EIS and the NEI

- Emission Inventory System (EIS)
  - Data repository for air emissions data used to create the NEI
  - Contains State, Local, Tribal and EPA-submitted data
  - Can be multiple emissions values for the same unit/process
  - Annual, monthly, daily data
  - Data available via a password-protected web site
    - EIS Gateway https://eis.epa.gov/eis-system-web/welcome.html
- National Emission Inventory (NEI)
  - Snapshot in time from EIS
  - Inventory version shared with the public
  - One emissions value per process selected
  - Annual emissions values

S/L/T Reporting Requirement

- Air Emissions Reporting Rule (AERR) http://www.epa.gov/ttn/chief/aerr/
  - Complete criteria pollutant inventory every 3 years
    - All point sources (100 tpy potential to emit threshold)
    - Nonpoint sources
    - Onroad and Nonroad sources
    - Events (wildfires and prescribed fires)
    - 2011 Emissions due 12/31/2012, EIS window opens 6/1/2012
  - Annual reporting for Type A point source facilities
    - SO2, NOx, CO with potential to emit ≥ 2,500 tpy
    - VOC, PM, NH3 with potential to emit ≥ 250 tpy
    - Pb with potential to emit ≥ 5 tpy (to be amended to agree with Lead NAAQS level of ≥ 0.5 tpy)
  - HAPs are submitted voluntarily by many S/L/Ts and are encouraged as part of an integrated report

Uses of the NEI

- The NEI is one of the key inputs for :
  - Modeling of national rules – NAAQS reviews, CSAPR, etc
  - Non-attainment Designations
  - NATA Review – toxics risk modeling
  - Trends reports and analyses

Components of the EIS

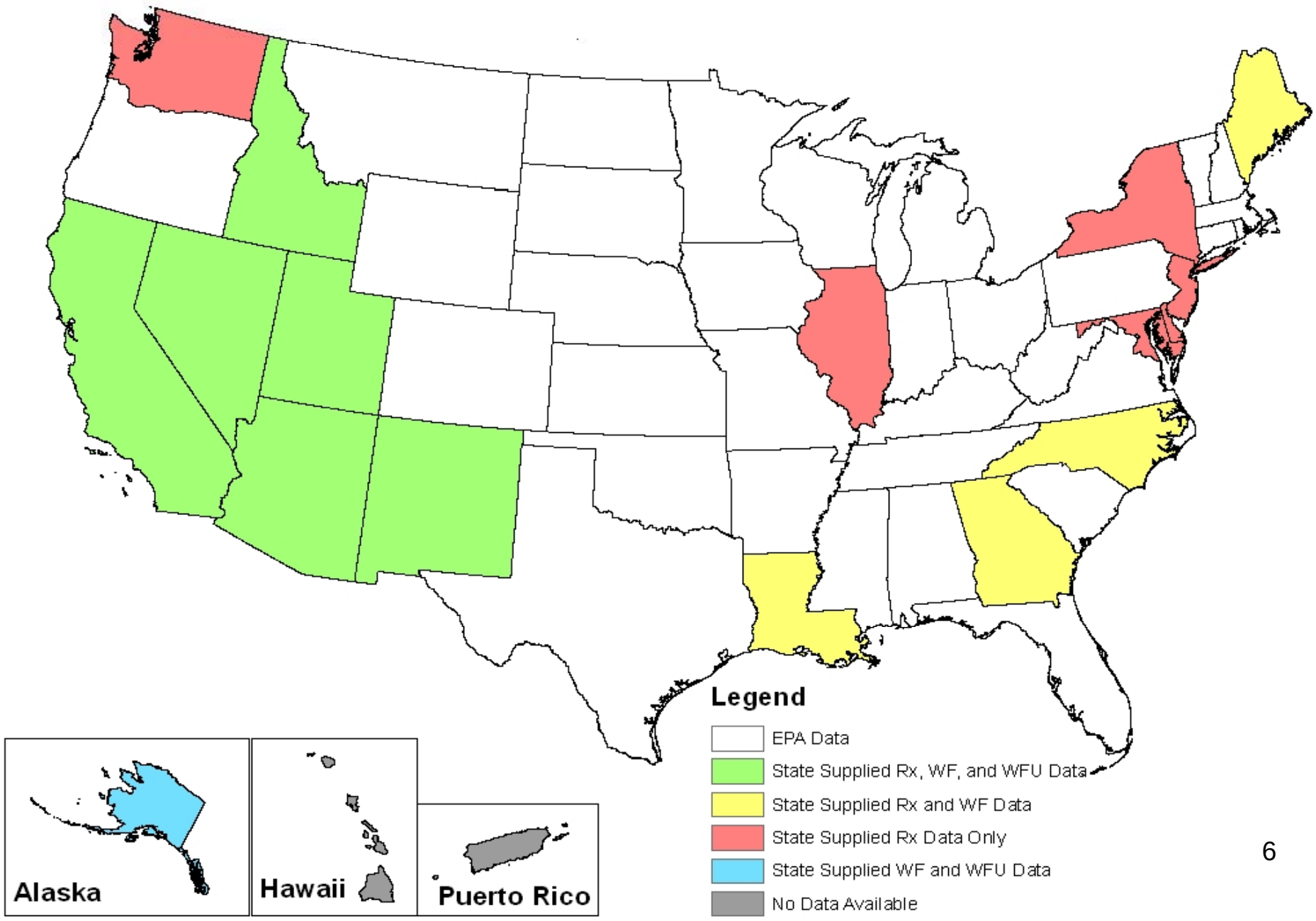
- Six different data categories
  - Facility Inventory
  - Point Emissions
  - Nonpoint Emissions
  - Onroad Emissions
  - Nonroad Emissions
  - Event Emissions (wildfires and prescribed fires)
  - No biogenic emissions, although these are part of EPA's modeling files

What are Events?

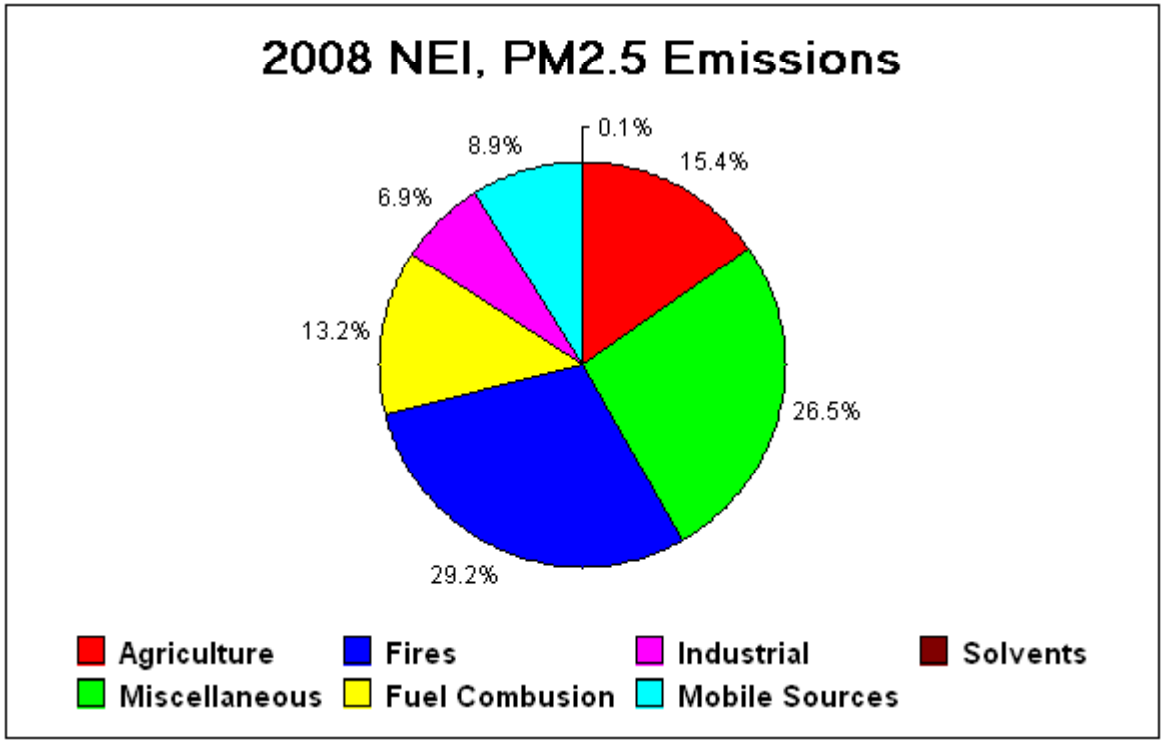
- Wild fires (WF)– A fire not started for a management purpose. These fires are then managed/contained.
- Wild Land Fire Use (WFU) – A WF, but not fought. Allowed to burn naturally to provide a resource benefit.
- Prescribed Fires—A fire ignited for a management purpose.
- By definition "Wild Land Fires" is a combination of all of these fires
- All other fires are in non point, and thus not covered in today's training
  - Agricultural Burning (EPA will develop nationwide estimates for these fires also)
  - Pile Burns

