



Proposed Updates to BACT Guidelines

BACT Scientific Review
Committee Meeting

October 15, 2025

Meeting Location: South Coast AQMD, Conference Room GB

Zoom Webinar: <https://scaqmd.zoom.us/j/92579517440>

Webinar ID: 925 7951 7440

Call-in number: 1-669-900-6833

Outline



South Coast AQMD BACT Guidelines

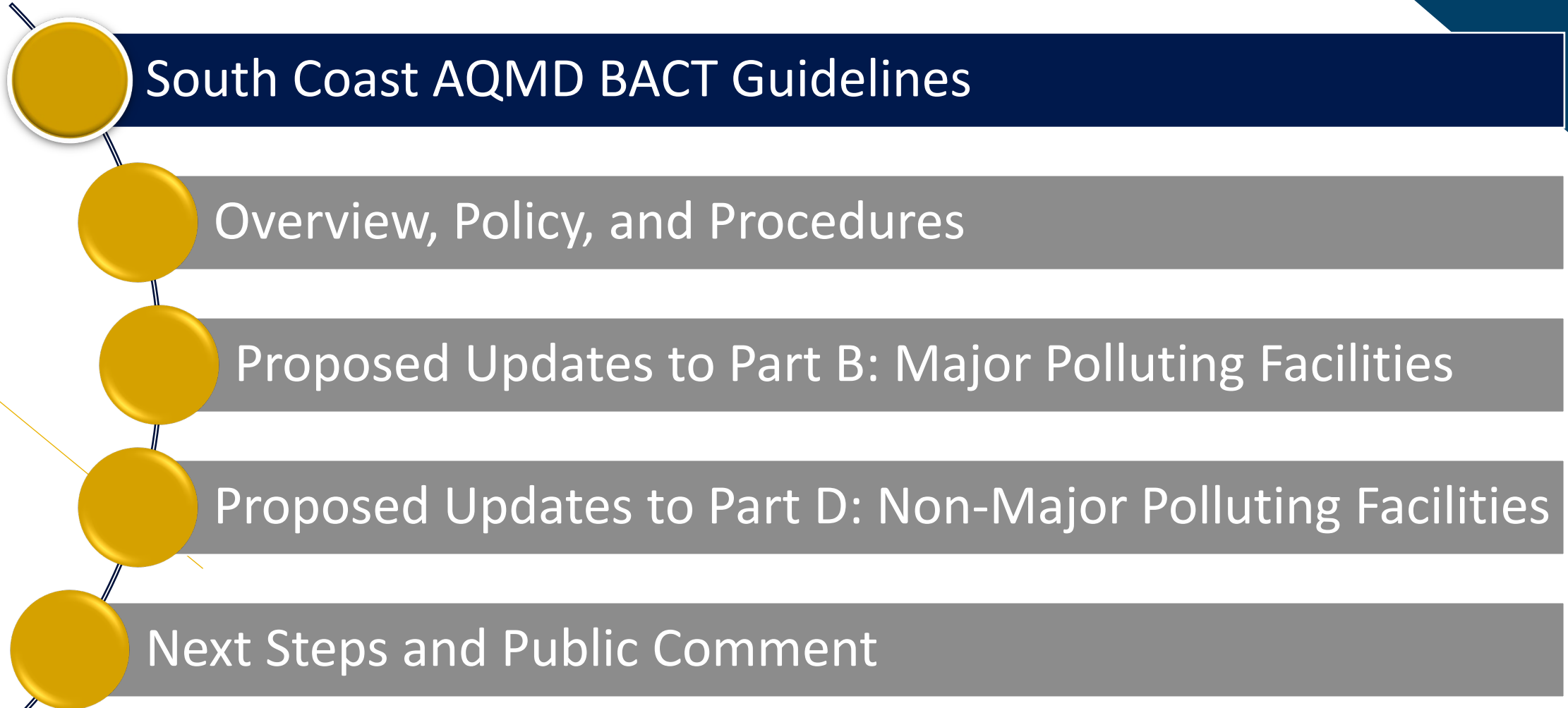
Overview, Policy, and Procedures

Proposed Updates to Part B: Major Polluting Facilities

Proposed Updates to Part D: Non-Major Polluting Facilities

Next Steps and Public Comment

Outline



South Coast AQMD BACT Guidelines

BACT/LAER Applicability and Criteria

Best Available Control Technology (BACT) is the most stringent emission limitation or control technique for a class & category of equipment that is:

Achieved in Practice (AIP), or

Contained in a State Implementation Plan (SIP), or

Technologically Feasible and Cost-Effective

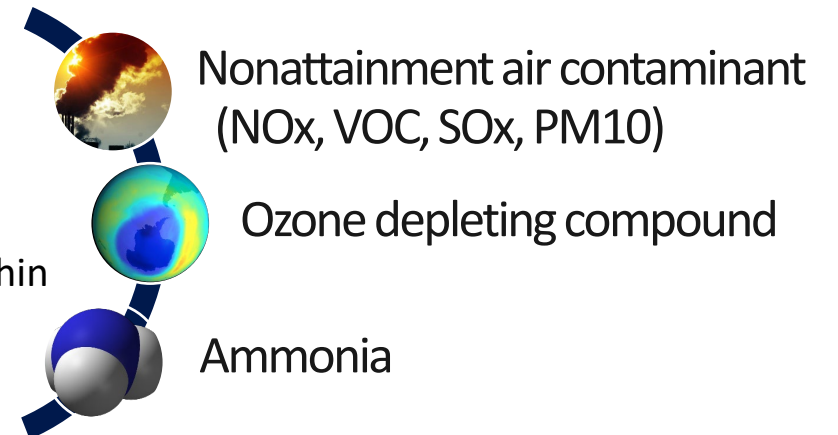
- BACT is a major element of Regulation XIII – New Source Review (NSR). BACT analysis is performed for
 - New sources
 - Relocated sources
 - Modifications to an existing source

