

Overview of BART and the Regional Haze Rule “A Work in Progress”

**Particulate/Matter/Regional Haze/Ozone Modeling
Workshop**

May 18, 2005

New Orleans, LA

EPA Office of Air Quality Planning and Standards



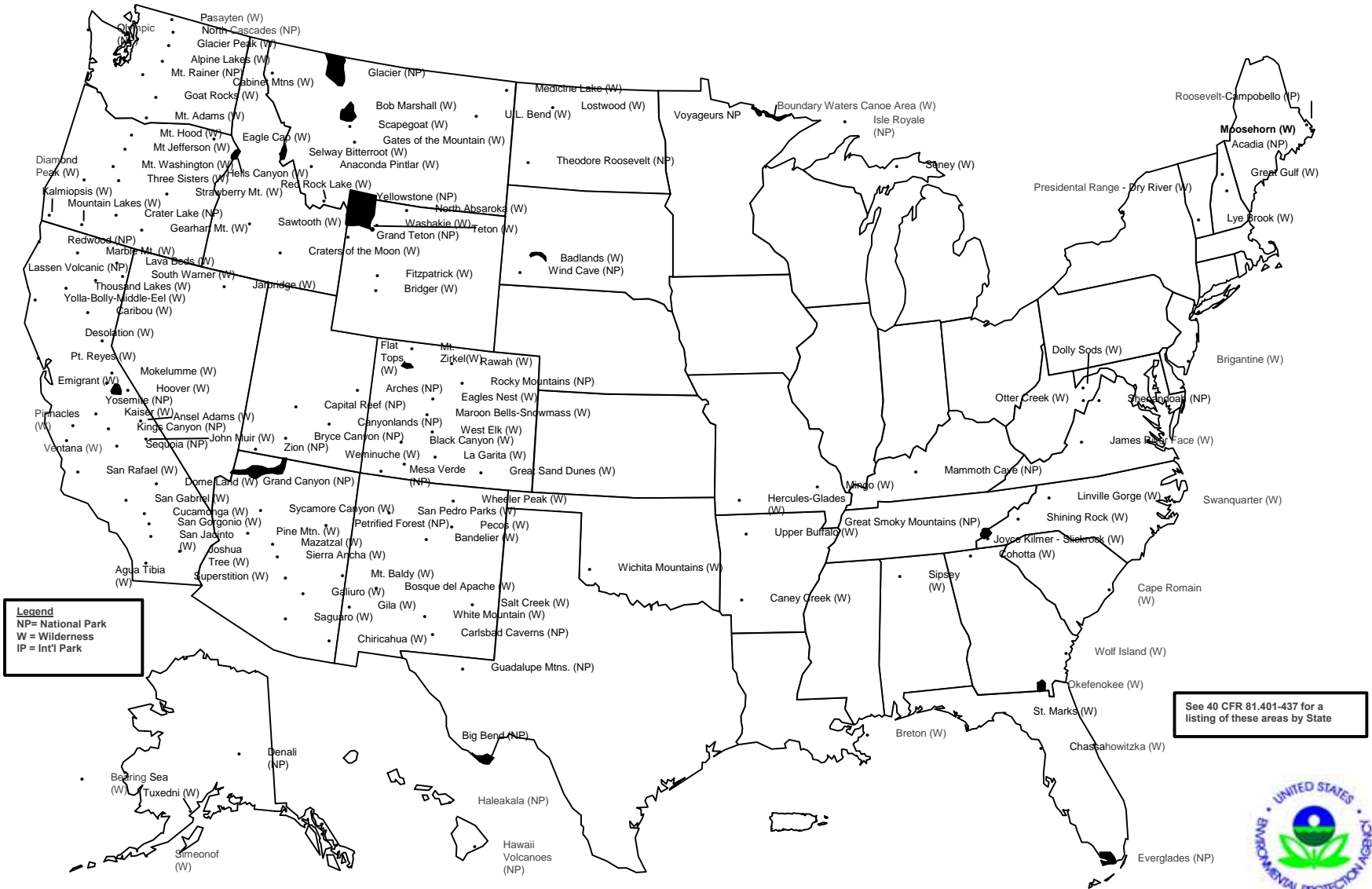
Shining Rock Wilderness 200 Mm-1
Visual Range = 12 Miles / Deciviews = 30



