



Proposed Amended Rule 1110.2

Emissions from Gaseous- and Liquid- fueled Engines and

Proposed Amended Rule 1100

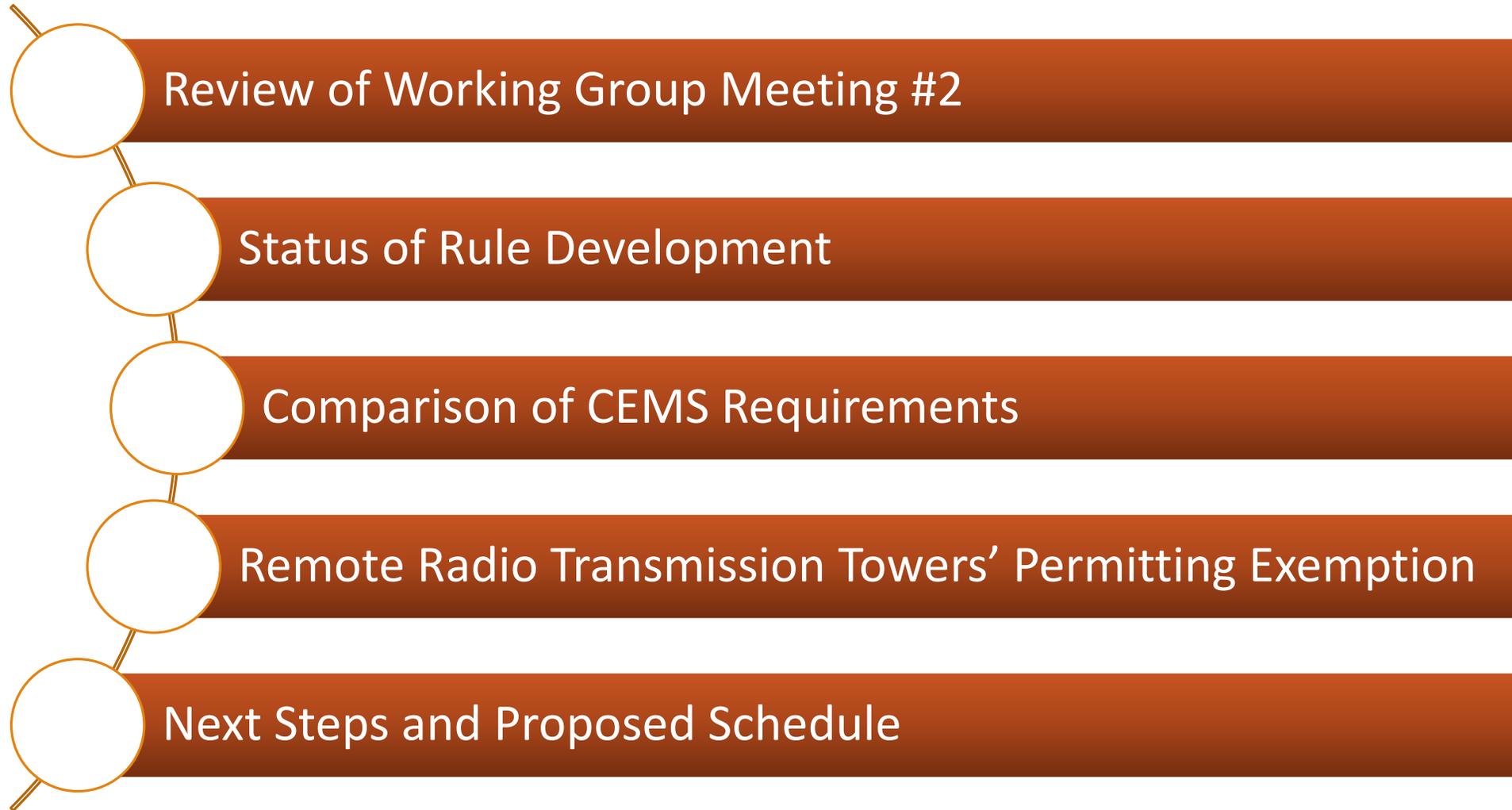
Implementation Schedule for NOx Facilities



