

Clean Air Plan

for the

Tri-Valley Area

Livermore, Pleasanton, Dublin, Sunol

January 2004



The Clean Air Plan is a collection of voluntary measures developed specifically for the Tri-Valley Area.

Through the cooperation of citizens, businesses and governments in applying the measures of the Plan, clean air can be a reality in our communities.

**Commissioned by
Scott Haggerty**
First District Supervisor
Alameda County
Board of Supervisors
and Chair, Bay Area
Air Quality
Management District

Prepared by
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To view this Plan online, visit <http://www.acgov.org/board/district1/index.htm>



BOARD OF SUPERVISORS

SCOTT HAGGERTY
SUPERVISOR, FIRST DISTRICT

January 2004

Dear Tri-Valley Community Member:

Achieving and maintaining clean air in our region is a priority for all of us. To help meet this goal, I established a project to develop a Clean Air Plan for the Tri-Valley Area. The Plan is a collection of voluntary measures that improve air quality in our community.

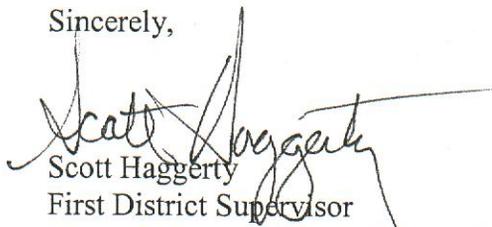
The measures contained in the plan may be implemented by local agencies, both small and large businesses and organizations, and citizens who work and live in the Tri-Valley. The plan also provides a description of the air quality in the Valley and the sources and impacts of pollution. The Tri-Valley's commitment to achieving and maintaining clean air quality will be vitally important as it contends with the impacts of projected population growth.

The Clean Air Plan also serves as a model for use by other communities in the Bay Area. We will all benefit as more communities throughout the region begin to formally adopt these voluntary measures.

Soon, I will be presenting the final Clean Air Plan to city councils in Livermore, Pleasanton and Dublin. I will request that they adopt the plan and implement the measures in a manner that is most effective for each community. The Plan will also be distributed to other public agencies in the Tri-Valley. Additional copies may be downloaded from my Alameda County web page at www.acgov.org/board/district1/index.htm and click on the "Clean Air Plan" icon.

I encourage you to examine the Clean Air Plan and to consider what measures you, your family or your organization is willing to implement. Working together, we will be able to maintain air quality that is clean and healthy for all of us.

Sincerely,



Scott Haggerty
First District Supervisor
Alameda County Board of Supervisors
Chair, Bay Area Air Quality Management District

Clean Air Plan for the Tri-Valley Area Livermore, Pleasanton, Dublin, Sunol

January 2004

TABLE OF CONTENTS

Executive Summary	2
Air Quality in the Tri-Valley Area: Causes, Effects and Current Status	6
Voluntary Clean Air Measures	14
Technology	15
Transportation	20
Land Use	26
Public Education	28
Appendix, Acronyms	30

EXECUTIVE SUMMARY

The quality of the air we breathe is a vital concern for all Americans. The very young and the very old are especially vulnerable, but even healthy young adults suffer as well. Air pollution causes respiratory problems, hospitalization for heart or lung disease, and even premature death. In addition, poor air quality affects our ability to see our vistas and landmarks and can impact aquatic life, vegetation, and animals.

Fortunately, air quality in the Bay Area and the Tri-Valley Area has improved greatly in the past 30 years, thanks to aggressive control programs adopted by government agencies and the voluntary efforts of the area's citizens. However, still more needs to be done to achieve all the health-based air quality standards. Maintenance of these standards will be even more difficult in light of the anticipated population growth and the resulting pollution from more vehicles and economic activity. Under the Clean Air Act, failure to make adequate progress in attaining and maintaining the standards can also jeopardize Federal transportation funding to the Bay Area.

Tri-Valley Area Air Quality

The Tri-Valley Area, in particular, is at high risk because most violations of the ozone air quality standards in the Bay Area occur at the Livermore monitoring station. The Tri-Valley Area is now a major residential and employment center in its own right, in addition to being downwind of several major freeways and industrial areas. The mountains surrounding the Tri-Valley Area tend to trap pollutants so when weather conditions are right, such as very hot summer days or very cold winter nights, the emissions from vehicles and other activities create unhealthy air that sometimes exceeds the standards.

The Bay Area Air Quality Management District (BAAQMD), the Air Resources Board (ARB) of California, and the United States Environmental Protection Agency (EPA) all have different and complementary responsibilities in cleaning up and protecting our air quality.

The BAAQMD (<http://www.baaqmd.gov>) is responsible for adopting plans, programs and regulations that reduce air pollution from factories and other stationary sources and works with local governments and transportation agencies to reduce pollution from

various transportation sources. The BAAQMD is a regional agency with jurisdiction over the following nine Bay Area counties: San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, Napa, and portions of Sonoma and Solano. ARB of California (<http://www.arb.ca.gov>) is responsible for adopting emission standards for new vehicles and off-road equipment; and provides funding, technical guidance and support to the BAAQMD and local governments. The U.S. EPA (<http://www.epa.gov>) is responsible for implementing the Clean Air Act across the country and adopts national health-based ambient standards, adopts emission regulations for vehicles and fuels, adopts minimum performance standards for state and local governments, and then provides oversight of their performance.

Health Standards Can Be Achieved Through Voluntary Actions

The clean air plans and regulations adopted by the BAAQMD, and approved by ARB of California and the U.S. EPA, are extremely comprehensive—addressing big and small stationary sources as well as on- and off-road mobile sources. However, because achieving and maintaining the health standards is so difficult, voluntary actions by citizens, businesses, cities, and counties are needed to build on and enhance these mandatory, regulatory programs.

In early 2003, at the request of the First District Supervisor Scott Haggerty, the Alameda County Board of Supervisors approved funding to develop a *Clean Air Plan for the Tri-Valley Area*. A draft Plan was prepared in June 2003 and distributed to key stakeholders in the Tri-Valley Area. As many Valley stakeholders as possible were contacted to explain the purpose and elements of the draft Plan and to receive feedback about how the Plan could be improved. The Plan that follows reflects their review and incorporates their specific suggestions for improvement. During the discussions, it became clear that the stakeholders of the Valley are already implementing many of these measures. This is evidence of the commitment of the Tri-Valley Area to clean air and bodes well for the future implementation of the suggested measures in this Plan. This Plan is also intended as a model for the Bay Area as a whole. Government, employers, and residents of other communities beyond the Tri-Valley Area can hopefully benefit from it as well.

The Clean Air Plan Provides Valuable Resources

The *Clean Air Plan* is a collection of voluntary measures that have been developed specifically for the Tri-Valley Area. Implementation of these measures will be a step towards reducing high levels of ozone and particulate matter (PM), resulting in cleaner air and fewer excesses of the standards. These measures are organized in four categories:

Technology measures that rely on technological devices or cleaner fuels to reduce emissions from sources; for example, conversion of a vehicle to burn natural gas instead of gasoline.

Transportation control measures that improve or modify a transportation system or element to reduce emissions from vehicles; for example, improving mass transit opportunities.

Land use measures that modify or improve land use policies or plans to minimize emissions generation from vehicles and other human activities; for example adoption of smart growth policies by local government.

Public education measures that seek to educate citizens about what they can do to reduce pollution; for example, using environmental education curriculum in K-12 schools.

A brief description of each measure is provided, as well as identification of the entity that would most likely implement the measure, the pollutant addressed, and potential funding sources. More detailed information about each of the measures, including the experiences of other cities and government agencies in implementing similar measures, can be accessed through the websites listed.

In addition to the measures, there is an overview of the air quality setting in the Tri-Valley area, along with a description of the ozone and particulate standards. Finally, the appendix defines and explains the acronyms used throughout the Plan.

If you are interested in accessing this plan electronically, please visit the Alameda County website at <http://www.acgov.org/board/district1/index.htm>. Click on the link to the *Clean Air Plan*.

What Can You Do To Help?

Although one-third of these measures are already being implemented, additional effort is needed in the Tri-Valley Area to reduce harmful levels of air pollution. Therefore, as a next step, all stakeholders should review the Plan to identify which measures they would find useful in their area. In some cases, special resources (identified in the Plan) may be available to help fund some of the measures.

The goal is that cities and other agencies adopt this Plan and implement as many measures as possible. Existing and new employers should be encouraged to implement those measures that are applicable to their specific situations. And finally, key to effectively maintaining clean air quality will be the acceptance and participation by residents in implementing appropriate measures in the Plan.

The Plan should be considered to be a work in progress. As new measures or technologies become available, they should be incorporated into the Plan. Through the cooperation of citizens, businesses and governments in implementing the measures of the Plan, clean air can be a perpetual reality in the Tri-Valley Area.

AIR QUALITY IN THE TRI-VALLEY AREA: CAUSES, EFFECTS AND CURRENT STATUS

Introduction

Breathing air pollution such as ozone (a primary ingredient in urban smog), particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead can have numerous effects on human health, including respiratory problems, hospitalization for heart or lung disease, and even premature death. Some can also have effects on aquatic life, vegetation, and animals. The U.S. Environmental Protection Agency and the California Air Resources Board have established National and State Ambient Air Quality Standards for these pollutants to protect human health and our ecology. The primary pollutants affecting air quality in the Bay Area are ground-level ozone and particulate matter.

