SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT

STATEMENT OF REASONS

Proposed New Rule 489, GREENWASTE COMPOSTING OPERATIONS

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RULE JUSTIFICATION

Health Effects

Ground-level ozone or "smog" is one of the air pollutants regulated by both federal and state laws. It is formed by photochemical reactions involving two types of precursor pollutants: volatile organic compounds (VOCs) and nitrogen oxides (NOX). VOCs and NOx are emitted by many types of sources, such as on-road and off-road combustion engine vehicles, power plants, industrial facilities, gasoline stations, organic solvents, consumer products, and composting. The high ozone season is from May through October for the Sacramento region.

Ground-level ozone is a strong irritant that adversely affects human health. Breathing ozone can reduce lung function and worsen respiratory problems. Ozone exposure has been associated with increased susceptibility to respiratory infections, cardiac-related effects, medical visits and school absenteeism, and can contribute to premature death, especially in people with heart and lung disease. Ozone can also cause damage to crops and natural vegetation by acting as a chemical oxidizing agent.

The District is currently designated as a nonattainment area for both the state and federal ozone standards. Since VOCs are a precursor to ozone, one of the strategies to control ozone pollution is to reduce VOC emissions from existing stationary sources. The summer season VOC emissions from composting facilities are estimated to be 0.252 tons per summer day for 2024[1] and 0.251 per summer day for 2032[2] in Sacramento County.

Legal Mandates

The District is within the Sacramento Federal Nonattainment Area (SFNA), which is classified as "severe" nonattainment for the 2008 National Ambient Air Quality Standard (NAAQS) for ozone[3]. For the 2015 ozone NAAQS, the SFNA area is currently classified as "serious" nonattainment[4]; however, the SFNA air districts have requested a voluntarily bump up to a severe nonattainment classification because additional time is needed to meet the standard. The U.S. Environmental Protection Agency (EPA) is expected to take action to reclassify the SFNA in a final rule. Title 40 of the Code of Federal Regulations, Subpart X, requires nonattainment areas to comply with the requirements for a "severe" ozone nonattainment area that are contained in Clean Air Act (CAA) Sections 182(c) and (d), which require that a plan be submitted to EPA that demonstrates attainment of the standard by the applicable attainment date and includes all control measures necessary for attainment and reasonable further progress (RFP).

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[1] CARB. "CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool," Base Year 2012.
[2] CARB. "CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool," Base Year 2017.
[3] "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes, Final Rule." 77 Federal Register (FR) 30088, May 21, 2012.
[4] "Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, Final Rule." 83 FR 25776, June 4, 2018.

In 2017, the air districts of the SFNA adopted the Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan (2008 Ozone NAAQS Plan)[5] to attain the 2008 ozone NAAQS by 2024. The RFP milestone years are 2017, 2020, and 2023. The plan to attain the 2015 ozone NAAQS by 2032 was adopted in 2023[6]. The RFP milestone years are 2023, 2026, and 2029.

CAA Sections 172(c)(9) and 182(c)(9) require ozone NAAQS attainment plans to include "contingency measures," which are to be triggered automatically if EPA promulgates a final rule finding that an ozone nonattainment area fails to meet RFP in the milestone years or attain the ozone standard by the attainment year. Contingency measures are intended to provide additional emission reductions in these circumstances to help achieve the standards. For many years, states relied on excess emission reductions from rules that had already been adopted to satisfy the contingency measure requirements. However, recent court decisions[7,8,9] have held that this approach doesn't meet CAA requirements because contingency measures must be unadopted measures that, when triggered, take effect without further action by the district, state, or EPA.

In June 2023, EPA partially disapproved[10] the SFNA's 2008 Ozone NAAQS Plan because it did not include contingency measures consistent with CAA Sections 172(c)(9) and 182(c)(9). To obtain approval, the districts of the SFNA must submit contingency measures that, in aggregate, achieve sufficient emission reductions. Failure to submit the contingency measures could lead to EPA sanctions with two penalties: an emission offset sanction, and a highway fund sanction resulting in the loss of Federal Highway Administration funding for new transportation projects.

Staff is proposing to adopt new Rule 489, Greenwaste Composting Operations, such that, if the contingency condition is triggered for either the 2008 or 2015 ozone NAAQS, the provisions of the rule will take effect and reduce VOC emissions from greenwaste composting operations by 0.0921 tons per summer day in 2024 and 0.0915 tons per summer day in 2032.

The adoption of Rule 489, together with other future measures planned for the districts of the SFNA, will meet the CAA contingency measure requirements.

Background

Composting is a biological process where organic material is decomposed by microorganisms under controlled conditions in the presence of oxygen to produce a compost material that can be used to reintroduce nutrients into soil. Composting is a three-stage process that begins as soon as appropriate materials are combined and piled together. After two to four months of composting, the material becomes finished compost. The initial stage of the process is referred to as active composting, followed by curing or finishing, and finally storage and/or processing of composted

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[5] *Sacramento Regional 2008 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan.* El Dorado County Air Quality Management District (AQMD), Feather River AQMD, Placer County Air Pollution Control District (APCD), SMAQMD, Yolo Solano AQMD, July 24, 2017.