WORKING GROUP MEETING NO. 3

February 6, 2019

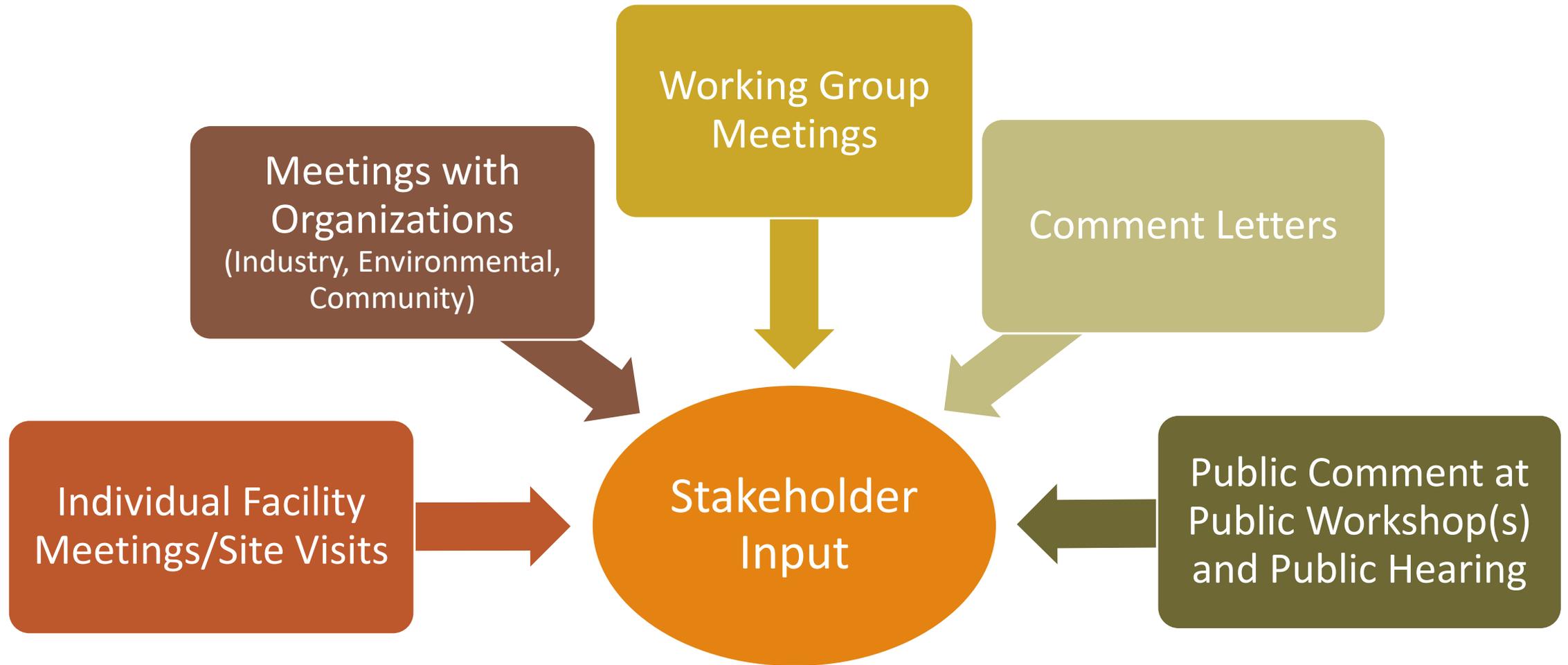
South Coast AQMD Headquarters – Room GB



Summary of Working Group Meeting #2

- Review of rules – Rules 1110.2 & 1470
- Revised universe and equipment
- BARCT overview
- Regulatory comparison of Rule 1110.2 with other air districts
- Distribution of RECLAIM engines
 - Emission levels
 - Fuel type
 - Rated horsepower
- Assessment of emission limits for existing equipment
- Survey questionnaire

