

Proposed Amended Rule 1153.1

Emissions of Oxides of Nitrogen from Commercial Food Ovens

**Working Group Meeting #2
June 8, 2022**

Join Zoom Webinar Meeting

<https://scaqmd.zoom.us/j/99936500985>

Teleconference Dial-In: 1-669-900-6833

Webinar Meeting ID: 999 3650 0985



Agenda

Summary of WGM #1

Background and Regulatory
Commitments

Status of Rule Development

Rule 1153.1 Applicability

BARCT Assessment

Stakeholder Comment

Next Steps

Summary of Working Group Meeting #1

- Working Group Meeting #1 held on July 9, 2021
- Staff provided an overview of:
 - Rule development process
 - Background on RECLAIM
 - BARCT assessment
 - Rule 1153.1 background



Background and Regulatory Commitments

Rule 1153.1 Background

- Adopted on November 7, 2014
- Limits NO_x and CO emissions from commercial food ovens, dry roasters, and smokehouses
 - Units formerly regulated under Rule 1147 – NO_x Reductions from Miscellaneous Sources
 - Rule 1153.1 adopted to allow more time for commercial ovens to achieve NO_x limits
 - At time of rule development, research project underway to explore lower NO_x emissions from ribbon type burners
 - ▣ Following up on status of project as part of BARCT assessment
- Six facilities with commercial food ovens currently participating in RECLAIM

Regulatory Commitments

- 2016 Air Quality Management Plan (AQMP)
 - Adoption Resolution directed staff to transition NOx REgional CLean Air Incentives Market (RECLAIM) facilities to command-and-control with reductions of 5 tons per day (CMB-05)
- Assembly Bill 617 (AB 617)
 - Requires expedited Best Available Retrofit Control Technology (BARCT) with the highest priority for sources that “have not modified emissions-related permit conditions the greatest period of time”
 - Staff conducting BARCT assessment as part of PAR 1153.1 development



Rule 1153.1 Applicability

- Applies to facilities operating ovens, dryers, roasters, and smokehouses/smoke generators and manufacturers that produce food and beverages for human consumption
 - 6 RECLAIM facilities with 66 units
 - 92 non-RECLAIM facilities with 171 units
 - Approximately 0.2 tons per day (tpd) total NOx emissions from all facilities

Permitted Equipment Type	Number of Units		Total
	RECLAIM	Non-RECLAIM	
Food Ovens	14	102	116
Dryers	46	7	53
Roasters	0	58	58
Smokehouses/Smoke Generators	6	4	10
Total	66	171	237