Note: In the AERR, emissions from fires are encouraged to be reported by state agencies, but not required

State Submissions for Wild Land Fires in 2008 NEI

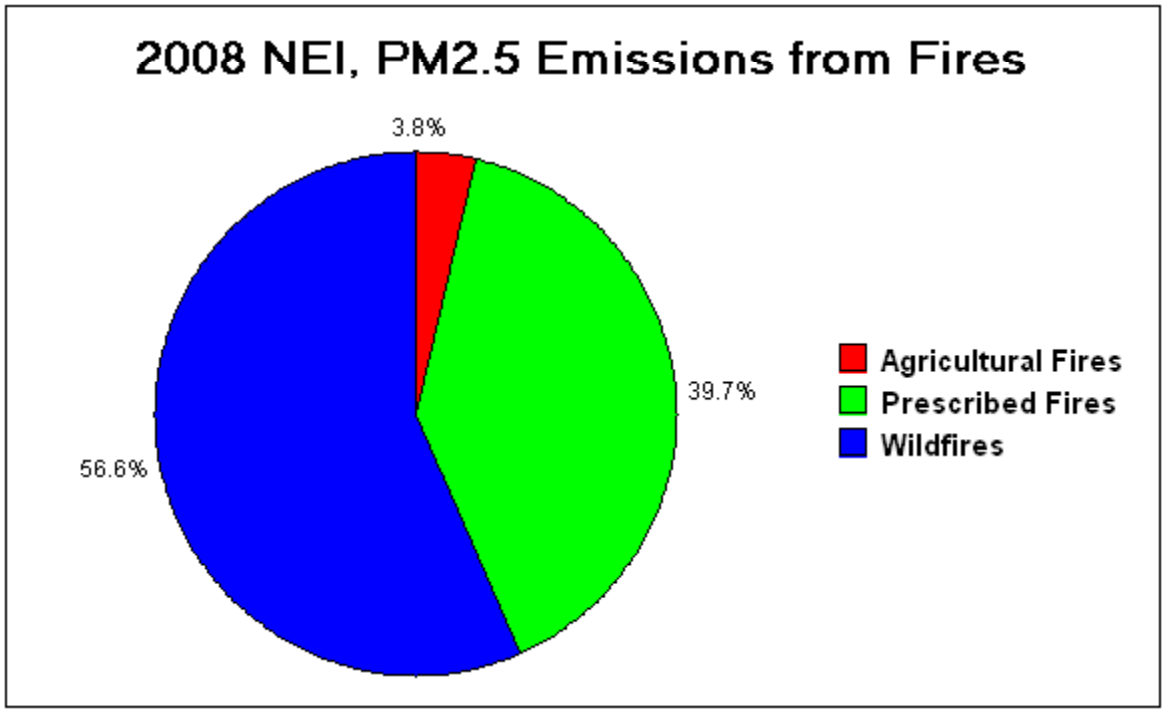


Fires most important contributor to 2008 PM2.5 Emissions…



- Total PM2.5 Emissions in 2008 is ~ 6.1 million tons; Fires ~ 1.8 million tons
- Fires here include: wild fires, prescribed fires, and agricultural fires
- Final NEI represents a blending of S/L and EPA data

Agricultural Fires a small component…



SCC changes that effect EVENTS

- Prescribed fires can no longer be reported to non point as they could be in the 2008 cycle
    - Prescribed and Wildfires (and WFU) have to be reported in day-specific format in “EVENTS”
- Here are the only SCCs that will exist in EVENTS database for 2011 cycle
    - 2810001000: Wildfires
    - 2810001001: Wildland Fire Use
    - 2811015000: Prescribed Fires (Forest)
    - 2811020000: Prescribed Fires (Rangeland)
    - 2811090000: Not classified fires (anything else)
        - We are thinking of retiring this last SCC, but it is an active SCC for now

SCCs continued….

Event	2810001000	Other Combustion	Forest Wildfires	Wildfires	Fires - Wildfires
Event	2810001001	Other Combustion	Forest Wildfires	Wildland Fire use	Fires - Wildfires
Event	2811015000	Other Combustion - as Event	Prescribed Forest Burning	Unspecified Burn Method	Fires - Prescribed Fires
Event	2811020000	Other Combustion - as Event	Prescribed Rangeland Burning	Unspecified Burn Method	Fires - Prescribed Fires
Event	2811090000	Other Combustion - as Event	Open Fire	Not Classified	Miscellaneous Non-Industrial NEC

EPA Methods will be reporting all Wild Fires to 281001000; all Prescribed Fires to 2811015000; all Wild Land Fire Use to 2810001001. It would be helpful to us if those Agencies wanting to submit fire emissions (option 3) followed suit.

Three Options

- Option 1: Accept EPA estimates for your State. EPA will run nation-wide EVENT emission estimates using “SMARTFIRE” (SFv2) and have results available for review by early July. State Agencies have the option to “accept” these estimates
- Option 2: Provide alternate parameters for input into EPA’s Methodology
- Option 3: Submit emissions on your own

To preserve nationally consistent methodology and pollutant reporting, we would encourage everyone to consider Option 1 or Option 2

Outline of Presentation today

- Option 1 Details
  - SMARTFIRE Version 2 (SFv2) methods summary
  - Some sample results from 2008 cycle
  - EPA's development of DRAFT 2011 emissions estimates for SLT review
  - What should you do if you want to "accept" these results
- Option 2 Details
  - After reviewing data from Option 1, would any agencies like to supply the "activity" data to EPA so that SFv2 can be re-run using those inputs?
  - How will this submission be accomplished and in what format?
  - What will EPA do with these submissions?
- Option 3 Details
  - What needs to be done if a state wants to submit their own fire emissions directly to the EIS
  - Very few states/agencies submitted data to Events in 2008

