



# SJVAPCD Rule Changes and Permit Forms

Rules 4306 and 4320



**R.F. MacDonald Co.**  
*your boiler & pump solutions team*

# Welcome

Thank you for joining us for our last in a series of informational workshops on the San Joaquin Valley Air Pollution Control District Rules 4306 and 4320.

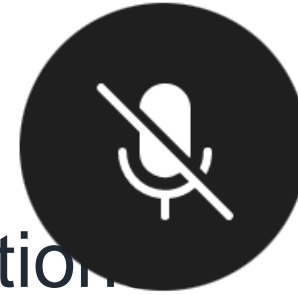
My name is Tyson MacDonald, Aftermarket Sales, in the Modesto office and I will be your host today.

Just a note, past workshops that included products and services R.F. MacDonald Co. provides to help assist you in determining your plan to meet the rule deadlines will be briefly reviewed at the end of the presentation.

Before we get started let's go over a few items to make sure this workshop is beneficial to all.

# Workshop Information

- Please make sure your microphone is muted.
- Please use the chat function to ask any questions.
- We will answer all questions after the rule presentation is completed.
- If we cannot answer your specific questions, an R.F. MacDonald Co. representative will reach out to you to follow up.
- Now let's get started.



**R.F. MacDonald Co.**  
your boiler & pump solutions team

# Speaker Introduction

- Nick Peirce
- BSME from CSU Sacramento
- 23+ years at APCD
- Permit Services Manager – Northern Region
- San Joaquin Valley Air Pollution Control District

# Rules for Boilers, Steam Generators, and Process Heaters >5 MMBtu/hr



**Nick Peirce**  
**Permit Services Manager**

## Applicable Rule Overview

# Rule 4306 : Boilers, Steam Generators, and Process Heaters > 5 MMBtu/hr (amended 12/17/2020)

**Rule 4320: Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters > 5 MMBtu/hr (amended 12/17/2020)**

- A boiler, steam generator, or process heater is subject to **BOTH** rules

## Applicability and Purpose:

### **Applicability:**

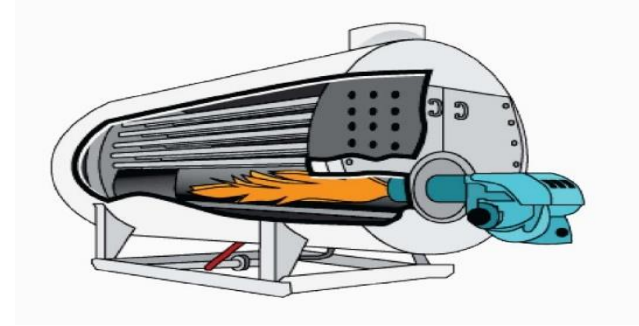
Applies to any gaseous or liquid fuel fired boiler, steam generator, or process heater with a rated (nameplate) heat input greater than 5 MMBtu per hour.

### **Purpose:**

To limit emissions of oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), oxides of sulfur (SO<sub>x</sub>) and particulate matter (PM<sub>10</sub>)



## Rule 4306 and 4320 Exemptions

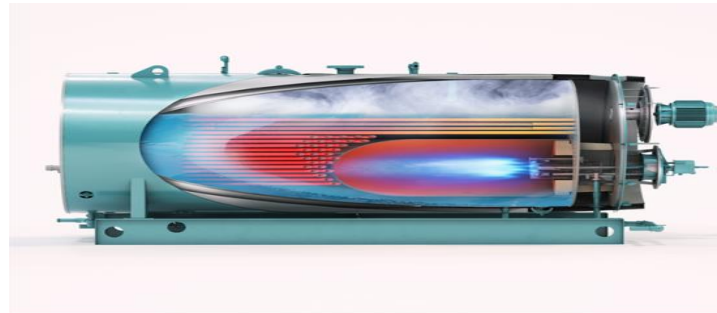


- Solid fuel fired units
- Dryers and glass melting furnaces
- Direct heat transfer units
- Unfired or fired waste heat recovery boilers on turbines or engines.