- BACT is required if BACT analysis shows:

Emissions increase

≥ 1.0 lb/day

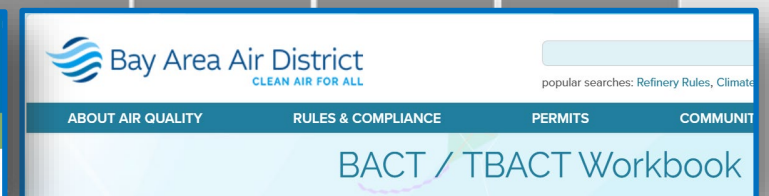
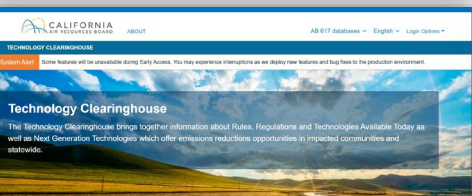
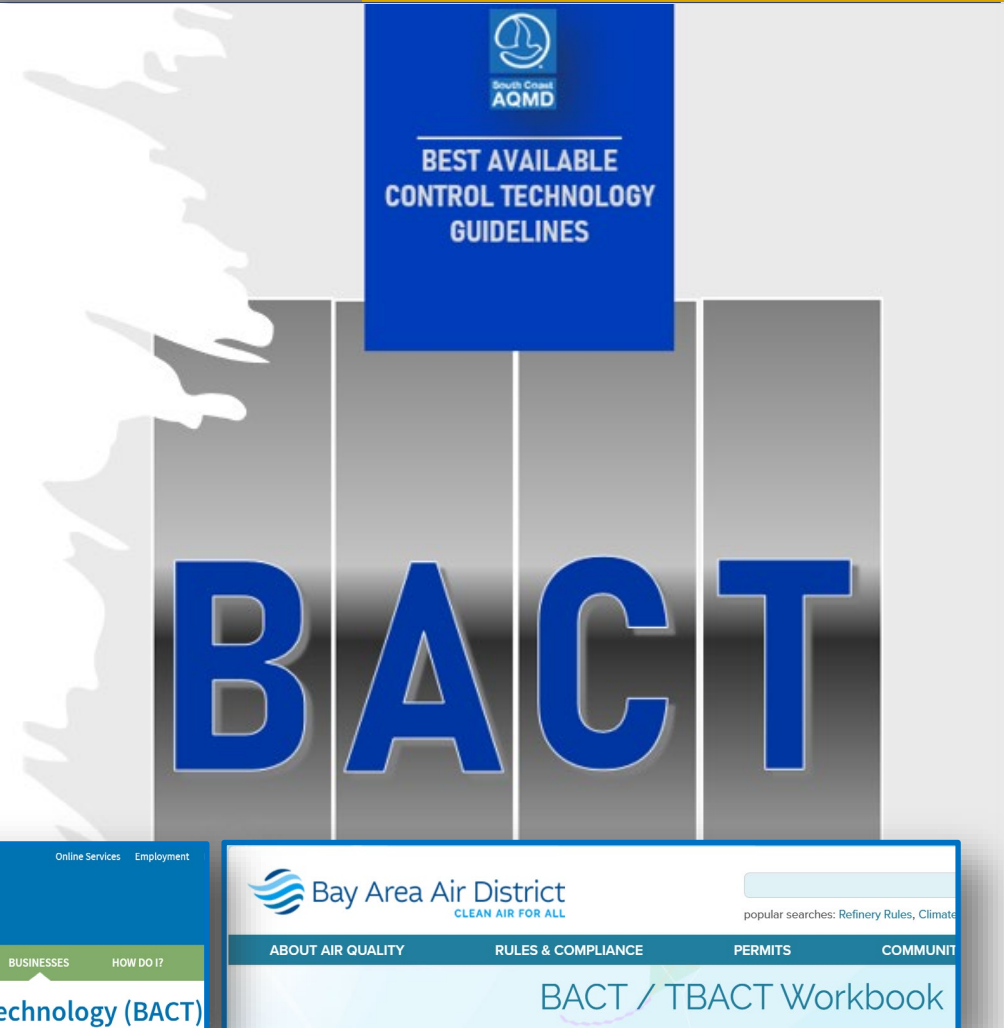
(Cumulative increases within a 5-year period will be subject to BACT)



South Coast AQMD BACT Guidelines Achieved in Practice Criteria

Emission limit or control technology may be considered AIP for a category or class of source if

- It is included in any of the following regulatory documents or programs:
 - South Coast AQMD BACT Guidelines
 - CARB BACT Technology Clearinghouse
 - U.S. EPA RACT/BACT/LAER Clearinghouse
 - Other districts' and states' BACT Guidelines
 - BACT/LAER requirements in permits issued by South Coast AQMD or other agencies

