

Proposed Amended Rule 1151

Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations

Working Group Meeting #4
July 11, 2024



Join Zoom Webinar Meeting

<https://scaqmd.zoom.us/j/92823189689>

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

Webinar Meeting ID: 928 2318 9689

Agenda

PAR 1151 Progress Update

Summary of Working Group Meeting #3

Proposed Interim Limits

Cost-Effectiveness and Incremental Cost-Effectiveness

Initial Preliminary Draft Rule Language

Next Steps

PAR 1151 Progress Update



Progress Since Working Group Meeting #3

Continued to meet with industry stakeholders

- Held five stakeholder meetings

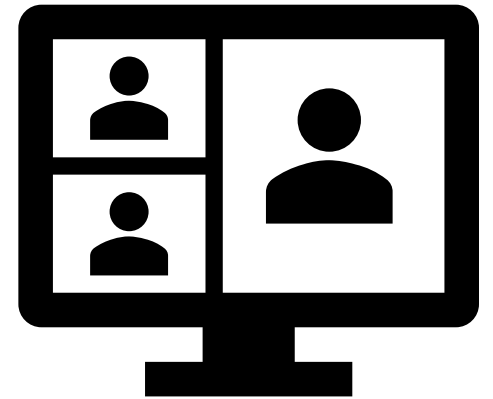
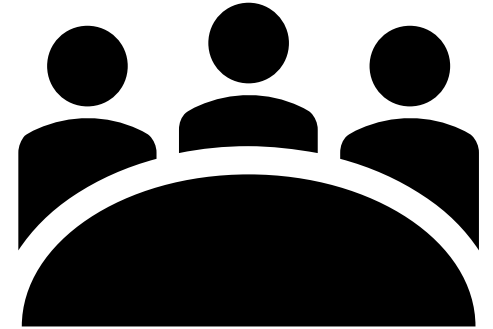
Released initial preliminary draft rule language

Attended California Autobody Association Meeting



Coating Manufacturer Meetings

- Staff met with coating manufacturers following the last working group meeting
- Manufacturers are developing and testing products to meet future lower VOC limits
 - Products are being developed but some require further testing
 - Some may need three to four years to fully develop, test, and certify
- Some products currently being slowly released into market



Summary of Working Group Meeting #3

Working Group Meeting #3 discussions include:

- PAR 1151 progress update
- Coating manufacturer survey update
- First four steps of BARCT Assessment
- Initial rule concepts and considerations



Staff Recommendation From WGM #3

Phase I

Establish interim VOC limits based on European limits

- Based on feedback and subsequent meetings, considering National limits

Phase II

Establish future-effective VOC limits at the same level as current limits without pCBtF or tBAc

- Some categories may require higher limits
- Some categories may be able to achieve lower limits

Proposed Interim VOC Content Limits

- Last working group meeting, staff proposed using European limits as Phase I interim limits
 - Limits are generally lower than National limits
 - Minimize backsliding
 - Transition would take longer
 - Supply chain, product registration, etc.
- Staff's priority is to transition out of pCBtF and tBAc as quickly as possible

Working Group Meeting #3, slide 44

Proposed Interim VOC Content Limits (*cont.*)

- During the first phase of the tBAc and pCBtF prohibition, VOC limits will be raised to allow for the use of non-pCBtF/tBAc products
- Proposed interim VOC content limits are mostly based on current European VOC limits
 - European VOC limits are generally more stringent than National Rule limits
 - Slightly different definition of a VOC (based on boiling point)
 - National Rule limits that are more stringent than European limits were used for associated categories, and for categories not established in the European regulation

Automotive Coating Categories	South Coast AQMD (g/L)	European Standards (g/L)	National Rule (g/L)
Primer	250	540	550-580
Color coating	420	420	600
Clear coating	250	420	600
Adhesion promoter	540	Not Regulated	840
Pretreatment coating	660	780	780
Single-stage coating	340	420	600
Truck Bed Liner coating	310	420	840
Uniform Finishing coating	540	-	840
Any Other Coating Type	250		840

Interim VOC Limits

National Limits

- Will allow for rapid phase out of pCBtF and tBAc
- Immediate replacement products currently available
- Higher VOC limits than European limits
- Allows manufacturers to direct resources to meeting lower future limits

European Limits

- Delay phase out of pCBtF and tBAc
 - Toxic Control Substance Act registration
 - OEM testing and approvals
 - Color match concerns
- Supply chain delay associated with importing European products

Staff Recommendation:

Rely on National Limits unless lower limits are already being achieved

Recommended Interim Limits

Based on stakeholder feedback

Clear coatings are already below the National Limits of 600 g/L

- Existing products formulated at or below 520 g/L

Matte Clear coatings need a slightly higher limit than Clear coatings

- Existing products formulated at or below 550 g/L

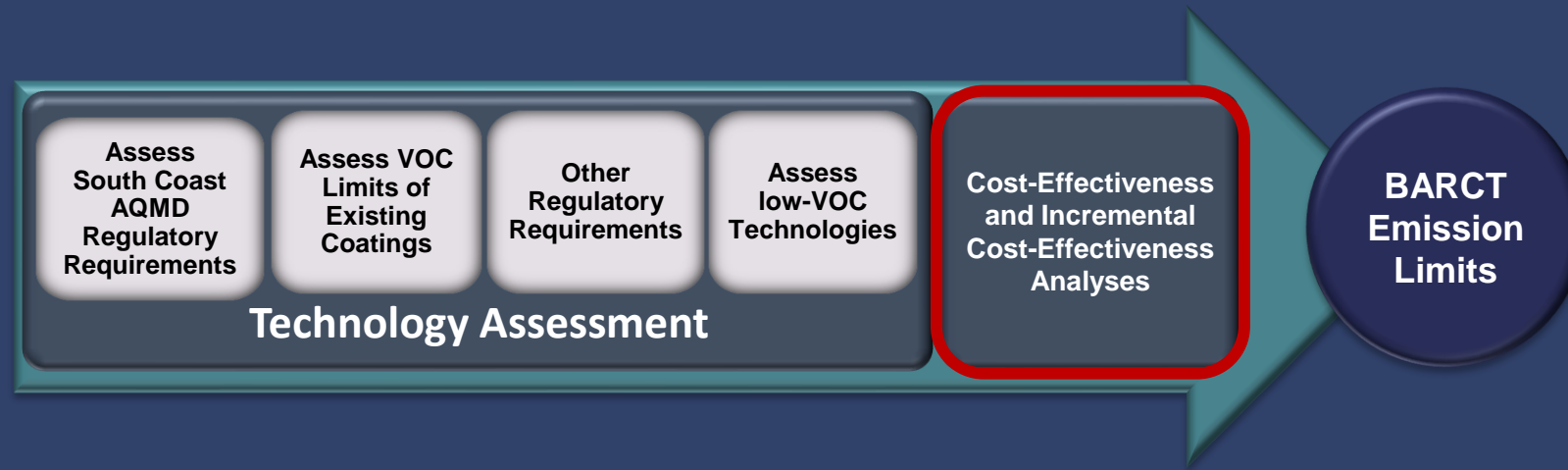
Color Coatings are already well below the National Limit of 600 g/L

