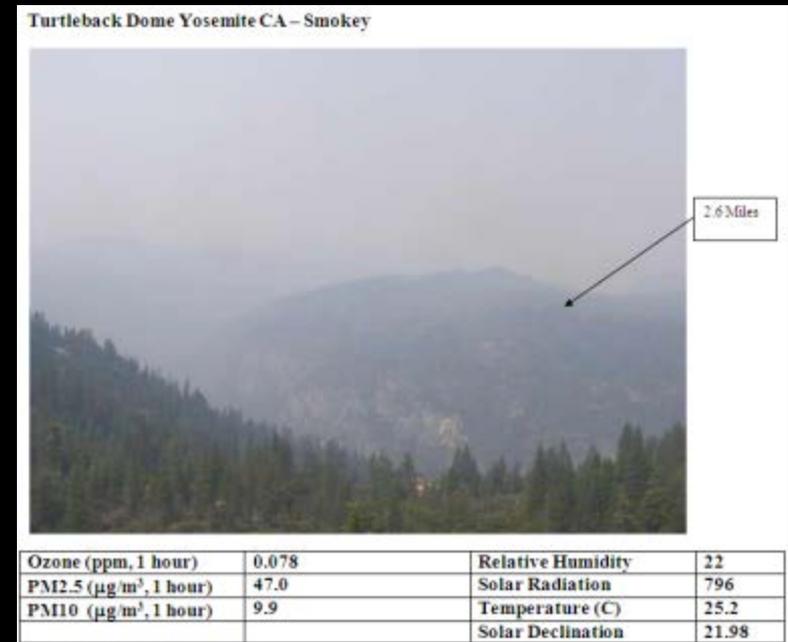
# BSMP 1: Evaluate smoke dispersion conditions to minimize smoke impacts

A photograph of a controlled burn in a field. In the foreground, two people wearing hard hats and work clothes are walking through the field. One person is wearing a yellow jacket and a grey cap, and the other is wearing a dark jacket and a white cap. In the middle ground, there is a large fire burning in a field of dry grass, with thick white smoke rising from it. The background shows rolling hills under a clear sky.

- Before
  - Identify smoke sensitive areas
  - Identify meteorological conditions
- During
  - (critical) Obtain latest meteorological forecast
  - Obtain AQ conditions (AIRNOW)
  - Verify forecast with observations (RAWS)
- After, burn operations
  - Assess smoldering conditions

# BSMP 2: Monitor the effects of the fire on air quality

- Monitoring effects of fire on air quality
  - Where does the smoke go?
  - How high does it go?
  - Does the smoke disperse or is tight and dense?
- Methods – Visual monitoring documented by:
  - notes, photographs, aircraft observations, satellite imagery, air quality monitoring data, and post-burn evaluations.
- Note air quality near sensitive receptors
- Correlating visual range to hourly PM2.5 concentrations is also possible in dry environments (relative humidity < 65%)



US Forest Service Smoke Photo Series

# BSMP 3: Record-keeping

- Keep a personal burn/smoke journal.
- What records to keep?
  - Weather (forecasted and observed)
  - BSMPs applied
  - Fire activity (location, area burned, date, ignition time, etc.)
  - Fuels burned
  - Smoke behavior & impacts (if any)
- Assess conditions and burns that meet goals, and provide lessons learned
- Documentation can be key if there is an air quality exceedance and the state seeks to exclude the data. This can be years later.



# BSMP 4: Communication – Public Notification

- Notify appropriate authorities (ex. air regulators, public health officials, local fire department).
- Notify those potentially affected by the smoke
- If an impact occurs, prepare contingency actions to reduce exposure (ex. Mop-up, reducing area burned).



# BSMP 5: Consider use of emission reduction techniques (ERTs)

- Ensure objectives are not compromised
- ERTs can include:
  - reducing fuel burned
  - increasing burning efficiency
- NRCS Practices considered ERTs: Brush Management, Clearing and Snagging, Firebreak, Forest Stand Improvement, Fuel Break, Prescribed Grazing, and Woody Residue Treatment.



