

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**Draft Socioeconomic Assessment for
Proposed Amended Rule 1133.1—Chipping and Grinding Activities—and
Proposed Rule 1133.3—Emission Reductions from Greenwaste Composting
Operations**

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EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the impacts of Proposed Amended Rule (PAR) 1133.1—Chipping and Grinding Activities & Proposed Rule (PR) 1133.3—Emission Reductions from Greenwaste Composting Operations. A summary of the analysis and findings is presented below.

<p>Elements of Proposed Rule and Proposed Amendments</p>	<p>Proposed Amended Rule (PAR) 1133.1 harmonizes AQMD’s requirements for chipping and grinding operations with the Code of California Regulations Title 14 Division 7 Chapter 3.1.</p> <p>Proposed Rule (PR) 1133.3 would require greenwaste composting operations to limit greenwaste and foodwaste compost feedstock holding times to less than 48 hours from the date of receipt, unless otherwise allowed by the local enforcement agency. PR 1133.3 would also require greenwaste composting operations with up to 20 percent manure, by volume, or processing up to 5,000 tons of foodwaste, by weight, to cover each newly formed compost pile with finished compost and apply water prior to pile turning. Greenwaste composting operations processing greater than 5,000 tons, by weight, and compost that includes more than 10 percent foodwaste, would be required to reduce VOC and ammonia emissions by an overall control efficiency of at least 80 percent.</p>
<p>Affected Facilities and Industries</p>	<p>PAR 1133.1 is not expected to affect any facilities in the AQMD.</p> <p>PR 1133.3 would affect facilities in the chemical manufacturing and waste management sector of the South Coast’s regional economy. Of the 17 affected facilities, approximately 80 percent are in the chemical manufacturing sector. Affected facilities are concentrated in the fertilizer (mixing only) manufacturing (North American Industry Classification System [NAICS] 325314) and materials recovery facilities (NAICS 562920) industries. Facilities processing greenwaste in the District range from less than 1,000 tons of throughput per year to 200,000 tons per year.</p>
<p>Assumptions of Analysis</p>	<p>No existing facilities currently process more than 5,000 tons of foodwaste per year. As a result, no facility would be required to install a forced aeration, or other similar, emissions control device. It is also assumed that 17 facilities would modify their best management practices to meet the proposed rule requirements. These facilities would cover newly-formed compost piles with finished compost, apply</p>

<p>Assumptions of Analysis (continued)</p>	<p>water to compost piles prior to turning, and perform additional recordkeeping. As such, these facilities would incur additional costs of water usage, front-loader wear and tear, diesel fuel, and labor associated with these activities.</p> <p>PR 1133.3 provisions requiring a finished compost cover for newly formed compost piles, the application of water prior to compost pile turning, and recordkeeping are expected to generate total annual compliance costs of approximately \$31,000 per facility. The annual compliance costs per facility depend on facility throughput. The range of annual compliance costs is from approximately \$2,600 (< 1,000 tons) to \$240,000 (200,000 tons).</p>
<p>Compliance Costs</p>	<p>The average annual total cost of Proposed Amended Rule (PAR) 1133.1 is assumed to be negligible because the proposed amendments align AQMD’s requirements for chipping and grinding operations with existing requirements in the Code of California Regulations.</p> <p>The average annual cost of PR 1133.3 is projected to be \$0.53 million from 2011 to 2025, of which the costs of covering newly formed piles with finished compost, watering piles prior to turning, and recordkeeping are, respectively, \$0.34 million (63 percent), \$0.16 million (31 percent), and \$0.03 million (6 percent).</p> <p>The chemical manufacturing industry would incur 94 percent of the cost and the rest would be incurred by the waste management and remediation services industry.</p>
<p>Employment Impacts</p>	<p>Overall, 4 jobs, which is 0.00004 percent of total jobs in the four county region, could be forgone annually, on average, between 2011 and 2025. Job impacts are within the noise level of the REMI economic model.</p>
<p>Competitiveness</p>	<p>Adoption of the proposed rule is expected to cause very few changes in the relative costs of production and prices of goods in the local economy. On a per ton of throughput basis, the compliance costs are approximately \$1.30. Based on these compliance costs, no significant changes in the location or distribution of greenwaste facilities in the District are anticipated.</p>

