

Best Available Control Technology for Large Standby Diesel Engines

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Welcome!

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Agenda

- Air District Mission
- BAAQMD Engineering Division Activities
- Internal Combustion Engine Permit Statistics
- Best Available Control Technology (BACT) Regulation
- Establishing the “Best Available Control Technology for a Particular Application
- Facilities Using Tier 4 Engines for Emergency Backup Power
- EPA Tier 4 Emission Standards
- How to Comply with the Tier 4 Emission Standards
- Source Testing Requirements
- FAQs
- Questions & Answer Period

Air District Mission

- *“To protect and improve public health, air quality and the global climate”*
- **Bay Area Air Quality Management District**
 - Established in 1955
 - Nine Bay Area Counties
 - Seven Million Residents
 - 5 Million vehicles
 - 5,340 square miles



BAAQMD Engineering Division Activities

Issue Permits for over 10,000 facilities with over 24,000 sources

Receive 1,200 applications per year for new and modified sources – approximately 400 engine applications

Conduct 300 health risk assessments per year for new and existing facilities

Issue Authorities to Construct, Permits to Operate, Registrations & Exemptions

Maintain emissions inventory for permitted facilities: greenhouse gases (GHG), criteria pollutants and toxic air contaminants

Issue and maintain Federal Title V Permits for 85 Major facilities

BAAQMD Internal Combustion Engine Permit Statistics

400 engine applications received per year

9700 Permitted Internal Combustion Engines

442 Prime Engines – 169 Diesel, 177 Natural Gas/LPG, 54 Digester gas, 34 landfill gas

322 Natural Gas/LPG Emergency Backup Engines

7928 Diesel Emergency Backup Engines

2035 Diesel Emergency Backup Engines that are 1000 BHP and larger



Best Available Control Technology Regulation

- Regulation 2 Rule 2 “New Source Review”
- BACT Requirement – Regulation 2-2-301
- BACT Trigger: Potential to emit 10 pounds or more per day per pollutant
- Potential to emit (PTE) is based upon 24 hour per day emergency operation
- PTE – defined as the “The maximum capacity of a source or facility to emit a pollutant based on its physical and operational design.”
 - Does not distinguish between planned and emergency operation

Establishing the “Best Available Control Technology” For a Particular Application

- **BACT – Most Stringent Level of Emissions Control**
 - Achieved in Practice
 - If a particular facility achieves a certain level of emissions control, then that level of control is required for all sources of the same type
 - Technologically Feasible/Cost-effective
 - The cost of any air pollution control equipment must meet cost-effectiveness criteria before it can be required
- **BACT Guidelines**
 - Compiles information about what has been achieved in practice at other facilities
 - Useful starting point for a BACT analysis
 - Does not supersede the BACT regulations
 - If a more stringent level of emissions control has been achieved in practice and/or is technologically feasible & cost effective, BACT requires it