# BSMP 6: Share the Airshed – Coordination of Area Burning

- Communication among fire managers burning in the same vicinity on the same day
- Coordinate and plan ignitions so as not to overwhelm the ability of the atmosphere to disperse the smoke
- Current smoke/AQ information
  - AIRNOW (<http://www.airnow.gov>) or from local/state air quality monitoring networks.
  - NOAA Hazard Mapping System – current satellite fire detections (<http://www.osdnp.noaa.gov/ml/and/hms.html>)

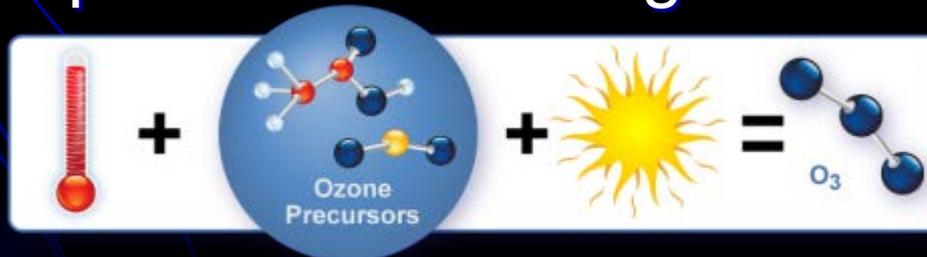


# Tiered Smoke Management Approaches

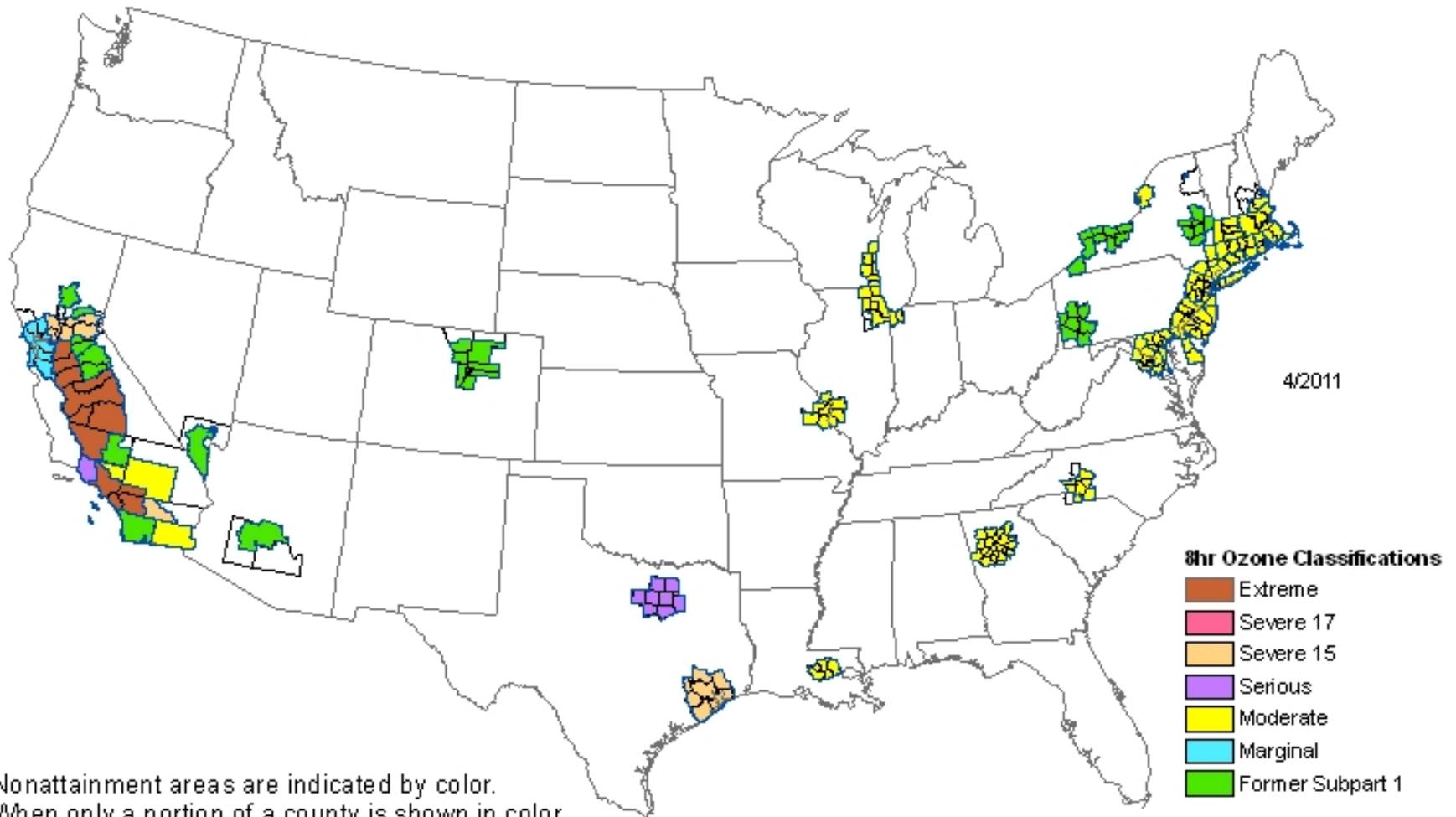
- Basic Smoke Management Practices
  - The building block of all smoke management effort
- Smoke Management Program (SMP)  
(state-level per EER/GC)
  - Recognizes 1998 Interim Policy SMP elements
- Enhanced Smoke Management Program  
(ESMP) (Regional Haze Rule – Section 309)
  - Recognizes ESMP Development that establishes elements needed when prescribed fire contributes to visibility impairment or nonattainment

