

MONTANA VISIBILITY PLAN ROLES AND RESPONSIBILITIES



October 21, 2005

**Air Resources Management Bureau
Department of Environmental Quality**

I. INTRODUCTION

- **National Visibility Goal**
- **Montana Mandatory Class I Federal Areas**
- **Visibility Impairment Defined**
- **Clean Air Act Visibility Requirements**
- **Reasonably Attributable Visibility**
- **Regional Haze Visibility**
- **Montana Visibility Control Strategies**

National Visibility Goal



**“The prevention of any future,
and the remedying of any exist-
ing impairment of visibility...
from man-made air pollution.”**

Progress Toward Goals 

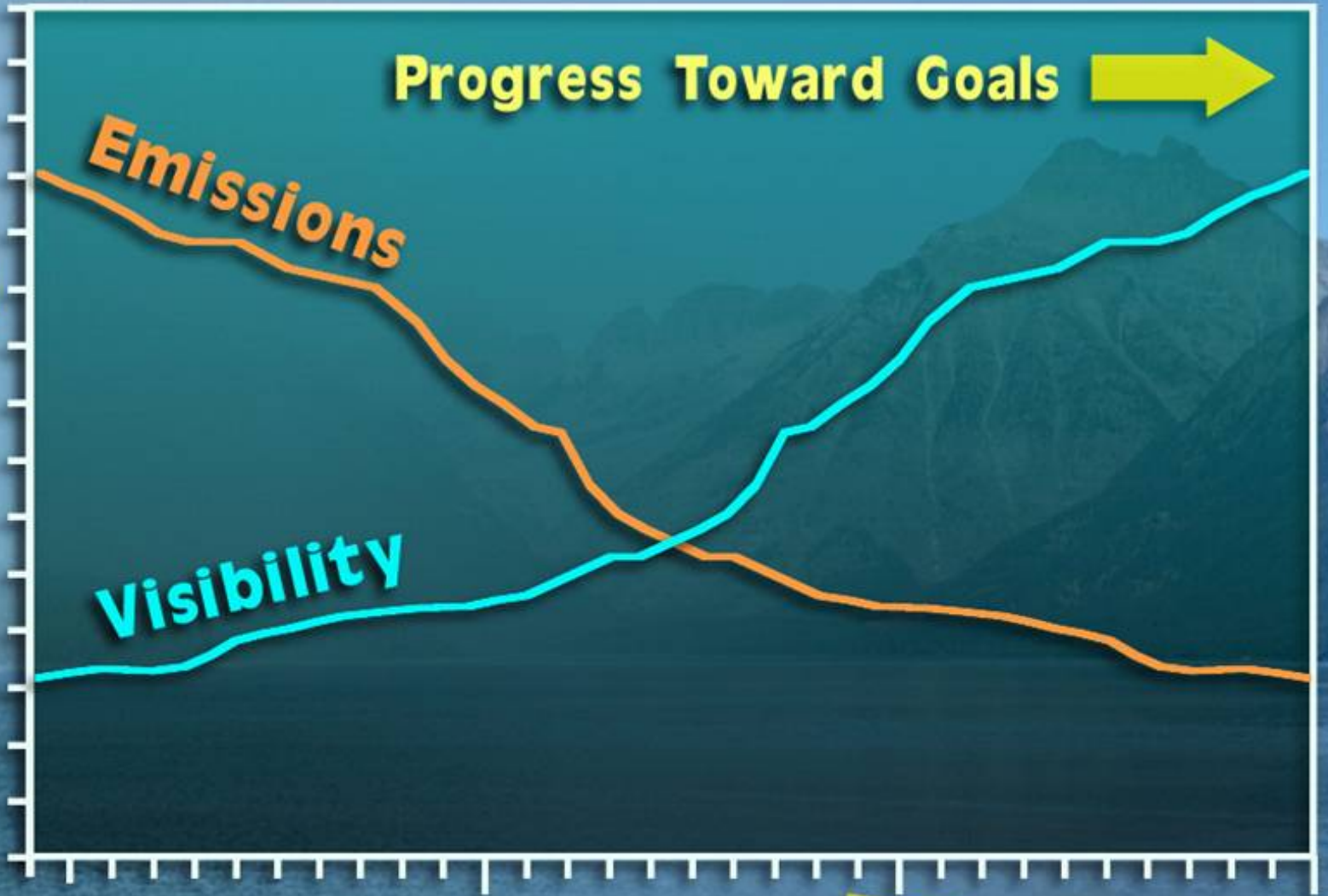
Emissions

Visibility

Increasing Visibility 

2000

21st Century 



MANDATORY CLASS I FEDERAL AREAS

- 1977 Clean Air Act Amendments
- 40 CFR Part 81 - Designated areas
- National Parks (> 6,000 acres)
- Wilderness Areas (> 5,000 acres)
- Effects on Adjacent States
- 156 Mandatory Class I Areas Nationally

Montana Mandatory Class I Federal Areas

