

# Proposed Mobil Source Offset Provisions in California May Negatively Impact Air Quality

by Randall Guensler

## BACKGROUND

Sources of air pollutant emissions can be generally separated into four categories: stationary sources, area sources, mobile sources, and indirect sources.

(1) Stationary sources are typically industrial operations such as utility boilers, petroleum refinery equipment, surface coating (painting) operations, graphic art printers, etc. Generally, stationary source emissions come from “point sources,” or single emission points that require a local agency permit to operate.

(2) Area sources are usually diffuse emission sources, such as sewage treatment plants, or point sources that are too small to be individually tracked by the local agency (e.g. residential fireplaces or water heaters).

(3) Mobile source emissions are from automobiles, heavy duty vehicles, aircraft, railroads, construction equipment, or similar sources.

(4) An indirect source is a facility that attracts mobile source activity. Thus, an indirect source is responsible for the trips, mileage, and emissions that mobile sources produce when transporting people and goods to and from the facility. Common indirect sources include: shopping malls, business parks, industrial parks, airports, residential developments, video rental outlets, and local convenience stores.

Local air pollution control districts are responsible for developing Air Quality Management Plans (AQMPs) designed to bring their local air basin into attainment with National Ambient Air Quality Standards (NAAQS). Based upon the AQMPs, the local districts and the State promulgate a State Implementation Plan (SIP) in accordance with the federal Clean Air Act.<sup>1</sup>

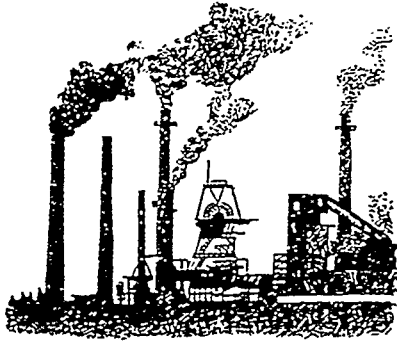
In California, the SIP consists of one set of regulations from each of the 41 local air pollution control districts within the state. Each local regulation is designed to achieve a specific emission reduction. The total estimated emission reductions result-

ing from regulations in each air basin are projected to yield local attainment of the NAAQS.

New Source Review (NSR) programs are a major component of the SIP for each local district. NSR regulations are designed to mitigate emissions from new facilities (where “new” is relative to the adoption date of the local NSR regulation) and from the modification of existing operations. Between 1979 and 1982, most districts in California adopted permit regulations that contained NSR provisions. These regulations were based upon the California model rule adopted in 1979 by the California Air Resources Board. California NSR requirements are more stringent than the federal NSR requirements (CARB, 1988).

Under NSR, when a facility increases emissions beyond the threshold value established by the regulation (typically ranging from 50 pounds per day to 250 pounds per day), the facility is required to apply Best Available Control Technology (BACT) to their process.<sup>2</sup> Depending upon the magnitude of the emission increase, NSR may also require the facility to provide emission offsets that mitigate the emission increases. Emission offsets are certified reductions of emissions at the same or another facility. Under NSR, offsets are usually provided at a ratio of greater than 1:1. Thus, when new sources are permitted, offset requirements will theoretically reduce the net emissions in the basin by some percentage.

There has been a long debate within regulatory agencies over the purpose of NSR regulations (CARB, 1988). Presuming that NSR regulations are designed to fully mitigate emission increases, or are designed to go beyond mitigation by providing net emission reductions as progress toward attainment, NSR programs have not functioned effectively. Many facilities are not required to provide emission offsets, either through special exemptions or because their emissions are less than the threshold value for NSR offset applicability (CARB, 1988). Emissions growth from sources that avoid NSR offsets has been



Pete McDonnell From "RE:SOURCES"

substantial enough to surpass the reductions gained from the NSR permitting offset ratio. In addition, significant problems have been noted in local district methodologies used to: 1) calculate the emission increases that determine when offset requirements apply, and 2) to calculate the emission reductions that are used under NSR as offsets.<sup>3</sup> The use of offsets that did not represent real emission reductions may have resulted in substantial unmitigated emission growth.

## INTRODUCTION

A proposed California Assembly Bill (AB 2759, Eaves) would require local air pollution control districts to develop and implement a mobile source offset program. Such a program would allow the emission reductions resulting from mobile source control measures to be used as offsets for emission increases at stationary sources.

Mobile source offset provisions, such as those outlined in AB 2759, raise two major issues. First, existing new source review and offset programs do not usually account for mobile source emissions already occurring at, or caused by, stationary sources. Second, the majority of emission reductions potentially obtainable from mobile sources are not likely to qualify as offsets under the Federal Emission Trading Policy.