# National Ambient Air Quality Standards (NAAQS)

- Ozone Standard Revised 3/2008
  - Old 8-hr Standard = 0.084 ppm
  - New 8-hr Standard = 0.075 ppm
- New Administration Remanded the 2008 Levels
- 9/22/2011 – The Administration decided to go forward with the 2008 levels.
  - 52 areas expected to be designated nonattainment

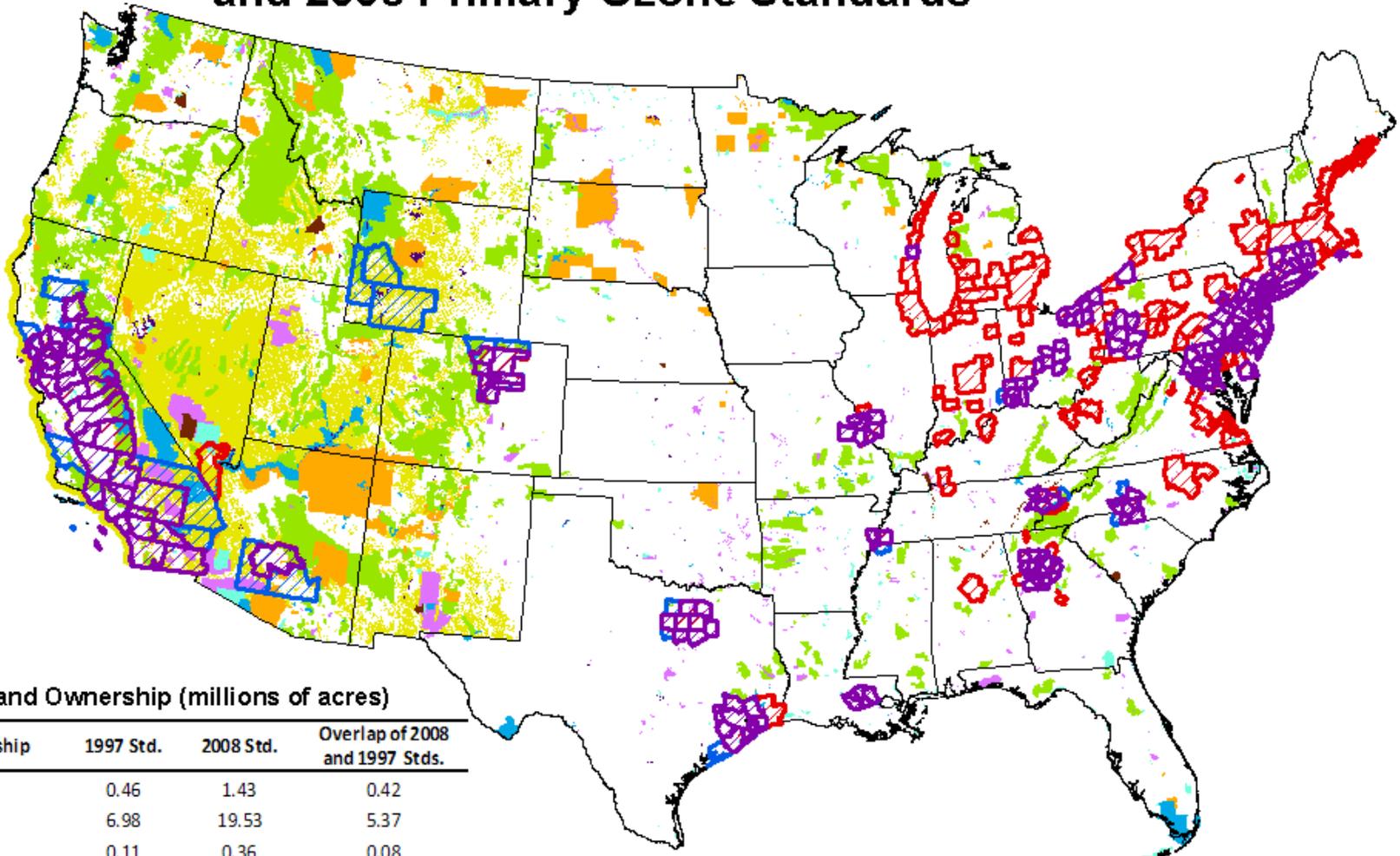


## 8-Hour Ozone Nonattainment Areas (1997 Standard)



Nonattainment areas are indicated by color. When only a portion of a county is shown in color, it indicates that only that part of the county is within a nonattainment area boundary.

# Nonattainment Areas (NAAs) based on 1997 (Current) and 2008 Primary Ozone Standards



NAAs by Land Ownership (millions of acres)

Land Ownership	1997 Std.	2008 Std.	Overlap of 2008 and 1997 Stds.
BIA	0.46	1.43	0.42
BLM	6.98	19.53	5.37
BOR	0.11	0.36	0.08
DOD	2.94	4.46	2.31
FS	10.46	14.56	9.84
FWS	1.14	0.76	0.63
NPS	3.64	5.01	2.89
OTHER FED	0.13	0.09	0.08
NONFED	149.61	98.54	84.53
<b>Total</b>	<b>175.46</b>	<b>144.74</b>	<b>106.15</b>