[6] *Sacramento Regional 2015 NAAQS 8-hour Ozone Attainment and Reasonable Further Progress Plan.* El Dorado County AQMD, Feather River AQMD, Placer County APCD), SMAQMD, Yolo Solano AQMD, October 17, 2023.

[7] *Bahr v. EPA*, 836 F.3rd 1218 (9th Cir. 2016).

[8] *Association of Irritated Residents v. EPA*, 10 F.4th 937 (9th Cir. 2021).

[9] *Sierra Club, et al. v. EPA*, 985 F.3d 1055 (D.C. Cir. 2021).

[10] "Disapproval of Clean Air Plans; Sacramento Metro, California; Contingency Measures for 2008 Ozone Standards," 88 FR 39179, June 15, 2013.

products. Emissions during the first 15 days of the active phase period account for a majority (87%) of the total integrated VOC emissions[11]. Two composting methods are used: static pile composting and turned windrow composting.

Static pile composting is characterized by infrequent turning, which is similar to backyard composting but on a larger scale. The material is placed into piles, where it decomposes over an extended period of time with little or no mixing during the composting process. Therefore, it is crucial to construct the pile to the appropriate size, with the material being thoroughly blended and having a moisture content and porosity to allow adequate aeration through the composting process.

The predominant method of greenwaste composting is turned windrow composting, in which materials are moved with a front-end loader into long piles called windrows. Aeration is achieved both by natural advection and mechanically turning the piles with a front-end loader or a windrow turner. Temperature, moisture content and oxygen concentration are maintained to optimize and hasten decomposition.

Control Techniques

Finished Compost Cover: Application of a finished compost cover to the top of greenwaste composting piles acts as a "pseudo-biofilter" that reduces VOC emissions during the active phase. A layer of finished compost at least six inches thick at the top should be applied within 24 hours of initial pile construction and stay in place for at least the first seven days of the active phase, during which the piles are not to be turned. SCAQMD, after reviewing several composting emission studies, estimated that this technique reduces active phase VOC emissions by 53% compared to regular greenwaste windrows without finished compost cover[12].

Water Irrigation: Application of water to the surface of compost piles during the active phase is also effective in reducing VOC emissions. Water should be applied to the surface of the pile such that the top one half of the pile is wet at a depth of at least three inches. Water irrigation was tested on an active phase composting windrow and showed 24% reductions in VOC emissions during 22 days of active phase composting[13]. Water is only required in amounts necessary to make the top three inches wet and does not require water application indiscriminately. A finished compost cover during the first 7 days of the active phase, combined with water irrigation for 22 days of the active phase, is estimated to result in a 40% reduction of total VOC emissions from greenwaste composting operations[14].

Control Device: Aerated static pile (ASP) is an example of a control technology that can be used to reduce composting emissions. Compostable material is placed on top of perforated pipes that are connected to blowers. In negative-pressure ASP, air is pulled through the pile and the exhaust is vented to an emission control device, such as a biofilter, to remove VOCs. Wood chips and compost can be used as biofilter media, and finished compost can be layered on the surface of the pile to increase capture efficiency of gas emissions from the pile. Overall control efficiencies

[11] SCAQMD. "Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." July 2011. p. 9.
[12] Ibid., p. 9.
[13] Ibid., p. 10.
[14] Ibid., p. 24.

of about 80 to 90 percent have been achieved[15]. SCAQMD Rule 1133.1, upon which proposed Rule 489 is based, requires control devices only for greenwaste composting facilities that include more than 5,000 tons per year of food waste in their feedstock. No facilities of this type have been identified in Sacramento County.

Other District's Regulations

Rules similar to proposed Rule 489 have been adopted by South Coast Air Quality Management District (SCAQMD, Rule 1133.3) and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD, Rule 4566). SCAQMD Rule 1133.3 was adopted July 8, 2011, and required full compliance by no later than November 8, 2011. SJVUAPCD Rule 4566 was adopted August 18, 2011, and required full compliance by no later than August 18, 2012. The best management practice requirements in SCAQMD Rule 1133.3 are similar to the proposed Rule 489.

SCAQMD Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations
SCAQMD Rule 1133.3 requires best management practices to limit VOC emissions occurring during greenwaste composting operations. The best management practices apply to all permitted greenwaste composting facilities. Minor composting operations, such as community composting, nursery composting, backyard composting, and recreational facility composting, are exempt from the rule. The rule requires covering each initial active phase compost pile with finished compost or compost overs within 24 hours of initial pile formation, with no turning of piles within the first seven days of active composting. Water must be applied to the pile for the first 15 days of the active phase of composting. Composting operations with significant food waste throughput require an emission control device with an overall system control efficiency of 80 percent, by weight[16].

SJVUAPCD Rule 4566 – Organic Material Composting Operations
SJVUAPCD Rule 4566 requires best management practices to limit VOC emissions occurring during organic material composting operations. The best management practices range from watering system requirements for smaller facilities, finished compost cover for moderate sized facilities, or ≥ 80% reduction, by weight, in VOC emissions for the largest compost facilities. Covering of or removal of stockpiles are specified for several facility throughput classifications.