## MOBILE SOURCE EMISSIONS AND NEW SOURCE REVIEW REGULATIONS

In implementing New Source Review (NSR) regulations, California's air pollution control districts generally do not account for emissions from mobile sources operating within each stationary source.<sup>4</sup> In addition, local districts' interpretations of NSR requirements do not account for indirect source emis-

sions (e.g. delivery or commuter traffic generated by the facility). Districts track the cumulative emission increase (CEI) resulting from multiple modifications at each facility to determine when Best Available Control Technology (BACT) and emission offset requirements apply to the facility. The definition of emissions and CEI under NSR provisions do not specifically exempt emissions from mobile, area, or indirect sources. However, in most cases, as either a matter of policy or practicality (i.e. the amount of staff resources required), local districts have not included emissions from mobile, area, or indirect sources in the facility CEI tallies.<sup>5</sup>

The proposed California Assembly Bill would allow industrial facilities to obtain offsets by controlling mobile source emissions, without requiring the stationary sources to properly include the contribution of mobile sources in their cumulative emissions tally. Because the cumulative emission increase tally is used to determine both the applicability and magnitude of required offsets, it is critical that the mobile source components of stationary source emissions be included before allowing credits for the control of mobile sources emissions. Emissions from company owned vehicles, as well as indirect source emissions from commuters and facility related operations, should be included in the CEI tallies.

## EPA EMISSION TRADING POLICY REQUIREMENTS

The Federal Emission Trading Policy Statement (FETPS) is the applicable federal guidance document that governs the use of emission trades (USEPA, 1986). In general, an emission trade can be thought of as a transfer of an emission reduction from one operation to another operation within a facility, or from one facility to another facility. Emission trades include alternative compliance plans, source bubbles (a combination of over-polluting and under-polluting within a facility), and offsets.

Emission credits, including those that are obtained from the control of mobile sources, must conform with the provisions of the FETPS. Specifically, the emission reductions from the mobile sources must be surplus, quantifiable, permanent, and enforceable.

In the FETPS, the EPA outlined the requirements and methods for calculating emission reduc-

tions and defined the terms “surplus, quantifiable, permanent, and enforceable” (USEPA, 1986). In February, 1989, the EPA clarified these definitions for the implementation of source bubbles in California, and the same definitions may reasonably be applied to offset provisions under the FETPS:

**Surplus:** At a minimum, only emission reductions not required by current regulations in the SIP, not already relied upon for SIP planning purposes, and not used by the source to meet any other regulatory requirements, shall be considered surplus. Surplus emission reductions shall be determined by using an appropriate baseline for reference.

**Quantifiable:** The emission reduction can be qualified and quantified by consistent methodologies that are repeatable.

**Permanent:** Permanence of each emission reduction must be assured by requiring that each emission trade be submitted as a source specific SIP revision. Permit conditions shall ensure that the emission reduction from the baseline is achieved for each and every future operating day.

**Enforceable:** The conditions of the AECF [emission trade] shall be reflected in a permit to operate, reviewed annually by the local agency. Each AECF [emission trade] must be approved by the local agency and rendered enforceable by submitting the emission trade to the Environmental Protection Agency as a source specific SIP revision. AECFs [emission trades] require recordkeeping to ensure ongoing compliance.

Guensler, 1989; USEPA, et al., 1990.

The FETPS specifically states that emission trades involving mobile sources must be implemented as case-by-case revisions to the SIP. Thus, mobile source emission trades must be submitted to EPA for approval. This policy decision was based upon the premise that local agencies might have difficulty in determining if the mobile source emission trades fully comply with FETPS criteria (USEPA, 1986).



## APPLICATION OF FETPS CRITERIA TO MOBILE SOURCE OFFSETS

### A. Surplus

Emission reductions associated with vehicle fleet turnover (natural replacement of older vehicles with newer, lower polluting, vehicles) are an inherent component of each local Air Quality Management Plan. In other words, in preparing the plans designed to attain the ambient air quality standards, local agencies already rely upon the emission reductions that result from vehicle fleet turnover. Therefore, the use of fleet turnover emission reductions appears to be contrary to the “surplus” requirements of the FETPS.

The California Clean Air Act (CCAA), adopted in 1988 (AB 2595, Sher), is similar to the federal Clean Air Act. That is, local air pollution control agencies are required to prepare AQMPs that will result in the attainment of both the National and the State Ambient Air Quality Standards (State standards are generally more restrictive than the National standards). As a result of the CCAA’s passage, California Health and Safety Code section 40717 now requires local air pollution control agencies in California to “...adopt, implement, and enforce transportation control measures for the attainment of the ambient air quality standards,....” Because local agencies in California are required to implement transportation control measures (TCMs) as a means to attain the air quality standards, the emission reductions achieved through TCMs should not be considered surplus.