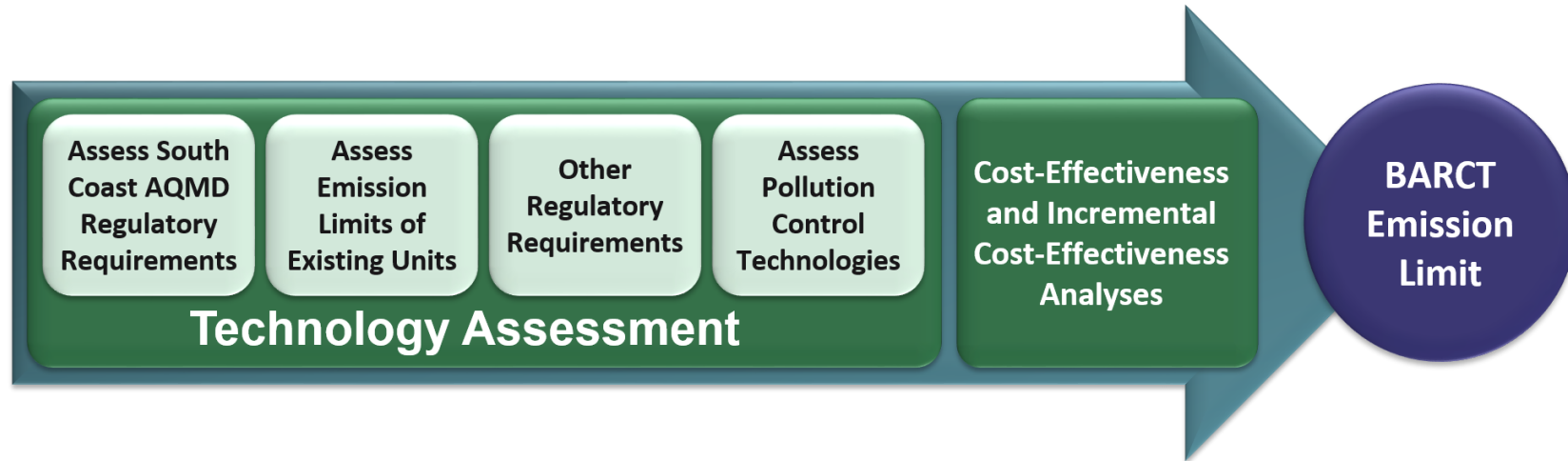
Status of Rule Development

Status of Rule Development

- Staff currently gathering data for BARCT assessment
 - Meeting with RECLAIM stakeholders
 - Conducting virtual and in-person site visits
 - Distributed equipment survey to RECLAIM facilities
 - Encouraging facilities to meet to discuss any specific concerns or suggestions

BARCT Assessment

- BARCT analysis is conducted for each class and category of equipment
- Current cost-effectiveness threshold is \$50,000/ton of NOx reduced (2016 AQMP)



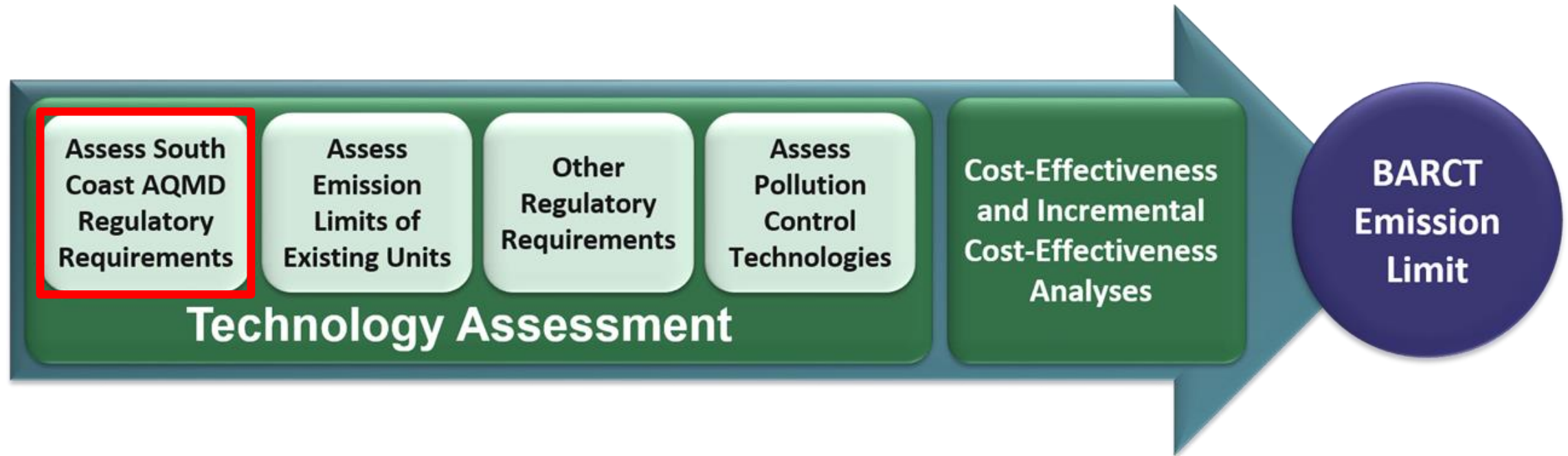
California Health and Safety Code Section 40406 defines BARCT as:

“...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.”