## District Rule 4306

### **Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr**



## Rule 4306 Requirements: NOx and CO Emission Limits

Two options for compliance:

1. Operate the unit in compliance with the applicable Tier 2 emission limits of the rule; or
2. Limit annual heat input to  $< 9$  billion Btu/yr

## NOx and CO Limits – Option 1 (§5.1)

- Tier 2 NOx limits are listed in Table 2 and vary between 5 and 30 ppmv depending upon applicable category

Category A ( $\leq 20.0$ MMBtu/hr)	Operated on Gaseous Fuel	
	NOx Limit	CO Limit (ppmv)
Fire Tube Boilers	7 ppmv or 0.0085 lb/MMBtu	400
Units at Schools	9 ppmv or 0.011 lb/MMBtu	
Units fired on Digester Gas		
Thermal Fluid Heaters		
All other units		
Category B ( $> 20.0$ MMBtu/hr)	NOx Limit	CO Limit (ppmv)
All units with a heat input $> 20.0$ MMBtu/hour and $\leq 75$ MMBtu/hour	7 ppmv or 0.0085 lb/MMBtu	400
Units with a heat input $> 75$ MMBtu/hour	5 ppmv or 0.0061 lb/MMBtu	
Category E (“Low Use” Units)	NOx Limit	CO Limit (ppmv)
Units limited by a Permit to Operate to an annual heat input of 9 billion Btu/year to 30 billion Btu/year	30 ppmv or 0.036 lb/MMBtu	400

## Tier 2 Emission Limits: Compliance Schedule

- Compliance date depends on size and type of unit and current NOx emission limit

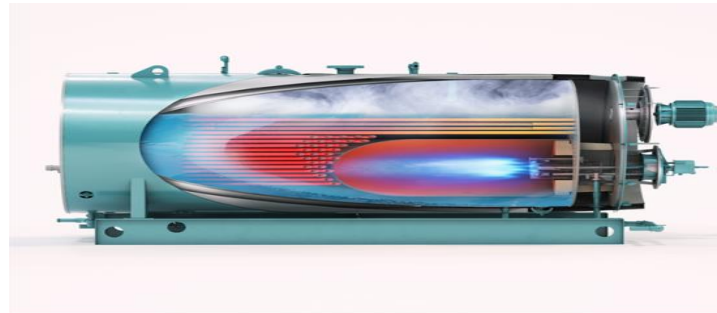
Category A ( $\leq 20.0$ MMBtu/hr)	Emission Control Plan	Authority to Construct	Compliance Deadline
Fire Tube Units permitted $> 9$ ppmv	May 1, 2022	May 1, 2022	December 31, 2023
Units at Schools			
Units fired on Digester Gas			
Thermal Fluid Heaters			
All other units permitted $> 12$ ppmv	May 1, 2028	May 1, 2028	December 31, 2029
Fire Tube Units permitted $\leq 9$ ppmv			
All other units permitted $\leq 12$ ppmv			

## Tier 2 Emission Limits: Compliance Schedule

Category B (> 20.0 MMBtu/hr)	Emission Control Plan	Authority to Construct	Compliance Deadline
Units with a heat input > 20.0 MMBtu/hour and $\leq$ 75 MMBtu/hour permitted greater than 9 ppmv	May 1, 2022	May 1, 2022	December 31, 2023
Units with a heat input > 75 MMBtu/hour permitted greater than 7 ppmv			
Units with a heat input > 20.0 MMBtu/hour and $\leq$ 75 MMBtu/hour permitted less than or equal to 9 ppmv	May 1, 2028	May 1, 2028	December 31, 2029
Units with a rated heat input > 75 MMBtu/hour permitted less than or equal to 7 ppmv			
Category E (“Low Use” Units)	Emission Control Plan	Authority to Construct	Compliance Deadline
Units limited by PTO an annual heat input of 9 billion Btu/year to 30 billion Btu/year	May 1, 2022	May 1, 2022	December 31, 2023