Shining Rock Wilderness 27.0 Mm-1

Visual Range = 90 miles / Deciviews = 10





Map of 156 Mandatory Class I Federal Areas

Regional Haze Rule Structure and Timeline

Structure

- **§ 308 – Contains Best Available Retrofit Technology (BART) rule and guidelines**
- **§ 309 – Provisions to implement visibility requirements for 5 western states (AZ, NM, UT, OR, WY)**

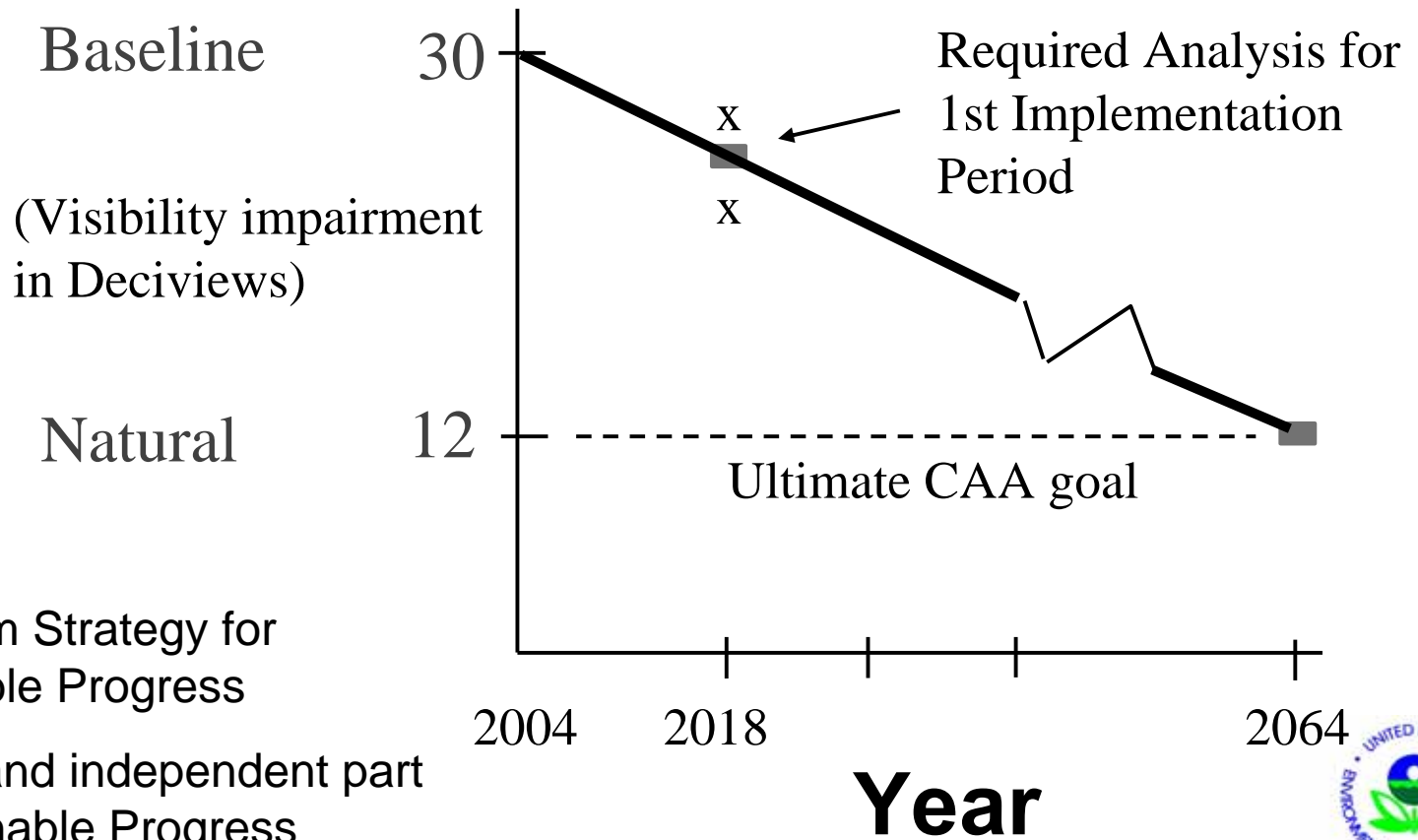
Timeline

- **July 1999 - Regional haze rule finalized**
- **May 2002 – *American Corn Growers* Court decision ; included BART and source by source analysis**
- **April 2004 – Reproposal of rule and guidelines to respond to the court decision**
 - CALPUFF
 - Source by Source impacts rather than cumulative
- **April 2005 – Deadline for final action – two rules**
 - Extended to **June 15, 2005** for additional analyses for BART
 - **Nov. 18, 2005** – trading provisions for § 308 and § 309



