

# Voluntary Clean Air Plan

## for North-Central Contra Costa County

Clayton, Concord, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill and Walnut Creek

**July 2005**



This Clean Air Plan is a collection of voluntary measures developed specifically for the North-Central Contra Costa region.

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

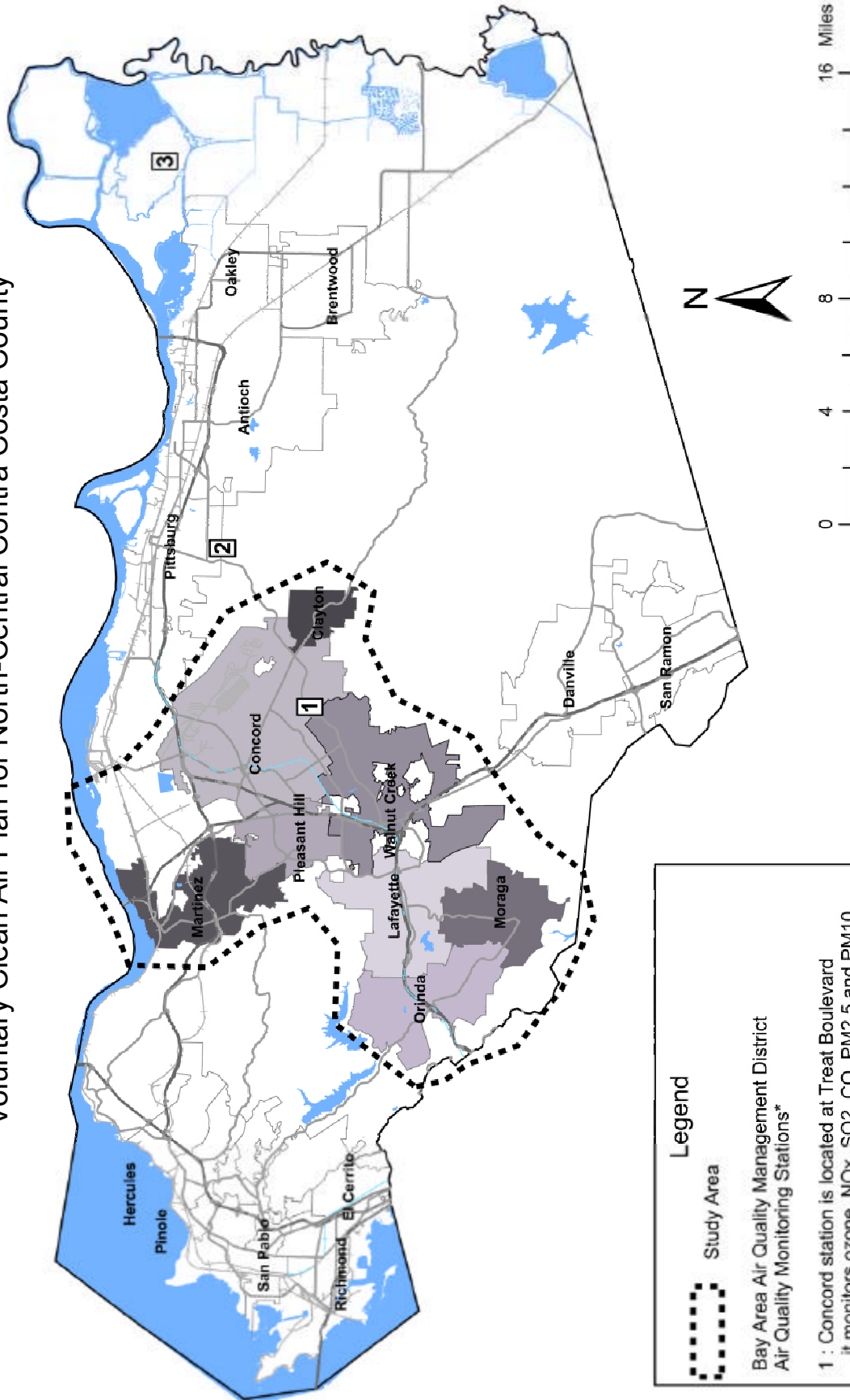
Commissioned by  
**Gayle B. Uilkema and Mark DeSaulnier,**  
Supervisors of Contra Costa County  
and Board Members of the  
Bay Area Air Quality Management District