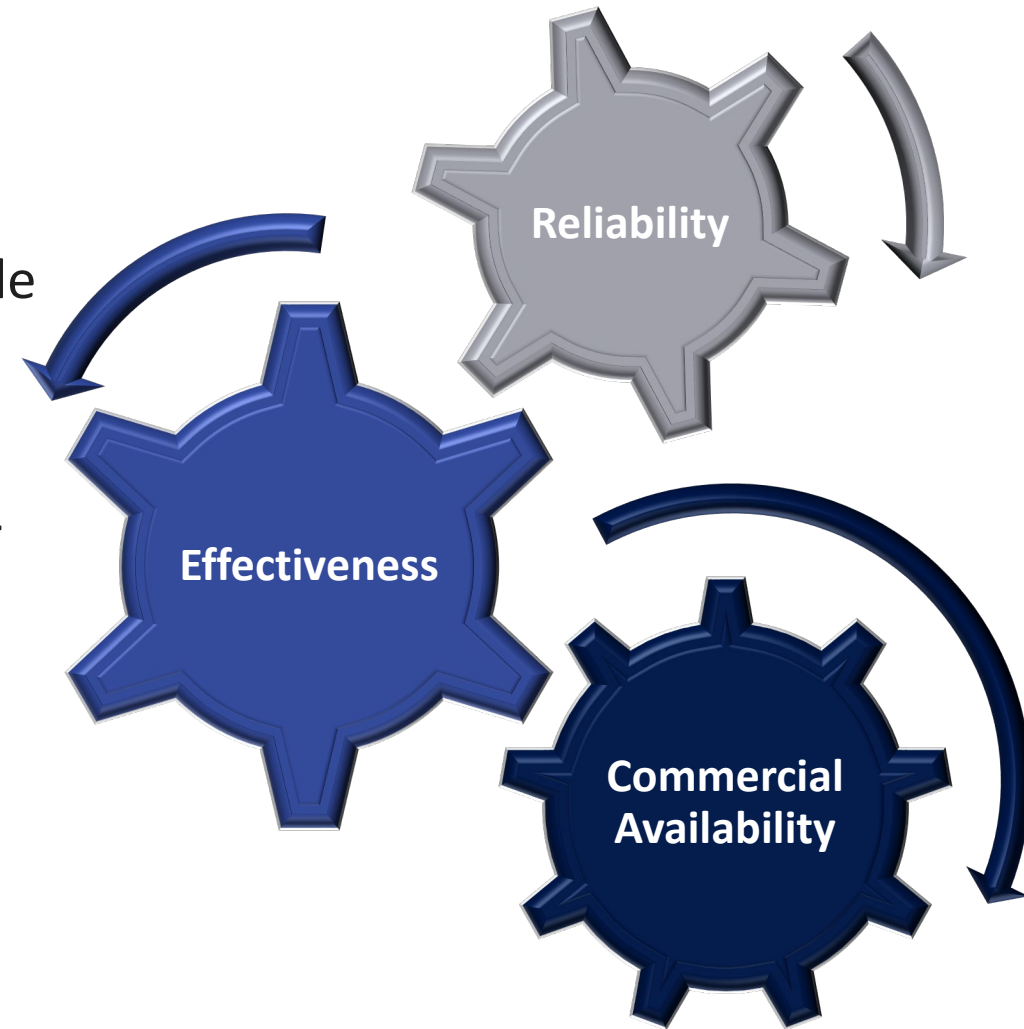


South Coast AQMD BACT Guidelines

Achieved in Practice Criteria (cont'd)

Also includes if emission limit or control technology

- **Meets all the following criteria:**
 - **Commercial availability:** At least one vendor must offer this equipment for regular or full-scale operation in the U.S.
 - **Reliability:** Control technology must have been installed and operated reliably for at least six months (for Major Polluting Facility) or one year (for Non-Major Polluting Facility)
 - **Effectiveness:** The control technology must be verified to perform effectively over the range of operation expected for that type of equipment
- **For Non-Major Polluting Facilities, the control technology or emission rate must be cost-effective**



South Coast AQMD BACT Guidelines

BACT Guidelines Structure

■ Overview

■ Policy and Procedures

- Major Polluting Facilities (Part A)
- Non-Major Polluting Facilities (Part C)
- Facilities Subject to PSD* for Greenhouse Gases (Part E)

■ Determinations & Guidelines

- LAER**/BACT Determinations for Major Polluting Facilities (Part B)
 - Section I – South Coast AQMD
 - Section II – Other Agencies
 - Section III – Other Technologies (not yet qualified as LAER)
- BACT Guidelines for Non-Major Polluting Facilities (Part D)

* Prevention of Significant Deterioration

** Lowest Achievable Emission Rate

South Coast AQMD BACT Guidelines

BACT Guidelines Structure (cont'd)

Major Polluting Facilities

- Has the potential to emit criteria pollutants at or above Clean Air Act thresholds, depending on attainment status
- Additional stringencies due to federal regulations
- Does not allow for routine consideration of cost
- Determined based on info at time of permit to construct issuance

Non-Major (Minor) Polluting Facilities

- Smaller emitting facilities
- CA Health & Safety Code (H&SC) Section 40440.11
- Cost-effectiveness analysis required
- Requires Board approval
- Determined at the time an application is deemed complete

Cleaning The Air That We Breathe...



Outline



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Overview, Policy, and Procedures

BACT/LAER Update Process

➤ Periodic Updates to the BACT Guidelines

- Reflect advancements in control technologies
- Ensure affected equipment uses the cleanest available and applicable technologies

**Achieved in Practice, or
Contained in a State Implementation Plan**

Required by federal law, as LAER for major sources

➤ LAER Update Process: Section I - South Coast AQMD LAER/BACT Determinations

- To make a LAER determination more stringent than current LAER
 - Notify the public and BACT Scientific Review Committee (SRC) through a public process, under 30-day public review
 - Include written comments in the BACT Docket
 - Evaluate comments filed during the 30-day period before making a permit decision
 - Provide standing status reports to the Stationary Source Committee and to the Governing Board

Overview, Policy, and Procedures

BACT/LAER Update Process (cont'd)

➤ BACT Update Process

- To make BACT more stringent than LAER
(Requirements of CA H&SC Section 40440.11)
or

- In establishing Non-Major Polluting Facility BACT

- Evaluate cost-effectiveness
- Notify the public and BACT SRC through a public process, under 30-day public review
- Include written comments in the BACT Docket
- Evaluate comments filed during the 30-day period before making a permit decision
- Provide a report to the Stationary Source Committee
- Present to the Governing Board for approval at a public hearing
- Update the BACT Guidelines

