



Department of
Environmental Quality

Air Quality Requirements for Proposed New Electrical Generation Units

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*“Do not consider all opponents to be enemies.
You may have productive, friendly
confrontations, with others inside and outside
your tribe.”*

--Wess Roberts, Ph.D.
Leadership Secrets of Atilla The Hun

Synopsis:

- Pre-construction requirements
 - **“Challenges” in the Air Use Permitting Process**
 - **Pending changes in federal standards and attainment designations**
 - **“Challenges” in the Public Participation Process**
- Post Construction Requirements
 - **Clean Air Mercury Rule (CAMR)**
 - **Federal “Cap and Trade” programs**
- Changes and suggestions for addressing identified challenges
- CAIR

Assumptions used in this presentation:

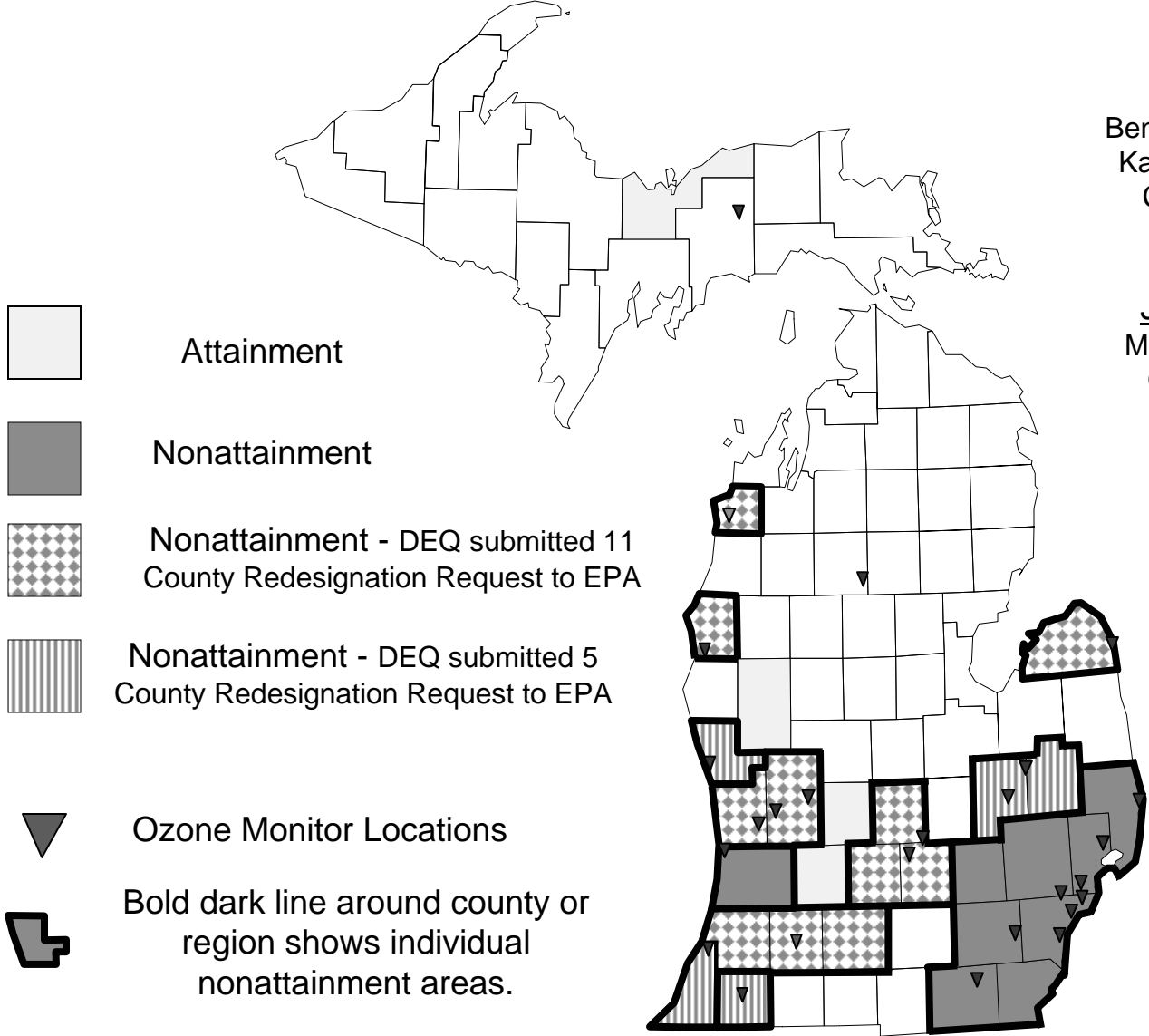
- The EGU is a large (500 Megawatt) base-loaded central station facility.
- The EGU will be a coal-fired unit. There is not a specific type of coal-fired boiler assumed (i.e. CFB, super critical, or conventional PC).