Rate To Achieve Natural Conditions in 60 Years (under § 308)

Example



Long Term Strategy for Reasonable Progress

BART is and independent part of Reasonable Progress

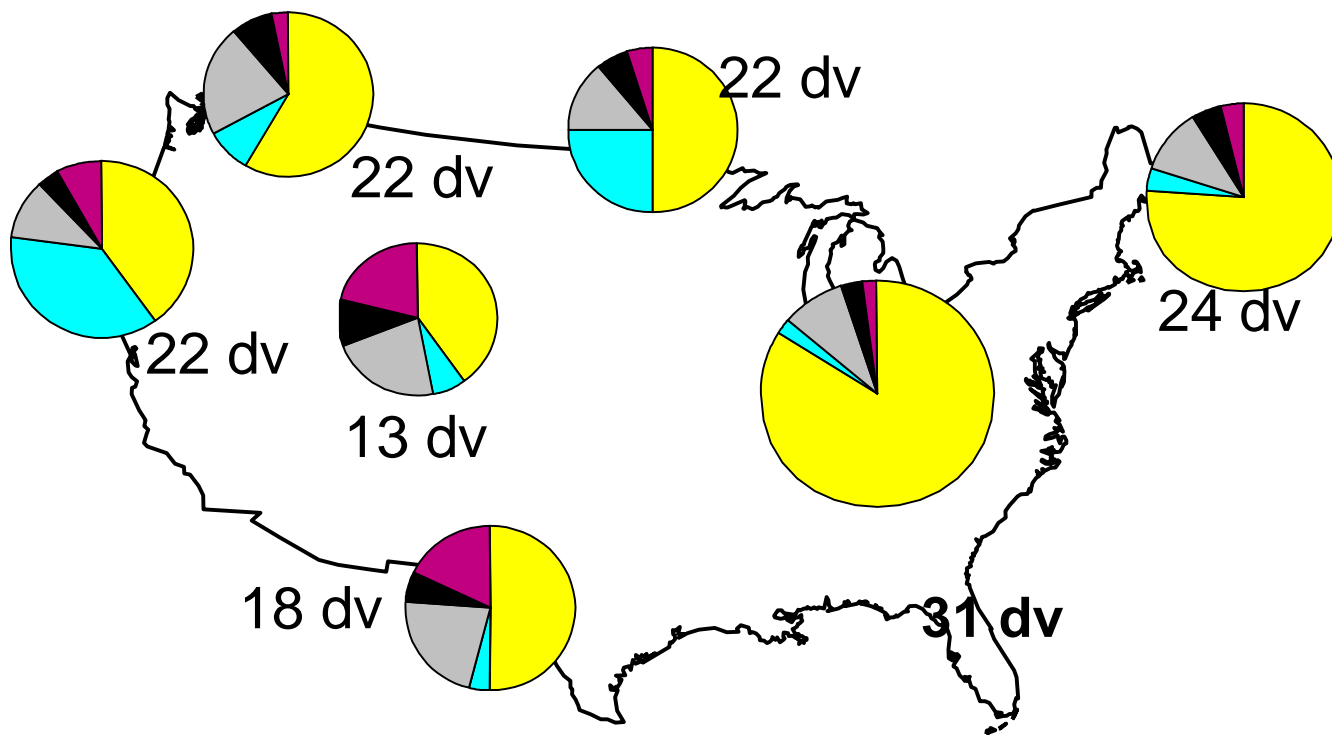


Visibility Metrics

- Common metrics of haze: visual range, light extinction coefficient, deciview
- All are mathematically related
- **Deciview**: uniform changes in haziness correspond to uniform incremental changes in perception across the entire range of possible conditions
 - Not a feature of visual range or light extinction
 - A deciview in the east is the same as in the west



Regional Variation of Visibility Impairment and Contributing Pollutants on 20% Haziest Days