Facilities Using Tier 4 Engines for Emergency Backup Power

Sutro Tower

- 1,881 bhp EPA-Certified Tier 4 Engine
- Permit to operate issued 10/4/2013





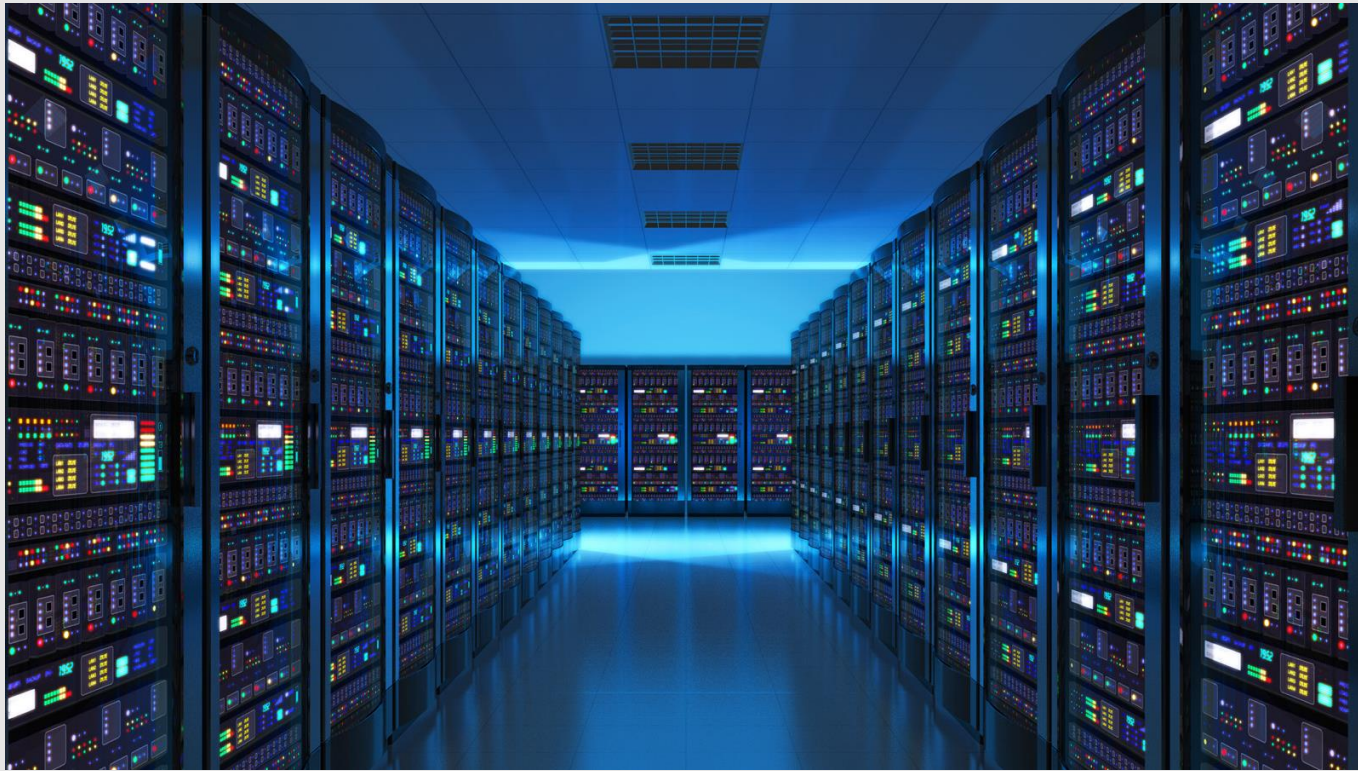
GSW Arena LLC

- Two 2,220 bhp and two 1,490 bhp EPA-Certified Tier 4 engines
- Equipped with SCR and catalyzed DPF
- Permit to operate issued May 8, 2019



San Jose-Santa Clara Regional Wastewater Facility

- Four 4,376 bhp engines equipped with SCR, oxidation catalyst, and DPF
- EPA-Certified Tier 4
- Permit to operate issued 10/11/2016



Microsoft MWH Data Center Quincy, Washington

- 0.5 MWe EPA-Certified Tier 4 engine equipped with SCR and Catalyzed DPF
- Multiple 0.75 MWe to 3 MWe Tier 4-Compliant engines equipped with SCR and catalyzed DPF
- Multiple engines source tested in 2016 verified compliance with Tier 4 standards

EPA Tier 4 Emission Standards

- Nitrogen Oxides – 0.5 g/bhp-hr
- Non-Methane Hydrocarbon – 0.14 g/bhp-hr
- Particulate Matter – 0.02 g/bhp-hr
- Carbon Monoxide – 2.6 g/bhp-hr

Examples of How to Comply with the Tier 4 Emission Standards

1

Purchase an EPA-certified Tier 4 engine

2

Purchase a Tier 4-compliant engine – packaged by the engine manufacturer with abatement equipment

3

Retrofit a Tier 2 engine with aftermarket abatement equipment from a third-party vendor

Source Testing Requirements

- EPA-Certified Tier 4 Engines
 - No initial or follow-up source testing
- Tier 4-Compliant engines packaged by engine manufacturer with SCR and catalyzed DPF or oxidation catalyst and DPF
 - If a District-approved source test has been conducted, and an applicant installs the identical engine/abatement package then no initial test is required. However, follow up testing will be required every 3 years thereafter
- Existing EPA-Certified Tier 2 engine retrofitted with SCR, Catalyzed DPF or DPF
 - Initial and follow up testing every 3 years is required
- Multiple identical engines
 - a single representative engine may be tested for the initial test. Subsequent 3-year follow up testing shall be performed on a different engine in the group of identical engines

FAQs

Are Tier 4 emission standards “achieved in practice” for my application?

- If you are applying for a permit for a large (≥ 1000 bhp) standby diesel engine of the type used at the facilities discussed in this presentation, Tier 4 standards have been achieved in practice for your equipment and you will have to meet Tier 4 standards as well (for any pollutant emitted over 10 pounds per day).

What are my next steps if the BACT regulation requires me to meet the Tier 4 standards?

- Contact your engine vendor and determine which Tier 4 engine option is best for your situation. EPA-certified Tier 4, Tier 4 Compliant, or Tier 2 retrofit

What if I have an authority to construct (AC) for a tier 2 engine but have not installed the engine and do not have a permit to operate?

- Permit conditions in an AC are not reopened when the permit to operate is issued. However, if the AC is expiring, it may have to undergo a new BACT review before it can be renewed. If you have made substantial use of the AC (e.g., by purchasing or acquiring the tier 2 engine), then the AC can be renewed without a new BACT review.

If I withdraw my application for a Tier 2 engine, are my fees refunded?

- The Air District will apply your application initial fee to a future application if the proposed engine is intended for the same purpose.



Question and Answer Period

