

**BUTTE COUNTY AIR QUALITY MANAGEMENT DISTRICT
STAFF REPORT**

**Proposed Amendment of Rule 205,
*Fugitive Dust Emissions***

Date of Public Release: March 5, 2010

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Proposed Amendment of Rule 205, *Fugitive Dust Emissions*

Date of Release: March 5, 2010

Public Hearing Date

Thursday, May 27, 2010 10:15 a.m.
Chico City Council Chambers, 421 Main Street, Chico, CA 95928

Schedule of Meetings

- Date of Public Workshop: 10:00 a.m., Monday April 5, 2010, Southside Oroville Community Center, 2959 Lower Wyandotte Road, Oroville, CA.
- Date of Public Workshop: 6:00 p.m., Thursday April 8, 2010, Chico City Council Chambers, 421 Main Street, Chico, CA.
- Date of Public Workshop: 10:00 a.m., Thursday April 15, 2010, Butte County AQMD, 2525 Dominic Drive, Suite J. Chico, CA.
- Date of Board Hearing: 10:15 a.m., Thursday May 27, 2010, Chico City Council Chambers, 421 Main Street, Chico, CA.

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Executive Summary

Proposed Amended Rule 205, Fugitive Dust Emissions is being considered by the District's Governing Board to fulfill State mandates. The State of California adopted Senate Bill 656 (Sher, Oct. 8, 2003) or SB656, which required the State to develop measures to reduce the public's exposure to fine particulate matter (PM) and other pollutants. SB656 also required districts to adopt an implementation schedule for adoption of the indentified reduction measures. The District's Governing Board approved their implementation schedule (SB656 Schedule) for reducing PM on August 25, 2005 which identifies the control measures applicable to the District. The fugitive dust control measures in the District's SB656 Schedule include measures for reducing PM < 10 microns in diameter (PM10).

Butte County is currently designated as a nonattainment area for the State ambient air quality standards (AAQS) for PM10. An area is designated nonattainment if there was at least one violation of a State standard for that pollutant. PM10 is a health concern because it can penetrate into the sensitive regions of the respiratory tract. Scientific studies have linked respirable PM (PM10 and the smaller PM2.5) to a wide variety of health and environmental impacts. Significant health problems include aggravated asthma, increases in respiratory symptoms like coughing and difficult or painful breathing, chronic bronchitis, decreased lung function, and premature death.

The Fugitive Dust section of the SB656 Schedule addresses each source of fugitive dust emissions which contribute to elevated PM10 emissions within the District. The District's current Rule 205 does not provide control measures to follow or a performance standard for vehicle traffic on unpaved areas. To provide specific guidance for affected industry staff developed a table in the proposed amended rule that provides a toolbox of control measures consistent with those recommended by the State and adopted by the District's SB656 Schedule. The toolbox is limited to the most feasible and cost effective measures identified in the SB656 Schedule. The format of the proposed Rule 205 provides clear direction to affected industry in determining the best management practices for reducing fugitive dust emissions. To develop the toolbox staff evaluated each control measure approved in the SB656 Schedule and recommended the District's Governing Board limit implementation of those listed control measures to those that provide the biggest reductions for the lowest cost. The District's Governing Board agreed with staff recommendations, and at the May 28, 2009 meeting, directed staff to develop proposed amendments to Rule 205, Fugitive Dust Emission. The most feasible and cost effective measures included in the toolbox are:

- Water application*
- Sweeping-Cleanup of carryout and trackout*
- Chemical Stabilization Application*
- Gravel or Pave Unpaved Roadways and Parking Lots*
- Install Wind Barriers*
- Pre-Watering*
- Material Handling Procedures*
- Speed Limits*
- Vegetation in Open Areas*
- Other Cost Effective Measures*

1. PURPOSE

The purpose of the proposed amendments to Rule 205 is to reduce ambient concentrations of Respirable PM and limit fugitive emissions of particulate from construction activities, bulk material handling and storage, carryout and trackout, and similar activities, weed abatement activities, unpaved parking lots, unpaved staging areas, private unpaved roads, inactive disturbed land, disturbed open areas, windblown dust, and similar contributors.