Technologically Feasible and Cost-Effective

Unique to South Coast AQMD and some other areas in California and allows for more stringent controls than LAER

Overview, Policy, and Procedures

Streamlining BACT and LAER Publication Process

Background

- Permitting Enhancement Program (PEP)
- Permit Streamlining Task Force
 - Public feedback identified a need to post LAER listings more frequently to support timely permitting decisions

Goal

- Assist Major Polluting Facilities in planning and reducing permitting delays
- Enhance transparency for applicants
- Enable more frequent updates to reflect new LAER listings
- Maintain rigorous technical review while improving timelines for LAER listings

Current Process

- Update LAER and BACT determinations & Guidelines concurrently through the same public process
- Provide standing status reports to Stationary Source Committee and Governing Board
- Update BACT Guidelines
- Concurrent update process could delay LAER listings

Overview, Policy, and Procedures

Streamlining BACT and LAER Publication Process (cont'd)

Basis to Decouple LAER from BACT Update Process

- LAER is determined based on information at time of permit to construct issuance
- More frequent LAER listings allow facilities to:
 - Understand control expectations in advance
 - Incorporate the cleanest technologies earlier in the process

- Per CA H&SC requirements, BACT updates involve broader stakeholder review and take longer to finalize
- Decoupling allows faster publication of LAER while still updating BACT Guidelines through SRC and public engagement

BACT SRC Role

- The SRC will continue to:
 - Provide technical review and feedback on BACT/LAER determinations as part of the overall process
 - Review and comment on LAER listings prior to update

Overview, Policy, and Procedures

Proposed Changes to the BACT Guidelines Documents

➤ Overview

■ Chapter 1 - Introduction

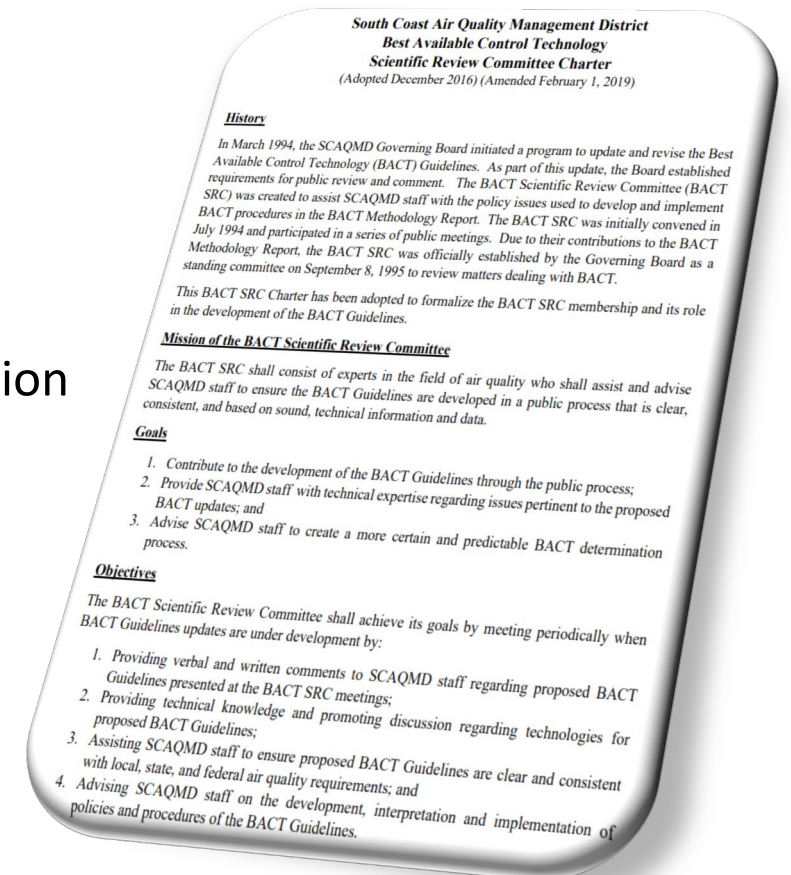
- Update listed manager of CARB Technology Clearinghouse database
- Reorganize paragraphs to improve clarity and consistency
- Update BACT Guidelines access instructions to reflect the current web address and eliminate the hardcopy ordering option

■ Chapter 3 - When is BACT Required?

- Add a footnote to include a link to the CO Attainment Status memo

■ Chapter 5 - Review of Staff BACT Determinations

- Add description of and link to BACT SRC Charter and updated BACT SRC web address



Overview, Policy, and Procedures

Proposed Changes to the BACT Guidelines Documents (cont'd)

➤ Part A - Policy and Procedures for Major Polluting Facilities

- Chapter 1 - How is LAER Determined for Major Polluting Facilities?
 - Correction to chapter number referenced in "Cost in LAER Determinations" section

➤ Part C - Policy And Procedures For Non-Major Polluting Facilities

- Chapter 1 - How Is Minor Source BACT (MSBACT) Determined for Minor Polluting Facilities?
 - Table 5: Update Maximum Cost-Effectiveness Criteria based on Marshall & Swift Cost Indexes

2025 Quarter 2		
Pollutant	Average (\$/ton)	Incremental (\$/ton)
ROG	43,117	129,352
NOx	40,770	122,095
SOx	21,559	64,676
PM ₁₀	9,605	28,603
CO	854	2,455

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South Coast AQMD BACT Guidelines

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Proposed Updates to Part B: Major Polluting Facilities

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Part B - LAER/BACT Determination for Major Polluting Facilities

Section I – South Coast AQMD LAER/BACT Determinations

Proposed Updated Listing

- **Linear Generator, Non-Emergency Electrical Generator, Natural Gas Fired**
- Achieved in Practice case (Permit to Operate issued in March 2024)
 - 240 kWe linear generator consists of two identical 120 kWe cores
 - Exhaust is vented to the oxidation catalyst
 - Rule 1110.3 adopted in Nov. 2023 and required the VOC limit of 10 ppmv
 - Emissions:

Emissions (ppmv)*	Proposed LAER Limits	Source Test Results @ Normal Load	
		Core 1	Core 2
NOx	2.5	1.40	2.09
CO	12	<2.07	<1.78
VOC	10	2.92	7.40

* @ 15% O2 on a dry basis

- Source test was performed using South Coast AQMD Method 100.1 for NOx, O2, and CO; and Method 25.3 for VOC



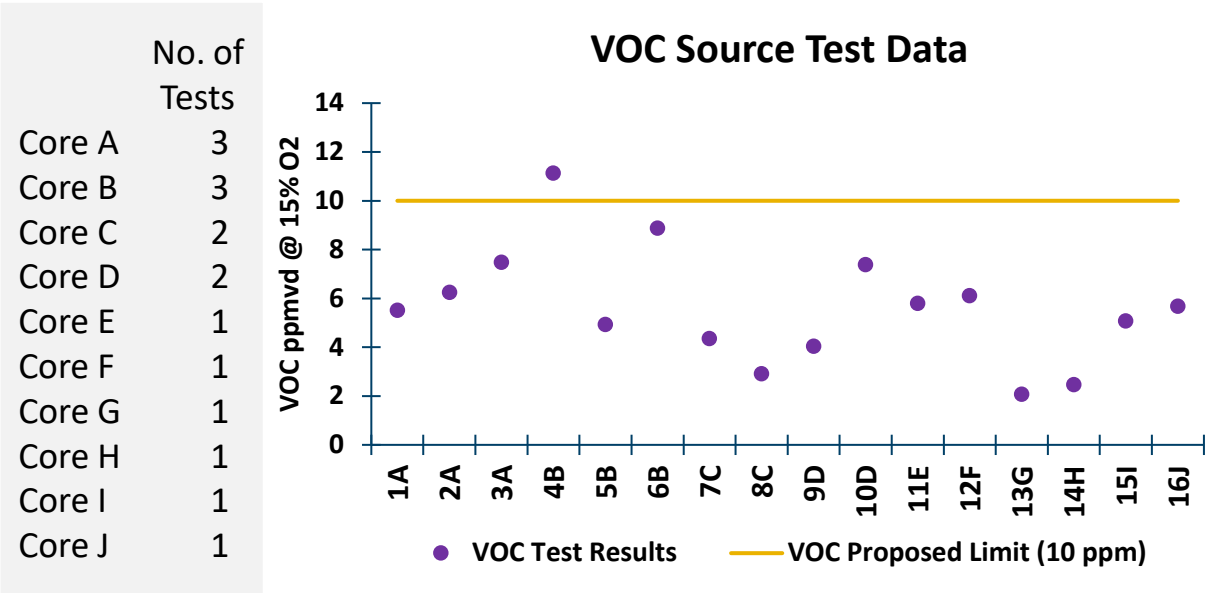
Part B - LAER/BACT Determination for Major Polluting Facilities

Section I – South Coast AQMD LAER/BACT Determinations (cont'd)

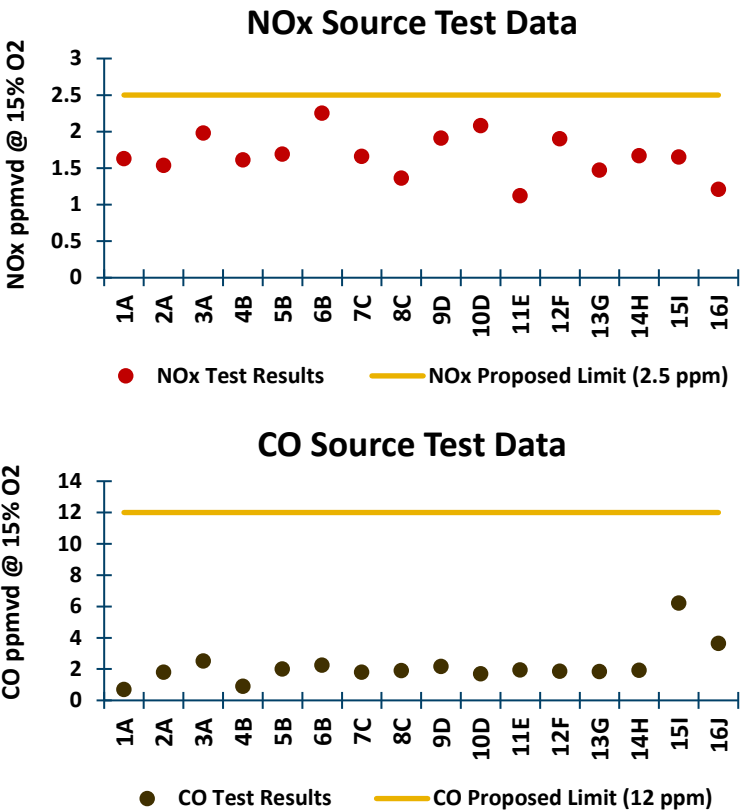
Proposed Updated Listing

➤ Linear Generator, Non-Emergency Electrical Generator, Natural Gas Fired (cont'd)

- 10 linear generator cores (A – J) tested
- 16 total test results (including subsequent tests for Cores A to D)



Note: In 2021, Core B's initial source test measured 11.13 ppmv VOC @ 15% O₂, well below the 25 ppmv permit limit. Subsequent tests demonstrated < 10 ppmv VOC @ 15% O₂



Part B - LAER/BACT Determination for Major Polluting Facilities

Section I – South Coast AQMD LAER/BACT Determinations (cont'd)

Proposed New Listing

➤ **Lithographic Printing, Non-Heatset, Sheet-fed**

BACT SRC Comment

Update the BACT Guidelines with additional determinations to reflect the recently permitted UV sheet-fed subcategory