The requirements of both rules apply to greenwaste composting operations that limit the amount of manure allowed in pile formation. Similar watering controls and testing are required, but SJVUAPCD requires larger facilities to implement controls that achieve greater VOC reductions than SCAQMD.

Proposed Rule 489 best management practices include using stockpiles within specified time limits, covering initial pile formations with finished compost, and maintaining sufficient moisture within a windrow or static pile. An alternative mitigation measure, such as active controls, may be implemented if approved and demonstrated to reduce emissions by at least 40 percent by weight for VOC. An active control system for composting could likely be an alternative to the best management practices but are significantly more costly. These systems include aerated state pile systems, biofilter collection systems, or using vessels/buildings under negative pressure to contain and capture composting VOC emissions.

[15] Ibid., p. 11.
[16] Ibid., pp. 14-21.

The best management practices requirements in Rule 489 are consistent with the requirements in SCAQMD Rule 1133.3 and SJVUAPCD Rule 4566. The emission control requirements in SCAQMD Rule 1133.3 for composting operations processing food waste are not included in Rule 489 as these operations are outside the scope of the rulemaking and no facilities of this type have been identified in Sacramento County.

SUMMARY OF PROPOSED NEW RULE 489, GREENWASTE COMPOSTING OPERATIONS

In establishing proposed best management practice requirements for Rule 489, Staff considered and evaluated similar rules in effect in SVAQMD and SJVUAPCD for consistency (see previous discussion under Other District's Regulations). Rule 489 requirements are consistent with SCAQMD Rule 1133.3 and similar to the requirements in SJVUAPCD Rule 4566.

Applicability

Rule 489 applies to composting facilities of any throughput that are subject to Local Enforcement Agency notification or permitting requirements. These sources would also be subject to District permitting requirements. The rule defines greenwaste as any organic waste material such as grass clippings, leaves, tree and shrub trimmings, and plant remains, with up to 20 percent manure by volume, but does not include food waste.

Effective Date

Rule 489 will become effective on the effective date of an EPA final rulemaking that the SFNA has failed to attain the 2008 or 2015 federal 8-hour ozone standard or any applicable milestone for the standards. Facilities will have up to a year to comply with the rule requirements after the rule is triggered. The District will most likely know about a year in advance if the SFNA fails to attain a milestone or the 2008 or 2015 federal 8-hour ozone standard, and will conduct outreach to affected sources to inform them of triggered requirements.

Rule Exemptions

Minor composting facilities, including community composting, nursery composting, backyard composting, and recreational facility composting are also exempt from the rule, provided they are not subject to Local Enforcement Agency notification or permit regulations. In addition, facilities subject to Rule 496, Large Confined Animal Facilities, are not subject to Rule 489.

Composting Operation Requirements

Section 301 establishes the best management practice operation requirements for greenwaste composting operations/facilities. These requirements take effect one year after the rule is triggered.

1. Chip or grind and use greenwaste for on-site composting as allowed by the Local Enforcement Agency or within 10 days, whichever is earlier. The Local Enforcement Agency (LEA) for waste management programs within Sacramento County is the

Sacramento County Environmental Management Department[17]. LEAs are responsible for ensuring the correct operation of solid waste facilities in the state.

2. Cover each active phase pile with screened or unscreened finished compost within 24 hours of initial pile formation, such that the top is at least six inches thick, and the pile must not be turned for the first seven days of the active phase of composting, unless the pile needs to be turned within the first seven days for managing temperature or pathogen reduction pursuant to state regulations.
3. For the first 15 days after initial pile formation for the active phase period of composting, within six hours before turning, apply water as necessary to the surface area of each active phase pile such that the top one half of the pile is wet at a depth of at least three inches. Alternatively, the owner/operator may apply water during turning using a windrow turner which is equipped with an operating water spraying technology during the entire windrow turning process.
4. Allowances are provided if a rain event occurs prior to watering a pile within 6 hours before turning provided the pile is sufficiently wet.
5. An alternative mitigation measure may be used in lieu of the above requirements if the emission reductions are at least 40 percent by weight of VOC emissions for combined compost cover and water application. This could include using active composting controls to meet the control efficiency requirements.

Testing Procedures

Section 501.1 specifies the procedure for the Squeeze Ball Test, which is used to determine adequate pile wetness. Section 501.2 specifies the methods necessary to measure compost maturity. These test methods include the Test Methods for the Examination of Composting and Compost (TMECC) Solvita® Maturity test and the TMECC Specific Oxygen Update Rate. These test methods are consistent with SCAQMD and SJVUAPCD and are considered industry standard. More details of these testing methods can be found at https://www.compostingcouncil.org/. The TMECC test methods are not required to be performed unless the owner/operator wants to reduce the duration of the active phase to less than 22 days or the curing phase to less than 40 days.

Recordkeeping

Section 502 specifies the recordkeeping requirements for owners or operators of composting facilities. Affected composting facilities must maintain on-site records of organic waste throughput, watering, and active compost covering operations. The records are necessary to document the date, time, squeeze ball test results, and throughputs of the composting facility. Full details of the recordkeeping requirements are listed in Section 502.

