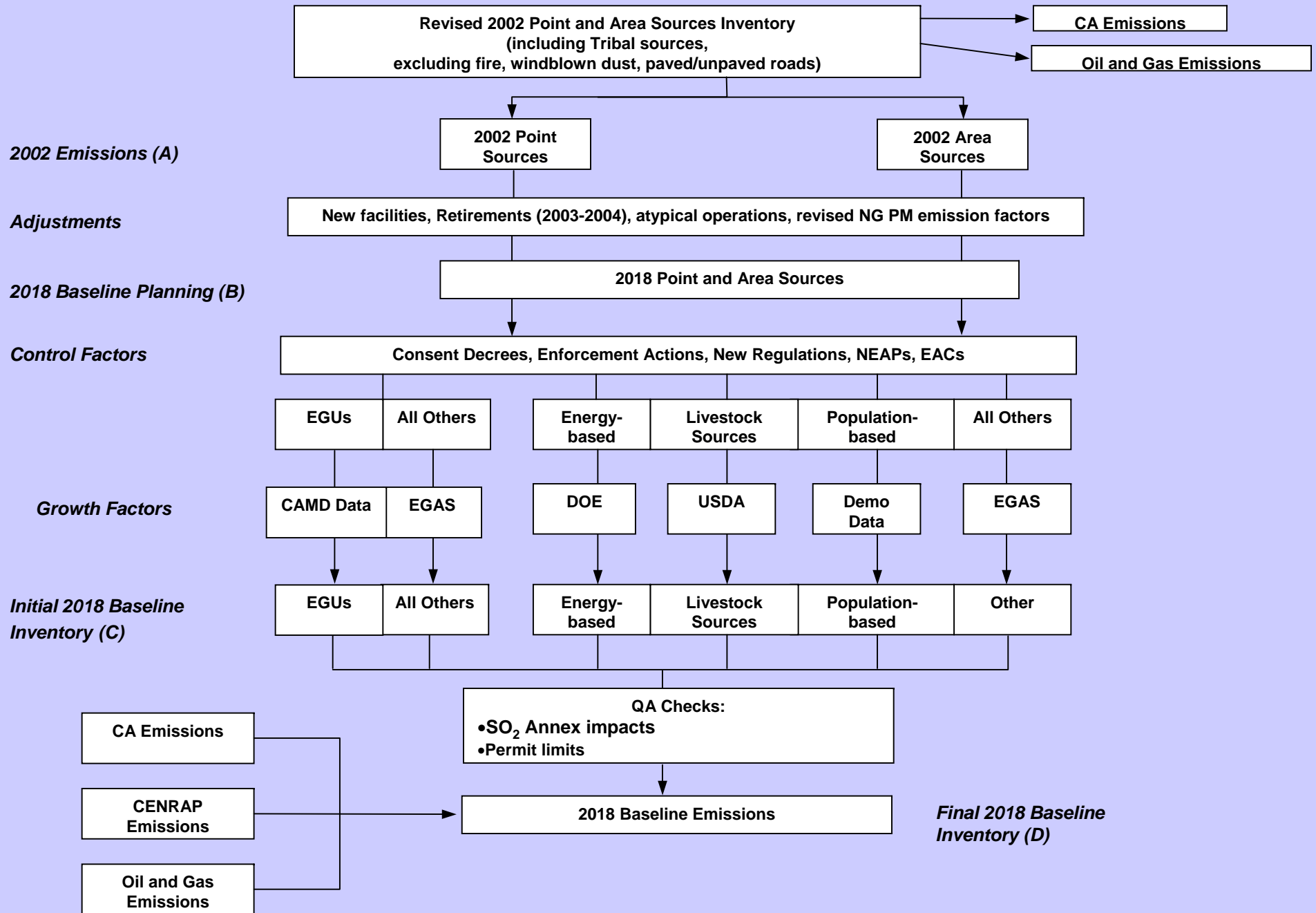


# 2018 Baseline Projections

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- **Scope and Sources:**
  - Non-EGUs + Tribal sources
  - EGUs
  - Oil and gas
  - California
- **Current (post-2002) Adjustments**
- **“On-the-Books” Controls**
- **Growth Factors**

# Road Map for 2018 Baseline Emissions Development



# Projections Database Objectives

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- **Transparent methodology that facilitates NIF conversion**
- **Easily updated and modified**
- **Comprehensive set of growth and control factors in one place**
- **Spreadsheets used for agency and stakeholder review**
  - References
  - Notes indicate outstanding issues, questions

# Spreadsheet Layout

Facility/SCC, Pollutant	BART Flag	INV. A	Adjustments						REF	INV. B
			New Facility Flag	Retired Flag (2003/2004)	Retired Flag (post-2004)	Other Flag	Other Factor			
10100222, SO2	1.Yes	<b>7,808.60</b>								<b>7,808.60</b>
20300202, PM10-PRI		<b>5.40</b>						0.0463	a	<b>0.25</b>
40799998, VOC	1.Yes	<b>0.11</b>							a, c	<b>0.11</b>
10100601, NOx	2.Likely	<b>219.20</b>			Y					<b>219.20</b>

A = 2002 Revised

B = 2002 Baseline Planning

Facility/SCC, Pollutant	Control Factors						Overall Factor	Growth Factors		
	Agreements/Enforcements			Other				Factor	Factor	REF
	Flag	Factor	REF	Flag	Factor	REF				
10100222, SO2				Y		f	1	1.7958	EGAS	
20300202, PM10-PRI							1	1.4137	EGAS	
40799998, VOC							1	1.6148	EGAS	
10100601, NOx							1	1.5878	EGAS	