California Health and Safety Code Section 40920.6 requires:

- Evaluation of BARCT prior to adopting rules or regulations
- Assessment of the cost-effectiveness of the potential control option

South Coast AQMD Regulatory Requirements



Rule 1153.1 Emission Limits

Emission Limit for In-Use Units	
NOx Emission Limit ppm at 3% O ₂ , dry or lb/MMBtu heat input	
Process Temperature	
$\leq 500^{\circ}\text{F}$	$> 500^{\circ}\text{F}$
<i>40 ppm or 0.042 lb/MMBtu</i>	<i>60 ppm or 0.073 lb/MMBtu</i>
CO Emission Limit ppm at 3% O ₂ , dry	
<i>800 ppm</i>	

- NOx emission limits based on process temperature
- Exemption for units with NOx emissions of one pound per day or less
- New unit installations are subject to New Source Review (NSR) and BACT limits

Best Available Control Technology (BACT) Guidelines for Food Ovens

- South Coast AQMD Governing Board approved BACT guidelines for food ovens on February 2, 2018

BACT NOx Limits ppmv at 3% O ₂ , dry		
Subcategory*	Process Temp ≤500 °F	Process Temp >500 °F
Ribbon Burner	30	60

BACT NOx Limits ppmv @ 3% O ₂ , dry	
Subcategory*	
Other Direct Fired Burners	30
Infrared Burners	30

*Indirect fired units may be subject to Rules 1146 and 1146.1 and BACT for Process Heater

Other South Coast AQMD Regulatory Requirements

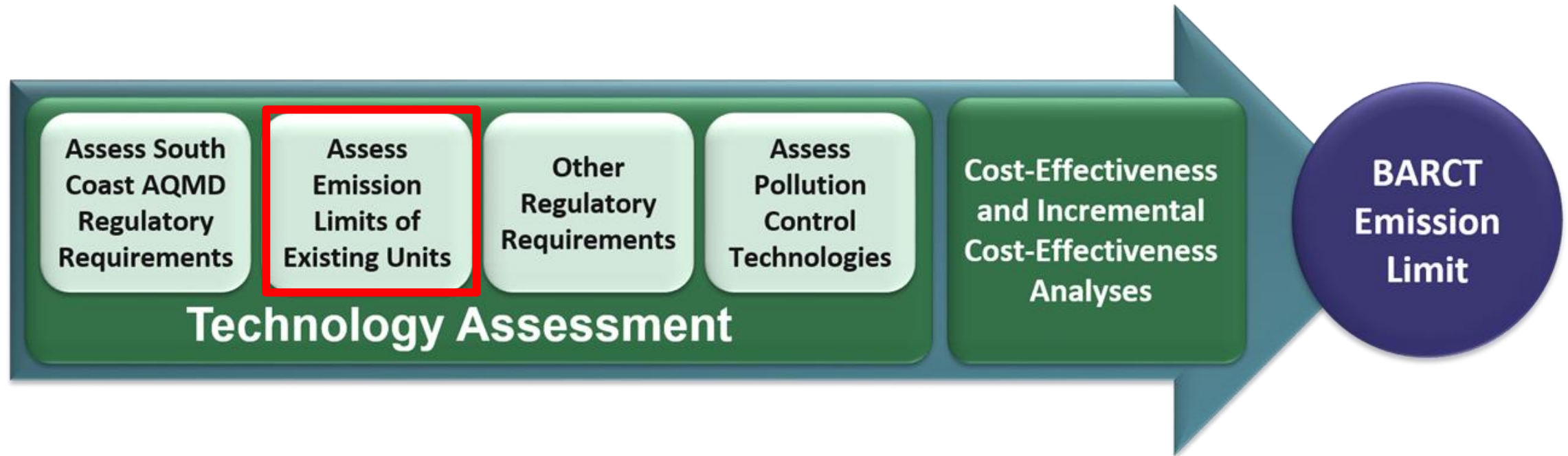
- South Coast AQMD Rule 1147 – NOx Reductions from Miscellaneous Sources

South Coast AQMD Rule 1147 NOx Limits ppmv (lb/MMBtu) at 3% O ₂		
	Process Temp < 1200 °F	Process Temp ≥ 1200 °F
Gaseous Fuel-Fired Equipment		
Oven, Dehydrator, Dryer, Cooker, Roaster	20 (0.024)	30 (0.036)
Liquid Fuel-Fired Equipment		
All liquid fuel-fired Units	20 (0.053)	60 (0.080)