## District Rule 4320

# Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater Than 5.0 MMBtu/hr



## Rule 4320 Requirements: NO<sub>x</sub>, CO, PM<sub>10</sub>, and SO<sub>x</sub> Emission Limits

Three options for compliance:

1. Operate the unit in compliance with the applicable emission limits of the rule; or
2. Pay an annual emissions fee based on total actual emissions; or
3. Limit annual heat input to  $\leq 1.8$  billion Btu/yr



## NOx and CO Limits – Option 1 (§5.2)

- Tier 2 NOx limits are listed in Table 2 and vary between 2.5 and 9 ppmv depending upon applicable category

Category A (≤ 20.0 MMBtu/hr)	NOx Limit	Emission Control Plan	Authority to Construct	Compliance Deadline
Fire Tube Boilers and others not listed below	5 ppmv or 0.0061 lb/MMBtu	May 1, 2022	May 1, 2022	December 31, 2023
Units at Schools, Units fired on DG, Thermal Fluid Heaters	9 ppmv or 0.011 lb/MMBtu	May 1, 2022	May 1, 2022	December 31, 2023
Category B (> 20.0 MMBtu/hr)	NOx Limit	Emission Control Plan	Authority to Construct	Compliance Deadline
All units	2.5 ppmv or 0.003 lb/MMBtu	May 1, 2022	May 1, 2022	December 31, 2023
Category E ("Low Use" Units)	NOx Limit	Emission Control Plan	Authority to Construct	Compliance Deadline
Annual heat input limited to >1.8 billion Btu/year but ≤ 30 billion Btu/year	9 ppmv or 0.011 lb/MMBtu	May 1, 2022	May 1, 2022	December 31, 2023

- CO emissions shall not exceed 400 ppmv

## PM10 and SOx Control Requirements (§5.4)

- Restrict operation on liquid fuels to periods of natural gas curtailment
- Reduce SOx emissions (PM10 precursor) by either
  1. Use PUC natural gas, commercial propane/butane or combination of such gaseous fuels; or,
  2. Limit fuel sulfur content to no more than 5 grains total sulfur per 100 scf; or,
  3. Use a SOx control system that either reduces the emissions by 95% or limits the exhaust SOx to less than 9 ppmvd @ 3% O<sub>2</sub>

## Annual Fee Option for NOx (§5.3) (Option 2)

- Operator may elect to pay annual fee rather than comply with the NOx and CO limits of Rule 4320
  - Notification of this compliance option should be part of the Emission Control Plan
- PM10 and SOx requirements are still applicable
- ATC not required for this compliance option (however, an ATC will be required to implement the PM10 requirements if the permit is currently not in compliance)
- First annual fee due 7/1/2025 (for 2024 emissions), unless already paying Rule 4320 fees
- Fee is based on unit's annual NOx emissions, calculated by applying the unit's permitted emission factor to the actual annual fuel consumption
- Fee rate is specified in District Rule 4320. Currently: \$9,350/ton + 4%.

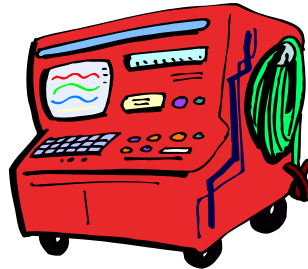
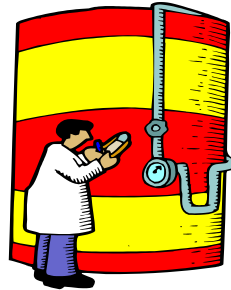
## Low-Use Unit Option (R4306 and R4320)

When annual heat input is limited to less than 9 billion Btu per year (R4306) or less than or equal to 1.8 billion Btu per calendar year (R4320), the following actions are required:

- The unit is tuned at least twice per calendar year in accordance with Rule 4304, or unit's exhaust oxygen concentration is maintained at less than or equal to 3% by volume on a dry basis; and
- The unit's operational characteristics , as recommended by the manufacturer, are monitored at least monthly and non-resettable fuel flow meter is installed.

