



# Proposed Rule (PR) 1147.2

## NOx Reductions from Metal Melting and Heating Furnaces

Working Group Meeting #5

June 18, 2020


Zoom URL: <https://scaqmd.zoom.us/j/4285162364>

Dial-In: (669) 900-6833

Meeting ID: 428 516 2364

*If the Zoom weblink above does not work you can copy the link into your web browser  
or join a Zoom meeting and enter the meeting ID.*

# Agenda

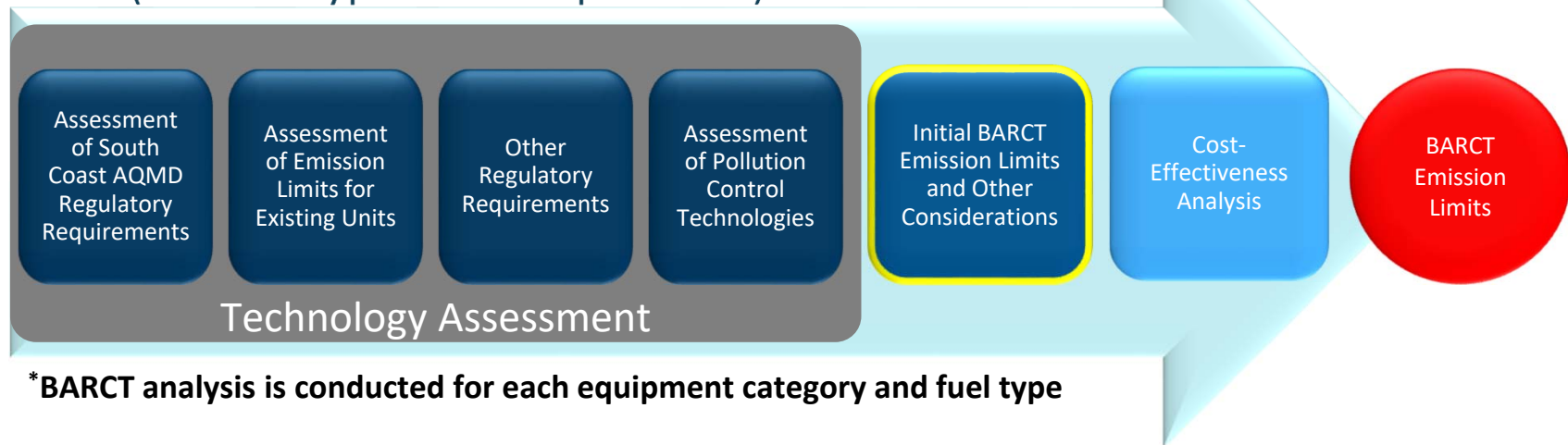
- 
- Summary of Working Group Meeting #4
  - Stakeholder Comments
  - Source Testing
  - Additional Data Requested by Stakeholders



# Summary of Working Group Meeting #4

# Summary of Working Group Meeting #4

- Provided Sub-30 ppm Source Test Results Handout
- Continued BARCT Analysis
  - Initial BARCT emission limits by Class and Category (furnace type and temperature)



\*BARCT analysis is conducted for each equipment category and fuel type

# Initial BARCT Emission Limit Summary for Metal Melting Furnaces – From Working Group Meeting #4

Temp.	Crucible & Pit	Kettle & Pot	Holding	Reverb-eratory	Rotary	Other
≤ 1,230 °F	30 ppm (via ULNB)	30 ppm (via ULNB)	30 ppm (via ULNB)	30 ppm (via ULNB)	No Units	30 ppm (via ULNB)
	15 ppm (via SCR)	15 ppm (via SCR)	15 ppm (via SCR)	15 ppm (via SCR)	No Units	15 ppm (via SCR)
> 1,230 °F	30 ppm (via ULNB)	No Units	No Units	30 ppm (via ULNB)	30 ppm (via UNLB)	No Units
	15 ppm (via SCR)	No Units	No Units	15 ppm (via SCR)	15 ppm (via SCR)	No Units

# Initial BARCT Emission Limit Summary for Metal Heating Furnaces – From Working Group Meeting #4

Temp.	Aging	Annealing	Billet & Pre-Heat	Forging & Drop Forge	Homogenizing	Re-Heat	Other
≤ 1,500 °F	20 ppm (via ULNB)	30 ppm (via ULNB)	20 ppm (via ULNB)	20 ppm (via ULNB)	20 ppm (via ULNB)	No Units	20 ppm (via ULNB)
	15 ppm (via SCR)	15 ppm (via SCR)	15 ppm (via SCR)	15 ppm (via SCR)	15 ppm (via SCR)	No Units	15 ppm (via SCR)
> 1,500 °F	No Units	30 ppm (via ULNB)	30 ppm (via ULNB)	20 ppm (via ULNB)	No Units	30 ppm (via ULNB)	30 ppm (via ULNB)
	No Units	15 ppm (via SCR)	15 ppm (via SCR)	15 ppm (via SCR)	No Units	15 ppm (via SCR)	15 ppm (via SCR)

# Selective Catalytic Reduction (SCR) – Preliminary Review

- Working Group Meeting #4 established initial NO<sub>x</sub> emission limits based on SCR
- To alleviate concerns for operators with smaller units, staff is providing an initial applicability of the lower NO<sub>x</sub> limit that is based on SCR, as SCR is generally not cost-effective for smaller units
- Staff reviewed the following recently adopted and proposed rules that conducted a cost-effectiveness analysis to identify an initial unit size where NO<sub>x</sub> limits based on SCR may be applicable
  - PR 1109.1: ≥ 40 MMBtu/hr<sup>1</sup>
  - Rule 1146: ≥ 20 MMBtu/hr<sup>2</sup>
  - PAR 1147: ≥ 40 MMBtu/hr<sup>3</sup>
- Staff is recommending that NO<sub>x</sub> limits based on SCR will apply to units ≥ 20 MMBtu/hr
  - No further cost-effectiveness analysis for units < 20 MMBtu/hr for NO<sub>x</sub> limits based on SCR
  - When the cost-effectiveness analysis for PR 1147.2 is performed, the applicability of the NO<sub>x</sub> limits based on SCR may be increased above the initial applicability of 20 MMBtu/hr

<sup>1</sup> <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules#1109.1>

<sup>2</sup> <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1146.pdf>

<sup>3</sup> <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules#1147>

# Revision of Initial BARCT Emission Limits

Initial BARCT emission limits based on SCR will only apply to units  $\geq 20$  MMBtu/hr

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## Metal Melting

- Units  $\geq 20$  MMBtu/hr only exist in reverberatory sub-category
- For remaining sub-categories, initial BARCT emission limits will only be based on ULNB (vendor literature)

## Metal Heating

- Units  $\geq 20$  MMBtu/hr do not exist in aging, low temperature forging & drop forging, and other
- For these sub-categories, initial BARCT emission limits will only be based on ULNB (source test data and vendor literature)



# Metal Melting – Revised Initial BARCT Emission Limits

Temp.	Crucible & Pit	Kettle & Pot	Holding	Reverb-eratory	Rotary	Other
≤ 1,230 °F	30 ppm	30 ppm	30 ppm	30 ppm	30 ppm	30 ppm
				15 ppm (SCR)		
> 1,230 °F	30 ppm	30 ppm	30 ppm	30 ppm	30 ppm	30 ppm

# Metal Heating – Revised Initial BARCT Emission Limits

Temp.	Aging	Annealing	Billet & Pre-Heat	Forging & Drop Forge	Homogenizing	Re-Heat	Other
≤ 1,500 °F	20 ppm	30 ppm	20 ppm	20 ppm	20 ppm	20 ppm	20 ppm
		15 ppm (SCR)	15 ppm (SCR)		15 ppm (SCR)		
> 1,500 °F	20 ppm	30 ppm	30 ppm	20 ppm	20 ppm	30 ppm	30 ppm
		15 ppm (SCR)	15 ppm (SCR)	15 ppm (SCR)		15 ppm (SCR)	



