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# PROPOSED AMENDED RULES 1147, 1100, & PROPOSED RULE 1147.1 WORKING GROUP MEETING #2

APRIL 17, 2019

SCAQMD

DIAMOND BAR, CA

# AGENDA

- Update on Rule 1147 Survey
- Summary of Working Group #1
- Overview of Rule 1147 Series
- Preliminary BARCT Analysis
  - ❑ Assessment of SCAQMD Regulatory Requirements
  - ❑ Assessment of Emission Limits of Existing Units
- Additional Considerations
- Next Steps

# UPDATE ON FACILITY SURVEY

- ❑ Physical surveys were mailed out on 03/22/2019
- ❑ Objective: To identify permit limits and annual usage for existing equipment located in SCAQMD
- ❑ Completed survey requested by April 26, 2019

Rule 1147 Survey – January 2019

Facility ID: \_\_\_\_\_ Company Name: \_\_\_\_\_ RECLAIM (Y/N): \_\_\_\_\_

(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)
Permit or Application No.	Heat Input (MMBtu/HR)	Permit Limit (ppm or lb/MMBtu)	Fuel Type (a-e)*	Annual Fuel Usage CY 2017	Annual Fuel Usage CY 2018	Burner Retrofit (%)	Unit Age (Years)	Control Device (If Applicable)
1								
2								
3								
4								
5								
6								

\*See key (page 2) for additional information

(9)		(10)
Source Test Results (if applicable)		Unit Description and Process
Date (MM/DD/YYYY)	NOx Conc. (ppm @ 3% O <sub>2</sub> )	
1		
2		
3		
4		
5		
6		

Additional Comments

Instructions:

- Please provide data (1) – (10) for each piece of equipment
- Attach most recent source test data for each piece of equipment, if applicable

Prepared by: \_\_\_\_\_

Contact Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Please return survey to:

South Coast Air Quality Management District  
 Attn: Shawn Wang  
 21865 Copley Drive  
 Diamond Bar, California 91765-4178  
 Or via E-mail: [swang@scqmd.gov](mailto:swang@scqmd.gov)

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# SUMMARY OF PREVIOUS WORKING GROUP

- ❑ Background on RECLAIM transition
- ❑ Overview of BARCT assessment
  - Technology Assessment
  - Cost Effectiveness
- ❑ Initial concepts of PAR 1147, PR 1147.1 and PR 1100
- ❑ Initial evaluation of affected universe
- ❑ Rule 1147 Survey to collect additional information to quantify impacted equipment

# OVERVIEW OF RULE 1147 SERIES

## Proposed Amended Rule 1147

- NO<sub>x</sub> reductions from miscellaneous sources
- Approximately 2701 facilities

## Proposed Rule 1147.1

- NO<sub>x</sub> reductions from large miscellaneous combustion
- To be determined

## Proposed Rule 1147.2

- NO<sub>x</sub> reductions from metal melting and heat treating furnaces
- Approximately 243 facilities

## Proposed Rule 1147.3

- NO<sub>x</sub> reductions for equipment at asphalt and aggregate facilities
- Approximately 8 facilities

# BARCT ANALYSIS\*+ OVERVIEW

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

**+This analysis does not include equipment from PR 1147.2 and 1147.3 universe**

Assessment of  
SCAQMD  
Regulatory  
Requirements

Assessment of  
Emission Limits  
of Existing Units

Other  
Regulatory  
Requirements

Assessment of  
Pollution  
Control  
Technologies

**Technology Assessment**

Initial BARCT  
Emission Limit  
and Other  
Considerations

Cost  
Effectiveness  
Analysis

**BARCT  
Emission  
Limit**

# CURRENT RULE 1147 LIMITS (3% O<sub>2</sub>, DRY)

Assessment of SCAQMD  
Regulatory Requirements

Gaseous Fuel-Fired Equipment	Process Temperature		
	≤ 800° F	> 800 ° F < 1200° F	≥ 1200 ° F
Asphalt Manufacturing Operation	40 ppm		
Afterburner, Degassing Unit, Remediation Unit, Thermal Oxidizer, Catalytic Oxidizer or Vapor Incinerator	60 ppm		
Burn-off Furnace, Burnout Oven, Incinerator or Crematory with or without Integrated Afterburner	60 ppm		
Evaporator, Fryer, Heated Process Tank, or Parts Washer	60 ppm		
Metal Heat Treating, Metal Melting Furnace, Metal Pot, or Tar Pot	60 ppm		
Oven, Dehydrator, Dryer, Heater, Kiln, Calciner, Cooker, Roaster, Furnace, or Heated Storage Tank	30 ppm		60 ppm
Make-Up Air Heater or other Air Heater located outside of building with temperature controlled zone inside building	30 ppm		
Tenter Frame or Fabric or Carpet Dryer	30 ppm		
Other Unit or Process Temperature	30 ppm		60 ppm
<b>Liquid Fuel-Fired Equipment</b>			
All liquid fuel-fired Units	40 ppm		60 ppm

# 2015 RECLAIM BARCT FOR MISC. COMBUSTION EQUIPMENT (FOR REFERENCE ONLY)

Assessment of SCAQMD  
Regulatory Requirements

Equipment Type	BARCT Emission Factor		Command and Control Limit		
			≤ 800° F	> 800 ° F < 1200° F	≥ 1200 ° F
Asphalt Heater, Concrete	0.036 lb/mmbtu	30 ppm	40 ppm		
Delacquering Furnace	0.036 lb/mmbtu	30 ppm	60 ppm		
Iron/Steel Foundry	0.055 lb/mmbtu	45 ppm	60 ppm		
Metal Heat Treating Furnace	0.055 lb/mmbtu	45 ppm	60 ppm		
Metal Forging Furnace (Preheated Combustion Air)	0.055 lb/mmbtu	45 ppm	60 ppm		
Metal Melting Furnaces	0.055 lb/mmbtu	45 ppm	60 ppm		
Other Heater (24F-1)	0.036 lb/mmbtu	30 ppm	30 ppm	60 ppm	
Ovens, Kilns, Calciners, Dryers, Furnaces	0.036 lb/mmbtu	30 ppm	30 ppm	60 ppm	
Steel Hot Plate Furnace	0.055 lb/mmbtu	45 ppm	30 ppm	60 ppm	
Sec. Aluminum	0.055 lb/mmbtu	45 ppm	60 ppm		
Sec. Lead	0.055 lb/mmbtu	45 ppm	60 ppm		



# RULE 1147 COMPLIANCE SCHEDULE (UNITS $\geq$ 325,000 BTU/HR)

Assessment of SCAQMD  
Regulatory Requirements

Equipment Category	Emissions Greater Than One Pound Per Day	Emissions Less Than One Pound Per Day
<b>New Units</b>		
Any unit installed after January 1, 2010	Demonstrate compliance with Rule 1147 at the time of permitting	
<b>Existing Units</b>		
Any unit in-use (operating) before January 1, 2010	Demonstrate compliance with rule NOx limits when unit or combustion system is modified or replaced; OR unit becomes 15 years old	Demonstrate compliance with NOx limits when unit or combustion system is modified, replaced, or relocated*; OR unit becomes 35 years old <sup>+</sup>
<b>Specific Existing Units</b>		
<ol style="list-style-type: none"> <li>1. Heated process tanks, parts washers, and evaporators in-use (operating) before January 1, 2010</li> <li>2. Heated process tanks, parts washers, and evaporators installed and operating with an SCAQMD permit before January 1, 2014</li> <li>3. Remediation units installed between December 5, 2008 and March 1, 2012</li> </ol>	Demonstrate compliance with rule NOx limits when unit or combustion system is modified or replaced	
<div style="border: 1px solid black; padding: 5px;"> <p><i>*Relocation exemption available for existing less than 1 pound/day units when owner relocates entire facility</i>  <i><sup>+</sup>Facilities may choose to conduct biennial emissions test in lieu of meeting rule requirements</i></p> </div>		

# RULE 1147 DETERMINATIONS FOR NO<sub>x</sub> EMISSIONS OF LESS THAN 1 POUND PER DAY

Assessment of SCAQMD  
Regulatory Requirements

Facilities may demonstrate NO<sub>x</sub> emissions of < 1 LB/Day by complying with one of the following:

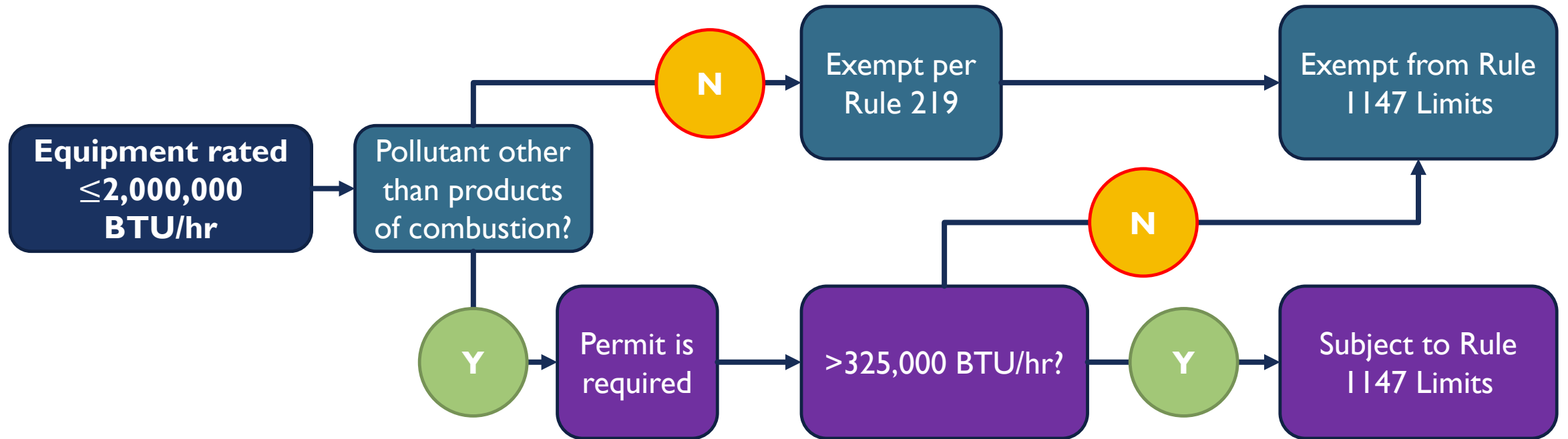
1. Unit heat input rating of <325,000 BTU/hr
2. Unit with permit condition limiting NO<sub>x</sub> emissions of < 1 LB/Day
3. Recordkeeping\* of monthly average emissions of < 1 LB/Day\*
4. Recordkeeping\* of total monthly emissions of < 22 LBs/Month\*
5. Recordkeeping\* of natural gas usage of <7,692 cubic feet per day\*
6. Daily recordkeeping\* of unit operation and the following specified rated heat input capacities operating less than or equal to the specified number of hours per day in the following table:

\* Demonstration of recordkeeping requirements must be based off of a unit-specific non-resettable time meter or fuel meter

Unit Rating (BTU/hr)	Daily Hour Limit	Monthly Hour Limit
325,000 to 400,000	16	352
400,001 to 500,000	14	308
500,001 to 800,000	8	176
800,001 to 1,000,000	6	132
1,000,001 to 1,200,000	5	110