40 CFR Part 81.417

- Anaconda-Pintlar WA
- Bob Marshall WA
- Cabinet Mtns WA
- Gates of the Mtns WA
- Glacier NP
- Medicine Lake WA
- Mission Mountain WA
- Red Rock Lakes WA
- Scapegoat WA
- Selway-Bitterroot WA
- U.L. Bend WA
- Yellowstone NP

WA = Wilderness Area

NP = National Park

Regional Visibility Planning in the West



II. WHAT IS VISIBILITY IMPAIRMENT?

- Interaction of light and small particles
- Scattering and absorption
- Transport, transformation, humidity
- East vs. West
- Visibility unit of measure = deciview
- Natural conditions

Wood-Burning Stoves



Power Plants



Heavy Duty Diesel Engines



Natural Sources



**Fine Particles Can Be
Emitted Directly or Formed
in the Air from Gases**

Cars and Trucks



Non-Road Vehicles

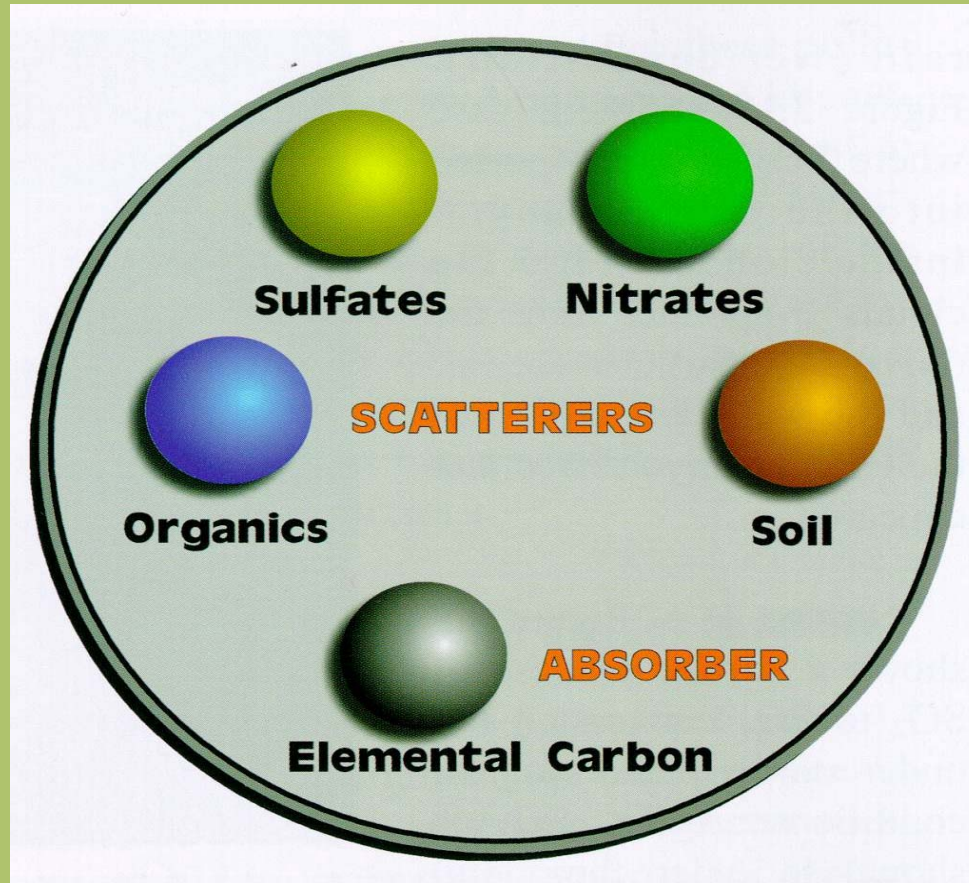


Forest Fires



Industrial Sources





**The Five Particle Types That Make up
Nearly all Particulate Matter
Found in the Atmosphere.**

Key PM2.5 Source Categories (National EI)

