Overview of the BART Guidance for the Regional Haze Rule

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MARAMA Permit Meeting
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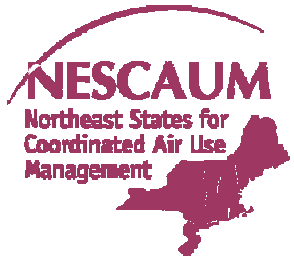

Why are we doing BART

- Visibility Protection in 156 Class I areas
- BART is part of the Regional Haze rule
- Regional Haze goal is to achieve natural background levels by 2064
- Natural background levels means no man made visibility impairment

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Timelines for BART

- Final Rule released June 2005
- Regional Haze SIP due Dec 17, 2007
  - an inventory of haze-related pollutant emissions from BART sources
  - proposed emission limits
  - compliance schedules
- States/regional planning organizations must conduct air quality analysis

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BART Determination Process

- Is a source BART-eligible?
- Is the source reasonably anticipated to cause or contribute to regional haze in any Class I area?
  - If so, the source is subject to BART
- For sources subject to BART, make a BART determination

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Determining BART Eligibility

- One of 26 source categories covered in the rule
- "In existence" before August 7, 1977 *and* commenced operation after August 7, 1962*
- Units within date range have the "Potential to Emit" (PTE) 250 tons/year of at least one visibility impairing pollutant
  - SO_2, NOx, PM10,** VOCs, or NH_3

*Captures 15 years worth of sources grandfathered by the Clean Air Act

**PM10 includes PM2.5

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Step 1 - BART Eligible
26 source categories

- Fossil-fuel fired steam electric plant >250mm Btu/hr heat input
- Coal cleaning plants w.thermal dryers
- Kraft pulp mills
- Portland cement mills
- Primary zinc smelters
- Iron and steel mill plants
- Primary aluminum ore reduction plants
- Primary copper smelters
- Municipal incinerators capable of charging >250 tons of refuse per day
- Hydrofluoric, sulfuric & nitric acid plants
- Petroleum refineries
- Lime plants
- Phosphate rock processing plants
- Coke oven batteries
- Sulfur recovery plants
- Carbon black plants (furnace plants)
- Primary lead smelters
- Fuel conversion plants
- Sintering plants
- Secondary metal production plants
- Chemical process plants
- Fossil-fuel boilers greater than 250 million Btu/hr heat input
- Petroleum storage and transfer facilities, total storage > 300,000 barrels
- Taconite ore processing facilities
- Glass fiber processing plants
- Charcoal production facilities

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Step 1 - BART Eligible

BART Guidance: “in existence”

- “In existence” means:
  - that the facility was constructed, or
  - that the owner had obtained all necessary permits for air pollution and air quality, AND had entered into binding agreements that could not be modified without substantial loss to the owner.

→Thus, an emission unit could be “in existence” in 1977 but not begin operating until several years later, and could still be BART-eligible!

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Step 1 - BART Eligible
BART Guidance: “in operation”

- “In operation” means that the unit was engaged in activity related to the primary design function of the source.
  - The source must have begun actual operations after August 7, 1962.

→Therefore, units installed in 1960 or 1961 may not have commenced operations until after August 7, 1962, so they may be BART-eligible!

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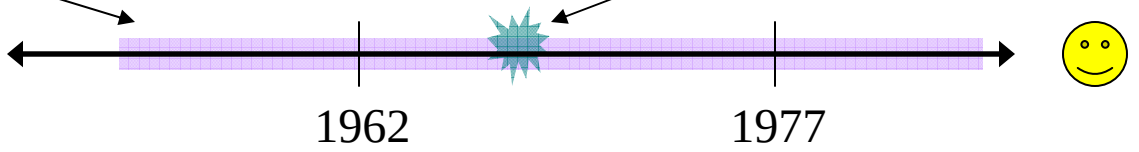
"In existence" and "in operation," *BUT...*

- An existing source that is completely or substantially rebuilt* is called a Reconstructed Source.
  - If a source was in operation before 1962 **but** was reconstructed between 1962 and 1977, it could be BART-eligible.



*Substantially rebuilt means that the fixed capitol cost of the new component exceeds 50% of the fixed capitol cost of a comparable entirely new source.