### B. Quantifiable

The requirement that emission reductions be quantifiable is relatively easy for most stationary sources to meet. Proper test procedures and recordkeeping requirements can ensure that emission reductions from industrial sources are quantifiable. In addition, if the facility is a combustion source, continuous emission monitors can be applied to the emission points.

Mobile source emissions depend upon the following: number of hot and cold engine starts, vehicle miles traveled, number of engine cool-downs, diurnal evaporation, running evaporation, and fueling losses. The magnitude of the emissions associated with each of the above emission components are affected by: vehicle age, temperature,



vehicle speed, congestion delay, operating environment, etc. Quantifying emission reductions resulting from a mobile source control strategy is very difficult. In addition, emission reductions per vehicle are relatively small, resulting in a system that requires the quantification of emissions from numerous mobile sources in order to provide even minor emission reductions for use at a stationary source.

### C. Permanent

The emission reductions claimed as offsets must be permanent. That is, once the emissions are reduced for a process, the emissions are never allowed to increase. For stationary sources, permanent emission reductions are associated with production and can be limited through operating conditions applied to the operating permit in accordance with EPA policy (USEPA, 1989).

It is unlikely that operating conditions can be placed upon mobile sources of emissions and their operators in order to guarantee that the emission reductions are permanent. A decrease in a single vehicle's usage may or may not result in an emission decrease. An emission decrease is not permanent if the operator of the vehicle simply switches to another vehicle and continues the same travel patterns. Also, an emission decrease is not permanent if additional drivers begin using vehicles that become available

when mobile source control strategies are implemented. The vehicles and operators together generate mobile source emissions. Thus, to ensure permanent emission reductions, restrictions would likely be required for both the vehicles and the individual operators. In concept, a system that effectively limits the operation and subsequent emissions of designated vehicles could be implemented. However, restrictions must ensure that the emission reductions from the vehicle are achieved for each and every future operating day. A regulatory infrastructure that would ensure permanent emission reductions would likely be prohibitively resource intensive.

### D. Enforceable

For an emission trade to be enforceable, it must be possible to monitor the emission change over time. Mobile sources of emissions are not as readily controlled and monitored as stationary source emissions. The EPA and local air pollution control districts make stationary source emissions reductions enforceable by tying the reductions directly to facility operations as "specific limiting conditions," in accordance with EPA guidelines (USEPA, 1989). Stationary source operating limits are enforced through operating records, process monitors, continuous emission monitors, and periodic inspections of the source. In theory, similar procedures could be implemented for each mobile source that provides an offset for a stationary source. However, the proposed legislation does not address how the emission reductions from mobile sources will be made feasibly enforceable. It does not seem likely that enforceable operating conditions can be effectively and practicably placed upon mobile sources.

## PROPOSED LOCAL AGENCY REGULATIONS

The language of South Coast Air Quality Management District (SCAQMD) proposed Regulation 1309 (a component of SCAQMD Regulation XIII, New Source Review) includes general mobile source offset provisions that are similar to those outlined in the proposed Senate and Assembly bills. Proposed Reg. 1309, section (i), allows stationary sources to obtain emission reduction credits from controlling mobile source emissions. However, the proposed NSR regulation contains a caveat that prohibits the use of mobile source emission reduction credits by

facilities subject to new source review. It is unclear at this point which facilities would be allowed to consume mobile source emission reduction credits. However, it appears that the SCAQMD may have already noted that mobile source offsets do not conform with the FETPS.

## CONCLUSIONS

Allowing stationary sources to use mobile source offsets would recognize that emissions from stationary and mobile sources are correlated under NSR. If this relationship is indeed acknowledged, local air pollution control districts should interpret NSR regulations to include emissions from mobile, area, and indirect sources in facility CEI tallies. In this manner, mobile source and indirect source emission growth associated with each stationary source would be properly mitigated.

Unless mobile source offset provisions include specific limiting conditions, test methods, and emission monitoring provisions, such that the emission reductions from each mobile source can be assured to be "permanent, quantifiable, and enforceable," emission reductions associated with transportation demand management strategies will not likely conform with the FETPS. The only mobile source emission reductions that may conform with the FETPS appear to include:

(1) Applying additional control equipment to new vehicles, such that the emissions are lower than required by regulation (provided that the emission reductions are made permanent by continuously applying the additional emission controls into the future fleet). It may be necessary to limit vehicle use to ensure that emissions reductions actually occur and are permanent.

(2) Permanently converting vehicle fleets to alternative low polluting fuel sources (e.g. converting delivery vehicles from gasoline to electric power, or converting school buses from diesel fuel to natural gas). Emission reductions from vehicle replacement would need to be made permanent by continuously applying the alternative fuel conversion into the future vehicle fleet. Again, it may be necessary to limit vehicle use to ensure that emissions reductions actually occur and are permanent.