All records must be maintained on site for a continuous 5-year period and submitted to the Air Pollution Control Officer by March 15 of each year for the previous calendar year. The submittal must be in electronic format.

A detailed description of each proposed section of Rule 489 is included in Appendix A.

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[17] *Local Enforcement Agency (LEA) Directory*, https://www2.calrecycle.ca.gov/SolidWaste/LEA/Directory. Accessed March 27. 2024.

EMISSIONS IMPACT

Table 1 shows the California Emissions Projection Analysis Model (CEPAM) planning inventories for 2024 and 2032, with base years of 2012 and 2017, respectively. The planning inventory is comprised of emissions from one identified composting facility, Lopez Ag, and residential composting. Lopez Ag submits annual emissions inventory to the District. Also shown in Table 1 are emissions that have been adjusted to remove the 8.67% of the inventory attributed to residential composting[18], which is not subject to Rule 489.

TABLE 1: VOC Planning and Adjusted Emission Inventories for Composting Operations

EIC Code	EIC Description	VOC Emissions Inventory (tons per day)		VOC Emissions Inventory, Adjusted (tons per day)*	
		2024[19]	2032[20]	2024	2032
199-170-0260-0000	Composting	0.2520	0.2506	0.2301	0.2289

* The emission inventory subject to Rule 489 has been adjusted downward to remove the 8.67% attributed to residential composting, which is not subject to Rule 489.

Table 2 shows the emissions reductions, which are based on a 40 percent reduction, consistent with SCAQMD 1133.3[21], using finished compost cover and watering combined.

TABLE 2: VOC Emission Reductions for Composting Operations

EIC Code	EIC Description	VOC Emissions Reductions (tons per day) @ 40% Reduction	
		2024	2032
199-170-0260-0000	Composting	0.0921	0.0915

Rule 489, if triggered, is estimated to reduce VOC emissions by 0.0921 tons per summer day (33.6 tons per year) in 2024.

ECONOMIC IMPACT

Cost Impact

CHSC §40703 requires that the District consider and make public its findings relating to the cost-effectiveness of implementing an emission control measure. The proposed rule, if triggered, will require composting facilities to minimize fugitive VOC emissions through best management practices, including finished compost covering, watering, and windrow management. One existing

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[18] Dooley, Todd. Email to Kevin J. Williams. *Insights Re: SMAQMD Composting Emission Inventory.* May 7, 2024.
[19] CARB. "CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool," Base Year 2012.
[20] CARB. "CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool," Base Year 2017.
[21] SCAQMD. "Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." July 2011. pp. 21-24.

permitted source, Lopez Ag, is subject to proposed Rule 489. Although any future sources will be subject to the rule, a new source would be subject to Best Available Control Technology, which is as stringent or more stringent than the proposed rule. Therefore, no compliance costs for future sources are attributable to the proposed rule.

Compliance Costs**:** Staff used a methodology similar to that used for SCAQMD Rule 1133.3 to calculate the cost-effectiveness of the emissions reductions for proposed Rule 489. That analysis identified labor and operational costs for compost covering, watering of piles, and the on-going recordkeeping requirements. For Lopez Ag, the LEA and District permits for the source already require recordkeeping and reporting of facility throughputs. The cost-effectiveness was estimated based on the compliance costs calculated for finished compost cover and watering. These costs were calculated on a throughput basis of $1.30 per ton of throughput[22]. This 2011 estimate of $1.30 per ton of throughput is equivalent to $1.79 per ton in 2024 dollars.

Overall Cost-Effectiveness

Table 3 shows the estimated VOC emissions inventory and reductions for composting operations subject to Rule 489.

TABLE 3: Cost-Effectiveness for Composting Operations

Facility	Composting Throughput (Avg. last 5 years)	Emissions @ 5.65 lb VOC/ton of throughput (tpy)	Emissions Reduction @ 40% (tpy)	Mitigation Measures	Total Annual Compliance Costs (@ $1.79/ton of throughput	Cost-Effectiveness ($/ton VOC reduced)
Lopez Ag	23,414 tons	66.1	26.5	Finished compost cover and watering	$41,911	$1,581

In comparison, previously adopted District rules have had cost-effectiveness values for emissions reductions, in 2024 dollars, ranging from $3,240 per ton of VOC reduced (for the July 2011 amendment of Rule 459, AUTOMOTIVE, MOBILE EQUIPMENT AND ASSOCIATED PARTS AND COMPONENTS COATING OPERATIONS) to as much as $54,500 per ton of VOC reduced (for the December 1991 amendment of Rule 449, TRANSFER OF GASOLINE INTO VEHICLE FUEL TANKS).

Incremental Cost-Effectiveness

Pursuant to CHSC §40920.6(a)(3), the District is required to perform incremental cost-effectiveness analysis prior to adopting requirements for Best Available Retrofit Control Technology or a "feasible measure" requirement pursuant to CHSC §40914. The District is required to identify one or more potential control options that achieve the emission reduction

[22] *Socioeconomic Assessment for Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations.* SCAQMD. July 2011. pp. 3-5.

objective for the regulation. The incremental cost-effectiveness is the difference in the dollar cost divided by the emissions reduction potential "between each progressively more stringent potential control option as compared to the next, less expensive control option."