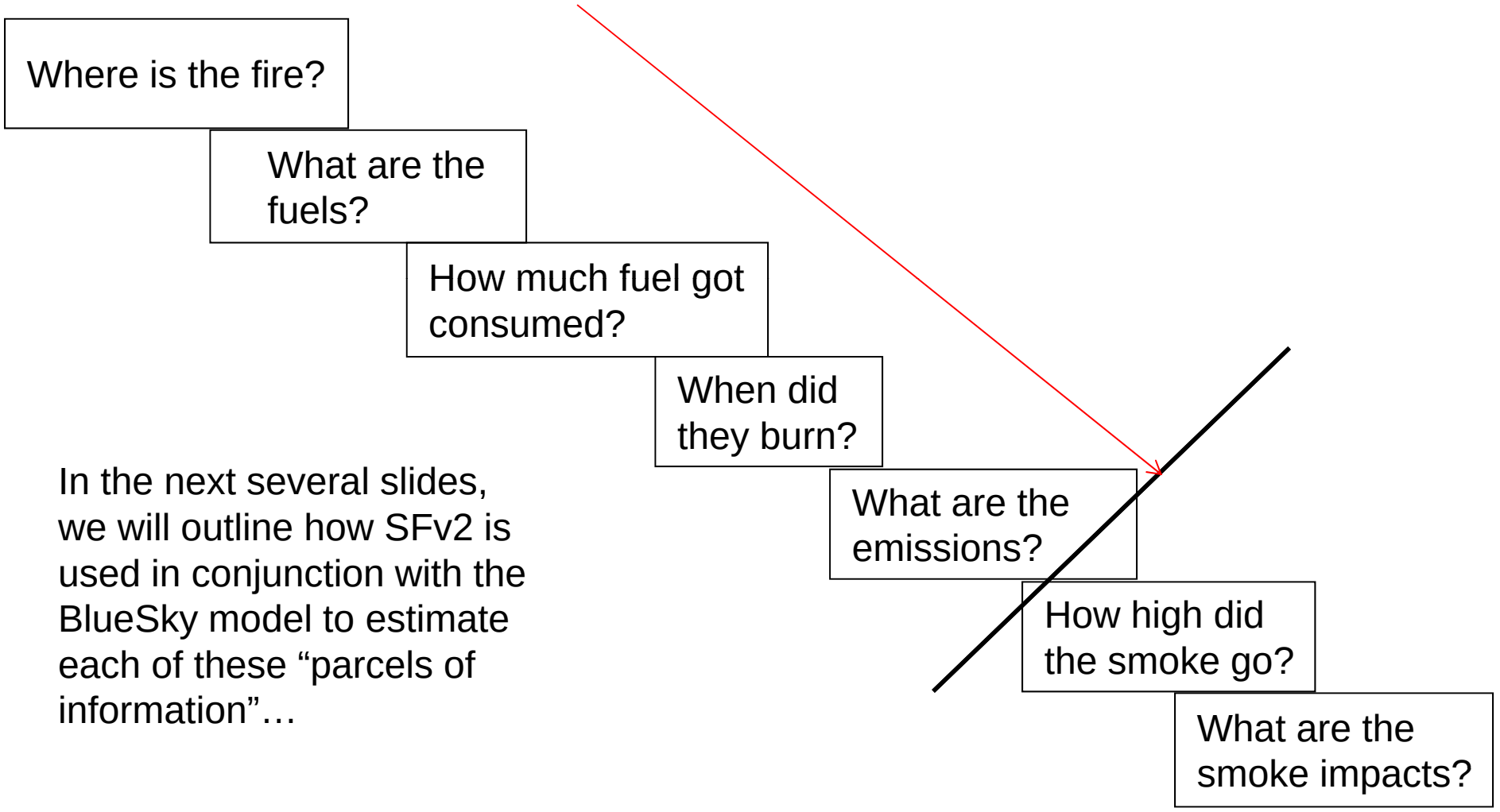
Option 1

EPA will generate day-specific Wild Land fire emissions. States/Agencies will have opportunity to review and accept…

Option 1

- EPA will develop an initial database of nation-wide EVENT fire emission inventory by early August 2012 for review by all state agencies
- This will be based on, as the 2008 EPA methods were, on SMARTFIREversion2 (SFv2)
  - Could be improvements in 2011 (to methods) based on comments gleaned during 2008 process
- The database will have day-specific fire emissions for wild fires, prescribed fires, and any wild land fire use fires
- For 2011, EPA will also include fires for AK, HI, PR, and VI (as data allow) and estimates of fire emissions over tribal lands
  - This has never been done before as part of EPA estimates
- You can “accept” these estimates (preferably via EIS) after you review them if you are satisfied with them

A logical progression



In the next several slides, we will outline how SFv2 is used in conjunction with the BlueSky model to estimate each of these “parcels of information”…

How are Fire Emissions Modeled---for the NEI?

Emissions = Area burned * Fuel Load Available * Fuel Consumed (Burn Efficiency) * Emission Factors

Mass of Emissions=

Area burned * (from SF v2)

Fuel Load Available * (updated FCCS map)

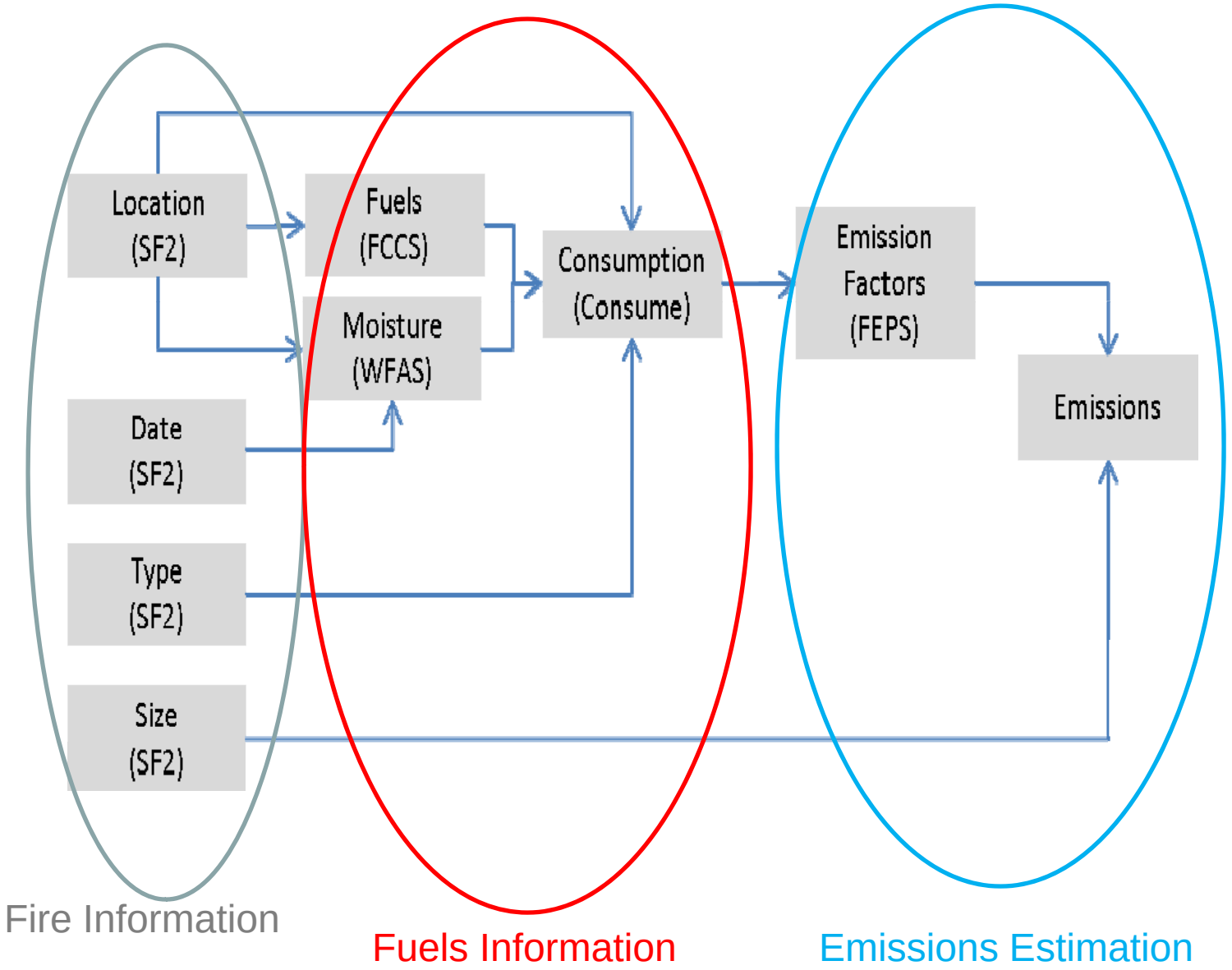
Fuel Consumed * (CONSUME3)

Emission factors (FEPS plus HAPs)

Blue Sky Framework

All these terms must be correct to produce correct emission estimates.

Process Flow



BlueSky and SmartFire 2

- **The BlueSky Framework** was developed to compute smoke emissions (and impacts) given known fire information
- **The SmartFire 2 System (Framework)** was later developed to help reconcile disparate sources of fire information into a useful data stream
  - SF uses NOAA Hazard Mapping System satellite fire detects along with ground reports (ICS-209 reports) and other datasets to create a reconciled fire information data feed.
  - SF was developed by the USDA Forest Service AirFire Team and STI under a grant from NASA
- **Together, SmartFire 2 -> BlueSky** can take in multiple heterogeneous fire information datasets and create a unified fire emissions inventory suitable for further modeling
  - SF interfaces with the Bluesky Framework to estimate daily, location specific fire emissions. Each and every fire can be identified into a fire type (WF or Prescribed, etc.)
- Developers in the process of putting these methods into the peer reviewed literature

The Fire Information Problem

Sources of fire information are often:

- Limited (to particular types, sizes, etc…)
- Incomplete (based on clouds, etc…)
- Redundant (with other sources)
- Better at some aspects (e.g. fire size) than other (e.g. location)

