

# WRAP/FEJF Inter RPO Report

WRAP - Fire Emissions Joint Forum Meeting  
San Diego, CA  
22 February 2007  
1015a – Presentation (c)



# Overview

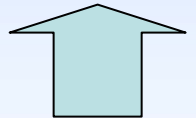
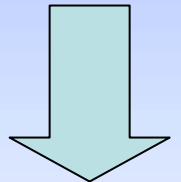
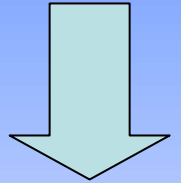
- Lessons Learned
- FCCS vs. NFDERS – a case study of wildfires in the WRAP region

# Status of Draft Report

- 150pp report (approximate).
- Proofreading/Formatting in Golden as we speak.
- Perhaps some changes/additions to “Lessons Learned” section based on discussions today.
- Posted and available for review on Friday, February 23, 2007.
- 2-4 weeks for review/comment, make necessary revisions, then post as Final.

# – Lessons Learned – Technical Methodology

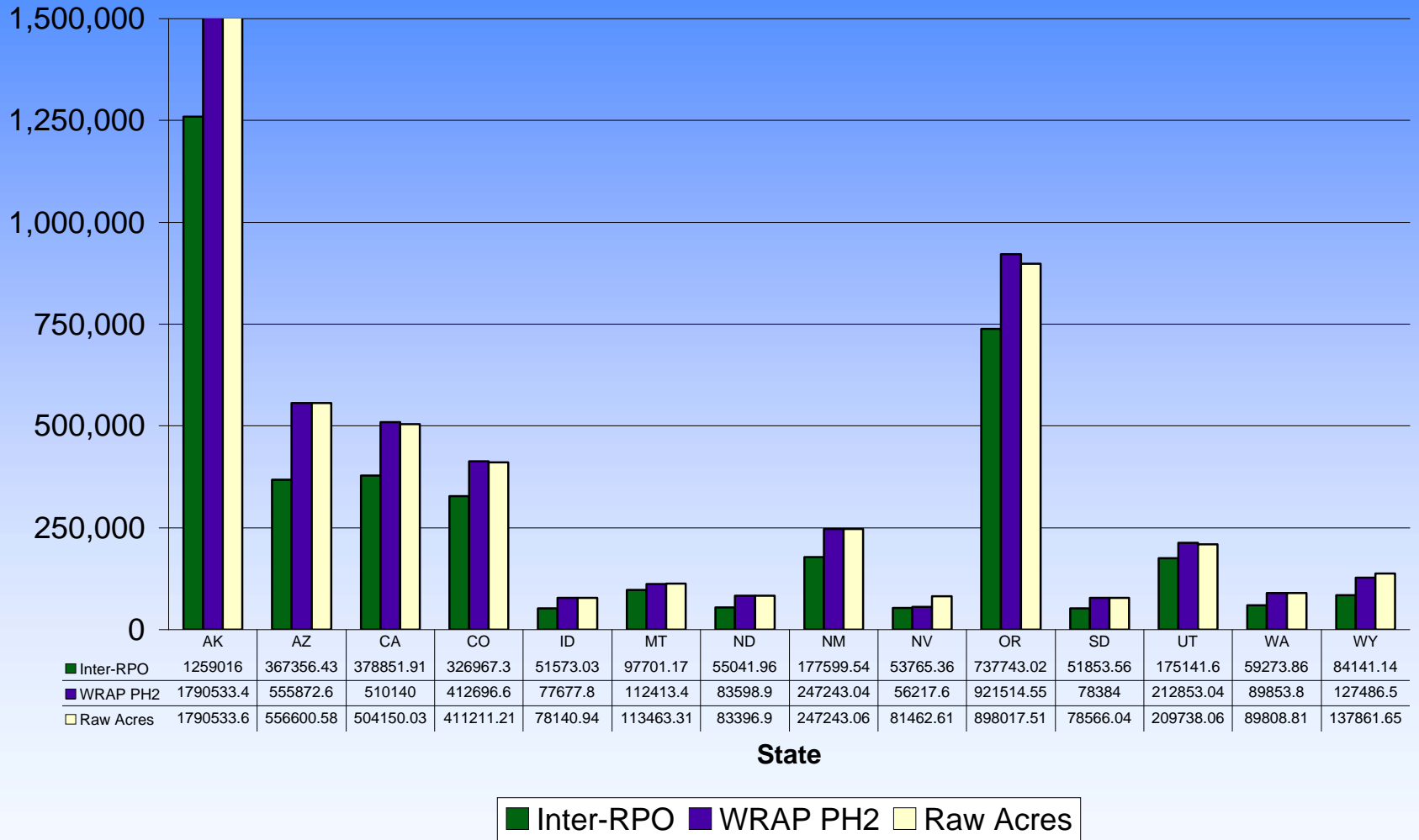
- Big hitters:
  - “Blackened Acres” presumption
    - 2/3 reported acres actually burned
  - FEPS-generated Fuel Consumption
    - Consumption estimated as a function of moisture regime of fuel
    - By definition, fuel consumption is less than available fuel loading
  - FEPS-generated Emission Factors