Special thanks to  
**Scott Haggerty**  
First District Supervisor of Alameda County  
Board of Supervisors and Former Chair,  
Bay Area Air Quality Management District

Plan prepared by  
**Ellen Garvey**  
Environmental consultant

To view this Plan online, visit [www.co.contra-costa.ca.us/depart/dis2/special\\_areas.htm](http://www.co.contra-costa.ca.us/depart/dis2/special_areas.htm) and select "Current Projects" or visit <http://www.cocoplans.org> and select "Plans"

Figure 1  
Voluntary Clean Air Plan for North-Central Contra Costa County



**Legend**

Study Area


Bay Area Air Quality Management District  
Air Quality Monitoring Stations\*

1 : Concord station is located at Treat Boulevard  
it monitors ozone, NOx, SO2, CO, PM2.5 and PM10.

2 : Pittsburg station is located at West Tenth Street  
it monitors ozone, NOx, SO2, CO and PM10.

3 : Bethel Island station is located at Bethel Island Road  
it monitors ozone, NOx, SO2, CO and PM10.

\*Monitoring station locations are approximate



Map created 9/20/2004  
by Contra Costa County Community Development  
651 Pine Street, 4th Floor – North Wing, Martinez, CA 94553-0095

This map was created by the Contra Costa County Community Development Department with data from the Contra Costa County. This map contains copyrighted information and may not be altered. It may be reproduced in its current state if the source is cited. Users of this map agree to read and accept the Contra Costa disclaimer of liability for geographic information.

# **Voluntary Clean Air Plan**

## **for North-Central Contra Costa County**

Clayton, Concord, Lafayette, Martinez, Moraga,  
Orinda, Pleasant Hill and Walnut Creek

July 2005

---

### **TABLE OF CONTENTS**

Area Map of North-Central Contra Costa County Clean Air Plan.....	i
Executive Summary.....	2
Air Quality in North-Central Contra Costa County Causes, Effects and Current Status.....	6
Voluntary Clean Air Measures .....	14
Public Education .....	15
Technology .....	16
Transportation.....	18
Land Use.....	24
Voluntary Measures Summary Listing .....	26
Glossary of Terms .....	29

# **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 north-central portion of Contra Costa County 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.

## **North-Central Contra Costa County Air Quality**

North-Central Contra Costa County (NCCCC) in particular, is at higher risk because a high percentage of violations of the ozone air quality standards in the Bay Area occur at the Concord air monitoring station. (Air monitoring stations located in and near the study area of the NCCCC Clean Air Plan are noted on Figure 1, behind the front cover of this document.) The north-central portion of Contra Costa County is a robust residential, industrial and employment center. The location of this region within the bay area results in elevated levels of pollutants on hot summer days or very cold winter nights. Air pollution emissions from vehicles, major industry, 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 ([www.baaqmd.gov](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 ([www.arb.ca.gov](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 ([www.epa.gov](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.

### **Achievement of Health Standards Can Be Improved 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 the fall of 2004, at the request of Contra Costa County Supervisors Gayle B. Uilkema and Mark DeSaulnier, work on developing a Clean Air Plan for North Central Contra Costa County began. Supervisors Uilkema and DeSaulnier also serve on the Bay Area Air Quality Management District Board of Directors. This Plan is modeled after the Tri-Valley Clean Air Plan commissioned by Supervisor Scott Haggerty and the Alameda Board of Supervisors. A draft of this Plan was distributed to key stakeholders in North-Central Contra Costa County. Many stakeholders were contacted to explain the purpose and elements of the draft Plan and to receive feedback about how the Plan could be structured and used. During discussions with County staff, it became clear that many in Contra Costa County were already implementing many of these measures and choices. This is evidence of the commitment of the County 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 Contra Costa County 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 for North-Central Contra Costa County. Implementation of these measures will be a step towards reducing high levels of ozone and particulate matter, resulting in cleaner air and fewer excesses of the standards. These measures are organized in four categories:

- **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.
- **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 land use policies or plans to minimize emissions generation from vehicles and other human activities; for example, adoption of revised growth policies by local government.

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 North-Central portion of Contra Costa County, along with a description of the ozone and particulate standards. Finally, the glossary defines and explains the acronyms used throughout the Plan.