SmartFire 2 was designed to overcome these issues by leveraging multiple sources

The 2008 NEI v2 – Fire Activity Data Sources

- NOAA Hazard Mapping System (HMS)
  - Automated detection from 7 satellites
  - Human analyst QC
  - More information at: http://www.osdpd.noaa.gov/ml/land/hms.html
- Incident Command Summary Reports (ICS-209)
  - Daily reports prepared by incident teams on wildfires
  - More info at: http://fam.nwcg.gov/fam-web/hist_209/report_list_209
- Monitoring Trends in Burn Severity (MTBS)
  - Burn scars derived from high resolution satellite imagery
  - All fires > 500 acres in the east (> 1000 acres in west)
  - Burn "perimeters" available after fire ends---to estimate size
  - More info at: http://www.mtbs.gov/
- Other data sources can be brought into the "stream" that SFv2 sees

2008 NEI v2 – Data source setup

Data Element	First Choice	Second Choice	Third Choice
Location/shape	MTBS	HMS	ICS-209
Final size	MTBS	ICS-209	HMS
Daily growth	HMS	ICS-209	MTBS
Fire type (WF/Rx)	ICS-209	MTBS	HMS
Name	ICS-209	MTBS	HMS
Start date	First reported		
End date	Last reported		

No more “unclassified” fires in SF v2

Fire info → Fuels → Consumption → Time profile → Emissions → Plume rise

The 2008 NEI v2 – Fuels

- How much fuel is available to burn?
- Fuel loadings from the Fuel Characteristic Classification System (FCCS)
  - 1-km resolution map assigns fires to one of several hundred "fuelbeds."
  - A fuelbed describes the live and dead vegetation structure of a region for use in fire effects models.
    - Tons/acre available to burn in the canopy, shrubs, ground fuels, fallen wood, etc.
- More information at: http://www.fs.fed.us/pnw/fera/fccs/maps.shtml

The 2008 NEI v2 - Consumption

- What fraction of the available fuel burns?
- Consumption from the Consume 3.0 model
  - Designed for use with FCCS fuelbeds
  - Consumption by phase (flaming and smoldering)
  - Dependent on fuel moisture values
    - Daily fuel moistures assigned based on nearest fire weather station
  - Capped consumption of ground fuels for prescribed fires
    - 5 tons per acre in the east
    - 20 tons per acre in the west
- More info at: http://www.fs.fed.us/pnw/fera/research/smoke/consume/index.shtml

The 2008 NEI v2 – Diurnal Time Profile

- When in the day does the consumption occur?
- Wildfires
  - Hourly profile is a standard curve developed by WRAP
- Prescribed fires
  - Modeled by the Fire Emissions Production Simulator (FEPS)

Fire info → Fuels → Consumption → **Time profile** → Emissions → Plume rise

The 2008 NEI v2 – Emissions

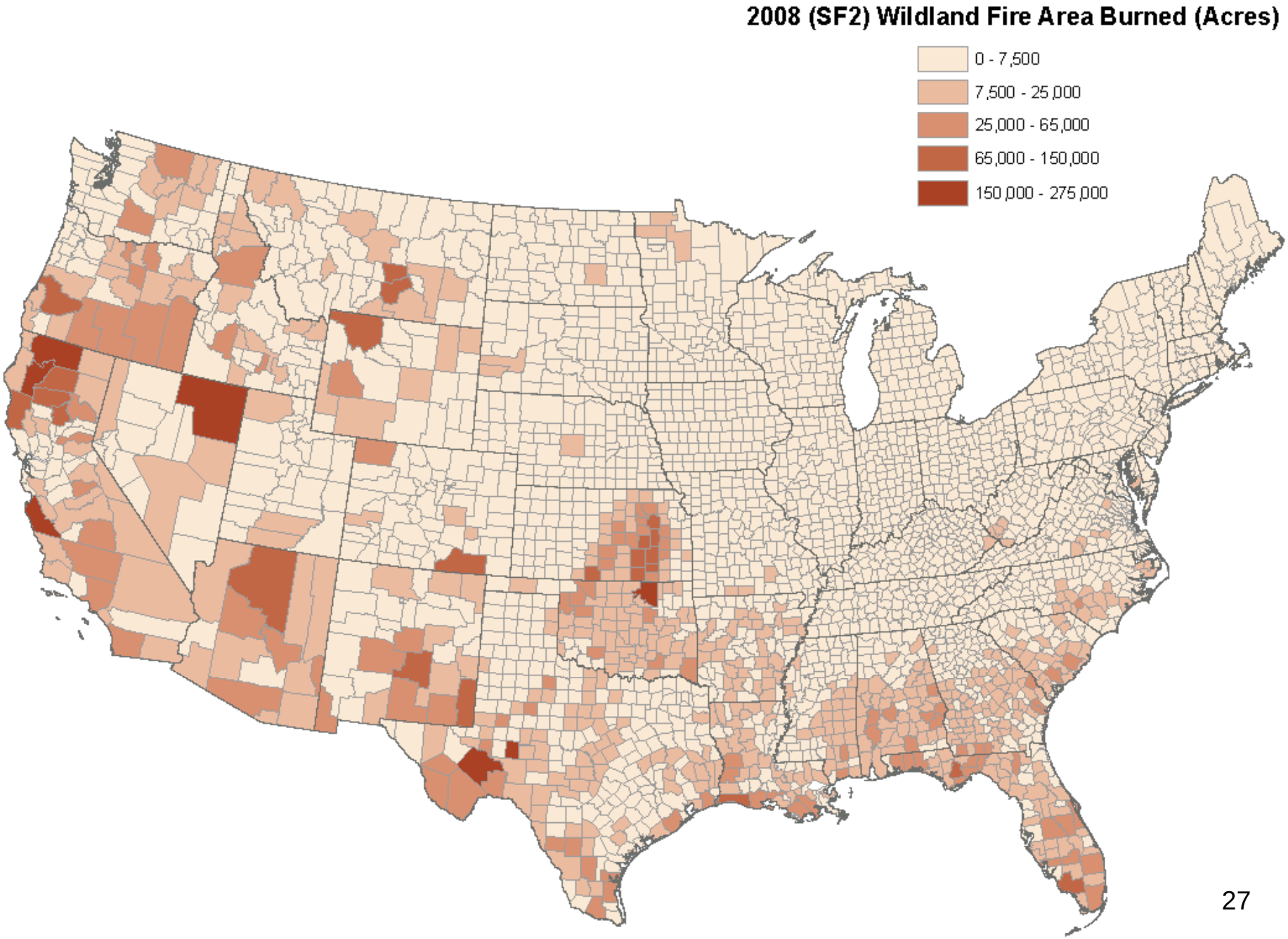
- How much is emitted by the fire?
- Emissions from the FEPS model
  - Emission factors from literature for flaming and smoldering combustion
  - $PM_{2.5}$, PM_{10}, total PM, NOx, CO, CO2, CH_4, NH_3, SO_2, VOC, NMHC
  - Total heat
- More info at: http://www.fs.fed.us/pnw/fera/feps/index.shtml

