

2007 Pinal County PM₁₀ Stakeholder Process

Science, Art and Policy

Pinal County Air Quality Summit
November 7, 2008



PINAL • COUNTY
wide open opportunity

Stakeholder Process Background

- Dust is an issue
- Citizens and businesses have an interest
 - Health impacts
 - Regulatory burdens
- Fall 2006 – Pinal opened discussions with individual stakeholders
- All agreed to a collaborative process
- Process started in February 2007



Stakeholder List

- Invited representatives from government and business
- Participants included (but not limited to):
 - Arizona Cattle Feeders Association
 - Arizona Cotton Growers Association
 - Associated General Contractors
 - Arizona Home Builders Association
 - Arizona Rock Products Association
 - Arizona Department of Environmental Quality
 - Arizona Department of Transportation
 - Several local municipalities
 - Individual companies



PM₁₀ Stakeholder Process

- Step 1 - Science
 - Review the monitoring data
- Step 2 – Art
 - How the Emissions Inventory was developed
- Step 3 – Policy Questions
 - Who should reduce emissions
- Step 4 – What's next
 - Commitments



The Challenge

- Define the problem before trying to solve the problem
- We can measure scientific data about the air
 - Monitored concentrations
 - Weather data
- We can't directly measure contributions from every source
- Without knowing who contributes, it isn't clear who should reduce



Step 1: Review the Science

- Monitoring
 - Monitor locations
 - Monitoring data – how much stuff?
- Meteorological data
 - Stagnation event or wind event?
- Land use patterns
 - What's next door?
- Chemical composition of particulate matter