If you are interested in accessing this plan electronically, please visit one of the following web sites:

- Contra Costa County Community Development Department at [www.cocoplans.org](http://www.cocoplans.org). Search under "Plans."
- [www.511ContraCosta.org](http://www.511ContraCosta.org). Click on "Publications."
- Supervisor Uilkema's website at [www.co.contra-costa.ca.us/depart/dis2/special\\_areas.htm](http://www.co.contra-costa.ca.us/depart/dis2/special_areas.htm). Click on "Current Projects."

## **What Can You Do To Help?**

Although many of these measures are already being implemented, additional effort is needed in North-Central Contra Costa County 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 North-Central Contra Costa County.

# **AIR QUALITY IN NORTH-CENTRAL CONTRA COSTA COUNTY: 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 North-Central portion of Contra Costa County is at higher risk than many Bay Area locations because many of the violations of the ozone air quality standards in the Bay Area occur at the Concord air monitoring station. Violations of the particulate matter standard are also seen at the Concord station. North-Central Contra Costa County is a major residential and employment center in its own right, in addition to being near several major freeways and industrial areas. The hills along the Carquinez Straits do not allow much dispersion of pollutants, so under certain weather conditions such as very hot summer days or very cold winter nights, the emissions from vehicles and other activities create unhealthful air that often exceeds the standards.

## **Why Does North-Central Contra Costa County Have a Tendency to Have Higher Air Pollution Levels Than the Surrounding Areas?**

The North-Central Contra Costa County geography is characterized by the Carquinez Straits and the Diablo Valley. Martinez is next to the Carquinez Straits at the north end, with all other cities in the study being located in the Diablo Valley portion. The Diablo Valley is approximately five miles wide and 10 miles long. The hills along the Carquinez straits are 1,500 to 2,000 feet high. This topography is sufficient to block much of the

cooler marine air from reaching the valleys, particularly the Concord area. Wind speeds are lower at Concord than areas closer to the Carquinez Straits, which allows ozone to build. Temperatures in the summer in the Concord area are often higher than surrounding locations, resulting in the potential for higher ozone levels.

During the winter months, strong high-pressure systems sometimes develop, leading to the formation of surface-based temperature inversions. Pollutants such as particulate matter (PM)—from motor vehicles and fireplaces—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 (O<sub>3</sub>) 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 volatile organic compounds (VOC) and oxides of nitrogen (NO<sub>x</sub>) in the presence of heat and sunlight.

#### **VOC + NO<sub>x</sub> + 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 VOC and NO<sub>x</sub> 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 2 show the breakdown of VOC and NO<sub>x</sub> emissions for North-Central Contra Costa County. Note that the vast majority of NO<sub>x</sub> emissions, 68%, 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 emissions from industry and mobile sources are about equal at 41% and 37% respectively.