## NA Areas/Counties

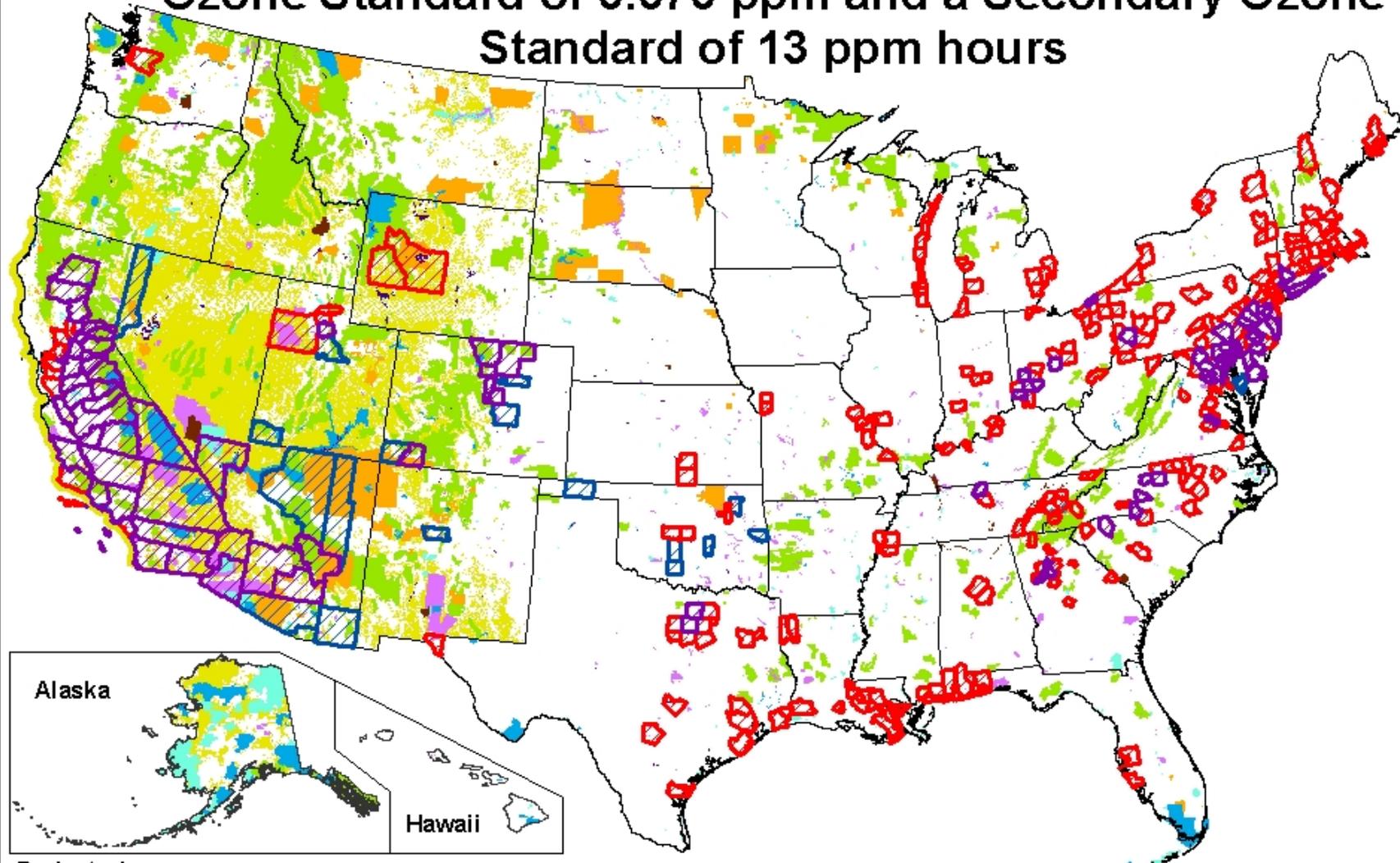
 1997 Standard

 2008 Standard

 Both Standards

Counties depicted have data which exceeds the proposed standard based on 2008-2010 monitoring data from EPA (<http://www.epa.gov/airtrends/values.html>). Includes data from CASTNET monitors. Includes data that could be excluded as exceptional events in the future. Analysis conducted by NWCG Smoke Committee.

# Projected Nonattainment (NA) Counties based on a Primary Ozone Standard of 0.070 ppm and a Secondary Ozone Standard of 13 ppm hours



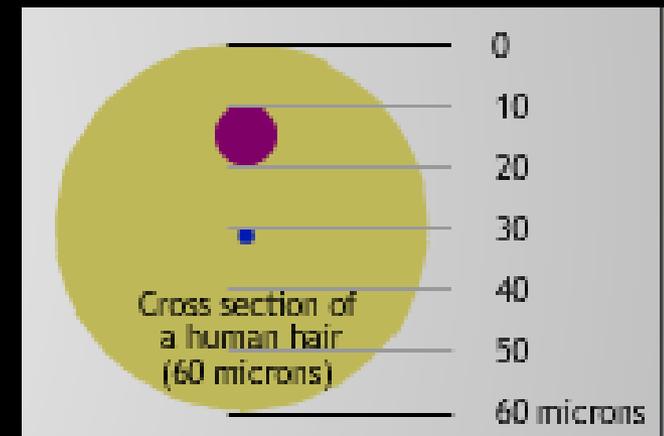
## Projected NAA Counties Ownership (Million Acres in Projected NA Counties Both Standards)

Primary	BIA (18)	DOD (10)	NPS (10)
Secondary	BLM (31)	FS (28)	Other Fed (0.2)
Both	BOR (0.5)	FWS (4)	Non-Fed (157)

Counties depicted have data which exceeds the proposed standard based on 2008-2010 monitoring data from EPA (<http://www.epa.gov/airtrends/values.html>). Includes CASTNET data. Includes data that could be excluded as exceptional events in the future. Analysis conducted by NWCG Smoke Committee.