2. BACKGROUND

Butte County is currently designated as a nonattainment area for the State PM10 standards. SB 656 enacted by the State legislature and implemented through the California Air Resources Board (CARB) required state air Districts to adopt an implementation schedule for PM control measures. The District's Governing Board adopted the SB 656 PM Implementation Schedule on August 25, 2005. The District PM Implementation Schedule includes measures to control PM from wood burning devices, residential open burning, and fugitive dust emission sources including construction, demolition, and grading operations.

3. HEALTH AND ENVIRONMENTAL IMPACTS OF PARTICULATE MATTER

Particulate matter in the air is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and consist of many different components such as metals, soot, soil, and dust. "Respirable particulate matter" or PM10 is defined as particles that are 10 microns or less in diameter. These particles (PM 10 and smaller) pose the greatest health concern because they can pass deep into the lungs. Particles which are 2.5 microns or less in diameter are defined as "fine" particulate matter or PM2.5. In addition to adverse health concerns, these fine particles can contribute significantly to regional haze and reduction of visibility in California.

Since the small particles that make up PM can easily penetrate deep into the lungs, scientists have studied the effects of this type of pollution on human health. Harmful health effects have been shown from both short and long-term exposures to PM. People with heart or lung diseases, older adults, and children are more at risk to the adverse health effects of PM exposure. In addition, scientists have observed higher rates of hospitalizations, emergency room visits and doctor's visits for respiratory illnesses or heart disease during times of high PM concentrations. During these periods of high PM levels, scientists also observed the worsening of both asthma symptoms and acute and chronic bronchitis. Scientists have found a relationship between high PM levels and reductions in various aspects of the healthy functioning of people's lungs.

The elderly and people with existing heart and/or lung disease are particularly at risk to the harmful effects from PM exposure. Data from CARB's Children's Health Study shows similar harmful health effects in children, as well. This study demonstrated that in communities highly polluted with PM, children's lungs developed more slowly and did not move air as efficiently as children's lungs in clean air communities. Children and infants are susceptible to harm from inhaling pollutants such as PM because they inhale more air per pound of body weight than do adults, they breathe faster, spend more time outdoors and have smaller body sizes. In addition, children's immature immune systems may cause them to be more susceptible to PM than healthy adults. Further research may clarify the relationship between PM exposure and children's health.

4. SOURCES AND ASSESSMENT OF FUGITIVE DUST EMISSIONS

Ambient PM can be classified into two groups; primary PM that is directly emitted from sources such as vehicle travel on paved and unpaved roads, forest management burning, agriculture burning, residential wood burning stoves/fireplaces, and combustion process; and secondary PM that is formed in the air from the reactions of precursor gases such as nitrogen oxides, volatile organic compounds, sulfur oxides, and ammonia.

Extensive research indicates that short-term and long-term exposure to PM above United States Environmental Protection Agency (USEPA) and CARB ambient air quality standards could lead to adverse health effects. Current federal and State PM standards are shown in Table 1.

Table 1. Current (as of March 5, 2010) state and federal PM ambient standards

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS		FEDERAL STANDARDS		
		Conc.	Method	Primary	Secondary	Method
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as primary standard	Inertial separation and gravimetric analysis
	Annual Arithmetic Mean	20 µg/m ³		No Standard		

Butte County is located entirely within the Northern Sacramento Valley Air Basin (NSVAB). The following sections of this report will assess current ambient PM10 conditions and the attainment status for the NSVAB.

District's State PM Attainment status and standards:

Butte County is designated as nonattainment for the state 24-hour and annual PM10 standard. Butte County meets the Federal 24-hour Standard which is three times higher than the State's. An area is designated nonattainment if there was at least one violation of a State standard for that pollutant.

District Ambient PM 10 Concentration Trend:

Figure 1 shows measured annual average PM10 concentrations in Chico between 1999 and 2008. Between 1999 and 2008, measured PM10 annual average concentrations exceeded the State Annual Average Standard every year but did not exceed National Annual Average Standard (which is 3X the state standard) in any year. The trend line in Figure 1 also reveals no significant improvements in measured PM10 annual average concentration in Chico between 1999 and 2008.