- Existing products formulated at or below 420 g/L

Phase I

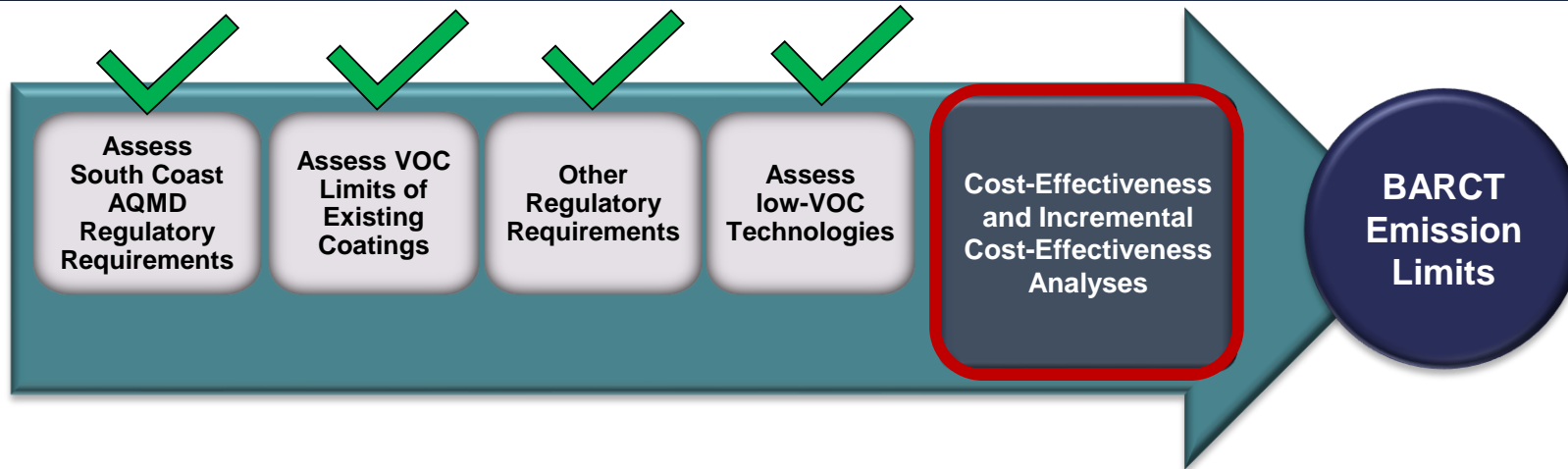
Staff's Revised Recommendations for Interim VOC Content Limits

Automotive Coating Categories	Initially Proposed Interim Limits (g/L)	National Limit (g/L)	Current Proposed Interim (g/L)
Adhesion Promoter	840	840	840
Clear Coating	420	600	520
Matte-Clear Coating	420	600	550
Color Coating	420	600	420
Metallics/Iridescent Color Coating	420	600	420
Pretreatment Wash Primer	660	780	780
Primer Sealer	250	580	580
Primer Surfacer	250	550	550
Single-Stage Coating	340	600	600



BARCT Assessment: *Cost-Effectiveness and Incremental Cost-Effectiveness*

BARCT Assessment: Progress



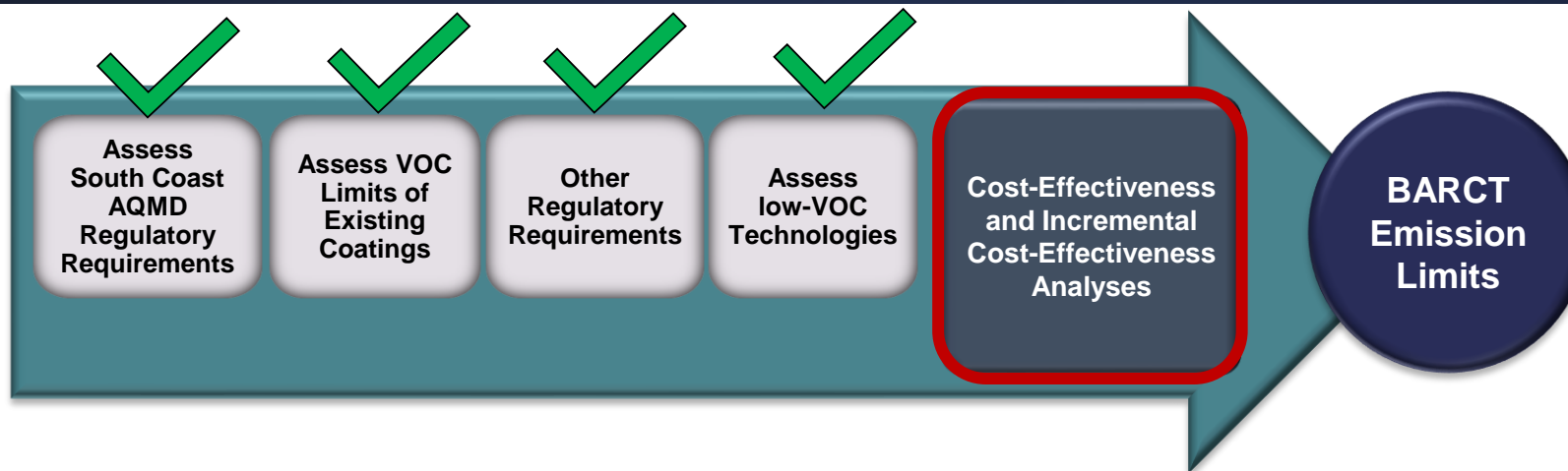
- Completed the first four steps of BARCT assessment at last WGM
- Recommended initial proposed future VOC limits (Phase II) near current Rule 1151, where feasible

BARCT Assessment: Initial Proposed Future Phase II VOC Limits

- Based on manufacturer feedback, some products cannot meet current limits without pCBtF and tBAC
 - VOC limits can be lowered slightly
 - Proposing a 720 g/L limit for Adhesion Promoters and Pretreatment Wash Primers
- Matte-Clears need higher limit
- Color Coatings can be formulated lower
 - Non-metallics can achieve 250 g/L
- Not proposing changes to the coatings outlined in red (no Phase I or Phase II limits)

Automotive Coating Categories	Current VOC Limits (g/L)	Initial Proposed Phase II Limit (g/L)
Adhesion Promoter	540	720
Clear Coating	250	250
Matte-Clear Coating	250	520
Color Coating	420	250
Metallics/Iridescent Color Coating	420	420
Pretreatment Wash Primer	660	720
Primer Sealer	250	250
Primer Surfacer	250	250
Single-Stage Coatings	340	340
Temporary Protective Coating	60	60
Truck Bed Liner Coating	310	310
Underbody Coating	430	430
Uniform Finishing Coat	540	540
Any Other Coating Type	250	250