Proposed Rule 489 is consistent with the most stringent adopted control measures of SCAQMD and SJVUAPCD for existing facilities and is consistent with the most restrictive BACT determinations of SCAQMD and SJVUAPCD (see Table B-1). A more stringent potential VOC control option is active control, such as a forced aerated system equipped with an emission control device, which can be expected to achieve an overall control efficiency of 80%. SJVUAPCD requires active control as BACT for new facilities with annual throughputs of 50,000 tons or more; however, this is more than twice the average annual throughput of Lopez Ag.

In evaluating the incremental cost-effectiveness of active controls, Staff reviewed the analysis performed by SCAQMD during the adoption of Rule 1133.3. SCAQMD conducted an incremental cost-effectiveness analysis for an operation with 50,000 tons throughput per year using a control device with an overall efficiency of 80% control and a lifetime of 10 years[23]. SCAQMD concluded that the incremental cost-effectiveness would be $6,600 per additional ton of VOC reduced in 2011 dollars ($9,243 in 2024 dollars). This is approximately six times more expensive than the proposed Rule 489 best management practice requirements.

Socioeconomic Impact

CHSC §40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. The District Board is required to actively consider the socioeconomic impacts of the proposal and make a good faith effort to minimize adverse socioeconomic impacts.

CHSC §40728.5 defines "socioeconomic impact" to mean the following:

1. The type of industry or business, including small business, affected by the proposed rule or rule amendments.
2. The impact of the proposed rule or rule amendments on employment and the economy of the region.
3. The range of probable costs, including costs to industry or business, including small business.
4. The availability and cost-effectiveness of alternatives to the proposed rule or rule amendments.
5. The emission reduction potential of the rule or regulation.
6. The necessity of adopting, amending, or repealing the rule or regulation to attain state and federal ambient air standards.

Type of industry or business, including small business affected by the proposed rule:
Rule 489 applies to composting facilities that take incoming organic material and create piles or windrows to produce compost through biological decomposition. The requirements of Rule 489

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[23] SCAQMD. "Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." July 2011. pp. 24-25.

require owners and operators of composting facilities to implement best management practice operational changes. The single affected facility in Sacramento County, Lopez Ag, is a small business that produces compost and other landscaping supplies.

Impact on employment and economy in the District of the proposed rule:
Using the same assumptions from the economic analysis performed by SCAQMD[24], the average annual costs to comply with Rule 1133.3 requirements are approximately $42,000.annually. The costs are based on labor costs for covering active compost piles, time spent watering, and time spent maintaining records.

It is possible the costs of implementing this rule in Sacramento County may be slightly different than the estimated costs in SCAQMD for labor, equipment used to turn and water piles, and amount of time spent maintaining records.

Based on the SCAMQD analysis, Staff does not anticipate a significant impact on the economy or employment of the Sacramento region. If more specific information is provided to the District by the affected source, Staff will further exam the impact to the affected source.

Range of probable costs, including costs to industry or business, including small business of the proposed rule:
Costs for the identified business vary depending on the labor costs, watering costs, and the additional fuel and depreciation costs of using a front-end loader to apply finished compost covering. Operational costs may be lower than estimated if the source is already implementing some of the best management practices. Using SCAQMD cost data, Staff estimated a conservative cost of up to ~ $42,000 annually for compliance.

Availability and cost-effectiveness of alternatives to the proposed rule:
An alternative to the proposed rule is to not adopt the rule. If the proposed Rule 489 is not adopted, the District will not fulfill the contingency requirements for the 2008 and 2015 8-hour federal ozone standard. Failure to meet the ozone NAAQS planning requirements could result in sanctions, including increased emissions offset ratios for new and modified stationary sources and loss of federal highway funds. The adoption of Rule 489 as a contingency measure is necessary to meet federal mandates.

Emission reduction potential of the proposed rule:
The proposed Rule 489, if triggered, will achieve an estimated reduction in VOC emissions of 33.6 tons per year (see discussion under Emissions Impact).

Necessity of adopting the rule:
The proposed Rule 489 partially fulfills the District's requirements to include contingency measures into the attainment plan for the 2008 and 2015 federal 8-hour ozone standards. The VOC emission reductions will be necessary should the District fail to meet RFP milestones or attain the 2008 or 2015 federal 8-hour ozone standards by the attainment date.

[24] "Final Socioeconomic Assessment for Proposed Rule 1133.3 – Liquified Petroleum Gas Transfer and Dispensing." SCAQMD. June 2012.

PUBLIC OUTREACH/COMMENTS

On September 18, 2024, Staff met with the one source that will be subject to the proposed rule: Lopez Agricultural Services. Staff presented the proposed rule and discussed the requirements and potential impact with the source. The primary change to their current operation will be adding finished compost to the tops of windrows after initial pile formation; however, the source did not anticipate any undue cost impacts.