# Stakeholder Comments

# Overview

- Since Working Group Meeting #4, staff received four comment letters
  - California Metals Coalition (CMC)
  - Furnace Dynamics Inc. (FDI)
  - Vista Metals
  - Hughes Bros. Aircrafters
- All comment letters are posted on the [Proposed Rule 1147.2 Page](#)
- The following slides will address these comment letters

# California Metals Coalition & Furnace Dynamics, Inc.

## Comment

CMC and FDI requested expanded data to include additional units, burner, and source test information for all units

## Response

Today's meeting will focus on presenting the additional information requested



# Hughes Bros. Aircrafters

## Comment

Hughes Bros. Aircrafters expressed difficulty in obtaining lower-emitting NOx burners after contacting multiple vendors for their zinc furnaces

## Response

Staff is reviewing additional information, including vendor literature and source test results, to inform decisions related to available technologies and their emissions performance

**Hughes Bros. Aircrafters**  
I N C O R P O R A T E D

4/13/2020

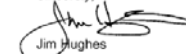
Dear Mr. Morris,

Thank you for allowing Hughes Bros. Aircrafters (Hughes Bros.) to submit the following comment on Proposed Rule 1147.2. We have been in operation since 1947, and we strive to be at the forefront in the manufacture of precision airframe sheet metal details and assemblies. Since our inception, Hughes Bros. has been under the same ownership at the same location within the Los Angeles Mid-Alameda Corridor Enterprise zone. We are a woman-owned small business with a facility covering 65,000 sq. ft and we employ over 45 employees. This foundation and longevity has and continues to provide our customers the confidence that every product that we manufacture is the best quality possible.

We express concern over the possible revision of emission limits for NOx emissions, specifically for the burners on our zinc pot melting furnaces. The burners installed on these furnaces are specifically designed for these furnaces so retro-fitting burners to existing melting furnaces is not a trivial task. We have been contacting vendors with little success in finding any vendor willing to provide us a quote for lower emitting NOx burners. I wanted to share with you a message from one of our vendors regarding this problem (attached to this letter). They indicated that the manufacturers are having difficulties finding the proper equipment to meet the requirements for the existing rule 1147. The vendor even went on to say that they stopped pursuing business for equipment required to meet existing rule 1147.

Again Hughes Bros. appreciates this opportunity to provide comment on Proposed Rule 1147.2. We are hopeful that our comments can provide SCAQMD further insight to the technological limitations in the development of Proposed Rule 1147.2.

Sincerely,



Jim Hughes

Vice President, Hughes Bros. Aircrafters, Inc.

# Vista Metals

## Comment

- Expressed concerns over the impact of COVID-19 on businesses
- Requested a temporary suspension on rulemaking activity to allow for businesses to more fully participate in the rulemaking process



# Vista Metals (*cont.*)

## Response



- Staff's goal is to move forward to achieve the emission reduction goals of AB 617 while taking note of stakeholders' resource limitations associated with COVID-19
- PR 1147.2's public hearing moved from November 2020 to First Quarter 2021 in response to COVID-19



Staff remains available via email or phone



Review time of working group meeting materials will be increased to better facilitate participation



Working group meetings will be structured to be shorter



Staff will continue to meet with stakeholders via tele- and video-conferencing to maintain social distancing



Staff understands that these are not the same as a face-to-face working group meetings, however, staff will take the time to listen to comments from all stakeholders





# Source Testing

# Purpose

- Stakeholders commented on source testing methodology and use of source tests for establishing NOx BARCT limits
- Only approved source test data was used
  - Approved source tests use approved test methods and protocols
  - Approved source test results are used for multiple purposes: compliance, emission fees, and rule development
  - Approved source tests are the basis of the initial BARCT emission limits

## Purpose (*cont.*)

- California H&SC §40406 defines BARCT as:  
*“...an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.”*
- Source test results demonstrate achievable emission levels
- Source test results serve as an important tool in establishing NOx BARCT limits

# Overview

Two components ensure source tests are accurate, representative of emissions from the source, and repeatable

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Approved  
Source Test Methods

Approved  
Source Test Protocols

# Source Test Method Background

Approved  
Source Test Methods

- Source test methods provide standardized procedures for setup, collection, and reporting
- Developed and certified by South Coast AQMD, CARB, or U.S. EPA



# Methods Used

## Approved Source Test Methods

### Pollutant Measurements

South Coast AQMD Method 7.1

NO<sub>x</sub>

South Coast AQMD Method 10.1\*

CO, CO<sub>2</sub>, O<sub>2</sub>

South Coast AQMD Method 100.1

SO<sub>2</sub>, NO<sub>x</sub>, O<sub>2</sub>, CO, CO<sub>2</sub>

### Process Measurements

South Coast AQMD Methods 1.1, 1.2<sup>†</sup>

Velocity and Sample Traverse Points

South Coast AQMD Methods 2.1, 2.2, 2.3<sup>†</sup>

Stack Gas Flow Rate

South Coast AQMD Methods 3.1, 4.1<sup>†</sup>

Stack Gas Density and Moisture

U.S. EPA Method 19<sup>†</sup>

SO<sub>2</sub> Removal Efficiency and PM, SO<sub>2</sub>, and  
NO<sub>x</sub> Emission rates

\*Non-RECLAIM Sources Only (Rule 1147)

22 <sup>†</sup> RECLAIM Sources Only (Rule 2012)

# Protocol Background

## Approved Source Test Protocols

- Specifies which sources to test and how samples will be sampled, analyzed, and reported
- Establishes procedures for equipment setup and calibration to ensure representative results
- Submitted by permit holder and approved by South Coast AQMD

**FORM ST-1**  
MONITORING & ANALYSIS DIVISION      MONITORING & SOURCE TEST ENGINEERING BRANCH

**CHECKLIST FOR REQUEST TO REVIEW:  
SOURCE TEST PROTOCOL, REPORT, OR SPECIAL PROJECT**

This Checklist (**FORM ST-1**) must accompany any request to evaluate a source test protocol, report, or special project. It may be completed by the requesting AQMD Engineer or Inspector, or a representative of the Source Testing Firm/Laboratory/Contractor. Verify, by checking each item below, that all the requested information has been provided with the attached source test protocol, report, or special project. (An incomplete submittal will be returned, and will ultimately delay the evaluation process):

- All Source Test Protocols and Reports Must Include:**
- Completed Review Request Memorandum. (A request for a "Priority Review" involves Hearing Board, Abatement Order, or similar critical action, and must be authorized by a manager).
  - Statement of Confidentiality of Test Information, or similar statement, provided by company (if included).
  - Information Request **FORM ST-2** with those applicable parts filled out completely.
  - Reason for test, including proposed operating test loads, reference to applicable rules/permit conditions, and key facility, test firm and AQMD personnel.
  - Complete Permit to Construct or Permit to Operate, including all conditions.
  - Brief process description, including maximum and normal operating temperatures, pressures, through-put, etc.
  - Brief description of sampling and analytical methods for each constituent to be measured. If a standard District, EPA, or ARB method "without any deviation" will be used, reference it by method number.
  - Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, along with upstream and downstream distances to flow disturbances, (e.g. elbows, tees, fans) from the sampling locations.
  - Calibration and quality assurance (QA) procedures identified.
  - Statement that source test firm/laboratory qualifies as an "independent testing laboratory" under Rule 304 (no conflict of interest), and is approved by AQMD or ARB, if required.
  - Attached test firm AQMD-LAP or CARB approval, if required.
- All Source Test Reports Must Also Include:**
- Field raw data sheets and laboratory data forms, where applicable.
  - Gas monitoring stripcharts and/or DAS printouts, legible and properly annotated, where applicable.
  - Complete calculations for volumetric flowrates and emissions rates, where applicable.
  - Complete QA supporting documentation (sampling equipment, cal gases, lab analyses, custodies).
  - (**CEMS & Fuel Meters**): Full identification/documentation for CEMS components and fuel meters (analyzer/fuel meter make, model, s/n, range, calibrations, etc.).
  - (**RECLAIM/Large Source**): "Certificate of No Exceptions for testing RECLAIM Large Sources" completed and signed.
- Applicable Source Specific Protocols / Reports Must Also Include:**
- (**VOC Efficiency**): VOC overall efficiency (capture/collection plus control efficiencies), or transfer efficiency describes all sample collection points, verifies total collection, and shows all calculations and documentation, according to specified requirements.
  - (**Organics Loading**): Organic (VOC) liquid loading testing describes all sample collection/monitoring points (both liquid and vapor), verifies representative start/stop time, and shows all calculations and documentation, according to specified requirements.
  - (**Particulates/sulfur**): Particulate testing of effluent gas streams with high amounts of sulfur compounds addresses additional test preparation, equipment, calculations, and documentation.