The Tri-Valley Area, in particular, is at high risk because most violations of the ozone air quality standards in the Bay Area occur at the Livermore monitoring station. Violations of the particulate matter standard are also seen at the Livermore station. The Tri-Valley Area is now a major residential and employment center in its own right, in addition to being downwind of several major freeways and industrial areas. The mountains surrounding the Tri-Valley Area tend to trap pollutants so when weather conditions are right, such as very hot summer days or very cold winter nights, the emissions from vehicles and other activities create unhealthy air that often exceeds the standards.

Why does the Livermore Valley have a tendency to have higher air pollution levels than the surrounding areas?

The Livermore Valley is a sheltered, inland valley with 1,000 to 1,500 foot hills on its eastern and western slopes and 3,000 to 3,500 foot high mountains on its south side. Due to its topography, the potential for elevated pollution levels increases when the air is stagnant and the temperatures are high. Winds from the west pick up ozone precursor pollutants as they move across the cities around the San Francisco Bay and carry them into the Livermore Valley. Locally generated emissions, added to these pollutants, are transformed into ozone during the hot, sunny days that are common to this area. When the area is under a high-pressure system, light winds combined with an inversion, act to trap the pollutants within the valley, resulting in ozone levels above

national standards. Air quality, overall, has improved in the Livermore Valley with excesses of the one-hour federal ozone standard declining from over 50 days in the late 1960's to one or two days per year in recent years.

During the winter months in the Livermore Valley, strong high-pressure systems sometimes develop, leading to the formation of surface-based temperature inversions. Pollutants such as particulate matter (PM)—from motor vehicles, fireplaces and agricultural burning—can build up and become trapped close to the ground. PM concentrations are highest at night and in the early morning hours, especially on clear, calm, cold nights.

OZONE

Ozone (O₃) is a gas composed of three oxygen atoms. It is not usually emitted directly into the air, but is created at ground level by a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of heat and sunlight.

VOC + NO_x + Heat + Sunlight = Ozone

Ozone has the same chemical structure whether it occurs miles above the earth or at ground level and can be "good" or "bad," depending on its location in the atmosphere. "Good" ozone occurs naturally in the stratosphere approximately 10 to 30 miles above the earth's surface and forms a layer that protects life on earth from the sun's harmful rays. In the earth's lower atmosphere, ground-level ozone is considered "bad." Motor vehicle exhaust and industrial emissions, combustion, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOC that form ozone. Sunlight, hot weather and low wind cause ground-level ozone to form in harmful concentrations in the air. As a result, it is known as a summertime air pollutant. Many urban areas tend to have high levels of "bad" ozone, but even rural areas are also subject to increased ozone levels because wind carries ozone, and pollutants that form it, hundreds of miles away from their original sources.

The pie charts in Figure 1 show the breakdown of NO_x and VOC emissions for Alameda County. Note that the vast majority of NO_x emissions (91%) come from mobile sources. On-road mobile sources include cars, trucks, and buses. Off-road mobile sources include construction equipment, boats and aircraft. For VOC, the majority of emissions also come from mobile sources. Industry also contributes a significant portion of VOC emissions.

Emissions Profile for Alameda County

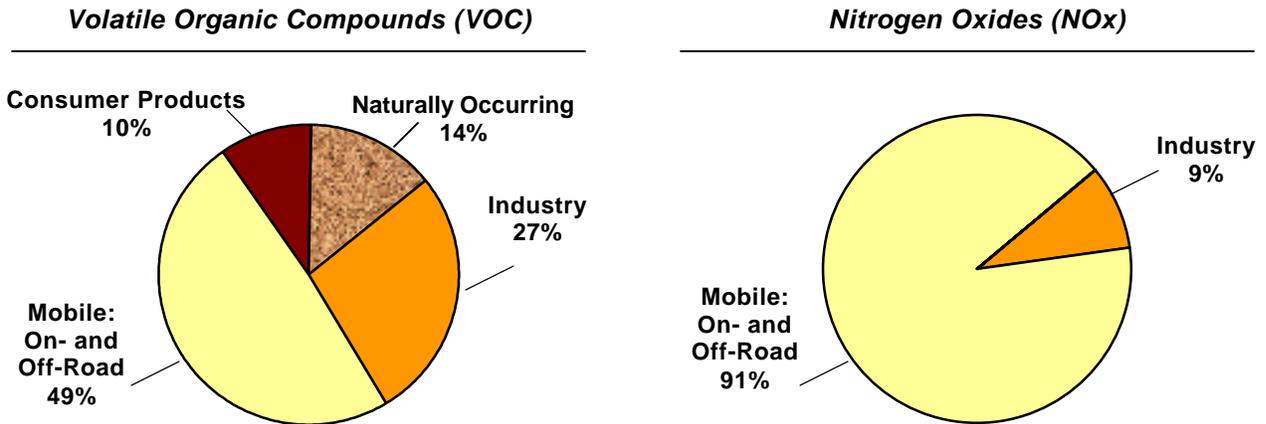


Figure 1
VOC + NOx + Heat + Sunlight = Ozone
 These charts illustrate the greatest contributors of VOC and NOx emissions in Alameda County, leading to ground-level ozone and unhealthy air.

Source: BAAQMD

Federal 1-Hour Ozone Level Standard: Number of Excesses per Year

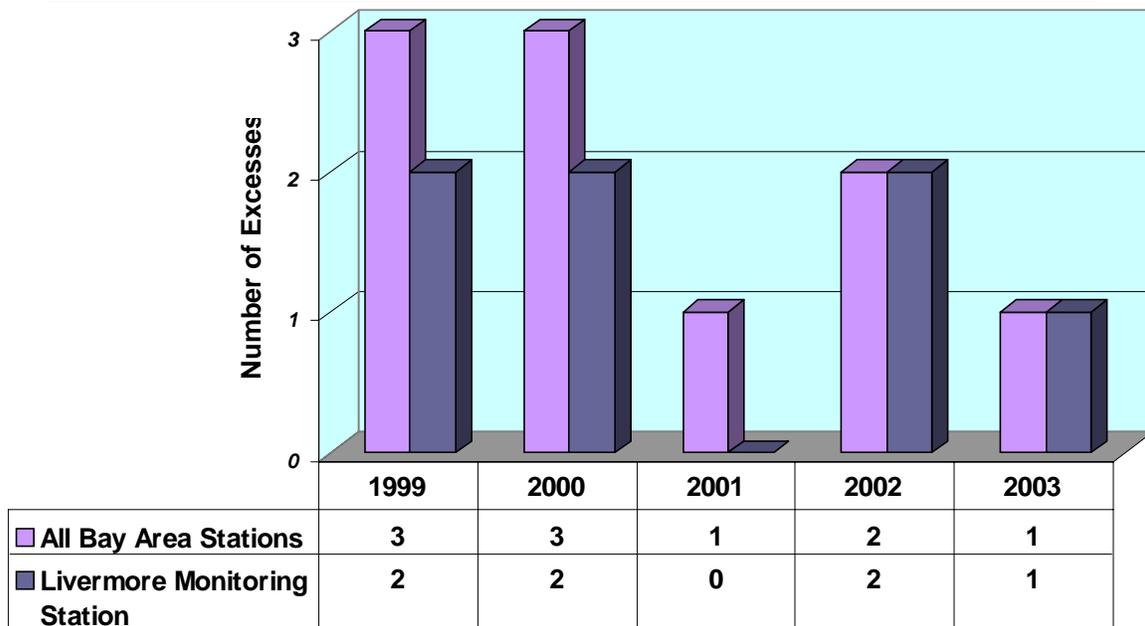


Figure 2
 Source: BAAQMD
 This chart illustrates the number of excesses of the Federal 1-Hour Ozone Standard in the Bay Area and in Alameda County, and to what degree Alameda County contributed to Bay Area excesses. For example, based on monitoring station readings, in 1999 and 2000 Alameda County created two of the three Bay Area ozone excesses. In 2001 Alameda County created no excesses, while in 2002 and 2003 was solely responsible.

As Figure 2 illustrates, the number of excesses of the Federal 1-Hour Ozone Standard in the Bay Area is decreasing. An exceedance occurs when ozone levels are above the standard for more than 60 consecutive minutes on any day at any monitoring station. Most of these excesses in the Bay Area occur in Livermore. This is due in part to Livermore's location (downwind from several major freeways and industry). It is also due to the very warm weather found in the Tri-Valley region. Ozone is formed on very hot summer days. Typically, these are days when the temperature is near or exceeding 100 degrees in the Tri-Valley Area.

Effects of Ground-Level Ozone on Human Health and the Environment:

Health Problems - *even at low levels, ozone can adversely affect everyone.*

- Ozone can irritate lung airways and cause inflammation much like a sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people that are active outdoors can be affected when ozone levels are high.
- Repeated exposure to ozone pollution for several months may cause permanent lung damage. Anyone who spends time outdoors in the summer is at risk, particularly children and other people who are active outdoors.
- Even at very low levels, ground-level ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis.

Plant and Ecosystem Damage

- Ground-level ozone interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, other pollutants, and harsh weather.
- Ozone damages the leaves of trees and other plants, ruining the appearance of cities, national parks, and recreation areas.
- Ozone reduces crop and forest yields and increases plant vulnerability to disease, pests, and harsh weather.