## Monitoring Requirements

- Units subject to the emission limits of the rule must either install a Continuous Emission Monitoring System (CEMS) for NO<sub>x</sub>, CO, and oxygen, or install an approved Alternate Monitoring System as outlined in the rule
  - An APCO-approved CEMS must comply with the federal standards listed in the rule



## Alternate Emissions Monitoring (AEM)

- An APCO-approved Alternate Monitoring System will monitor one or more of the following:
  - A. Periodic NOx and CO exhaust concentrations
  - B. Periodic exhaust oxygen concentration
  - C. Flow rate of reducing agent added to exhaust
  - D. Catalyst inlet and exhaust temperature
  - E. Catalyst inlet and exhaust oxygen concentration
  - F. Periodic flue gas recirculation rate, or
  - G. Other operational characteristics An APCO-approved
- Refer to District policy SSP-1105 for pre-approved AEM schemes  
([http://www.valleyair.org/policies\\_per/Policies/SSP%201105.pdf](http://www.valleyair.org/policies_per/Policies/SSP%201105.pdf))

## Compliance Testing

- Units subject to emission limits, shall perform annual source testing\* for NO<sub>x</sub> and CO at least once every 12 months.
  - Gaseous fuel fired units demonstrating compliance on two consecutive 12-month source tests may defer the following source test for up to 36 months.
  - If the 36-month source testing demonstrates the unit does not meet the emissions limits, the frequency reverts back to at least once every 12 months.

\* Annual source test also required for SO<sub>x</sub> if a SO<sub>x</sub> control system is installed



## Emission Control Plan (ECP) Requirements

- The operator of any subject unit shall submit an ECP containing the following information:
  - Permit to Operate number
  - Fuel type and HHV
  - Annual fuel consumption (Btu/yr)
  - Current emission level, including method used to determine emission level
  - Applicable Tier 2 Category for each unit
  - Plan of actions which will be taken to satisfy the emission requirements of the rule

## Permit Application Forms

- Permit Application Forms are available on the District's website:
  - Permit Application Form: <http://www.valleyair.org/busind/pto/ptoforms/ATCappformJul2019.pdf>
  - Supplemental Application Form: <http://www.valleyair.org/busind/pto/ptoforms/BoilerSupplemental.pdf>
- Submit these forms along with ECP by the dates mentioned earlier



# San Joaquin Valley Air Pollution Control District

[www.valleyair.org](http://www.valleyair.org)



## Checklist for Permit Applications:

To avoid unnecessary delays, please review the following checklist before submitting your Authority to Construct/Permit to Operate Application.

Checklist for Complete Applications (include the following)	
<input type="checkbox"/>	1. A signed Authority to Construct/Permit to Operate Application.
<input type="checkbox"/>	2. Include a site map that identifies the location(s) where the new/modified unit(s) will operate and the approximate property lines. This is required for any proposal for new equipment, an increase in emissions from existing units, or change in location of emission points.
<input type="checkbox"/>	3. Any applicable supplemental application forms. Supplemental application forms can be found here: <a href="http://www.valleyair.org/busind/pto/ptoforms/1ptoforidx.htm">http://www.valleyair.org/busind/pto/ptoforms/1ptoforidx.htm</a>
<input type="checkbox"/>	4. Equipment listing (including a list of electric motors with hp rating).
<input type="checkbox"/>	5. Include a short project description, including a process flow schematic identifying emission points.
<input type="checkbox"/>	6. Process parameters (describe throughput, operating schedule, fuel rate, raw material usage, etc.).
<input type="checkbox"/>	7. Identify control equipment/technology.
<input type="checkbox"/>	8. Any additional information required to calculate emissions.
<input type="checkbox"/>	9. \$87 filing fee for each permit unit. <i>Note: Permit application processing time will be billed at the applicable District hourly labor rate</i>

Detailed Authority to Construct (ATC) and Permit to Operate (PTO) Application Instructions can be found here:

PDF Format: <http://www.valleyair.org/busind/pto/ptoforms/atcappinstruct.pdf>

Word Format: <http://www.valleyair.org/busind/pto/ptoforms/WordDocs/atcappinstruct.doc>

Applications may be submitted either by mail or in person at any of the regional offices listed below. The District is pleased to provide businesses with assistance in all aspects of the permitting process. Any business is welcome to call the **Small Business Assistance (SBA) Hotline** or to visit the SBA Office located in each of the regional offices. No appointment is necessary. For more information, please call the SBA Hotline serving the county in which your business is located.