BARCT Assessment: Progress

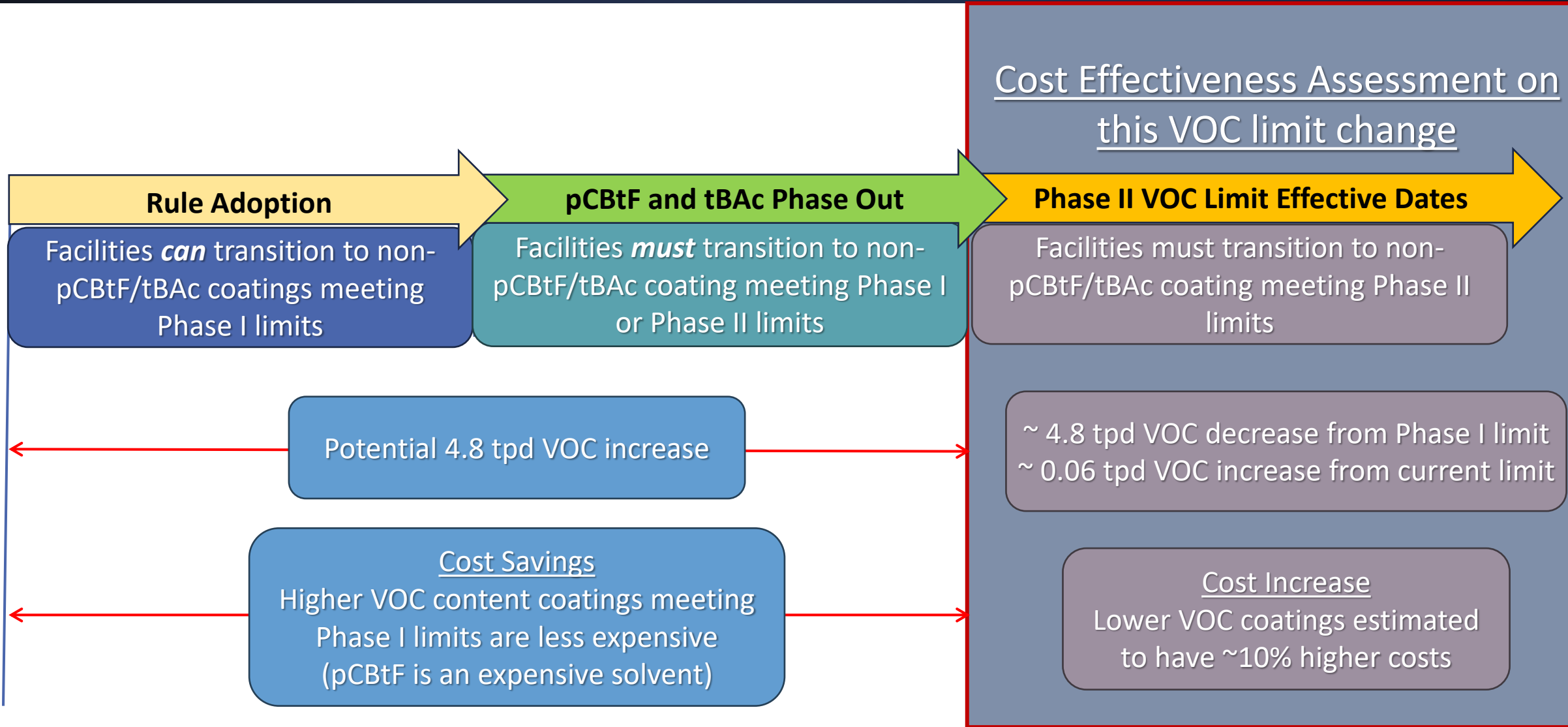


- Next step is Cost-effectiveness and Incremental Cost-effectiveness
 - Cost-effectiveness analysis conducted for coatings transitioning from Phase I to Phase II VOC limits
 - Determine if it is cost effective to transition from higher-VOC Phase I limits to lower-VOC Phase II limits
 - For purpose of analysis, staff not include cost savings associated with transition from current rule limits to the higher interim Phase I limits

Timeline for Proposed Changes

Updated

Cost-Effectiveness
and Incremental
Cost-Effectiveness
Analyses



BARCT Assessment: Cost-Effectiveness

- Cost-effectiveness is a measure that compares the costs of pollution reduction to amount of pollutant reduced
 - Measured in cost per ton of pollutant reduced
 - South Coast AQMD Governing Board established cost screening threshold of **\$40,168** per tons of VOC removed
- South Coast AQMD typically uses the *Discounted Cash Flow Method* to calculate cost-effectiveness
- **Cost – Effectiveness** =
$$\frac{\text{Present Worth Value}}{\text{Emissions Reduced Over Equipment Life}}$$
 - **Present Worth Value** = *Annualized Nonrecurring Costs* + (*Recurring Costs* x *Present Worth Value Formula*)
 - **Present Worth Value Formula** = $(1 - 1/(1+r)^n)/r$
 - $r = (i-f)/(1+f)$
 - i = nominal interest rate
 - f = inflation rate
 - n = number of cycles or years

BARCT Assessment: Cost-Estimates and Assumptions

- Cost estimates were gathered from various sources:
 - Manufacturers
 - Online searches
 - Vendor quotes
- Staff used actual costs where available (i.e., color coats meeting lower VOC limits)
- Coatings meeting current South Coast AQMD limits are approximately 10% more expensive than coatings meeting National Rule limits (*based on manufacturer feedback*)
 - Staff averaged cost for each coating category from quotes, estimates, and online searches
 - Staff assumes products meeting proposed future limits will be similar in cost to existing products
 - Costs associated with reformulations and testing
 - Potential costs savings since pCBtF costs more than conventional solvents

BARCT Assessment: Interim Phase I Emissions and Assumptions

Updated

Cost-Effectiveness
and Incremental
Cost-Effectiveness
Analyses

- Estimated VOC emissions will be 7.3 tpd for all automotive refinishing coatings categories based on interim limits
- Estimates emissions relied on:
 - 2002 CARB Automotive Refinishing Survey
 - CA population growth data from U.S. Census
 - Sales data from South Coast AQMD coating manufacturer survey
- 2002 CARB survey:
 - Total volume: 3,685,636 gallons
 - CA Population: 33.8 million (April 1, 2000)
 - Estimated Emissions: 20.7 tons per day
- Based on April 1, 2020 Census data, CA has ~39.5 million people
 - CA population grew ~15% from April 1, 2000
 - South Coast AQMD accounts for ~46% of CA population

[2020 Census Apportionment Results](#)

Coating Category	CA Sales from Survey (Average)	Interim Phase I Emissions (tpd)
Adhesion Promoter	0.7%	0.12
Primer	14.7%	2.11
Color Coating*	27.3%	0.73
Single Stage Coating	1.8%	0.20
Clear Coating	41.1%	3.9
Uniform Finishing Coating	1%	0.07
Underbody Coating	0.2	0.004
Truck Bed Liner Coating	4%	0.13
Total		7.3

*~80% of color coats are waterborne and meet current limit, ~20% will need to reformulate

Cost-Effectiveness Calculation Example

Example walk through on the cost effectiveness of transitioning from Phase I to Phase II VOC limits

Present Worth Value = *Annualized Nonrecurring Costs* + (*Recurring Costs* x *Present Worth Value Formula*)



Annualized cost of low VOC technology which is the cost difference of transition from Phase I Limits to Phase II Limits



Annual cost that is recurring over the course of the equipment life or life of technology considered such as operation and maintenance



Present Worth Value Formula = $(1 - 1/(1+r)^n)/r$

1 year = 1
5 year = 4.5
10 year = 8.1
15 year = 11.1
25 year = 15.62

Cost-Effectiveness Calculation Example Continued

Present Worth Value = *Annualized Nonrecurring Costs* + (*Recurring Costs* x *Present Worth Value Formula*)



\$40,000,000

Cost difference for lower VOC
clear coat category based on total
estimated gallons used



\$0

No associated annual
operating cost



1

Solving present worth
value formula for one
year is equal to one

$$= \$40,000,000 + (\$0 \times 1)$$

$$= \$40,000,000$$

Cost-Effectiveness Calculation Example Continued

$$\text{Cost – Effectiveness} = \frac{\text{Present Worth Value}}{\text{Emissions Reduced} *}$$

$$= \frac{\$40,000,000}{1,475 \text{ tons}}$$

= ~\$27,000 per ton of VOC reduced

- Since we used one year to calculate present worth value, the equipment life will also be one year
- In the case of multiple years, the annual emission reductions is multiplied by the number of years

*Note: For emission calculations, the VOC of material (actual VOC) is used. Staff estimated the actual VOCs based on survey data and product datasheets.