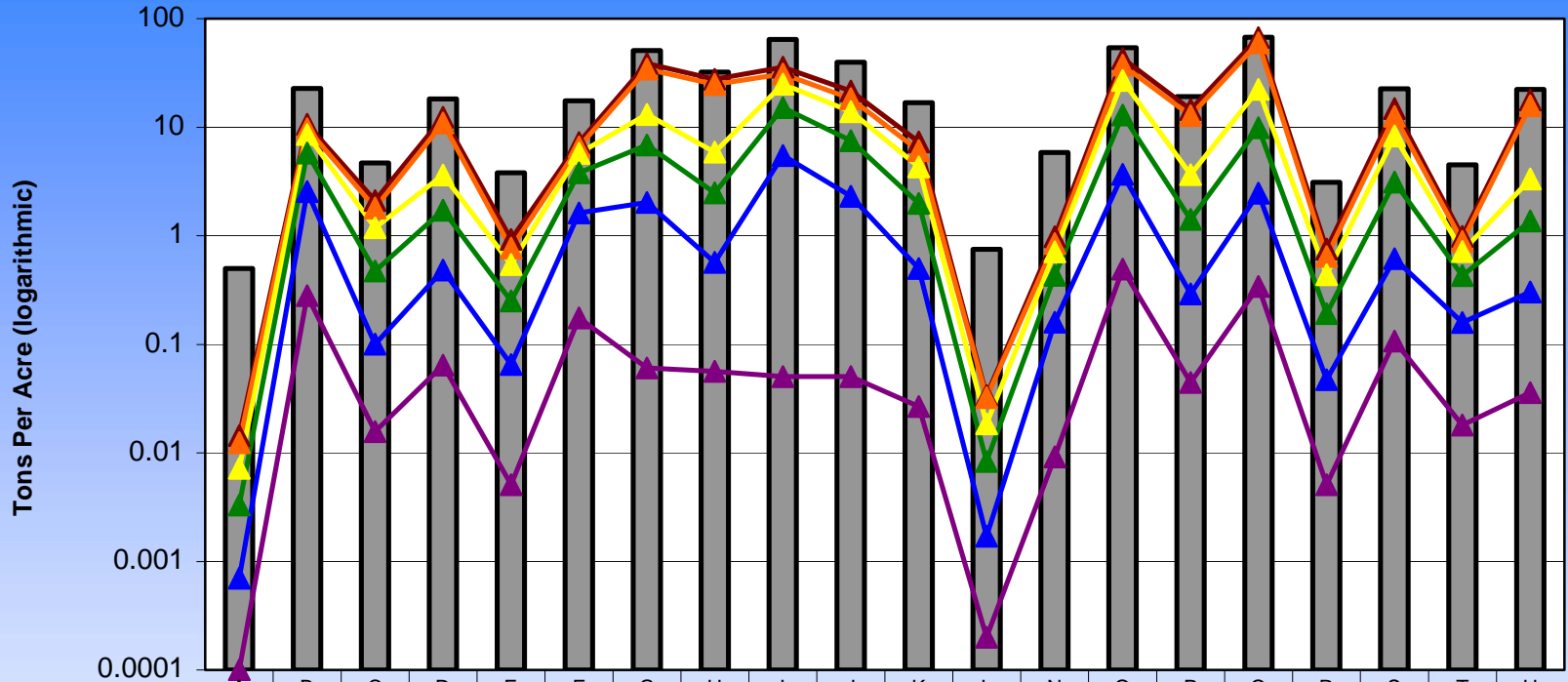
# Inter RPO Results / WRAP Phase II Results