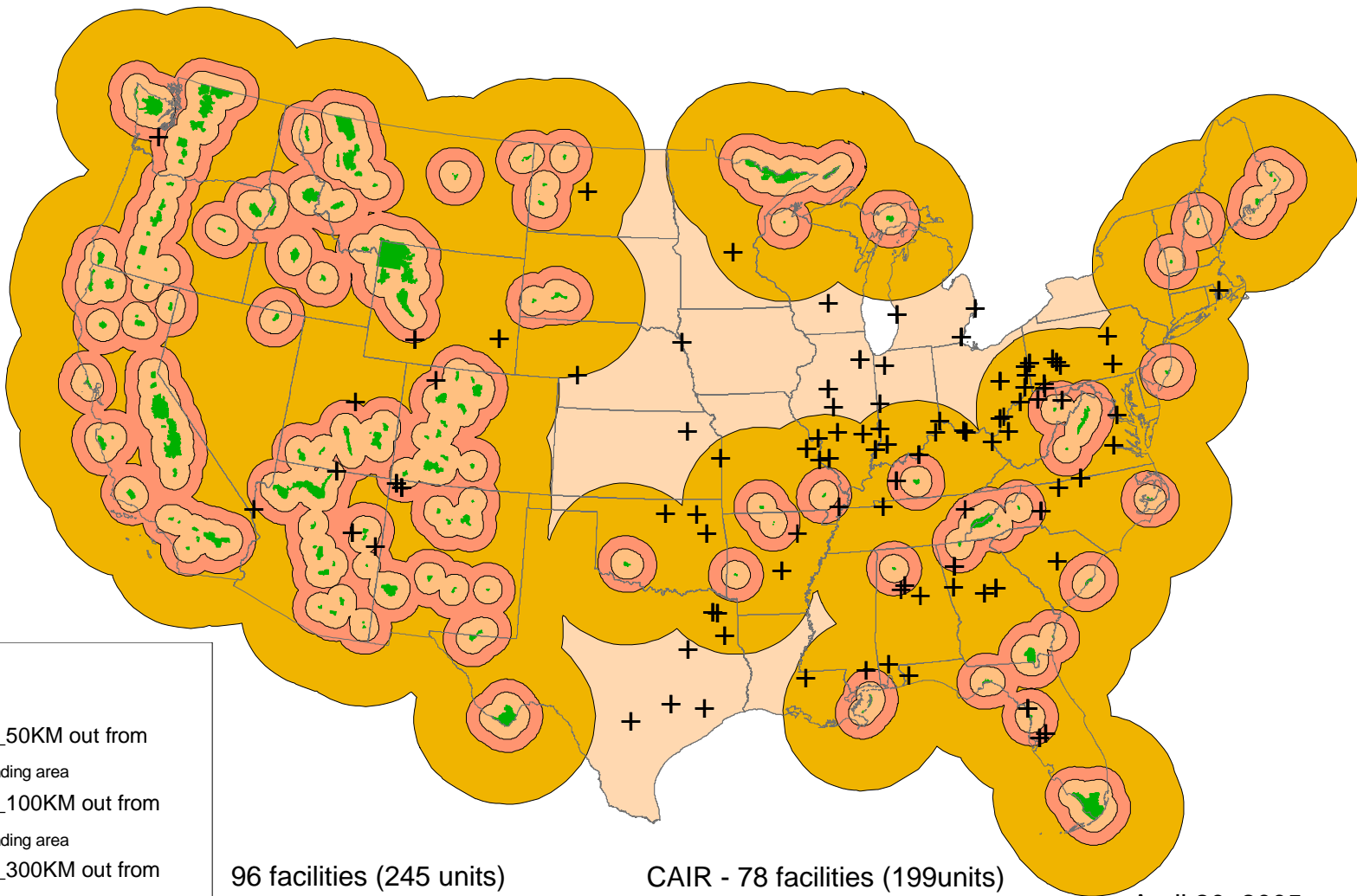


Best Available Retrofit Technology (BART) :

- Under §308, a source is BART eligible if:
- Major stationary source, including EGUs
- 26 PSD categories
- Placed into operation: 1962-1977
- Potential to emit 250 tons of any pollutant *reasonably anticipated to contribute to regional haze in any Class I area* (modeling analysis helps determine cause or contribute)