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Cost Effectiveness Assessment

Assess each category with a proposed future Phase II VOC

Adhesion Promoters

Cost-Effectiveness

Cost-Effectiveness	
Proposed VOC Limit	720 g/L
Cost per ton VOC reduced	\$30,000
VOC Reductions	0.02 tpd

- Coatings applied to uncoated plastic surfaces to facilitate bonding of coatings
- tBAc is primarily exempt solvent used
- Proposed interim Phase I limit of **840 g/L**
- Proposed future Phase II limit of **720 g/L**
- Approximately 12,900 gallons of adhesion promoter used in South Coast AQMD
 - 0.7% of the total coatings used in South Coast AQMD
- Phase I emissions for category is 0.12 tpd

Staff Recommendation:
Future Limit of 720 g/L

Clear Coats

Cost-Effectiveness

Subcategory	Clear Coat	Matte-Clear Coat
Proposed VOC Limits	250 g/L	520 g/L
Cost per ton VOC reduced	\$39,000	\$600,000
VOC Reductions	2.8 tpd	0.01 tpd

- Clear coats are 41% of the total coatings used in South Coast
- Proposing two subcategories:
 - **Clear Coat:** Provides a glossy clear protective topcoat
 - Proposed interim Phase I limit of **520 g/L**
 - Proposed future Phase II limit of **250 g/L**
 - Approximately 801,000 gallons used annually in South Coast AQMD
 - Phase I emissions is 3.9 tpd
 - **Matte Clear Coat:** Contains a flattening or matting agent to clear coat to achieve low gloss coating
 - Proposed interim Phase I limit of **550 g/L**
 - Proposed future Phase II limit of **520 g/L**
 - Approximately 3,200 gallons used annually in South Coast AQMD
 - 0.4% of the total clear coats used in South Coast AQMD
 - Phase I emissions is 0.02 tpd
- Potentially challenging category, staff proposing longer Phase II effective date of January 1, 2030

Staff Recommendation:

- 250 g/L for Clear Coats
- Maintain limit of 550 g/L for Matte Clear Coats

Color Coatings

Cost-Effectiveness

Subcategory	Color Coatings	Metallics
Proposed VOC Limits	250 g/L	420 g/L
Cost per ton VOC reduced	\$24,000	\$0
VOC Reductions	0.14 tpd	0

- Color coats are 27% of the total coatings used in South Coast
- Based on manufacturer feedback, 80% of colors meet 250 g/L
 - 20% will need to reformulate to meet future limit
- Actual cost were used since low VOC waterborne options are available
- Two subcategories:
 - Color Coatings:** non-metallic color coating (45% of category)
 - Proposed interim Phase I limit of **420 g/L**
 - Proposed future Phase II limit of **250 g/L**
 - Approximately 240,000 gallons used annually in South Coast AQMD
 - Phase I emissions is 0.33 tpd
 - Metallic Color Coatings:** contain metallic pigments (55% of category)
 - Proposed Interim limit of **420 g/L**, not proposing Phase II limits
 - Need higher VOCs to achieve metallic appearance
 - Approximately 293,000 gallons used annually in South Coast AQMD
 - Phase I emissions is 0.4 tpd

Staff Recommendation:

- 250 g/L for Color Coatings
- Maintain 420 g/L for Metallics Color Coatings

Pretreatment Wash Primers

Cost-Effectiveness	
Proposed VOC Limit	720 g/L
Cost per ton VOC reduced	\$104,000
VOC Reductions	0.01 tpd

- Acid containing coating used for surface etching of bare metal surfaces for corrosion resistance and adhesion
- Proposed interim Phase I limit of **780 g/L**
- Proposed future Phase II limit of **720 g/L**
 - Above cost effectiveness threshold
- Approximately 25,300 gallons used annually in South Coast AQMD
 - 1.3% of the total coatings used
- Phase I emissions is 0.21 tpd

Staff Recommendation:

Maintain Interim Phase I Limit of 780 g/L

Primers

- Coatings applied to a substrate to provide bond between the substrate and subsequent coats
- Two categories of primers:
 - Primer sealer:** Provides a smooth substrate surface for topcoat
 - Proposed interim Phase I limit of **580 g/L**
 - Proposed future Phase II limit of **250 g/L**
 - Approximately 13,600 gallons used annually used in South Coast AQMD
 - 0.7% of the total coatings used
 - Estimated baseline emissions 0.09 tpd
 - Primer surfacer:** Provides adhesion and promotes uniform surface by filling in surface imperfection
 - Proposed interim Phase I limit of **550 g/L**
 - Proposed future Phase II limit of **250 g/L**
 - Approximately 287,000 gallons used annually in South Coast AQMD
 - 14.7% of the total coatings used
 - Estimated baseline emissions is 1.8 tpd

Cost-Effectiveness

Subcategory	Primer Sealers	Primer Surfacers
Proposed VOC Limit	250 g/L	250 g/L
Cost per ton VOC reduced	\$21,000	\$22,000
VOC Reductions	0.08 tpd	1.57 tpd

Staff Recommendation:

- Future limit of 250 g/L for both Primer Sealers and Surfacers

Single Stage Coatings

Cost-Effectiveness	
Proposed VOC Limit	340 g/L
Cost per ton VOC reduced	\$19,000
VOC Reductions	0.12 tpd

- Single stage coatings are ready for application as supplied without any subsequent application clear coat
- Proposed interim Phase I limit of **600 g/L**
- Proposed future Phase II limit of **340 g/L**
- Approximately 35,000 gallons of single stage coatings used in South Coast
 - 1.8% of the total coatings used in South Coast
- Estimated annual VOC emissions for category is 0.20 tpd

Staff Recommendation:
Future Limit of 340 g/L

Temporary Protective Coatings

Truck Bed liner Coating

Underbody Coating

Uniform Finish Coating

Any Other Coating

- Cost-effectiveness not calculated since no proposed changes to existing limits
- Temporary Protective Coatings
 - Not reported in survey
- Truck Bed Liner Coating
 - 4% of total coatings in South Coast
 - Estimated usage is approximately 68,000 gallons
- Underbody Coating
 - 0.2% of total coatings in South Coast
 - Estimated usage is approximately 3,400 gallons
- Uniform Finish Coating
 - 1% of total costings in South Coast
 - Estimated annual usage is approximately 17,000 gallons

Staff Recommendation:

Maintain current limits for categories

BARCT Assessment: Cost-Effectiveness Summary

- Proposed future limits for all automotive coating categories are based on staff's assessment
- Staff evaluated:
 - Manufacturer submitted survey data
 - Manufacturer brochures and technical data sheets
 - Product labels and material safety data sheets
 - Discussions and meetings with manufacturers, suppliers, and users of coatings
- Proposed future limits are feasible and cost-effective with product being developed
- No VOC change for following categories:
 - Temporary protective category
 - Truck bed line category
 - Underbody coating
 - Uniform finishing coat
 - Any other coating type
- Maintaining interim VOC limit for Matte Clear Coatings and Pretreatment Wash Primers