## Permit Application Form Checklist



**San Joaquin Valley**  
AIR POLLUTION CONTROL DISTRICT



# San Joaquin Valley Air Pollution Control District Supplemental Application Form



## Boilers, Steam Generators, Dryers, and Process Heaters

Please complete one form for each different piece of equipment. For streamlining, make note if one form covers identical equipment.

*This form must be accompanied by a completed [Authority to Construct/Permit to Operate Application form](#)*

PERMIT TO BE ISSUED TO:
LOCATION WHERE THE EQUIPMENT WILL BE OPERATED:

### EQUIPMENT DESCRIPTION

<b>Equipment Details</b>	<input type="checkbox"/> Boiler <input type="checkbox"/> Steam Generator <input type="checkbox"/> Dryer <input type="checkbox"/> Process Heater <input type="checkbox"/> Other: _____
	Number of Identical Units This Application Covers (if applicable): _____
	Check all that apply: <input type="checkbox"/> Oilfield Steam Generator <input type="checkbox"/> Refinery Unit <input type="checkbox"/> Wastewater Treatment Facility <input type="checkbox"/> Fired on < 50%, by volume, PUC quality gas
	Manufacturer: _____
	Model: _____ Serial Number: _____
	<input type="checkbox"/> Indirect-Fired <input type="checkbox"/> Direct-Fired
<b>Rule 4320 Type of Use and Emissions Monitoring Provisions</b>	Flue Gas Recirculation: <input type="checkbox"/> Forced FGR <input type="checkbox"/> Induced FGR <input type="checkbox"/> None
	Is an O <sub>2</sub> Controller present? <input type="checkbox"/> No <input type="checkbox"/> Yes, Manufacturer: _____
	<input type="checkbox"/> Full Time
	<input type="checkbox"/> Low Use - for units installed prior to January 1, 2009 and limited to less than 1.8 billion Btu/year, must have fuel use meter <input type="checkbox"/> Tune the unit at least twice per calendar year in accordance with District Rule 4304 <input type="checkbox"/> Operate the unit in a manner that maintains exhaust O <sub>2</sub> concentration ≤ 3.00% by volume on a dry basis
	<input type="checkbox"/> Pay Annual Fee - in lieu of complying with NO <sub>x</sub> and CO emission limits of the Rule, pay annual fee per §5.1.2
	Note: Low Use units must identify operational characteristics recommended by the manufacturer, which can be monitored on a monthly basis (please provide details in additional documentation).
	Note: Full Time units must have either a Continuous Emission Monitoring System (CEMS) or one of the following alternate emissions monitoring plans
	<input type="checkbox"/> CEMS, please specify all pollutants monitored: <input type="checkbox"/> NO <sub>x</sub> <input type="checkbox"/> CO <input type="checkbox"/> O <sub>2</sub> <input type="checkbox"/> Other: _____
	<input type="checkbox"/> Monitoring of NO <sub>x</sub> , CO, and O <sub>2</sub> concentrations
	<input type="checkbox"/> Periodic determination of flue gas recirculation rate by temperature measurement
<input type="checkbox"/> Periodic determination of flue gas recirculation rate by O <sub>2</sub> measurement	
<input type="checkbox"/> Monitoring of burner mechanical adjustments and O <sub>2</sub> concentration	
<input type="checkbox"/> Monitoring of the flue gas recirculation valve(s) setting	
<input type="checkbox"/> Other Alternate Monitoring Plan (approved on a case by case basis), attach details	
Note: See District policy (SSP-1105) for additional details of pre-approved alternate emissions monitoring plans, at: <a href="http://www.valleyair.org/policies_per/Policies/SSP_1105.pdf">http://www.valleyair.org/policies_per/Policies/SSP_1105.pdf</a>	
<b>Fuel Use Meter</b>	<input type="checkbox"/> Gaseous Fuel Meter <input type="checkbox"/> Liquid Fuel Meter <input type="checkbox"/> None
<b>Primary Burner</b>	Manufacturer: _____ Type: <input type="checkbox"/> Standard <input type="checkbox"/> Low NO <sub>x</sub> <input type="checkbox"/> Ultra Low NO <sub>x</sub>
	Model: _____ Serial Number: _____
	Maximum Heat Input Rating: _____ MMBtu/hr Annual Heat Input: _____ billion Btu/year
<b>Secondary Burner</b> (if more than one burner is present)	Manufacturer: _____ Type: <input type="checkbox"/> Standard <input type="checkbox"/> Low NO <sub>x</sub> <input type="checkbox"/> Ultra Low NO <sub>x</sub>
	Model: _____ Serial Number: _____
	Maximum Heat Input Rating: _____ MMBtu/hr Annual Heat Input: _____ billion Btu/year