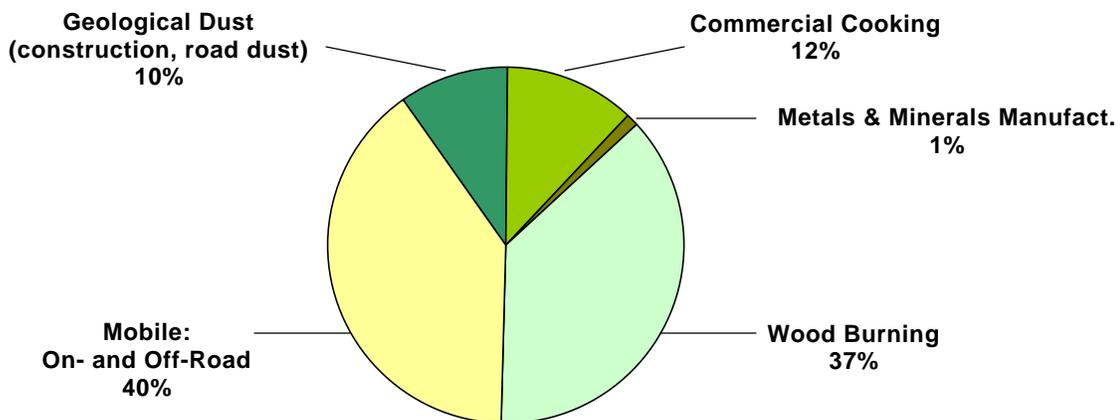
PARTICULATE MATTER

Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Particles can be suspended in the air for long periods of time. Some particles are large or dark enough to be seen as soot or smoke. Others are so small that individually they can only be detected with an electron microscope. Fine particulate matter is of greatest concern because it can bypass the body’s natural filtration systems and lodge deep in the lungs.

Some particles are directly emitted into the air. They come from a variety of sources such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood. Other particles may be formed in the air from the chemical change of gases. They are indirectly formed when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants, and in other industrial processes. The pie chart in Figure 3 shows the contribution of particulate emissions in Alameda County.

Emissions Profile for Alameda County

Particulate Matter



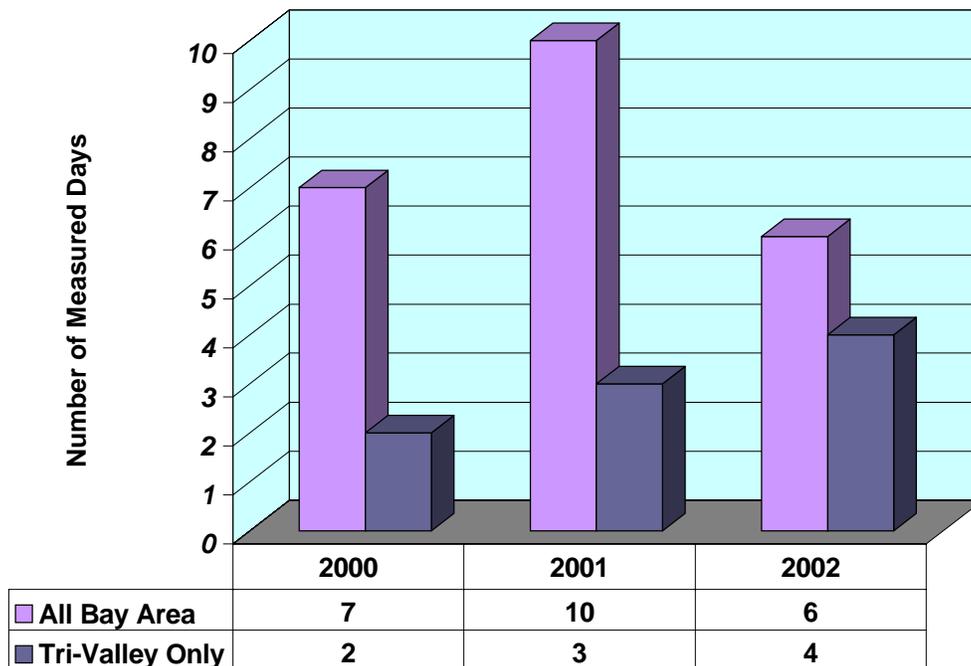
Source: BAAQMD

Figure 3

This chart illustrates the greatest contributors of particulate matter in Alameda County. Particulate excesses occur in the winter on cold, still days.

As Figure 4 below illustrates, the number of excesses of the State Particulate Matter Standard (PM10) is holding steady at 2-4 per year for the Tri-Valley Area. "PM 10" stands for "Particulate Matter less than 10 microns in size." Ten microns is roughly one-tenth the diameter of a human hair. These very small particles can penetrate deeply into lung tissue where they can adversely affect our health. Excesses of this standard occur not only in the Tri-Valley Area, but also at other inland valley locations in the Bay Area. The mountains in these areas tend to trap the pollutants. Strong inversions also trap pollutants near the surface. While ozone excesses occur on hot summer days, particulate excesses occur in the winter on cold, still days. Days with strong inversions are conducive to high levels of pollution. Strong inversions occur in the winter, and trap the pollutants near the ground, where we breathe them. These strong inversions can last several days at a time.

***California 24-hour Particulate Matter (PM) 10 Standard:
Number of Measured Days Exceeding the Standard***



Source: BAAQMD

Figure 4

The number of measured excesses of the California 24-hour PM Standard in the Bay Area and Livermore. For example, in 2000 Alameda County created two of the seven excesses of particulate matter. (Note: Sampling does not occur every day. Therefore, the number of excesses may be more than measured.)

Effects of Particulate Matter on Human Health and the Environment:

Health Problems

Many scientific studies have linked breathing PM to a series of significant health problems, including:

- aggravated asthma
- increased respiratory symptoms like coughing and difficult or painful breathing
- chronic bronchitis
- decreased lung function
- premature death

Visibility Impairment

PM is the major cause of reduced visibility (haze) in parts of the United States, including many of our national parks.

Atmospheric Deposition

Particles can be carried over long distances by wind and then settle on ground or water. The effects of this settling include:

- making lakes and streams acidic
- changing the nutrient balance in coastal waters and large river basins
- depleting the nutrients in soil
- damaging sensitive forests and farm crops
- affecting the diversity of ecosystems

Aesthetic Damage

Soot, a type of PM, stains and damages stone and other materials, including culturally important objects such as monuments and statues.

GROWTH AND AIR QUALITY

Air quality in the Bay Area and the Tri-Valley Area has improved greatly in the past 30 years, thanks to aggressive control programs adopted by government agencies and the voluntary efforts of the area's citizens. However, still more needs to be done to achieve all the ambient air quality standards. Maintenance of these standards will be even more difficult in light of the anticipated population growth and the resulting pollution from more vehicles and economic activity.

More people are choosing to live and work in the Tri-Valley area, and more people are commuting through this area on their way to work. This means more cars on the road, which means our total vehicles miles traveled is increasing. We are driving our cars further and further each year. Many people have daily commutes that are as long as two hours. As Figures 5 and 6 indicate, the population and vehicle miles traveled for the Tri-Valley Area have increased substantially during the past several years, and are projected to continue to grow.

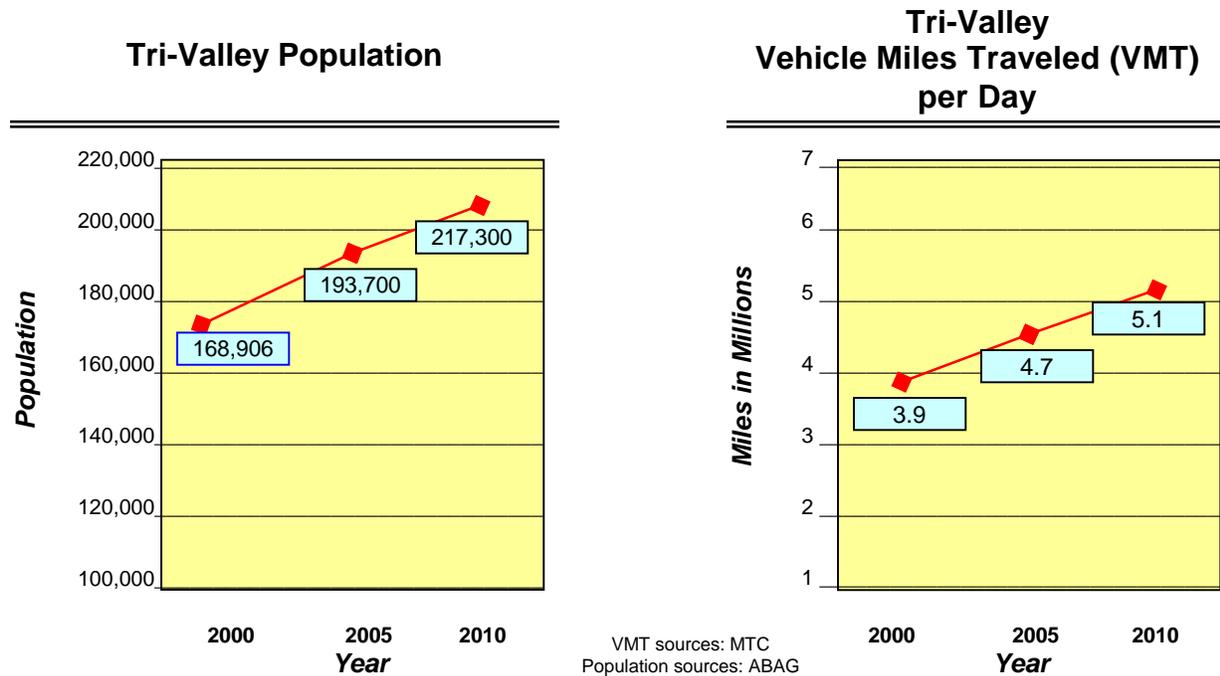


Figure 5

Figure 6

These charts illustrate the increase in population and vehicle miles traveled (VMT) in the Tri-Valley Area.