FORM ST-1 : 12a&c, evaluation request, #1.docx (Revised 05/30/18)

# Protocol Sections

Approved  
Source Test Protocols

## Typical Sections<sup>†</sup>

### Equipment, Process, and Operation Description

Details of source tested equipment, process, and operating conditions

### QA/QC Procedures

Calibration and sample handling procedures and QA/QC procedures

### Testing Methodology

Specifies source test method(s) and instrumental, sampling, and parameter methods

### Calculations Procedures

Formulas to calculate gaseous concentrations, exhaust flow, mass emissions, etc.



# Source Testing Summary

- Source test data used in the BARCT analysis to establish the initial NOx limit were based on approved source tests
- Approved protocols specify the appropriate test methods and conditions
- Established source test methods ensure standardization and repeatability
- Using approved source tests conducted using approved protocols ensures that source test results are technically sound, reliable, repeatable, and provide valuable data for establishing BARCT emission limits, compliance, emission fees, and rule development



# **Additional Data Requested by Stakeholders**

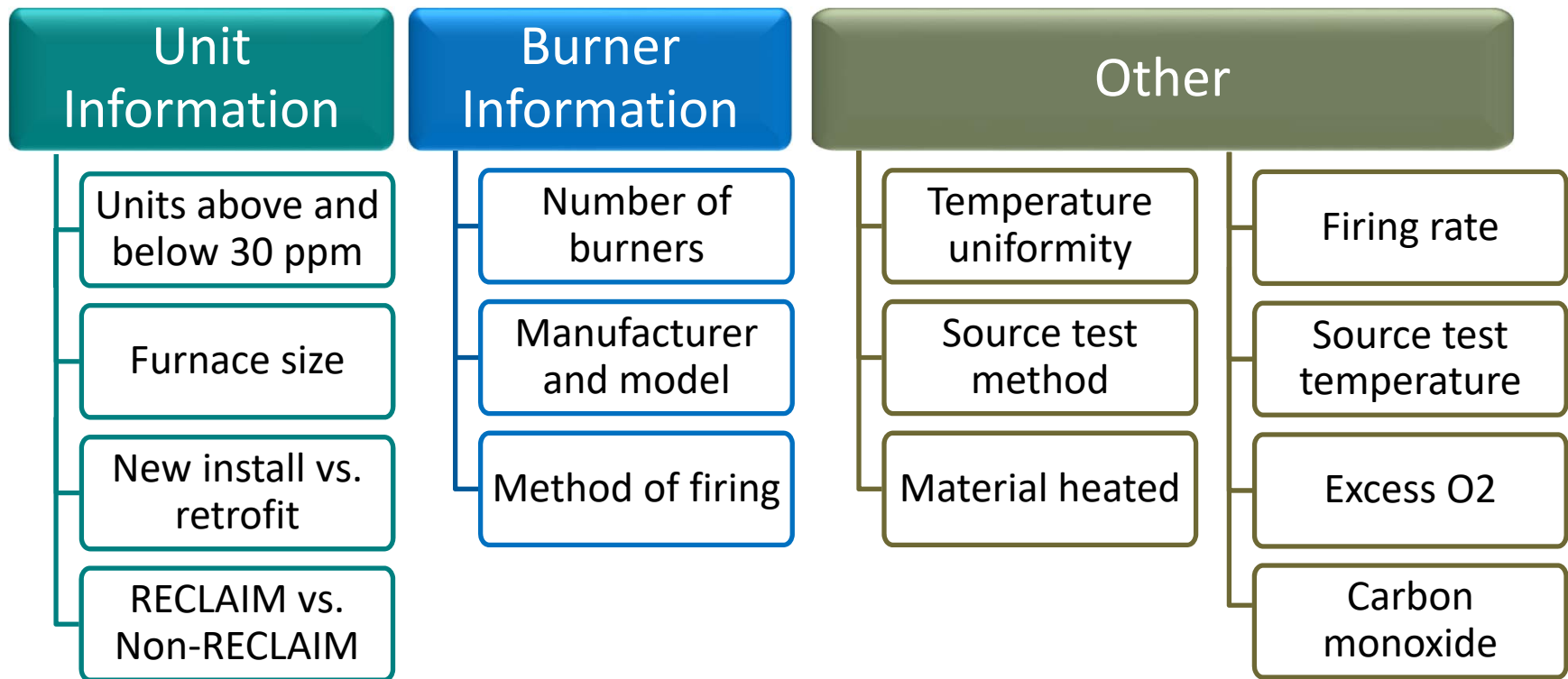
# Additional Data – Overview

- During Working Group Meeting #4, staff provided the [Sub-30 ppm Source Test Results Handout](#)

Metal Heating Furnaces						
Equipment Category	Heat Input (MMBTU/HR)	Process Temperature (°F)	Control Technology	Permit Limit (ppm)	Source Test Result (ppm)	Notes
Aging	3	340 - 420	Not Listed	50	5	None
Aging	4	350	Not Listed	12	12	None
Aging	5	680 - 900	LNB	30	13	None
Aging	3	680 - 900	LNB	30	14	None
Aging	3	680 - 900	LNB	65	16	None
Aging	4	875 - 1,000	LNB	60	22	None
Aging	3	680 - 900	Not Listed	40	25	None
Aging	3	680 - 900	Not Listed	40	26	None
Aging	8	1,000	LNB	50	29	Startup Load: 29 ppm; Normal Load: 28 ppm
Annealing	2	1,220 - 1,400	Not Listed	60	20	None
Annealing	12	Not Listed	Not Listed	75	26	None

- Stakeholders requested additional information from:
  - Sub-30 ppm Source Test Results Handout
  - Furnaces with source test results greater than 30 ppm
  - Furnaces with no source test results