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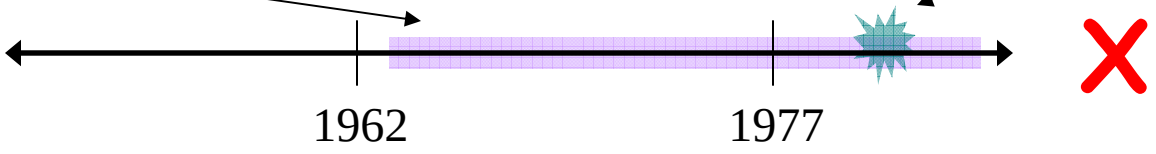
"In existence" and "in operation," *BUT...*

- An existing source that is completely or substantially rebuilt is called a Reconstructed Source.
  - If a source existed before 1977 *and* commenced operation after 1962,

but was reconstructed *after* 1977,
is is not BART-eligible.



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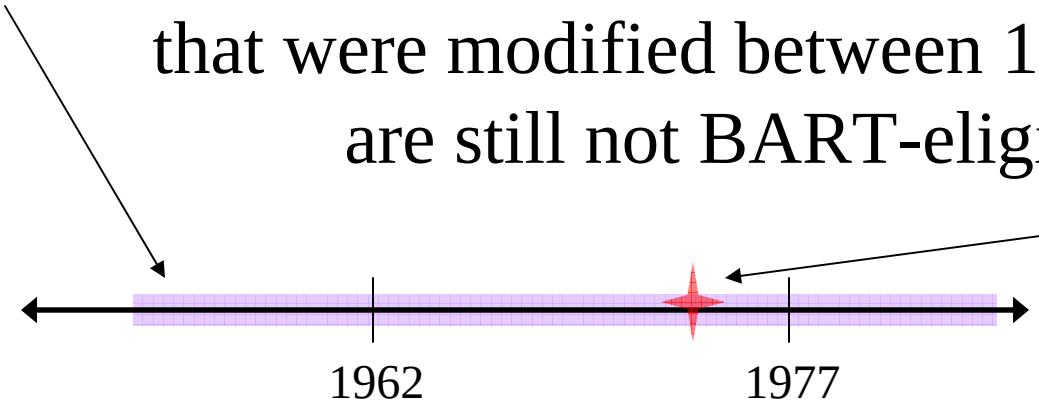
"In existence" and "in operation", *BUT...*

- If a source underwent modification (changes that may be significant but are less than a reconstruction), its BART eligibility is not impacted.
  - Thus, pre-1962 sources that were modified between 1962 and 1977 are still not BART-eligible.



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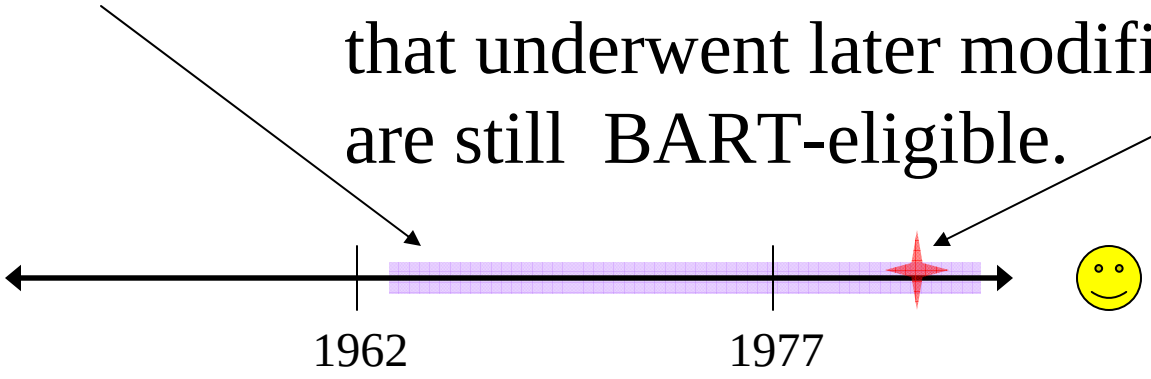
"In existence" and "in operation", *BUT...*

- If a source underwent modification (changes that may be significant but are less than a reconstruction), its BART eligibility is not impacted.
  - Sources built in the 1962-1977 timeframe that underwent later modifications are still BART-eligible.