Status of Rule Development



- Received survey questionnaire responses from RECLAIM and non-RECLAIM facilities
- Reviewed 3 Comment Letters
- Scheduled site visits with affected facilities

Survey Questionnaire

Survey Questionnaire

- Sent to affected sources – RECLAIM (25) and non-RECLAIM (426)
- Information used to update existing equipment information
 - Prime vs emergency status
 - Equipment no longer used or sold
 - Change of ownership/operator
- Information also used to develop/complete equipment inventory for cost analysis

 Rule 1110.2 Survey – September 2018

Facility ID – 123456 (Example)

(1)	(2)	(3)	(4)	(5)	(6)	(A)	(B)	(C)	(D)	(E)
Device ID	Application No.	Size (bhp)	Primary Fuel Type	2-stroke engine (Y/N)	Lean/Rich Burn	Age of Engine (yrs)	Primary Engine Use	Type of Emission Control	Ammonia Slip (ppmv)	Ammonia Type
D1	252525	150	NG	Y	Rich					
D2	252526	150	NG	Y	Rich					
D3	252527	150	NG	Y	Rich					
D21	323232	500	Diesel	N	Lean					

Device ID	(F)	(G)	(H)	(I)	(J)	(K)	(L)		(N)		(O)
	Engine Portable (Y/N)	Tier Rating	Engine Efficiency (%)	Typical Load Factor	Any Retrofit (Y/N)	Fuel Usage Units	CY 2016	CY 2017	CY 2016	CY 2017	Annual Operating Hours
D1											
D2											
D3											
D21											

Additional Comments:

Instructions:

- Please review data (1) – (6) for each engine.
- Please provide data (A) – (O) for each engine.
- Attach most recent emissions data for each engine (e.g. source test report, hand-held portable data, etc.)
- For any IC engine(s) not identified, please list them in the Additional Comments section.

Please return survey to:
South Coast Air Quality Management District
Attn: Kevin Orellana
21865 Copley Drive
Diamond Bar, California 91765-4178
Or via E-mail: korellana@aqmd.gov

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- 25 RECLAIM sites / 426 non-RECLAIM sites
- 76.0% response from RECLAIM sites
- 30.3% response from non-RECLAIM sites

- Emergency engines coded as prime engines
- Several facilities no longer have equipment
- Portable diesel engines used as wood chippers or concrete pumping
- Tier 1 portable engines in operation (review ATCM applicability)
- Stationary prime engines used in water pumping activities
- Few cogen units in operation, but many others reported out of service