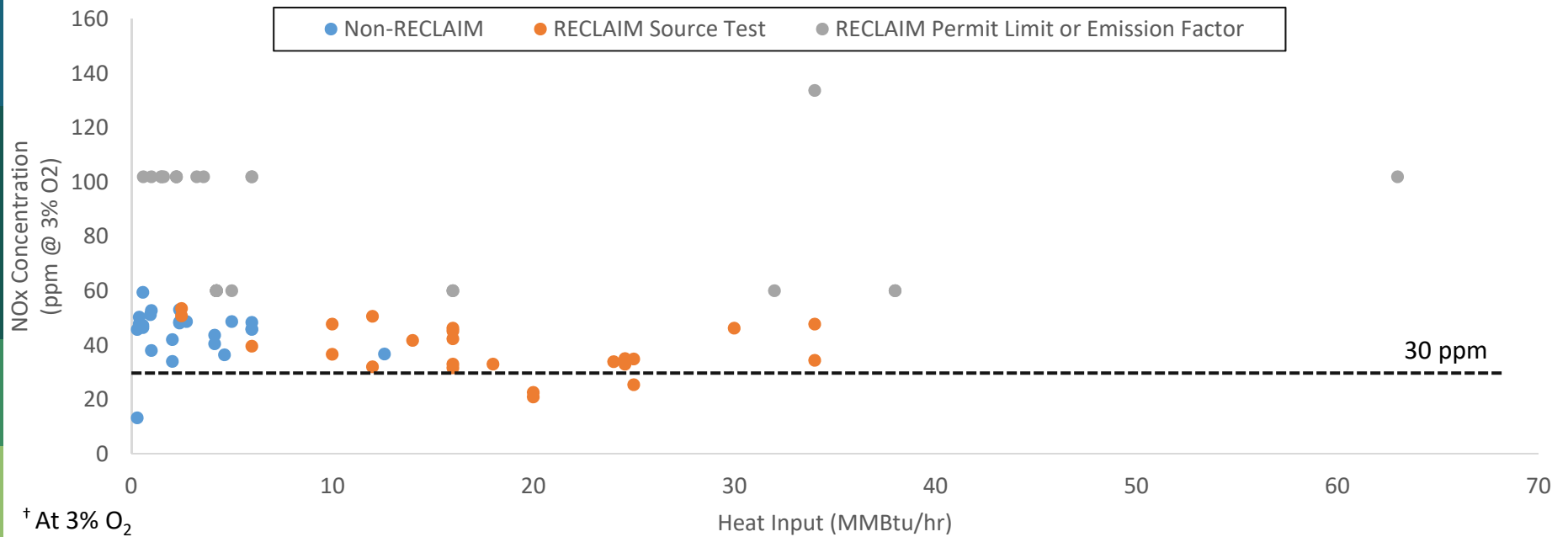
# Additional Data\* – Request from Stakeholders



# Metal Melting – Below and Above 30 ppm

Unit Information

- Units above and below 30 ppm
- Furnace Size
- New install vs. retrofit
- RECLAIM vs. Non-RECLAIM



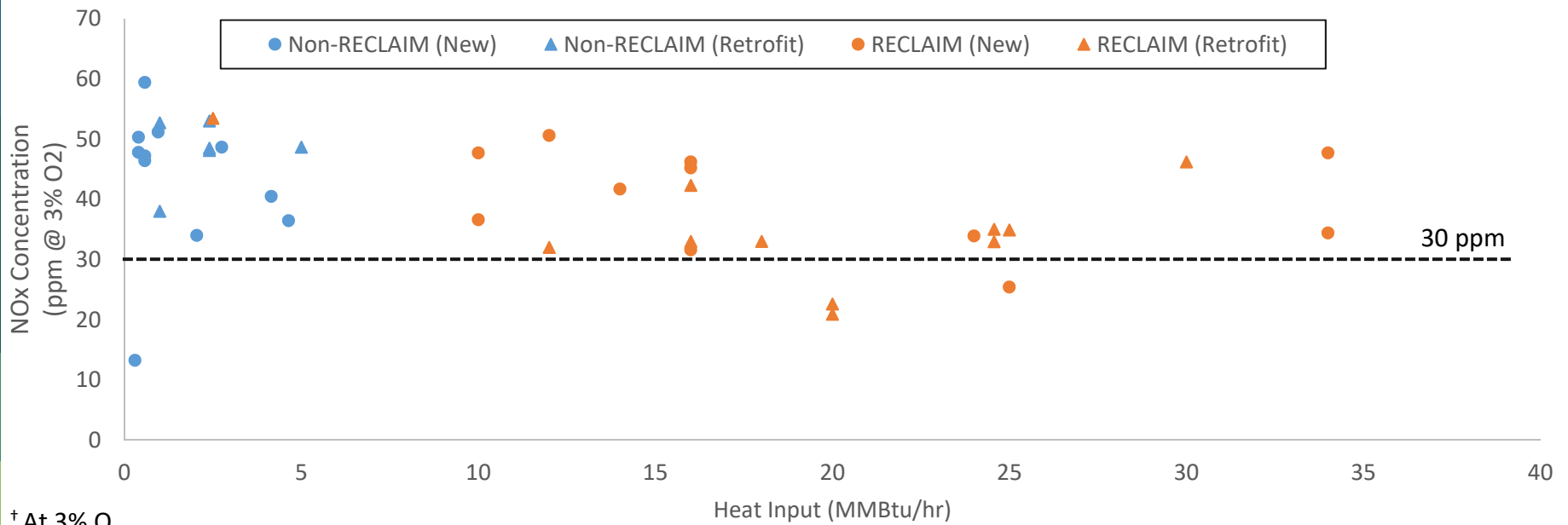
† At 3% O<sub>2</sub>

	Total Units	≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	24	1 (4%)	23 (96%)
RECLAIM Source Test	24	3 (12%)	21 (88%)

# Metal Melting – Furnace Size and New vs. Retrofit

**Unit Information**

- Units above and below 30 ppm
- Furnace Size
- New install vs. retrofit
- RECLAIM vs. Non-RECLAIM



† At 3% O<sub>2</sub>

	Total Units	New		Retrofit	
		≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	17	1 (6%)	10 (59%)	0 (0%)	6 (35%)
RECLAIM	22	1 (5%)	10 (45%)	2 (9%)	9 (41%)