Phase
I



Phase
II

Updated

Cost-Effectiveness Summary and Estimated Emission Reduction from Interim Limit

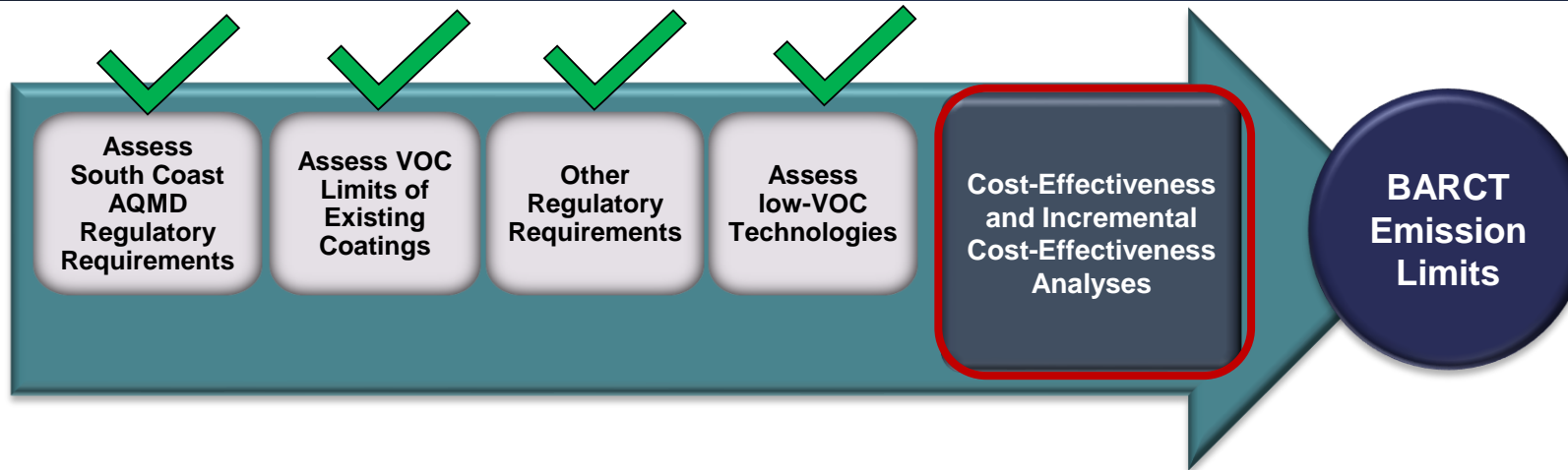
Automotive Coating Categories	Future Limit (g/L)	Cost-Effectiveness	Emission Reduction from Interim Limit (tpd)
Adhesion Promoter	720	\$30,000	0.02
Clear Coating	250	\$39,000	2.8
Matte-Clear Coating	550	\$600,000	0
Color Coating	250	\$24,000	0.14
Metallics Color Coating	420	\$0	0
Pretreatment Wash Primer	780	\$104,000	0
Primer Sealer	250	\$21,000	0.08
Primer Surfacer	250	\$22,000	1.6
Single-Stage Coatings	340	\$19,000	0.12
Temporary Protective Coating	60	--	--
Truck Bed Liner Coating	310	--	--
Underbody Coating	430	--	--
Uniform Finishing Coat	540	--	--
Any Other Coating Type	250	--	--
Total			4.8

Overall Emission Summary

Automotive Coating Categories	Current Limits Emissions (tpd)	Phase I Limits Emissions (tpd)	Phase II Limits Emission (tpd)	Difference from Current Limits (tpd)
Adhesion Promoter	0.04	0.12	0.10	+0.02
Clear Coating	1.09	3.92	1.09	0
Matte-Clear Coating	0.006	0.02	0.02	+0.014
Color Coating	0.33	0.33	0.19	-0.14
Metallics Color Coating	0.40	0.40	0.40	0
Pretreatment Wash Primer	0.08	0.21	0.21	+0.13
Primer Sealer	0.01	0.09	0.01	0
Primer Surfacer	0.23	1.8	0.23	0
Single-Stage Coatings	0.08	0.2	0.08	0
Temporary Protective Coating	0	0	0	0
Truck Bed Liner Coating	0.13	0.13	0.13	0
Underbody Coating	0.004	0.004	0.004	0
Uniform Finishing Coat	0.07	0.07	0.07	0
Any Other Coating Type	0	0	0	0
Total Emissions (tpd)	2.47	7.29	2.53	--
Emissions Difference (tpd)	0	+4.82	-4.76	+0.06

Incremental Cost-Effectiveness

BARCT Assessment: Progress



- ✓ Completed the Cost-effectiveness assessment
- California Health and Safety Code requires an incremental cost-effectiveness assessment
 - Staff identifies controls to reduce VOC emissions and must evaluate the incremental cost between more stringent controls
 - There is no established cost threshold for incremental cost-effectiveness

BARCT Assessment: Incremental Cost-Effectiveness

- Incremental Cost-effectiveness (I-CE) is calculated as follows:

$$I - CE \left(\$ / \text{tons VOC reduced} \right) = \frac{\text{Incremental Difference in Cost (Present Worth Value)}}{\text{Incremental Difference in Emission Reductions (Lifetime Reductions)}}$$

BARCT Assessment: Incremental Cost-Effectiveness and Cost Estimates

- For incremental cost-effectiveness, staff evaluated the next stringent level of control beyond the lower future VOC limits
- Staff identified thermal oxidizers with low-NOx burners as the next level of control
 - 95% VOC destruction efficiency
 - Cost will vary based on facility size and unit size
 - Cost estimate includes:
 - Capital cost or equipment cost (~\$150,000)
 - Installation costs (50% of capital)
 - Annual energy and operating costs (i.e., natural gas and maintenance)
- Total installed cost for thermal oxidizers averages ~\$275,000
- Staff assumed a 25-year equipment life

Incremental Cost-Effectiveness: Thermal Oxidizer Assumption

Installed at facility level to control VOC emissions

- Approximately 3,000 automotive refinish facilities in South Coast
- Assuming spray booth size of 30'Lx15'Wx13'H

Thermal Oxidizer Assumptions per Facility

- Estimated heat input is 1.25 MMBtu/hr
- Operation of 12 hours a day, 5 days a week
- Flow rate of 15,000 scfm
- Total Installed Cost of \$275,000
- Annual operating cost of \$91,000 a year

Incremental Cost-Effectiveness: Thermal Oxidizer

- Not cost-effective for automotive refinish shops to install thermal oxidizers
- High emission reduction potential but
 - High capital investment for facilities
 - High energy and annual operating cost
 - Additional equipment maintenance cost
 - Additional training necessary for proper operation

Incremental Cost-Effectiveness
95% Reduction
\$230,000
Potential VOC Reductions
2.4 tpd

Staff does not recommend installation of thermal oxidizer for further VOC control

Staff Conclusions

- Interim Phase I VOC limits will cause a significant increase in VOC emissions
 - Concurrent significant decrease in toxicity and public health benefit
 - VOC increase will be temporary
- Staff recommends requiring future Phase II VOC limits effective:
 - January 1, 2028 for all coatings other than clear coatings
 - January 1, 2030 for Clear Coatings



Reactivity-Based VOC Limits

Mass-Based versus Reactivity limits

- Mass-based VOC limits treat all solvents equally other than water and exempts solvents which are not considered VOCs
- Reactively-based limits are weighted averages based on the Maximum Incremental Reactivity (MIR) value of each solvent
- CARB uses reactivity-based limits for aerosol coatings

Table of Reactivity Limits
Product-Weighted MIR in Grams Ozone per Gram Product
(g O₃ / g product)

Aerosol Coating Category

General Coatings	06/01/2002	01/01/2017
Clear Coating	1.50	0.85
Flat Coating	1.20	0.80
Fluorescent Coating	1.75	1.30
Metallic Coating	1.90	1.25
Nonflat Coating	1.40	0.95
Primer	1.20	0.70
Specialty Coatings (A)	01/01/2003	01/01/2017
Auto Body Primer	1.55	0.95
Electrical/Electronic/Conformal Coating		2.00
Exact Match Finish:		
Automotive	1.50	0.95
Engine	1.70	0.95
Industrial	2.05	1.20
Flexible Coating		1.60
Ground Traffic/Marking Coating	1.20	0.85
Mold Release Coating		1.10
Two Component Coating		1.20
Uniform Finish Coating		1.30

MIR Values of Some Common Solvents

- Reactivity-based limits would require manufacturers to choose solvents with lower MIR
- Could allow formulators more flexibility

Compound	MIR
2-pentenes	10.47
o-xylene	7.64
butanal	5.97
toluene	4.00
ethanol	1.53
MEK	1.48
nonane	0.78
methanol	0.67
isopropyl alcohol	0.61
tert-Butyl alcohol	0.41
benzaldehyde	0.00
acetone	0.36
pCBtF	0.13
methyl acetate	0.07
D4	0.00