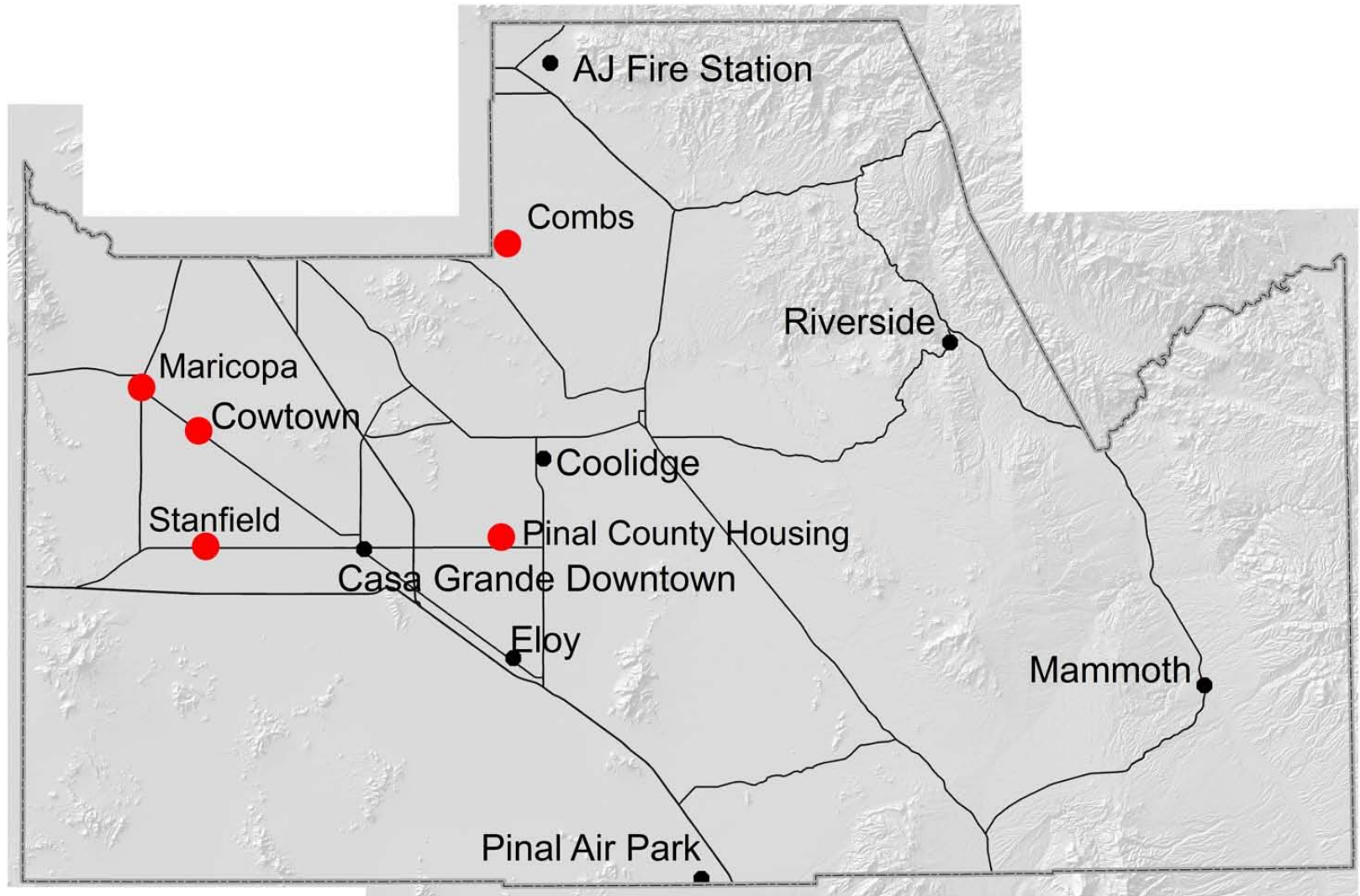


Step 1: Geographic Focus

- Review of science focused on three sites
 - Stanfield
 - Pinal County Housing
 - Maricopa
- Two additional sites were discussed briefly
 - Combs School – has a limited data set
 - Cowtown – very site specific



Pinal County Air Quality PM₁₀ Monitors



Step 1: No Wind vs. Wind

- Stagnation events
 - Little or no wind
 - Activity = emissions
 - Every little bit counts
- Wind events
 - Surface conditions
 - Wind speed
 - Affected acreage



Step 1: Site Specific Discussions

- Monitoring site-specific packages
 - Broad aerial photo
 - Focused aerial photo
 - 24-hour concentration plots
 - Wind
 - Stagnation
 - Site-specific speciation data
- Here is the Pinal County Housing package



PCAQCD PCH Monitoring Site

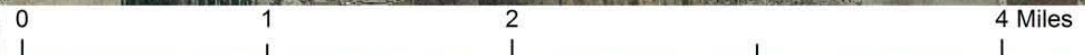
Storey Rd.

Eleven Mile Corner Rd.

PCH Monitor



Source: State ArcIMS Server
2005 Aerial



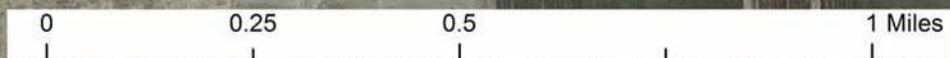
PCAQCD Pinal County Housing Monitoring Site

