air pollution control district
SANTA BARBARA COUNTY

# Development near Busy Roadways: Guidance for Santa Barbara County
# June 2017

In April of 2017, the California Air Resources Board (CARB) released a Technical Advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways* (see ww2.arb.ca.gov/resources/fact-sheets/strategies-reduce-air-pollution-exposure-near-high-volume-roadways). The focus of the Technical Advisory is to identify strategies to help decrease air pollution exposure near freeways and high-volume roadways. These recommendations are based on health studies and on CARB's *Air Quality and Land Use Handbook* guidance.

This supplemental guidance highlights relevant sections of the Technical Advisory and provides additional context for Santa Barbara County.

**Public Health Impacts Near High-Volume Roadways**

Studies show that air pollution from major roadways can seriously affect the health of people in the communities nearby. While vehicle emission rates have declined over time due to increasingly stringent emissions standards for cars and trucks, recent studies continue to show high near-roadway concentrations and serious health impacts linked to traffic emissions. In fact, time-of-day studies have found that near-roadway pollution exposure has been previously underestimated.

In addition, vehicle standards primarily focus on reducing tailpipe emissions, but non-tailpipe particulate matter emissions – like road dust, tire wear, and brake wear – currently account for more than 90 percent of $PM_{10}$ and 85 percent of $PM_{2.5}$ emissions from traffic. Both epidemiological and toxicological studies show an association between these pollutants and cardiovascular and pulmonary effects.

In Santa Barbara County, Highway 101 is the only roadway considered a "high-volume roadway," defined as a roadway that has average daily traffic in excess of 50,000 vehicles in a rural area, or 100,000 vehicles in an urban area. Therefore, the Technical Advisory's strategies are applicable to development along Highway 101.

**Recommendations for New Development**

For new development being considered countywide, the Santa Barbara County Air Pollution Control District recommends that sensitive land uses such as residences, schools, day care centers, playgrounds, and medical facilities should not be sited within 500 feet of Highway 101. In addition, outdoor sports facilities and active outdoor recreation areas should not be sited within 500 feet of Highway 101. The District continues to recommend policies that require re-designing projects so that sensitive receptors are moved at least 500 feet away from Highway 101 to reduce potential health impacts. Commercial or visitor-serving land uses, with fewer long-term health implications, should be considered for locations closer to the freeway.

**Strategies to Reduce Health Impacts**

CARB's Technical Advisory highlights benefits of compact infill development, including facilitating active transportation, supporting transit operations, facilitating community connectivity, and furthering SB 375 greenhouse gas reduction goals. The Technical Advisory also acknowledges that there are existing

developments near high-volume roadways and many strategies included in the advisory apply to those areas as well.

However, as stated in the Technical Advisory (page four):

> "It is important to note that this Technical Advisory is not intended as guidance for any specific project, nor does it create any presumption regarding the feasibility of mitigation measures for purposes of compliance with the California Environmental Quality Act (CEQA)."

The Technical Advisory also notes the importance of the local context, and the fact that certain strategies may not be appropriate for specific locations.

While some of the strategies discussed in the Advisory would not apply to projects near Highway 101, measures that could potentially reduce air pollution exposure from Highway 101 include: ***solid barriers***, ***vegetation***, and ***high-efficiency filtration***.

Lead agencies should consider the following points regarding these potential strategies.

- In general, agencies need to consider the site-specific factors that may play a significant role in whether an exposure-reduction strategy will be effective without resulting in negative, unintended consequences. Agencies should consider topographical, meteorological, and time-of-day factors (e.g., roadway versus development height, wind direction, and pollution amounts and sources).
- As stated in the Advisory, health effects are related to a variety of conditions—not just emission rates and pollution concentrations—so it is difficult to draw conclusions about health outcomes based on the implementation of these strategies.
- Solid barriers and vegetation could have the effect of decreasing on-road pollution concentrations in some locations, while increasing them in other locations. Pollutants can concentrate and creep around gaps and edges of solid barriers. Gaps should be avoided and edges should be placed to minimize exposure to sensitive groups.
- If solid barriers disrupt network connectivity, they can increase vehicle miles traveled.
- The effects of vegetation barriers are mixed. Most studies that showed a beneficial impact were conducted on the East Coast and Europe where vegetation types and densities differ from California's. The greatest effectiveness has been observed with extremely dense vegetative stands that provide a solid barrier (with no gaps or edges, from ground-level to the top of the canopy).
- If particle filtration systems are implemented, higher efficiency filters (at least MERV 13 to MERV 16) should be installed.
- Regular operation and maintenance is necessary for highest filter and ventilation efficiency. These are difficult conditions to enforce for residential uses, as they depend on choices by individual residents. If people ventilate their residences with open windows or doors instead of using a mechanical ventilation system, the filtration system will not be effective. High-efficiency filter maintenance can be costly, and operating whole-house filtration systems can increase electrical costs.
- Gaseous pollutants, such as ozone, oxides of nitrogen, and volatile organic compounds pose health risks. Most filtration systems are not effective at reducing concentrations of gaseous pollutants.

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