Adopt Proposed Amendments to District Rule 4352 (Solid Fuel Fired Boilers, Steam Generators, and Process Heaters)

San Joaquin Valley Air Pollution Control District
Governing Board Meeting

December 16, 2021

Overview of Rule 4352

- Adopted September 1994, amended three times
  - Approved as meeting Most Stringent Measures by EPA in July 2020
- NOx controlled approximately 75% through current rule
- Solid fuel fired boilers, steam generators, and process heaters subject to Rule 4352 primarily used for power generation
- 6 facilities (1 municipal solid waste, 5 biomass)
  - 1.1% of total Valley NOx emissions, 8.5% of total stationary source NOx emissions
  - 0.3% of total Valley PM2.5 emissions, 2.4% of total stationary source PM.5 emissions

Image credit: Covanta Holding Corporation

Further Emission Reductions Needed

- Valley's challenges in meeting federal air quality standards unmatched due to unique geography, meteorology, and topography
- Substantial reductions needed to achieve federal health-based PM2.5 standards – need to go beyond current limits
- Proposed amendments address:
  - Commitment in *2018 PM2.5 Plan* to further reduce emissions from solid fuel fired boilers, steam generators, and process heaters
  - Commitments included in Board/CARB-approved AB 617 South Central Fresno and Stockton Community Emission Reduction Programs
- District staff have conducted comprehensive review of requirements in other air districts, lowest emission limits being achieved in installations statewide, and costs and feasibility of most effective emission control technologies available

Health Benefits of Emissions Reductions

- Exposure to PM2.5 and ozone linked to a variety of health issues, including asthma, chronic bronchitis, irregular heartbeat, respiratory/cardiovascular hospitalizations, and other issues
- District implements control measures to lower direct PM2.5 and precursor emissions throughout the Valley
  - NOx emissions key precursor to ammonium nitrate, which is large portion of total PM2.5 during peak winter season (also key precursor for ozone)
  - SOx emissions precursor to ammonium sulfate, key component of PM2.5 concentrations in the Valley
  - Direct PM2.5 emissions reductions also important to meet health-based standards
- Proposed rule amendment will support goal of attaining health-based federal standards for PM2.5 and ozone, and help to protect public health

Current Controls In Use on Valley Solid Fuel Fired Boilers

NOx Control Technologies

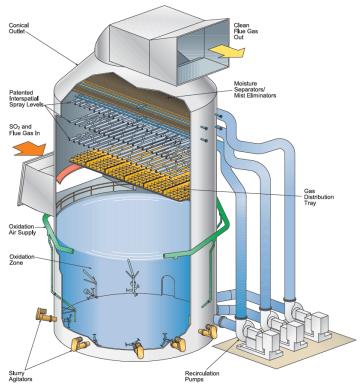
- Selective Non-Catalytic Reduction (SNCR) Systems
- Selective Catalytic Reduction (SCR) Systems

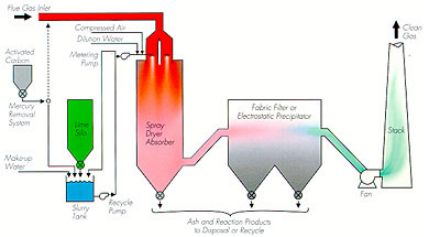
SOx Control Technologies

- Dry Sorbent Injection Systems
- Wet Scrubber Systems

Particulate Matter Control Technologies

- Electrostatic Precipitators (ESP)
- Baghouses
- Multiclones





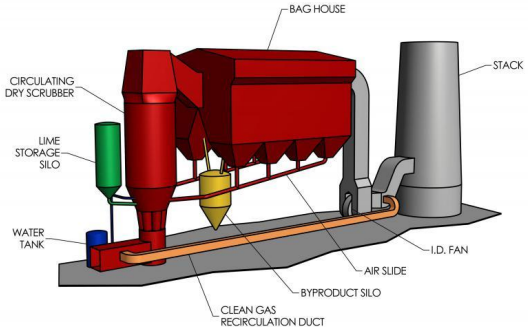


Image credit: Babcock & Wilcox, 2016

Proposed Amendments to Rule 4352: Requirements for Municipal Solid Waste Facilities

- Proposing to lower existing NOx emission limits
  - Current rule limit of 165 ppmv NOx at 12% CO_2
  - Proposed lower NOx limit: 90 ppmv @ 12% CO_2 on a 12-month rolling average and 110 ppmv @ 12% CO_2 on a block 24-hour average
- Proposing to establish PM10 emission limits
  - No current rule limit
  - Proposed limit: 0.04 lbs/MMBtu or 0.02 gr/dscf @ 12% CO_2
- Proposing to establish SOx emission limits
  - No current rule limit
  - Proposed limit: 0.03 lbs/MMBtu or 12 ppmv @ 12% CO_2 on a 12-month rolling average and 0.064 lbs/MMBtu or 25 ppmv @ 12% CO_2 on a block 24-hour avg
- Full compliance required by January 1, 2024