Therefore, even though the emissions of individual cars will continue to decrease in the years ahead (due to much cleaner engines in newer vehicles), the increase in the total number cars and vehicle miles traveled will make achieving and maintaining the standards very challenging. Also, because much of the PM10 emissions from motor vehicles come from road dust kicked up as the vehicles travel rather than out of the tailpipe, increases in VMT will result in increased emissions of PM10, regardless of cleaner engine technology. On a positive note, transportation and transit improvements planned for the I-580 and I-680 corridors, such as HOV/Smart lanes and expanded rail and bus service, will help to address the air quality in the long term.

VOLUNTARY MEASURES FOR CONSIDERATION

The *Clean Air Plan* is a collection of voluntary measures that have been developed specifically for the Tri-Valley Area. These measures are organized in four categories: technology, transportation, land use, and public education. To assist you in taking action to safeguard your community's air quality, this Plan includes:

- Clean air measures for each category.
- Brief description of each clean air measure.
- Identification of the air pollutant(s) reduced by the measure.
- Identification of the entity (ies) likely to implement the measure.
- Possible funding sources for many of the measures.
- Websites containing more detailed information about each of the measures, including the experiences of other cities and government agencies implementing similar measures. Accessing an electronic version of the Plan will allow you to hotlink directly to these websites. Easy access to an electronic version can be found at Supervisor Haggerty's website at: <http://www.acgov.org/board/district1/index.htm>. Click on the link to the *Clean Air Plan*.

TECHNOLOGY

TECHNOLOGY

TECH 1. Purchase Low Emission Vehicles (SULEV or best available)

When replacing or adding gasoline-powered vehicles to fleets, employers should maximize percentage of SULEVs, PZEVs and/or ZEVs¹ (or lowest-emitting available alternative) purchased. In general, SULEVs and PZEVs should be able to perform most average tasks and will result in substantial emission reductions compared to regular certified models.

Pollutant: VOC/NOx/PM

Applies to: Vehicle Fleets

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources:

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>;

http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf;

<http://www.airquality.org/modelord/index.shtml>

TECH 2. Lawnmower and Garden Equipment Trade-in Program

Cities and/or county could establish a subsidy/rebate program for residents to trade-in their existing two and older four-stroke off-road engines such as lawn, garden and other maintenance utility equipment for replacement with four stroke engines or electric motors. By taking such engines permanently out of service, emissions will be substantially reduced.

Pollutant: NOx/VOC

Applies to: Tri-Valley Residents

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources:

References:

<http://www.deq.state.ok.us/AQDnew/whatsnew/SIP/EAC.htm>;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>

TECH 3. Purchase Alternative Fuel (CNG, LNG, LPG) or Electric Vehicles

When replacing or adding to fleets, employers should strongly consider purchasing alternative fuel and electric vehicles. These vehicles are especially appropriate where fleet equipment operates in defined areas or campuses and refueling or charging is easily accomplished at the home work site. CNG, LNG and LPG² all can be used in heavy-duty applications and produce less NOx emissions than diesel engines.

Pollutant: VOC/NOx/PM

Applies to: Vehicle Fleets

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources: Clean Cities (DOE program); TFCA (vehicle registration fund); Lower-Emission School Bus Program; Vehicle Incentive Program

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>;

<http://www.cityofla.org/EAD/EADWebAQD/AlternativeFuelMobile.htm>;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>;

http://www.greatvalley.org/oca/action_plan.pdf;

http://www.the-partnership.org/about_us.htm;

http://www.aqmd.gov/aqmp/docs/Draft_CHAP7.pdf

TECH 4. Woodstove/Fireplace Replacement

Incentives/rebates to replace non-EPA certified stoves with natural gas stoves. Also retrofit woodburning fireplaces to burn natural gas.

Pollutant: PM

Applies to: Tri-Valley Residents

Additional Organizations Involved: City & County Government; BAAQMD incentive programs/model ordinance

Potential Funding Sources:

References:

<http://www.sparetheair.org>

¹ SULEV: Super Ultra Low Emission Vehicle; PZEV: Partial Zero Emission Vehicle; ZEV: Zero Emission Vehicle

² CNG: Compressed Natural Gas; LNG: Liquid Natural Gas; LPG: Liquid Propane Gas

TECHNOLOGY

TECH 5. Encourage Private Sector Fleets to Purchase Alternative Fuel Vehicles

Using their own programs as a model, the cities could establish programs to encourage large employers to include alternative fuel and electric vehicles in their fleets. Shared infrastructure for refueling stations and recharging stands could help to facilitate such programs for both cities and the private sector.

Pollutant: VOC/NOx/PM

Applies to: Private companies or large non-profits

Additional Organizations Involved: City of San Francisco

Potential Funding Sources:

References:

http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm

TECH 6. Heavy Duty Diesel Retrofits

Emissions from existing diesel engines can be substantially reduced by the use of emulsified diesel fuel, which can be used without modification to the engine. Aftertreatment devices, which are add-on traps and catalysts not requiring substantial engine modification, are now readily available for many diesel highway trucks and much off-road equipment. Both emulsified fuel and add-on devices reduce NOx and PM emissions substantially.

Pollutant: NOx/PM

Applies to: Cities, Counties, School District and Employer-Owned Fleets

Additional Organizations Involved: Texas Council on Environmental Quality, Houston

Potential Funding Sources: TFCA; Lower-Emission School Bus Program; Carl Moyer Program

References:

http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Overview.shtml>;

http://www.greatvalley.org/oca/action_plan.pdf;

<http://www.epa.gov/otaq/retrofit/overview.htm>;

http://www.pscleanair.org/dieselsolutions/ds_overview.shtml

TECH 7. Exceptional Vehicle Maintenance

Proper maintenance of fleets can reduce fuel demand up to 15 percent and reduce emissions by insuring vehicles are operating as designed. Timely preventive maintenance includes regular tune-ups, filter replacements, and engine diagnostics.

Pollutant: VOC/NOx/PM

Applies to: City/County-Owned Fleets

Additional Organizations Involved: City of Austin

Potential Funding Sources:

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereducti on.pdf>

TECH 8. Establish Funding Incentive Program for Private On-Road Trucks

This measure would be modeled after the Port of Oakland, Sacramento SECAT and South Coast Gateway Cities programs that fund replacement and scrappage of old diesel trucks (pre-1984) with newer less polluting models (1994 or newer used trucks). Participants in the program are partially reimbursed for the cost of purchasing newer diesel trucks that are more reliable, cleaner, and fuel efficient.

Pollutant: NOx/PM

Applies to: Independent Truck Owners

Additional Organizations Involved: Port of Oakland, Sacramento; Gateway Cities (Los Angeles County)

Potential Funding Sources: TFCA; CMAQ; special state &/or Federal appropriation

References:

<http://www.4secat.com>;

<http://www.gatewaycog.org/cleanairprogram/index.html>

TECHNOLOGY

TECH 9. Green Contracting Ordinance

The cities and county could adopt policies requiring contractors (including garbage disposal) to procure and to operate alternative fuel of super ultra low-emission gasoline vehicles (SULEV), and ARB certified off-road equipment and heavy-duty on-road trucks that have been equipped with ARB verified emission control devices. In addition, municipal contracts could require bidders to agree to specifications that require specified actions on Spare-the-Air days, enhancements for carpooling and mass transit for their employees, and other measures that parallel those implemented by the cities themselves.

Pollutant: VOC/NOx/PM

Applies to: City/County Contractors Fleets

Additional Organizations Involved: City of Austin, Tulsa Area

Potential Funding Sources:

References:

<http://www.airquality.org/modelord/index.shtml>;
<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>;
http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf;
<http://www.deq.state.ok.us/AQDnew/whatsnew/SIP/documents/Tulsastrategies.doc>

TECH 10. Diesel Locomotive Retrofits

Emissions from existing diesel locomotive engines can be substantially reduced by the use of emulsified diesel fuel, which can be used without modification to the engine.

Aftertreatment devices, which are add-on traps and catalysts not requiring substantial engine modification, could also be explored for locomotives as well. Both emulsified fuel and add-on devices reduce NOx and PM emissions substantially.

Pollutant: VOC/NOx/PM

Applies to: Commuter and freight railroads

Additional Organizations Involved: Joint Powers Agencies

Potential Funding Sources: CMAQ, Carl Moyer Program

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>;
http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf

TECH 11. Establish Police Bicycle Patrols

This measure would replace motor vehicles for community policing, parking enforcement, park ranger patrols and security patrol. The primary goal would be to generate reductions in motor vehicle emissions and VMT through the use of bicycles in place of motor vehicles. In addition to this primary goal, the cities would also lower maintenance costs and improve community and public relations. Bicycle officers are often viewed as more approachable by the public than officers in motor vehicles. This improved public interaction can help to improve officer morale, decrease sick-time, and increase productivity.