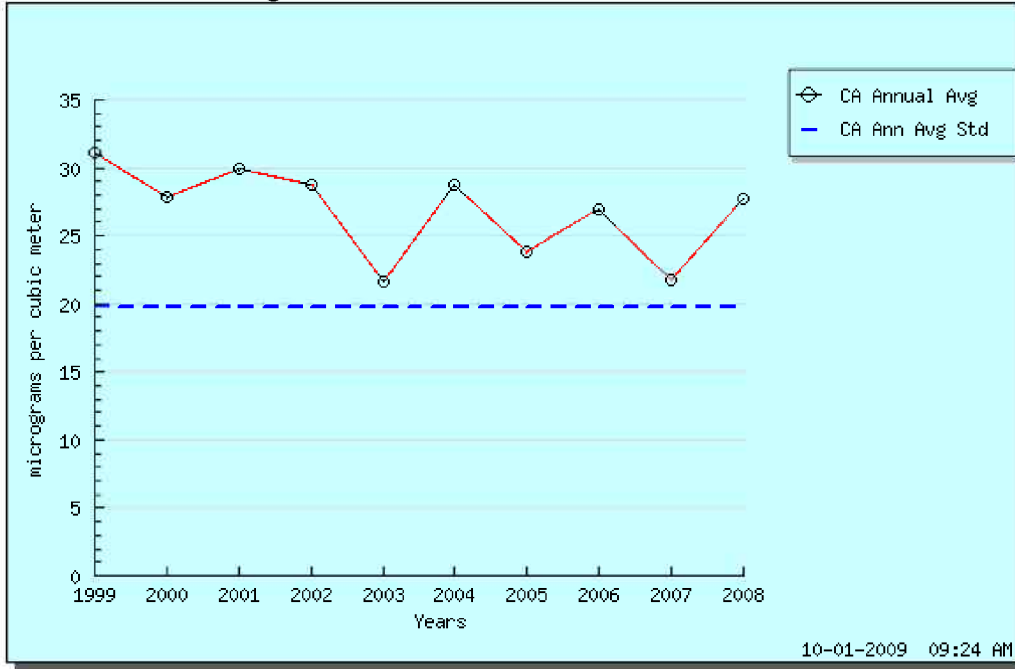


Figure 1-Chico Annual Average Concentration of PM 1999-2008

Figure 2 shows the estimated number of days each year in Chico that PM10 concentrations exceeded the State Annual Average Standard.