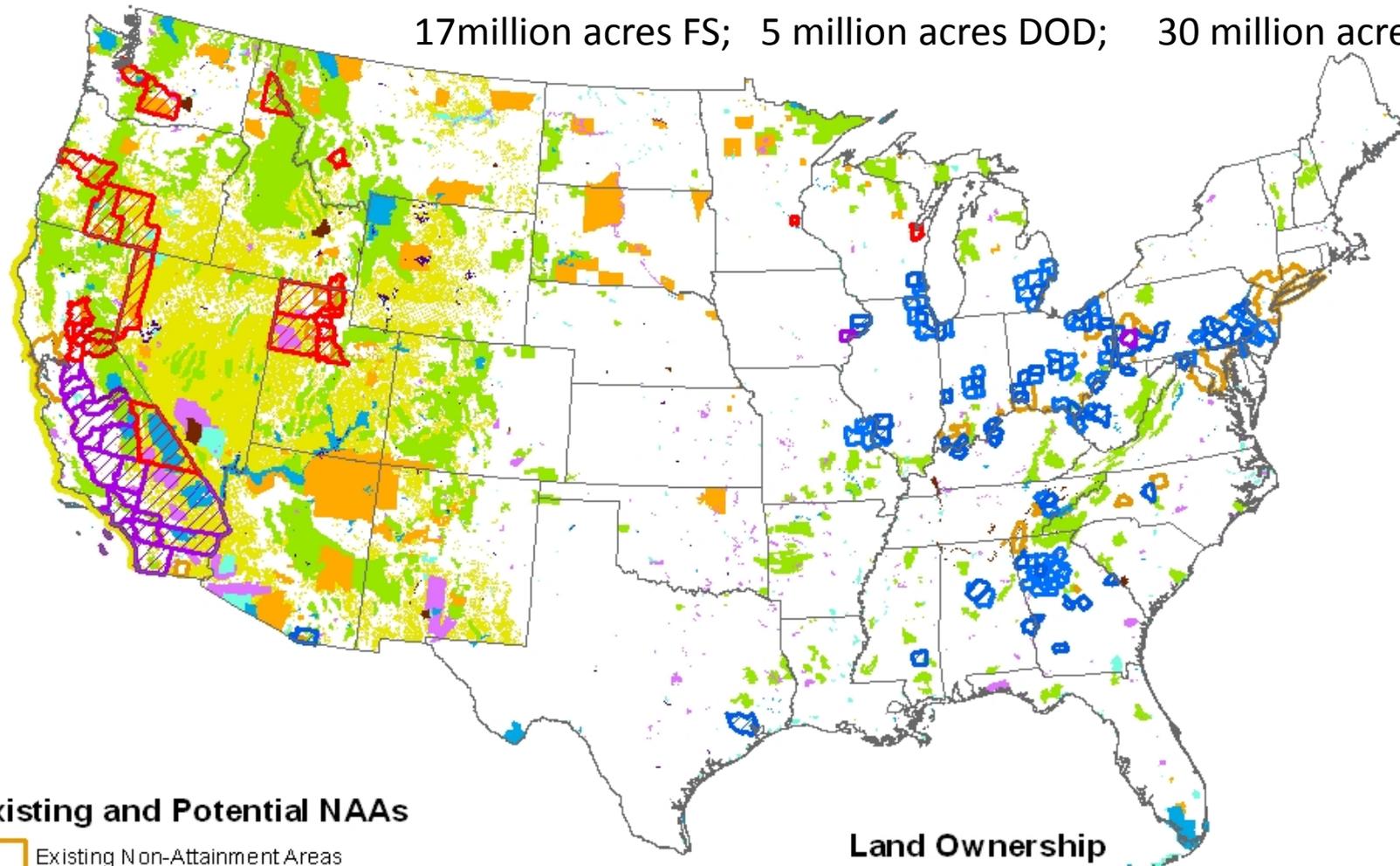
# Particulate Matter NAAQS

- **PM<sub>2.5</sub> Standard Proposed – out for comment**
  - 24-hr Standard = **35  $\mu\text{g}/\text{m}^3$**
  - Annual Standard = **12-13  $\mu\text{g}/\text{m}^3$**  (now 15  $\mu\text{g}/\text{m}^3$ )
- **PM<sub>10</sub> 24-hr Standard = 150  $\mu\text{g}/\text{m}^3$**
- **Secondary Standard = 28-30 Deciview**
  - “Mostly urban” using CSN
  - 24-hr though comments taken on shorter time periods



