

State of California  
AIR RESOURCES BOARD

PUBLIC MEETING TO CONSIDER THE ADOPTION OF  
AN EMISSIONS FORMULA FOR EMPLOYER-BASED TRIP REDUCTIONS

Staff Report

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## I. INTRODUCTION

### Purpose of Regulation

Employer-based trip reduction rules adopted by air pollution control districts require employers to take actions to reduce vehicle commute trips by employees (e.g. by increasing employee ridesharing). State law enacted in 1994 requires that districts which amend or adopt such rules allow employers the option to pursue alternative strategies for reducing air emissions as long as the chosen option results in an equal or greater emissions reduction benefit. (Health and Safety Code section 40717.5 (c)(3)).

In order to give employers credit for strategies that reduce air pollution in ways other than reducing employee commute trips, a calculation methodology is needed. The Air Resources Board (ARB) is required to adopt a calculation methodology for that purpose and has proposed a formula for determining equivalency. (Health and Safety Code section 40717.5 (d)). The formula must be used by districts to calculate an emission reduction target equivalent to meeting district trip reduction requirements.

### Background

The California Clean Air Act, Health and Safety Code section 40910 et. seq., requires air pollution control districts to adopt plans to achieve and maintain state ambient air quality standards. The Act also requires districts to adopt transportation control measures to the extent necessary to meet the attainment plan requirement (sections 40716, 40717, 40910, 40918(c), 40919(a) and (d), 40920(a) and (c), and 40920.5(a)). The transportation control measures are to reduce growth in vehicle trips and miles traveled, and to increase vehicle occupancy during commute periods. To meet these requirements, a number of air districts have adopted employer-based trip reduction regulations and included these measures in their attainment plans.

Employer-based trip reduction rules require major employers to reduce air pollution emissions associated with the commute travel of their employees by reducing drive-alone commute trips. The progress of these programs is measured by the employment site's average vehicle ridership (AVR) which is based on a survey of employees. An AVR goal is imposed by the air district. If an employer fails to meet the designated AVR goal, the employer is generally required to increase trip reduction efforts.

The first employer-based trip reduction regulation was adopted by the South Coast Air Quality Management District (SCAQMD) in 1987. Since then, three more local and regional air agencies (Ventura, San Francisco Bay Area, and San Joaquin Valley) have adopted rules that require employers to develop commute trip reduction plans. Other air districts have employer

trip reduction rules with less extensive requirements (Shasta and Mohave Desert).

In recent years several changes have been made to state law requiring statewide consistency and flexibility in air district ridesharing regulations. In 1992, AB 2783 (Sher) mandated that air districts allow employers the option to use alternative strategies to achieve emission reductions equal to the benefits of achieving employer-based trip reduction goals. Districts must provide for use of alternative strategies when adopting or amending employer-based trip reduction rules. (Health and Safety Code section 40717.5(c)(3)).

Alternative strategies are actions that reduce emissions by some means other than reducing commute period work trips, and also, go beyond those measures already included in regional air quality plans. Examples of alternatives being considered are identification and repair of high emitting vehicles, purchase of cleaner fueled buses, retrofit of cars and trucks to operate with cleaner fuels, and scrapping of high emitting vehicles.

Several air districts already have regulations that allow the use of equivalent emission reducing strategies: Bay Area, San Joaquin Valley, and South Coast. South Coast Rule 1501.1, which provides for alternatives, was adopted by the South Coast District Board on April 14, 1995.

State law also requires congestion management agencies to adopt and implement trip reduction programs. (Government Code section 65089(b)(3)). These local ordinances are expected to be consistent with air quality goals for the area but also have additional congestion relief goals to meet. These local ordinances are not subject to the requirement for alternatives that applies to air districts. However, the congestion management based rules adopted to date are less stringent than air district trip reduction requirements.

#### Need for Uniformity

Employers who do business in more than one air district would like statewide consistency in implementation of trip reduction requirements. In 1993, AB 1336 (Gotch; Health and Safety Code section 39613) required the Air Resources Board to establish a statewide technical working group to define standard definitions for a number of terms relating to ridesharing regulations. The Board approved a set of definitions in June, 1994. Air districts have been receptive to these standard definitions, and are taking steps to incorporate them into existing rules.