Proposed Amendments to Rule 4352: Requirements for Biomass Facilities

- Proposing to lower existing NOx limits
  - Current rule limit of 90 ppmv NOx @ 3% O_2 (block 24-hour avg.)
  - Proposed lower NOx limit: 65 ppmv @ 3% O_2 (block 24-hour avg.)
- Proposing to establish PM10 emission limits
  - No current rule limit
  - Proposed limit: 0.03 lbs/MMBtu
- Proposing to establish SOx emission limits
  - No current rule limit
  - Proposed limit: 0.02 lbs/MMBtu on a rolling 30-day average, and 0.035 lbs/MMBtu on a block 24-hour average
- Full compliance required by January 1, 2024

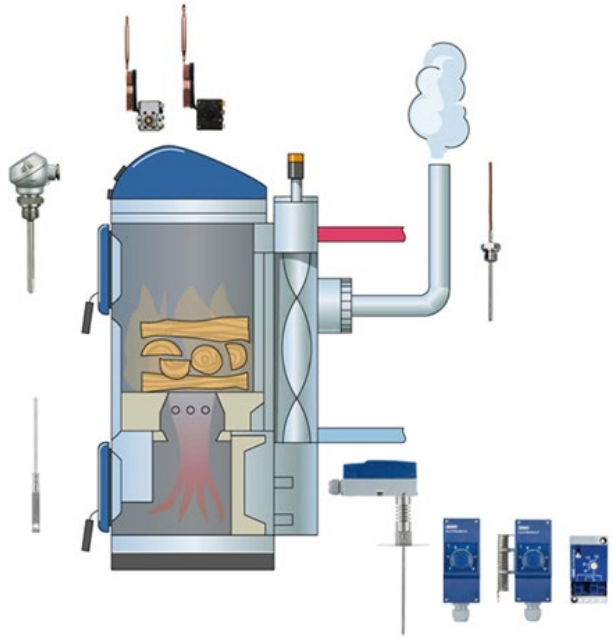


Image: Biomass boiler (Jumo, 2021)

Proposed Amendments to Rule 4352: Exemptions

- Currently facilities with potential to emit less than 10 tons of NOx or VOC are exempt from emission limit requirements of Rule 4352
- Proposing to remove this exemption
  - No solid fuel fired units would be exempt from the requirements of Rule 4352
  - Two facilities in Valley will be newly subject to requirements of this rule through removal of exemption

Cost-Effectiveness Analysis

- Sources for cost
  - Actual costs provided by facilities, engineering estimates, and control technology vendors & manufacturers
  - Various sources for the cost of electricity, fuel, and replacement parts
  - Cost factors from EPA's Office of Air Quality Planning and Standards
- Staff held virtual meetings with facilities, vendors, manufacturers, and other stakeholders to gather cost figures
- Cost-effectiveness for control technologies expected to be installed
  - $26,269/ton NOx reduced
  - $7,100 - $29,702/ton SOx reduced
- Full details of cost-effectiveness analysis provided in staff report documentation

Estimated Emission Reductions

Fuel Type	NOx Emission Reductions (tons/day)
Municipal Solid Waste	0.39
Biomass	0.32
TOTAL	**0.71**

Fuel Type	PM10 Emission Reductions (tons/day)
Municipal Solid Waste	0.02
Biomass	0.29
TOTAL	**0.31**

Fuel Type	SOx Emission Reductions (tons/day)
Municipal Solid Waste	0.06
Biomass	0.21
TOTAL	**0.27**

Socioeconomic Impact Analysis

- Socioeconomic Impact Analysis conducted by third-party consultant, Eastern Research Group (Staff Report, Appendix D)
  - Units affected in multiple industries (municipal solid waste, biomass)
  - COVID-19 adjusted baselines and multiple recovery scenarios used in modeling
  - Impacts assessed using Board and CARB-approved methodology
  - No significant impact to biomass industry
  - Potentially significant impact to municipal solid waste facility

ERG

POTENTIAL AMENDMENTS TO RULE 4352—SOLID FUEL-FIRED BOILERS, STEAM GENERATORS AND PROCESS HEATERS

SOCIOECONOMIC IMPACT ANALYSIS

Final

December 9, 2021

Submitted to:

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Submitted by:

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District Agreement No. 21-4-22

Public Process to Amend Rule 4352

- *2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards*
  - Adopted: November 15, 2018
- Public scoping meeting held December 3, 2020
- Public workshops held on September 30, 2021 and November 4, 2021
- Regular updates provided at Citizens Advisory Committee (CAC), Environmental Justice Advisory Group (EJAG), and District Governing Board meetings
- Community engagement through AB 617 Steering Committees
- Initial proposed rule posted for public review on November 4, 2021
  - Final proposed rule posted November 16, 2021
- Ongoing opportunities for public input throughout rule development process

Summary of Comments

Comments

- Rule should reduce PM2.5 emissions, not just PM10
- Remove the exemption for units that have potential to emit less than 10 tons/year NOx or VOC
- Concerns with stringency of SOx emissions limits
- Concerns with stringency of PM10 emissions limit for municipal solid waste fired units

Responses

- Proposed Rule reduces emissions of PM10 and PM2.5 (PM10 approximately 90% PM2.5)
- Proposed Rule removes exemptions
- Proposed emissions limits for NOx, PM10 and SOx are technologically feasible and achievable
- Proposed requirements are cost-effective

Recommendations

1. Adopt proposed amendments to Rule 4352 (Solid Fuel Fired Boilers, Steam Generators, and Process Heaters)

2. Authorize the Chair to sign the attached Resolution