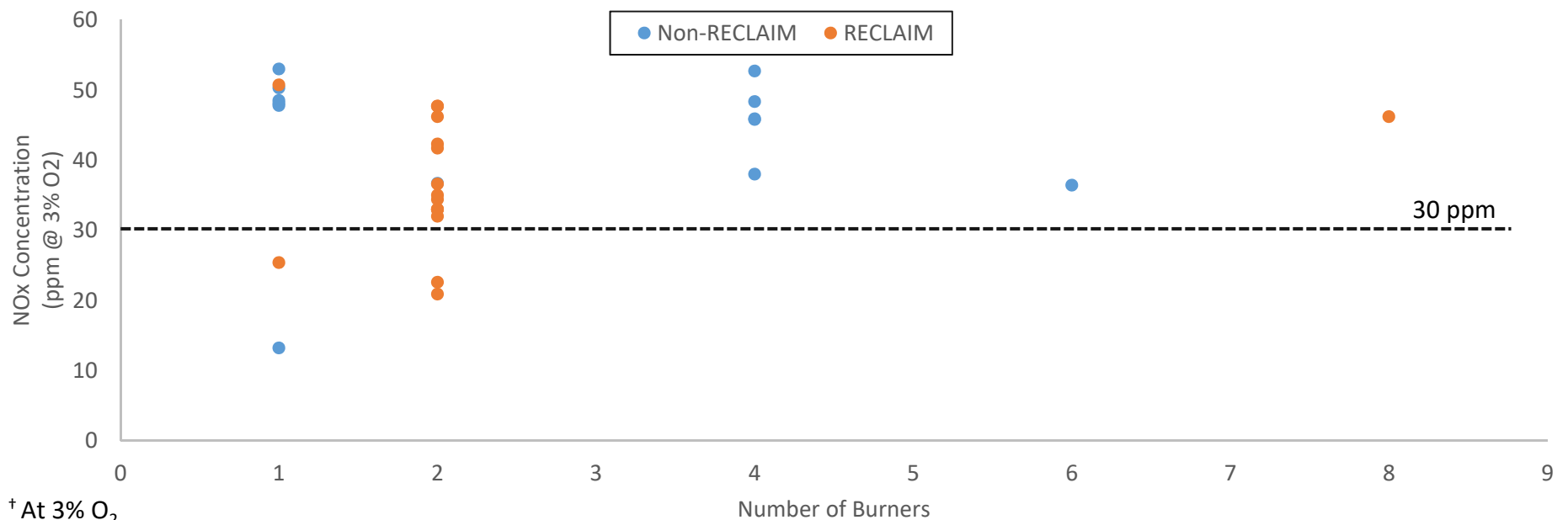
# Metal Melting – Number of Burners

## Burner Information

Number of burners

Manufacturer and model

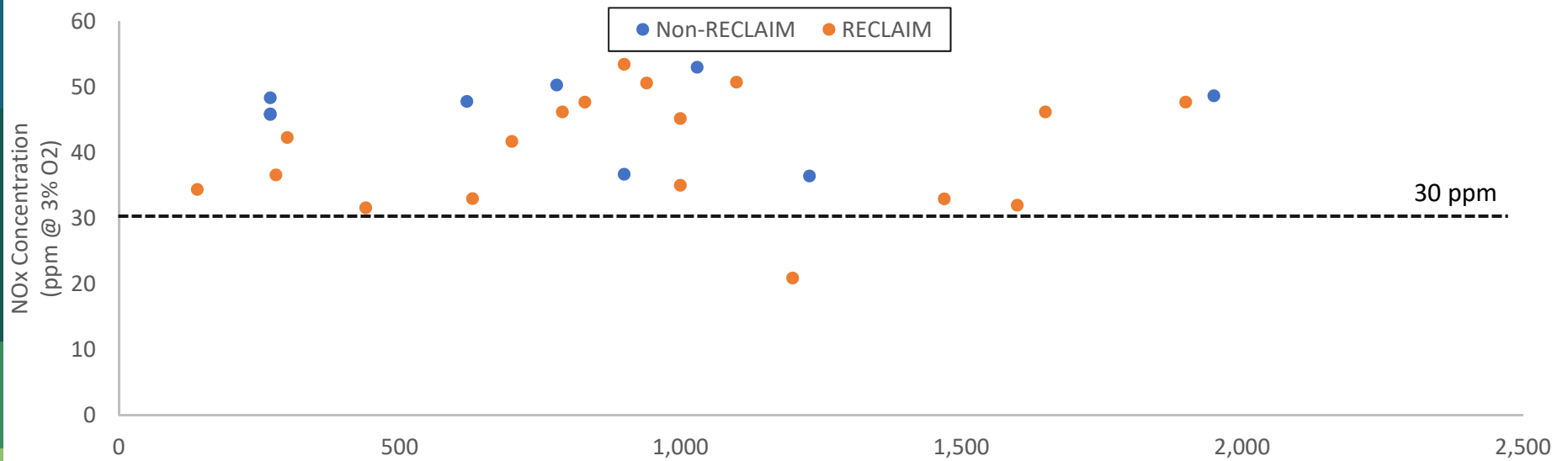
Method of firing



	Total Units	1 Burner		2 Burners		3+ Burners	
		≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	13	1 (17%)	5 (83%)	0 (0%)	1 (100%)	0 (0%)	6 (100%)
RECLAIM	17	1 (50%)	1 (50%)	2 (14%)	12 (86%)	0 (0%)	1 (100%)

# Metal Melting – Source Test Temperature

- Other
  - Temperature uniformity
  - Source test method
  - Material heated
  - Firing rate
  - Source test temperature
  - Excess O<sub>2</sub>
  - Carbon monoxide



<sup>1</sup> The highest NOx concentration and associated temperature were plotted when multiple data points were reported

Source Test Temperature (°F)

<sup>†</sup> At 3% O<sub>2</sub>

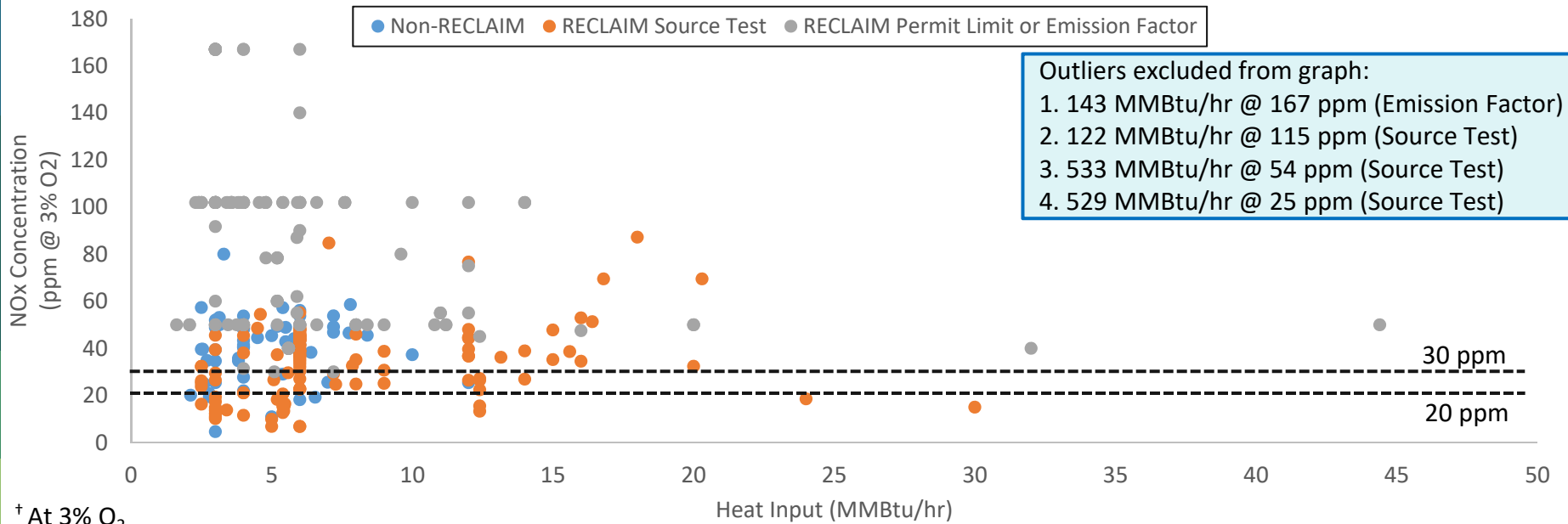
	Total Units	≤ 1,230 °F		> 1,230 °F	
		≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	9	0 (0%)	8 (100%)	0 (0%)	1 (100%)
RECLAIM	18	1 (7%)	13 (93%)	0 (100%)	4 (100%)



# Metal Heating – Below and Above 30 ppm

**Unit Information**

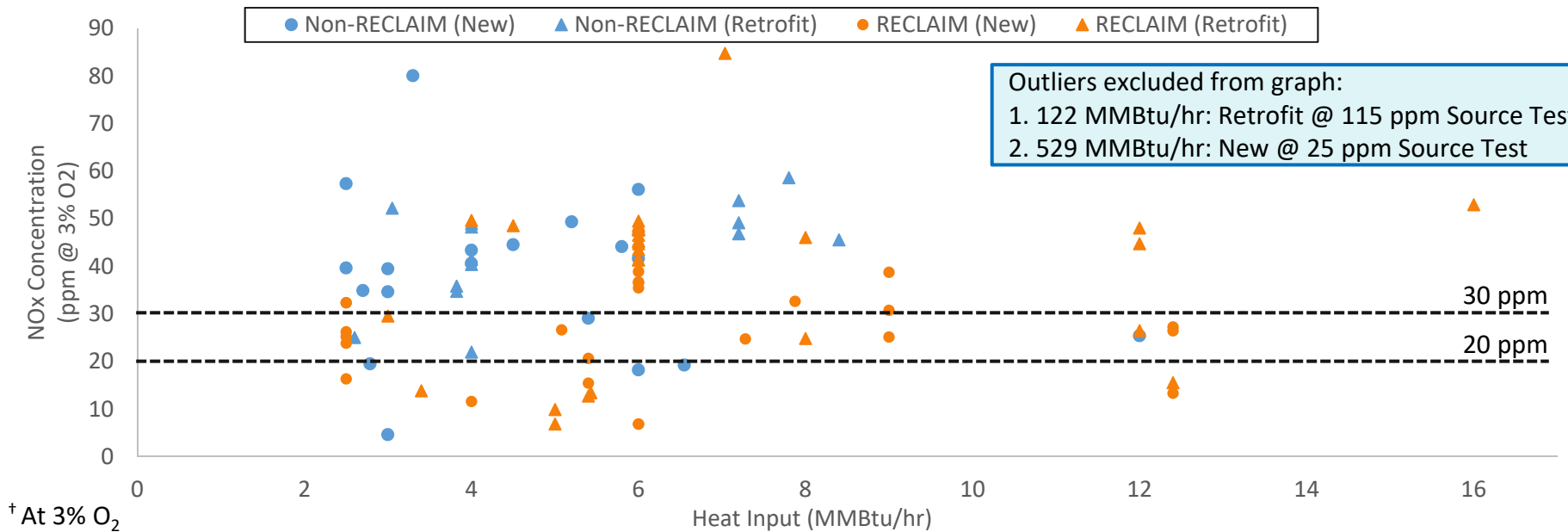
- Units above and below 30 ppm
- Furnace Size
- New install vs. retrofit
- RECLAIM vs. Non-RECLAIM