## Supplemental Application Form



# Supplemental Application Form

## EMISSIONS DATA

Note: See District BACT and District Rule 4320 requirements for applicability to proposed unit at <http://www.valleyair.org/busind/pto/bact/chapter1.pdf>, and <http://www.valleyair.org/rules/cumrurules/r4320.pdf>.

<b>Primary Fuel</b>	Fuel Type: <input type="checkbox"/> Natural Gas <input type="checkbox"/> LPG/Propane <input type="checkbox"/> Diesel <input type="checkbox"/> Other: _____			
	Higher Heating Value: _____ Btu/gal or _____ Btu/scf		Sulfur Content: _____ % by weight or _____ gr/scf	
<b>Primary Fuel Emissions Data</b>	Operational Mode	Steady State (ppmv)	Start-up (lb/hr)	Shutdown (lb/hr)
	Nitrogen Oxides			
	Carbon Monoxide			
	Volatile Organic Compounds			
	Duration (please provide justification)		hr/day	hr/yr
% O <sub>2</sub> , dry basis, if corrected to other than 3%: _____ %				
<b>Secondary Fuel</b>	Fuel Type: <input type="checkbox"/> Natural Gas <input type="checkbox"/> LPG/Propane <input type="checkbox"/> Diesel <input type="checkbox"/> Other: _____			
	Higher Heating Value: _____ Btu/gal or _____ Btu/scf		Sulfur Content: _____ % by weight or _____ gr/scf	
<b>Secondary Fuel Emissions Data</b>	How will the secondary fuel be used? <input type="checkbox"/> Secondary full-time fuel <input type="checkbox"/> Backup for primary fuel <input type="checkbox"/> Other: _____			
	Operational Mode	Steady State (ppmv)	Start-up (lb/hr)	Shutdown (lb/hr)
	Nitrogen Oxides			
	Carbon Monoxide			
	Volatile Organic Compounds			
Duration (please provide justification)				
% O <sub>2</sub> , dry basis, if corrected to other than 3%: _____ %				
<b>Source of Data</b>	<input type="checkbox"/> Manufacturer's Specifications <input type="checkbox"/> Emission Source Test <input type="checkbox"/> Other: _____ (please provide copies)			
<b>Additional Emissions Control Equipment</b>	<input type="checkbox"/> Selective Catalytic Reduction - Manufacturer: _____ Model: _____ <input type="checkbox"/> Ammonia (NH <sub>3</sub> ) <input type="checkbox"/> Urea <input type="checkbox"/> Other: _____			
	<input type="checkbox"/> Non-Selective Catalytic Reduction - Manufacturer: _____ Model: _____ Control Efficiencies: NO <sub>x</sub> _____ %, SO <sub>x</sub> _____ %, PM <sub>10</sub> _____ %, CO _____ %, VOC _____ %			
	<input type="checkbox"/> Other (please specify): _____			

## HEALTH RISK ASSESSMENT DATA

Note: See Manufacturer's Specifications for Stack Parameters and Exhaust Data. All information is required.