ENVIRONMENTAL REVIEW

California Public Resources Code Section 21159 requires an environmental analysis of the reasonably foreseeable methods of compliance. Compliance with the best management practices for greenwaste composting in Rule 489 is expected to be achieved by utilizing finished compost and sufficient watering to keep the windrows sufficiently wet to minimize fugitive VOC emissions.

In 2011, SCAQMD adopted Rule 1133.3, Emission Reductions from Greenwaste Composting Operations, and examined the environmental impact[25] of implementing best management practices for greenwaste composting facilities, including watering and covering initial active phase piles with finished compost within three hours of formation[26]. In evaluating the impacts of the rule, SCAMQD also evaluated the impacts of installing an emission control device for all active phase compost piles processing food waste, which is beyond the scope of this rulemaking.

SCAQMD also evaluated the operational impacts from Rule 1133.3. No operational air quality impacts in emissions are expected to occur for best management practices that are not already occurring. SCAQMD estimated a peak operational emission due to increase loader usage to place finished compost cover and concluded these emissions would not be of significance[27]. SCAQMD concluded that adopting Rule 1133.3 was expected to reduce VOC emissions and would not have the potential to generate significant adverse air quality impacts[28].

The conclusions by SCAQMD in the adoption of Rule 1133.3 are consistent with Staff's analysis of proposed Rule 489. Proposed Rule 489 will reduce operational VOC emissions from greenwaste composting operations. Staff has concluded that there will be no significant environmental impacts from compliance with the proposed rule.

Staff finds that the proposed rule is exempt from the California Environmental Quality Act (CEQA) as an action by a regulatory agency for protection of the environment (Class 8 Categorical Exemption, §15308 State CEQA Guidelines) and because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment (§15061(b)(3), State CEQA Guidelines).

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[25] "Final Environmental Assessment for Proposed Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations." SCAQMD. July 2011.
[26] Ibid., pp. 1-9 – 1-10.
[27] Ibid., pp. 2-8 – 2-16.
[28] Ibid., Page 2-16.

FINDINGS

The California Health and Safety Code (HSC), Division 26, Air Resources, requires local districts to comply with a rule adoption protocol as set forth in §40727 of the Code. This section contains six findings that the District must make when developing, amending, or repealing a rule. These findings and their definitions are listed in the following table.

Finding	Finding Determination
Authority: The District must find that a provision of law or of a state or federal regulation permits or requires the District to adopt, amend, or repeal the rule. [CHSC Section 40727(b)(2)].	The District is authorized to adopt Rule 489 by California Health and Safety Code (CHSC) Sections 40001, 40702, and 41010.
Necessity: The District must find that the rulemaking demonstrates a need exists for the rule, or for its amendment or repeal. [CHSC Section 40727(b)(1).]	The proposed adoption of Rule 489 is necessary to meet the requirements of Clean Air Act Sections 182(c) and (d). These sections require that ozone attainment and further progress (RFP) plans include contingency measures that trigger automatically if EPA finds that a nonattainment area has not achieved a standard by the applicable attainment date or has not met RFP milestones.
Clarity: The District must find that the rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it. [CHSC Section 40727(b)(3)].	Staff has reviewed the proposed rule and determined that it can be understood by the affected parties. In addition, the record contains no evidence that people directly affected by the rule cannot understand the rule.
Consistency: The rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations. [CHSC Section 40727(b)(4)].	The proposed rule does not conflict with, and is not contradictory to, existing statutes, court decisions, or state or federal regulations.
Non-Duplication: The District must find that either: 1) The rule does not impose the same requirements as an existing state or federal regulation; or (2) that the duplicative requirements are necessary or proper to execute the powers and duties granted to, and imposed upon the District. [CHSC Section 40727(b)(5)].	The proposed rule does not duplicate any existing state or federal regulations.
Reference: The District must refer to any statute, court decision, or other provision of law that the District implements, interprets, or makes specific by adopting, amending or repealing the rule. [CHSC 40727(b)(6).]	In adopting the proposed rule, the District is implementing the requirements of Clean Air Act Sections 172(c)(9) and 182(c)(9).
Additional Informational Requirements: In complying with HSC Section 40727.2, the District must identify all federal requirements and District rules that apply to the same equipment or source type as the proposed rule or amendments. [CHSC Section 40727.2].	No other District or federal rules apply to the same source type. BACT for this source category is based on SCAQMD composting BACT and SJVUAPCD BACT Guideline 6.4.10. A comparison of Rule 489 with BACT requirements is included in Appendix B.

REFERENCES

California Air Resources Board (CARB). *ARB Emissions Inventory Methodology for Composting Facilities.* Sacramento, CA. March 2, 2015.

California Air Resources Board (CARB). *CEPAM: California 2019 Ozone SIP Baseline Emission Projections - Version 1.04 Sacramento Nonattainment Area Tool*. Base Year 2012.

CARB. *CEPAM: California 2016 Ozone SIP Baseline Emission Projections - Version 1.05 Sacramento Nonattainment Area Tool.* Base Year 2017.

San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). *Final Draft Staff Report for Revised Proposed New Rule 4566 (Organic Material Composting Operations)*. August 18, 2011.

SJVUAPCD. *Rule 4566 – Organic Material Composting Operations.* August 18, 2011.