Similarly, multi-site employers need a simple, standardized calculation procedure to determine the level of emission reductions needed to replace trip reduction programs. To this end, AB 2358 (Sher; Health and Safety Code section 40717.5(d)) was passed in 1994, requiring the Air Resources Board to provide a "calculation methodology" for determining a level of emission reductions that would be equivalent to achieving employer AVR goals. The language in the law reads:

"The state board, in consultation with the public, the regulated community, and other interested parties, shall develop, and adopt in a public hearing, within six months of the enactment of this section, and periodically update, a calculation methodology which shall be used by districts to determine emissions equivalency pursuant to paragraph (3) of subdivision (c). In developing the formula, the state board shall take into account and consider any suggestions made by those parties." (Health and Safety Code section 40717.5 (d); emphasis added).

A state adopted formula provides air districts and employers a consistent way to calculate an emission reduction goal for employers who wish to turn to alternatives to meet their employer-based trip reduction obligations.

### Development of Proposed Regulation

Development of the emissions formula began two years ago. The formula was released in June 1993 as part of a more comprehensive guidance document. (Transportation Performance Standards of the California Clean Air Act: Guidance Revision, 1993, Preliminary Draft, May, 1993). The larger document was sent to air districts, congestion management agencies, transportation agencies, private industry, environmental organizations, and other interested individuals. Two workshops were held: one in Sacramento and one in the Los Angeles area. The response to the emissions formula was positive and at least one district (Bay Area AQMD) has been using the formula in conjunction with its rule.

After the passage of AB 2358, the proposed formula was circulated to a wide audience in January, 1995. Staff received roughly twenty responses to the draft. The formula was revised to reflect comments. It has been simplified but remains essentially unchanged from the 1993 version. In February 1995, staff held a workshop on the simplified version of the formula in the Los Angeles area.

Subsequently, staff incorporated the formula into a proposed regulation. A workshop on the proposed regulation is scheduled for May 10, 1995. The proposed regulation is found in Appendix A of this staff report.

## II. PROPOSED EMISSIONS FORMULA

The proposed emissions formula is based on four variables: average daily peak period employees, average vehicle ridership (AVR) base, AVR goal, and an annual commute emission factor. More specifically, the employer-based emissions reduction goal equals the product of three terms: 1) average daily peak period employees, (2) the difference of the inverses of the AVR base and the AVR goal, and (3) the annual commute emission factor for each pollutant analyzed. The formula is written algebraically in Appendix A.

The proposed regulation includes the definitions the districts will need in order to use the formula. One element of the formula--the average daily peak period employees--is not defined in the proposed regulation. Instead, the regulation references the definitions in district rules. The regulation is designed this way in order to ensure that the formula can be used in conjunction with air district rules. District rules contain definitions that identify the number of peak period employees whose associated vehicle trips must be reduced. This number is used in ARB's emissions formula to set the emissions goal. Referencing district definitions will not result in inconsistent uses of the formula.

The proposed regulation allows the use of algebraic expressions of the formula that give the same mathematical results. This approach was taken because the formula is already in place in some districts (expressed in a different form).

The ARB would be required to provide emission factors to use in the formula. The regulation requires ARB to provide district specific emission factors and to periodically update those factors. The factors must be provided to districts in a format that allows emission estimates to reflect variable trip lengths. The ARB will provide emission factors based on a typical commute vehicle fleet and peak period speed distributions and temperatures.

Once the proposed ARB regulation is adopted, the formula will be binding on all districts that amend or adopt employer-based trip reduction regulations. It will not apply in districts with existing rules until the rule is amended, due to the language in the statute.

### III. DISCUSSION OF ISSUES

Staff was able to address the public comments by revising the formula or the emission factors except for two issues: (1) what credit should be given for specific alternative strategies and (2) a concern that emission reductions based on AVR targets put an unrealistic burden on employers.

Two major gas companies requested that dedicated compressed natural gas (CNG) cars receive a greater credit than certification standards establish and that the purchase of CNG cars should qualify as an alternative strategy. One company expressed interest in emission credits for remote sensing and repair of gross polluting vehicles.

These issues go beyond the scope of the proposed regulation, which establishes an emissions formula only. The formula provides a means of establishing an emission reduction target as required by state law. It is not intended to address how the target is achieved through the granting of emission reduction credits for alternative strategies. The CNG strategy, along with other alternatives, will be acceptable substitutions for trip reduction programs provided the emission reductions are not already required in regional air quality plans.

Emission reduction credits are sought for a number of reasons. Emission credits are needed to provide offsets for stationary source growth, employer trip reduction programs, and emission reduction shortfalls in regional air quality plans designed to improve air quality, among other things. The Air Resources Board will continue its role of working with local air districts and the regulated community on how to quantify the benefits of emission reduction strategies.