	Total Units	≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	59	5 (8%)	10 (17%)	44 (75%)
RECLAIM Source Test	130	24 (18%)	24 (18%)	82 (64%)

# Metal Heating – Furnace Size and New vs. Retrofit

Unit Information  
Units above and below 30 ppm  
Furnace Size  
New install vs. retrofit  
RECLAIM vs. Non-RECLAIM



	Total Units	New			Retrofit		
		≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	33	4 (12%)	2 (6%)	13 (40%)	0 (0%)	2 (6%)	12 (36%)
RECLAIM	56	6 (11%)	9 (16%)	10 (18%)	6 (11%)	3 (5%)	22 (39%)

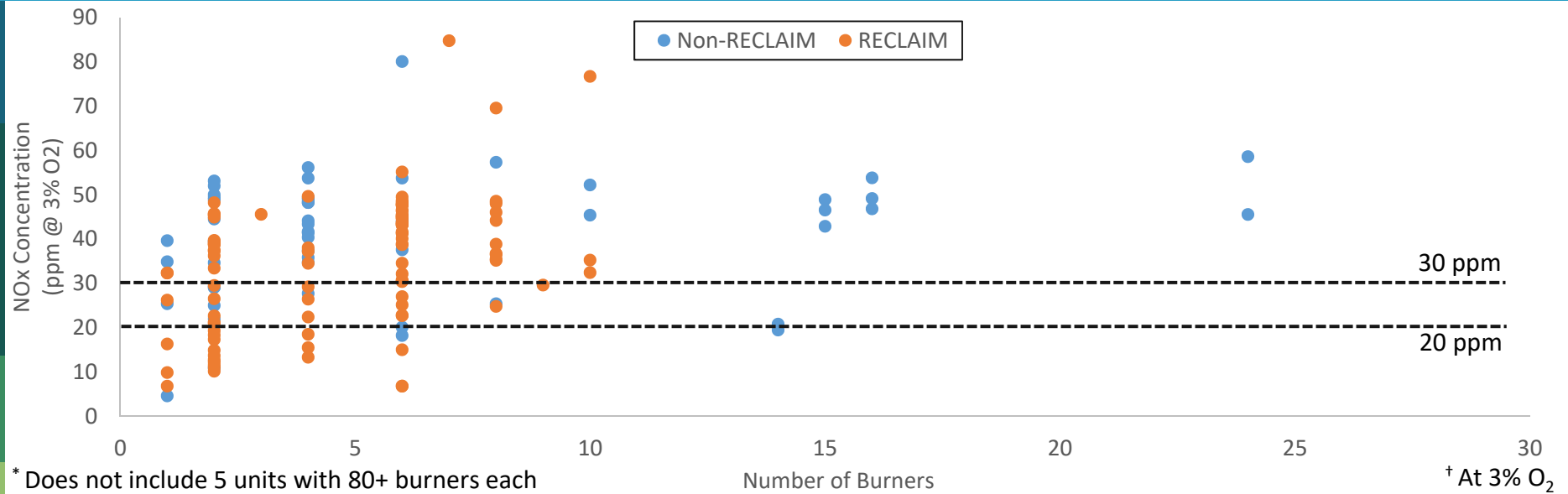
# Metal Heating – Number of Burners

## Burner Information

Number of burners

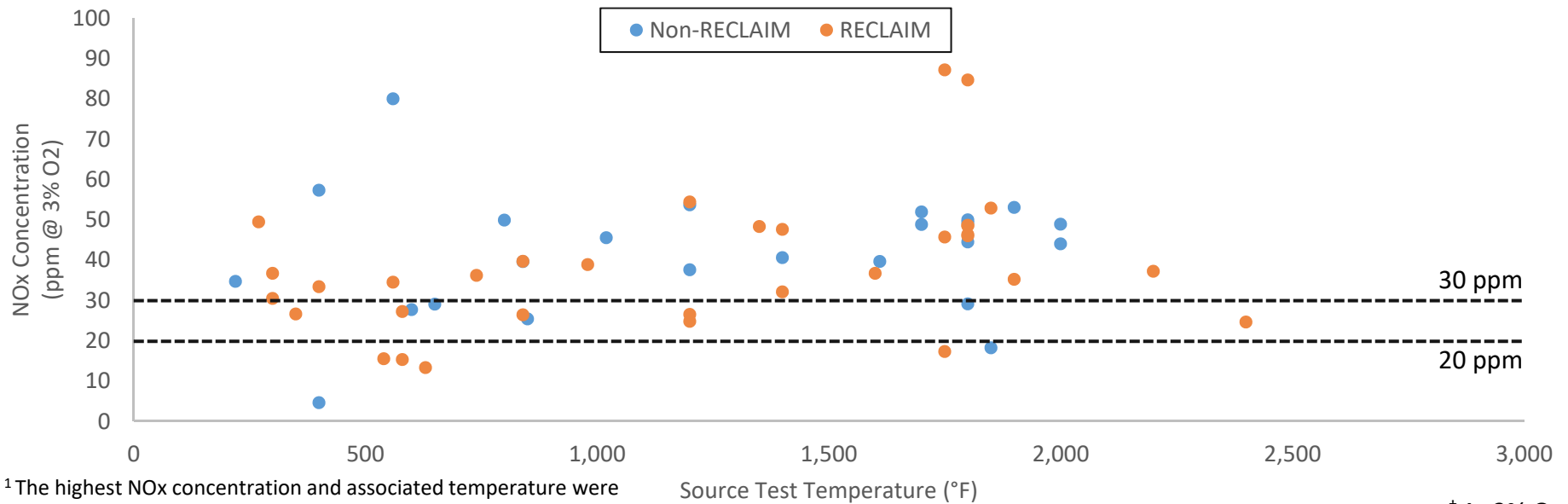
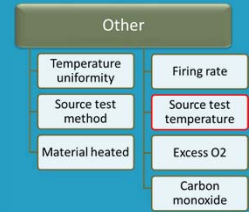
Manufacturer and model

Method of firing



	Total Units	1 Burner		2 Burners		3-8 Burners		9+ Burners	
		≤ 20 ppm <sup>†</sup>	> 20 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	> 20 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	> 20 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	> 20 ppm <sup>†*</sup>
Non-RECLAIM	52	1 (5%)	3 (75%)	1 (8%)	12 (92%)	1 (4%)	22 (96%)	1 (8%)	11 (92%)
RECLAIM	102	3 (50%)	3 (50%)	10 (34%)	19 (66%)	6 (10%)	57 (90%)	0 (0%)	4 (100%)