South Coast Air Quality Management District (SCAQMD). *Emission Reductions from Greenwaste Composting Operations.* Diamond Bar, CA: South Coast Air Quality Management District, July 8, 2011.

SCAQMD. *Final Staff Report: Proposed Amended Rule 1133.1 – Chipping and Grinding Activities and Proposed Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations*. July 2011.

SCAQMD. *Rule 1133.3 – Emission Reductions from Greenwaste Composting Operations.* July 8, 2011.

APPENDIX A:
LIST OF RULE PROVISIONS – RULE 489

SECTION NUMBER	PROPOSED PROVISIONS
101	Set the purpose of the rule to limit the emission of volatile organic compound occurring during greenwaste composting operations.
102	Set the applicability to any compost facility that compost and/or stockpile organic material. Currently, in Sacramento County there is one identified permitted composting facility that will be subject to the rule if the rule becomes effective.
103	Add the severability language consistent with other District rules.
110	Set an exemption from the rule for minor composting facilities that are not subject to Local Enforcement Agency notification or permitting requirements pursuant to 14 California Code of Regulations §17857.1(a). These exempt facilities are identified as community, nursery, backyard, and recreational facility composting as defined in the rule.
111	Set an exemption for operations subject to Rule 496 – LARGE CONFINED ANIMAL FACILTIIES.
200	Add definitions section.
201	Add definition of “active compost” consistent with SCAQMD Rule 1133.3. The abbreviation for Btu is used throughout the rule.
202	Add definition of “active phase” consistent with SCAQMD Rule 1133.3. Cooking units are a subset of miscellaneous devices that are provided higher NOx and CO emission limits than other types of miscellaneous combustion units.
203	Add definition of “backyard composting” consistent with SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
204	Add definition of “compost facility” consistent with SCAQMD Rule 1133.3.
205	Add definition of “community composting” consistent with the SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
206	Add definition of “composting” consistent with SCAQMD Rule 1133. The process of composting is the decomposition of organic material in the presence of oxygen, bacteria and other microorganisms.
207	Add definition of “composting overs” consistent with SCAQMD Rule 1133.3. Composting overs are woody materials that do not decompose in typical composting. Composting overs with finished compost are materials that can be used to cover initial active windrows.
208	Add definition of “curing phase” consistent with SCAQMD Rule 1133.3. Curing phase is the composting process that occurs after the end of the active phase.
209	Add definition of “finished compost” consistent with SCAQMD Rule 1133.3. Finished compost is the material created after the active and curing phases of composting.
210	Add definition of “greenwaste” consistent with SCAQMD Rule 1133.3. Greenwaste is a component of the organic material that is compostable.

SECTION NUMBER	PROPOSED PROVISIONS
211	Add definition of "greenwaste composting" consistent with SCAQMD Rule 1133.3. For the purposes of this rule, this defines the maximum allowable mixture of manure to greenwaste for composting.
212	Add definition of "Local Enforcement Agency" consistent with the authorities of the Sacramento County Environmental Management Department and CalRecycle.
213	Add definition of "nursery composting" consistent with the SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
214	Add definition of "organic waste" consistent with SCAQMD Rule 1133.3. This definition defines the component materials that make up compostable material for the purposes of this rule.
215	Add definition of "owner/operator" as any person who owns, leases, or operates a greenwaste composting operation.
216	Add definition of "pile" consistent with the SCAQMD Rule 1133.3.
217	Add definition of "recreational facility composting" consistent with SCAQMD Rule 1133.3. This definition is necessary to define exemption for minor composting facilities.
218	Add definition of "Solvita® maturity index" consistent with SCAQMD Rule 1133.3. This test can be used by operators to determine composting characteristics of windrows.
219	Add definition of "test methods for the examination of composting and compost (TMECC)" consistent with SCAQMD Rule 1133.3.
220	Add definition of "throughput" consistent with SJVUAPCD Rule 4566. Throughput recordkeeping is required pursuant to Section 501.
221	Add definition of "volatile organic compound (VOC)" consistent with as the same meaning in Rule 101.
222	Add definition of "windrow" consistent with SJVUAPCD Rule 4566. Windrows are the basic pile formation for composting organic waste material.
223	Add definition of "woodwaste" consistent with SCAQMD Rule 1133.3. Woodwaste is a component of the organic material that is compostable.
300	Add standards section.
301	Add operational requirements for greenwaste composting operations. These are the best management practices that operators must comply with.
301.1	Add chip and grind requirements section consistent with allowable Local Enforcement Agency requirements.
301.2	Add covered compost requirements section for initial active phase pile. No windrow turning is allowed within the first seven days unless temperature control or pathogen reduction is required pursuant Section 301.5 applies. The covering requirements are consistent with SCAQMD Rule 1133.3.
301.3	Add watering requirements section to require sufficient watering for the first 15 days after initial pile formation. The watering requirements are consistent with SCAQMD Rule 1133.3.
301.3a	Add wet determination using ball test as described in Section 501.1. The squeeze ball test is consistent with SCAQMD Rule 1133.3. The test is to quickly determine if the compost pile is sufficiently wet.