# RULE 219 EXEMPTIONS

Assessment of SCAQMD  
Regulatory Requirements

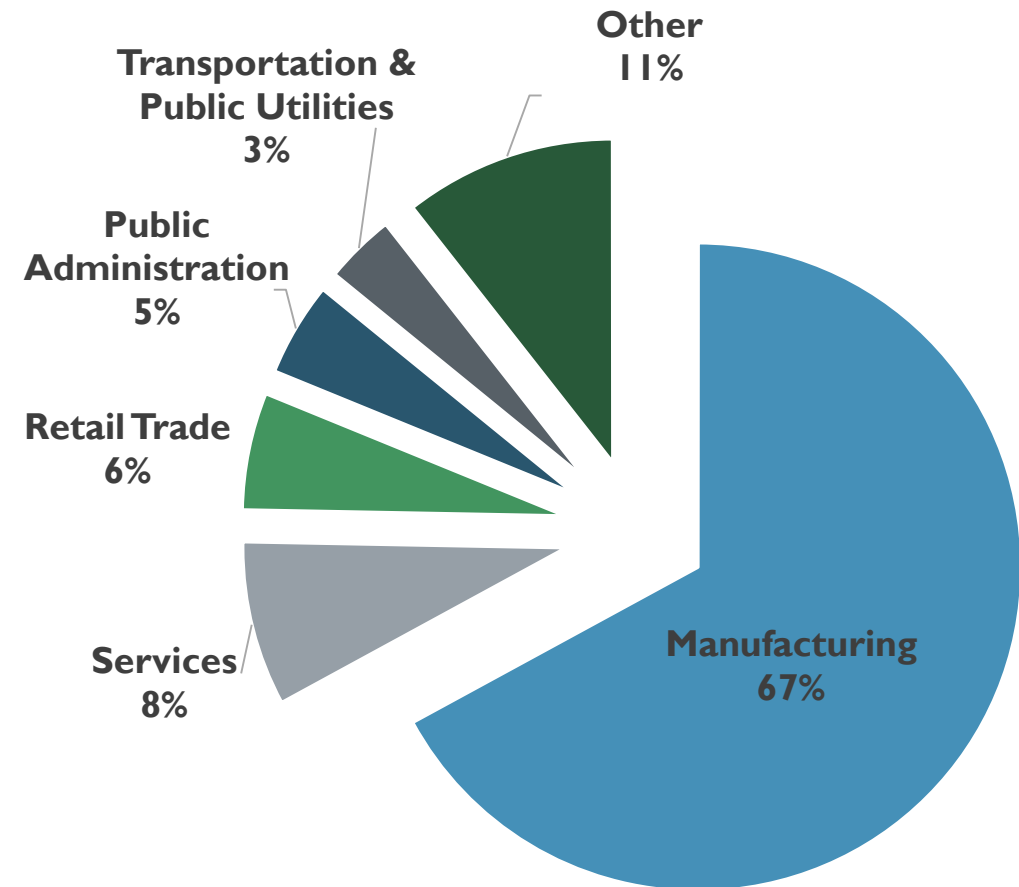


- ❑ Rule 1147 limits do not apply to equipment rated below 325,000 BTU/hr
- ❑ Equipment rated between 325,000 BTU/hr and 2,000,000 BTU/hr are not the focus of this rulemaking

# RULE 1147 RECLAIM UNIVERSE INDUSTRY OVERVIEW

Assessment of Emission  
Limits of Existing Units

Type of Industry Category	Total Number of Facilities
Manufacturing	57
Services	7
Retail Trade	5
Public Administration	4
Transportation & Public Utilities	3
Construction	2
Wholesale Trade	2
Mining	2
Oil and Gas Extraction	1
Finance, Insurance, Real Estate	1
Transportation and Public Utilities	1
<b>Grand Total</b>	<b>85</b>



# RULE 1147 RECLAIM UNIVERSE EQUIPMENT OVERVIEW

Assessment of Emission  
Limits of Existing Units

Type of Equipment	Total Number
Oven/Dryer/Heater/Furnace/Kiln/Heated Process Tanks	219
Afterburner/Thermal Oxidizer/Oxidizer/Regenerative Thermal Oxidizer	80
Autoclave	16
Fryer	13
Crematory	5
Burn-off Oven/ Incinerator	8
Chiller	3
Turbine (Diesel)	3
Spray Coating Operation <sup>1</sup>	3
Kettle/Tar Pot	2
Singeing Machine	2
<b>Grand Total</b>	<b>355</b>

<sup>1</sup> Some heated spray booths are permitted under heater

# RULE 1147 RECLAIM UNIVERSE

## EMISSION LIMIT ASSESSMENT OF EXISTING UNITS

Assessment of Emission  
Limits of Existing Units

- ❑ Staff conducted analysis of each Rule 1147 category for applicable RECLAIM equipment
- ❑ Information analyzed for each equipment category:
  - Total number of impacted units
  - Units with Emission limit greater than that of Rule 1147 limits
  - Units with Emission limit less than or equal to Rule 1147 limits



**Emission Limit Assessment:**

*Ovens, Dryers, Heaters, Furnaces, Kilns, and Heated Process Tanks*

# RULE 1147 RECLAIM UNIVERSE

## OVENS/DRYERS/HEATERS/FURNACES/KILNS/HEATED PROCESS TANKS

Assessment of Emission  
Limits of Existing Units

- ❑ Total of 219 ovens, dryers, heaters, furnaces kilns and heated process tanks
- ❑ Equipment in this category is used in a large variety of processes and industries
- ❑ Current Rule 1147 Limit:

Process Temperature		
$\leq 800^\circ \text{ F}$	$> 800^\circ \text{ F}$ $< 1200^\circ \text{ F}$	$\geq 1200^\circ \text{ F}$
30 ppm		60 ppm

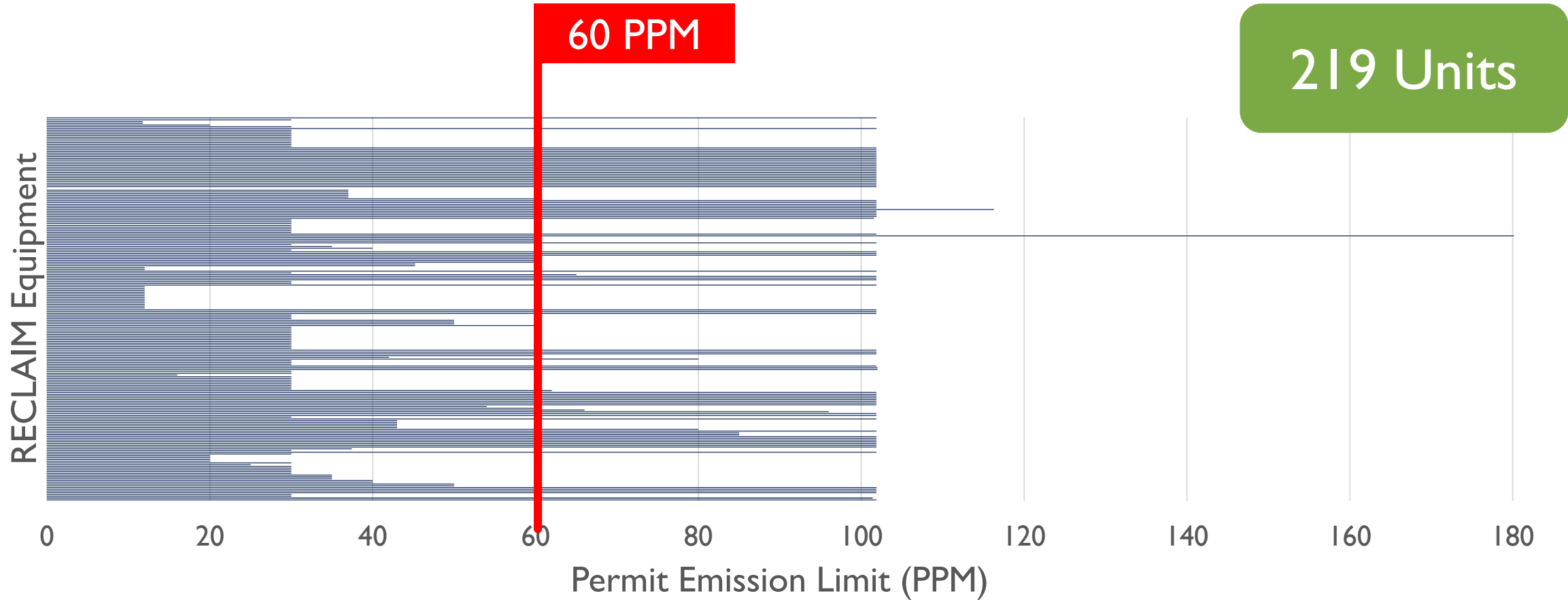
- ❑ 92 out of 219 impacted units permitted with emission limits above 60 ppm
- ❑ 127 out of 219 impacted units permitted with emission limits below or equal to 60 ppm
- ❑ Those complying with limits 30 ppm or lower are likely due to BACT



# RULE 1147 RECLAIM UNIVERSE

OVENS/DRYERS/HEATERS/FURNACES/KILNS/HEATED PROCESS TANKS

Assessment of Emission Limits of Existing Units





# RULE 1147 RECLAIM UNIVERSE

OVENS/DRYERS/HEATERS/FURNACES/KILNS/HEATED PROCESS TANKS

Assessment of Emission  
Limits of Existing Units

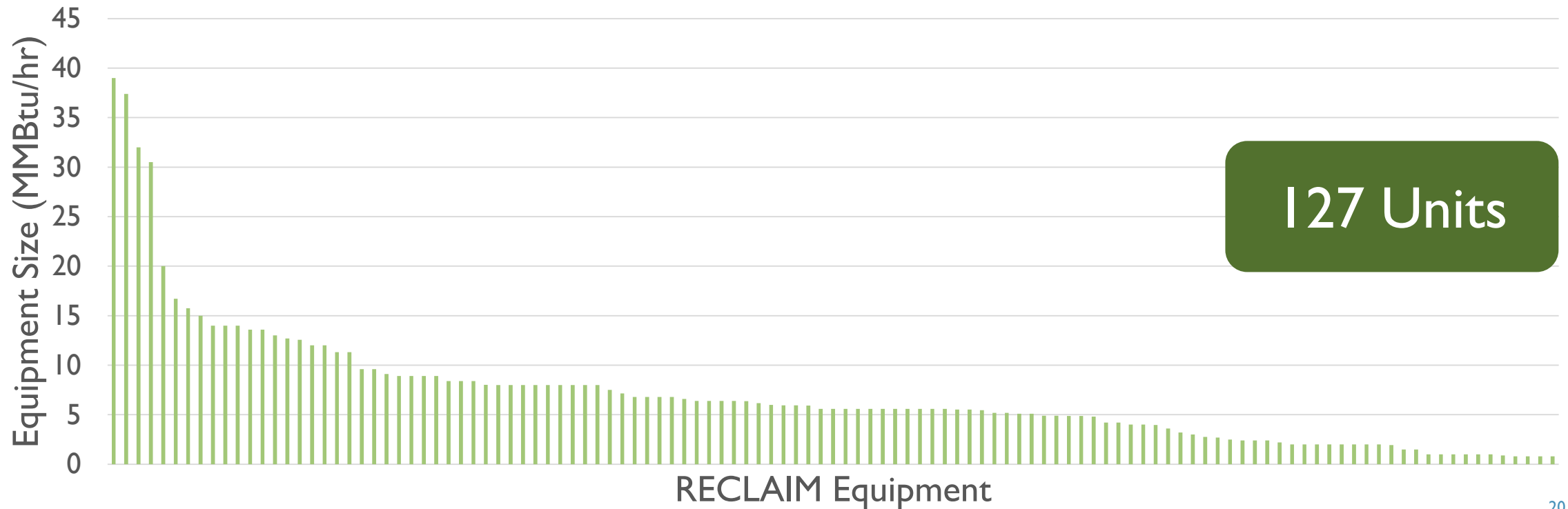
- ❑ Of the 92 units that are > 60 ppm:
  - Equipment sizes ranged from 0.08 to 84 MMBtu/hr
  - 12 units were rated greater than or equal to 10 MMBtu/hr
  - 15 units were rated between 10 MMBtu/hr and 5 MMBtu/hr
  - 65 units were rated below 5 MMBtu/hr
- ❑ Further investigation will be conducted for two units that are >130 lbs/mmscf (~102 ppm)