DIRECT EMISSIONS

Carbonaceous ^{a, b}

- **Residential Wood Burning**
- **Managed Burning**
- **Non-Road Mobile**
- **Wildfires**
- **Residential Waste Burning**
- **On Road Mobile**
- Power Gen Coal
- Boilers (Oil, Gas)
- Boilers (Wood)

Crustal / Metals ^b

- Fugitive Dust
- Mineral Prod Ind
- Ferrous Metals

PRECURSOR EMISSIONS

SOx ^c

- **Power Gen (Coal)**
- **Power Gen (Oil)**
- Boilers (Coal)
- Boilers (Oil)
- Pulp and Paper

NOx

- **On Road Mobile (Gas, Diesel)**
- **Non-Road Mobile (Diesel)**
- **Power Gen (Coal)**
- **Boilers (Gas)**
- Residential (Gas, Oil)
- Mineral Prod Ind

NH3

- **Animal Husbandry**
- Fertilizer Application
- On Road and Non Road
- Wastewater Treatment
- Boilers

VOC ^d

- **Biogenics**
- Solvent use
- On Road (Gas)
- Storage and Trans
- Residential Wood
- Petro Industry
- Waste Disposal

- a Includes organic particles, elemental carbon and condensible organic particles
b Impact of carbonaceous emissions on ambient PM 5 to 10 times more than crustal emissions impact
c Includes SO₂, and SO₃ and H₂SO₄ condensible inorganics
d Contributes to formation of secondary organic aerosols

NOTE: Categories in **ITALICS TYPE** are most important.

June 2000 / tgp

III. CLEAN AIR ACT

- 1977 - Section 169A - Visibility Protection
- 1980 - “Reasonably Attributable” (RA) Rules
(40 CFR Subpart P 51.300 – 51.307)
- 1990 - Section 169B - GCVTC Established
- 1999 - “Regional Haze” (RH) Rules
(40 CFR Subpart P 51.308 – 51.309)

Subpart P – Protection of Visibility

- **51.300 - Purpose & Applicability** (EPA)
- **51.301 - Definitions** (EPA)
- **51.302 - Impln. Control Strategies** (EPA)
- **51.303 - Exemption from Control** (EPA)
- **51.304 - I.D. of Integral Vistas** (NA)
- **51.305 - Monitoring** (MT)
- **51.306 - Long Term Strategy** (EPA)
- **51.307 - New Source Review** (MT)

Subpart P – Protection of Visibility (continued)

- **51.308 - National RH Program**
(a.k.a. National Rule -or- '308')

- **51.309 - Transport Region RH Program (NA)**
(a.k.a. GCVTC Rule -or- '309')

IV. MT REASONABLY ATTRIBUTABLE

- **1986 - EPA Partially Approved MT SIP:**
 - Monitoring (51.305)
 - NSR (51.307)
- **1987 - EPA Partially Disapproved MT SIP:**
 - Control Strategies (51.302)
 - Long-term Strategy (51.306)
- **1987 - EPA FIP RA SIP**

MT REASONABLY ATTRIBUTABLE (continued)

- **2002 - DEQ Proposed:**

- (1) New Rules:

- FLM Ability to Certify Impairment (51.302)
 - DEQ to Conduct BART Analysis (51.302)
 - Source Application for Exemption (51.303)
 - Source Implementation of BART (51.302)

- (2) Revisions to Existing Visibility Plan:

- Long-range strategy (51.306)
 - Monitoring (51.305)
 - NSR (51.307)

MT BER TOOK NO ACTION

V. MT REGIONAL HAZE

- States / Tribes / FLMs / Industry / etc.
- Regional Planning Organizations (RPOs)
- Western Regional Air Partnership (WRAP)
- WRAP Committees / Forums:
 - Emission Forum;
 - Air Quality Modeling Forum;
 - Stationary sources Joint Forum;
 - Fire Emissions Joint forum;
 - Implementation Work Group; and many more...