- South Coast AQMD Rule 1147.1 – NOx Reductions from Aggregate Dryers

South Coast AQMD Rule 1147.1 NOx Limits ppmv @ 3% O ₂	
Aggregate Dryer (including dryers, rotary dryers, fluidized bed dryers and rotary kilns)	30

Assessing Emission Limits of Existing Units



Emission Limits of Existing Units

- Technology assessment includes evaluation of existing units to help understand emission levels currently being achieved

Permitted Equipment Type	Number of Units	Emission Limits and Source Test (ppmv at 3% O ₂ , dry)			
		Permit Limit (<500 °F)	Source Test	Permit Limit (≥500 °F)	Source Test
Food Ovens	116	30 to 60*	5 to 46	25 to 60	17.2 to 44
Dryers	53	30 to 40	19 to 28	N/A	N/A
Roasters	58	30	12.8 to 37	60	49 to 52
Smokehouses & Smoke Generators	10	30 to 102**	15.3 to 67	N/A	N/A

*RECLAIM permit limit

**Converted from emission factor 130 lb/mmscf

Existing Units Emission Limits

- NOx emissions vary depending on operations, equipment age, burner type, and retrofit or new install
- Most new installations are performing at BACT limit of 30 ppm
- Based on source test data, most units operate below permit limit
- Most commercial bakery ovens are conveyor type
- Smokehouses and roasters are batch type
- Dryers can either be conveyor or batch

Conveyor Type
Oven

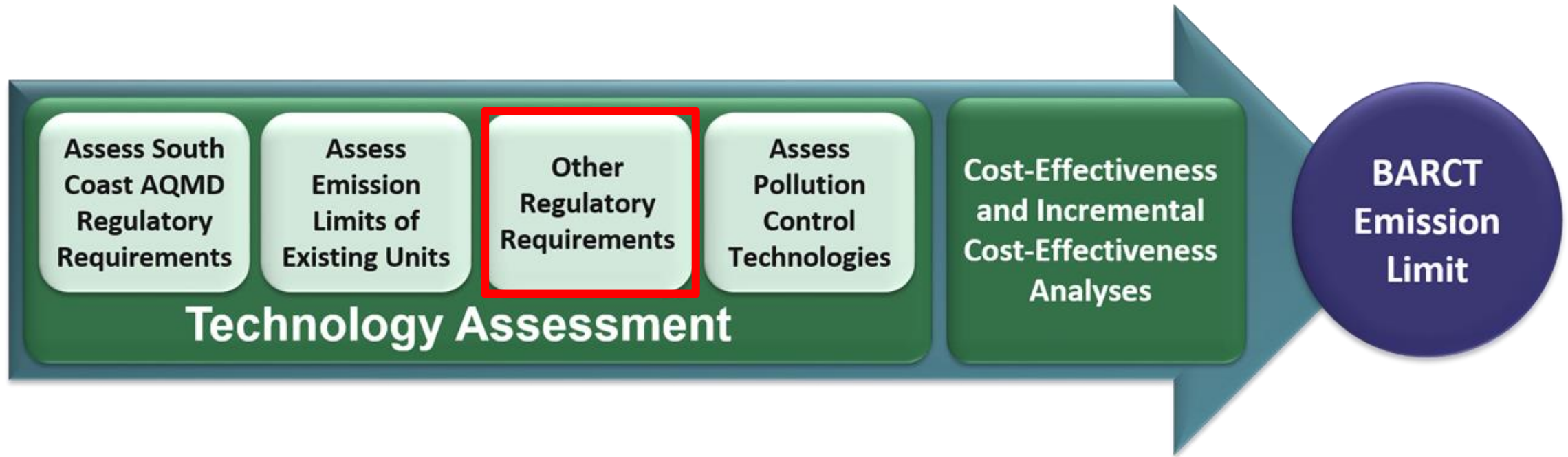
Batch Type Oven

<500 °F

500 to
900 °F

>900 °F

Other Regulatory Requirements



Other Regulatory Requirements

- San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4309 – Dryers, Dehydrators, and Ovens (units with a total rated heat input capacity of 5 MMBtu/hr or greater) – *Exempts smokehouses, units used for roasting, and units used to bake or fry food for human consumption*