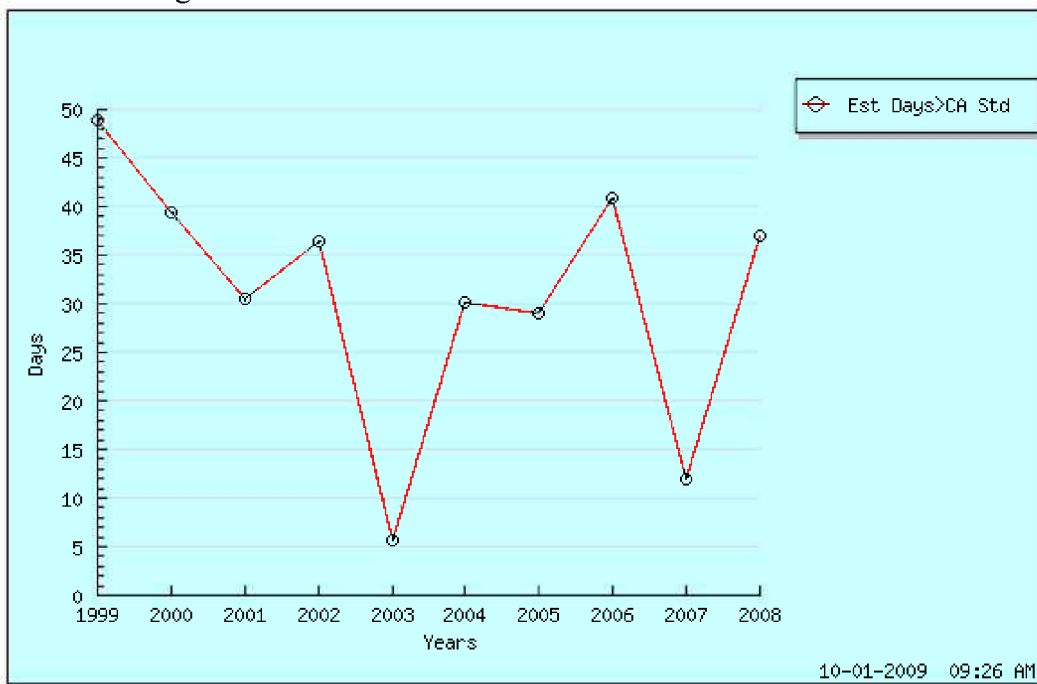


Figure 2-Chico Estimated Exceedance of Daily Standard in Given Year 1999-2008

Area Description:

The District is located in Northern Sacramento Valley Air Basin which is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6000 feet with peaks rising much higher. This provides a substantial physical barrier to locally generated pollution as well as that transport northward on prevailing winds from the Sacramento Metropolitan area (NSVAB Air Quality Attainment Plan, 2003). The vast majority of District’s population lives and works below 1000 feet sea level, which is often subjected to inversion layers that, coupled with geographic barriers and high summer temperatures, create a high potential for air pollution problem.

PM10 Emission Sources:

Figure 3 shows the average daily emissions from miscellaneous area wide sources of PM10 as designated by CARB’s 2008 emission inventory of Butte County. The majority of average daily emissions from miscellaneous sources are fugitive in nature and constitute 80.9% of the total daily average of PM10 emissions in Butte County. During summer, vehicle travel on unpaved roads, farming operations, and vehicle travel on paved roads are the top three potential sources for PM 10. During winter, farming operations, waste burning and disposal (including agricultural burning), and residential fuel combustion are the top three potential sources for PM10. Even though the top three sources for PM 10 are different seasonally, Figure 3 reveals that the annual daily average of summer emissions is greater than winter emissions.