SECTION NUMBER	PROPOSED PROVISIONS
301.4	Add the option to not water after a rain event if the pile is wet enough. This allowance is consistent with SCAQMD Rule 1133.3.
301.5	Add alternative to covering requirements if a pile needs to be turned within the first seven days pursuant to California Code of Regulations requirements for composting. This allowance and requirements are consistent with SCAQMD Rule 1133.3.
301.6	Add option to allow operator to implement alternative mitigation measures that demonstrates emissions reductions by 40 percent by weight for VOC. The approval must be from the Air Pollution Control Officer, the California Air Resources Board, and the U.S. Environmental Protection Agency. This is consistent with SCAQMD Rule 1133.3.
400	No administrative requirements are applicable.
500	Add monitoring and recordkeeping section.
501	Add testing procedures section.
501.1	Add squeeze ball test method to approximate the water amount in a compost pile. This method is consistent with SCAQMD Rule 1133.3.
501.2	Add compost maturity test methods consistent with SCAQMD Rule 1133.3. These methods can be utilized to identify the active and curing phase of the composting process.
502	Add recordkeeping section consistent with SJVUAPCD Rule 4566.
501.2a-c	Add “watering requirements” recordkeeping requirements. The owner or operator subject to the rule must document date and times a windrow was tested for compliance. This includes the result of the ball test and the date and time a windrow was turned.
502.2a-b	Add “active compost covering” recordkeeping requirements. The owner or operator subject to the rule must document date and times each initial windrow or turned windrow was covered with a finished compost cover. a windrow was tested for compliance. This includes the result of the ball test and the date and time a windrow was turned.
502.3a-c	Add “throughput records” recordkeeping requirements. The owner or operator subject to the rule must document date, type, and weight (in wet tons) of each type of organic material received on site.
502.4	The owner or operator must maintain on-site records for a continuous 5-year period and submit the records to the Air Pollution Control Officer by March 15 of each year for the previous calendar year. The submittal must be in electronic format.

APPENDIX B:
COMPARISION OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

California Health and Safety Code (CHSC) §40727.2 requires air districts to provide a written analysis to 1) identify all existing federal air pollution control requirements, including Best Available Control Technology (BACT) for new or modified equipment, that apply to the same equipment or source type as the proposed rule, and 2) identify any of the District's existing or proposed rules that apply to the same equipment or source type. The analysis shall compare the following elements:

- Averaging provisions, units, and any other pertinent provisions associated with emission limits.
- Operating parameters and work practice requirements.
- Monitoring, reporting, and recordkeeping requirements, including test methods, format, content, and frequency.
- Any other element that the air district determines warrants review.

There are no other proposed or existing District rules that apply to this source category. Table B-1 contains the required analysis identifying federal BACT air pollution control requirements.

Comparison with BACT: See comparison in Table B-1.

Comparison with existing federal air pollution control requirements: No identified federal air pollution controls, including new source performance standards or national emission standards for hazardous air pollutants, are required for composting operations.

Table B-1
40727.2 Matrix for Proposed Contingency Measure 489 Composting Operations

Comparative Requirements			
Elements of Comparison	Proposed Rule 489	Best Available Control Technology (BACT)	
		SCAQMD BACT Guidelines Part D – Page 31	SJVUAPCD BACT Guideline 6.4.10
Applicability	The rule is applicable to any greenwaste composting facility.	Greenwaste composting	Organic Material Composting Operations as defined by Rule 4566 with >= 50,000 ton/yr throughput
Exemptions	• Minor composting facilities that are not subject to Local Enforcement Agency notification or permit regulations • Operations subject to Rule 496	• Operations subject to Rule 1133.2 – Emission Reductions from Co-Composting Operations • Installation of an emission control device • Minor composting facilities that are not subject to Local Enforcement Agency notification or permit regulations	• Facilities < 50,000 ton/yr throughput
Emission Limits	None	None	80% overall capture and control efficiency using: • positively aerated static windrow piles with engineered covers or equivalent; or • negatively aerated static windrow piles vented to a biofilter or equivalent
Averaging Provisions	None	None	
Operating parameters & Work Practice Requirements	Perform best management practices including: • Timelines to use incoming organic material • Watering of compost piles • Covering each pile or windrow with finished compost	Compliance with Rule 1133.3 including: • Timelines to use incoming organic material • Watering of compost piles • Covering each pile or windrow with finished compost	
Monitoring/ Testing	Wet Ball Test to quickly determine moisture content TEMCC 05.08-A & TMECC 05.08-E to determine compost maturity	Wet Ball Test to quickly determine moisture content TEMCC 05.08-A & TMECC 05.08-E to determine compost maturity	

Comparative Requirements			
Elements of Comparison	Proposed Rule 489	Best Available Control Technology (BACT)	
		SCAQMD BACT Guidelines Part D – Page 31	SJVUAPCD BACT Guideline 6.4.10
Monitoring/ Recordkeeping	• Keep records of watering, coverings, and throughput of organic materials • Maintain records on site for a continuous five-year period.	Compliance with Rule 1133.3 including: • Records of watering, application of finished compost, operation of control device, and source tests • Maintain records for five years with most recent two years on site	