Potential Reactivity Based Limits

- Consider including reactivity-base limits for specialty categories that do not have a strong pathway to lower limits
- Products that are low-solids and not readily converted to water-based
 - Adhesion Promotors
 - Pretreatment Wash Primers
 - Reducers

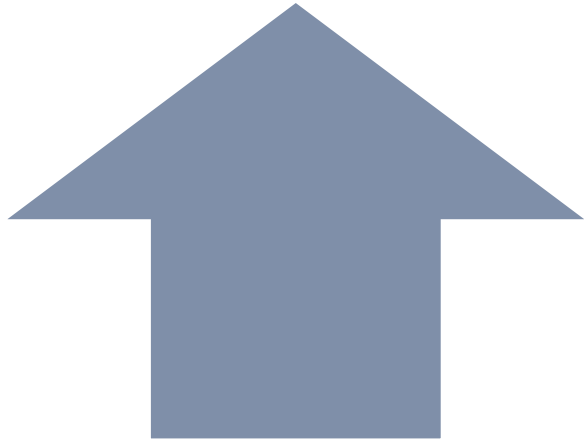
Impact of Reactivity

Solvent	Weight Percent	MIR	Weighted Average
Toluene	10%	4.0	0.4
MEK	40%	1.5	0.6
Acetone	10%	0.4	0.0
IPA	30%	0.6	0.2
Methyl acetate	10%	0.1	0.0
	100%		1.2

- Examples of solvent selection for a thinner or coating
- Second example will produce almost 5 times more ozone than the first example

Solvent	Weight Percent	MIR	Weighted Average
Xylene	40%	7.6	3.1
Toluene	20%	4.0	0.8
Butanol	25%	6.0	1.5
MEK	15%	1.5	0.2
	100%		5.6

Pros and Cons



Reduce ozone

- Formulation flexibility
- Provide another tool to improve air quality

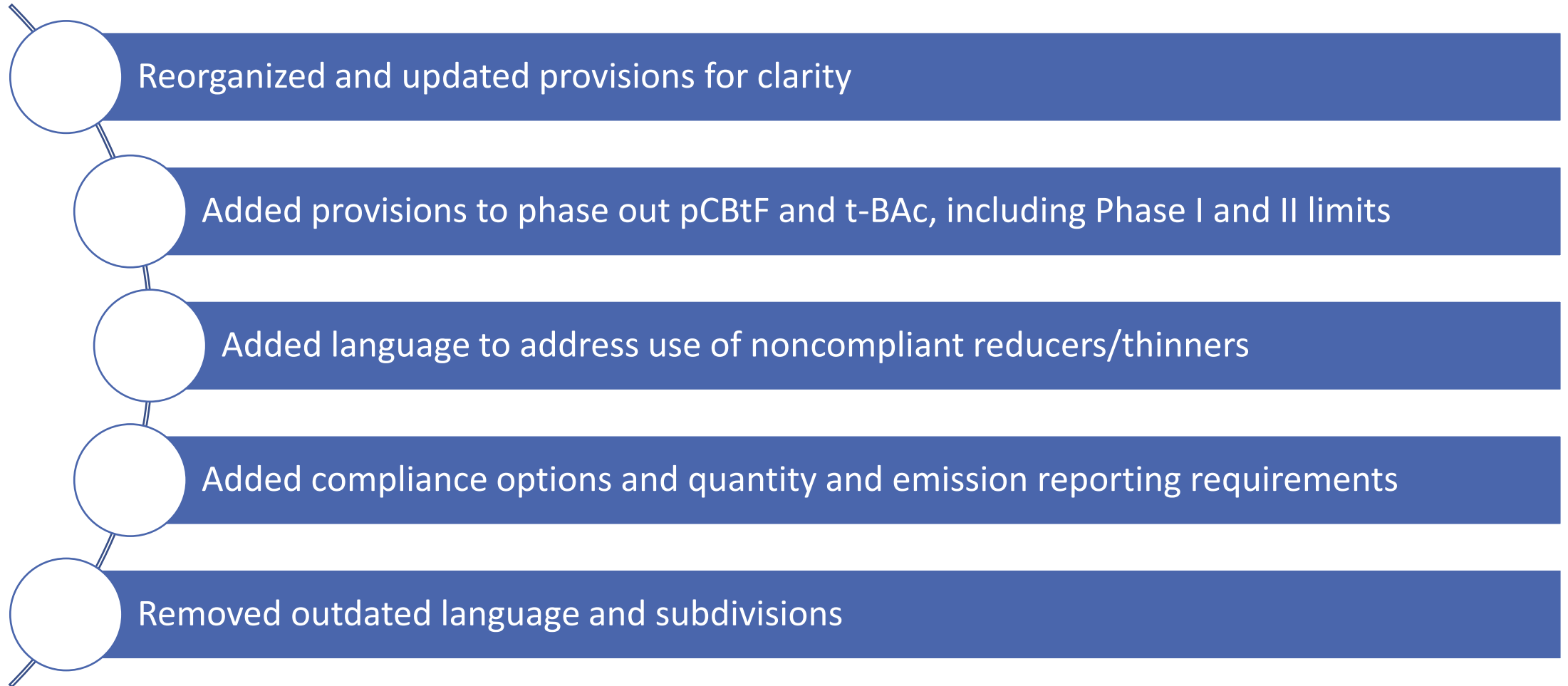


Might not be adopted widely

- Different metric just for South Coast AQMD
- More complicated than mass-based limits

Preliminary Draft Rule Language

Key Rule Updates Summary



Rule Structure Updates Overview

- No major changes made to rule structure
- Moved Alternative Compliance Options paragraph into separate subdivision
- Minor restructuring of provisions for consistency

Proposed Amended Rule 1151

- (a) Purpose
- (b) Applicability
- (c) Definitions
- (d) Requirements
- (e) Alternative Compliance Options
- (f) Prohibition of Possession, Specification, Sale or Use
- (g) Recordkeeping Requirements
- (h) Administrative and Reporting Requirements for Automotive Coating Manufacturers
- (i) Test Methods
- (j) Rule 442 Applicability
- (k) Exemptions

Purpose –
Subdivision (a)

and

Applicability –
Subdivision (b)

- Capitalized defined terms in both subdivisions to indicate that their definitions can be found in Subdivision (c)

(c) Definitions

~~For the purpose of this rule, the following definitions shall apply:~~

- (1) ADHESION PROMOTER means any ~~automotive coating~~ Automotive Coating, specifically labeled and formulated to be applied to uncoated plastic surfaces to facilitate bonding of a subsequent ~~automotive coatings~~ Automotive Coating, and on which, a subsequent ~~automotive coating~~ Automotive Coating is applied.

Key Changes in Definitions – Subdivision (c)

- Added four new definitions
 - For clarification and for a new coating category
 - Matte Clear Coating
 - Private Labeler
 - Ready-To-Spray Automotive Coatings
 - South Coast AQMD Test Method
- Revising one definition
 - Metallic/Iridescent Color Coating
 - Allowing higher limit for metallic coatings because metal flake needs more solvent
 - Iridescent mica should not need the higher VOC limits
- Removed one definition
 - Multi-Color Coating
 - Staff has not identified any multi-color coatings, proposing to remove category

Definitions – Subdivision (c) (cont.)

- (18) MATTE CLEAR COATING means any Automotive Coating that is formulated with materials that do not impart color and is specifically labeled and formulated for application over a Color Coating or a subsequent layer of a Matte Clear Coating, which register a gloss of less than 40 units on a 60-degree meter, according to ASTM Test Method D523.
- (19) METALLIC/~~IRIDESCENT~~ COLOR COATING means any ~~automotive coating~~Automotive Coating that contains more than 0.042 pounds per gallon (5 grams per liter) of metal ~~or iridescent particles~~ as applied, where such particles are visible in the dried film.