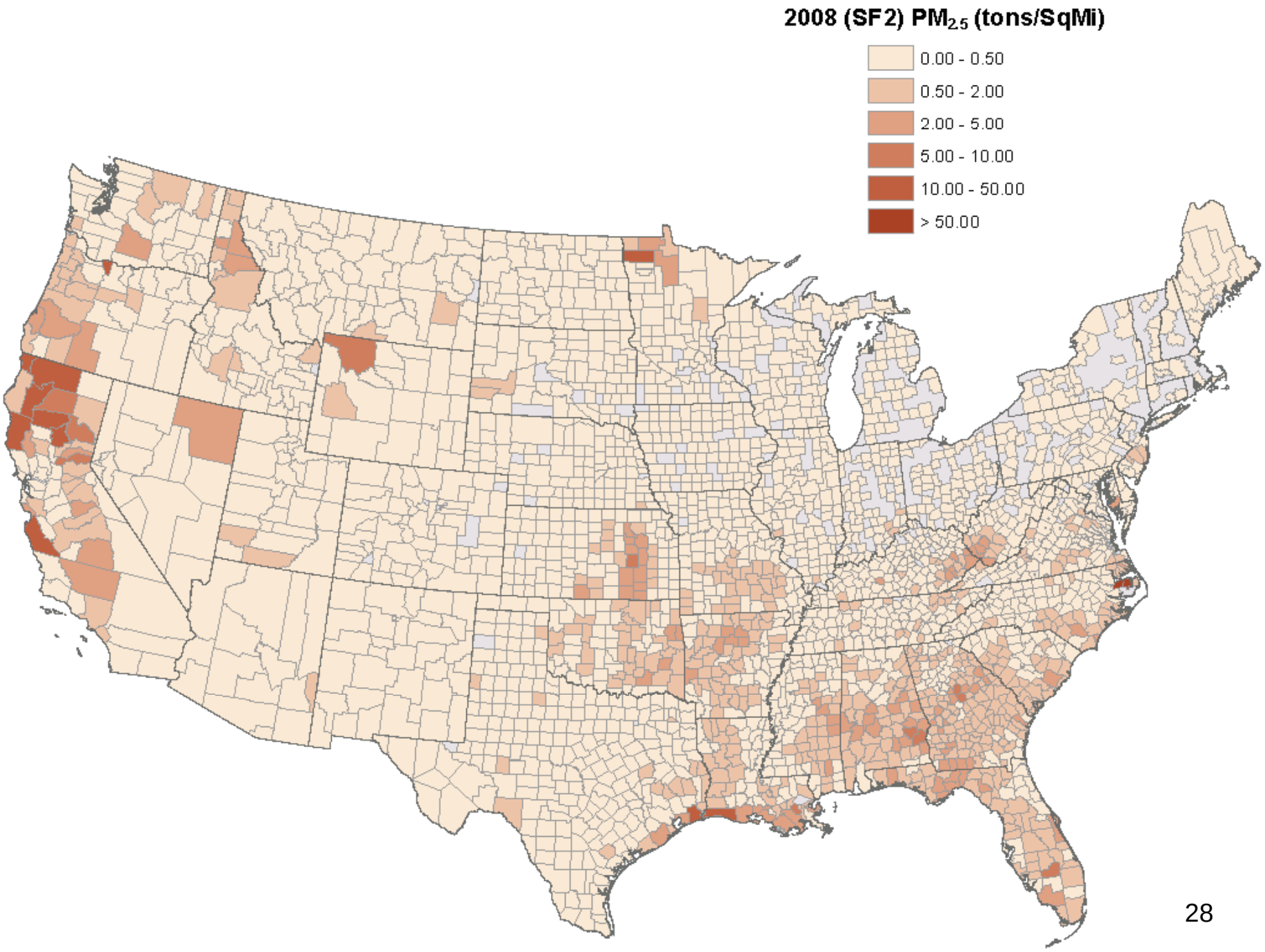
Fire info → Fuels → Consumption → Time profile → **Emissions** → Plume rise

Pollutant	HAP Emission factor (lb/ton fuel consumed)
PM2.5	N/A
PM10	
CO	
CO2	
CH4	
NOx	
NH3	
SO2	
VOC	
1,3-butadiene	0.405
Acrolein	0.424
Toluene	0.56825
n-hexane	0.0164025
Anthracene	0.005
Pyrene	0.00929
o,m,p-xylene	0.242
benzo(ghi)perlyene	0.00508
benzo(e)pyrene	0.00266
indeno(1,2,3-cd)pyrene	0.00341
benzo(c)phenanthrene	0.0039
Perylene	0.000856
benzo(a)fluoranthene	0.0026
Fluoranthene	0.00673
benzo(k)fluoranthene	0.0026
Chrysene	0.0062
methylpyrene,-fluoranthene	0.00905
methylbenzopyrenes	0.00296
Methylchrysene	0.0079
Methylanthracene	0.00823
Carbonylsulfide	0.000534
Formaldehyde	2.575
benzo(a)pyrene	0.00148
benz(a)anthracene	0.0062
Benzofluoranthenes	0.00514
Benzene	1.125
Methylchloride	0.128325
Acetaldehyde	0.40825
Phenanthrene	0.005