INTRODUCTION

Proposed Amended Rule (PAR) 1133.1 harmonizes AQMD's requirements for chipping and grinding operations with the Code of California Regulations Title 14 Division 7 Chapter 3.1. Proposed Rule (PR) 1133.3 would require greenwaste composting operations to limit greenwaste and foodwaste compost feedstock holding times to less than 48 hours from the date of receipt, unless otherwise allowed by the local enforcement agency. Within four months of the adoption date, PR 1133.3 would require that greenwaste composting operations with up to 20 percent manure, by volume, or processing up to 5,000 tons of foodwaste, by weight, cover each newly formed compost pile with finished compost and apply water prior to pile turning. Upon the date of adoption, greenwaste composting operations processing greater than 5,000 tons, by weight, and compost that includes more than 10 percent foodwaste, would be required to reduce VOC and ammonia emissions to an overall control efficiency of at least 80 percent.

The socioeconomic assessment herein analyzes the impacts of the proposed rule and proposed amendments on affected facilities and the entire economy in the four-county region.

LEGISLATIVE MANDATES

The socioeconomic assessments at the AQMD have evolved over time to reflect the benefits and costs of regulations. The legal mandates directly related to the assessment of the proposed rule and the proposed amendments include the AQMD Governing Board resolutions and various sections of the California Health & Safety Code (H&SC).

AQMD Governing Board Resolutions

On March 17, 1989 the AQMD Governing Board adopted a resolution that calls for preparing an economic analysis of each proposed rule for the following elements:

- Affected Industries
- Range of Control Costs
- Cost Effectiveness
- Public Health Benefits (see staff report)

On October 14, 1994, the Board passed a resolution which directed staff to address whether the rules or amendments brought to the Board for adoption are in the order of cost effectiveness as defined in the AQMP. The intent was to bring forth those rules that are cost effective first.

Health & Safety Code Requirements

The state legislature adopted legislation that reinforces and expands the Governing Board resolutions for socioeconomic assessments. H&SC Sections 40440.8(a) and (b), which became effective on January 1, 1991, require that a socioeconomic analysis be prepared for any proposed rule or rule amendment that *"will significantly affect air quality or emissions limitations."* Specifically, the scope of the analysis should include:

- Type of Affected Industries

- Impact on Employment and the Economy of the District
- Range of Probable Costs, Including Those to Industries
- Emission Reduction Potential
- Necessity of Adopting, Amending or Repealing the Rule in Order to Attain State and Federal Ambient Air Quality Standards
- Availability and Cost Effectiveness of Alternatives to the Rule

For emission reduction potential, necessity of rule adoption and cost effectiveness of alternatives to the proposed rule, please refer to the Staff Report for PAR 1133.1 and PR 1133.3. Additionally, the AQMD is required to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. H&SC Section 40728.5, which became effective on January 1, 1992, requires the AQMD to:

- Examine the type of industries affected, including small businesses; and
- Consider socioeconomic impacts in rule adoption

H&SC Section 40920.6, which became effective on January 1, 1996, requires that incremental cost effectiveness be performed for a proposed rule or proposed amendments related to ozone, carbon monoxide (CO), oxides of sulfur (SO_x), oxides of nitrogen (NO_x), and their precursors. Incremental cost effectiveness is defined as the difference in costs divided by the difference in emission reductions between one level of control and the next more stringent control. Incremental cost effectiveness for this proposed rule is addressed in the Staff Report for PAR 1133.1 and PR 1133.3.

AFFECTED FACILITIES

PAR 1133.1 will not affect any facilities in the four-county region because facilities already comply with the proposed amendments. PR 1133.3 will affect 17 facilities operating in the District. The affected facilities belong to the industries of Waste Management and Remediation Services [North American Industry Classification System (NAICS) code 562] and Chemical Manufacturing (NAICS 325). Approximately 23 percent of affected facilities are in Los Angeles County, 42 percent are in Orange County, 23 percent are in Riverside County, and 12 percent are in San Bernardino County.

Small Businesses

The AQMD defines a "small business" in Rule 102 as one which employs 10 or fewer persons and earns less than \$500,000 in gross annual receipts. In addition to the AQMD's definition of a small business, the federal Small Business Administration (SBA), the federal Clean Air Act Amendments (CAAA) of 1990, and the California Department of Health Services (DHS) also provide definitions of a small business.