Definitions – Subdivision (c)

(cont.)

(24) PRIMER SEALER means any Coating applied prior to the application of a topcoat for the purpose of color uniformity, or to promote the ability of an underlying Coating to resist penetration by the topcoat.

~~(23)~~(25) PRIMER SURFACER means any Coating applied for the purpose of corrosion resistance or adhesion, and which promotes a uniform surface by filling in surface imperfections.

Definitions – Subdivision (c) (cont.)

- (26) PRIVATE LABELER is the person, company, firm, or establishment (other than the toll manufacturer) identified on the label of a Regulated Product.
- (27) READY-TO-SPRAY AUTOMOTIVE COATINGS means the Automotive Coatings, mixed with all Automotive Coating Components, based on the manufacturers' stated mix ratio.
- (28) REGULATED PRODUCT means any Automotive Coating, Automotive Coating Component, and any product with reference to automotive refinishing or Automotive Coating on the container or in product literature and with a recommendation for use in motor vehicle, Mobile Equipment, and Associated Parts and Components refinishing.

Requirements –
Subdivision (d)

Updated Table 1
VOC Content Limits
and added Two
Coating Categories
and split primer
into sealer and
surfacers categories



Table 1- TABLE OF STANDARDS
Regulatory VOC Content Limits and Effective Dates

<u>Coating Categories</u>	<u>Current Limits⁽¹⁾</u>		<u>Phase I</u> <u>[Date of Rule Adoption]</u>		<u>Phase II</u>		
	<u>g/L</u>	<u>lb/gal</u>	<u>g/L</u>	<u>lb/gal</u>	<u>g/L</u>	<u>lb/gal</u>	<u>Effective Date</u>
<u>Adhesion Promoter</u>	<u>540</u>	<u>4.5</u>	<u>840</u>	<u>7.0</u>	<u>720</u>	<u>6.0</u>	<u>1/1/2028</u>
<u>Clear Coating</u>	<u>250</u>	<u>2.1</u>	<u>520</u>	<u>4.3</u>	<u>250</u>	<u>2.1</u>	<u>1/1/2030</u>
<u>Matte-Clear Coating</u>	<u>250</u>	<u>2.1</u>	<u>550</u>	<u>4.6</u>	<u>520</u>	<u>4.3</u>	<u>1/1/2030</u>
<u>Color Coating</u>	<u>420</u>	<u>3.5</u>	<u>420</u>	<u>3.5</u>	<u>250</u>	<u>2.1</u>	<u>1/1/2028</u>
<u>Metallics Color Coating</u>	<u>420</u>	<u>3.5</u>					
<u>Pretreatment Wash</u>							
<u>Primer</u>	<u>660</u>	<u>5.5</u>	<u>780</u>	<u>6.5</u>			
<u>Primer Sealer</u>	<u>250</u>	<u>2.1</u>	<u>580</u>	<u>4.8</u>	<u>250</u>	<u>2.1</u>	<u>1/1/2028</u>
<u>Primer Surfacers</u>	<u>250</u>	<u>2.1</u>	<u>550</u>	<u>4.6</u>	<u>250</u>	<u>2.1</u>	<u>1/1/2028</u>
<u>Single-Stage Coating</u>	<u>340</u>	<u>2.8</u>	<u>600</u>	<u>5.0</u>	<u>340</u>	<u>2.8</u>	<u>1/1/2028</u>
<u>Temporary Protective Coating</u>	<u>60</u>	<u>0.5</u>					
<u>Truck Bed Liner Coating</u>	<u>310</u>	<u>2.6</u>					
<u>Underbody Coating</u>	<u>430</u>	<u>3.6</u>					
<u>Uniform Finishing Coating</u>	<u>540</u>	<u>4.5</u>					
<u>Any Other Coating Type</u>	<u>250</u>	<u>2.1</u>					

¹ The specified limits remain in effect unless revised limits are listed in subsequent columns in the Table of Standards.

Requirements – Subdivision (d) (cont.)

- Added language clarifying coatings must comply with both VOC, pCBtF and t-Bac content limits

(d) Requirements

- (1) A person shall not apply any ~~automotive coating~~Automotive Coating to a ~~motor vehicle~~Motor Vehicle, ~~mobile equipment~~Mobile Equipment, or ~~associated parts or components~~Associated Parts or Components of a ~~motor vehicle~~Motor Vehicle or ~~mobile equipment~~Mobile Equipment that contains VOC in excess of the limits specified in the Table of Standards ~~below~~. Compliance with the applicable VOC content limits shall be based on VOC content, including any material added to the original ~~automotive coating~~Automotive Coating supplied by the manufacturer, as applied, less water and ~~exempt compounds~~Exempt Compounds. Automotive Coatings formulated to meet Phase I and Phase II VOC limits shall not contain more than 0.01 weight percent of para-Chlorobenzotrifluoride (pCBtF) or tert-Butyl Acetate (t-Bac).

Requirements – Subdivision (d) (cont.)

(3) Alternative VOC limits for Color Coatings and Metallic Color Coatings
In lieu of complying with the Phase I Color Coating VOC limit and until the Phase II Color Coating VOC limit effective date, a person may elect to apply a Color Coating or Metallic Color Coating supplied in half-pint or smaller containers, provided the Regulatory VOC content is no more than 600 g/L and the Color Coating does not contain more than 0.01 percent by weight of pCBtF or t-BAc.

- Added alternative VOC limit of 600 g/L for color coatings or metallics supplied in half-pint or smaller containers, provided they do not contain tBAc or pCBtF
 - Intended to address smaller autobody shops that are still using solvent-based color coatings
 - Provide additional time for them to transition to water-based alternatives

Requirements – Subdivision (d) (cont.)

(4) Sell-Through and Use-Through Provision

Any Automotive Coating that is manufactured prior to the effective date of the applicable limit specified in Table 1, and that has a VOC content above that limit (but not above the limit in effect on the date of manufacture), may be sold, supplied, or offered for sale for up to 18 months after the specified effective date and used up to 24 months after the specified effective date.

- Added language clarifying timeframe during which products formulated to meet current or Phase I VOC content limits can be sold, supplied, offered for sale and used

Alternative Compliance Options – Subdivision (e)

Moved to its own
subdivision

(e) Alternative Compliance Options

(1) Emission Control System

A person may comply with the provisions of paragraph (d)(1), by using an approved Emission Control System, consisting of collection and control devices, provided such Emission Control System is approved pursuant to Rule 203 – Permit to Operate, in writing, by the Executive Officer for reducing VOC emissions. The Executive Officer shall approve such Emission Control System only if the VOC emissions resulting from the use of non-compliant Automotive Coatings will be reduced to a level equivalent to or lower than that which would have been achieved by compliance with the terms of paragraph (d)(1). The required efficiency of an Emission Control System at which an equivalent or greater level of VOC emission reduction will be achieved shall be calculated by the following equation:

(2) Alternative Emission Control Plan

A person may comply with the provisions of paragraph (d)(1) by means of an Alternative Emissions Control Plan, pursuant to Rule 108 – Alternative Emissions Control Plans.

Prohibition of Possession, Specification, Sale or Use – Subdivision (f)

- Added language prohibiting the use, supply, sale or offer for sale of a regulated product into South Coast AQMD that contains pCBtF and t-BAc

(8) Exempt Compounds

No person shall use, supply, sell, or offer for sale a Regulated Product into or within the South Coast AQMD that contains more than 0.01 percent by weight of the following chemicals:

- (A) Chloroform, ethylene dichloride, methylene chloride, perchloroethylene, trichloroethylene;
- (B) Group II Exempt Compounds, excluding cyclic, branched, or linear, completely methylated siloxanes;
- (C) pCBtF and t-BAc for Regulated Products subject to the applicable Phase I or Phase II VOC limits; or
- (D) pCBtF and t-BAc pursuant to the applicable effective dates in Table 2.