Pollutant: VOC/NOx

Applies to: City/County Police Departments

Additional Organizations Involved: City of Livermore

Potential Funding Sources:

References:

<http://www.cityofla.org/EAD/EADWeb-AQD/bikepatrols.htm>;
http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm

TECH 12. Two Stroke Small Engine Program

Handheld and non-handheld lawn and garden equipment account for over 75% of the population of small off-road equipment. A program to upgrade such utility equipment with four stroke engines or electric motors would substantially reduce pollution. Likewise, limiting or deferring the use of this equipment on Spare-the-Air days should be a city and employer policy.

Pollutant: NOx/VOC

Applies to: Lawn and garden equipment

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources:

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>

TECHNOLOGY

TECH 13. Gas Can Trade-in Program

Replacing portable gas cans, like those used to fuel lawnmowers, with ARB-compliant cans substantially reduces VOC emissions. The cities could address this issue by conducting programs that allow citizens to trade in old gas cans and in return receive a rebate, discount or even free environmentally friendly cans. Also, ensuring city workers have low emitting gas cans with a city logo on them, would help spread the word that they are environmentally designed.

Pollutant: VOC

Applies to: Tri-Valley Residents; City & Employer Fleets

Additional Organizations Involved: City & County Government/Chicago

Potential Funding Sources:

References:

http://www.cleanaircounts.org/default.cfm?page=strategies&strategy=gascan_b

TECH 14. Replace or Retrofit Streetsweepers

Purchasing new EPA-certified PM10 efficient street sweepers, rather than the traditional rotary brush sweepers, would reduce dust on roadways without sending particles into the air. Emissions from the engines could also be reduced by purchasing new alternative fueled sweepers or retrofitting existing sweepers.

Pollutant: NOx/PM

Applies to: City/County-Owned Equipment

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources: TFCA

References:

TECH 15. Clean Air Consortium

The BAAQMD is asking public agencies to participate in this consortium, and to voluntarily reduce activities that pollute on Spare the Air Days. Activities include: rescheduling the use of gasoline powered lawn and garden equipment (electric equipment is ok), rescheduling surface coating and painting projects, and postponing refueling vehicles until the end of the day. Cities are encouraged to "sign on" to this voluntary agreement, and to help publicize their participation in this effort.

Pollutant: NOx/VOC/PM

Applies to: City/County-Owned Equipment and Fleets

Additional Organizations Involved: Bay Area cities and counties; BAAQMD

Potential Funding Sources:

References:

<http://www.sparetheair.org>;

http://www.co.marin.ca.us/EFiles/BS/AgMn/03_0715/html/Item-CA-2b-memo.pdf;

http://www.co.sanmateo.ca.us/bos.dir/BosAgendas/agendas2003/currentagenda/20030812_r_12.htm;

Clean Air Consortium Checklist

TECHNOLOGY

TECH 16. Clean Construction Equipment

Retrofitting construction equipment with controls reduces NOx and particulates. Most development projects are done in or near town. Controls would reduce smoke and odor from this equipment during operation. Also, development agreements could specify that only ARB compliant equipment could be used during construction with additional retrofits added.

Pollutant: NOx/PM

Applies to: Developers

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources: Carl Moyer Program

References:

http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>;

<http://www.epa.gov/otaq/retrofit/overview.htm>;

http://www.pscleanair.org/dieselsolutions/ds_overview.shtml

TECH 17. Good Fueling Practices

Entities would adopt policies for employees to refuel later in the day, avoid topping off the tank, and make sure the nozzle is fully drained before removing from the vehicle. Reducing spillage during fueling will reduce VOC emissions from both gasoline and diesel fueling. Fueling vehicles later in the day reduces the potential for ozone, because the emissions take several hours to form, and need high temperatures. Fueling in the evening means lower temperatures, and less sunlight.

Pollutant: VOC

Applies to: Fleets owned by Cities/Counties & large employers

Additional Organizations Involved: Air Quality Agencies, and many others

Potential Funding Sources:

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>

TRANSPORTATION

TRANSPORTATION

TRAN 1. Telework

Teleworking, also known as telecommuting, replaces travel to, from and for work with telecommunications technologies. It refers to working at home or another location on a full- or part-time basis. Many employees telework only once or twice per week. On the other hand, some employees telework full time and only go to the office on an occasional basis. Even part-time telecommuting reduces auto use and emissions.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: City & County Employers, Private Employers, and many others

Potential Funding Sources:

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>;

http://www.the-partnership.org/about_us.htm;

http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf

TRAN 2. Compressed Work Week

Allows eligible employees to work a compressed schedule, typically four 10-hour days with the fifth day off or nine nine-hour days over two weeks. Commute trips are reduced. Sensitive timekeeping issues include overtime, vacation and holiday scheduling. Reduces VMT by up to one round trip per week.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: City & County Employers, Private Employers, and many others

Potential Funding Sources:

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Overview.shtml>;

http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf

TRAN 3. Carpool/Vanpool/Transit Promotion

Employers can aggressively recruit participants for vanpools and carpools by establishing in-house coordinators or utilizing the RIDES Bay Area matching service. Other incentives include financial incentives and preferred parking for carpool vehicles. Employers and public agencies can also establish "Guaranteed Ride Home Programs" for emergencies to encourage employee use of carpooling and mass transit.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: Rides for Bay Area Commuters, City & County Employers, Private Employers, and many others

Potential Funding Sources:

References:

<http://www.rides.org/main/index.htm>;

<http://www.511.org>;

http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm

TRAN 4. Transit Financial Incentives Program

Employers can subsidize employees' monthly transit passes or provide pre-tax payroll deduction programs. Commuter Checks are vouchers, provided by the employers, that may be redeemed for transit passes and tickets. Employer subsidies and pre-tax deductions are very effective in promoting transit use. For example, Pleasanton offers a Financial Incentives Program to its city employees. Any employee who opts to use alternative modes of transportation to get to work is given \$2.00 per day. This program is very successful, with 25 - 30% of Pleasanton City staff using alternative modes.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: Commuter Check; Rides for Bay Area Commuters, City & County Employers, Private Employers, and many other areas

Potential Funding Sources: Alameda County CMA

References:

<http://www.commutercheck.com/home.html>;

http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm

TRANSPORTATION

TRAN 5. Bicycle & Pedestrian Infrastructure Improvements

By providing improved bike & pedestrian amenities such as bike racks, bike lanes and paths, upgraded sidewalks, crosswalks, and showers/lockers at work sites, local governments, employers, and others can encourage walking and biking as viable transportation options. Walking and biking can reduce auto use for trips to work, to school, to shops and services, and other destinations.

Pollutant: VOC/NOx/PM

Applies to: Cities, Tri-Valley Residents, Employees & Visitors

Additional Organizations Involved: City & County Employers, and many others

Potential Funding Sources: TFCA, TLC

References:

<http://bicycling.511.org/>;

<http://www.baaqmd.gov/pln/polprevent/bicycles.asp>;

http://www.vtpi.org/0_nmt.htm

TRAN 6. Car Sharing Programs

Car share programs allow you to use a car when you need it without incurring the fixed costs. You pay for just the time you use the car and the miles you drive. Without the incentive to drive as much as possible--and with the means to pay just the incremental costs of each individual trip--it makes sense to choose different modes of transportation based on the specific requirements of each trip. Car-sharing promotes fair competition between modes of transportation by removing the incentive to drive and by making visible the real costs of each car trip. Additional programs could be modeled on the successful Livermore car-sharing program operated with LLL and Sandia.

Pollutant: VOC/NOx/PM

Applies to: Public & Private Employers

Additional Organizations Involved: City Carshare

Potential Funding Sources: TFCA

References:

<http://www.citycarshare.org/about/>;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>

TRAN 7. Parking Incentives

Parking Cash-Out programs offer monthly cash payments to employees who receive subsidized parking and are willing to forego a parking space to encourage them to not use their cars for commuting. Successful parking cash-out programs can also result in net savings to the employer, as fewer leased parking spaces are required. State law requires certain employers to offer parking cash out programs to their employees. The Alameda County CMA has implemented a parking cash-out demonstration program. Other parking incentive measures include preferred parking for ridesharers.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: City & County Employers; Private Employers

Potential Funding Sources:

References:

<http://www.arb.ca.gov/planning/tsaq/cashout/cashout.htm>;

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>

TRAN 8. Trip-Appropriate Vehicles ("Right-Sizing")

Employer policies could be established that the most efficient vehicle possible should be selected for each staff trip, based on the number of passengers, weight of cargo, and likelihood of off-road use. Vehicles used for City/County business should default to a compact size car or SULEV unless a larger size vehicle is absolutely required for the particular job. Smaller cars and SULEV's produce fewer emissions per trip or mile.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: City of Austin

Potential Funding Sources:

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>

TRANSPORTATION

TRAN 9. Congestion Relief Improvement Projects

Cities should continue to install medians, left turn lanes and signals, rapidly clear traffic accidents, and provide advance notice of construction detours to improve traffic flow in their jurisdictions. They also should continue to implement their joint project for regional signal timing to improve traffic flow through the entire valley. Decreased stop-and-go and idling reduces emissions. When providing such improvements, safety improvements, safety for pedestrians and cyclists must be assured.