# Metal Heating – Source Test Temperature

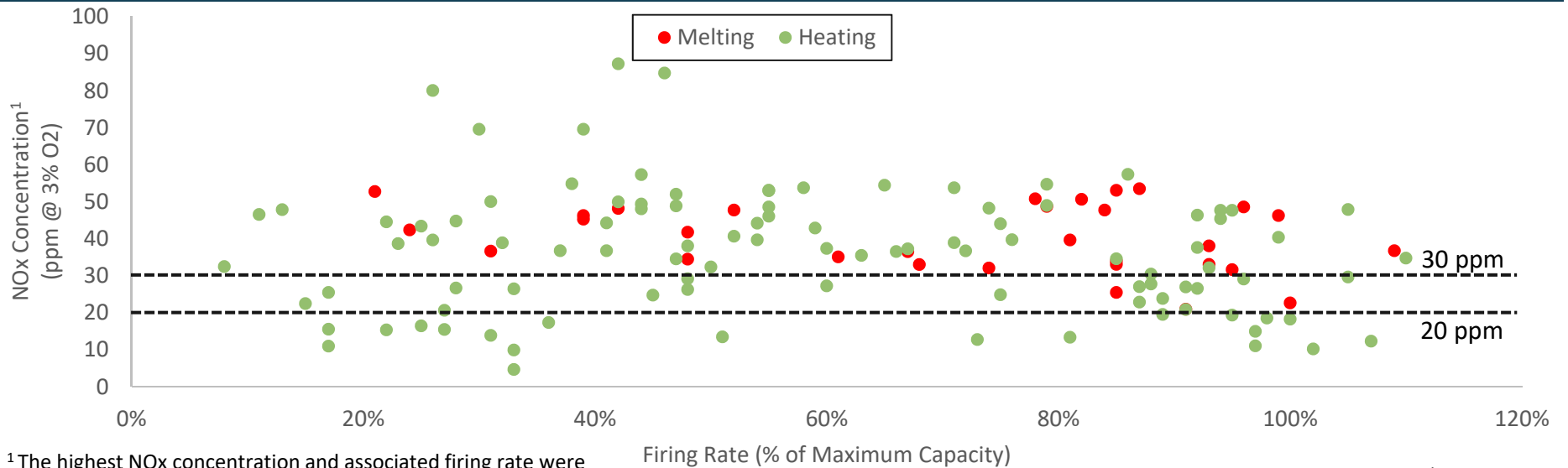
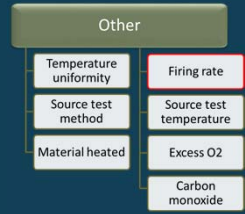


<sup>1</sup> The highest NOx concentration and associated temperature were plotted when multiple data points were reported

<sup>†</sup> At 3% O<sub>2</sub>

	Total Units	≤ 1,500 °F			> 1,500 °F		
		≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Non-RECLAIM	24	1 (8%)	3 (23%)	9 (69%)	1 (9%)	1 (9%)	9 (82%)
RECLAIM	33	3 (16%)	4 (21%)	12 (63%)	1 (8%)	1 (8%)	11 (84%)

# All Units – Firing Rate



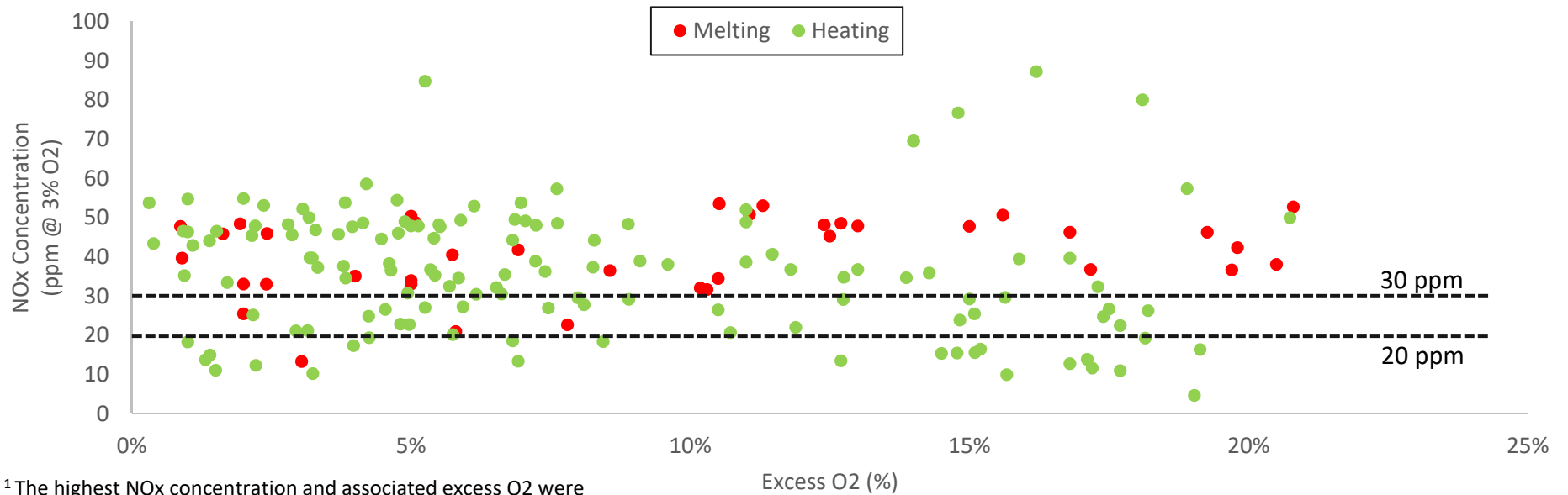
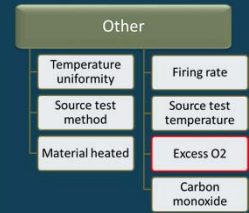
<sup>1</sup> The highest NOx concentration and associated firing rate were plotted when multiple data points were reported

Firing Rate (% of Maximum Capacity)

<sup>†</sup> At 3% O<sub>2</sub>

	Total Units	≤ 50% Firing Rate			> 50% Firing Rate		
		≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Melting	31	0 (0%)	0 (0%)	8 (100%)	0 (0%)	3 (13%)	20 (87%)
Heating	101	9 (20%)	8 (18%)	28 (62%)	11 (20%)	11 (20%)	34 (60%)

# All Units – Excess O2 (Corrected to 3% O2)



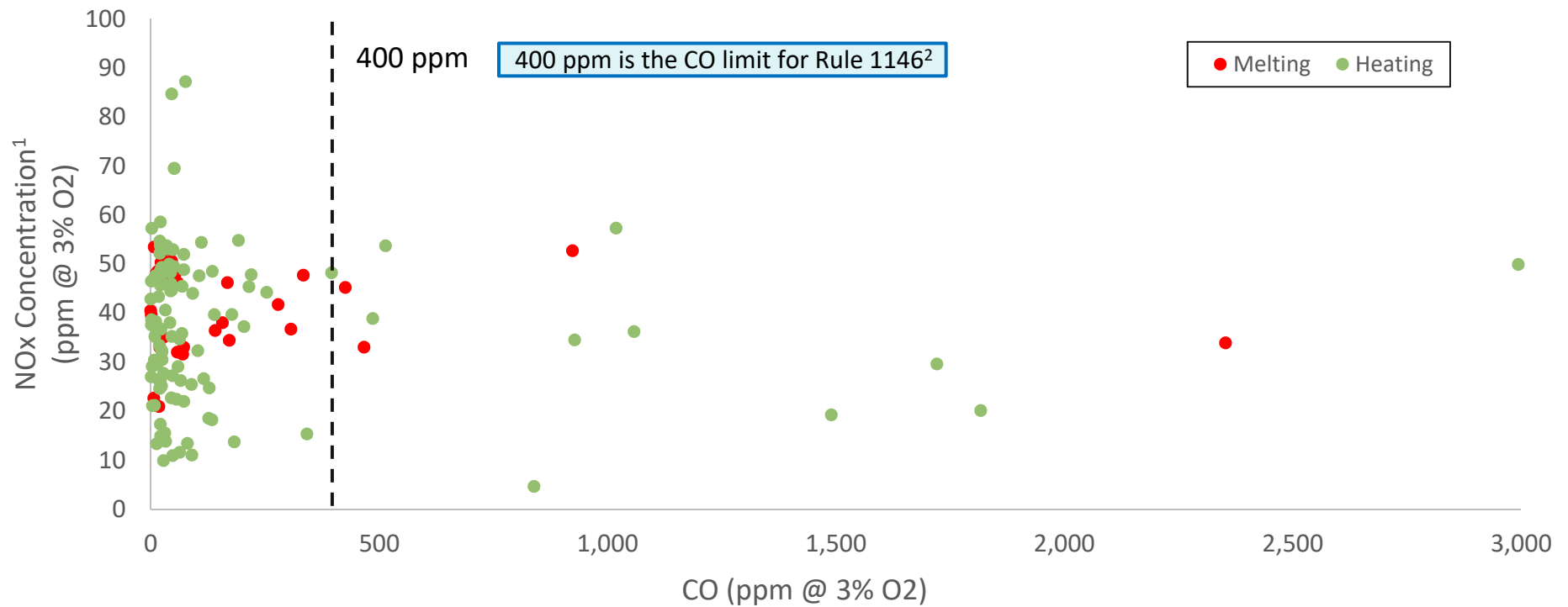
<sup>1</sup> The highest NOx concentration and associated excess O2 were plotted when multiple data points were reported