General observations

- Public participation is an open process
- Currently, if a permit action is appealed, it is appealed at the federal level by petitioning the Environmental Appeals Board (EAB)
- Air use permitting does not obviate the owner from securing necessary local permits

Ozone Attainment Designation Status

8-hour Ozone Designations est. June 15, 2004

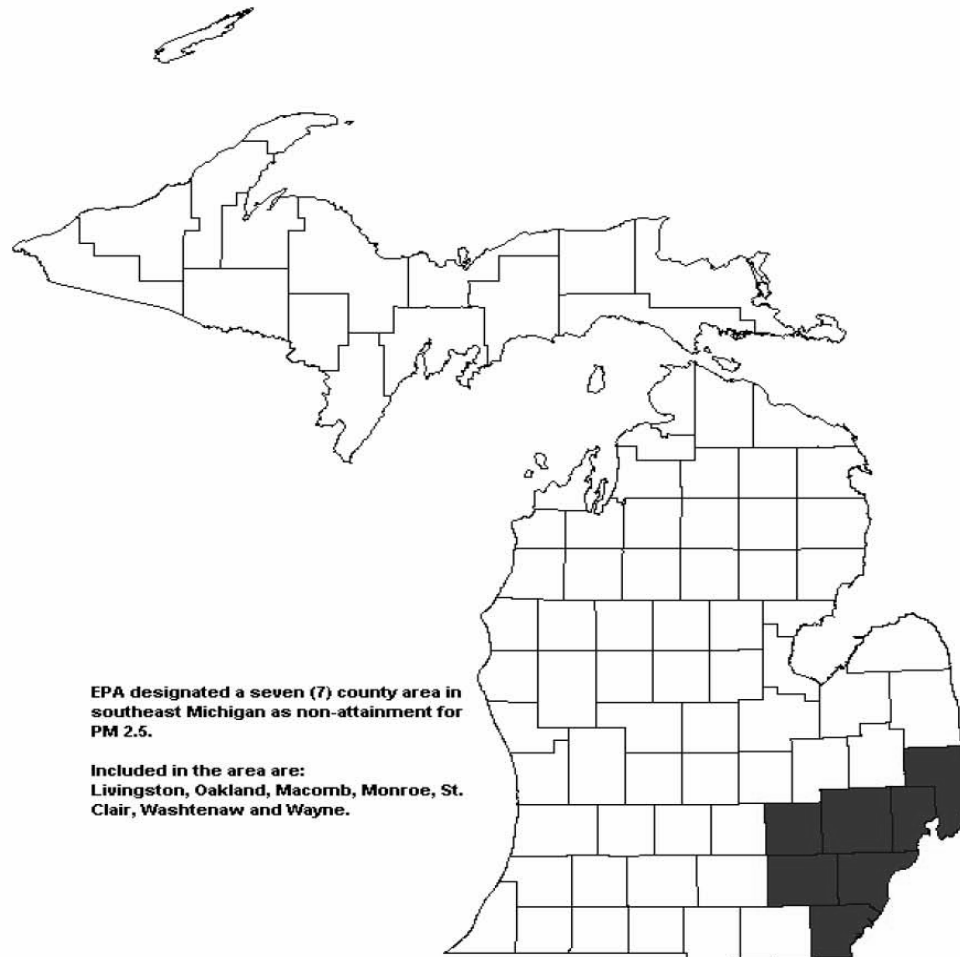


May 2006 Request:
Benzie, Mason, Ottawa, Kent, 6,
Kalamazoo, Calhoun, Ingham,
Clinton, Eaton, and Huron.

June 2006 Request:
Muskegon, Berrien, Cass,
Genesee, and Lapeer.

PM-2.5 Nonattainment

December 17, 2004



Air pollution control requirements for a 500 MW coal-fired plant

- Dependent on location (attainment or nonattainment) and the type of the boiler
- Best Available Control Technology (BACT) is required in attainment areas
- More stringent control may be required in a nonattainment area and the Lowest Achievable Emission Rate (LAER) is required for a given pollutant

**BACT AND LAER ARE BASED
ON EMISSION LIMITS**

Major New Source Review Comparisons

Requirement	Attainment Area	Nonattainment Area
Type of review	Prevention of Significant Deterioration	Michigan Rule 220
Federal approval to carry out program	No	Yes (Appendix S)
Applicable at the federal level	Yes	No
Applicability threshold (new source)	100 tons per year	100 tons per year
Level of control	Best Available Control Technology (BACT)	Lowest Achievable Emission Rate (LAER)
Economics considered	Yes	No
Emission offsets required	No	Yes
Endangered Species Act review	Yes	No
Ability to “net out” of review	Yes	Yes