# RULE 1147 RECLAIM UNIVERSE

OVENS/DRYERS/HEATERS/FURNACES/KILNS/HEATED PROCESS TANKS

Assessment of Emission  
Limits of Existing Units

Units With Emissions Less Than or Equal to Rule 1147 Limits



# RULE 1147 RECLAIM UNIVERSE

OVENS/DRYERS/HEATERS/FURNACES/KILNS/HEATED PROCESS TANKS

Assessment of Emission  
Limits of Existing Units

- Of the 127 units that are  $\leq 60$  ppm:
  - Equipment sizes ranged from 0.8 to 39 MMBtu/hr
  - 22 units were rated greater than or equal to 10 MMBtu/hr
  - 61 units were rated between 10 MMBtu/hr and 5 MMBtu/hr
  - 44 units were rated below 5 MMBtu/hr



**Emission Limit Assessment:**

*Afterburners, Thermal Oxidizers, Oxidizers,  
Regenerative Thermal Oxidizers*

# RULE 1147 RECLAIM UNIVERSE

AFTERBURNERS/THERMAL OXIDIZERS/OXIDIZERS/REGENERATIVE THERMAL OXIDIZERS

Assessment of Emission  
Limits of Existing Units

- ❑ 80 afterburners, thermal oxidizers, oxidizers, regenerative thermal oxidizers
- ❑ Equipment in this category are used as pollution control equipment for pollutants such as VOC
- ❑ Current Rule 1147 Limit:

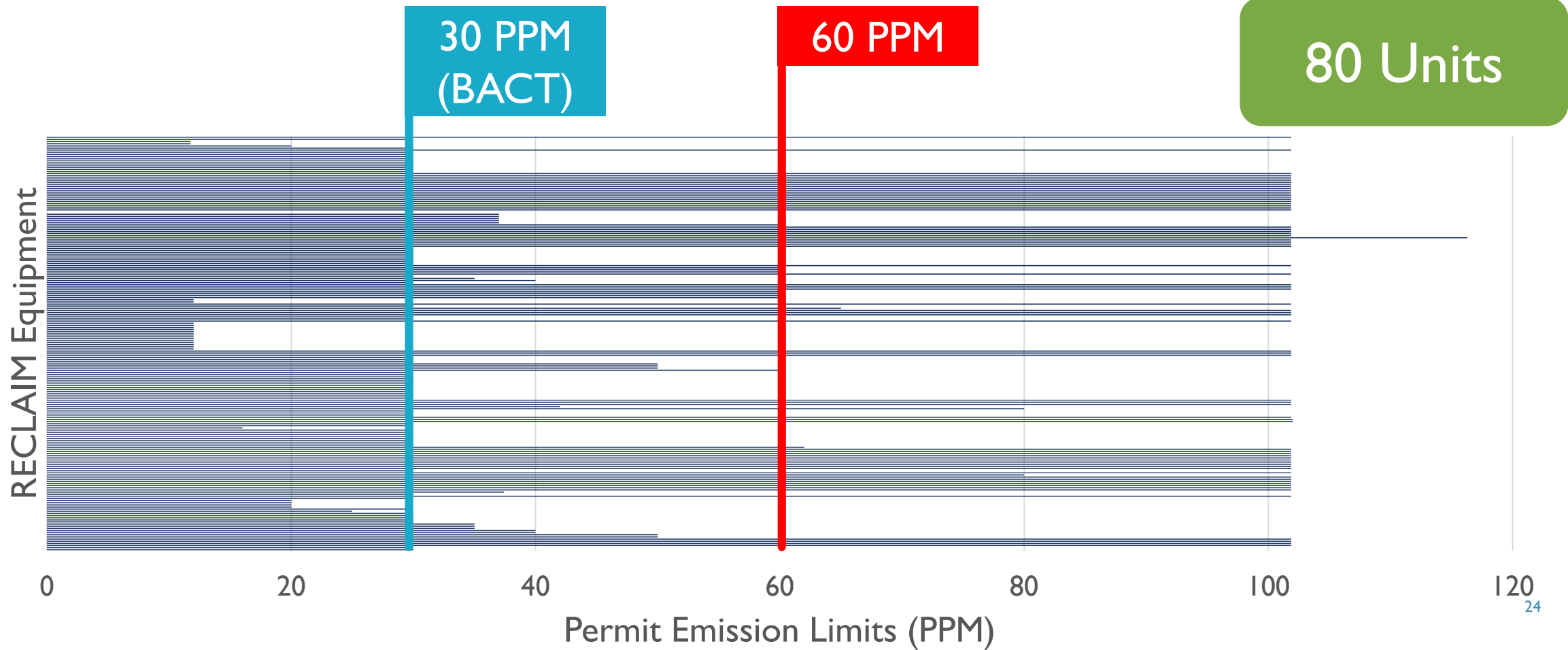
Process Temperature		
$\leq 800^{\circ} \text{ F}$	$> 800^{\circ} \text{ F}$ $< 1200^{\circ} \text{ F}$	$\geq 1200^{\circ} \text{ F}$
60 ppm		

- ❑ 52 out of 80 units have emission limits above 60 ppm
- ❑ 28 out of 80 units have emission limits below or equal to 60 ppm

# RULE 1147 RECLAIM UNIVERSE

AFTERBURNERS/THERMAL OXIDIZERS/OXIDIZERS/REGENERATIVE THERMAL OXIDIZERS

Assessment of Emission Limits of Existing Units



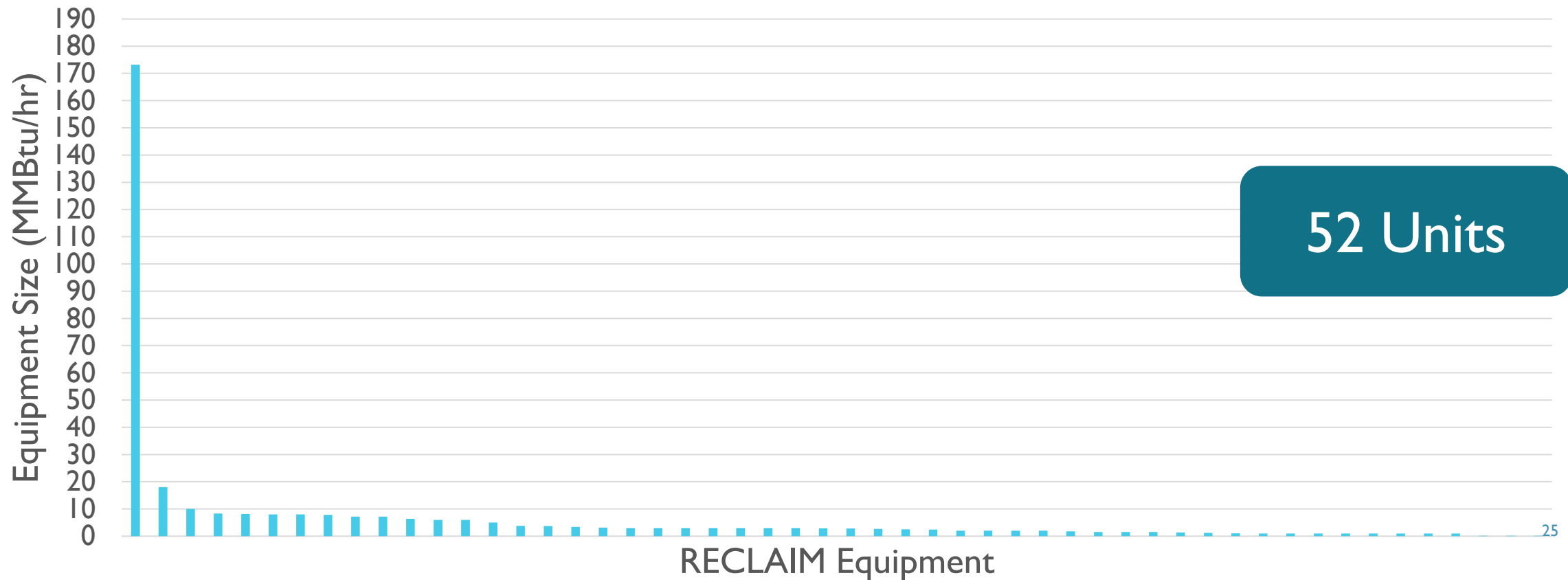


# RULE 1147 RECLAIM UNIVERSE

AFTERBURNERS/THERMAL OXIDIZERS/OXIDIZERS/REGENERATIVE THERMAL OXIDIZERS

Assessment of Emission  
Limits of Existing Units

### Units With Emissions Greater Than Rule 1147 Limits



52 Units

# RULE 1147 RECLAIM UNIVERSE

AFTERBURNERS/THERMAL OXIDIZERS/OXIDIZERS/REGENERATIVE THERMAL OXIDIZERS

Assessment of Emission  
Limits of Existing Units

- ❑ Of the 52 units > 60 ppm:
  - Equipment sizes ranged from 0.17 to 173 MMBtu/hr
  - 3 units were rated greater than or equal to 10 MMBtu/hr
  - 11 units were rated between 10 MMBtu/hr and 5 MMBtu/hr
  - 38 units were rated below 5 MMBtu/hr
- ❑ Some thermal oxidizers identified meet the definition of Flares in Rule 1118.1



# RULE 1147 RECLAIM UNIVERSE

AFTERBURNERS/THERMAL OXIDIZERS/OXIDIZERS/REGENERATIVE THERMAL OXIDIZERS

Assessment of Emission  
Limits of Existing Units

- ❑ Of the 28 units  $\leq$  60 ppm:
  - Equipment sizes ranged from 0.43 to 44.1 MMBtu/hr
  - 7 units were rated greater than or equal to 10 MMBtu/hr
  - 7 units were rated between 10 MMBtu/hr and 5 MMBtu/hr
  - 14 units were rated below 5 MMBtu/hr
- ❑ Current BACT\* for afterburners, thermal oxidizers, and catalytic oxidizer is 30 ppm @ 3% O<sub>2</sub> (burner emissions only)



# **Emission Limit Assessment:**

## *Autoclaves*

# RULE 1147 RECLAIM UNIVERSE AUTOCLAVES

Assessment of Emission  
Limits of Existing Units

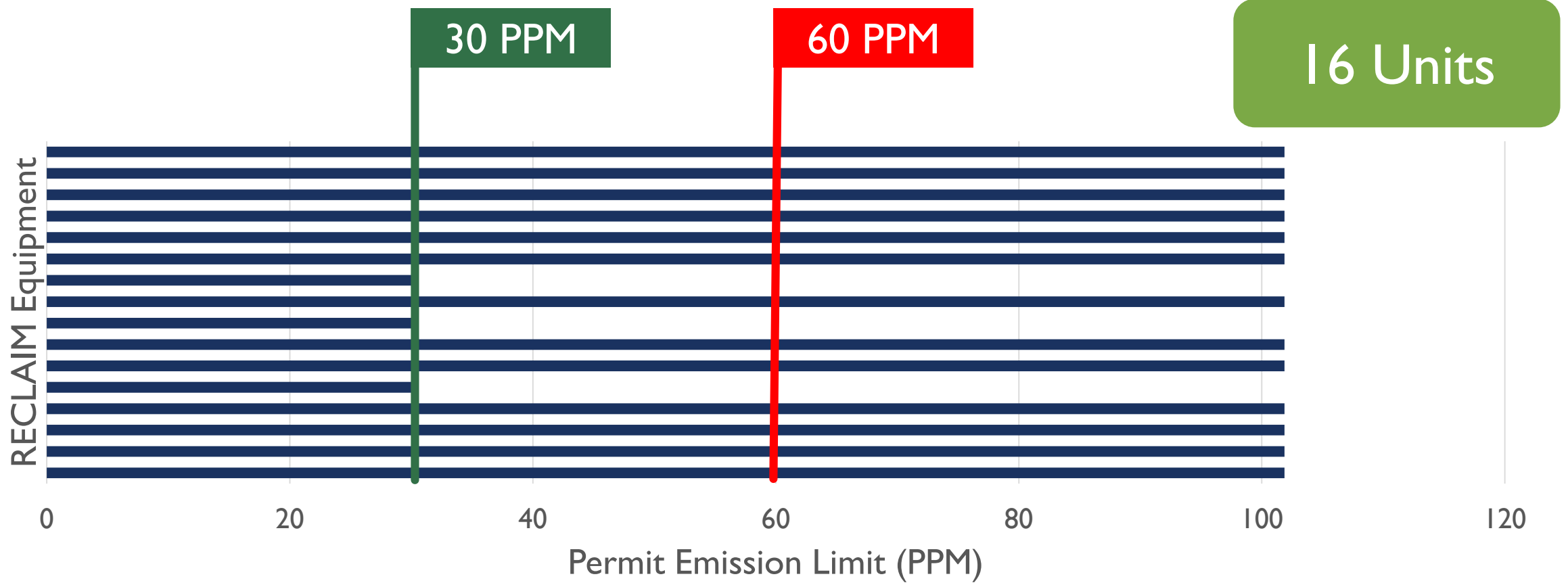
- ❑ 16 autoclaves
- ❑ Equipment in this category are used primarily in the aerospace applications
- ❑ Autoclaves are considered as “Other Unit or Process Temperature” in Rule 1147 with the following current rule limit:

<b>Process Temperature</b>		
<b>≤ 800° F</b>	<b>&gt; 800 ° F &lt; 1200° F</b>	<b>≥ 1200 ° F</b>
<b>30 ppm</b>		<b>60 ppm</b>

- ❑ 13 out of 16 impacted units permitted with emission limits above 60 ppm
- ❑ 3 out of 16 impacted units permitted with emission limits below or equal to 60 ppm

# RULE 1147 RECLAIM UNIVERSE AUTOCLAVES

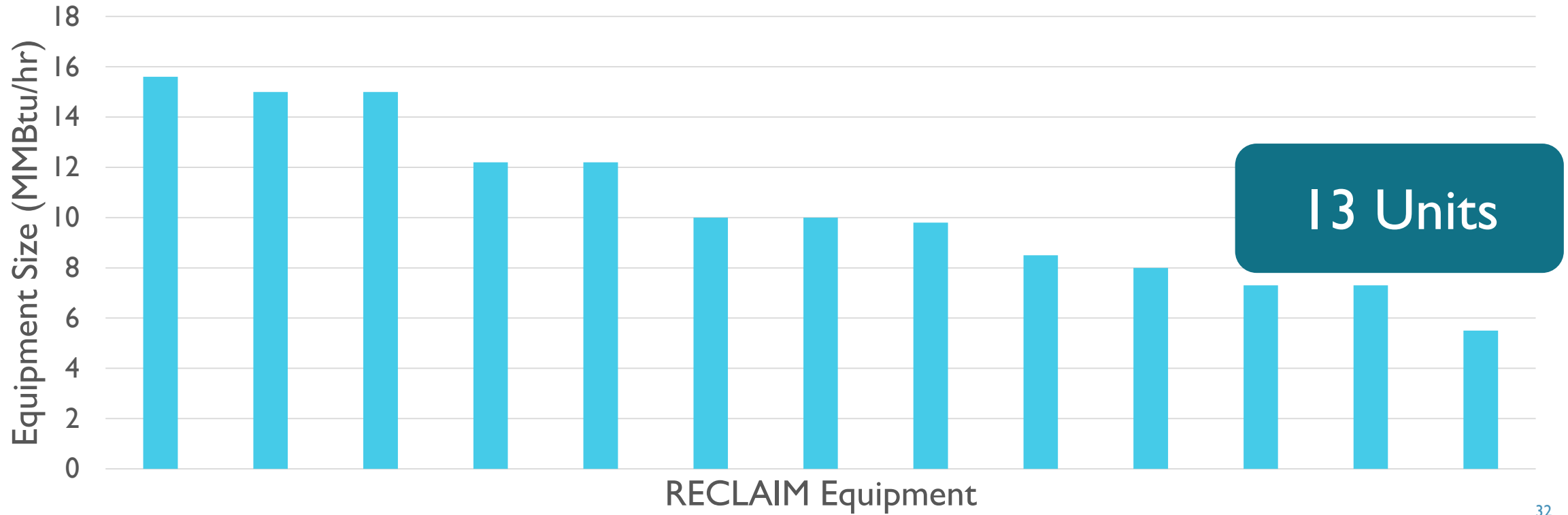
Assessment of Emission  
Limits of Existing Units



# RULE 1147 RECLAIM UNIVERSE AUTOCLAVES

Assessment of Emission  
Limits of Existing Units

Units With Emissions Greater Than Rule 1147 Limits





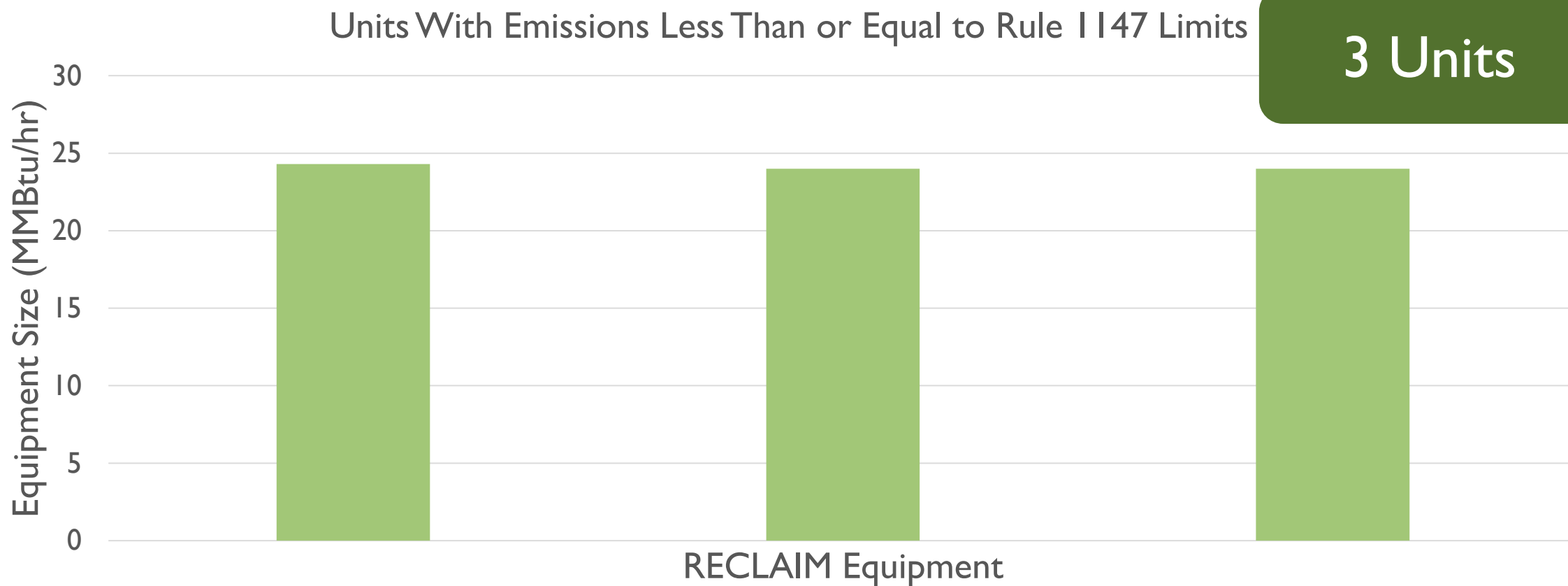
# RULE 1147 RECLAIM UNIVERSE AUTOCLAVES

Assessment of Emission  
Limits of Existing Units

- ❑ Of the 13 units > 60 ppm:
  - Equipment sizes ranged from 5.5 to 15.6 MMBtu/hr
  - 7 units were rated greater than or equal to 10 MMBtu/hr
  - 6 units were rated between 10 MMBtu/hr and 5 MMBtu/hr
- ❑ Low size variation among impacted equipment
- ❑ Equipment located across 4 facilities

# RULE 1147 RECLAIM UNIVERSE AUTOCLAVES

Assessment of Emission  
Limits of Existing Units



# RULE 1147 RECLAIM UNIVERSE AUTOCLAVES

Assessment of Emission  
Limits of Existing Units

- ❑ Of the 3 units at 30 ppm:
  - Equipment sizes are similar in size and ranged from 24.0 to 24.3 MMBtu/hr
- ❑ All three units are located in separate facilities
- ❑ Demonstrates that 30 ppm emission limits for autoclaves are achievable



# **Emission Limit Assessment:**

*Fryers*

# RULE 1147 RECLAIM UNIVERSE FRYERS

Assessment of Emission  
Limits of Existing Units

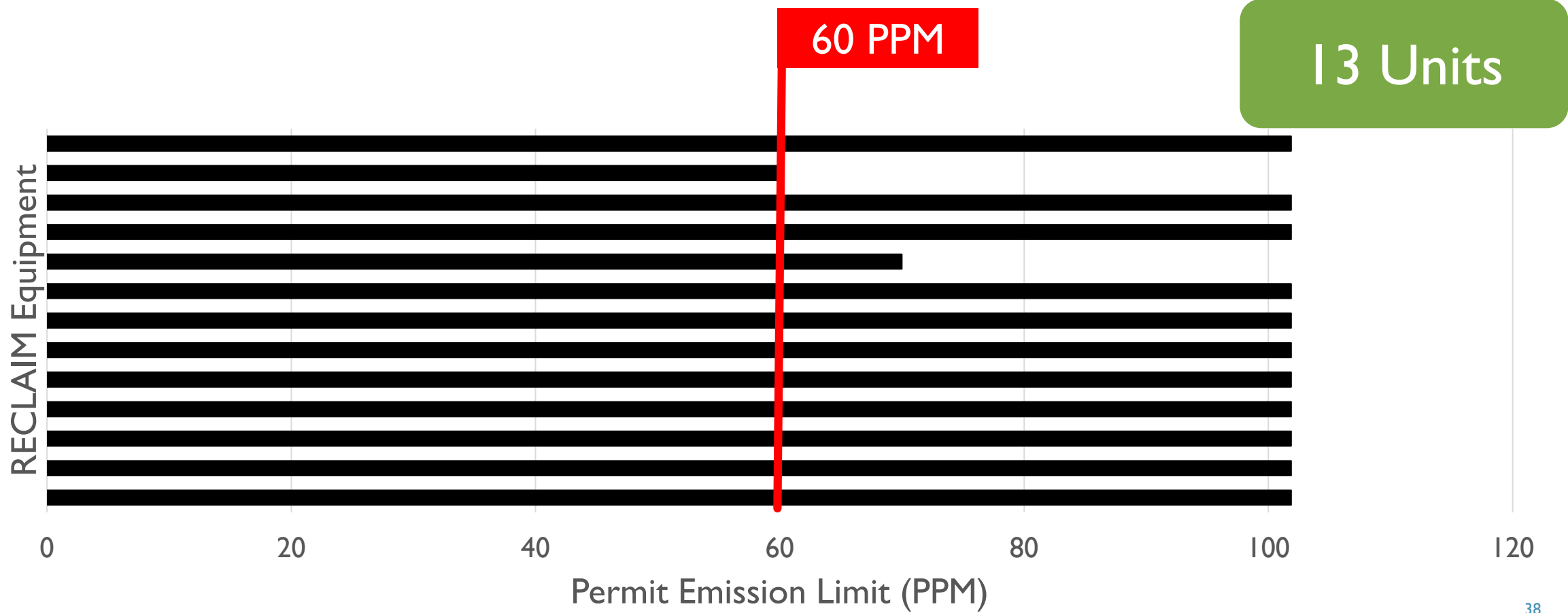
- ❑ 13 fryers
- ❑ Equipment in this category are used primarily in food preparation
- ❑ Current Rule 1147 Limit:

Process Temperature		
$\leq 800^{\circ} \text{ F}$	$> 800^{\circ} \text{ F}$ $< 1200^{\circ} \text{ F}$	$\geq 1200^{\circ} \text{ F}$
60 ppm		

- ❑ 12 out of 13 impacted units permitted with emission limits above 60 ppm
- ❑ 1 out of 13 impacted units permitted with emission limits below or equal to 60 ppm