**Emissions Profile for North-Central Contra Costa County**

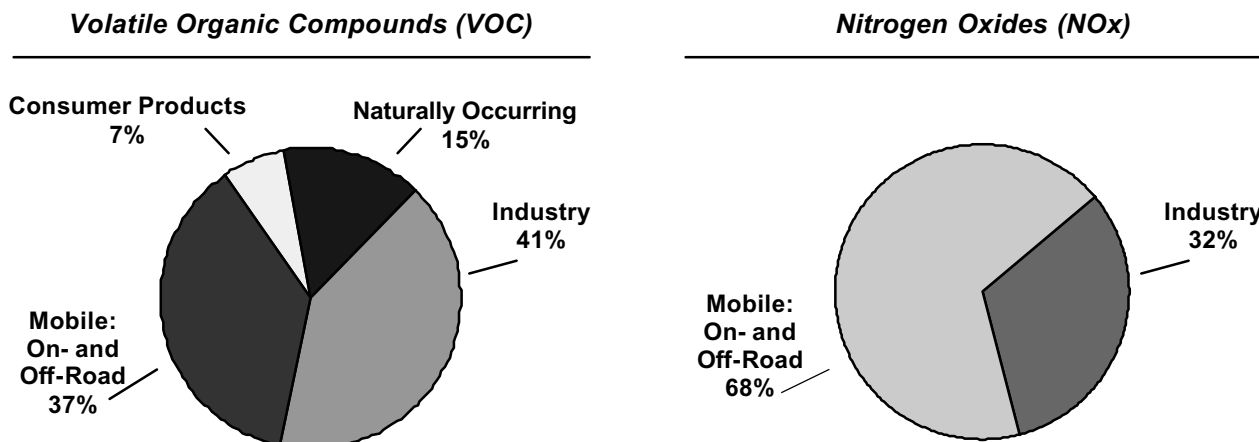


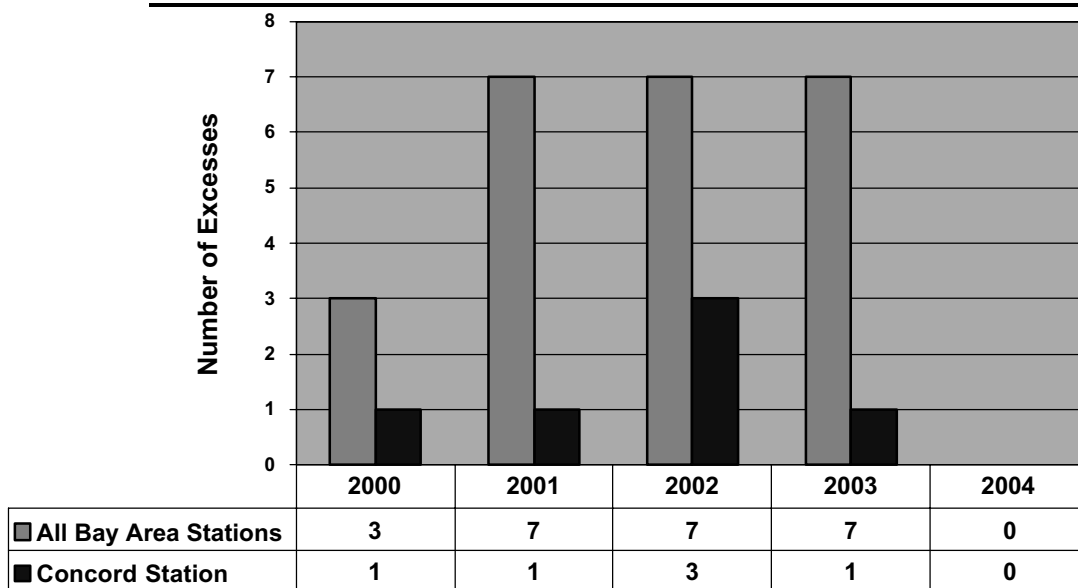
Figure 2

Source: BAAQMD

**VOC + NOx + Heat + Sunlight = Ozone**

These charts illustrate the greatest contributors of VOC and NOx emissions in NCCCC. (See Figure 1 for more detail of NCCCC area.) These emissions lead to ground-level ozone and unhealthy air.

**Federal 8-Hour Ozone Standard: Number of Excesses per Year**



Source: BAAQMD

Figure 3

This chart illustrates the number of excesses of the Federal 8-Hour Ozone Standard in the Bay Area and in NCCCC, and to what degree NCCCC contributed to Bay Area excesses. For example, based on monitoring station readings, in 2000 NCCCC created one of the three Bay Area ozone excesses. There is one air monitoring station located in NCCCC and it is located in Concord.

As Figure 3 illustrates, the number of excesses of the Federal 8-Hour Ozone Standard in the Bay Area is decreasing. An excess occurs when ozone levels are above the standard for more than eight consecutive hours on any day at any monitoring station. Many of these excesses in the Bay Area occur in Concord. This is due in part to Concord's location (near and downwind of several major freeways and industry). It is also due to the very warm weather found in the Diablo 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 region.