Regional Planning Organizations

WRAP CENRAP Midwest RPO MANE-VU VISTAS



Regional Visibility Planning in the West

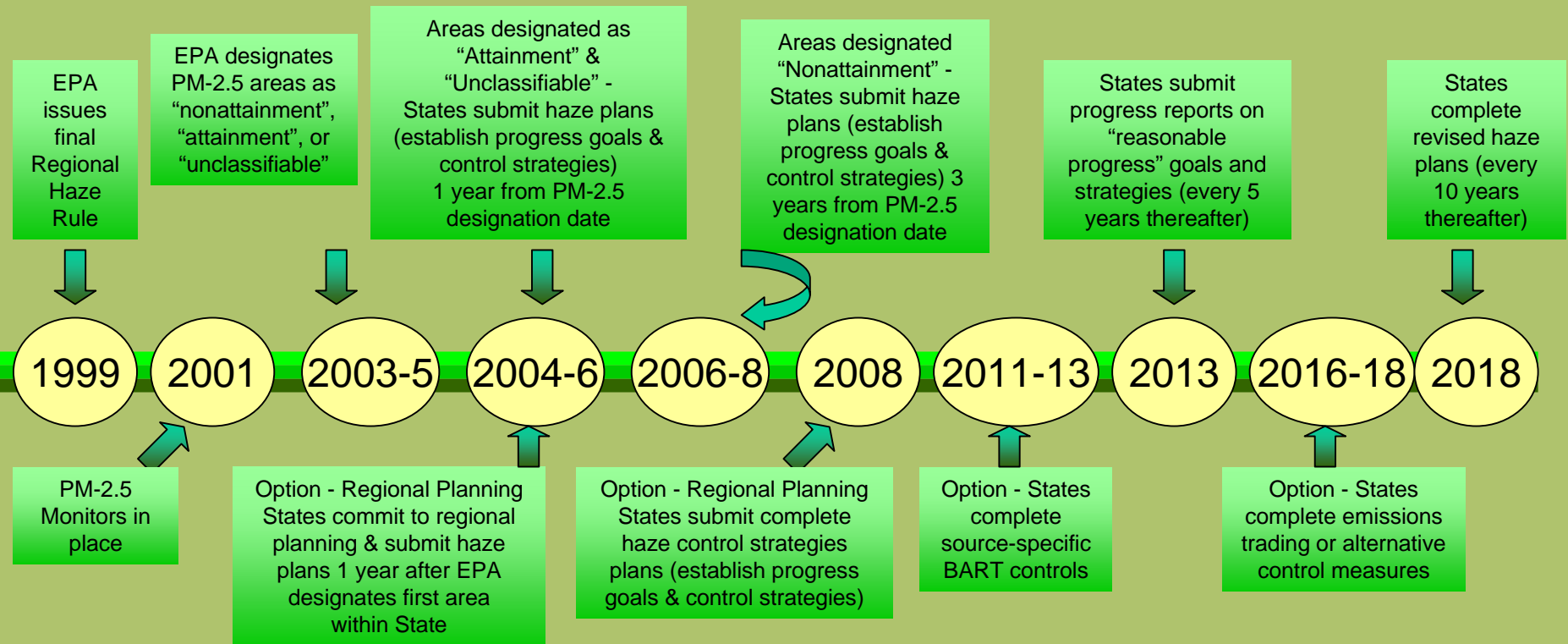


VI. MT VISIBILITY SIP

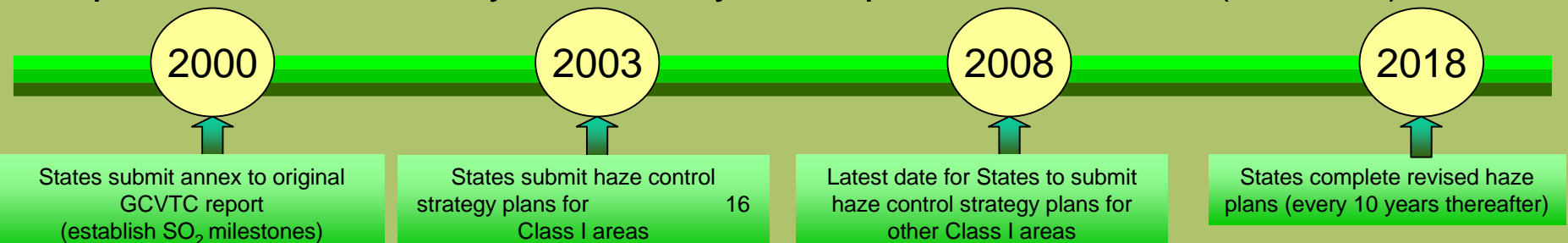
- Disapproved RA rules will be fulfilled by new RH rules.
- MT continues participating in WRAP to develop policies / products in support of the MT visibility SIP.
- DEQ to sponsor stakeholder meetings to discuss visibility control strategies.