The SBA's definition of a small business uses the criteria of gross annual receipts (ranging from \$0.75 million to \$35.5 million), number of employees (ranging from 50 to 1,500), megawatt hours generated (4 million), or assets (\$175 million), depending on industry type (US SBA, 2010). The SBA definitions of small businesses vary by 6-digit NAICS code. For example, in the Fertilizer (Mixing Only) Manufacturing (NAICS 325314) industry, a business with 500 or

fewer employees is considered “small.” In the Material Recovery Facilities (NAICS 562920) industry, a business with gross annual receipts of \$12.5 million or less is considered “small.”

The CAAA classifies a facility as a "small business stationary source" if it: (1) employs 100 or fewer employees, (2) does not emit more than 10 tons per year of either VOC or NOx, and (3) is a small business as defined by SBA.

Of the 17 facilities examined, Dunn and Bradstreet data on gross annual receipts and employees were available for 16 facilities.¹ Data on emissions of VOC and NOx were only available for one facility. Applying the small business criteria to the facilities with adequate data for evaluation revealed that 14 facilities meet the SBA criteria for small business designation. Under the AQMD criterion for small businesses, 3 affected facilities would be categorized as small businesses. No facility would meet the CAAA small business criterion.

COMPLIANCE COST

There would be no additional compliance cost for chipping and grinding facilities under PAR 1133.1 because the proposed amendments reflect existing requirements in the Code of California Regulations. The 17 affected facilities under PR 1133.3 would be required to cover newly-formed compost piles with finished compost, apply water to compost piles prior to turning, and perform additional recordkeeping. No existing facility would be required to install a forced aeration, or similar, emissions control device because no facilities currently process more than 5,000 tons of foodwaste. The effective date for all the requirements is from the date of adoption. Table 1 summarizes the cost assumptions for PR1133.3.

Table 1
Cost Assumptions for PR 1133.3

Requirement	Unit Cost	Total Units Per Ton of Throughout or Per Facility
<u>Compost Covering</u>		
Labor	\$30/hr	0.0044 hr/ton
Wear/Tear	\$150/hr	0.0044 hr/ton
Diesel Fuel	\$3.50/gal	0.022 gal/ton
<u>Watering</u>		
Labor	\$10/hr	0.0165 hr/ton
Water	\$0.0024/gal	95 gals/ton
<u>Recordkeeping</u>		
Labor	\$25/hr	78 hrs per facility

A survey by District staff showed that approximately 416,000 tons of greenwaste throughput is processed at affected facilities annually. Industry cost studies were used by staff to estimate the cost of compliance activities associated with each of the proposed requirements using the volume (132 tons) of throughput in a pile of typical dimensions (200 feet long, 16 feet wide, and 7 feet high). Covering a newly-formed pile would require finished compost material, a front-end

¹ Data for some of the affected facilities was obtained from Manta.com, which specifies a range for facility employment and gross annual receipts. The lower end value in the data range given by Manta.com was used for small business status classification.

loader, and additional labor. The finished compost used for covering can be recovered from piles when composting is completed and is thus assumed to generate no additional cost to composting facilities. Applying the finished compost cover would require approximately 35 minutes of front-end loader time for a pile of typical dimensions. On a per ton of throughput basis, 0.0044 hours of front-end loader time is needed to apply the compost cover. The wear and tear associated with operation of a front-end loader (excluding fuel) is assumed to be \$150 per hour. Diesel fuel for front-end loader operation is assumed to cost \$3.50 per gallon. The wage rate for operating a front-end loader is assumed to be \$30 per hour.

The cost of applying water to compost piles prior to turning includes the cost of increased water usage and labor for its application. Each ton of composting throughput is assumed to require five applications at 19 gallons of water per application prior to each turning to satisfy the proposed wet depth requirement. Water is assumed to cost \$0.0024 per gallon. The analysis herein assumes that affected facilities use potable water, which is significantly more costly than the non-potable water that is often used in composting operations. Approximately, 25 minutes of labor are assumed to be needed in each application of water to a pile of typical dimensions. On a per ton of throughput basis, 0.0165 hours of labor are needed. The assumed wage rate for labor is \$10 per hour.

PR 1133.3 also would require that additional labor be devoted to documenting compliance activities at affected facilities. The analysis assumes that approximately one additional hour per week of recordkeeping will be necessary at each affected facility. Recordkeeping labor is assumed to have a wage of \$25 per hour.

The average annual cost of PR 1133.3 is estimated to be \$0.53 million from 2011 to 2025. Table 2 shows the cost of compliance by industry and requirement. The majority of the cost is incurred in the chemical manufacturing sector. The compost covering requirement has 64 percent of the total compliance cost of PR 1133.3.