	<u>Acres</u>	<u>Consumption</u>	<u>PM2.5</u>
AK	70%	71%	84%
AZ	66%	67%	83%
CA	74%	48%	46%
CO	79%	61%	71%
ID	66%	37%	39%
MT	87%	91%	113%
ND	66%	12%	16%
NM	72%	46%	51%
NV	96%	157%	161%
OR	80%	67%	70%
SD	66%	12%	15%
UT	82%	58%	61%
WA	66%	35%	36%
WY	66%	26%	28%
WRAP-wide	73%	66%	75%

## WRAP 2002 Phase II and Inter-RPO Wildfire EI Annual Acres Burned Spatial Distribution (state) Comparison



## Inter-RPO National Wildfire Emission Inventory WRAP - Fuel Consumption Comparison

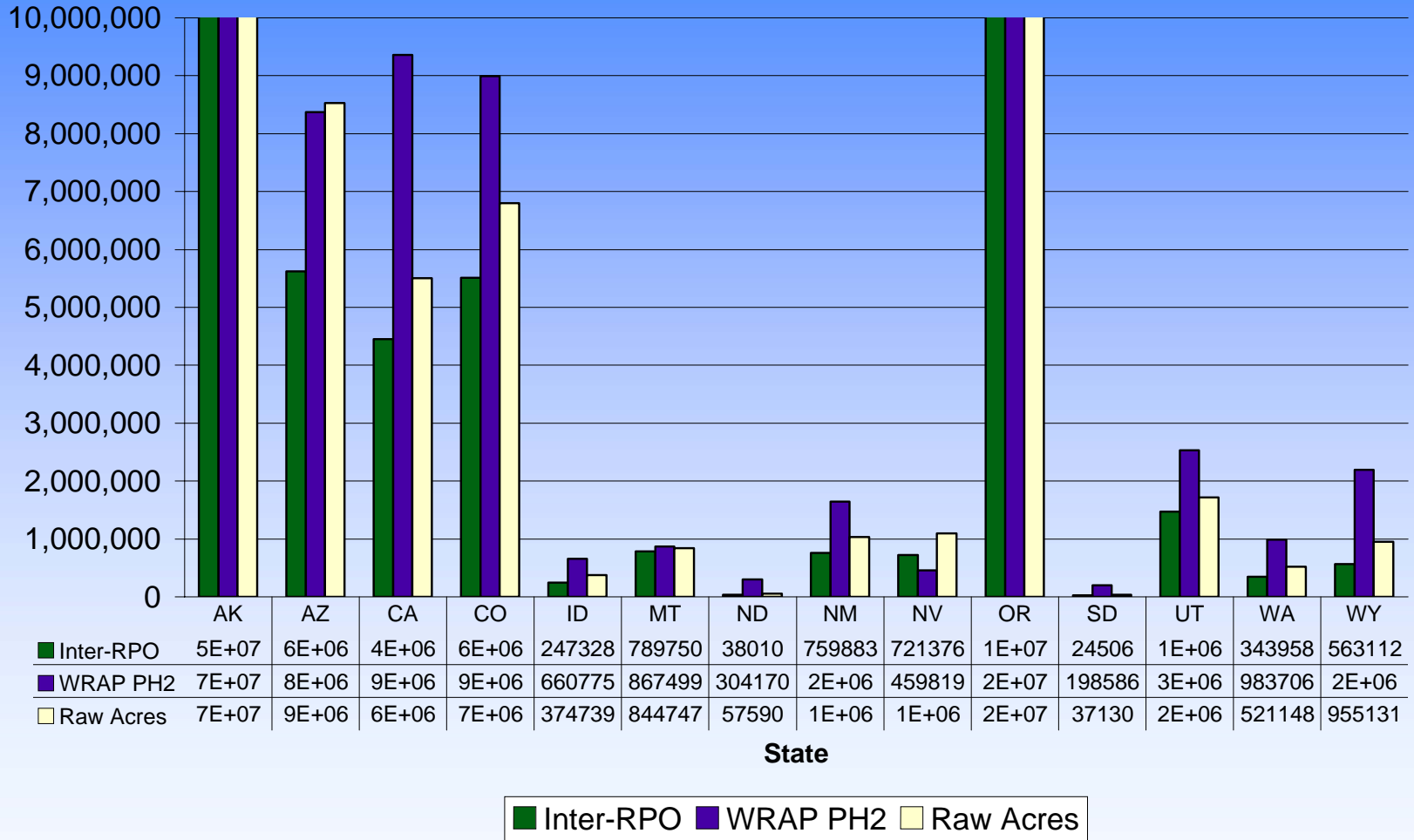


RPO Consumption	0.5000	22.815	4.7000	18.252	3.8000	17.550	50.895	32.175	64.467	39.780	16.848	0.7500	5.8500	53.937	19.188	67.392	3.1000	22.581	4.5000	22.347
Very Dry *	0.0144	10.626	2.1115	12.373	0.9217	7.2473	38.657	27.778	35.833	21.539	7.3024	0.0339	0.9791	43.087	14.579	67.100	0.7543	14.858	0.9867	17.817
Dry *	0.0124	9.7163	1.8038	10.926	0.7710	6.5946	34.446	24.709	31.014	18.281	6.1028	0.0322	0.8477	37.500	12.756	60.109	0.6429	12.653	0.8859	15.762
Moderate *	0.0072	8.5559	1.1882	3.6288	0.5436	5.7633	13.125	5.8846	24.945	13.902	4.3236	0.0185	0.7111	26.962	3.6479	22.244	0.4380	8.2987	0.7155	3.3474
Moist *	0.0033	5.7860	0.4728	1.7174	0.2512	3.8149	6.8739	2.4922	15.200	7.5163	1.9865	0.0083	0.4330	12.951	1.4195	9.8709	0.1922	3.1311	0.4295	1.3726
Wet *	0.0007	2.5460	0.1006	0.4837	0.0650	1.6262	2.0331	0.5689	5.5011	2.3055	0.5002	0.0017	0.1594	3.6879	0.2928	2.4646	0.0472	0.6168	0.1583	0.3030
Very Wet *	0.0001	0.2811	0.0157	0.0643	0.0051	0.1755	0.0604	0.0562	0.0503	0.0503	0.0268	0.0002	0.0092	0.4930	0.0446	0.3423	0.0051	0.1070	0.0180	0.0358