Pollutant: VOC/NOx/PM

Applies to: Tri-Valley Residents & Visitors

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources: CMAQ; TFCA

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>;

<http://66.42.64.231/oca/index.aspx>;

http://www.the-partnership.org/about_us.htm;

http://www.aqmd.gov/aqmp/docs/Draft_CHAP7.pdf

TRAN 10. Increase Number of City Services Available by Phone or Electronic Media

Increased accessibility of services reduces travel required by citizens, businesses, developers and other customers doing business with city departments. Additional services would build on the substantial number of electronic and phone opportunities already provided by Tri-Valley cities.

Pollutant: VOC/NOx/PM

Applies to: City/County Residents & Clients

Additional Organizations Involved: Cities of Pleasanton, Livermore and Dublin, and many other cities

Potential Funding Sources:

References:

TRAN 11. Dedicated Bus Lanes

On major arterials, WHEELS buses are often mixed with other types of vehicles (passenger and commercial). By creating bus-only, dedicated, exclusive lanes on the major arterials, WHEELS buses can be more competitive in congestion. WHEELS buses using dedicated bus lanes will reduce travel time for bus passengers, and will provide more incentives for people to stop driving and take mass transit.

Pollutant: NOx/PM

Applies to: Tri-Valley Residents & Visitors

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources: CMAQ; TFCA

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml>

TRAN 12. Neighborhood Electric Vehicles

Developing and funding a program that provides electric vehicles for neighborhood residents for local trips would replace trips using personal automobiles. Such a program can build on the fact that all three Tri-Valley cities already offer some chargers for electric vehicles (library, city hall, large commercial development are examples). The Dublin program working with the Fairway Ranch developer to provide electric vehicles for trips to downtown could provide a model for such programs.

Pollutant: VOC/NOx/PM

Applies to: Public and Private Employers; Tri-Valley Residents

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources:

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml>

TRANSPORTATION

TRAN 13. Reduce City-Owned Paid Parking and/or Raise Parking Fees

The easy availability of ample, free parking encourages people to drive. The reduction of parking spaces and/or increases in parking fees can induce people to use mass transit or bike/walk to avoid the hassle of looking for scarce parking and the very visible cost of parking charges. Revenues from parking charges can fund transportation alternatives.

Pollutant: VOC/NOx/PM

Applies to: Public and Private Employers, Retailers, Tri-Valley Residents and Visitors

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources:

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml>

TRAN 14. Traffic Calming

Traffic calming refers to a wide range of improvements intended to slow traffic speeds and thus encourage walking and cycling by improving safety for pedestrians and cyclists. Examples include: traffic medians, curb extensions, traffic circles, diverters, speed humps and roadway narrowings. Other measures such as closures (diagonal diverters, half closures, full closures, and median barriers) reduce cut-through traffic by obstructing traffic movements in one or more directions and thus improve pedestrian and bicycle safety. Even simple measures like crosswalks, reduced speed limits, and rigorous enforcement of speed limits can make a difference.

Pollutant: VOC/NOx/PM

Applies to: Cities; Counties; Tri-Valley Residents & Visitors

Additional Organizations Involved:

Potential Funding Sources: TFCA, TLC

References:

<http://www.vtpi.org/calming.pdf>;

<http://www.fhwa.dot.gov/environment/tcalm/index.htm>;

<http://www.trafficcalming.org>;

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml>;

<http://www.cityofpaloalto.org/ntcp/>

TRAN 15. Expand Mass Transit

Identify and obtain funds to improve transit service and ridership by enhancing the WHEELS bus system, shuttles, dial-a-ride, and DART. Enhancements could include expanded geographic coverage, increased service frequency and increased hours of service. Cities should continue to explore the use of BART, DMUs, and other alternate rail technologies.

Pollutant: VOC/NOx/PM

Applies to: City & County Government & Transit Agencies

Additional Organizations Involved: Large Employers

Potential Funding Sources: MTC, TFCA

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml>

TRAN 16. Bus Priority Program

Implementing a system of bus priority to include traffic signal preemption and other measures reduces traffic delay to buses and improves the reliability and travel time of transit services and thus encourages ridership.

Pollutant: VOC/NOx/PM

Applies to: City & County Government & Transit Agencies

Additional Organizations Involved: Tri-Valley Residents & Visitors, and many others

Potential Funding Sources: TFCA

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml>

TRANSPORTATION

TRAN 17. Improve/Pave Road Shoulders

By paving dirt and gravel shoulders, particulate matter being kicked up into the air will be greatly reduced when traffic is forced onto the shoulder. In addition, bike riding will be greatly enhanced by providing a more comfortable, stable and safe path.

Pollutant: PM

Applies to: City & County Government

Additional Organizations Involved: Tri-Valley Residents & Visitors, and many others

Potential Funding Sources:

References:

<http://66.42.64.231/oca/index.aspx>

TRAN 18. Idling Restrictions for Large Vehicles and Off-Road Equipment

Cities could adopt policies requiring that large city-owned and contractor vehicles (gross weight rating of greater than 14,000 pounds) and off-road equipment would be restricted to engine idling for five consecutive minutes and engine idling in parking lots would be prohibited. Transit providers could also adopt such a policy for their operations. Such policies could be modeled on a recent measure adopted by the ARB limiting school bus idling.

Pollutant: NOx/PM

Applies to: Transit Providers, City/County Employees & Contractors

Additional Organizations Involved: City & County Government

Potential Funding Sources:

References:

<http://www.deq.state.ok.us/AQDnew/whatsnew/SIP/EAC.htm>;

<http://www.airquality.org/modelord/index.shtml>

TRAN 19. Water Meter Reading Via Transponders

Reading residential water meters using transponders allows the meter readers to operate their trucks at a steady pace, rather than stop and go.

Pollutant: VOC/NOx/PM

Applies to: City & County Employees

Additional Organizations Involved: City of Dublin

Potential Funding Sources:

References:

TRAN 20. Provide School Buses to Reduce School Congestion

Purchasing new school buses would decrease the congestion caused by parental drop-off and pick-up.

Pollutant: VOC/NOx/PM

Applies to: Tri-Valley School Districts

Additional Organizations Involved: Other California School Districts

Potential Funding Sources: Low Emission School Bus Program

References:

http://www.baaqmd.gov/pln/ProgramsandGrants/schoolbus/pln_prgm_schoolbus.asp

TRAN 21. School Transit

Publicize and promote all of the transit options available for parents to get their children to school: 1) WHEELS offers free one month pass; 2) "Safe Routes to School"; 3) "Rides to school" carpool program; 4) "Safety Valet" program; and 5) Tri-transit program. Continue to reduce congestion at schools by getting PTAs involved in solutions and improving walk/bike options to high schools to decrease driving by students.

Pollutant: VOC/NOx/PM

Applies to: Tri-Valley School Districts and Residents

Additional Organizations Involved: WHEELS; California School Districts; Caltrans

Potential Funding Sources:

References:

<http://www.lavta.org/>

TRANSPORTATION

TRAN 22. School Bus Idling Restrictions

K-12 schools and WHEELS should adopt policies and education programs for drivers of buses servicing schools to require and enhance the compliance with ARB's recently adopted Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools. This measure limits idling to no more than five minutes and limits starting an engine to no more than thirty seconds prior to departure from the school.

Pollutant: NOx/PM

Applies to: K-12 schools and WHEELS

Additional Organizations Involved: ARB of California has statewide responsibility

Potential Funding Sources:

References:

<http://www.arb.ca.gov/toxics/sbidling/sbidling.htm>

TRAN 23. Best Workplaces for Commuters Program

The Bay Area Best Workplaces for Commuters List spotlights Bay Area employers offering superior commuter benefits to employees, thereby committing to reducing traffic and air pollution and improving health and quality of life for harried commuters. The City of Pleasanton is already on the list. Other cities in the Tri-Valley and private employers should consider qualifying and getting on the list to publicize their commitment to reducing commute emissions.

Pollutant: VOC/NOx/PM

Applies to: Public and Private Employers & Employees;

School District and Employer-Owned Fleets

Additional Organizations Involved: City of Pleasanton

Potential Funding Sources:

References:

<http://www.bwc.gov/campaign/sanfran.htm>

TRAN 24. "Smart Drive" Policy

Employers could establish standard procedures for staff trips such as reducing idling, linking trips, and accelerating more slowly will result in greater fuel-efficiency and lower emissions. Successful "smart drive" programs can also result in net savings to the cities or county because of lower fuel costs.

Pollutant: VOC/NOx/PM

Applies to: Employers and Employees

Additional Organizations Involved: City of Austin

Potential Funding Sources:

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf>

TRAN 25. Dynamic Ridesharing Program

This is an "instant carpooling" cooperative effort between the Alameda County Congestion Management Agency and Environmental Defense. Potential carpool riders and drivers register on a web site. When they need a ride, or, can offer a ride, they use their cell phone (or the web) to place their request. This can be done a day in advance, or, on the same day. This service will be free. This service differs from the Rides service in that Rides does not currently offer "same day" service. Participants will receive a dashboard sticker that qualifies them for one day of preferred parking at the Dublin BART station.

Pollutant: VOC/NOx/PM

Applies to: Tri-Valley Residents

Additional Organizations Involved: Alameda CMA

Potential Funding Sources: Alameda CMA

References:

<http://www.accma.ca.gov/pages/index.shtml>

LAND USE

LAND USE

LU 1. Smart Growth

Smart growth is development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth/no growth question to "how and where should new development be accommodated." Local governments, for example, can promote walkable neighborhoods, facilitate the development of public transit systems and transit-oriented neighborhoods, zone communities for multiple uses and mixed-incomes, and charge the actual cost. These policies can reduce reliance on the automobile, and also have other benefits such as preserved open space, reduced long-distance commutes, and more vibrant communities.