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Step 1 - BART Eligible
Unit Aggregation

Unit Type	PTE NOx (tons/yr)	PTE SOx (tons/yr)	PTE VOCs (tons/yr)	PTE PM (tons/yr)	PTE NH3 (tons/yr)
Cement kiln	52	6	14	27	0
Boiler #1	72	14	23	4	1
Boiler #2	123	42	32	16	4
Steam Electric Plant	103	24	27	24	4
TOTAL	**350**	**86**	**96**	**71**	**9**

Units total >250 tons per year, therefore all units are BART-eligible

*That all meet the criteria for existence and operation

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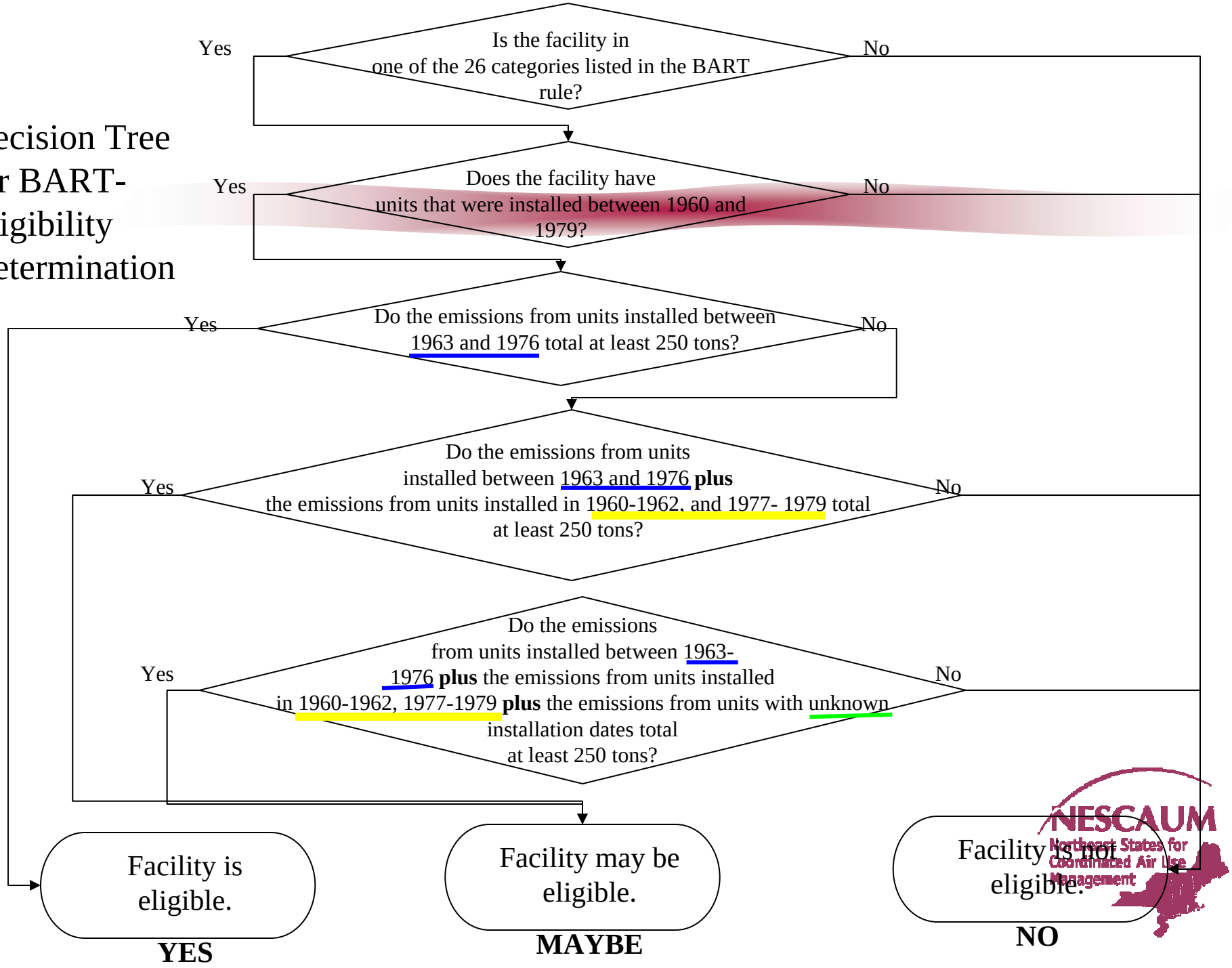
Decision Tree for BART-Eligibility Determination