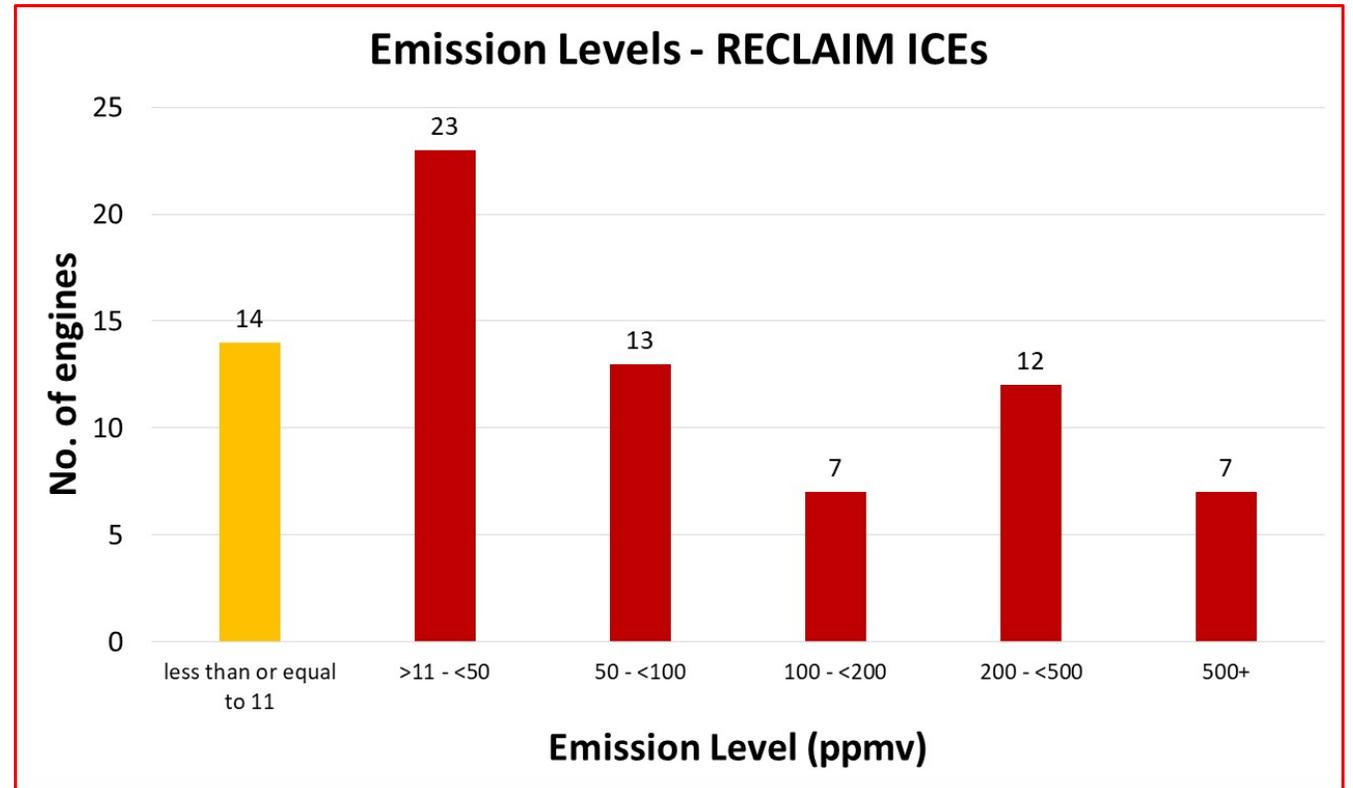
Changes to original universe of RECLAIM facilities affected by PAR 1110.2

- Two sites – equipment decommissioned and out of service
- One site – equipment transferred from PAR 1110.2 to PAR 1146
- One site – equipment permitted for testing purposes and then shipped out of state