Response

Proposed adding sheet-fed BACT determination under non-heatset to ensure the BACT Guidelines reflect achieved in practice cases

Printing (Graphic Arts) - Lithographic, Non-Heatset

- [Lithographic - Non-Heatset, A/N 367452, Creative Mailings](#) 11/30/00
- [Offset Printing, Plastic Container Lids, A/N 357056, Container Supply Co.](#) 12/13/00

- Achieved in Practice case
(Permit to Operate issued in March 2021)
 - Sheet-fed lithographic printing
 - 170 kW rated ultraviolet (UV) dryer and 175 kW rated infrared dryer
- Emissions:
 - Low VOC fountain solution; less than or equal to 8% by volume
 - Low VOC blanket and roller washes; less than or equal to 100 gram per liter
 - UV-curable or oil-based inks
 - Comply with Rule 1130 and Rule 1171



Part B - LAER/BACT Determination for Major Polluting Facilities

Section I – South Coast AQMD LAER/BACT Determinations (cont'd)

Proposed New Listing

➤ **Landfill Gas Combustion and Sulfur Control System**

- Achieved in Practice case (In operation since Nov. 2018)
 - Five parallel fixed-bed pressure vessels (four operational and one standby)
 - Each vessel containing granular media to reduce total sulfur in the landfill gas stream to 85 ppmv daily and 60 ppmv monthly prior to combustion
- Emissions:

Emission (ppmv)	Proposed LAER Limits	Maximum Concentration* Feb. 2024 – Sep. 2024
Total Sulfur as H2S (Daily average)	85	69
Total Sulfur as H2S (Monthly average)	60	59



* As measured by the facility’s Continuous Fuel Gas Monitoring System

Part B - LAER/BACT Determination for Major Polluting Facilities

Section I – South Coast AQMD LAER/BACT Determinations (cont'd)

Proposed New Listing

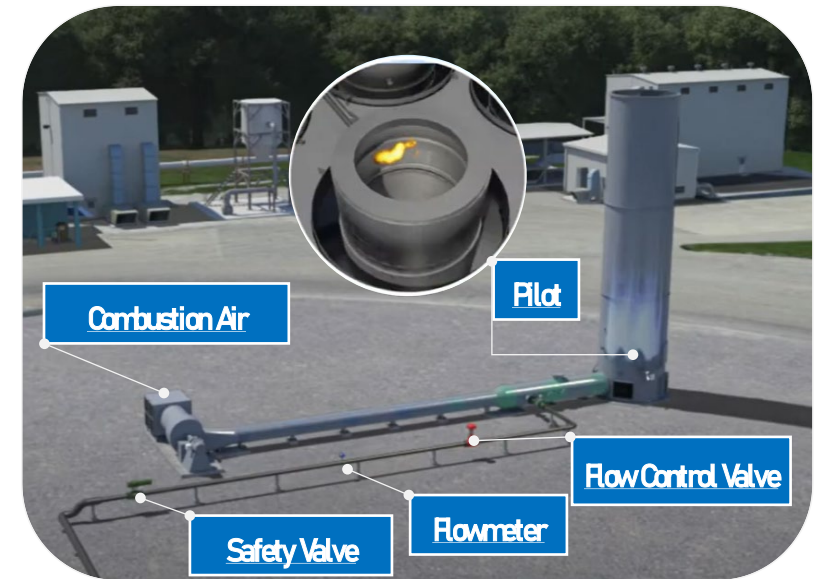
➤ Flare, Landfill Gas Fired

- Achieved in Practice case (Permit to Operate issued in Feb. 2021)
 - Enclosed 167 MMBtu/hr ultra low emissions flare with automatic air damper, propane pilot, and 250 HP combustion air blower
 - Equipped with a flow meter and continuous temperature indicator/recorder
 - Flare capacity: 5,500 SCFM

■ Emissions:

Emissions	Proposed LAER Limits	Source Test Results Range 2022 - 2025
VOC as Hexane (lb/MMBtu)	0.006	0.0023 - 0.0058
PM10 as PM (lb/MMSCF)	5	2.29 - 4.96

- Maintain ≥ 1400 °F (15-min avg.) during flare operation; excludes startup/shutdown