(3) Replacing mobile sources with an alternative transportation mode that will accomplish the same task, on a production basis, with a lower emission rate (e.g. substitution of an electric hoist and

conveyor system for forklifts).

Even when mobile source offsets allowed under the FETPS are used, one question still remains unanswered. What happens when additional vehicle control requirements are implemented in the future (i.e. the emission reductions previously achieved by replacement become mandated, and are no longer optional) and the emission reductions previously consumed as offsets are no longer surplus and permanent? The fact is, when new stationary sources use mobile source emission reduction credits, it is possible that the mobile source offsets may later be disallowed. Based on past experience with source bubbles in California (USEPA, et al., 1990), if emission offsets are later deemed invalid, it is unlikely that local political decisions will require the source to discontinue operations or to retroactively provide the required emission reductions. Thus, it is imperative that proper consideration be given to mobile source offset validity questions before future problems arise.

The EPA established the 1986 Federal Emission Trading Policy as a safeguard to emission trading practices. The FETPS requirements are designed to ensure that when emission trades are undertaken, the trades result in a "real-world" net decrease in emissions of air contaminants. If offsets and emission credits that do not meet emission trading policy criteria are allowed to be created, a net decrease in emissions will not occur. Unless emission trades are adequately proctored by regulatory agencies so that real reductions in emissions are guaranteed, progress toward the attainment of the National Ambient Air Quality Standards is jeopardized.

---

## NOTES

1. A series of Federal Register notices contain detailed descriptions of CAA requirements, EPA's implementation of the CAA, and requirements for SIPs: 54 FR 2138 (January 19, 1989), 54 FR 2214 (January 19, 1989), 53 FR 34500 (September 1, 1988), 52 FR 45044 (November 24, 1987), 52 FR 26404 (July 14, 1987), 48 FR 50686 (November 2, 1983), 46 FR 7182 (January 22, 1981), and 44 FR 20372 (April 4, 1979).

2. New regulations in the San Joaquin valley and the South Coast Air Quality Management District now have a 0 pound per day threshold for BACT.

3. Based upon ARB staff evaluations of the San Diego County APCD, South Coast AQMD, Kern County APCD, and seven other local air pollution control district programs in California.

4. In some operations, such as mining operations in San Bernardino and Nevada Counties, emissions from heavy duty mobile equipment (e.g. bulldozers and earth movers) were included by the local agency in the CEI calculations. In general, the CEI may include emissions from heavy duty vehicles operating on-site solely for support of the stationary source. Emissions from light duty vehicles, such as automobiles or delivery vehicles, are generally not included in the CEI.

5. Based upon ARB staff evaluations of the Bay Area AQMD, San Diego County APCD, South Coast AQMD, Kern County APCD, and seven other local air pollution control district programs in California.

Hunt, Terrell F., Associate Enforcement Counsel, Air Enforcement Division, Office of Enforcement and Compliance Monitoring, U.S. Environmental Protection Agency, and John S. Seitz, Director, Stationary Source Compliance Division, Office of Air Quality Planning and Standards; Washington, D.C.; June 13, 1989.

U.S. Environmental Protection Agency (Region IX), California Air Resources Board, Bay Area Air Quality Management District, San Diego Air Pollution Control District, and South Coast Air Quality Management District (1990); Phase III SIP Strategy Effectiveness Study of the Aerospace Coating Industry; San Francisco, CA; scheduled for release in May 1990.

-----

*Randall Guensler is currently pursuing a Ph.D. in Civil Engineering at UC Davis, focusing on technical and policy issues associated with mobile and indirect source emission control strategies. He served as an Air Resource Engineer in the Compliance Division of the California Air Resources Board from 1985 to 1989, reviewing local agency air pollution control programs and regulations.*

-----

## REFERENCES

California Air Resources Board, Stationary Source Division, Project Assessment Branch (1988); *Emission Credit Systems and New Source Review Programs: A Report to the Legislature as Required by AB 2162* (Chaptered, 1987); Sacramento, CA; December, 1988.

Guensler, Randall (1989); *Preparation of Alternative Emission Control Plans for Surface Coating Operations*; Proceedings of the 1989 Air and Waste Management Association Annual Meeting in Anaheim, CA; Pittsburgh, PA; June 1989 (revised in August 1989, copies may be obtained directly from the author).

U.S. Environmental Protection Agency (1986); *Emission Trading Policy Statement*; Federal Register, Volume 51, No. 233; December 4, 1986; pp 43814-43860.

U.S. Environmental Protection Agency (1989); *Policy Memorandum: Guidance on Limiting Potential to Emit in New Source Permitting*;