CLASS I AREAS WITH BART ELIGIBLE UNITS 250 TONS/YR AND ABOVE



96 facilities (245 units)
 -4.5 million TPY SO₂
 -1.9 million TPY NO_x

CAIR - 78 facilities (199 units)
 -4.0 million TPY SO₂
 -1.5 million TPY NO_x

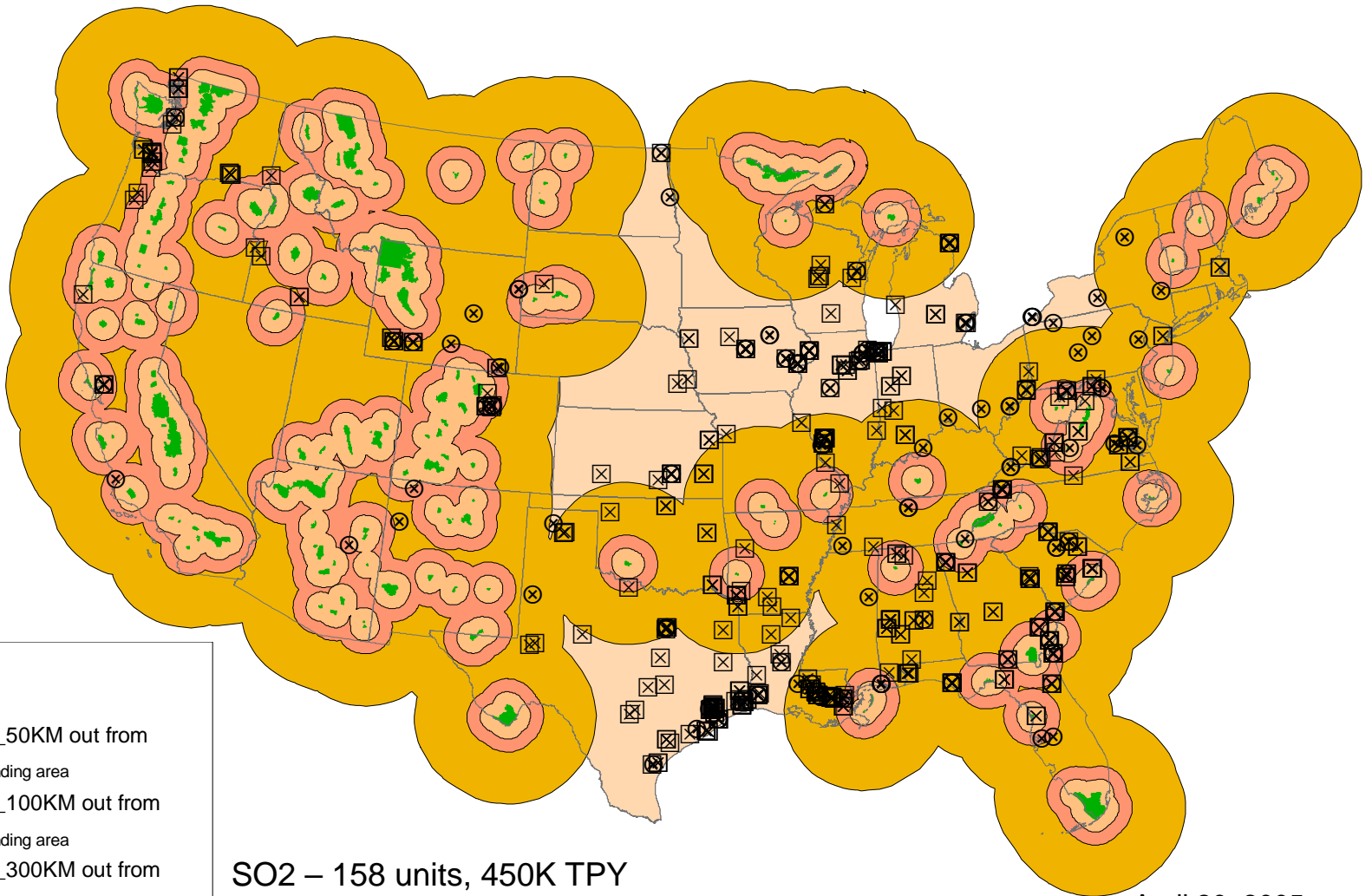
April 20, 2005
 OAQPS final version

EGU BART UNITS >250 tons/yr.

- Class I**
- areas
 - buffer_zones_50KM out from
 - surrounding area
 - buffer_zones_100KM out from
 - surrounding area
 - buffer_zones_300KM out from
 - surrounding area

- BART Source Units:**
- ⊗ SO₂ NonEGU BART Units with SO₂ > 250 tons/yr.
 - ⊠ NO_x NonEGU BART Units with NO_x > 250 tons/yr.
 - ⊕ EGU BART Units with SO₂ or NO_x > 250 tons/yr.