### **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**

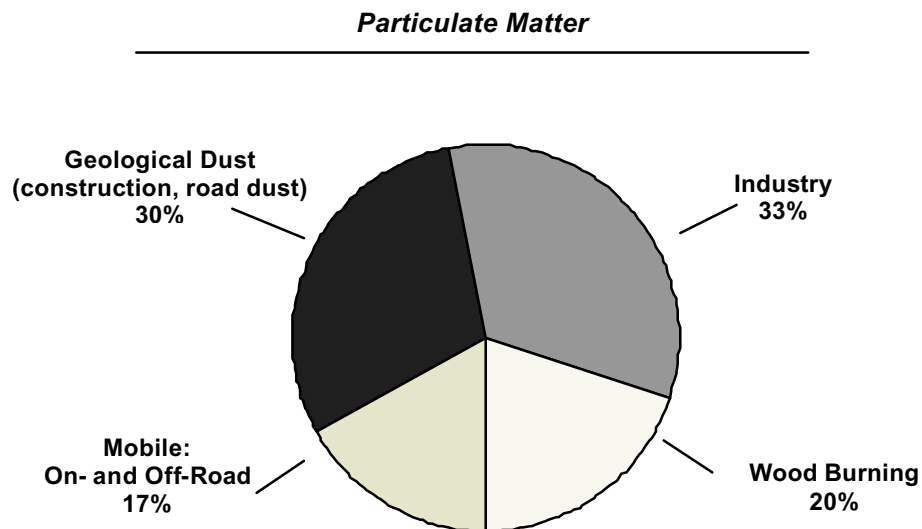
- Ground-level ozone interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, other pollutants, and harsh weather.
- Ozone damages the leaves of trees and other plants, ruining the appearance of cities, national parks, and recreation areas.
- 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 4 shows the contribution of particulate emissions in North-Central Contra Costa County.

#### **Emissions Profile for North-Central Contra Costa County**



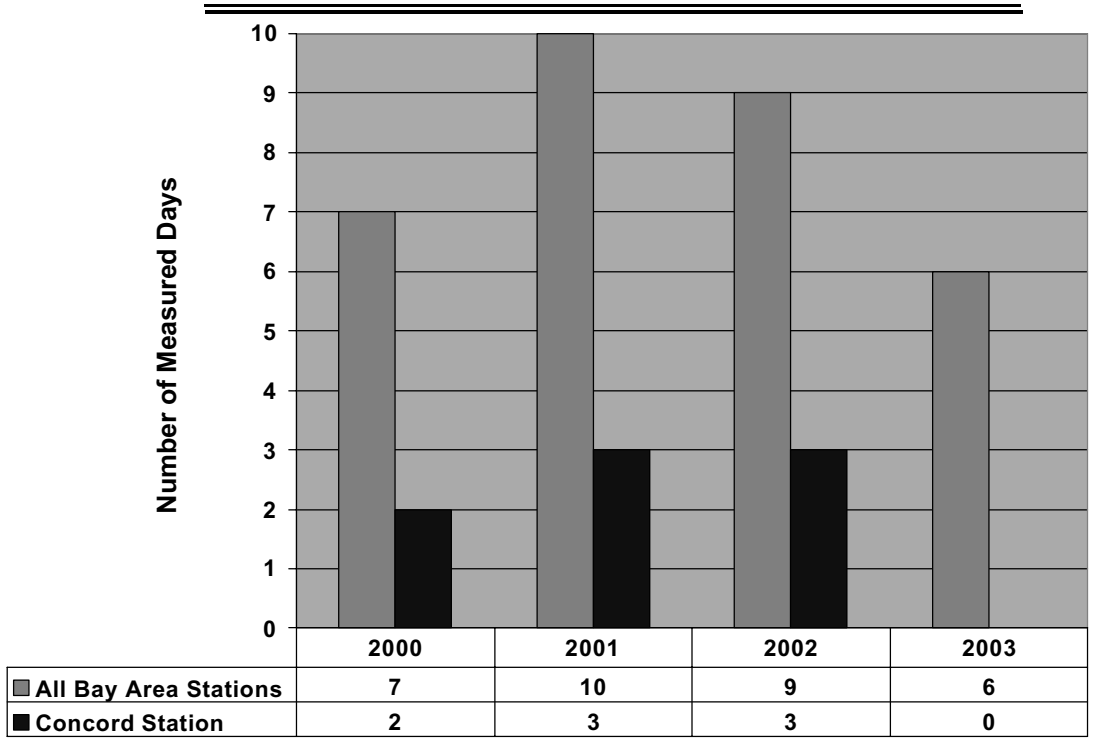
Source: CARB

Figure 4

*This chart illustrates the greatest contributors of particulate matter in North-Central Contra Costa County. Particulate excesses occur in the winter on cold, still days.*

Figure 5 below illustrates the number of excesses of the State Particulate Matter Standard (PM10) is improving. There were no excesses at the Concord monitoring station in 2003. "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 North-Central Contra Costa 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 5

This chart illustrates the number of measured excesses of the California 24-hour PM Standard in the Bay Area and Concord. Air quality is improving as a result of reduced particulate matter. For example, in 2000 Concord created two of the seven excesses of particulate matter, and in 2003 contributed 0 of the 6 excesses.