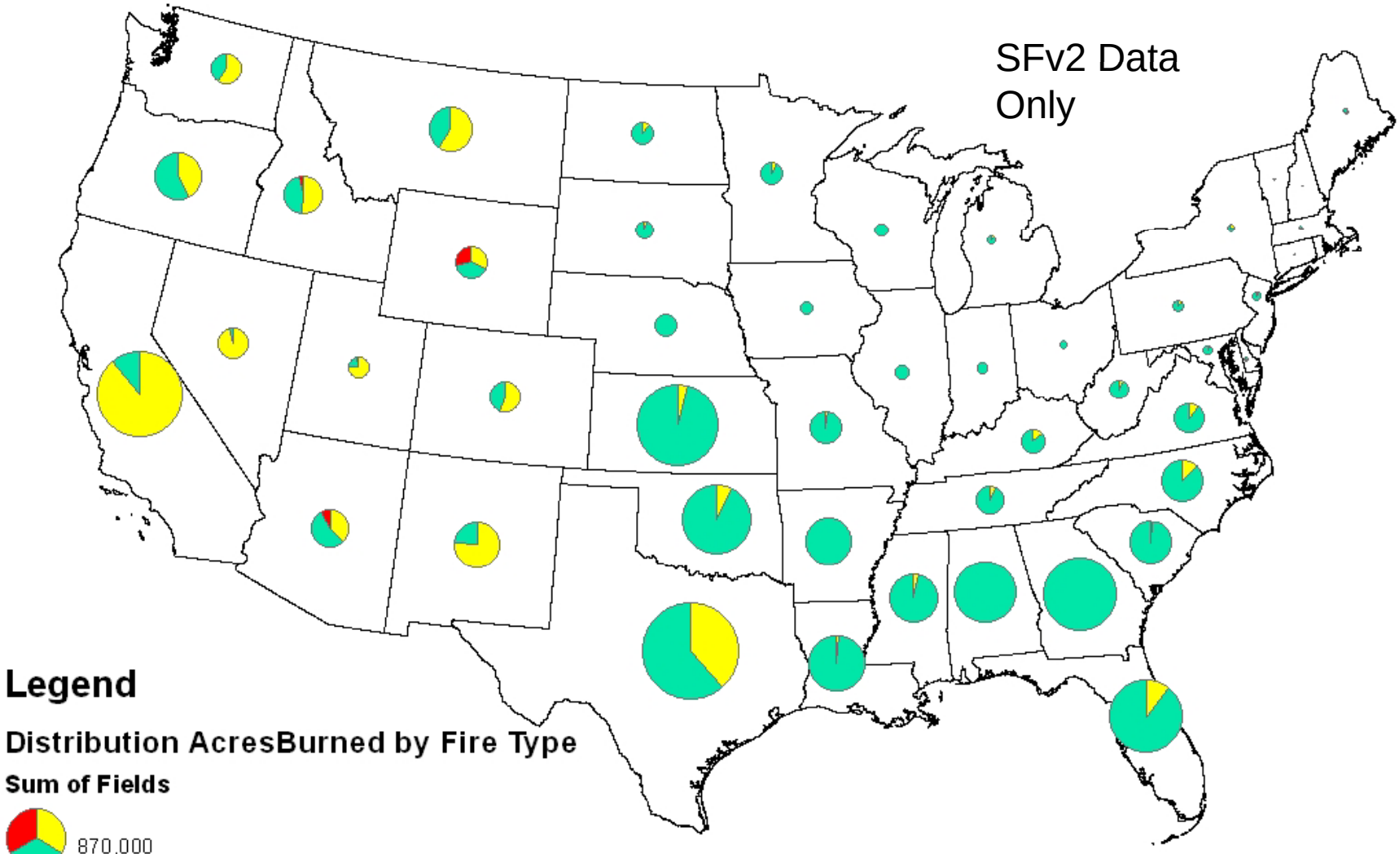
From SFv2/BS---FEPS

From EPA supplied "average" emission factors---have been used since early 2000s



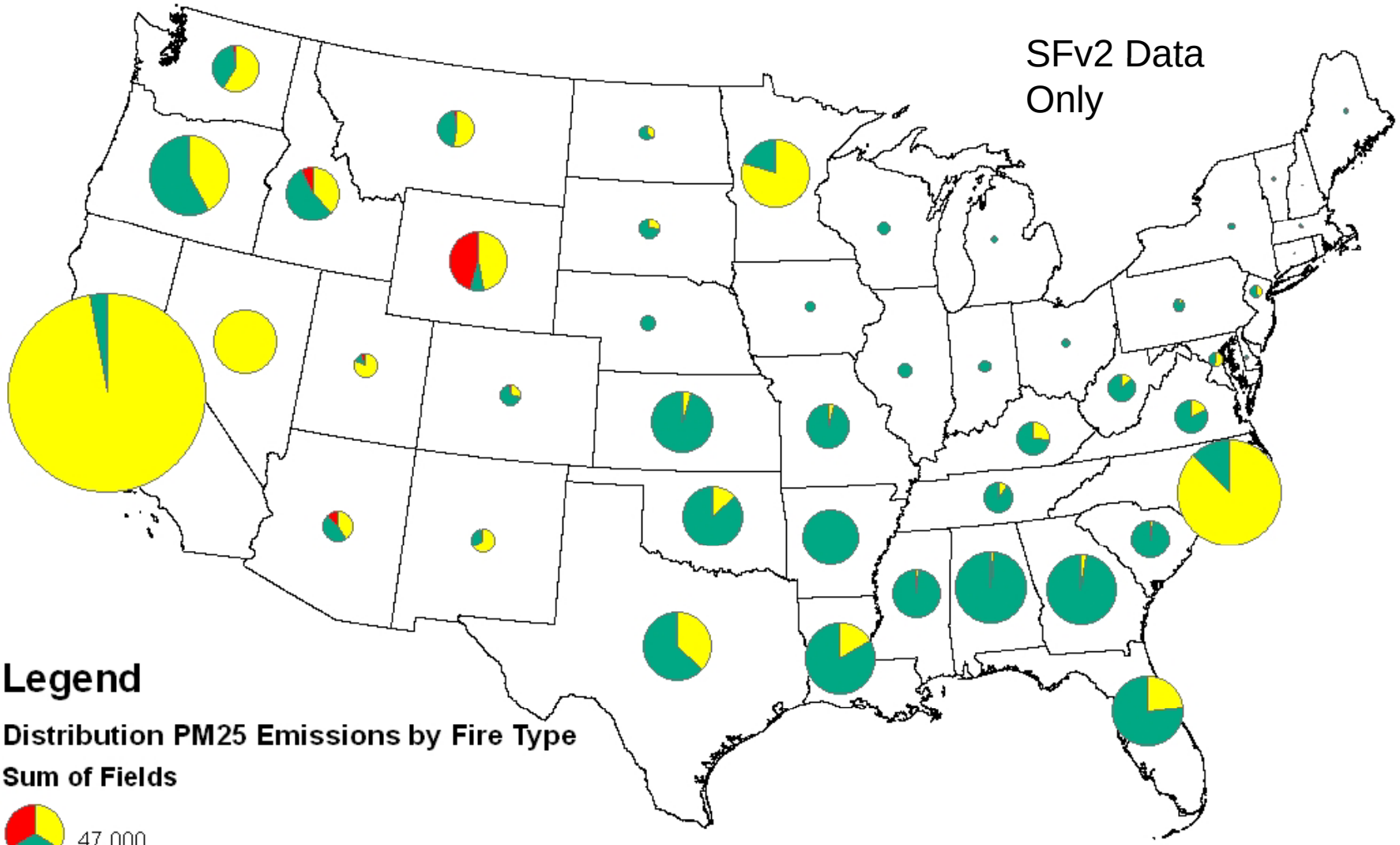


Weighted Distribution of Acres Burned by Fire Type



- Lots of Rx burning in the East
- Wildfires in West
- SE US, CA, TX have a lot of acres burned

Weighted Distribution of Annual PM2.5 Emissions by Fire Type



- Note NC. Due to Evans Road fire in June 2008. Smoldering for a month in peat depth of ~ 3 ft.
- CA also very high in PM2.5 emissions
- Higher PM2.5 emissions associated with WFs than with Prescribed burning (due to conditions of burn)

What Data will you get from EPA, and in what format?

- Currently, there isn't a way to get EVENTS data out of EIS on a day-specific basis
- Thus, our current thinking is that in ~ early August, we will have available at: ftp://ftp.epa.gov/EmisInventory/temp/wildfires

  all the draft 2011 EVENTS data
  - Either parsed state-by-state and by tribes, or
  - As one data set with proper identifiers to enable you to excise just the data for your domain..
  - Each of you can download the relevant data directly from that site to review.
- I will need a list of contacts in each State
  - As default, I will use the list of participants taking this training today

What you will see when you get the data from EPA

Field Name	Data Type	Notes/Units
date_	date/time	
id	text	id for wildland fire from SMARTFIRE
event_id	text	event id from SMARTFIRE (links multiple burn areas over multiple dates into a single event)
event_name	text	Corresponding fire event name
latitude	double	decimal degrees (NAD83)
longitude	double	decimal degrees (NAD83)
fips	text	
state	text	
county	text	
country	text	
type	text	Wildfire (WF) or Prescribed burn (RX) or WFU
scc	text	source classification code
area	double	area in acres blackened
fuel_1hr	double	FCCS based fuel loading in tons/acre
fuel_10hr	double	FCCS based fuel loading in tons/acre
fuel_100hr	double	FCCS based fuel loading in tons/acre
fuel_1khr	double	FCCS based fuel loading in tons/acre
fuel_10khr	double	FCCS based fuel loading in tons/acre
fuel_gt10khr	double	FCCS based fuel loading in tons/acre
shrub	double	FCCS based fuel loading in tons/acre
grass	double	FCCS based fuel loading in tons/acre
rot	double	FCCS based fuel loading in tons/acre
duff	double	FCCS based fuel loading in tons/acre
litter	double	FCCS based fuel loading in tons/acre
moisture_1hr		1 hr fuel moisture percentage
moisture_10hr	double	10 hr fuel moisture percentage from nearest reporting WIMS
moisture_100hr		100 hr fuel moisture percentage
moisture_1khr	double	1000 hr fuel moisture percentage from nearest reporting WIMS
moisture_live		live fuel moisture
moisture_duff		duff fuel moisture
consumption_flaming	double	flaming stage consumption from Consume 3.0 in tons/acre
consumption_smoldering	double	smoldering stage consumption from Consume 3.0 in tons/acre
consumption_residual	double	residual stage consumption from Consume 3.0 in tons/acre. Total consumption is sum of flaming, smoldering, and residual.
consumption_duff	double	total consumption in the duff phase from Consume 3.0 in tons/acre.
heat	double	heat release in BTUs from FEPS
pm25	double	Tons
pm10	double	Tons
co	double	Tons
co2	double	Tons
ch4	double	Tons
nox	double	Tons
nh3	double	Tons
so2	double	Tons
voc	double	Tons
fccs_number	long	FCCS code
VEG	text	Vegetation types
canopy	double	FCCS based fuel loading in tons/acre
distance_km	double	Distance in km from this fire to the nearest reporting fire weather station
hap_nnnnnn	double	HAP emissions in tons. nnnnn is the Pollutant code
stnID	long	Fire Weather station ID used to determine fuel moisture parameters if distance_km < 300
LC	long	2006 NLCD land cover classification

- You will get these set of data for every identified fire for your agency (state and county)

- Will enable you to review all the specifics, including activity data, fuel information, and emissions