The Santa Clara County Manufacturing Group raised the concern that AVR targets are unrealistic and should not be mandatory. They believe that emission targets based on AVR targets put an unreasonable burden on employers.

Local air district regulations establish AVR targets--not this regulation. Thus, this issue is outside the scope of the proposed regulation. The proposed regulation provides a formula for translating the AVR targets into emission reduction targets. It does not establish those targets. The districts are required by law to hold public hearings before adopting or amending their rules and regulations, including their employer-based trip reduction regulations. The public is encouraged to present testimony on AVR goals and other issues at the district hearing.

#### IV. ENVIRONMENTAL AND ECONOMIC IMPACTS

##### Environmental Impacts

Staff have determined that adopting the proposed new sections to Title 13 of the California Code of Regulations, proposed sections 2330, 2331, and 2332, would not result in significant adverse air quality or other environmental impacts. Adoption of the proposed regulation would enhance the implementation of current air district employer-based trip reduction regulations, provide additional flexibility to affected parties, and would not compromise the air quality benefits of the regulations. Thus, the regulation may have a beneficial impact on the environment.

##### Economic Impacts

Staff have determined that adopting the proposed new sections to Title 13 of the California Code of Regulations, proposed sections 2330, 2331, and 2332, would not result in significant economic impacts. Adoption of the proposed regulation would provide additional flexibility to affected parties which may reduce compliance costs. The proposed formula enables employers to determine an emissions goal to substitute for their AVR goal. This allows employers to meet their obligations with strategies other than trip reduction programs and to choose the most cost effective option. The emissions approach provides flexibility, and imposes no new requirements.

## V. RECOMMENDATION

ARB staff recommend that the Board approve the proposed regulation establishing a standardized emissions formula for determining the emission benefits equal to achieving employer-based trip reduction goals.

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- (b) The state board shall provide the districts with district-specific emission factors to be used in the emissions equivalence formula and shall periodically update these factors. The factors shall be in a format that allows for varying trip lengths.

NOTE: Authority cited: Sections 39600, 39601, 40717.5 (d), and 40916 (c), Health and Safety Code. Reference: Sections 39613, 40717, 40717.1, 40717.5, 40916, 40918, 40919, 40920, 40920.5, Health and Safety Code.

**PROPOSED REGULATION ON EMISSIONS FORMULA  
FOR EMPLOYER-BASED TRIP REDUCTIONS**

Adopt new Section 2330, 2331, and 2332, Subchapter 8.5, Title 13, California Code of Regulations, to read as follows:

**Subchapter 8.5 EMISSIONS FORMULA FOR EMPLOYER-BASED TRIP REDUCTIONS**

**2330. Applicability.** This subchapter shall be applicable to any air pollution control or air quality management district which adopts or amends a rule or regulation which establishes employer-based trip reduction requirements.

**2331. Definitions.** The following definitions shall apply to this subchapter:

- (a) "AVR Base" is the average vehicle ridership based on the most recent survey of employees at the site or an average value provided by the air district. Employers shall have the option to choose either value.
- (b) "AVR Goal" is the average vehicle ridership goal for a given year provided by the air district or implementing agency.
- (c) "Annual Commute Emission Factor" is the annual emission factor, expressed in pounds per year, for a given year and pollutant based on a typical commute vehicle fleet, peak period speed distributions and temperatures, and average commute trip lengths for a given area.

**2332. Emissions Formula.**

- (a) Air pollution control districts, air quality management districts, and employers subject to air district employer-based trip reduction regulations shall use the following emissions formula, or an algebraic expression of the formula which produces the same mathematical results, to determine employer-based emissions reduction goals equivalent to employer-based trip reduction goals:

**Employer-Based Emissions Reduction Goal =**

$$\left( \begin{array}{l} \text{Average Daily} \\ \text{Peak Period Employees} \\ \text{as defined in district rules} \end{array} \right) \times \left( \frac{1}{\text{AVR Base}} - \frac{1}{\text{AVR Goal}} \right) \times \left( \begin{array}{l} \text{Annual Commute} \\ \text{Emission Factor} \end{array} \right)$$

Example: If peak employees equal 100, AVR Base is 1.2, AVR Goal is 1.5, and Annual Commute Emission Factor for Reactive Organic Gases (ROG) in 1995 is 21 lbs/year, then the Employer-Based Emissions Reduction Goal for ROG equals:

$$(100) \times \left( \frac{1}{1.2} - \frac{1}{1.5} \right) \times (21) = 336 \text{ lbs / year of ROG}$$