# PM<sub>2.5</sub> NA areas based on June 2012 proposed standards: Annual NAAQS level = 12 µg/m<sup>3</sup>, 24-hr NAAQS level = 35 µg/m<sup>3</sup>

17million acres FS; 5 million acres DOD; 30 million acres DOI



## Existing and Potential NAAs

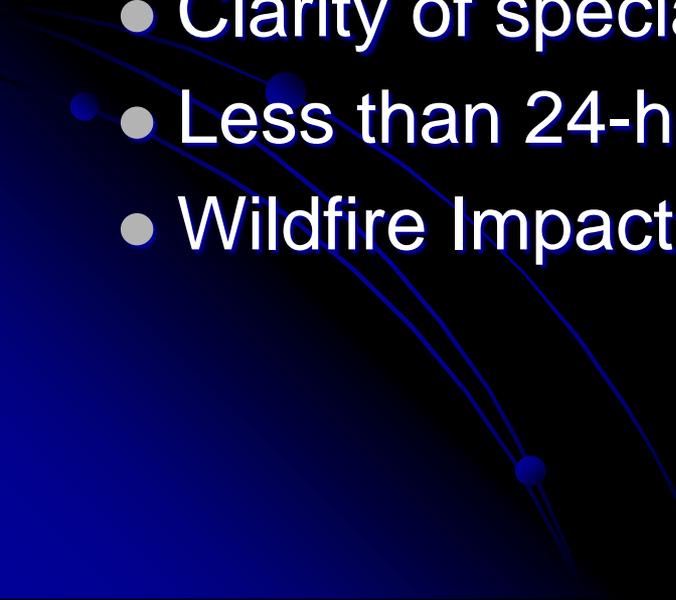
- Existing Non-Attainment Areas
- Likely not to meet both annual and 24-hr NAAQs
- Likely not to meet 24-hr NAAQs, but likely to meet annual NAAQs
- Likely not to meet annual NAAQs, but likely to meet 24-hr NAAQs