Step 2 – Contribution Assessment

- Is the source reasonably anticipated to cause or contribute to regional haze in any Class I area?
- Modeling by states to determine regional haze impact
- MANE VU Directors Position – Any source subject to BART will go through the BART determination process

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Step 2 – Contribution Assessment

- 3 Options:
  - Individual source assessment
  - Cumulative assessment of all BART-eligible sources
  - Assessment based on model plants

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Contribution Assessment

- Perform source-specific analysis:
  - Use CALPuff or other EPA approved model
  - Compare to natural background
  - "Cause" = impact of 1.0 deciview or more
  - "Contribute" – 0.5 deciview (State may set lower threshold)
- Consider all eligible sources to be subject, based on an analysis of an area's contribution to visibility impairment -- or demonstrate that *no* sources are subject, based on cumulative modeling.
- Develop model plants to exempt sources with common characteristics
  - BART Guidelines provide example model runs

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Step 3
BART Control Determination

- **Five CAA BART Factors**
  - Costs of compliance
  - Energy and non-air environmental impacts
  - Existing controls at source
  - Remaining useful life of source
  - Visibility improvement reasonably expected from the technology

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Power Plants

- For EGU plants >750 megawatt (MW), CAA requires BART determinations to be made pursuant to EPA guidelines.
  - Guideline is binding
  - Guidelines' procedures mandatory for these sources
  - Guidelines contain presumptive control levels
- For EGU units ≥200 MW (not at 750 MW plants): encourage use of presumptive controls
  - Because of evidence that such controls are cost effective
- All other source categories: guidelines are guidance only

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Presumptive controls for EGUs over 750 MW

- **SO2: 95**% control or 0.15 lbs/MMBtu.
- **NOx:**
  - In NOx SIP call area, extend use of controls to year-round.
  - Outside NOx SIP call area, current combustion controls
    - 0.2 – 0.45 lbs/mmBtu, depending on coal and boiler type

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BART/CAIR Interplay

- Rule contains EPA's determination that CAIR will result in greater progress than BART
- If your state is in CAIR that is BART for power plants for NOx and SO_2
- Still must complete an assessment for PM

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Presumptive Controls

- **Non-CAIR EGUs:**
- SO2 – 95% control or 0.15 lb/MMBtu
- NOx
  - in NOx SIP call area, extend use of controls to year-round
  - 0.1 – 0.25 lb/MMBtu, depending on coal and boiler type
- PM - 0.02 lb/MMBtu

- **CAIR EGU's:**
- SO2 – CAIR requirements
- NOx – CAIR requirements
- PM - 0.02 lb/MMBtu

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Presumptive Controls (cont)

- **Industrial Boilers**
- SO2 – 90% control or MACT acid gas control level
- NOx
  - 0.15[1] – 0.4 lbs/mmBtu, depending on boiler type
- PM - .02 lb/MMBtu

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Presumptive Controls (cont)

- **Cement Kilns**
- No common emission threshold has been identified; however the following lists recommended control technologies to evaluate.
- SO2
  - in process removal
  - combustion optimization
  - flame shape adjustment
  - wet or dry scrubbers
- NOx
  - Low NOx burners
  - Secondary combustion
  - Staged combustion
  - Combustion optimization
- PM
  - baghouse
  - electrostatic precipitator

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Other Control Programs

- OTC Control Measures
  - Cement kilns
  - EGU
  - ICI Boilers
  - Municipal Waste Combustors
  - Petroleum Refineries

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Resources for BART Control Determination

- MANE VU
  - http://bronze.nescaum.org/committees/haze/BART_Control_Assessment.pdf
- LADCO
  - http://www.ladco.org/reports/rpo/MWRPOprojects/Strategies/Final%20Control%20Measures.pdf
- VISTAs resources
  - http://www.vistas-sesarm.org/BART/index.asp

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BART Resource Guide

- Overview of rules and supporting materials
- Detailed information on determining BART eligibility
- Modeling overview
- Anticipated reductions/controls
- Resources for completing BART control determinations

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