



Comparison of the Most Recent BACT/LAER Determinations for Combustion Turbines by State Air Pollution Control Agencies

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Outline

- Introduction
- Survey Procedures
- Results
- Conclusions



Introduction

- Need for current info on BACT/LAER determinations
- Survey of 23 State Air Pollution Control Agencies in the eastern half of the U.S.
- Focus on large (60 MW+) natural gas fired combustion turbines for power generation
- Evaluation of timeliness of info in EPA RACT/BACT/LAER Clearinghouse (RBLC)



Introduction (Cont'd)

States Surveyed (* information not provided)

Alabama	Massachusetts*
Arkansas	Michigan
Connecticut	Mississippi*
Delaware	New Hampshire
Florida	New Jersey*
Georgia	New York
Illinois	North Carolina
Indiana	Pennsylvania
Kentucky	Rhode Island*
Louisiana	South Carolina
Maine	Tennessee
Maryland*	



Survey Procedures

- Questionnaire on State Agency Experience in BACT/LAER determinations
- 3 most recent BACT/LAER determinations
- Simple/combined cycle natural gas fired combustion turbines



Survey Procedures (cont'd)

- Questions
 - BACT/LAER determinations
 - Compliance averaging time
 - Types of control technologies
 - Cost per ton removed threshold for economic feasibility
 - Total # of BACT/LAER determinations in the last 12 months



Survey Procedures (cont'd)

- Pollutants
 - PM10
 - NO_x
 - CO
 - SO₂
 - Hydrocarbons (VOC)



Results

- 18 of 23 states responded to survey
- Determinations obtained for all five pollutants
 - BACT – 144
 - LAER - 17



Results (cont'd)

- BACT determinations
 - NO_x
 - 3.5 – 9.25 ppm
 - CO
 - 4.5 – 25 ppm
 - SO₂
 - 0.0006 – 0.006 lb/MMBtu
 - PM₁₀
 - 0.0055 – 0.021 lbs/MMBtu
 - VOC
 - 0.7 – 6.7 ppm



Results (cont'd)

- LAER determinations
 - NO_x
 - 2.0 – 3.0 ppm
 - CO
 - 2.0 ppm
 - PM₁₀
 - 0.0155 lb/MMBtu
 - VOC
 - 1.3 – 1.56 ppm



Results (cont'd)

- Compliance averaging times for BACT/LAER determinations
 - NO_x
 - 1 hour – 12 month rolling average (combined with 3 hour averaging time)
 - CO
 - 1 hour – 30 day rolling average
 - SO₂
 - 1 hour – 3 hour rolling average



Results (Cont'd)

- Compliance averaging times for BACT/LAER determinations
 - PM10
 - 1 hour – 24 hour rolling average
 - VOC
 - 1 hour – 30 day rolling average



Results (cont'd)

- Control technologies
 - NO_x
 - SCR
 - DLNB
 - CO
 - Good/Efficient combustion
 - Catalytic Oxidation



Results (cont'd)

- Control technologies
 - PM10
 - Good/Efficient combustion
 - VOC
 - Good/Efficient combustion
 - Catalytic Oxidation



Results (cont'd)

- BACT determinations average cost per ton for economic feasibility
 - NO_x (4 States)
 - \$2,606 - \$12,485
 - CO/VOC (1 State)
 - \$3,373



Results (cont'd)

BACT/LAER Determinations in RBLC

State	Pollutant	BACT/LAER Determinations in This Survey	BACT/LAER Determinations from Survey that are in U.S. EPA's RACT/BACT/LAER Clearinghouse Database	Percentage of BACT/LAER Determinations from Survey that are in U.S. EPA's RACT/BACT/LAER Clearinghouse Database
Alabama	NO _x	3	0	0
	CO	3	0	0
	PM ₁₀	3	0	0
	VOC	3	0	0
Arkansas	NO _x	3	2	66.6
	CO	2	2	100
	PM ₁₀	1	1	100
	VOC	2	2	100



Results (cont'd)

- Only 14% of the BACT/LAER determinations in this survey were included in the U.S. EPA RBLC database



Conclusions

- Significant differences by state
 - BACT/LAER determinations
 - Compliance averaging time
 - Average cost per ton of pollutant removed for economic feasibility
- Similarities by state
 - Control technologies
- Results indicate not all current BACT/LAER determination are available in RBLC