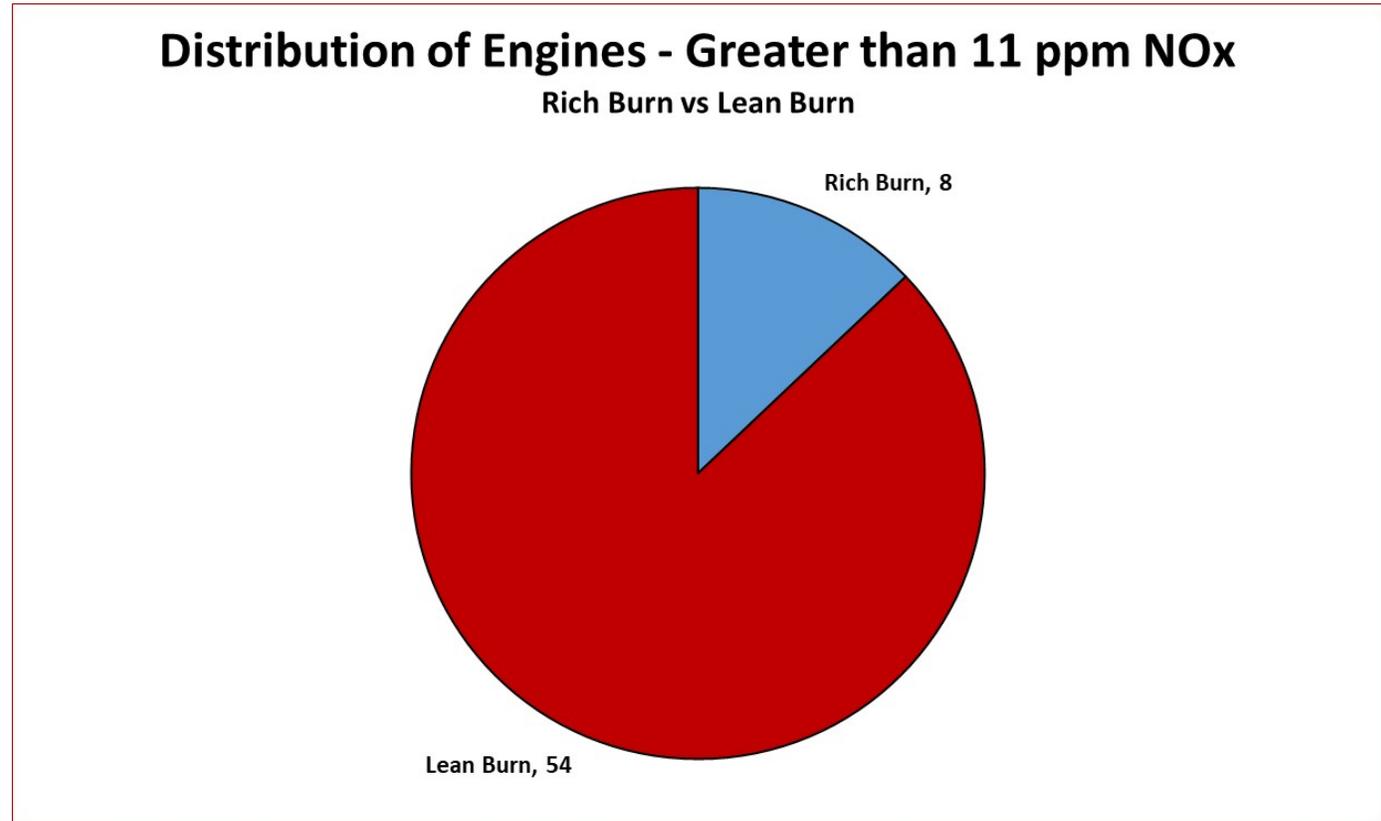
Changes to original universe of RECLAIM engines

- Initial universe contained 98 engines
- 76 remain in the universe
 - 14 comply with current R1110.2 limit of 11 ppmv NO_x
 - 62 would not currently comply with limit

Distribution of Engines versus Emission Levels (update)	
	No. of Engines
less than or equal to 11	14
>11 - <50	23
50 - <100	13
100 - <200	7
200 - <500	12
500+	7



Distribution of Engines Greater than 11 ppm NOx Rich Burn vs Lean Burn	
Rich Burn	8
Lean Burn	54



Site Visits

- San Diego Gas and Electric – Moreno Valley
- So Cal Gas Company
 - Aliso Canyon
 - Honor Rancho
 - Playa del Rey
- Snow Summit
- Miller Coors



Any facility that wants us to visit them, please let us know.

Review of Comment Letters

Issue	Industry Comment	Staff Response
Sampling Protocol	Include EPA Method 18 to test for VOCs	<ul style="list-style-type: none">• Only EPA Method 25.1 is supported by SCAQMD Source Testing for diesel-fueled emissions testing
CEMS Applicability	Modify Rule 1110.2 CEMS requirements to match RECLAIM – large sources	<ul style="list-style-type: none">• Modifying Rule 1110.2 towards RECLAIM may be considered backsliding
Limited use provision	Consider different emissions limits for diesel ICEs that operate less than 2,190 hours per year	<ul style="list-style-type: none">• At a minimum, diesel engines should be at Tier 4 limits
Accessibility Issues	Request consideration for equipment at high elevations with limited infrastructure	<ul style="list-style-type: none">• Staff is considering different options