<b>Operating Hours</b>	Maximum Operating Schedule: _____ hours per day, and _____ hours per year	
<b>Receptor Data</b>	Distance to nearest Residence	_____ feet
	Direction to nearest Residence	_____
	Distance to nearest Business	_____ feet
	Direction to nearest Business	_____
<b>Stack Parameters</b>	Release Height	_____ feet above grade
	Stack Diameter	_____ inches at point of release
	Rain Cap	<input type="checkbox"/> Flapper-type <input type="checkbox"/> Fixed-type <input type="checkbox"/> None <input type="checkbox"/> Other: _____
	Direction of Flow	<input type="checkbox"/> Vertically Upward <input type="checkbox"/> Horizontal <input type="checkbox"/> Other: _____ ° from vert. or _____ ° from horiz.
<b>Exhaust Data</b>	Flowrate: _____ acfm	Temperature: _____ °F
<b>Facility Location</b>	<input type="checkbox"/> Urban (area of dense population) <input type="checkbox"/> Rural (area of sparse population)	
	Include a facility plot plan showing the location of the stack. Please indicate North on the plot plan. For public notice projects, indicate on plot plan the facility boundaries or fence line and distance(s) from stack to boundaries.	

## Small Boilers, Steam Generators, Process Heaters $\leq 5$ MMBtu/hr

- Rule 4308 Boilers, Steam Generators, and Process Heaters – 0.075 MMBtu/hr to  $< 2.0$  MMBtu/hr
- Rule 4307 Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr
  - No changes to Rules covering small boilers



# Questions?



# Past Online Workshops

## ONLINE WORKSHOPS

1

RULES 4306 & 4320  
TIMETABLE

2

BURNER RETROFITS &  
CONTROLS SOLUTIONS

3

SELECTIVE CATALYTIC  
REDUCTION SOLUTIONS

4

BOILER EQUIPMENT  
REPLACEMENT SOLUTIONS

5

EMISSIONS PLAN  
OVERVIEW & CHECKLIST

[rfmacdonald.com/clear-the-air](http://rfmacdonald.com/clear-the-air)



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# Past Workshop Solutions – Burner Technology

## BURNER RETROFIT & CONTROLS UPGRADE



- Ultra Low Emissions Burners on new units down to 5PPM NOx on sizes up to 50 MMBtu/hr input
- Burner retrofits to existing units down to 5PPM NOx on sizes up to 30 MMBtu/Hr input
- Enhanced PLC controls to maintain NOx repeatability across the firing range while also increasing operational efficiencies



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# Past Workshop Solutions – SCR Technology

## SELECTIVE CATALYTIC REDUCTION



- For Sources with limits below 5 PPM NO<sub>x</sub> requirements
  - Anhydrous Ammonia – Highest Risk
  - Aqueous Ammonia - Moderate Risk
  - Urea – Low Risk

Ammonia-Based Reagents	 ANHYDROUS	 AQUEOUS	 UREA
Hazard Rating (Level of Toxicity): 3 = Extreme 2 = Moderate 1 = Low	3	2	1
Level of Usage Risk:	Highest Risk	Moderate Risk	Lowest Risk
Ease of Use / Operational Readiness:	Ready to Operate	Vaporized before Use	Needs Vaporization & Conversion
Safety Requirements:	Training, Emergency Planning, Fire Dept. Audit	Training, Emergency Planning, Fire Dept. Audit	Training
Most Common Applications:	Power Plants, Industrial Facilities	Food Processing, Agriculture, Utilities	Hospitals, Schools, Universities, Prisons
R.F. MacDonald Co. Offers:	Full Installation Support & Service		



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# Past Workshop Solutions - Equipment Replacement

## REPLACE YOUR EQUIPMENT



### Some Benefits of New Equipment

- Replace older equipment that is at its upper life cycle.
- Replace larger units with multiple smaller boilers that meet requirements.
- Increased efficiency with newer units.