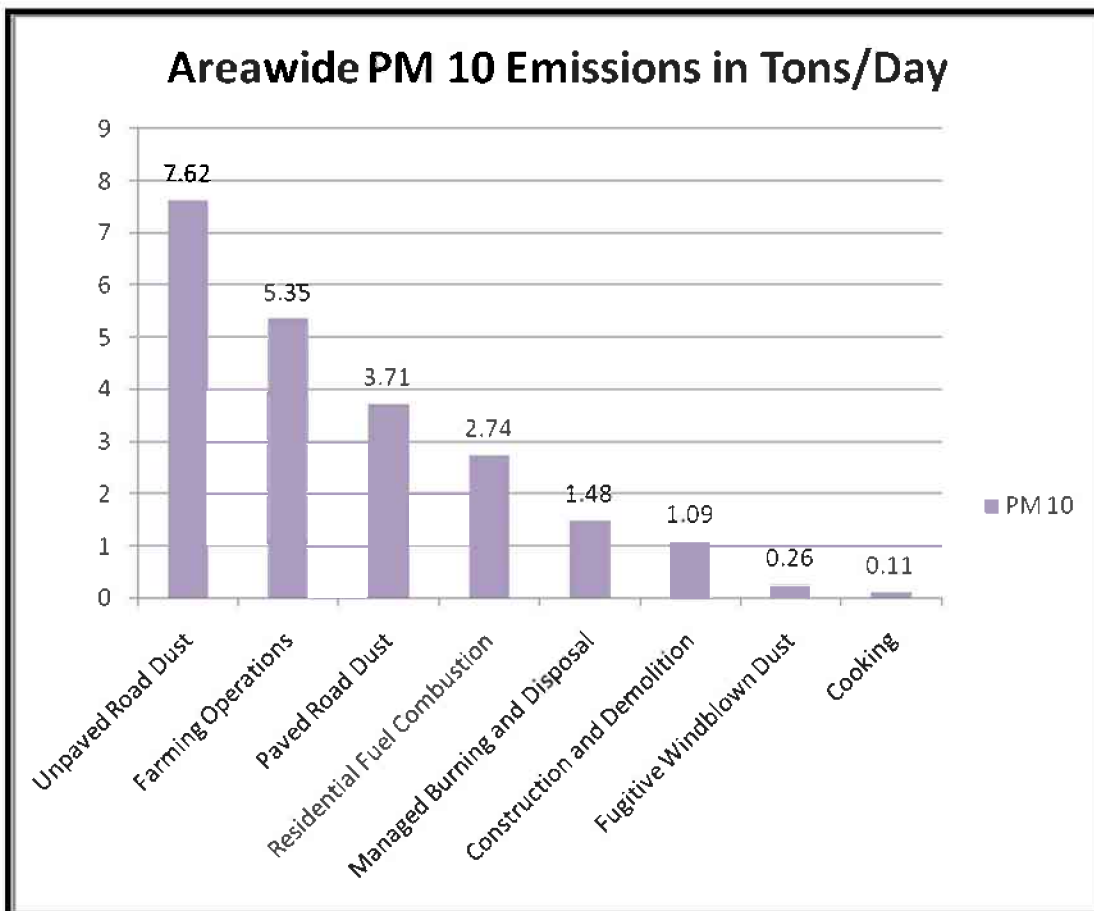


Figure 3

Figure 4 shows the annual average percentage for area wide PM10 source.