Issue	Industry Comment	Staff Response
Sampling time for source testing	Reduce sampling time during source testing from 30 minutes to 5 minutes	<ul style="list-style-type: none">• Sampling may be conducted in smaller canisters – time of sampling dependent on size• Lowering to 5 minutes may produce non-representative samples• Lowering to 15 minutes may be allowed based on operational considerations
Data smoothing	Increase averaging time from 15 minutes to 1 hour for compliance determination	<ul style="list-style-type: none">• Past review of similar requests indicated that increasing the averaging time may not solve all of the issues• In addition, increasing averaging time may mask significant emissions or out-of-compliance situations

Current Regulations

Currently, SCAQMD Rule 1110.2 requires that all non-RECLAIM stationary, non-emergency internal combustion engines comply with the following emissions standards for any gaseous or liquid fuel:

- 11 ppmv¹ NOx
- 30 ppmv¹ VOC
- 250 ppmv¹ CO

These emission limits have been in effect within our District since 2011

¹Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes

Current U.S. EPA Non-Road and Stationary Emissions Regulations Tier 4 Final - NO_x

75 – 750 hp	0.30 g/bhp-hr	27 ppm ^{1,2}
> 750 hp	0.50 g/bhp-hr	45 ppm ^{1,2}

At a minimum, new diesel engines must meet these emission limits

Note: ¹Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes
²Conversion from g/bhp-hr to ppm based on 40% thermal efficiency

- The State Airborne Toxic Control Measure (ATCM) contains a schedule for the retirement of older portable diesel-fueled engines
- On 1/1/2020, portable Tier-1 engines rated at 50 hp and greater will be prohibited engines from operating in California
- Designated low use engines operating less than 200 hours per year exempted