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# Equipment Maintenance Program (EMP)

We offer a customizable Boiler Equipment Maintenance Plan to maintain optimum performance, improve system stability, extend equipment life and minimize risk of a boiler system failure.

- Comply with Rule 4320 Section 5.7 for monitoring provisions
- Scheduled/Preventive/Predictive Maintenance options

## Membership Term Options

**5 YEARS** **Five Year Membership Plan**

- Fixed labor rate for three (3) years
- 15% discount on parts for any equipment
- Two (2) free training classes at a local seminar
- Priority scheduling benefits

**3 YEARS** **Three Year Membership Plan**

- Fixed labor rate for two (2) years
- 10% discount on parts for equip. in program
- One (1) free training class at a local seminar
- Priority scheduling benefits

**2 YEARS** **Two Year Membership Plan**

- Fixed labor rate for two (2) years
- 5% discount on parts for equip. in program
- Priority scheduling benefits

**1 YEAR** **One Year Membership Plan**

- 5% discount on parts for equip. in program
- Priority scheduling benefits

CHOOSE YOUR  
PLAN

Monthly **M**

Annual **A**

Quarterly/Semi-Annual **Q**

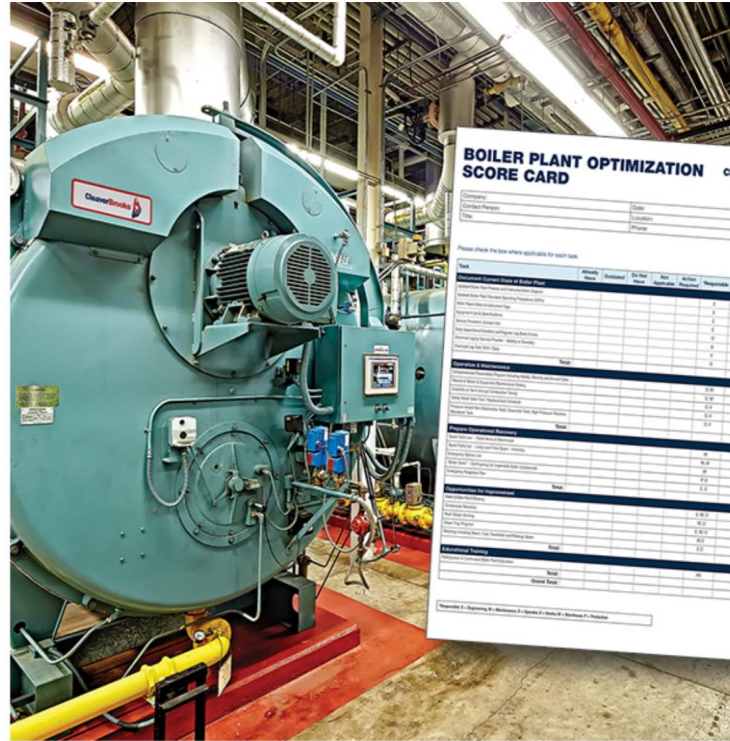


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# Cleaver Brooks Boiler Plant Optimization (BPO)

With our Boiler Plant Optimization (BPO) programs, we can assist with a variety of methodologies to create a successful roadmap to improve and address any site-specific issues. We partner with you to inspect and evaluate the four cornerstones of successful plant operation: Safety, Efficiency, Reliability & Sustainability





# Contact Information

Thank you for joining us today. A follow up email will be sent to you with your R.F. MacDonald Co. sales rep's contact information and a link to our workshops.

R.F. MacDonald Co.  
1549 Cummins Drive  
Modesto, CA 95358  
P: 209-576-0726  
E: [info@rfmacdonald.com](mailto:info@rfmacdonald.com)



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4912 West Jacquelyn Avenue  
Fresno, CA 93722  
P: 559-498-6949  
E: [info@rfmacdonald.com](mailto:info@rfmacdonald.com)



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