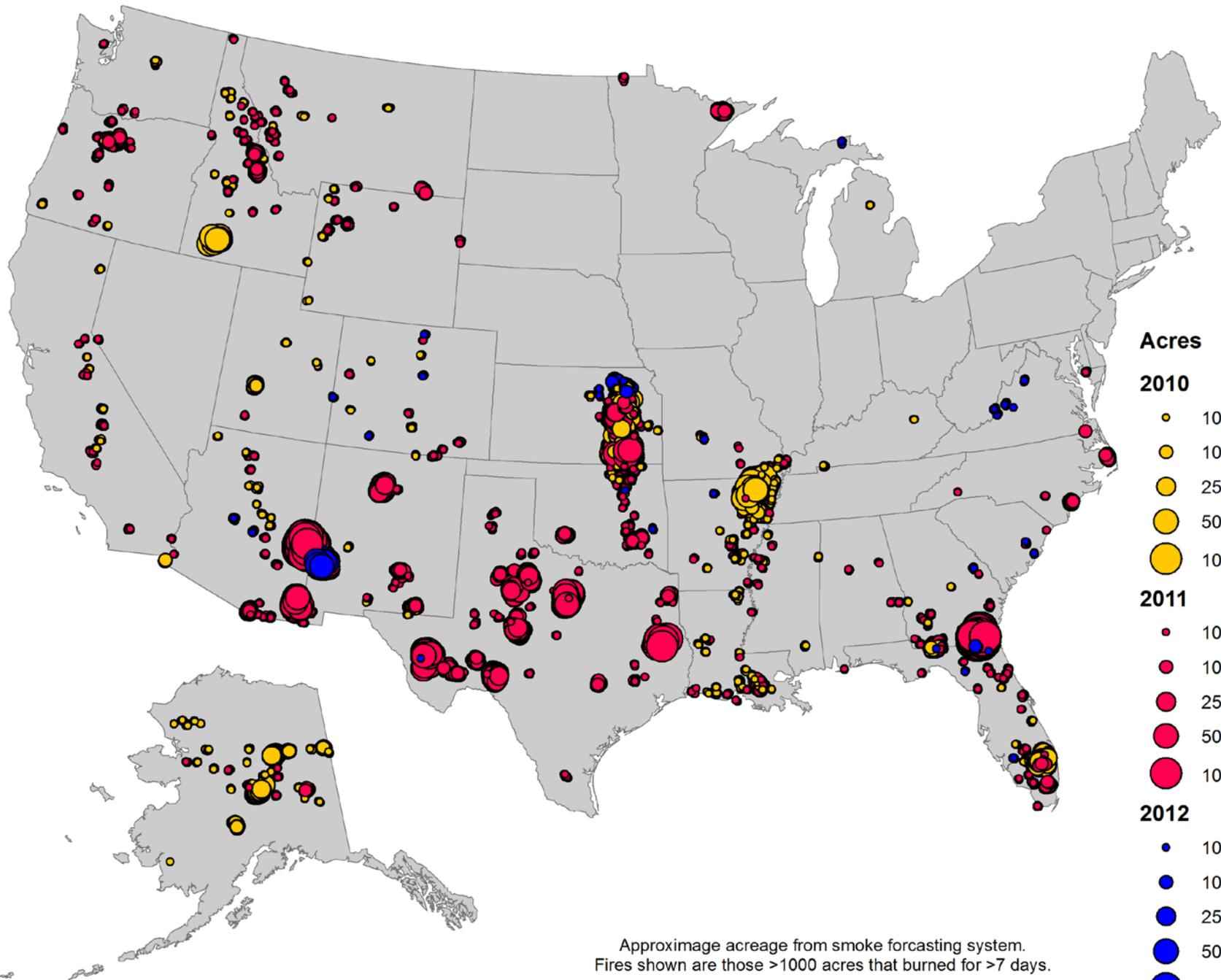
## Land Ownership

- |   |  |  |  |
|---|--|--|--|
| <span style="display: inline-block; width: 15px; height: 10px; background-color: orange;"></span> BIA | <span style="display: inline-block; width: 15px; height: 10px; background-color: purple;"></span> BOR  | <span style="display: inline-block; width: 15px; height: 10px; background-color: lightgreen;"></span> FS | <span style="display: inline-block; width: 15px; height: 10px; background-color: cyan;"></span> NPS        |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: yellow;"></span> BLM | <span style="display: inline-block; width: 15px; height: 10px; background-color: magenta;"></span> DOD | <span style="display: inline-block; width: 15px; height: 10px; background-color: lightcyan;"></span> FWS | <span style="display: inline-block; width: 15px; height: 10px; background-color: brown;"></span> Other Fed |

Non-Attainment areas based on June 2012 proposed EPA PM<sub>2.5</sub> standards. As quantitative spatial data were unavailable, NAAs were selected *ad hoc*, by visual comparison with a pictorial representation of the data.

# Particulate Matter NAAQS

- Implementation Issues for fires
  - Annual Standard
    - Wildfire Impacts and the EER Process
    - Prescribed Fire General Conformity Approach
  - Secondary Standard
    - Clarity of speciated monitoring network to be used
    - Less than 24-hr time periods
    - Wildfire Impacts
- 



Approximate acreage from smoke forecasting system.  
 Fires shown are those >1000 acres that burned for >7 days.

# Draft Exceptional Events Guidance Documents

(<http://www.epa.gov/ttn/analysis/exevents.htm> )

- Initially aimed at High Wind Event Guidance
- FAQ's includes Fire discussion and examples
  - Definitions
  - Added requirements on certain fires
  - Examples of how wildfires can and will create higher design days and could contribute to NAA