SJVAPCD Rule 4309 NOx Limits ppmv at 19% O ₂ (at 3% O ₂)	
Milk, Cheese, and Dairy Processing < 20 MMBtu/hr	3.5 (~32)
Milk, Cheese, and Dairy Processing ≥ 20 MMBtu/hr	5.3 (~49)
Other processes (dryers, dehydrators, or ovens) not described above	4.3 (~40)

- Ventura County Air Pollution Control District (VCAPCD) Rule 74.34 – NOx Reductions from Miscellaneous Sources (units with a total rated heat input capacity of 5 MMBtu/hr or greater)

VCAPCD Rule 74.34 NOx Limits ppmv (lb/MMBtu) at 3% O ₂		
	Process Temp < 1200 °F	Process Temp ≥ 1200 °F
Oven, Dryer (besides asphalt, sand, or paper dryer)	30 (0.036)	60 (0.072)

Other Regulatory Requirements *(cont.)*

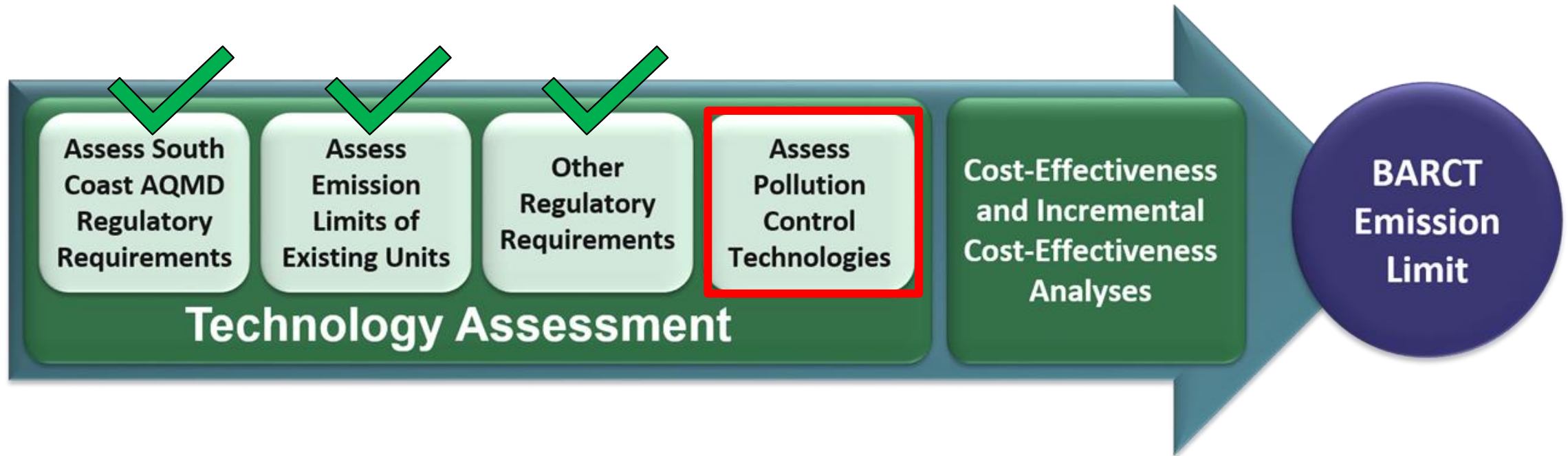
- Sacramento Metropolitan AQMD Rule 419 – NOx from Miscellaneous Combustion Units (≥ 2 MMBtu/hr)

Sacramento Metropolitan AQMD Rule 419 NOx Limits ppmv (lb/MMBtu) at 3% O₂

	Process Temperature	
	< 1200 °F	≥ 1200 °F
Gaseous Fuel-Fired Equipment		
Oven, Dehydrator, Dryer, Heater, or Kiln	30 (0.036)	60 (0.073)
Soybean Roaster	45 (0.055)	60 (0.073)
Other miscellaneous combustion unit not listed above	30 (0.036)	60 (0.073)
Liquid Fuel-Fired Equipment		
All miscellaneous combustion units when liquid fuel-fired	40 (0.051)	60 (0.077)
Other	< 500 °F	≥ 500 °F
Cooking Unit*	40 (0.049)	60 (0.073)