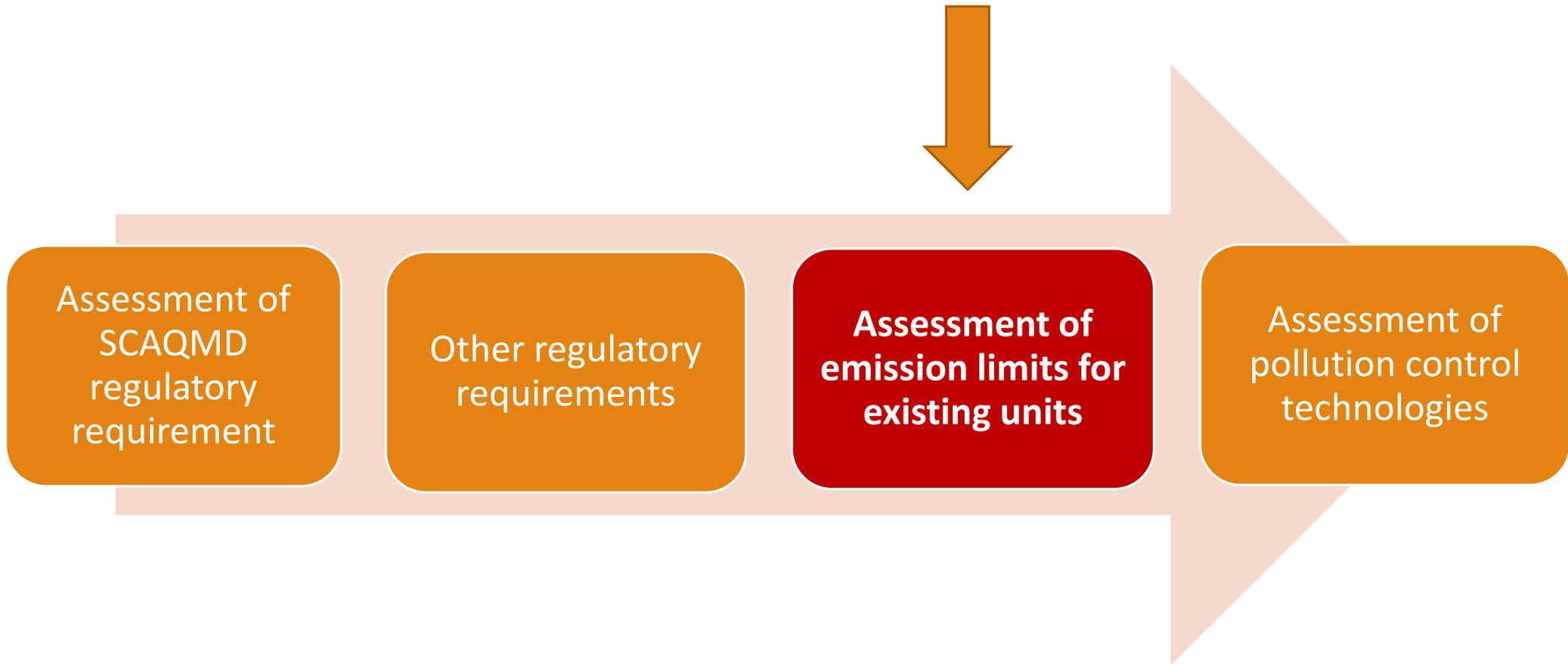
Airborne Toxic Control Measure

- ATCM for diesel particulate matter from portable engines (≥ 50 bhp) prohibits engines from operating in California on or after the dates listed below
- New replacements must meet Federal standards (Tier 4 Final)

Engine Certification	Engines rated 50 to 750 bhp		Engines rated >750 bhp
	Large Fleet	Small Fleet	
Tier 1	1/1/2020	1/1/2020	1/1/2022
Tier 2 built prior to 1/1/2009	1/1/2022	1/1/2023	1/1/2025
Tier 2 built on or after 1/1/2009	NA	NA	1/1/2027
Tier 3 built prior to 1/1/2009	1/1/2025	1/1/2027	NA
Tier 3 built on or after 1/1/2009	1/1/2027	1/1/2029	NA
Tier 1, 2, and 3 flexibility engines	<ul style="list-style-type: none"> • Dec. 31 of the year 17 years after the date of manufacture • This provision shall not apply to any engine operation before the effective date of this regulation 		

BARCT Approach





Comparison between 1110.2 and RECLAIM For CEMS

- Under Rule 1110.2, engines ≥ 1000 bhp require CEMS
- Under RECLAIM, Major NO_x sources not Large sources require CEMS
 - Major NO_x source – engines $\geq 1,000$ bhp and operating $> 2,190$ hours per year
 - Large NO_x source – engines rated:
 - ❖ $\geq 1,000$ bhp and operating $< 2,190$ hours per year; or
 - ❖ ≥ 200 bhp but $< 1,000$ bhp and operating $> 2,190$ hours per year.

- Under Rule 1110.2, there is a facility constraint determining if CEMS is required
 - Combined rating ≥ 1500 bhp at the same location
 - Combined fuel usage $\geq 16 \times 10^9$ BTUs per year (HHV)
 - Engines < 500 bhp or permitted as a backup or having restricted use are not counted in the combined rating
- Under RECLAIM, no equivalent facility constraint

Summary

- 6 RECLAIM facilities with an on-site aggregate horsepower rating \geq 1500 hp would require CEMS under Rule 1110.2
- 24 engines affected
- Staff believes that changing Rule 1110.2 to match RECLAIM represents backsliding on MRR

Radio Transmission Towers' Permit Exemption

History

- Rule 219 exempts from permitting diesel, prime engines rated less than 100 bhp used exclusively at remote two-way radio transmission towers where no utility, electricity or natural gas is available within ½ mile radius
- Engines found to operate greater than 500 hours
- Rule 1110.2 does not exempt engines from emissions limits

Considerations

- Provide explicit exemption for emission limits
- Require compliance
- Establish phase-out schedule

Schedule

On-going
working
group
meetings

Public
workshop
1st Quarter
2019

Public
hearing
September
2019

Contacts

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