PCH Monitor



Eleven Mile Corner Road

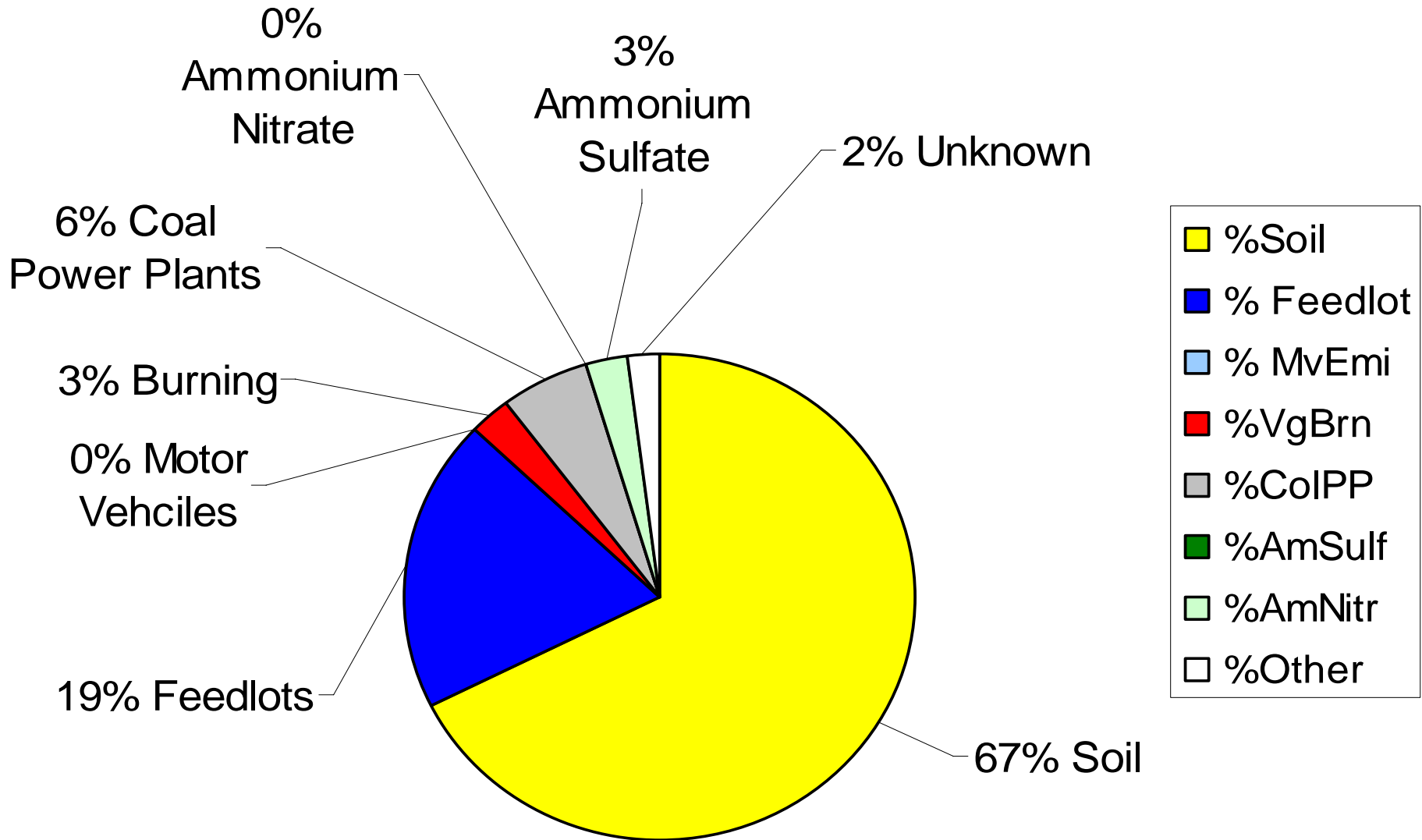
SR-287



Source: State ArcIMS Server
2005 Aerial
Updated: 4/20/07
By: SD