Table 2
Average Annual Cost by Industry (2011-2025) in Millions of Dollars

Industry (NAICS)	Compost Covering	Watering	Recordkeeping	Total
Chemical Manufacturing (325)	\$0.333	\$0.163	\$0.006	\$0.50
Waste Management and Remediation Services (562)	\$0.003	\$0.001	\$0.027	\$0.03
Total	\$0.34	\$0.16	\$0.03	\$0.53

On a per ton of throughput basis, the compliance costs of PR 1133.3 are approximately \$1.30. Based on these compliance costs, no significant changes in the location or distribution of greenwaste facilities in the District are anticipated.

TOTAL IMPACTS

The REMI PI⁺ model (version 1.2.7) is used to assess the total socioeconomic impacts of a policy change. The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino. The REMI model for each county is comprised of a five block structure that includes (1) output and demand, (2) labor and capital, (3) population and labor

force, (4) wages, prices and costs, and (5) market shares. These five blocks are interrelated. Within each county, producers are made up of 165 private non-farm industries, three government sectors, and a farm sector. Trade flows are captured between sectors and borders as well as across counties and the rest of U.S. Market shares of industries are dependent upon their product prices, access to production inputs, and local infrastructure. The demographic/migration component has 160 ages/gender/race/ethnicity cohorts and captures population changes in births, deaths, and migration.

The assessment herein is performed relative to a baseline without the implementation of PR 1133.3. Direct effects of the policy change (the proposed rule) have to be estimated and used as inputs to the REMI model in order for the model to assess secondary and induced impacts for all the actors in the four-county economy on an annual basis and across a user-defined horizon (2011 to 2025). Direct effects of PR 1133.3 include additional costs to the affected industries and additional sales of control devices or services by local vendors at the county (or finer) level and by industry.

Proposed Rule 1133.3 would create additional demand for water utilities (NAICS 221) due to the requirement to wet compost piles prior to turning. PR 1133.3 would also create an additional demand for diesel fuel for front-loader operation, resulting additional sales of diesel fuel by gasoline stations in the retail sector (NAICS 447). The increased use of front-loaders will modestly increase equipment depreciation and create a small additional demand in the construction machinery manufacturing industry (NAICS 333).

The additional costs to affected facilities include the annualized costs for water, fuel, and equipment depreciation. In addition, facilities complying with the watering and covering requirements in PR 1133.3 will also use additional labor for the compost covering, watering, and recordkeeping. The additional labor cost will modestly reduce worker productivity at affected facilities.

Overall, 4 jobs could be forgone annually, on average, between 2011 and 2025 in the local economy. Of the 4 jobs forgone, the chemical manufacturing and retail trade sectors each would forgo one job. The two other jobs forgone are due to secondary and induced impacts on the demand for labor across all other sectors in the regional economy. Under the baseline forecast, the four county region will average 10 million jobs annually from 2011 to 2025. The forecasted decline of 4 jobs represents 0.00004 percent of total jobs in the four county region, and is within the noise of the model.

The relative cost of production in the chemical manufacturing sector is estimated to rise by 0.001 percent in 2011 and by 0.002 percent from 2012 to 2025. For the waste management and remediation services sector, which includes materials recovery facilities affected by the rule, the cost of production is estimated to rise by less than 0.001 percent from 2011 to 2025. The chemical manufacturing sector also is projected to experience an increase of 0.001 percent in the cost of production from 2012 to 2025. All other sectors would experience an increase in the cost of production of less than 0.001 percent.

The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere. The proposed rule is projected to result in increases in delivered prices in all sectors by less than 0.001 percent.

**RULE ADOPTION RELATIVE TO THE COST EFFECTIVENESS
SCHEDULE**

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for adoption are considered in the order of cost-effectiveness. The 2007 Air Quality Management Plan (AQMP) ranked, in the order of cost-effectiveness, all of the proposed control measures for which costs were quantified. It is generally recommended that the most cost-effective actions be taken first.

Proposed Rule 1133.3 implements control measure MCS-04—Emissions Reduction from Greenwaste Composting. MCS-04 is not ranked for overall cost-effectiveness among competing stationary source control measures listed in the 2007 AQMP. The estimated cost effectiveness of PR 1133.3 was not determined for the 2007 AQMP because emissions reductions were difficult to estimate.

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