Pollutant: VOC/NOx/PM

Applies to: City & County Government; Developers

Additional Organizations Involved: Tri-Valley Residents & Employees

Potential Funding Sources: TLC, TFCA

References:

<http://www.abaq.ca.gov/planning/smartgrowth/>;
http://www.mtc.ca.gov/projects/livable_communities/lcindex.htm;
<http://www.baaqmd.gov/pln/smartgrowth.asp>;
<http://www.epa.gov/livability/>

LU 2. Urban Heat Island Mitigation

Dark colored building materials and paved surfaces can increase ambient temperatures. Urban heat island mitigation measures include planting trees (or saving existing trees from removal) and using light colored materials for roofs, streets, and parking lots. Use of lighter colored materials is designed to increase the albedo (reflection of sunlight) in urban areas, thus potentially reducing daytime ambient temperatures which can in turn (under the right conditions) result in lower ozone concentrations. Lower temperatures also reduce energy demand for air conditioning. Planting trees is designed to: 1) Provide shade and thus reduce absorption of sunlight by building structures and pavement; 2) Provide atmospheric cooling via increase evapotranspiration (evaporation of water from leaf surfaces), and 3) Provide additional vegetative surfaces for pollutant deposition.

Pollutant: NOx/PM

Applies to: City & County Government; City buildings & streets; homeowners and developers

Additional Organizations Involved:

Potential Funding Sources:

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml>; http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf

LAND USE

LU 3. “Green Buildings”

Local government “green building” policies and regulations require design and maintenance techniques that reduce energy and water consumption, helping to reduce air emissions. Specific examples include: solar site orientation (positioning of building in relation to the sun for natural heating and cooling); choosing energy efficient designs and building materials; daylighting and other forms of efficient lighting, such as skylights; use of light-colored reflective roofs to reduce cooling load; water-efficient landscaping utilizing native, drought tolerant plants; water-efficient plumbing fixtures and appliances.

Pollutant: NOx/PM

Applies to: City & County Government; Developers

Additional Organizations Involved:

Potential Funding Sources:

References:

<http://www.ci.berkeley.ca.us/sustainabledevelopment/greenbuilding/>;
<http://www.oaklandpw.com/greenbuilding/index.htm>;
<http://www.ci.san-jose.ca.us/esd/GB-HOME.HTM>

LU 4. Jobs Housing Balance

Local government can adopt policies, general plans and zoning ordinances with a goal of achieving roughly equal numbers of jobs and housing units in their jurisdictions. The result can be that workers have the opportunity to drive shorter distances or take transit, walk or bike to work, thereby reducing VMT and air emissions. Specific examples include allowing mixed use zoning, permitting live/work units, adopting jobs-housing linkages for new commercial developments, etc.

Pollutant: VOC/NOx/PM

Applies to: City & County Government; Developers

Additional Organizations Involved:

Potential Funding Sources:

References:

<http://www.abag.ca.gov/planning/smartgrowth/>;
<http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml>;
http://www.atlreg.com/qualitygrowth/Planning/Toolkits/JOB_S_HOUSING_BALANCE_TOOL.PDF

LU 5. Air Quality Element in General Plans

General plans could be amended by adding an air quality element or section to bring air quality into the decision making process. Many of the recommendations in this Tri-Valley Clean Air Plan could be advanced by adopting relevant policies in the local general plan and pursuing implementation programs. Cities could also follow the lead of Pleasanton who will add a "sustainability" element to their General Plan later this year. Water, waste, and air quality will be considered in this element.

Pollutant: VOC/NOx/PM

Applies to: City & County Government

Additional Organizations Involved: City of Pleasanton

Potential Funding Sources:

References:

<http://www.cityofpaloalto.org/compplan/Natural4WEB.pdf>;
<http://www.ci.berkeley.ca.us/planning/landuse/plans/generallplan/pdf/gpliteintroduction%5Fpolicies.pdf>;
<http://www.ci.pleasanton.ca.us/genplanupdate.html>

PUBLIC EDUCATION

PUBLIC EDUCATION

PE 1. Educate the Public to Promote Behavior Changes

Utilizing materials developed by the BAAQMD, ARB and EPA, cities and county government can sponsor media campaigns, advertise Spare the Air support, prepare guides to shopping without car, trip linking, mass transit, etc. These materials can be modified and specifically targeted for residents, visitors and employers in the Tri-Valley Area. Dublin, Pleasanton, and Livermore city web pages could also have a hot link to the BAAQMD web site for citizens to easily learn more about what can be done on Spare the Air days to reduce pollution. The BAAQMD also has a program to report smoking vehicles (call 1-800-EXHAUST), as well as a program to report air pollution complaints (call 1-800-344-ODOR).

Pollutant: NOx/PM

Applies to: Tri-Valley Residents & Visitors

Additional Organizations Involved: City & County Government, and many others

Potential Funding Sources: TFCA

References:

<http://www.ci.austin.tx.us/airquality/downloads/ozonereducution.pdf>;

<http://www.epa.gov/epahome/educational.htm>;

<http://www.arb.ca.gov/html/cando.htm>;

<http://www.baaqmd.gov>

PE 2. Air Quality Award for Tri-Valley Science Fair

Adding an air quality award to this Science and Engineering Fair would help focus the issue with high school students, and would compliment the water quality award already offered.

Pollutant: NOx/PM

Applies to: K-12 schools

Additional Organizations Involved: LLNL

Potential Funding Sources: TFCA

References:

<http://tvsef.llnl.gov/sponsors.html>

PE 3. Public Education in Schools

Air quality would be added as one of the core science elements taught in the schools.

BAAQMD has a curriculum (the "Clean Air Challenge") for 6th – 9th grades, which is available now. Communications West is the District's consultant on this issue.

Pollutant: NOx/PM

Applies to: K-12 schools

Additional Organizations Involved: Air Quality Agencies and City & County Government, and many others

Potential Funding Sources: TFCA

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml>;

<http://www.epa.gov/epahome/educational.htm>;

<http://www.awma.org/resources/education/>

PE 4. Education of Employers

As the cities and county develop their own air programs such as commute options for employees, fleet improvements, etc, they could develop educational modules as to how companies in their jurisdictions can contribute in ways parallel to city/county programs. These modules would be very cost effective to develop, extrapolating the materials to private sector applications. Local government employees responsible for the internal implementation of their programs could be tasked with training their private sector counterparts.

Pollutant: VOC/NOx/PM

Applies to: Tri-Valley Employers

Additional Organizations Involved: Rides for Bay Area Commuters; Air Quality Agencies; City & County Government, and many others

Potential Funding Sources: TFCA

References:

<http://www.sparetheair.org>; <http://www.rides.org/main/index.htm>

PUBLIC EDUCATION

PE.5 Education to Improve Fueling Practices

Cities and Alameda County would develop a targeted campaign aimed at drivers filling up in their jurisdictions. Campaign could include joint program with service stations to set up signage at stations and pumps as well as producing ads and public service messages. Messages would encourage drivers to not top off fuel tanks and to make sure nozzles are fully drained before removing from vehicle and to fill up late in the day. Reducing spillage during fueling will reduce VOC emissions from both gasoline and diesel fueling. Fueling vehicles later in the day reduces the potential for ozone, because the emissions take several hours to form, and need high temperatures. Fueling in the evening means lower temperatures, and less sunlight.

Pollutant: VOC

Applies to: Tri-Valley Residents & Visitors

Additional Organizations Involved: Air Quality Agencies, and many others

Potential Funding Sources: TFCA

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml>

PE 6. Electronic Sign and Billboard Air Quality Messages.

Cities would work with car dealerships on I-580 to display real-time ozone levels and Spare the Air message on their electronic billboards.

Cities could also work with billboard owners to display Spare the Air message during smog season. By displaying ozone levels and Spare the Air days, drivers would be encouraged to drive less on high ozone days.

Pollutant: NOx

Applies to: Tri-Valley Residents & Visitors

Additional Organizations Involved: SMAQMD

Potential Funding Sources: TFCA

References:

<http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml>

PE 7. Resource Teams

Business, government and community organizations come together at a local level as a resource team to improve air quality. They do this by: 1) Educating their community about air pollution (including Spare the Air) and about actions community members can take to reduce air pollution; 2) Creating and promoting local programs to facilitate behavior change. The Tri-Valley team developed a Commuter Choice Electronic Education piece, a Tri-Valley Transit Map, and co-sponsored a Family Transit-Day Fair in Livermore.

Pollutant: NOx/PM

Applies to: Tri-Valley Cities & Employers

Additional Organizations Involved: BAAQMD

Potential Funding Sources:

References:

PE 8. Green Business Program

The Bay Area Green Business Program, a partnership among businesses, government agencies and the public, promotes environmentally responsible companies to the public by awarding the Green Business logo. Certified Green Businesses must undergo certification inspections and must comply with environmental laws and regulations, conserve resources, and use sound business practices to prevent environmental pollution.