Facility/SCC, Pollutant	Retirement and Replacement				INV. C	Limits/QA Checks				INV. D
	CAMD EGU?	EGU Growth to Threshold	Retired Capacity	New Source Control Efficiency		Permit Limits		SO2 Annex		
						Flag	Limit	Flag	Factor	
10100222, SO2	Yes	1.1102			<b>8,669.11</b>			Y		
20300202, PM10-PRI					<b>0.35</b>					
40799998, VOC					<b>0.18</b>					
10100601, NOx	Yes	2.8493	1	0.56	<b>274.81</b>					

C = Initial 2018

D = Final 2018

# Key Assumptions

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- **Adjustments:**

- Retirements 2003-2004 (no replacement)
- Retirements/replacement post-2004
  - CAMD EGUs: based on expected lifetimes
  - Other EGUs, industrial boilers, and selected other sources: based on annual retirement rates
  - All other industrial sources: no retirement/replacement
  - Replacement with % control equal to difference between 19xx and current BACT level
- Changes by EPA to the natural gas combustion emission factors
- Atypical operations in 2002 changed for 2004 based on information from agencies (*not* applied across the board)

# Key Assumptions – cont.

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- **Controls:**

- Reflect current “OTB” controls, limits, etc.

- Refinery Compliance Initiative

- Consent Decrees (EGUs and Non-EGUs)

- EGU Voluntary Reductions TBD

- Denver Metro Area Plan – point sources

- Waiting on modeling inventory for area impacts on 500 hp ICs, condensate tanks, dehydrators

- Wood Productions Compliance Initiative (OR)

- Fugitive Dust in AZ/Maricopa from Ag BACM

- Post-2002 emission limits <2002 actuals

- **Growth (Non-EGUs and Area Sources): EGAS, EIA, and USDA**

# Projecting Emissions from EGUs

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- Adjusted 2002 inventory for new/retired sources (Arapahoe #1/#2)
- Obtained EIA 2002 generation statistics and 2018 projections
  - Northwest Power Pool (ID, OR, UT, WA, WY; portions of MT, NV, SD)
  - Rocky Mountain Power Area (AZ, CO; portions of NV, NM)
  - Mid-Continent Area Power Pool (ND, portions of MT, SD)
  - Southwest Power Pool (portions of NM)

# EGU Method – cont.

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- **Developed capacity factor (CF) for each EGU in CAMD**
  - Unit capacity
  - 2002 gross generated electricity
- **Developed capacity thresholds (CT) for EGUs**
  - Coal-fired – 0.85
  - Oil-fired – 0.50
  - Natural gas-fired turbines – 0.25
  - Natural gas-fired combined cycle – 0.60

# EGU Method – cont.

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- Assumed that all CAMD EGUs would be grown up to CT
- Unit-level growth factor (GF) =  $CT/CF$
- 2018 unit-level emissions = 2002 unit-level emissions x GF
- If EGU was already operating at or above CT, then  $GF = 1.0$  and 2018 emissions are equal to 2002 emissions
  - Many coal-fired EGUs

# EGU Method – cont.

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- Needed generation capacity determined from EIA statistics/projections
- Existing generation capacity calculated from differential between CF and CT
- New capacity = needed capacity – existing capacity (by Electricity Market Module Region)
- Estimated for Northwest Power Pool and Rocky Mountain Power Area only
- New EGUs needed: 12 500 MW coal-fired and 73 200 MW combined cycle NG-fired

# EGU Retirement/Replacement

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- CAMD EGU

- Commencement year from CAMD
- Lifetime – 60 yrs (45 yrs for coal <100 MW)
- If retired between 2002 and 2018, then replaced with new facility grown to CT and adjusted by new emission rates

- Non-CAMD EGU

- Retirement rates applied to emissions
- Retired fraction replaced by new emission rates

# Oil & Gas Methodology (2018)

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- ENVIRON

# 2018 Baseline Inventory (DRAFT)

## Arizona – Point Sources

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	2002 Revised (A)	2002 Baseline Planning (B)	2018 Initial Baseline (C)
NO <sub>x</sub>	110,503	111,412	119,797
SO <sub>2</sub>	119,217	119,240	142,184
VOC	7,820	7,921	12,033
CO	21,736	21,938	29,816
PM <sub>10</sub>	16,148	13,601	16,353
PM <sub>2.5</sub>	5,406	5,044	6,221
NH <sub>3</sub>	723	768	1,028

# 2018 Baseline Inventory (DRAFT)

## Arizona – Area Sources

	2002 Revised (A)	2002 Baseline Planning (B)	2018 Initial Baseline (C)
NO <sub>x</sub>	9,049	9,049	12,559
SO <sub>2</sub>	2,677	2,677	3,410
VOC	108,332	108,332	171,415
CO	49,957	49,957	70,097
PM <sub>10</sub>	99,963	99,016	138,475
PM <sub>2.5</sub>	28,290	28,044	39,455
NH <sub>3</sub>	5,922	5,922	9,457

# Next Steps: 2018 Projections

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- Post all state and Tribal spreadsheets, reviewer memo, revised EGU memo this week (by Sep 9)
- Convene conference call “walk through” of state and Tribal spreadsheets
- Receive comments from agencies and stakeholders by Sep 16 (23?)
- Finalize, submit IDA format to RMC by Sep 30, load into EDMS
- Submit draft final report by w/e Oct 3
- Finalize report by mid-Nov

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THANK YOU!

*Any questions?*