Regional Haze

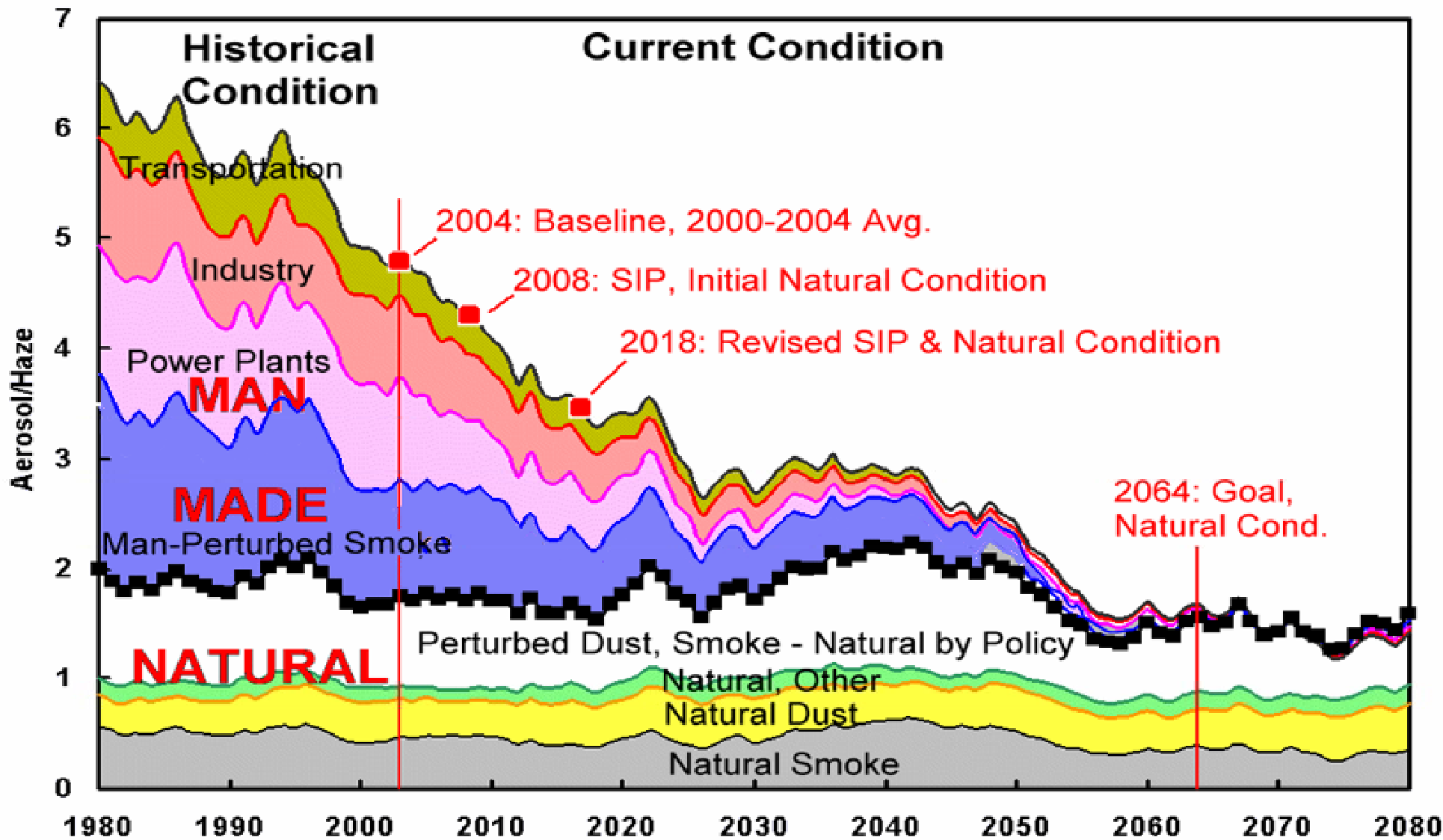
Timeline for State to Implement EPA's Rule