**Oven or dryer used to heat, cook, dry, roast, or prepare food for human consumption*

BARCT Assessment Next Steps



Assessment of Pollution Control Technologies

NOx

Evaluate Existing, Emerging, and Zero-Emission Technology



Evaluate Any Potential Control Technology Implementation Issues



Gather Costs for Control Equipment and Installation



Compliance Schedules and Rule Concepts

Stakeholder Comment

Multiple Units at Different Facilities

Comment

- Alternative Compliance Plans (ACP) allowed for facilities with multiple units that must comply
- Rule does not currently allow ACP for a facility with multiple units at different facilities
- Imposes significant burden on small-business who cannot afford to shut facility down
- Suggest amending rule to allow ACP for facilities with 3 or more units with different physical addresses

Staff Response

- Staff acknowledges that there may be a significant burden on small businesses with units at more than one facility impacted
- Staff will consider revising language to reflect facilities under common ownership with units at different physical locations
- Will alleviate burden on small businesses and provide operational flexibility

Next Steps



Continue Site Visits and Stakeholder Meetings



Continue BARCT Assessment and Research Zero-Emission Alternatives



Meet with Technology Vendors



Public Workshop



Public Hearing

Receiving PAR 1153.1 Updates

- To receive email updates, sign up at South Coast AQMD sign up page <http://www.aqmd.gov/sign-up>
- Enter email address and name
- Subscribe by scrolling down to “Rule Updates” and check the box for Rule 1153.1 and click on the subscribe button at bottom of page
- Future meeting notices, links to documents, and any updates will be sent via email

During this difficult time, South Coast AQMD is committed to protecting air quality and public health. Please visit our COVID-19 page for the operational updates and latest information. [Learn more.](#)

Language ▾ E.I.N.D. ▾ About ▾ Contact ▾ Grants & Bids ▾ Online Services ▾ I'm Looking For ▾ Sign Up ▾ Search

South Coast AQMD

AIR QUALITY INCENTIVES & PROGRAMS RULES & COMPLIANCE PERMITS NEWS, WEBCASTS, & CALENDAR TECHNOLOGY ADVANCEMENT RESOURCES MEETING AGENDAS & MINUTES

Home / Sign Up

Share: [f](#) [t](#)

Sign Up

The South Coast AQMD offers periodic newsletter updates via Email on a variety of topics. Click on the Manage Subscriptions link at the bottom of the form to update your subscriptions (unsubscribe from lists, subscribe to additional lists, or change your Email address).

If you wish to receive daily pollution forecasts or alerts for specific pollution levels in your area, sign up for [Air Alerts](#).

For printed copies of South Coast AQMD publications that mailed to you, please visit [Subscription Services](#) (charges may apply).

Enter the following information:

Email Address: Re-Enter Email Address:

First Name (optional): Last Name (optional):

Subscribe by checking the box adjacent to the E-Mail List(s) you are interested in and then CLICK on the **Subscribe** button below:

General Notifications:

<input type="checkbox"/> Events & Conferences	List of stakeholders interested in events and conferences.
<input type="checkbox"/> Environmental Justice Conference	Interest in attending a South Coast AQMD EJ Conference (More Information - TBD)
<input type="checkbox"/> South Coast AQMD News	Brief updates highlighting what is current at South Coast AQMD, such as conferences, equipment exchanges, advisories, etc.
<input type="checkbox"/> South Coast AQMD Advisor	South Coast AQMD's comprehensive bi-monthly newsletter containing the latest news, including rule updates, the latest on programs for businesses

Rule Updates:

<input type="checkbox"/> Rule 1151	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations
<input checked="" type="checkbox"/> Rule 1153.1	Emissions of Oxides of Nitrogen from Commercial Food Ovens
<input type="checkbox"/> Rule 1159.1	Control of NOx Emissions from Nitric Acid Tanks

Staff Contacts

Michael Krause
Assistant DEO
mkrause@aqmd.gov
909.396.2706

Heather Farr
Planning and Rules Manager
hfarr@aqmd.gov
909.396.3672

Zoya Banan, Ph.D.
AQ Specialist
zbanan@aqmd.gov
909.396.2332

Sarady Ka
AQ Specialist
ska@aqmd.gov
909.396.2331