CLASS I AREAS WITH BART ELIGIBLE UNITS 250 TONS/YR AND ABOVE



SO2 – 158 units, 450K TPY
 NOx – 557 units, 422 K TPY

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Class I

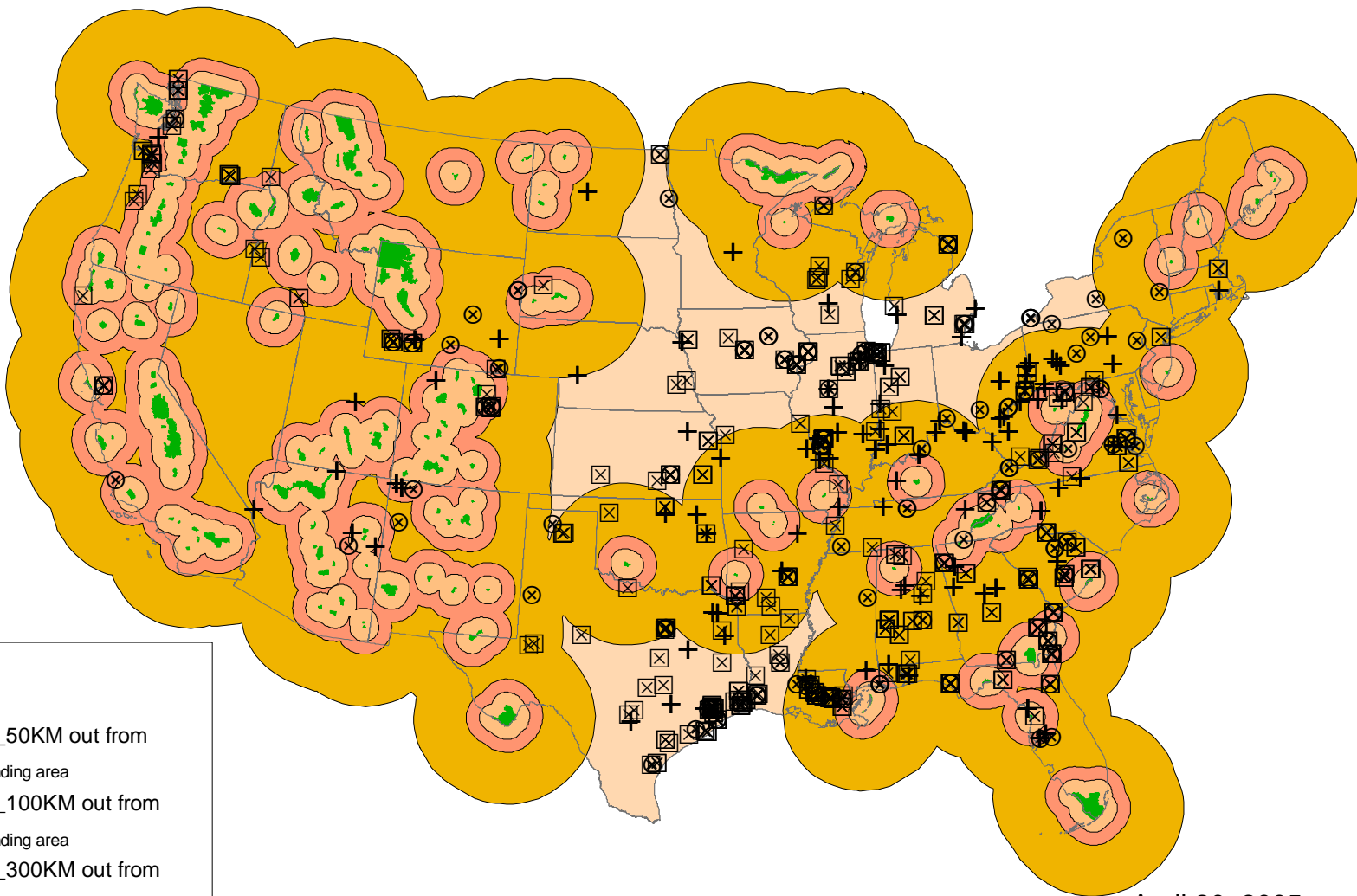
- areas
- buffer_zones_50KM out from
 surrounding area
- buffer_zones_100KM out from
 surrounding area
- buffer_zones_300KM out from
 surrounding area

BART Source Units:

- ⊗ SO2 NonEGU BART Units with SO2 > 250 tons/yr.
- ⊠ NOx NonEGU BART Units with NOx > 250 tons/yr.
- ⊕ EGU BART Units with SO2 or NOx > 250 tons/yr.

nonEGU (SO2&NOx) BART UNITS >250 tons/yr.