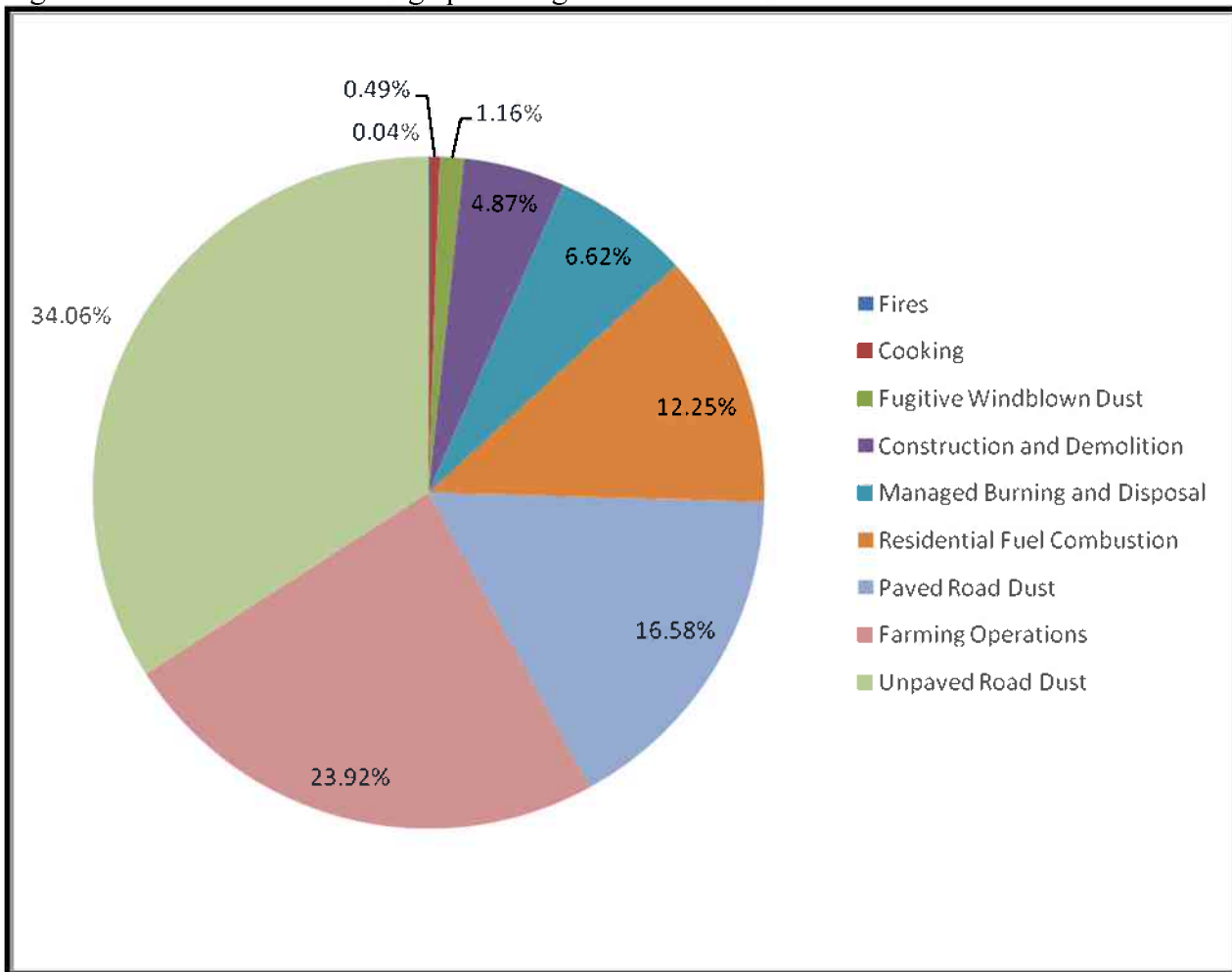


Figure 4

PM Control Measure List Development

As required by Senate Bill 656, CARB approved a list of the most readily available, feasible, and cost-effectiveness control measures that can be employed by air districts to reduce PM at their November 18, 2004 Board meeting. This list was based on rules, regulations, and programs existing in California as of January 1, 2004 for stationary, area-wide, and mobile sources.

SB656 required air districts to adopt their own implementation schedules for selected measures from the CARB list by July 31, 2005. The implementation schedule identifies the appropriate subset of measures, and the dates for of implementation, and the sequencing of selected control measures. In developing the implementation schedule, your Board prioritized measures based on public health, air quality, emission reduction, and cost-effectiveness. Consideration was also given to ongoing programs such as measures being adopted to meet national air quality standards or the State ozone planning process.

In August of 2005 your Board held a public hearing and adopted the required implementation schedule to meet the requirements of SB 656 (Appendix B).

5. PROPOSED RULE 205 REQUIREMENTS

Proposed Amended Rule 205, *Fugitive Dust Emissions* would apply to outdoor fugitive dust sources including construction activities, carryout and trackout, inactive disturbed land or open areas, unpaved parking lots/staging areas and private unpaved roads, weed abatement, and windblown dust.

Proposed Amended Rule 205, if adopted, would become effective May 27, 2010. Proposed amendments to Rule 205 limits fugitive emissions from movement of a motorized vehicle to 20% opacity and requires the use of readily available and cost effective best practices for minimizing fugitive dust emissions.

- The performance standard and best practices toolbox would not apply to agricultural sources, emergency activities, abrasive blasting, sources meeting best practices requirements during high wind events, public areas and public unpaved roadways, and specified blasting activities.

6. SOCIOECONOMIC IMPACTS AND ANALYSIS

CHSC Section 40728.5 exempts districts with a population of less than 500,000 persons from the requirement to assess the socioeconomic impacts of proposed rules. Butte County population is below 500,000 persons. However, staff has included an economic analysis on the impacts of Proposed Amended Rule 205 based upon the cost-effectiveness limitations in the proposed amendments. This analysis includes a range of costs for a given reduction in PM emissions.

Health Impacts and Costs:

As stated earlier, particulate matter air pollution is linked to significant health problems. Individuals with respiratory conditions such as asthma are particularly affected. California Breathing, a branch of the California Department of Public Health, produces a County Asthma Profile for each of the 58 counties in California. In Butte County, approximately 29,000 children and adults have been diagnosed with asthma. The profile for Butte County also provides data on the number of asthma hospitalizations reported for children and adults. The number reported uses those individuals who were discharged from Butte County hospitals with the primary diagnosis of asthma. The average costs for these visits (which do not include medications or indirect costs) are presented in Table 2. It should be noted that the emergency room visits reported in the profile are approximately four times higher than hospitalization numbers yet are not included in the associated costs. It is therefore safe to assume that the actual costs associated with asthma in Butte County are significantly underestimated. Exposures to elevated levels of PM exacerbate asthmatic conditions.