Pollutant: NOx/VOC/PM

Applies to: Tri-Valley Cities and Employers

Additional Organizations Involved: ABAG

Potential Funding Sources:

References:

<http://www.greenbiz.ca.gov>

ACRONYMS

A list defining and explaining acronyms used throughout the *Clean Air Plan*.

ACRONYM FULL NAME OR PHRASE and DESCRIPTION

ABAG **Association of Bay Area Governments**

ARB **Air Resources Board of California**

State agency charged with regulatory authority over mobile sources in California and oversight of local air quality agencies.

BAAQMD **Bay Area Air Quality Management District**

Regional agency charged with planning, regulatory authority and enforcement to achieve air quality standards in the nine-county Bay Area.

CMA **Congestion Management Agency**

An Alameda County agency, whose primary responsibility is to coordinate transportation planning, funding and other activities in a congestion management program.

CMAQ **Congestion Mitigation and Air Quality Improvement Program**

Provides funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion.

CMP **Carl Moyer Program**

Provides state funds on an incentive-basis for the incremental cost of cleaner than required engines and equipment.

DART **Direct Access Responsive Transit**

DART Buses use flexible or "Flex Routing" to extend local passenger pickup and drop off to areas not served by WHEELS regular fixed route buses.

DMU **Diesel Multiple Unit**

A self-propelled commuter rail passenger car that is capable of pulling additional coaches.

DOE **Department of Energy**

Federal agency charged with protecting our national and economic security by promoting a diverse supply of reliable, affordable, and environmentally sound energy.

LLNL **Lawrence Livermore National Laboratory**

U.S. Department of Energy National Laboratory located in Livermore operated by the University of California.

MTC **Metropolitan Transportation Commission**

MTC is the transportation planning, coordinating and financing agency for the nine-county San Francisco Bay Area.

NOx **Nitrogen Oxides**

Gaseous pollutant emitted from the combustion of fossil fuel. Key component in the formation of ozone (smog).

PM Particulate Matter

Term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. They come from a variety of sources such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood.

RIDES (Not an Acronym) RIDES for Bay Area Commuters

Non-profit organization that provides transportation information and assistance to Bay Area commuters.

ROG Reactive Organic Gases

Hydrocarbon compounds that react with NO_x in the presence of sunlight to create ozone (smog). Emitted by combustion of fossil fuel and evaporation of hydrocarbon-based products. Term is often used interchangeably with VOC.

SECAT Sacramento Emergency Clean Air and Transportation Program

Partnership between local government, clean air professionals, local businesses, and manufacturers that provides incentive funding to replace older, high polluting trucks with cleaner newer models.

SULEV Super-Ultra Low Emissions Vehicle

A SULEV vehicle is defined by the state of California as being eight times cleaner than an Ultra Low Emissions Vehicle (ULEV), 90% cleaner than the average new car, and its rating is second only to the Zero Emission Vehicle (ZEV).

TFCA Transportation Fund for Clean Air

The BAAQMD collects a \$4 surcharge on motor vehicle registration fees paid within the San Francisco Bay Area to fund the TFCA. TFCA revenues are allocated by the Air District to public agencies, such as cities and counties, the Metropolitan Transportation Commission, transit districts, and public schools, for air quality improvement projects.

TLC Transportation for Livable Communities

Grant program administered by MTC to promote community vitality and provide transit, pedestrian and bicycling amenities. Includes planning and capital grants.

UHIMM Urban Heat Island Mitigation Measures

Planting trees (or saving existing trees from removal) and using light colored materials for roofs, streets, and parking lots.

EPA United States Environmental Protection Agency

Federal agency responsible for oversight of air quality management agencies in all states and adoption of certain minimum standards applicable in all areas.

VMT Vehicle Miles Traveled

Number of miles traveled by automobiles, trucks and buses.

VOC Volatile Organic Compounds

Hydrocarbon compounds that react with NO_x in the presence of sunlight to create ozone (smog). Emitted by combustion of fossil fuel and evaporation of hydrocarbon-based products. Term is often used interchangeably with ROG.

WHEELS (Not an Acronym)

Livermore Amador Valley Transit Authority (LAVTA) service that provides public transportation for the Tri-Valley.

Acknowledgements

About the authors:

Ellen Garvey

Ellen has more than 25 years of experience in the public sector working on environmental issues. Ellen was the Executive Officer of the Bay Area Air Quality Management District from 1996-2002. During her tenure, she was responsible for all air quality policy and programs for the nine-county region. Prior to this, Ellen was the Director of the BAAQMD's Technical Division. Ellen has extensive experience in power plant and refinery permitting, drafting regulations, and testifying before Boards and Commissions. As a consultant, Ellen has provided clients air quality policy advice on a national as well as local level. She has also drafted energy and transportation reports, analyzed various air quality control options, and analyzed state and national legislation. Ellen received a BS in Environmental Engineering from Pennsylvania State University, and a Certificate of Business Administration from UC Berkeley, graduating with distinction.

Dave Howekamp

Dave Howekamp has more than 30 years of experience in the public and private sector working on environmental issues. He was the Director of the Air Division for EPA's San Francisco Regional Office, where for nearly 20 years he was the principal advisor to the Regional Administrator on policy, technical and political issues involving air quality management and radiation. He has extensive experience in administrative and judicial enforcement, permitting of new facilities, developing State implementation plans, developing emission limiting rules, and development of emissions trading programs. As a consultant, Dave has provided clients expert witness reports in complex Clean Air Act litigation matters, developed air quality plans for local government, analyzed impacts and controls for port expansion projects and analyzed remediation costs for recovery from insurance carriers. He received both a BS in Mechanical Engineering and an MBA from the University of California at Berkeley.

Tri-Valley Clean Air Plan designed by Patricia Kreamer
Printed by Pacific Color Graphics
Cover photo provided by Hacienda Business Park

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[District Map](#)
[Clean Air Plan](#)
[Traffic Safety in Unincorporated Alameda County](#)
["Don't Wait For The Quake!"](#)
[Be Aware](#)
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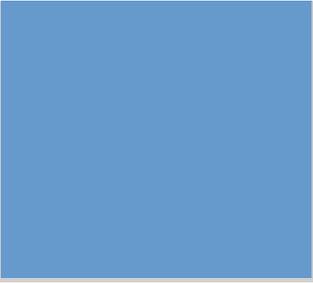
Thank you for visiting my Web page. I hope you will join me in helping to make Alameda County "The Most Earthquake-Conscious County in America." Please see the section "Don't Wait for the Quake!" for earthquake information and seismic safety tips.

Scott Haggerty was first elected to the Alameda County Board of Supervisors in November of 1996. Scott is now serving his second term effective January of 2001 until December of 2004 and recently completed a two-year term as President of the Board. He ran unopposed for a third term in the March 2004 election. Scott Haggerty's Supervisorial District 1 of Alameda County includes most of the city of Fremont and the cities of Pleasanton, Livermore and a portion of Sunol.

Alameda County is located in one of the most traffic-congested regions in California. In recent surveys of residents, transportation was identified as the most important issue facing the San Francisco Bay Area region. Supervisor Haggerty has made his mark as a leader in the area of regional transportation and infrastructure of the Bay Area. Scott's experience in this policy area is extensive. He is a founding member of the Inter-Regional Partnership, comprised of 15 elected officials representing counties and cities from the region; past chair of the Altamont Rail Express Joint Powers Authority ([ACE](#)); past chair of the Alameda County Transportation Authority ([ACTA](#)) and of the Alameda County Transportation Improvement Authority ([ACTIA](#)) which was formed in 2001 to oversee projects funded through Measure B dollars; chair of the Bay Area Air Quality Management District ([BAAQMD](#)); and he is a member of the Board of Supervisors' Transportation & Planning Committee. Scott also serves on numerous regional transportation boards including; the Livermore-Amador Valley Transit Authority ([LAVTA](#)); the Alameda County Congestion Management Authority ([CMA](#)) and his most recent appointment to the Metropolitan Transportation Commission ([MTC](#)). MTC is responsible for allocating state and federal dollars to regional transportation projects. Scott is currently involved with a coalition of elected officials in the Tri-Valley region to ensure that BART's (Bay Area Rapid Transit) extension to Livermore is completed. Scott has also played a key role in discussions with Santa Clara County to extend BART to San Jose.

In addition to his leadership in the transportation arena, Supervisor Haggerty places strong priorities in the field of public safety. Appointed by then-Governor Pete Wilson, Scott formerly served on the California State Seismic Safety Commission. He is a member of the Alameda County Collaborating Agencies Responding to Disasters ([CARD](#)) Board of Directors. Scott also chairs the Alameda County Board of Supervisors Public Protection Committee and has been very active on paramedic and trauma issues.

Scott's appointment to other boards and commissions as the representative for Alameda County include: president of the Association of Bay Area Governments ([ABAG](#)); East Bay Regional Park District County Liaison Committee ([EBRPD](#)); Local Agency Formation Commission ([LAFCO](#)); and the Tri-Valley Transportation Council ([TVTC](#)). Appointed to the Commission of the Oakland-Alameda County Coliseum Authority in 2001 (also known as the JPA),



Scott also formerly served as its president.

Supervisor Haggerty is active in community activities and serves as a board member of the Joseph Matteucci Foundation and Goodwill Industries of the East Bay. Scott has also served on the board of Alameda County Meals on Wheels and as chair of the Twin Valley District of the Boys Scouts of America.

Supervisor Haggerty was raised in Fremont and now resides in Livermore.

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