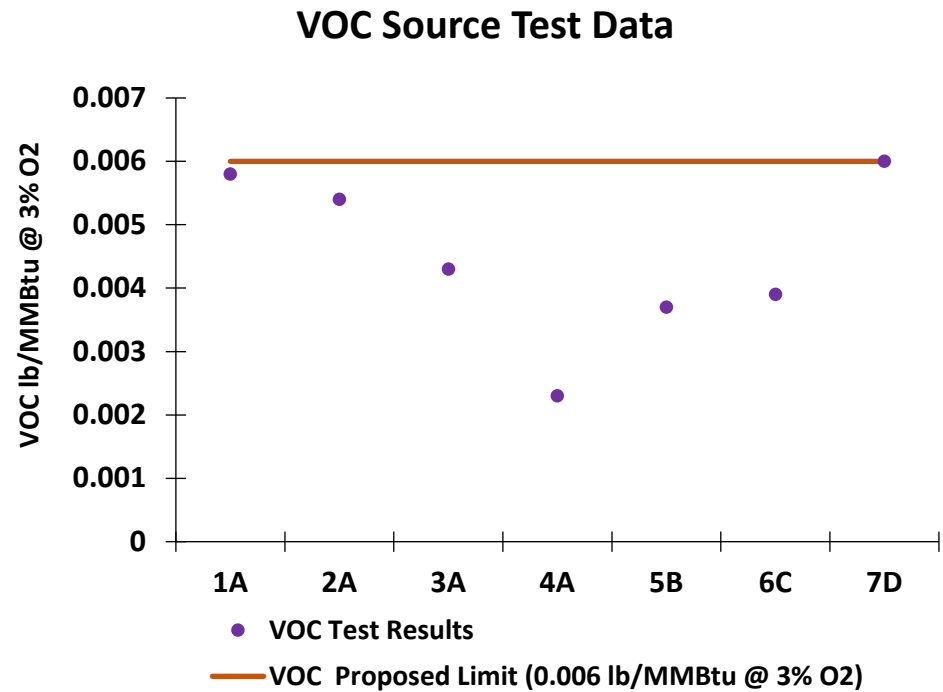
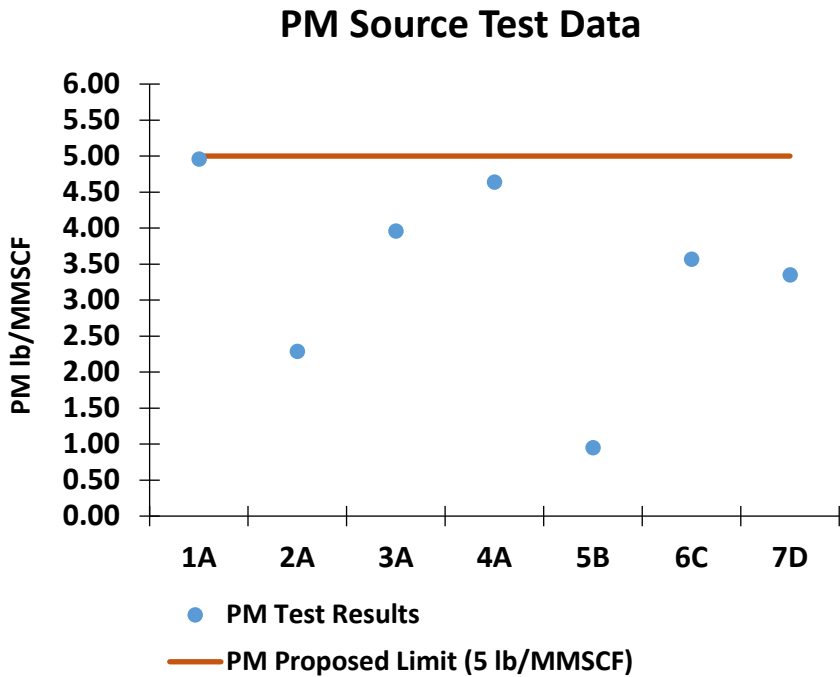
Part B - LAER/BACT Determination for Major Polluting Facilities

Section I – South Coast AQMD LAER/BACT Determinations (cont'd)

Proposed New Listing

- Flare, Landfill Gas Fired
 - PM and VOC emissions

	No. of Tests
Flare A	4
Flare B	1
Flare C	1
Flare D	1



Part B - LAER/BACT Determination for Major Polluting Facilities

Section III - Other Technologies

➤ Boilers

- Emerging Technology case
 - Construction in progress - Permit to Construct issued in Oct. 2023
 - Two boilers rated at 520.4 MMBtu/hr each, with low-NOx burners
 - Two Selective Catalytic Reduction (SCR) Systems
 - Fired on natural gas, process gas from the fume scrubber, and refinery gas
- Emissions:

Emissions (ppmv)	Proposed LAER Limits		
	30-day average	24-hr average	1-hr average
NOx*	2.5	3.0	-
CO*	27	35	-
Ammonia	-	-	5

* @ 3% O2 on a dry basis



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Part D - BACT Determination for Non-Major Polluting Facilities

South Coast AQMD BACT Determinations

Proposed New Category

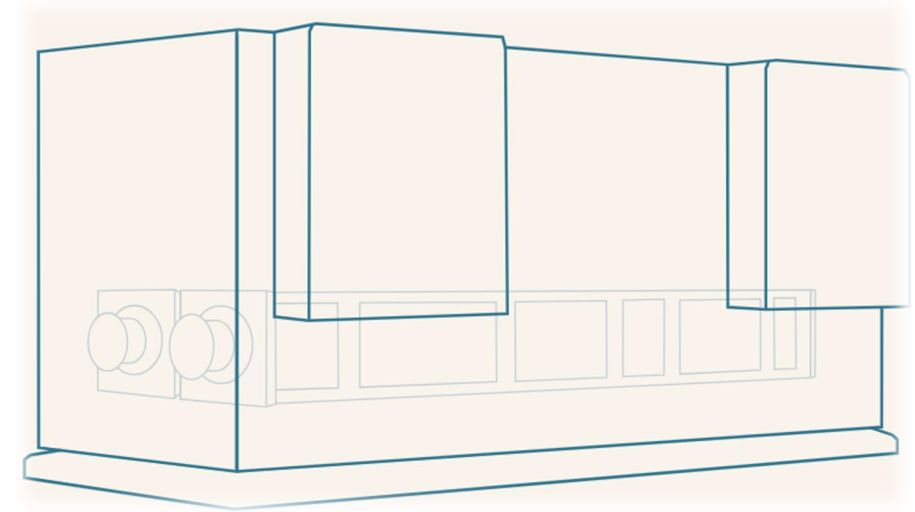
➤ Linear Generator, Non-Emergency Electrical Generator, Natural Gas Fired

- Achieved in Practice case (Permit to Operate issued in April 2024)
 - 240 kWe linear generator consists of two identical 120 kWe cores
 - Exhaust is vented to the oxidation catalyst
- Rule 1110.3 adopted in Nov. 2023 and required the VOC limit of 10 ppmv
- Emissions:

Emissions (ppmv)*	Proposed LAER Limits	Source Test Results @ Normal Load	
		Core 1	Core 2
NOx	2.5	1.98	2.25
CO	12	2.51	2.24
VOC	10	7.48	8.87