Estimated Annual Air Emissions for a Coal-Fired Boiler with BACT Level Control

Pollutant	Control	Emissions, TPY
Carbon Monoxide	Good combustion practices	109
Nitrogen Oxides	SNCR or Low NOx burners and SCR	153
Particulate matter	Fabric Filter Control	21.9
Sulfur Dioxide	Flue Gas Desulfurization	219
Volatile Organic Compounds	Good combustion practices	131

Numbers in table above are based on:

0.07 lb/MMBTU for NOx

0.10 lb/MMBTU for SO₂

0.05 lb/MMBTU for CO

0.01 lb/MMBTU for PM

Actual numbers at time of permit evaluation may be lower

Numbers listed above of conventional coal-fired power plants

Permitting Issues

- Air use permitting in attainment area
 - **Requires BACT Control and economic considerations of using those controls**
- Air use permitting in nonattainment areas may not be technically and/or economically feasible.
 - **Lowest Achievable Emission rate is required (no consideration given to economics)**
 - **Emission offsets (reductions of 110% of allowable emissions) are required for VOCs and NOx**
 - **Emission offsets for fine particulate are 100%**
 - **Emission offsets are not readily available or may not be available at all**

Major Permitting Challenges in Ozone Nonattainment Areas

- A 500 MW plant would be “major” for both VOC and NO_x
 - Plant could potentially “net out” of NAA review for VOC
 - VOC emission offsets may be available
 - NO_x is problematic
 - Plant could potentially “net out” of NAA review, but it would be more difficult than for VOC because of level of emissions
 - Availability of NO_x offsets are difficult, if not impossible, to obtain
 - Mostly likely candidate for NO_x offsets are other combustion sources

Endangered Species Act

- All PSD permits subject to ESA in a delegated state
- ESA is an EPA and federal Fish and Wildlife determination
- ESA will delay final issuance of the PSD permit

Other Challenges in the Process

- Timeframes or schedules when a permit is appealed
- Reviews outside of the purview of DEQ
 - Local zoning
 - Endangered Species Act
 - Federal policies that are unclear and subject to interpretation

Other Considerations

- Technical review – siting in nonattainment areas
 - Locating a large central plant will continue to be very problematic in nonattainment areas. NOx emission credits may be difficult or impossible to find in the short term
 - Netting out of nonattainment area review should be considered
 - **Replacing existing inefficient units with more efficient and cleaner units as an alternative**

Post Permitting Requirements

- After the permit is issued there will be additional requirements that the facility will be subject to:
- “Cap and Trade” programs:
 - Acid Rain Program
 - NOx budget/Clean Air Interstate Rule
- Clean Air Mercury Rule (CAMR)
 - Michigan will not allow interstate trading
- State rules (Michigan Mercury Rule)

Technical review – siting in non-attainment areas

- Consider installing more smaller capacity base-load units, instead of a large central station unit.
- Consider addition of combined heat and power to existing industrial coal-fired facilities.

Other Issues

- Regulatory
 - Obtain delegation of authority to carry out PSD program.
 - **Permit appeals would then transpire at the state level.**
 - Identify and resolve any federal policies which are unclear.
 - Consider environmental and health economic benefits in the siting process.

CAIR

- SO_x under Acid Rain Program
- NO_x Allocations
 - Average of two high years out of four
 - Heat input

CAIR - continued

- Michigan NOx Budgets 2009-2014
 - EGU's Ozone Season equals 28,971
 - Non-EGUs Ozone Season equals 2,209
 - EGU's annual equals 65,304
- Michigan NOx Budgets 2015 and thereafter
 - EGU's Ozone Season equals 24,142
 - Non-EGUs Ozone Season equals 2,209
 - EGU's annual equals 54,420

CAIR - continued

- Set asides for new and renewable sources will be available for both annual and ozone season budgets
- Federal Implementation Plan (FIP) finalized April 28, 2004
 - **Allows states to submit abbreviated SIPs**
 - **Michigan plans on using the abbreviated SIP option**
- Full SIP due by states September 11, 2006
- Abbreviated SIP due by states March 21, 2007

CAIR - continued

- Michigan sources will need to obtain the following permits in addition to any new source permitting requirements.
 - **These will be rolled into their Title V or Renewable Operating Permit**
 - **CAIR NOx Ozone Season permit**
 - **CAIR NOx Annual permit**
 - **CAIR SO2 permit**
- Michigan sources will be required to hold enough allowances in their EPA CAIR accounts to cover their NOx and SO2 emissions for the appropriate time periods.

Questions?