CLASS I AREAS WITH BART ELIGIBLE UNITS 250 TONS/YR AND ABOVE



April 20, 2005
 OAQPS final version

Class I

- areas
- buffer_zones_50KM out from
 - surrounding area
- buffer_zones_100KM out from
 - surrounding area
- buffer_zones_300KM out from
 - surrounding area

BART Source Units:

- ⊗ SO2 NonEGU BART Units with SO2 > 250 tons/yr.
- ⊠ NOx NonEGU BART Units with NOx > 250 tons/yr.
- + EGU BART Units with SO2 or NOx > 250 tons/yr.

EGU & nonEGU (SO2&NOx) BART UNITS >250 tons/yr. 12

Determining Source by Source Visibility Impacts

- **Guidance to the States for assessing “reasonably anticipated to cause or contribute”**
 - **Our Proposal recommended:**
 - **Use of CALPUFF model**
 - Only tool available for quick runtime and resource effort – we acknowledge there are flaws
 - Range may be adequate for predicting relative impacts of BART-eligible sources 300 km and beyond
 - Approved in Appendix W but only for PSD increment for SO₂ and direct PM
 - **We established 0.5 Δ dv as “causing” visibility impairment**
- Exemption Test (Subject to BART)**
- **The test is to use the CALPUFF model and compare to 0.5 Δ dv (24 hr); if the impact is greater, the source is subject to a BART engineering analysis, otherwise it is exempt from further analysis**
 - **Visibility impacts are compared to **natural background** conditions**
 - **We received **lots** of public comments. The test is subject to change in light of the additional analysis for the June 15th deadline**



If the Source “causes or contributes” to visibility impairment...then

- Subject to a BART engineering review to determine a control technology to set an emission limit (BART)
- For each source, State must consider 5 factors:
 - Controls already in place at the source
 - Cost of compliance
 - Remaining useful life
 - Energy and nonair environmental impacts

Visibility Test – the fifth factor

- *Degree of visibility improvement from use of such technology <CALPUFF>*



Modeling Protocol

- **Required in all cases**
- **Describes how States, RPOs, or Sources will run the model**
- **Approvable by the EPA Regional Office**
- **We recommend *IWAQM* as a starting point**
- **Flexibility**



BART Presumptions for EGUs

- **Control Levels for SO₂ and NO_x from EGUs:**
 - **SO₂ - 95% or 0.15 lb/MMBtu, NO_x – 0.2 lb/MMBtu**
 - **Note: NO_x differences exist for boiler type and coal type (evaluating in final rule)**
- **States should require these control levels at >750 MW plants including units at those plants that are > 200 MW, unless analysis of other BART factors dictate otherwise.**
- **We *presume* that States should require these control levels at >200 MW units anywhere, unless analysis of other BART factors dictates otherwise.**
- **No exemptions (in almost all cases) for these sources**
- **Regional Haze rule allows trading as alternative to source-by-source BART (e.g. CAIR)**



Alternatives to CALPUFF for exemption (Q/D)

- **Criticisms**
 - No accounting for terrain, meteorology, chemistry
- **May be used to help inform the BART applicability provisions**
- **We may consider if there is adequate demonstration that results are equivalent or better than CALPUFF**



Next Steps

- **Finish BART by June 15th - §308**
- **Also, by June 15th 2005, a proposal to revise the trading provisions - §308(e)(2)**
 - Has implications on §309 – WRAP rule
 - Final November 8th, 2005
- **Regional Haze Rule will be 2 rules**
 - BART (source by source) – June 15th
 - Trading Provisions of BART and revised §309



Additional Information

- Website: www.epa.gov/air/visibility/

- “Draft Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Program”
- “Draft Guidance for Tracking Progress Under the Regional Haze Program”
 - www.epa.gov/ttn/oarpg/t1pgm.html

- IMPROVE and website
 - <http://vista.cira.colostate.edu/improve>
 - Contacts: Todd Hawes (hawes.todd@epa.gov), Kathy Kaufman (kaufman.kathy@epa.gov)