* @ 15% O₂ on a dry basis

- Source test was performed using South Coast AQMD Method 100.1 for NO_x, O₂, and CO and Method 25.3 for VOC



Part D - BACT Determination for Non-Major Polluting Facilities

Other Updates

Consistency with Rules and Regulations

- **Rule 1153.1 - Emissions of Oxides of Nitrogen from Commercial Food Ovens** (Aug. 4, 2023): update to comply with Rule 1153.1 NOx and CO requirements
 - **Ribbon Burner:** At all temperatures comply with 30 ppm NOx limit per Rule 1153.1
 - **Indirect Fired Burner:** Move from footnote to the table and add 30 ppm NOx and 800 ppm CO emission limits

Equipment or Process:		Food Oven				
Subcategory ¹	Rating/ Size	Criteria Pollutants				
		VOC	NOx	SOx	CO	PM10
Ribbon Burner	>500°F		60-30 ppmvd @ 3% O ₂ (2-2-2018)(xx-xx-2026)	Natural Gas (2-2-2018)	800 ppmvd @ 3% O₂ Compliance with applicable Rules 407 or 1153.1 (2-2-2018)(xx-xx-2026)	Natural Gas (2-2-2018)
	≤500°F		30 ppmvd @ 3% O ₂ (2-2-2018)	Same as above	Same as above	Same as above
Other Direct Fired Burner			30 ppmvd @ 3% O ₂ (2-2-2018)	Same as above	Same as above	Same as above
Indirect Fired Burner			30 ppmvd @ 3% O ₂ (xx-xx-2026)			
Infrared Burner			30-15 ppmvd @ 3% O ₂ (2-2-2018)			

- **Infrared Burner:** Update NOx limit to 15 ppm
- **All categories:** Add 800 ppm CO limit to comply with current rule requirements

Add-on Control for Bakery Oven processing yeast leavened products with emissions ≥ 30 lb VOC/day	Catalytic Oxidizer with 95% overall control efficiency (mass basis); catalyst inlet temperature ≥ 600°F; ceramic prefilter (2-2-2018)(xx-xx-2026)	Compliance with Rule 1147 at the time of applicability for Oxidizer (2-2-2018)(xx-xx-2026)		
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¹Indirect Fired units may be subject to Rules 1146 and 1146.1 and BACT for Process Heater.

Outline



South Coast AQMD BACT Guidelines

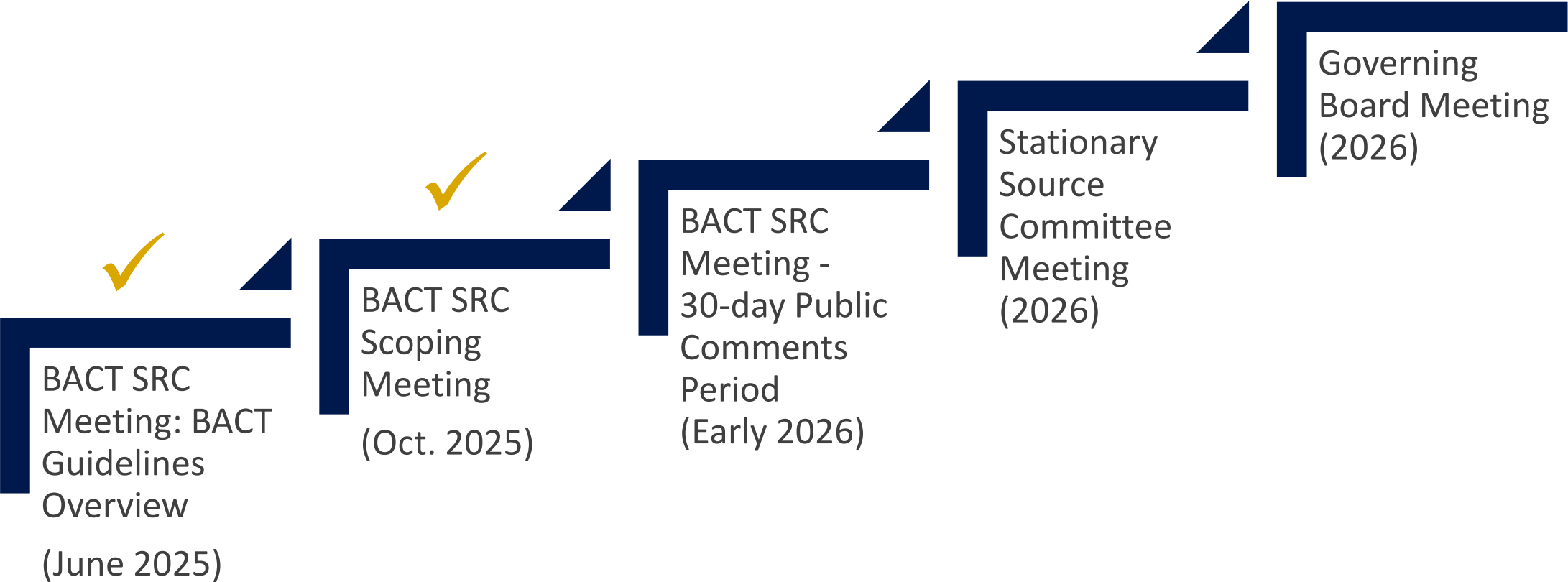
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Next Steps



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<http://www.aqmd.gov/home/permits/bact>

Opportunities for Stakeholder Feedback

Currently seeking public
comment on proposed
updates to BACT
Guidelines

Stakeholders can provide
comment during BACT
SRC Meetings

Submission of written
comment requested by
December 1, 2025

To: BACTTeam@aqmd.gov
Include “BACT Docket” in
the subject line



Public



COMMENT

Please note that under the California Public Records Act (Gov't. Code § 7920.000 et seq.) your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email) become part of the public record and can be released to the public on request or posted on the South Coast AQMD website.