Prohibition of Possession, Specification, Sale or Use – Subdivision (f)

- Added a table to specify the prohibition effective date, sell-through and use-through end dates for products containing pCBtF and/or t-Bac
- Still considering if a different timeline is needed for different coating categories

Table 2: pCBtF and t-BAc Prohibition Timeline

<u>Prohibition Effective Date</u>	<u>Sell-through End Date</u>	<u>Use-through End Date</u>
<u>January 1, 2025</u>	<u>January 1, 2026</u>	<u>July 1, 2027</u>

Recordkeeping Requirements – Subdivision (g)

Clause (e)(3)(A)(iv)
moved to Paragraph
(g)(3)

- (3) Recordkeeping Requirements for Coatings complying with paragraph (f)(3)
Any person that supplies, sells, offers for sale, markets, blends, packages, repackages or distributes Automotive Coatings that exceed the VOC limits in paragraph (d)(1) by complying with paragraph (f)(3) shall keep the following records for at least five years and make them available to the Executive Officer upon request:
- (A) Automotive Coating and Automotive Coating Component name and manufacturer;
- (B) Application method as recommended;

Recordkeeping Requirements – Subdivision (g) (continued)

- (C) Automotive Coating category and mix ratio specific to the Automotive Coating;
- (D) Actual VOC and regulatory VOC content of the Automotive Coating and Automotive Coating Component;
- (E) Documentation such as manufacturer specification sheets, material safety data sheets, technical data sheets, or any other air quality data sheets that demonstrate that the material is intended for use as an Automotive Coating or Automotive Coating Component;
- (F) Current manufacturer specification sheets, material safety data sheets, technical data sheets, or air quality data sheets, which list the actual VOC and regulatory VOC content of each Ready-to-Spray Automotive Coating and Automotive Coating Components and VOC content of each solvent;
- (G) Purchase records identifying the Automotive Coating category, name, and the total volume of all Automotive Coatings and Automotive Coating Component; and
- (H) For sale to an end-user:
 - (i) The name and address of the person receiving the Automotive Coating;
 - (ii) An acknowledgement warranting that the sale to an end-user will comply with paragraph (f)(3); and
 - (iii) If the Coating is for use outside the South Coast AQMD, acknowledgement by the purchaser that this statement is correct.

Administrative and Reporting Requirements for Automotive Coating Manufacturers – Subdivision (h)

- Added labeling requirement to display date of manufacture or a code indicating the date of manufacture on automotive coatings and components
 - Needed to enforce sell through and use through provisions
 - Many manufacturers already include date codes

(C) On and after [12 months from Date of Rule Adoption], any Automotive Coatings and Automotive Coating Components shall display the date of manufacture of the Automotive Coating or a code indicating the date of manufacture. The manufacturers shall file an explanation of each code with the Executive Officer.

Administrative and Reporting Requirements for Automotive Coating Manufacturers – Subdivision (h)

Added General Quantity and Emission Reporting (QER) requirements for automotive coating manufacturers

- Added General Quantity and Emission Reporting (QER) requirements for automotive coating manufacturers

(4) General Quantity and Emission Report (QER)

The manufacturer or private labeler of Regulated Products shall submit to the South Coast AQMD a QER for Regulated Product sales into or within the South Coast AQMD according to the schedule in Table 3. The QER for a manufacturer or private labeler of Regulated Products shall include the following information:

- (A) Product manufacturer (as listed on the label);
- (B) Product name and code;
- (C) Applicable Rule 1151 category;
- (D) Actual VOC and Regulatory VOC content;
- (E) Whether the product is waterborne or solvent-based;
- (F) Total annual volume sold into or within the South Coast AQMD, including products sold through distribution centers located within or outside the South Coast AQMD, reported in gallons for all container sizes;

Administrative and
Reporting
Requirements for
Automotive Coating
Manufacturers –
Subdivision (h)

Added General
Quantity and
Emission Reporting
(QER) requirements
(continued)

- Added General Quantity and Emission Reporting (QER) requirements for automotive coating manufacturers

- (G) For any Regulated Product with VOC content higher than the applicable VOC content limits in paragraph (d)(1), indicate whether the product has been sold under any of the following provision:
- (i) Sell-through provision pursuant to subparagraphs (f)(8)(D);
 - (ii) Exempted pursuant to subdivision (k); or
 - (iii) Complying with subdivision (e).
- (H) For multicomponent Automotive Coatings, each line item shall report the information required pursuant to subparagraph (h)(4)(A) – (G) for all of the components mixed in the Ready-to-Spray Automotive Coatings, separated by a slash, and include the Actual VOC and Regulatory VOC content of the Ready-to-Spray Automotive Coating.

Administrative and Reporting Requirements for Automotive Coating Manufacturers – Subdivision (h)

- Added table specifying QER reporting deadlines

(4) QER Reporting Timeline

A manufacturer and Private Labeler of Regulated Products shall submit the QER required pursuant to paragraph (h)(3) according to the reporting timeline in Table 3:

Table 3 - Reporting Timeline

<u>Reporting Deadlines</u>	<u>Reported Years</u>
<u>Manufacturers & Private Labelers</u>	
<u>September 1, 2030</u>	<u>2028, 2029</u>
<u>September 1, 2035</u>	<u>2033, 2034</u>
<u>September 1, 2040</u>	<u>2038, 2039</u>

Test Methods –
Subdivision (i)

Rule 442
Applicability –
Subdivision (j)

Exemptions –
Subdivision (k)

Administrative corrections made

Restructured for better readability

Removed outdated language

Added test method names

No additions or removals from Exemptions
subdivision

Next Steps

Release Preliminary Draft Rule Language and Staff Report



Continue to review existing products on the market and meet with Manufacturers



Public Workshop anticipated for early fall



Anticipated Public Hearing – 4th Quarter

Working Group Materials

- Working group materials for each working group meeting will be made available:
<https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules>

The screenshot shows the South Coast AQMD website. The top navigation bar includes links for Language, F.I.N.D., About, Contact, Grants & Bids, Online Services, I'm Looking For, Sign Up, and a search bar. The main navigation menu features categories like AIR QUALITY, INCENTIVES & PROGRAMS, RULES & COMPLIANCE (which is highlighted), PERMITS, NEWS, WEBCASTS, & CALENDAR, TECHNOLOGY ADVANCEMENT, RESOURCES, and MEETING AGENDAS & MINUTES. The breadcrumb trail reads: Home / Rules & Compliance / Rules / South Coast AQMD Rule Book / Proposed Rules. The page title is 'Proposed Rules and Proposed Rule Amendments'. On the left, there is a sidebar with links to 'Proposed Rules', 'Guide to South Coast AQMD Rules', 'Archived', and 'Recent Actions'. The main content area contains several paragraphs of text explaining the purpose of the page, including information about rule development, working group meetings, and where to find current rules. At the bottom, there is a table with two columns: 'Rule Name' and 'Description'.

Rule Name	Description
Regulation III	Fee Rules
Rule 218.2 and Rule 218.3	Proposed Rule 218.2 - Continuous Emission Monitoring System: General Provisions Proposed Rule 218.3 - Continuous Emission Monitoring System: Performance Specifications

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Rule Updates:

<input checked="" type="checkbox"/> Rule 1151	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations
<input 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



Chris Bradley

Air Quality Specialist

cbradley@aqmd.gov

909.396.2185

Heather Farr

Planning and Rules Manager

hfarr@aqmd.gov

909.396.3672

Sarady Ka

Program Supervisor

ska@aqmd.gov

909.396.2331

Michael Krause

Assistant DEO

mkrause@aqmd.gov

909.396.2706