You will also get emissions for the 29 HAPs listed on slide 28

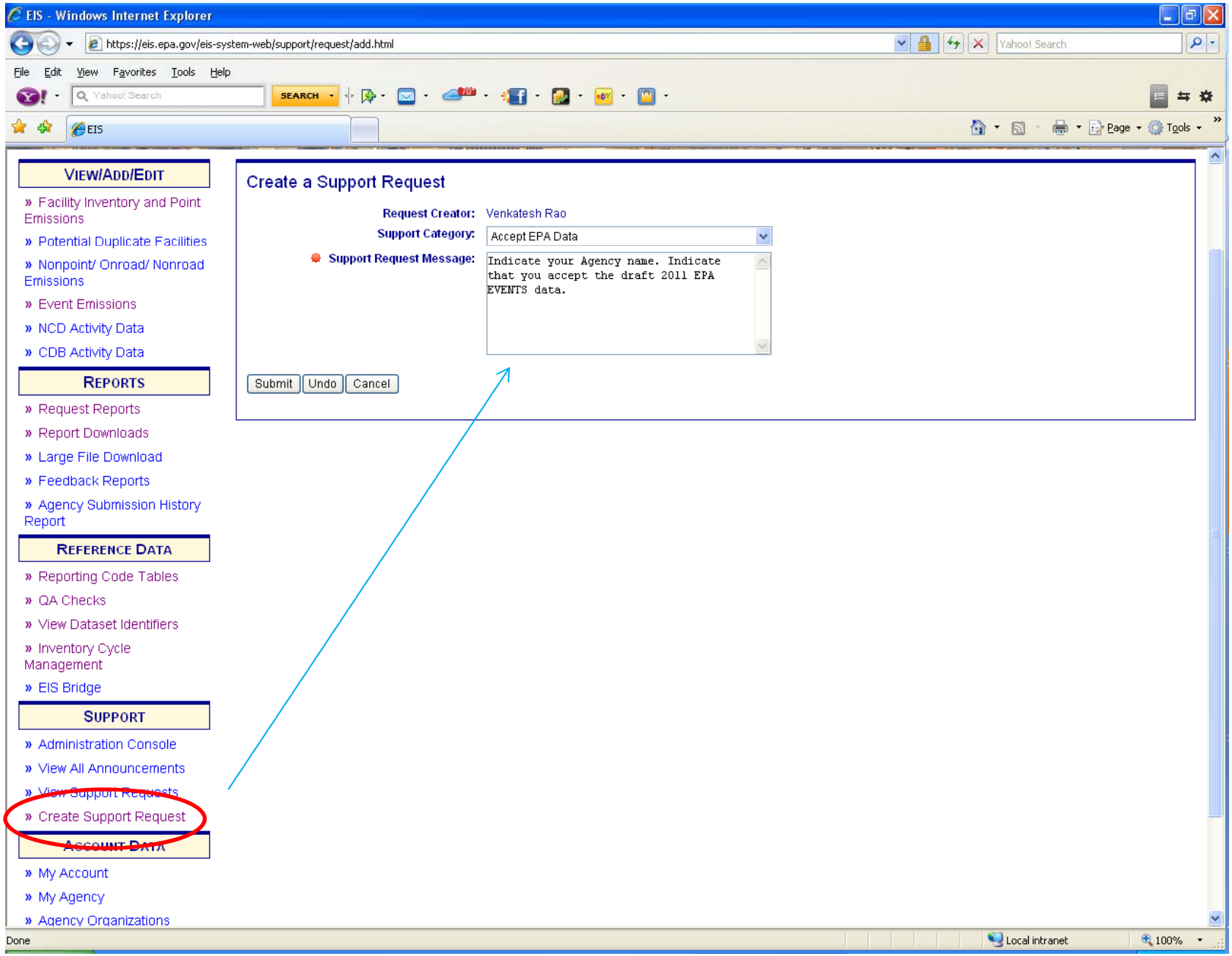
date_	id	event_id	event_name	latitude	longitude	fips	state
04-Jan-08	SF11C251255	SF11E295328	I-75 South Rx Fire	26.164	-81.157	12021	Florida

This is the orientation of how you will see the data when you download the files

2008NEI documentation covers how these estimates were developed. More detailed documentation will be posted later.

What to do after reviewing 2011 Draft data…

- If you would like to “accept” these emission estimates for your agency, please use the “create support request” option in EIS to indicate your acceptance (see next slide)
- We will use these emissions as default for your Agency, if:
  - 1: We don’t hear from you until 12/31/12 on your acceptance of these emission estimates (Option 1)
  - 2: We don’t hear from you until 12/31/12 on Option 2 (coming up next)
  - 3: We don’t receive any emissions from you via EIS route (Option 3)



Option 2

After reviewing the initial SFv2 estimates from EPA, States/Agencies can opt to submit "activity" data so that EPA can re-run SFv2 using those submitted parameters

Details on Option 2

- After reviewing the fire estimates sent to you via option 1, if you would like to change or add information on fires for your Agency, you can submit these information via spreadsheet
  - We will collect these data until December 2012, and re-run SFv2 early next year with any inputs provided via this process
  - NOTE: this option will be a re-run of SFv2 using the (revised or new) information you submit
  - Note: this option only asks you to submit "activity" or "fuel information" data---- NOT emissions
  - Will preserve methodology and pollutants reported
- The next few slides show what information is needed
  - Your patience is appreciated as this is an evolving process in our effort to get the best information we can from you all to improve our fire emission estimates
- You can submit these data outside the EIS, via Excel spreadsheet to fireactivitynei2011@epa.gov

Basic Fire Information (required information)

- For each fire, for each day of growth
  - Date
  - Name (see slide 34, “event_name” in our files)
  - Is this fire already identified in EPA estimates?
  - Latitude
  - Longitude
  - State
  - County
  - Type (wildfire, prescribed)
  - Area burned (on this day, not cumulative)
- All elements must be provided for a fire we have already identified or a new fire (if you set area burned = 0 zero, for example, we will omit that fire)
- If these are not provided, daily area burned estimates from SMARTFIRE will be applied

REQUIRED FIELDS	Field Name	Units	Notes
All required	date		format MM/DD/YY
			Text, but not blank---if related to a fire already identified
	name		by EPA, use same Name, "Event_Name"
	Is this fire already identified in EPA Estimates?		Text, either "Yes" or "No"
	latitude	decimal degrees (NAD83)	
	longitude	decimal degrees (NAD83)	
	state		Name of State in Question
	county		Name o County in Question
	type		WF or RX
	area	acres	area burned on this day only (not cumulative area)
OPTIONAL FIELDS			
	fccs_number		A standard FCCS fuelbed number
or			
optional: all must be provided	fuel_1hr	tons/acre	1-hr sound woody fuel loading
if these are provided, fccs_number will be ignored	fuel_10hr	tons/acre	10-hr sound woody fuel loading
	fuel_100hr	tons/acre	100-hr sound woody fuel loading
	fuel_1khr	tons/acre	1000-hr sound woody fuel loading
	fuel_10khr	tons/acre	10,000-hr sound woody fuel loading
	fuel_gt10khr	tons/acre	> 10,000-hr sound woody fuel loading
	shrub	tons/acre	shrub fuel loading
	grass	tons/acre	grass fuel loading
	rot	tons/acre	rotten woody fuel loading
	canopy	tons/acre	canopy fuel loading
	duff	inches	duff depth
	litter	tons/acre	litter fuel loading
optional: both must be provided	fuel_moisture_10hr	percentage	10 hr fuel moisture percentage
	fuel_moisture_1khr	percentage	1000 hr fuel moisture percentage
	fuel_moisture_duff	percentage	duff fuel moisture percentage
	consumption_flaming	tons/acre	flaming consumption
	consumption_smoldering	tons/acre	smoldering consumption
	consumption_residual	tons/acre	residual consumption
	consumption_duff	tons/acre	duff consumption
	Single line for each day for each fire		
	If multiple fuel loadings or fuelbeds for a single fire/day, split into multiple lines		

- Parameters in light blue are required for EPA to re-run SFv2 using improved inputs from SLTs. The "Area burned" variable is one where we would encourage state input, as our estimates may not be based on all data available.
  - Note that name of fire must match the name provided in EPA database if input corrections made for that fire (which we have already identified). If new fire, new name must be supplied and identified.
- All other parameters are optional. If SLT Agencies have ways to get these data, they can submit. Note the specifications on requirements. Parameters in same color go together in terms of requirements.
- Save file as "YourAgencyName_2011_fireinputparameters"

A Hypothetical Example of Basic Information in a Spreadsheet (TX)…

date	name	Is this Fire in SF2 already?	latitude	longitude	State	County	type	area (in Acres)
07/06/11	Station	Yes	48.664	-120.022	Texas	Harris	WF	500.5
07/07/11	Station	Yes	48.664	-120.022	Texas	Harris	WF	90.33
07/07/11	Station	Yes	48.68	-120.03	Texas	Adams	WF	0
07/06/11	Rx522	No	37.79518	-119.86505	Texas	Harris	RX	12
07/06/11	Rx445	No	34.505	-110.246	Texas	Knox	RX	45

Note that these are the required fields . If you would like to also submit the “optional” fields from the last slide, just add them as columns for each event (for example, add a column for “FCCS_number” and input those values, etc.)

Closing remarks on Option 2

- As mentioned previously, this is an evolving method/option, and we would like to work with you to get what we need to re-run SFv2 (if you decide to use this option)
- As such, if you can give me an indication early on that you would like to use this option, I can email you a sample spreadsheet and we can work together to generate what it is we need. Please email me if this is the case (once you see our data for 2011 later this summer), using the email address given at the end of this presentation (on slide 57).
- This is our early thinking. We will provide updates on items related to options 1 and 2 during our second training session on EVENTS, to occur on August 1. Training will also be available at our EI Conference (Tampa, FL; Aug 13-16, 2012).