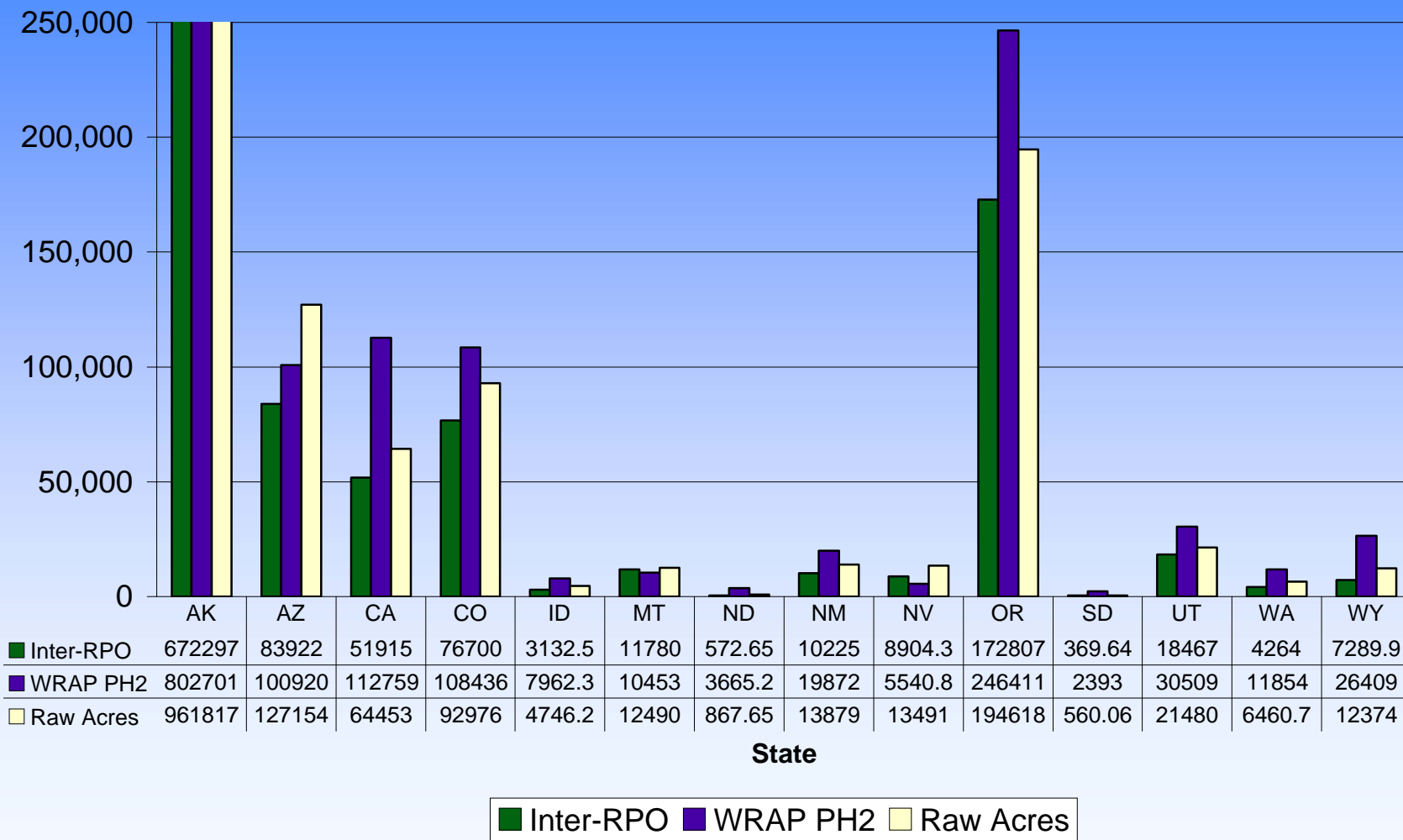
\* Inter-RPO Fuel Consumption

NFDRS Class

## WRAP 2002 Phase II and Inter-RPO Wildfire EI Annual Fuel Consumed (tons) Spatial Distribution (state) Comparison



## WRAP 2002 Phase II and Inter-RPO Wildfire EI Annual PM<sub>2.5</sub> Emissions (tons) Spatial Distribution (state)



# What should we do NEXT time?

- The labor is in the data gathering and QA/QC.
  - Is there any (better) way to gather, store, and disseminate activity data?
- Build and use a SCC coding system in coordination with EPA.
- Improve upon the “Blackened Acres Presumption”
- Use FEPS
  - The Consumption Curves make sense.
  - The burning phase-specific EFs make sense.
  - The smoldering method makes sense.

# How should we use the Inter RPO 2002 WF EI?

- If you want a wildfire EI that is developed in a consistent way across the US, there is probably no better.
- It might be an equitable way to set up “boundary” conditions due to WF emissions in regional modeling analyses.
- As a reference point to build “better” EI’s in the future:
  - Good activity data is everything.
  - Better fire science = more confidence in results.
  - Standards for NIF formats and SCC.
  - ...and we’ve still got the challenge of representing these events “correctly” in the models (plume characteristics)

# Case Study: NFDRS vs. FCCS in the WRAP (2002)

- Different data sources are available to represent fuel loading (& consumption) across the US.
  - National Fire Danger Rating System
  - Fuel Characteristic Classification System
- This analysis attempts to quantify the effect on fuel loading estimates based on NFDRS vs. FCCS for the WRAP's 2002 Fire Inventory