# RULE 1147 RECLAIM UNIVERSE FRYERS

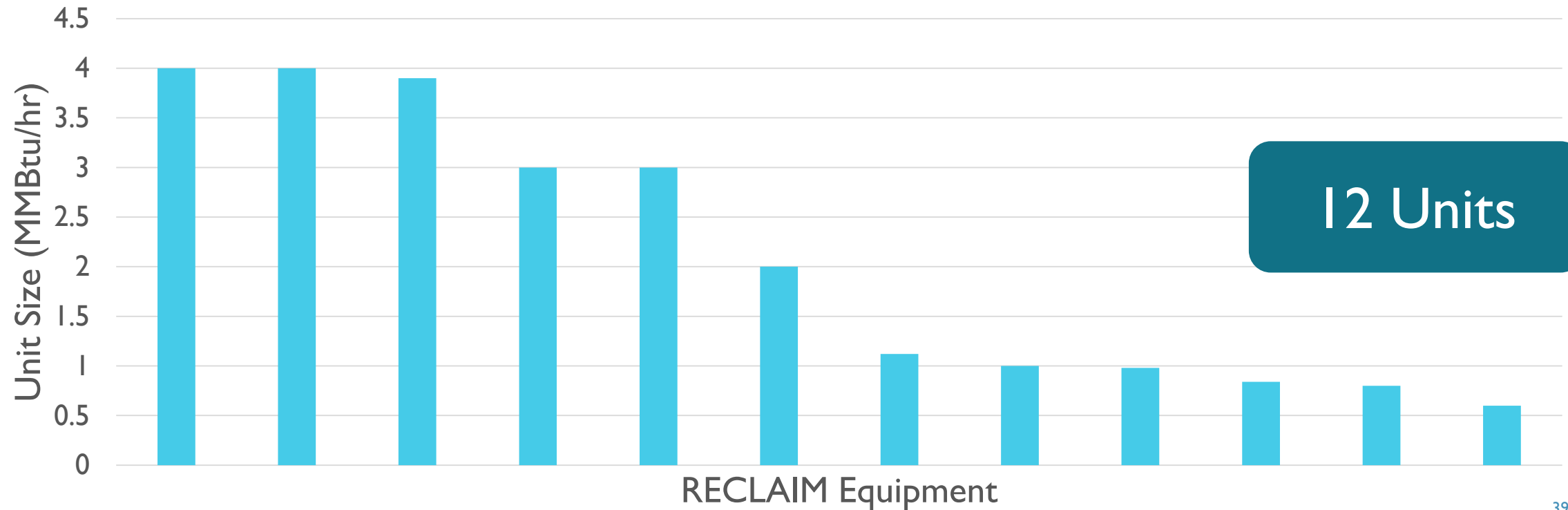
Assessment of Emission  
Limits of Existing Units



# RULE 1147 RECLAIM UNIVERSE FRYERS

Assessment of Emission  
Limits of Existing Units

Units With Emissions Greater Than Rule 1147 Limits



# RULE 1147 RECLAIM UNIVERSE FRYERS

Assessment of Emission  
Limits of Existing Units

- Of the 13 units > 60 ppm:
  - 12 units have emission limits greater than Rule 1147 limits
    - Equipment sizes ranged from 0.6 to 4.0 MMBtu/hr
    - 9 out of 13 pieces of equipment located at one facility
  - One unit with emission limit less than or equal to 60 ppm is rated to 0.98 MMBtu/hr





# **Emission Limit Assessment:**

*Crematory*

# RULE 1147 RECLAIM UNIVERSE CREMATORY

Assessment of Emission  
Limits of Existing Units

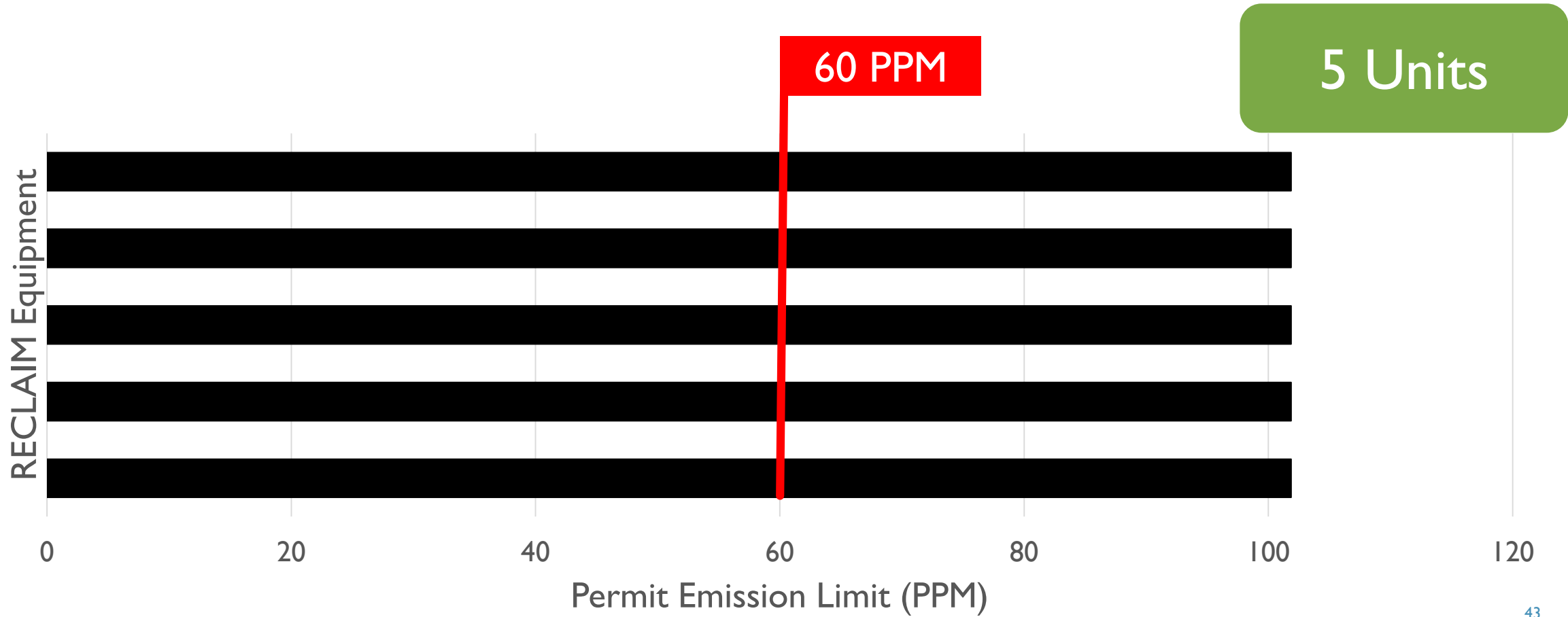
- ❑ 5 crematory units
- ❑ Equipment in this category are used to burn away various organic materials at high temperatures
- ❑ Current Rule 1147 Limit:

Process Temperature		
$\leq 800^{\circ} \text{ F}$	$> 800^{\circ} \text{ F}$ $< 1200^{\circ} \text{ F}$	$\geq 1200^{\circ} \text{ F}$
60 ppm		

- ❑ All 5 impacted units were permitted with emission limits above 60 ppm

# RULE 1147 RECLAIM UNIVERSE CREMATORY

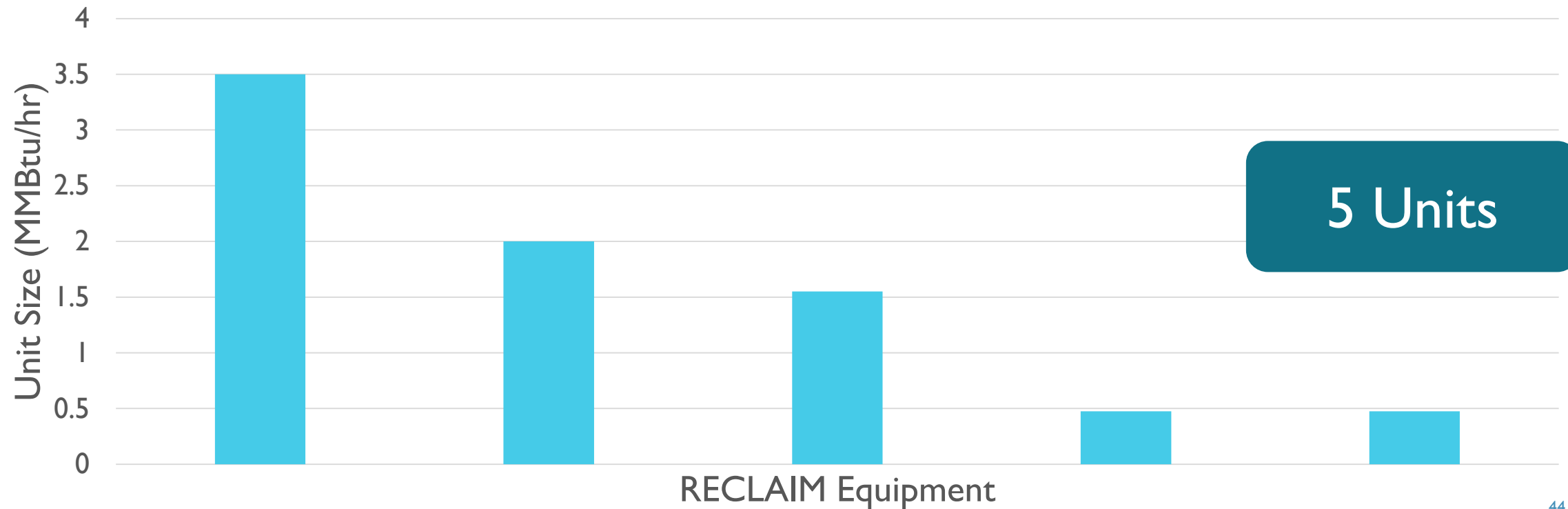
Assessment of Emission  
Limits of Existing Units



# RULE 1147 RECLAIM UNIVERSE CREMATORY

Assessment of Emission  
Limits of Existing Units

Units With Emissions Greater Than Rule 1147 Limits



# RULE 1147 RECLAIM UNIVERSE CREMATORY

Assessment of Emission  
Limits of Existing Units

- ❑ All units are > 60 ppm
- ❑ Equipment sizes ranged from 0.48 to 3.5 MMBtu/hr
- ❑ All 5 pieces of equipment are located in one facility



**Emission Limit Assessment:**

*Burn-Off Ovens and Incinerators*

# RULE 1147 RECLAIM UNIVERSE BURN-OFF OVEN / INCINERATOR

Assessment of Emission  
Limits of Existing Units

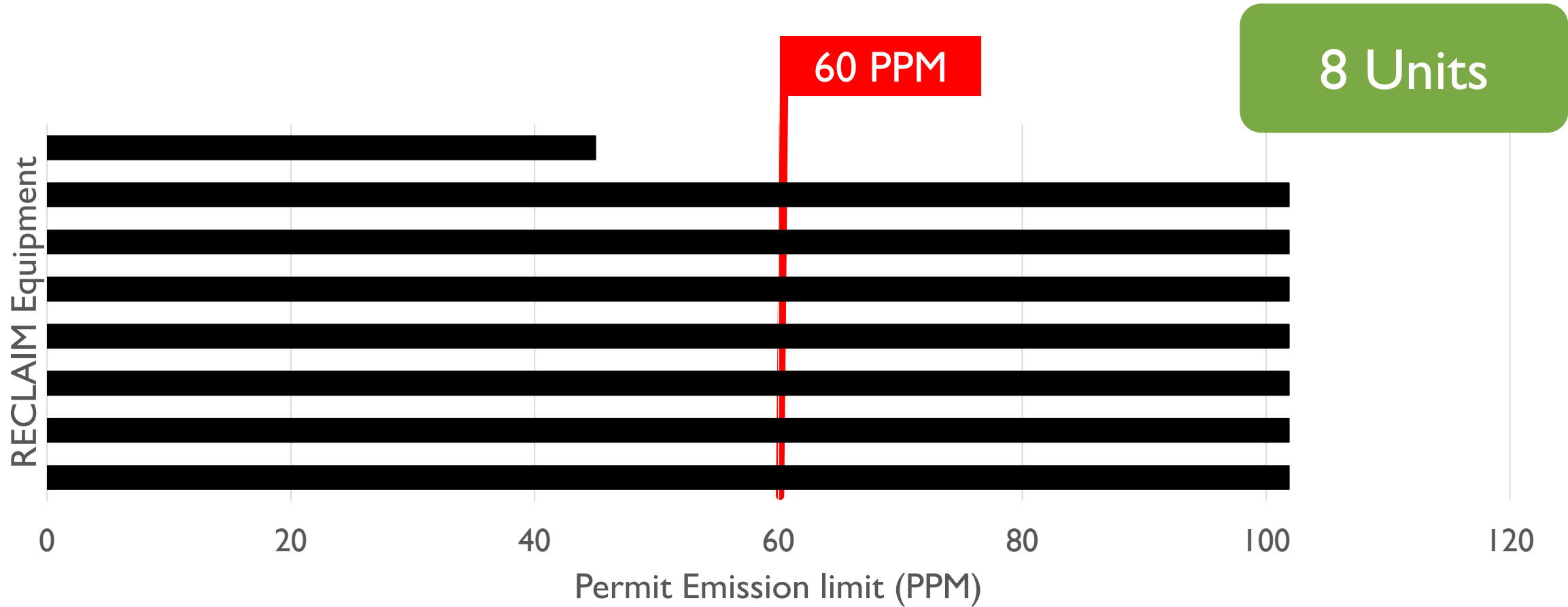
- ❑ 8 burn-off oven/incinerator units
- ❑ Equipment in this category are used to burn away various in-organic materials at high temperatures
- ❑ Current Rule 1147 Limit:

Process Temperature		
$\leq 800^{\circ} \text{ F}$	$> 800^{\circ} \text{ F}$ $< 1200^{\circ} \text{ F}$	$\geq 1200^{\circ} \text{ F}$
60 ppm		

- ❑ 7 out of 8 impacted units permitted with emission limits above 60 ppm
- ❑ 1 out of 7 impacted units permitted with emission limits below or equal to 60 ppm

# RULE 1147 RECLAIM UNIVERSE BURN-OFF OVEN / INCINERATOR

Assessment of Emission  
Limits of Existing Units

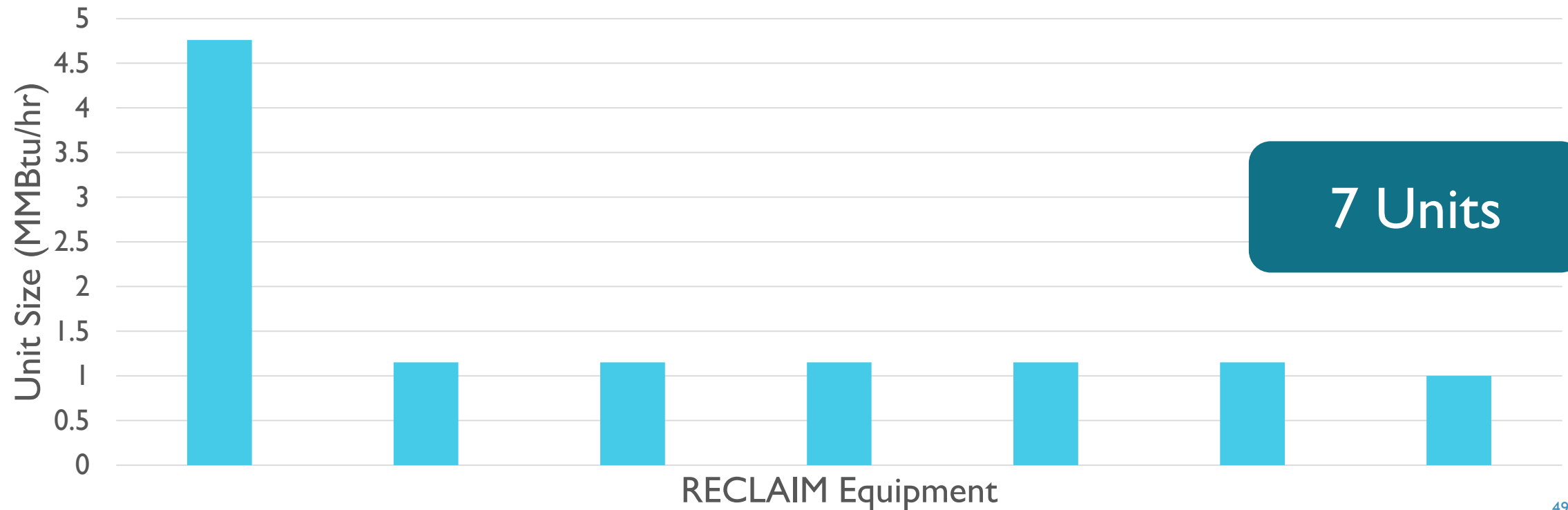




# RULE 1147 RECLAIM UNIVERSE BURN-OFF OVEN / INCINERATOR

Assessment of Emission  
Limits of Existing Units

Units With Emissions Greater Than Rule 1147 Limits



# RULE 1147 RECLAIM UNIVERSE BURN-OFF OVEN / INCINERATOR

Assessment of Emission  
Limits of Existing Units

- Of the 7 units  $> 60$  ppm:
  - Equipment sizes ranged from 1.00 to 4.76 MMBtu/hr
- One unit  $\leq 60$  ppm
  - Unit is rated at 14 MMBtu/hr



**Emission Limit Assessment:**

*Adsorption Chillers*

# RULE 1147 RECLAIM UNIVERSE ADSORPTION CHILLERS

Assessment of Emission  
Limits of Existing Units

- ❑ 3 adsorption chillers
- ❑ Adsorption Chillers are exempt from the “Boiler or Steam Generator” definition of Rule 1146(b) which puts them into Rule 1147
- ❑ Adsorption Chillers are considered as “Other Unit or Process Temperature” in Rule 1147 with the following current rule limit:

<b>Process Temperature</b>		
<b>≤ 800° F</b>	<b>&gt; 800 ° F &lt; 1200° F</b>	<b>≥ 1200 ° F</b>
<b>30 ppm</b>		<b>60 ppm</b>

- ❑ All 3 impacted units were permitted with emission limits of 20 ppm (below 30 ppm limit of Rule 1147)



**Emission Limit Assessment:**

*Micro-Turbines (Diesel)*

# RULE 1147 RECLAIM UNIVERSE MICRO-TURBINES (DIESEL)

Assessment of Emission  
Limits of Existing Units

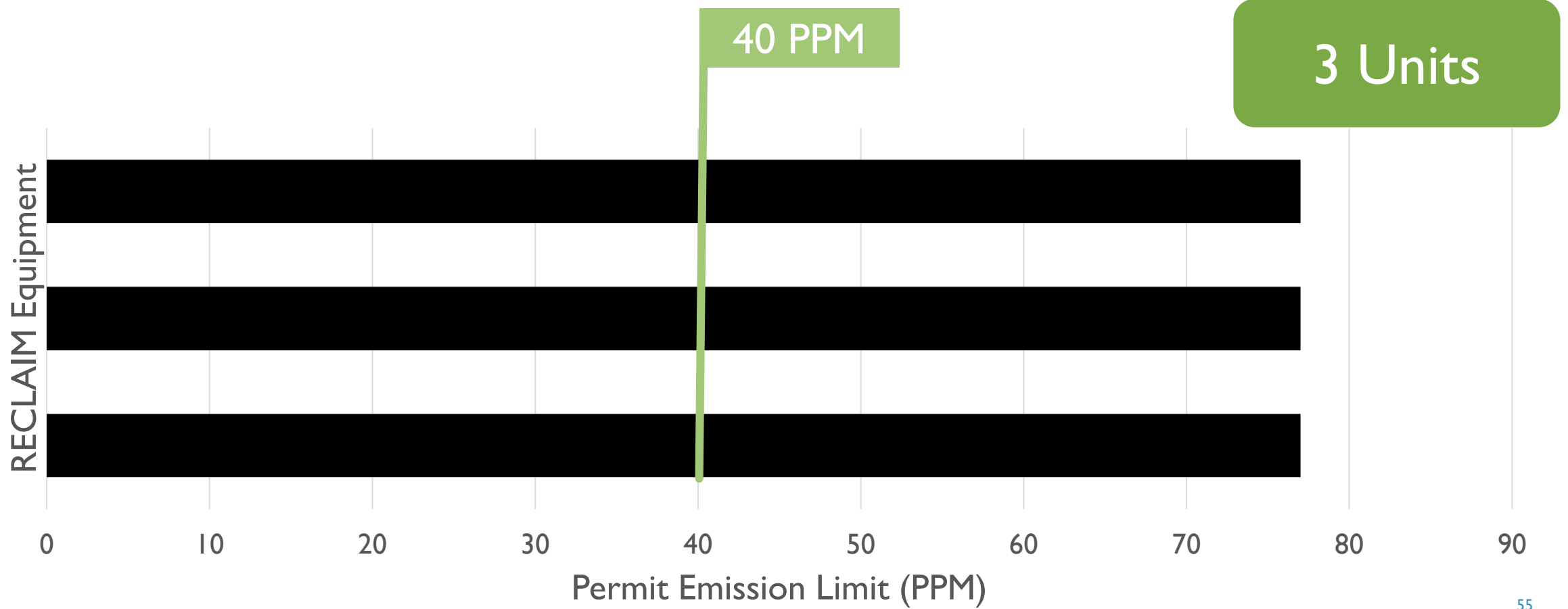
- ❑ 3 diesel fired micro-turbines
- ❑ Turbines that are less than 0.3 megawatt (MW) are exempt from the applicability of Rule 1134 and diesel fueled micro-turbines do not qualify for the exemption under Rule 219(b)(1) which puts them into Rule 1147 applicability
  - Staff is contemplating removing exemption for turbines in Rule 1147 applicability
- ❑ Diesel fueled equipment are considered as “Liquid Fueled” in Rule 1147 with the following current rule limit:

<b>Process Temperature</b>		
<b><math>\leq 800^{\circ} \text{ F}</math></b>	<b><math>&gt; 800^{\circ} \text{ F}</math> <math>&lt; 1200^{\circ} \text{ F}</math></b>	<b><math>\geq 1200^{\circ} \text{ F}</math></b>
<b>40 ppm</b>		