<sup>†</sup> Corrected to 3% O2

	Total Units	≤ 10% Excess O2			> 10% Excess O2		
		≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>	≤ 20 ppm <sup>†</sup>	20-30 ppm <sup>†</sup>	> 30 ppm <sup>†</sup>
Melting	38	1 (5%)	3 (16%)	15 (79%)	0 (0%)	0 (0%)	19 (100%)
Heating	135	11 (12%)	14 (15%)	66 (73%)	13 (30%)	12 (27%)	19 (43%)

# All Units – Carbon Monoxide

Other	
Temperature uniformity	Firing rate
Source test method	Source test temperature
Material heated	Excess O2
	Carbon monoxide



<sup>1</sup> The highest NOx concentration and associated excess O2 were plotted when multiple data points were reported. Only source test CO data corrected to 3% O2 was used.

<sup>2</sup> <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1146.pdf>

# Identified & Non-Identified Information

- Staff received comments regarding source test results relative to temperature uniformity requirements and composition of metal heated
- Regarding temperature uniformity
  - Since temperature uniformity is not a parameter that is collected during permitting or source testing – staff could not present the relationship between emissions and temperature uniformity
  - If stakeholders have source tests with temperature uniformity data, staff can evaluate that information
- Regarding material heated
  - Whether metal is charged during testing is generally not documented for source tests
  - Less than a third of sampled source tests specified whether metal was charged in the unit during source testing



# Additional Data – Overall Conclusions

## Metal Melting Units



Vendor literature presented in Working Group Meeting #4 states ability to meet 30 ppm for all sub-categories

## Metal Heating Units



- Vendor literature presented in Working Group Meeting #4 states ability to meet 30 ppm for all sub-categories
- Review of source test data supports 30 ppm NO<sub>x</sub> limit for all sub-categories and 20 ppm for certain sub-categories

# Additional Data – Further Considerations

Staff's review of source tests showed additional items that warrant review in the BARCT analysis process

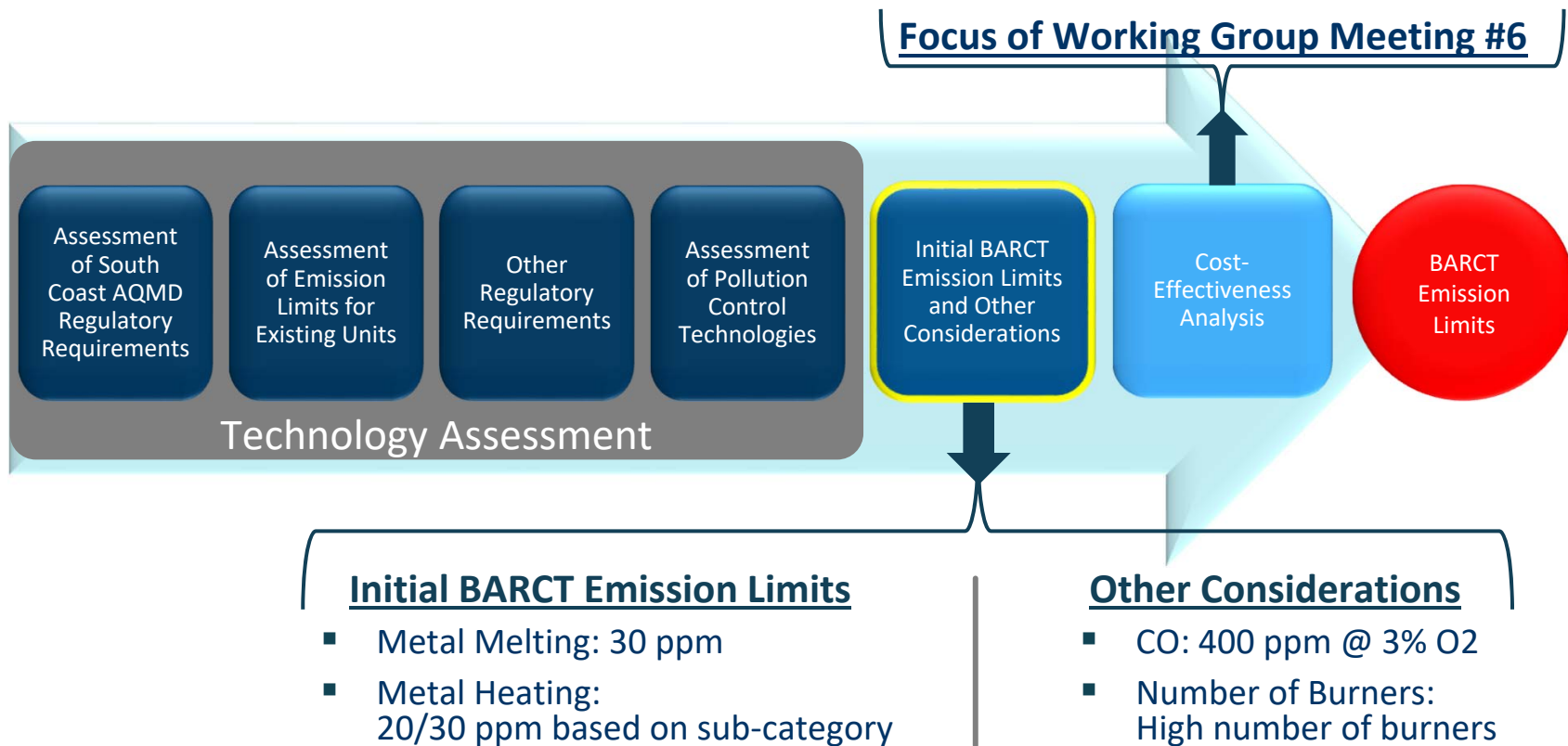
## Carbon Monoxide

- Staff will consider including a provision for a 400 ppm CO @ 3% O<sub>2</sub> limit for all units

## Number of Burners

- Staff will consider including provisions for units with a high number of burners

# Additional Data – Overall Conclusions





**Next Steps**

# Next Steps

- Conduct cost-effectiveness on initial BARCT emission limits
- Develop Proposed Rule Language and Preliminary Draft Staff Report

Rule Development Activity	Tentative Schedule
Next Working Group Meeting	July 2020
Public Workshop	Fourth Quarter 2020
Public Hearing	First Quarter 2021

# Contacts

PR 1147.2	PAR 1147	RECLAIM Questions	General Questions
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