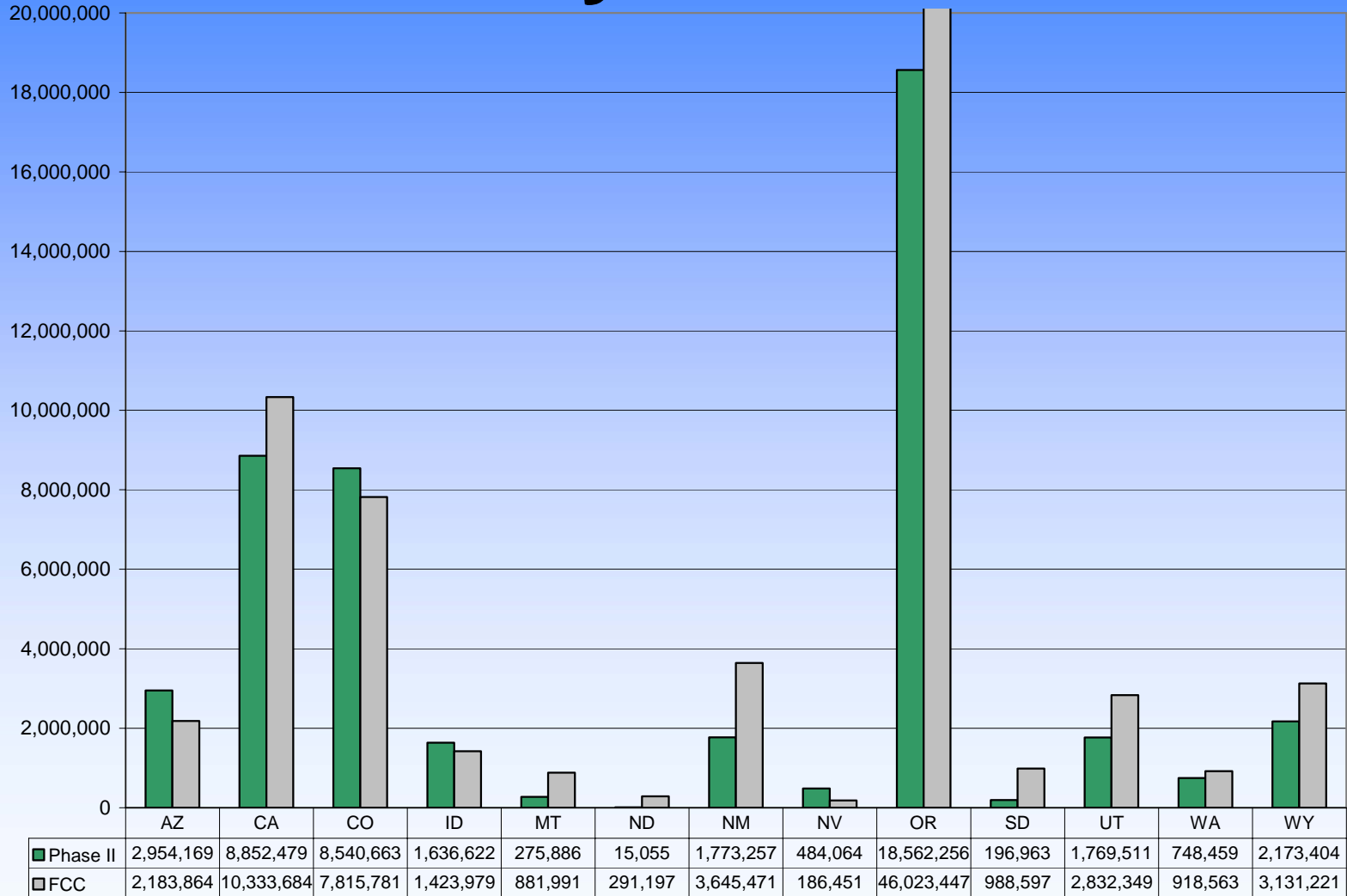
# Fuel Consumption Assignment Rules

Rule #	Fuel loading data availability	Action
1	Event was subject to “large fire” fuel refinement in Phase II effort and received fuel loading based on site-level information	Use refined Phase II tons
2	Fuel loading in tons or tons/acre supplied in raw activity data	Use Phase II raw tons directly
3	NFDRS code supplied in raw activity data	Look up tons from Phase II NFDRS fuel loading table
4	Event subject to “perimeter-based” fuel refinement in Phase II	Assign fuel loading using perimeter over FCC map
5	No fuel loading supplied in raw or refined activity data	Assign fuel loading using FCC map

# Basis for Fuel Consumption Values (as a % of Total Acres) – Post Application of Fuel Assignment Rules

	Basis for Fuel Consumption Values – Post Application of Fuel Assignment Rules (Percent of Acres)				
Source Type (Total Acres in EI)	FCC-based	Tons Fuel Consumption Reported in Raw Data	Tons Fuel Consumption Derived via QC-effort	NFDRS Fuel Model Reported in Raw Data	Total
Wildfire (5.3M)	<b>13%</b>	44%	18%	25%	100%
WFU (200K)	<b>19%</b>	79%	0%	2%	100%
Prescribed Burning (650K)	<b>42%</b>	53%	0%	5%	100%

# Fuel Consumption Comparison By State



# Some More Statistics

- WRAP Wide
  - Fuel Consumption increases by 68% (from 48MM tons to 81MM tons) with the application of FCCS
  - Fuel Consumption increased in 8 states
- Oregon:
  - NFDRS G (short needle, heavy dead @ 43.5 tons/acre)  
**...45% of the acres of the Biscuit Fire...**  
converts to FCC2 (Western Hemlock (& others) @ 73.44 tons/acre)