Option 3

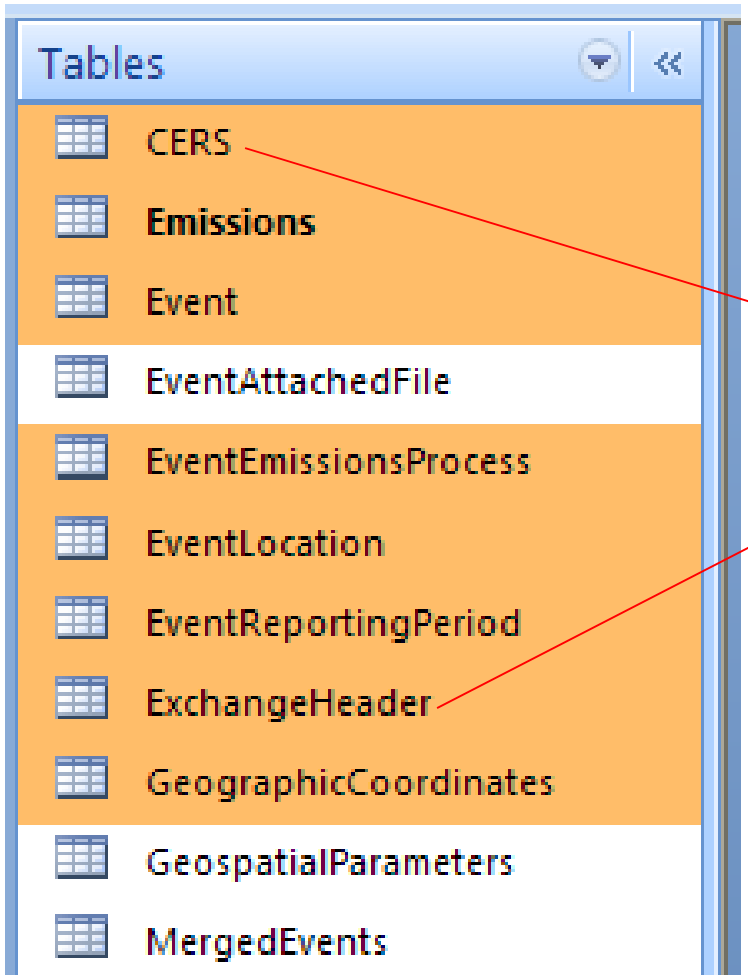
In this Option, after States/Agenices review initial EPA estimates, they can decide to submit emissions (and required other information) directly to EIS in EVENTS

Option 3: Submit Emissions Data to EIS

- The next few slides outline the steps that need to be taken if you would like to submit "EVENT" data to the EIS
- There will be additional EIS training at the EIC2012 Conference (on the first day of conference: 8/13/2012 in Tampa, FL)
- There will be also SFv2/BS training at the EIC2012 workshop (on 8/13/2012)
- The EIS EVENTS module will be ready to accept your inputs by ~ July 1, 2012
  - We are working to implement additional QA checks (including "warning---→critical" checks)

Event Inventory

- Requirements for submitting an event inventory (8 Tables Required)
  - CERS
  - Exchange Header
  - Event
  - Event Reporting Period
  - Event Location
  - Geographic Coordinates or Geospatial Parameters
  - Event Emissions Process
  - Emissions
- Optional
  - Event Attached File
  - Merged Events



CERS and Exchange Header Tables are the “Administrative” Tables and the other Tables contain actual information (your data)

Required - CERS

- Required
  - User ID (EIS login)
  - Program System Code (what is your agency known by?)
  - Emissions Year (**2011**)
- Optional
  - Model
  - Model Version
  - Emissions Creation Date
  - Submittal Comment

Required - Exchange Header

- Required
  - Author Name (not ID)
  - Organization Name
  - Document Title (**EIS**)
  - Data Flow Name (**EIS_v1_0**)
  - Submission Type (**QA** or **Production**)
  - Property-Data Category (**EVENT**)
- Optional
  - Keywords
  - Comments
  - Property-NCD Data File (Only when submitting NCD)

Required - Event

- Required
  - Event Identifier
  - Program System Code
  - Event Name
- Optional
  - Event Classification Code
  - Ground Based Data Source Code
  - Remote Sensing Data Source Code
  - Land Manager
  - Location Description
  - Event Size Code
  - Containment Date
  - Recurrence Indicator Code
  - Recurrence Year
  - Fuel Consumption and Emissions Model Code
  - Fuel type Model Code
  - Fuel Selection Code
  - Ignition Method Code, Ignition Location Code, and Ignition Orientation Code
  - Event Comment

Required - Event Reporting Period

- Required
  - Event Identifier
  - Program System Code
  - Event Begin Date/ End Date
  - Event Stage Code
    - 2 records – 1 F (Flaming) and 1 S (Smoldering), **OR**
    - 1 record – B (Both)
- Optional
  - Begin and End Hour
  - Event Reporting Period Comment

Required – Event Location

- Required
  - Event Identifier
  - Program System Code
  - State/County FIPS or Tribal Code
  - Event Begin Date/End Date

Required – Geographic Coordinates

- Required if not populating Geospatial Parameters
  - Event Identifier
  - Program System Code
  - Event Begin Date/End Date
  - State and County FIPS or Tribal Code
  - Latitude and Longitude Measure
  - Area Within Perimeter (in “acres”)
  - Area Within Perimeter UOM
- Optional
  - Percent of Area Producing Emissions
  - All other data elements

Required – Geospatial Parameters

- Required if not populating Geographic Coordinates
  - Event Identifier
  - Program System Code
  - Event Begin Date/End Date
  - Shape File Identifier
  - Area Within Shape and UOM
- Optional
  - Percent of Area Producing Emissions
  - Geospatial Parameters Comment
- Note: Before submitting, contact EIS Administrators to add the shape files that will be used for our reference listings
- If you do supply Geo-spatial parameters, you must also submit a set of zipped Geo-spatial files as the Event Attached File element (next slide)

Optional – Event Attached File

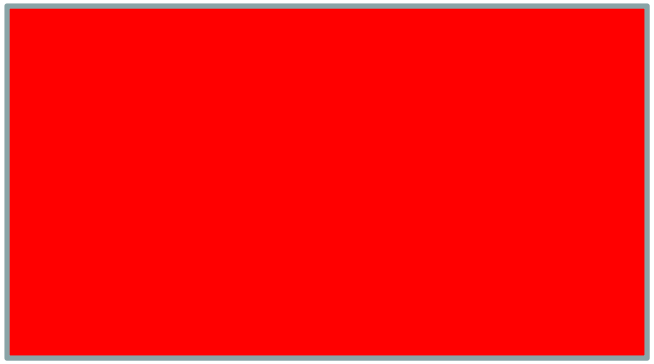
- Used to submit shape file
  - Requires Geospatial Parameters table, not Geographic Coordinates
- Required
  - Event Identifier
  - Program System Code
  - Attachment File Name
  - Attachment File Content Type Code
  - Attached File Size
  - Attached File Content Type Code
  - Note: All Geospatial files must be zipped together and submitted with the XML. The name of the zip file is what will appear in the "Attachment File Name" shown above

Required – Event Emissions Process

- Required
  - Event Identifier
  - Program System Code
  - Event Begin Date/End Date
  - State and County FIPs or Tribal Code
  - Source Classification Code (there are only 5)
    - 2810001000: Wildfires
    - 2810001001: Wildland Fire Use
    - 2811015000: Prescribed Fires (Forest)
    - 2811020000: Prescribed Fires (Rangeland)
    - 2811090000: Not classified fires (anything else)
- Optional
  - Fuel Configuration Code
  - Fuel Loading and UOM
  - Amount of Fuel Consumed and UOM
  - Percent Ten Hour Fuel Moisture
  - Percent One Thousand Hour Fuel Moisture
  - Percent Live Fuel Moisture
  - Percent Duff Fuel Moisture
  - Heat Release and UOM
  - Emission Reduction Technique Code
  - Event Emissions Process Comment

Required - Emissions

- Required
  - Pollutant Code
  - Total Emissions and UOM
  - Emissions Calculation Method Code
- Optional, but very much desired (in red)
  - Emission Factor and Numerator/Denominator
  - Emission Factor Text
  - Emissions Comment



Thank You!!

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Determination of Size from HMS