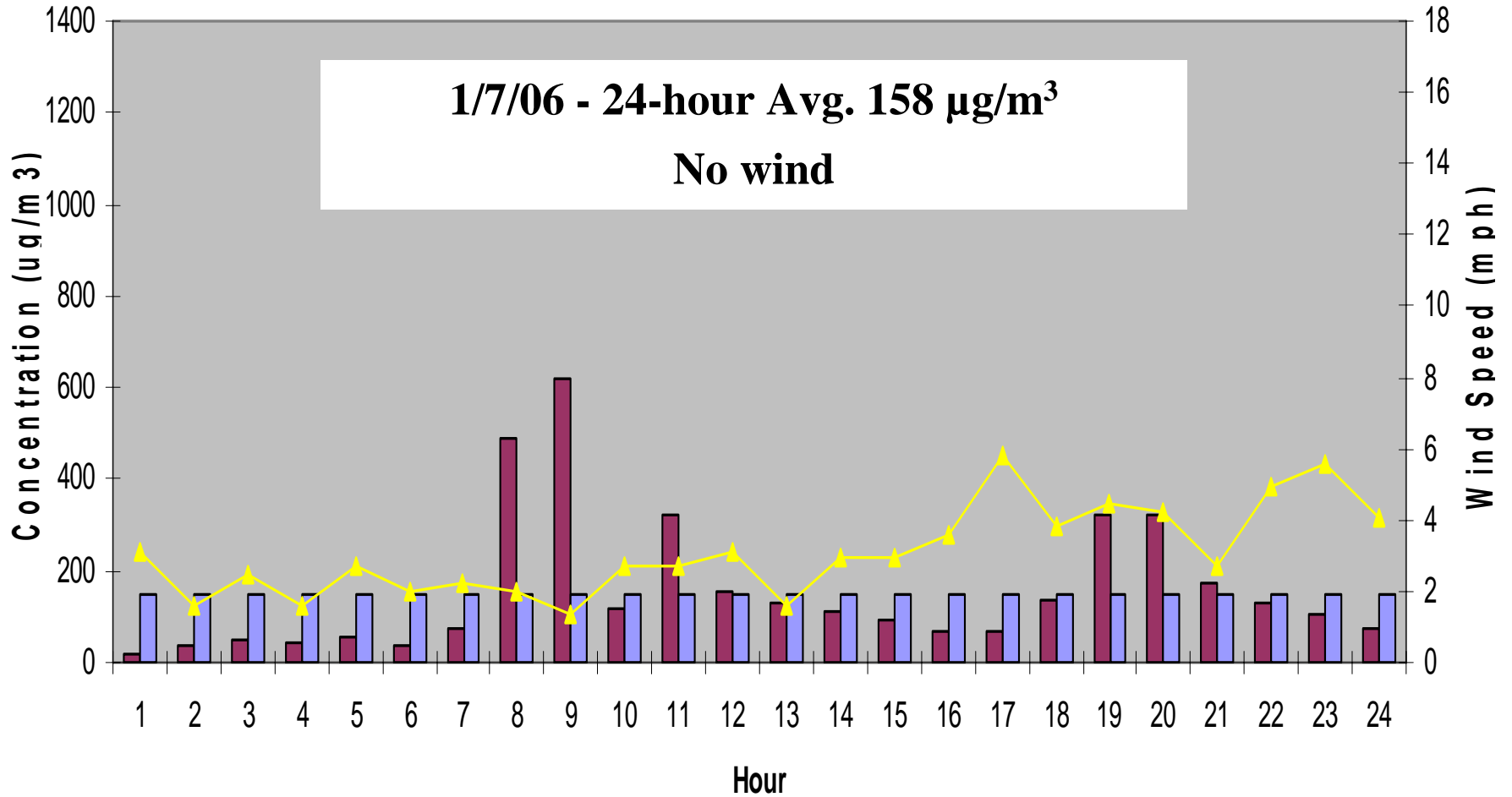
2003 Chemical Fingerprint

Pinal County Housing PM₁₀



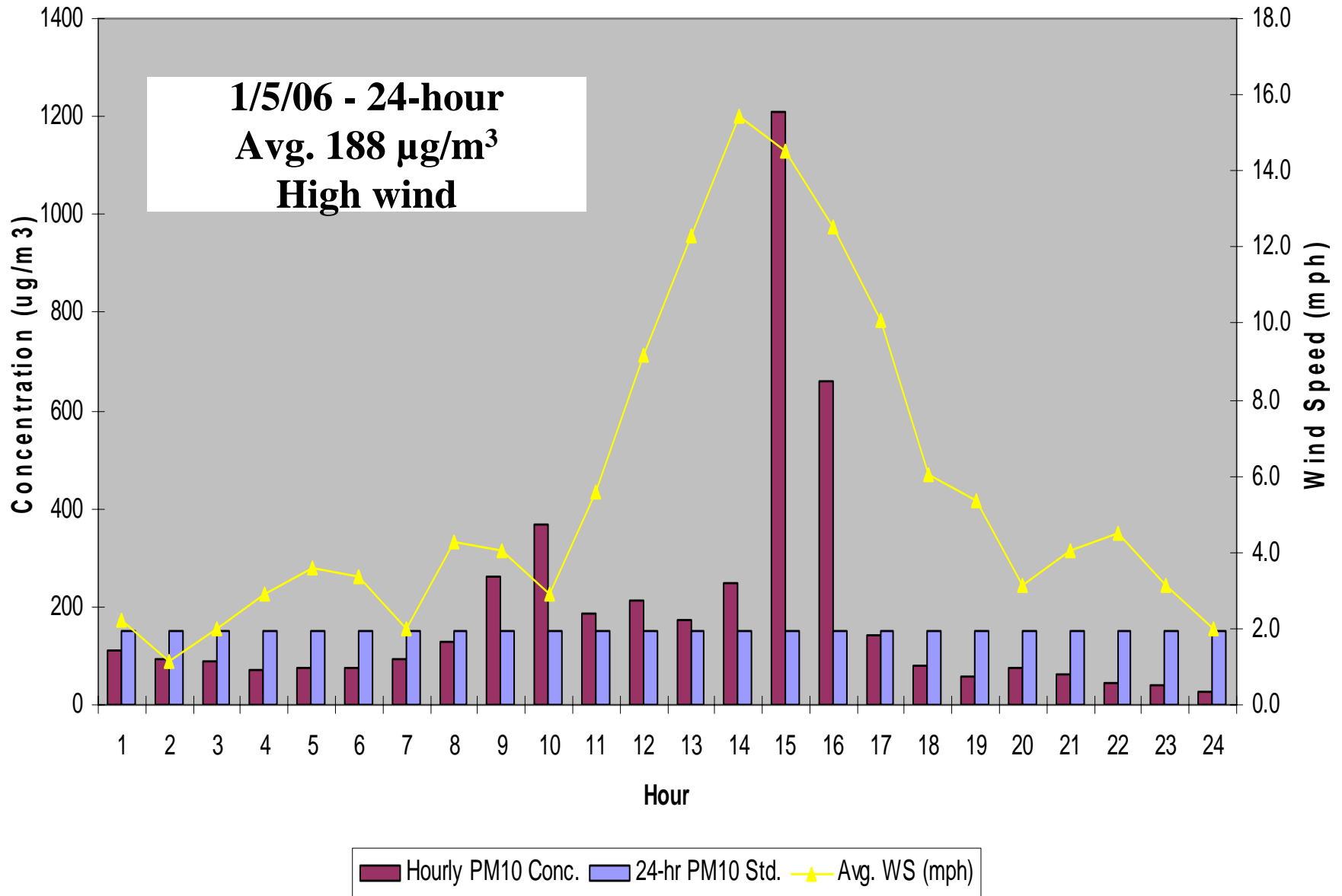
PCH 2006 Data (Jan 7th) Stagnation Event