No. of Hospitalizations	Age	Average Charges	Total Costs
47	(0 – 17)	\$11,563	\$563,461
153	(18+)	\$24,309	\$3,719,277

7. ALTERNATIVES

The Governing Board may choose to:

- a) Approve the amended rule as proposed;
- b) Direct staff to modify the amended rule after receiving public comments during the hearing; or
- c) Take no action.

8. ENVIRONMENTAL REVIEW AND COMPLIANCE

The adoption of Amended Rule 205 is categorically exempt from the California Environmental Quality Act (CEQA) under Sections 15307 and 15308 of the State CEQA Guidelines and no exceptions to these exemptions apply. This exemption is allowed when the rule will help improve air quality in Butte County. California Public Resources Code (Section 21159) requires an environmental analysis of the reasonably foreseeable methods of compliance. The District has concluded that no reasonably foreseeable adverse environmental impacts will be caused by adoption of the proposed rule.

9. REQUIRED FINDINGS

Findings required by Division 26 of the California Health and Safety Code requires local districts to comply with a rule adoption protocol as set forth in Section 40727 of the Code. This section has been revised through legislative mandate to contain six findings that the District must make when developing, amending, or repealing a rule or regulation. These findings and their definitions are included in the Table 2.

Table 2 - Findings

FINDING	DEFINITION	REFERENCE
Authority	A district shall adopt rules and regulations and do such acts as may be necessary or proper to execute the powers and duties granted to, and imposed upon, the district by this division and other statutory provisions.	California Health and Safety Code Division 26, Part 3, Sections 40001, 40702, and 40716 are provisions of law that provide the District with the authority to adopt the proposed rule.
Necessity	The district has demonstrated that a need for the rule, or for rule amendment or repeal.	The adoption of Amended Rule 205 is necessary to obtain emission reductions to move closer to the goal of meeting state ambient air quality standards for PM10.
Clarity	The rule is written or displayed so that its meaning can easily be understood by the persons directly affected by it.	There is no indication, at this time, that the proposed rule is written in such a manner that persons affected by the rule cannot easily understand it.
Consistency	This rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or State or federal regulations.	The District has found that the proposed rule is consistent with applicable statutory requirements.
Non-Duplication	The rule does not impose the same requirements as an existing State or federal regulation, unless the district finds that the requirements are necessary and proper to execute the powers and duties granted to, and imposed upon, the district.	The proposed rule does not impose requirements that duplicate existing laws or regulations.
Reference	Any statute, court decision, or other provision of law that the district implements, interprets, or makes specific by adopting, amending, or repealing a regulation.	California Health and Safety Code, Division 26, Part 3, Sections 40000 and 40001.

10. REFERENCES

1. District Staff Report for Proposed Amended Rule 207 – *Wood Burning Devices*.
2. District Status Report for Proposed Amended Rule 205, *Fugitive Dust Emissions*, dated May 28, 2009, and Dated October 22, 2009.
3. CARB Chronology of State PM10 Designations, March 1, 2010.
4. Placer County APCD, Staff Report-Implantation of SB 656 Measures to Reduce Particulate Matter, June 2005, Appendix A, Section C.
5. CARB Air Quality Data Statistics - <http://www.arb.ca.gov/adam/welcome.html>.
6. CARB Emissions Inventory - <http://www.arb.ca.gov/app/emsinv/fcemssumcat2008.php>.
7. CARB (2004). Recent Research: Health Effects of Particulate Matter and Ozone Air Pollution, January 2004, http://www.arb.ca.gov/research/health/fs/pm_ozone-fs.pdf.
8. American Lung Association (ALA) (2002). ALA Fact Sheet Particulate Matter Air Pollution. www.lungusa.org/air/pm_factsheet99.html.
9. ARB – Particulate Matter Mortality Staff Report October 23, 2008
10. CARB SB656 List of Air District Measures that Reduce Particulate Matter, November, 2004.

APPENDIX A

Proposed Amendments - Rule 205, *Fugitive Dust Emissions*

APPENDIX B

Board Approved District Implementation Schedule

APPENDIX C
Best Practices Cost Effectiveness

Appendix D
Proposed Resolution of Adoption