- ❑ All 3 impacted units were permitted with emission limits of 77 ppm

# RULE 1147 RECLAIM UNIVERSE MICRO-TURBINES (DIESEL)

Assessment of Emission  
Limits of Existing Units

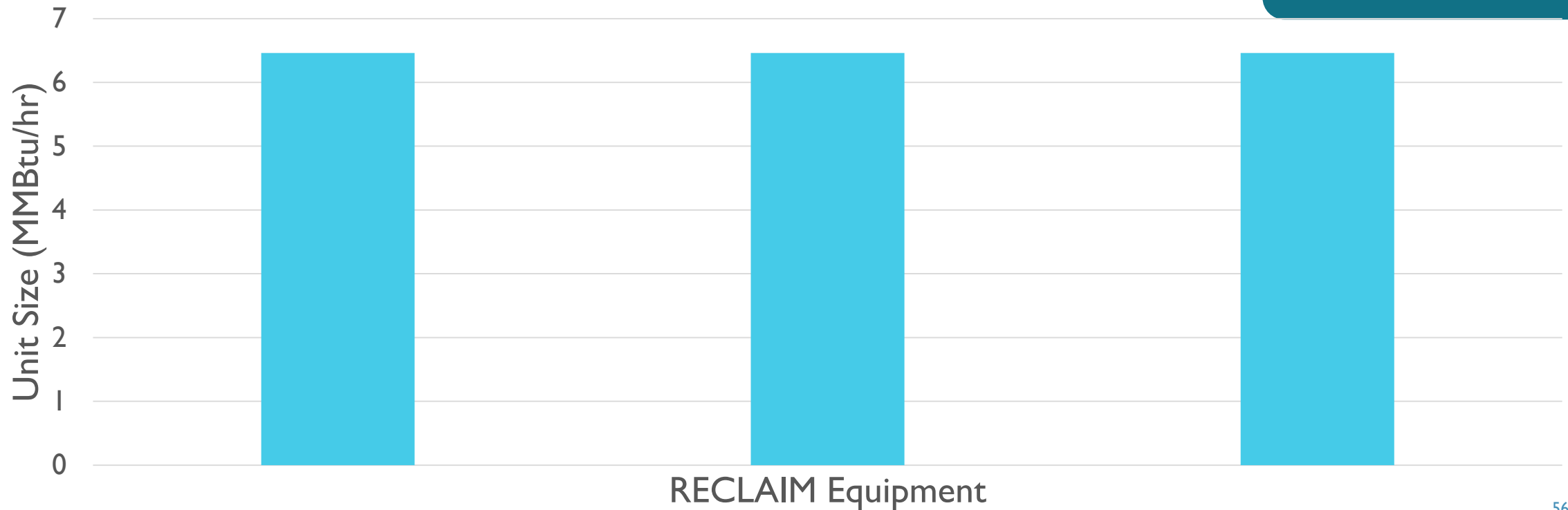


# RULE 1147 RECLAIM UNIVERSE MICRO-TURBINES (DIESEL)

Assessment of Emission  
Limits of Existing Units

**3 Units**

Units With Emissions Greater Than Rule 1147 Limits





# RULE 1147 RECLAIM UNIVERSE MICRO-TURBINES (DIESEL)

Assessment of Emission  
Limits of Existing Units

- ❑ All three micro-turbines are located at the same facility
- ❑ Units are currently permitted to meet 77 ppm NO<sub>x</sub> and limited to less than 300 hours of operation per year



**Emission Limit Assessment:**

*Spray Coating Operations*

# RULE 1147 RECLAIM UNIVERSE SPRAY COATING OPERATIONS

Assessment of Emission  
Limits of Existing Units

- ❑ 3 spray coating units
- ❑ Equipment in this category are used as make-up air heaters to cure coating applications
- ❑ Current Rule 1147 Limit:

Process Temperature		
$\leq 800^{\circ} \text{ F}$	$> 800^{\circ} \text{ F}$ $< 1200^{\circ} \text{ F}$	$\geq 1200^{\circ} \text{ F}$
30 ppm		

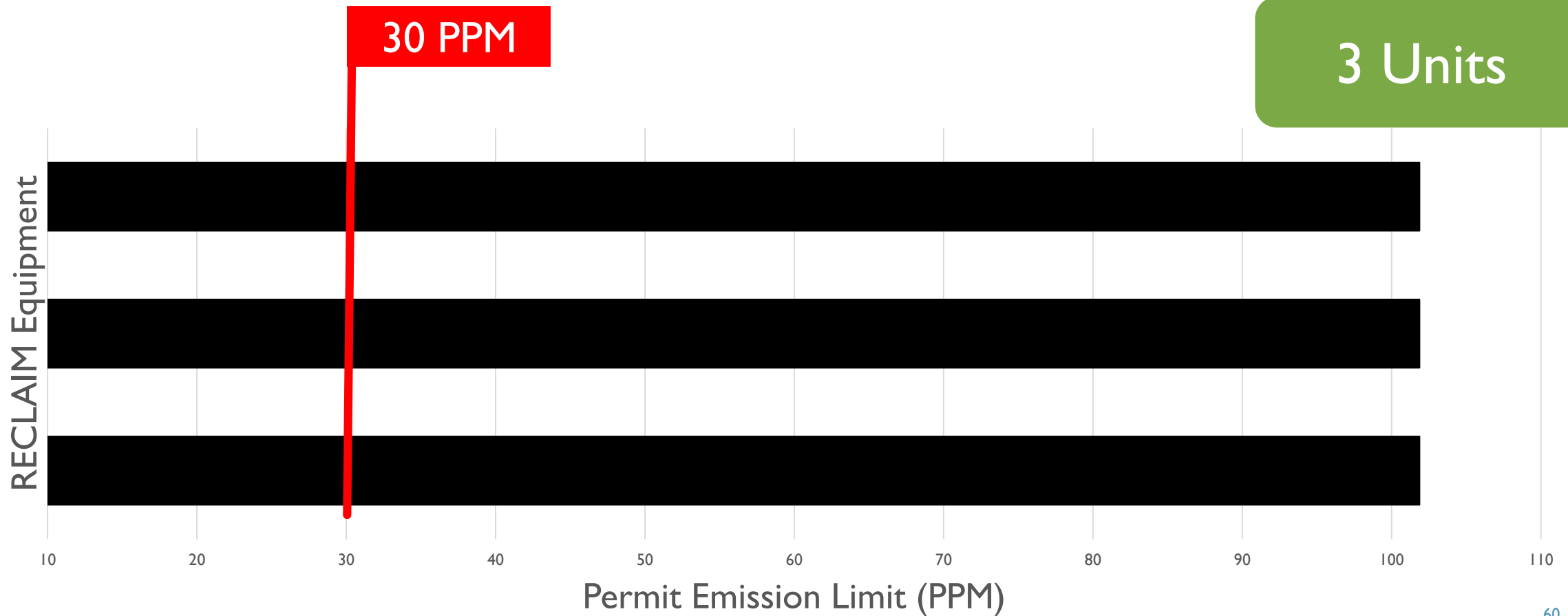
- ❑ All 3 impacted units permitted with emission limits above 30 ppm

# RULE 1147 RECLAIM UNIVERSE SPRAY COATING OPERATIONS

Assessment of Emission  
Limits of Existing Units

30 PPM

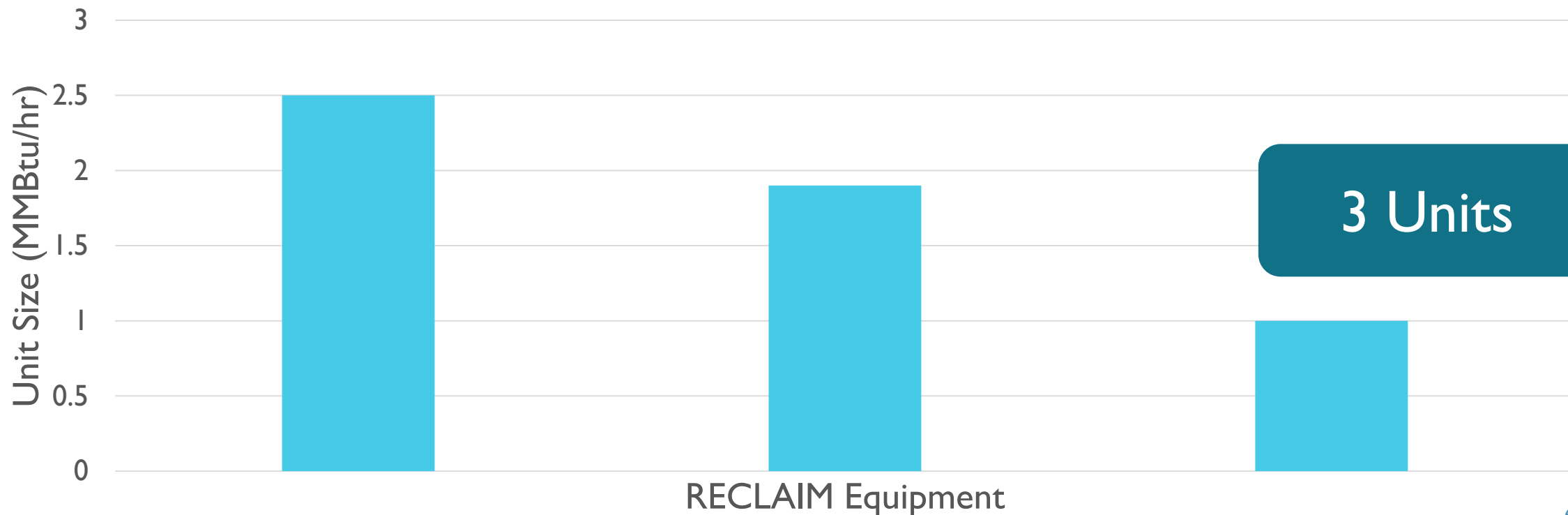
3 Units



# RULE 1147 RECLAIM UNIVERSE SPRAY COATING OPERATIONS

Assessment of Emission  
Limits of Existing Units

Units With Emissions Greater Than Rule 1147 Limits



# RULE 1147 RECLAIM UNIVERSE SPRAY COATING OPERATIONS

Assessment of Emission  
Limits of Existing Units

- ❑ All three impacted units are permitted at the RECLAIM default emission factor of 130 lbs/mmscf
- ❑ Unit size range from 1.0 to 2.5 MMBtu/hr
- ❑ Additional make-up heaters could be classified as heaters



## **Emission Limit Assessment:**

### *Kettles and Tar Pots*

# RULE 1147 RECLAIM UNIVERSE KETTLES / TAR POTS

Assessment of Emission  
Limits of Existing Units

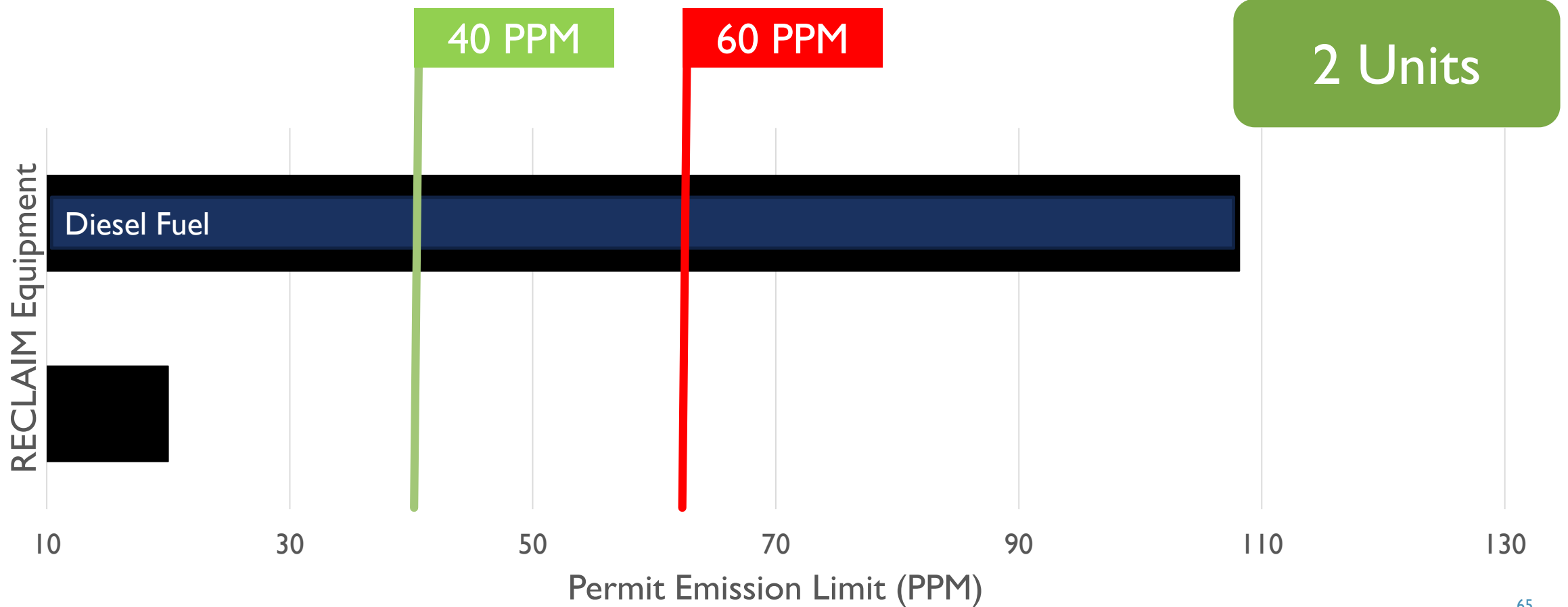
- ❑ 2 kettle and tar pots
  - ❑ One natural gas fired Kettle
  - ❑ One diesel fuel fired Tar Pot
- ❑ Kettles are classified as “Other Unit or Process Temperature” and diesel fueled tar pots are classified under “Liquid Fuel-Fired Units” in Rule 1147 with the following current rule limit:

Equipment Categories	Process Temperature		
	≤ 800° F	> 800 ° F < 1200° F	≥ 1200 ° F
Other Unit or Process Temperature	30 ppm		60 ppm
All Liquid Fuel-Fired Units	40 ppm		



# RULE 1147 RECLAIM UNIVERSE KETTLES / TAR POTS

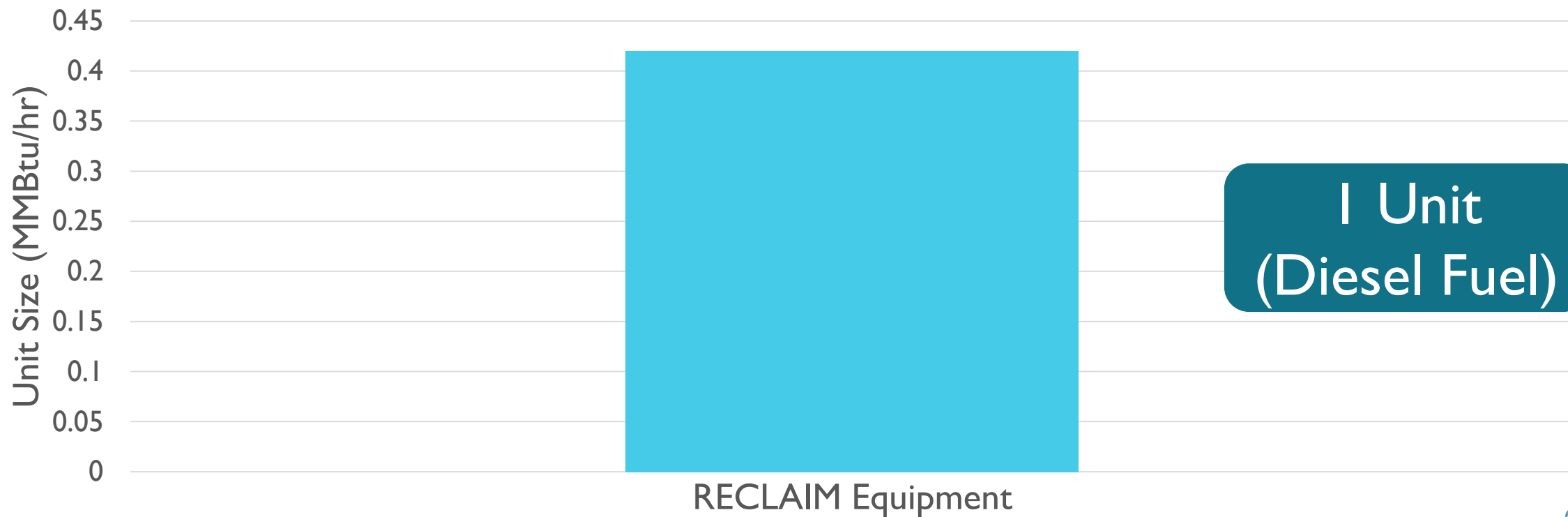
Assessment of Emission  
Limits of Existing Units



# RULE 1147 RECLAIM UNIVERSE KETTLES / TAR POTS

Assessment of Emission  
Limits of Existing Units

Units With Emissions Greater Than Rule 1147 Limits



# RULE 1147 RECLAIM UNIVERSE KETTLES / TAR POTS

Assessment of Emission  
Limits of Existing Units

- ❑ Natural gas fired Kettle is permitted to meet a NO<sub>x</sub> limit of 20 ppm
- ❑ Diesel fuel fired Tar Pot is permitted to the RECLAIM default emission factor of 130 lbs/mmscf



**Emission Limit Assessment:**

*Singeing Machines*

# RULE 1147 RECLAIM UNIVERSE SINGEING MACHINES

Assessment of Emission  
Limits of Existing Units

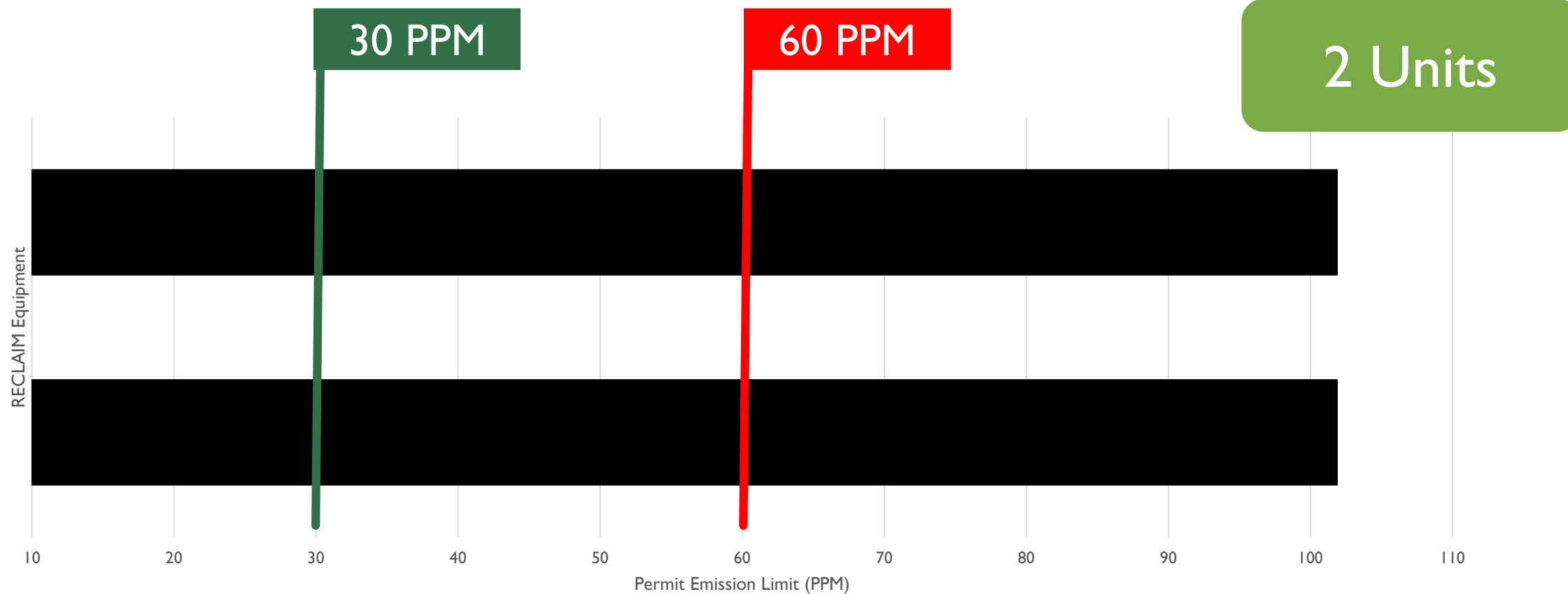
- ❑ 2 singeing machines
- ❑ Impacted equipment are used to burn off projecting fibers (such as hairs and textile)
- ❑ Singeing machines are considered as “Other Unit or Process Temperature” in Rule 1147 with the following current rule limit:

Process Temperature		
$\leq 800^{\circ} \text{ F}$	$> 800^{\circ} \text{ F}$ $< 1200^{\circ} \text{ F}$	$\geq 1200^{\circ} \text{ F}$
30 ppm		60 ppm

- ❑ Both units are permitted at RECLAIM default emission factor of 130 lbs/mmscf
- ❑ Both units are located at the same facility

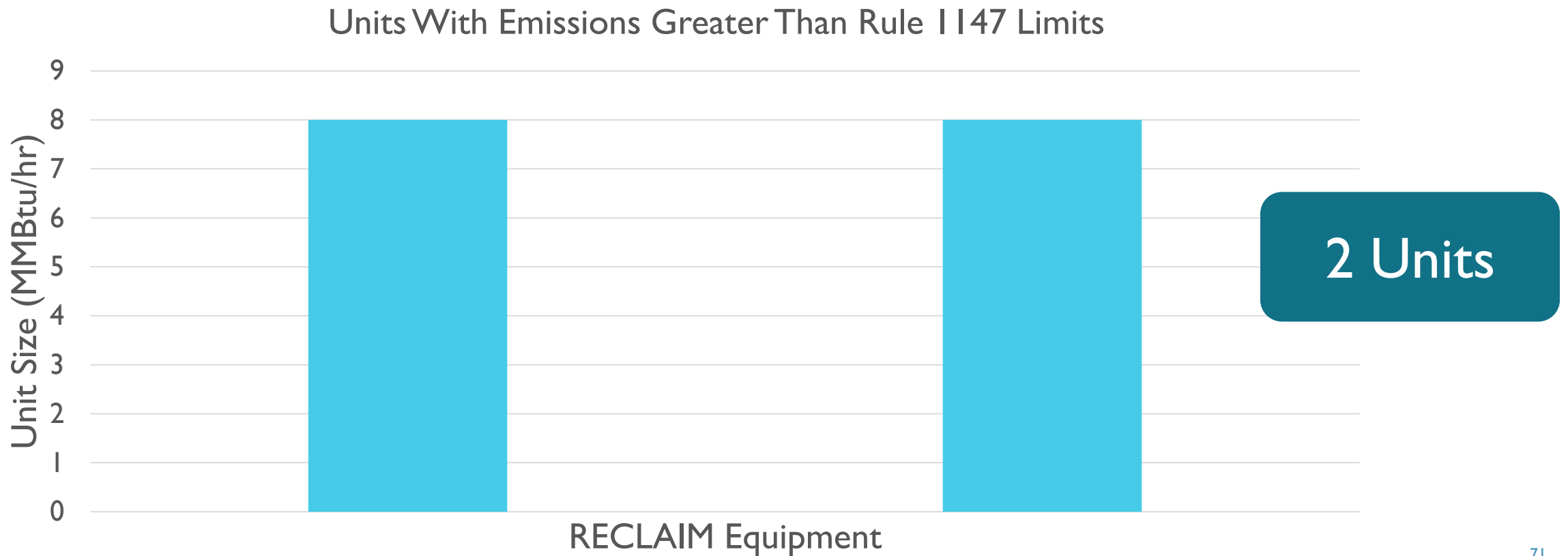
# RULE 1147 RECLAIM UNIVERSE SINGEING MACHINES

Assessment of Emission  
Limits of Existing Units



# RULE 1147 RECLAIM UNIVERSE SINGEING MACHINES

Assessment of Emission  
Limits of Existing Units



# AFTERBURNER/THERMAL OXIDIZER/OXIDIZER/REGENERATIVE THERMAL OXIDIZER

Additional Considerations

Gaseous Fuel-Fired Equipment	Process Temperature		
	≤ 800° F	> 800 ° F < 1200° F	≥ 1200 ° F
Afterburner, Degassing Unit, Remediation Unit, Thermal Oxidizer, Catalytic Oxidizer or Vapor Incinerator	<b>60 ppm</b>		

- ❑ Current Rule 1147 limits all afterburner, degassing unit, remediation unit, thermal oxidizer, catalytic oxidizer or vapor incinerator to 60 ppm NO<sub>x</sub> for all process temperatures
  - As recommended from third party review of the February 2017 Final Technology Assessment for Rule 1147 Small and Low Emissions Sources
  - Also noted that preferred burner type of afterburner applications cannot easily meet 30 ppm NO<sub>x</sub> in process less than 800 F
- ❑ Current BACT\* for afterburners, thermal oxidizers, and catalytic oxidizer is 30 ppm @ 3% O<sub>2</sub> (burner emissions only)

\*From 02/01/2019 revision of SCAQMD BACT Guidelines



# NEXT STEPS



Evaluate Survey Results – Due April 26, 2019

BARCT Analysis - Sample equipment from all applicable Rule 1147 categories

Next Working Group Meeting – Late May

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