1/7/06 - 24-hour Avg. 158 $\mu\text{g}/\text{m}^3$
No wind



Hourly PM10 Conc. 24-hr PM10 Std. Avg. WS (mph)

PCH 2006 Exceedance (Jan 5th) Wind Event



Step 2: Art – Develop an Inventory

- Any inventory needs to reflect
 - All sources, or at least representative sources
 - All locations, or at least representative locations
 - Representative dates & weather conditions
 - Wind and Stagnation
- Trying to improve 24-hour PM_{10} levels requires an inventory that reflects short term, nearby emissions



Step 2: Pinal County 2007 Inventory

- Audience Participation
 - 10-30 people depending on the day
 - Created charts for each site and each scenario
- Averaged the three sites together
 - But kept Stagnation (no wind) and Wind Events separate



Consensus Allocations

Category	% No Wind	% Wind
Desert Land	0%	13%
Paved Public Roads	10%	7%
Dirt Public Roads	42%	27%
Ag – Fields and Field Activity	13%	23%
Ag – Dairies and Feedlots	10%	2%
Construction	7%	3%
Burning – All Types	3%	0%
Background – Transport in	15%	25%
Other – In County Emissions	0%	0%
TOTAL	100%	100%

Pinal Inventory Benchmarking

What's Available "On the Shelf"?

- EPA's county-wide assessment
- EPA's 1999 National Emission Inventory
 - Countywide, not local
 - Annual, not short term
 - Ignores wind-driven emissions



EPA's 1999 National Emission Inventory

- PM₁₀ Summary
 - 40% roads
 - 25% agriculture
 - 15% construction
 - 10% burning
 - 5% mining
 - 5% miscellaneous



Step 2: Pinal County Emission Inventory

- “Back of the pickup truck” inventory
- Identifies the groups that need to be involved
- Utilized local knowledge



Step #3 – The Policy Question

Who Should Reduce Emissions?

- Group discussed “design day” conditions
 - Wind
 - Stagnation
- Initial focus was a “typical” stagnation day
 - 24-hour design value of 200 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)
 - Must be reduced to $150 \mu\text{g}/\text{m}^3$ to meet the standard
- Policy question – focused reduction or shared reduction?



Stagnation Reductions	AVG %	Concentration	%	Projected Net
	Contribution		Reduction	Concentration
Desert Land	0%	0	0%	0
Paved Public Roads	10%	20	30%	14
Dirt Public Roads	42%	83	30%	58
Agriculture - Fields and Field Activity	13%	27	30%	19
Agriculture - Dairies and Feedlots	10%	20	30%	14
Construction	7%	13	30%	9
Burning - All Types	3%	7	30%	5
Background - Transport in	15%	30	0%	30
Other - In County Emissions	0%	0	0%	0
Totals	100%	200		149
				99%

The Stakeholder Process Hits a Bump in the Road

- August 2007
- Several stakeholder groups were willing to commit to reductions
 - Agriculture
 - Construction
 - Mining/rock products
- Those representing roads were under represented



Conclusion

- Step 1 - Science
 - Monitoring data shows many exceedances
- Step 2 – Art
 - A consensus inventory identified major contributors
- Step 3 – Policy Question
 - Who should make the required reductions?
- Step 4 – What's required to move forward?