Option for Grand Canyon Visibility Transport Commission (GCVTC) Areas



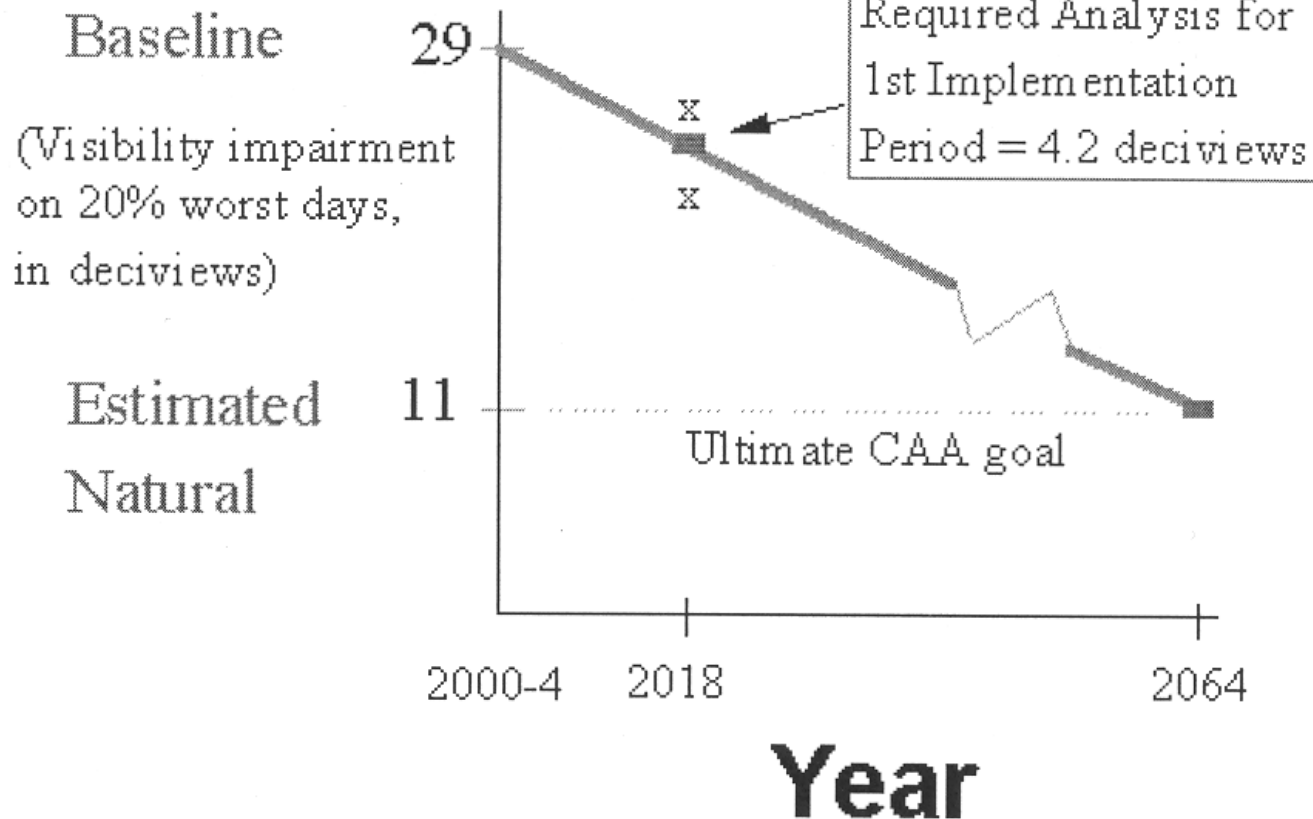
REGIONAL HAZE RULE – CONCEPTUAL GLIDE PATH



VISIBILITY THEORY

Rate To Achieve Natural Conditions in 60 Years

Example



**KEEP THE
AIR
CLEAN**



GENERAL BART PROCESS

STATIONARY SOURCE IS BART-ELIGIBLE IF:

- • Is in one of 26 source categories (power plants, refineries, etc.);
- • Has emission units which were “in existence” on August 7, 1977 but “not in operation” before August 7, 1962; and
- • Has a potential to emit more than 250 tons per year of any visibility-impairing pollutant (SO_2 , NO_x , PM_{10} ; VOC & NH_3 - optional).

GENERAL BART PROCESS

(CONTINUED)

“SUBJECT-TO-BART” DECISIONS BASED ON 1 OF 3 OPTIONS:

- Individual source assessment (MT’s choice, use CalPuff model, ≥ 0.5 deciview change in any Class I federal area);
- Cumulative assessment of all BART-eligible sources; and
- Assessment based on model plants.

GENERAL BART PROCESS

(CONTINUED)

BART DETERMINATIONS FOR “SUBJECT-TO-BART” UNITS BASED ON 5 FACTORS:

- Visibility improvement reasonably expected from the technology;
- Remaining useful life of the source;
- Existing controls at the source;
- Energy & non-air environmental impacts; and
- Costs of compliance.

GENERAL BART PROCESS

(CONTINUED)

ELECTRIC GENERATING UNITS (EGUS) > 750 MEGAWATTS (MW)

CAA requires BART determinations be made pursuant to EPA guidelines:

- • Guidelines' procedures are mandatory.
- • Guidelines contain presumptive control levels.

EGUs \geq 200 mw but $<$ 750 mw

- • Use of guideline's presumptive control levels is encouraged but not mandatory.

NOTE: After BART Determinations completed – 5 years to implement controls.

**KEEP THE
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OPEN BURNING AND VISIBILITY

OBJECTIVE: Smoke management program needs to (1) increase accuracy of calculating open burning smoke; and (2) to distinguish between “natural” and “anthropogenic” smoke emissions.

ACTION: Department participates in Fire Effects Joint Forum of WRAP that developed a policy to categorize fire emissions as either “natural” or “anthropogenic.”

REGARDLESS OF IGNITION ...

NATURAL FIRE:

“Burning activity for the primary and predominant purpose of ecosystem maintenance.”

ANTHROPOGENIC FIRE:

“Burning activity for the primary and predominant purpose of ecosystem restoration.”

CLASSIFICATION CRITERIA

- PF = Anthropogenic source. However.....
PF used to maintain ecosystems under natural fuel conditions, then = Natural source.
- WFU = Anthropogenic source. However.....
WFU used to maintain ecosystems under natural fuel conditions, then = Natural source.
- Suppressed Wildland fire = Natural source.
- Native Cultural Burning = Natural source.

OPEN BURNING AND VISIBILITY

DATABASE REVISIONS:

- Burners choose “Natural” or “Anthropogenic” categorizations.
- FOFEM fire emissions model to uniformly calculate emissions.
- Emissions reports will be used by MT DEQ and EPA to determine RFP.

**KEEP THE
AIR
CLEAN**



DEQ VISIBILITY MODELING

- DEQ will apply Cal Puff trajectory model on each BART ELIGIBLE source.
- Three years of gridded Meteorological Data (Currently 1990, 1992, 1996).
- Maximum 24-hour emissions during 2001, 2002, 2003 time frame (Allowables as default).
- Each source will be compared to 0.5-deciview trigger.
- Protocol out in December for initial comment – formal public comment in spring 2006.

DEQ VISIBILITY MODELING

(CONTINUED)

- DEQ will use this same protocol for NSR AQRV analyses in future.
- Protocol will be posted as guidance on DEQ web site.
- All files will be available for public use.
- Modeling expected to be completed by March 2006.

NEXT STEPS

- (a) Request for additional info out by 10/26/05.
- (b) DEQ Draft BART Rule out by 11/16/05.
- (c) Stakeholder #2 Meeting BART Rule on 11/30/05.
- (d) BART rulemaking process initiation by 2/15/06.
- (e) Visibility Website / Contact information:
 - a. Federal Regional Haze Rule.
 - b. WRAP Committees and Forums.
- (f) Additional Interested Parties as Stakeholders?

END OF SLIDES