(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

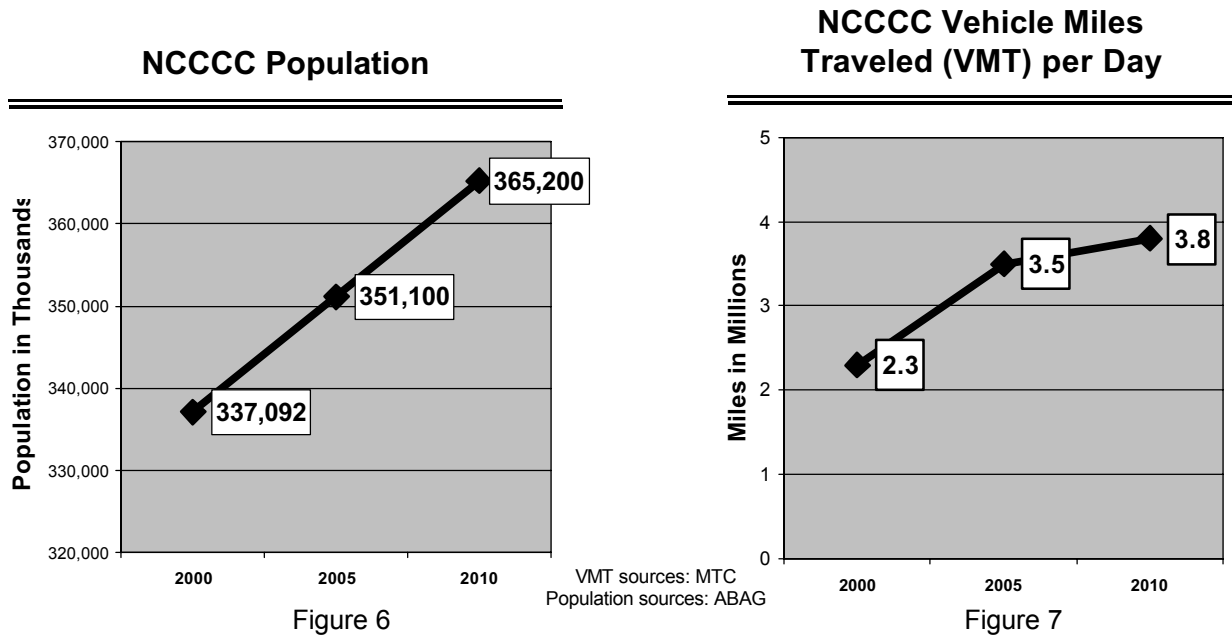
### **Aesthetic Damage**

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 North-Central Contra Costa County 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 North-Central Contra Costa County. Contra Costa County’s population as a whole has just reached the one million mark, and the county is the third most populous county in the Bay Area. It is also the third fastest growing county at a 33% growth rate between the years 2000 and 2030. In addition, 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 6 and 7 indicate, the population and vehicle miles traveled for North-Central Contra Costa County have increased substantially during the past several years, and are projected to continue to grow.



*These charts illustrate the population and vehicle miles traveled for North-Central Contra Costa County have increased substantially during the past several years, and are projected to continue to grow.*

Therefore, even though the emissions from 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 our air quality 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, the recently completed HOV lane on southbound 680 from south of the Benicia Bridge to SR.242 will help to address 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 North-Central Contra Costa County region. These measures reflect those that would be appropriate for inclusion in the Plan based on input from stakeholders. Please refer to page 27 for a full list of stakeholders who assisted in the development of the Plan. Any measures that have been deleted from the draft plan were removed due to the fact that they were not commented on, and therefore it was assumed they were not appropriate for implementation.

The voluntary measures are organized in four categories: public education, technology, transportation and land use. 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.
- Easy access to an electronic version of Plan at the following websites:
  - [www.511ContraCosta.org](http://www.511ContraCosta.org). Click on "Publications."
  - Contra Costa County Community Development Department at [www.cocoplans.org](http://www.cocoplans.org). Search under "Plans."
  - Supervisor Uilkema's website at [www.co.contracosta.ca.us/depart/dis2/special\\_areas.htm](http://www.co.contracosta.ca.us/depart/dis2/special_areas.htm). Click on "Current Projects."

## PUBLIC EDUCATION

## PUBLIC EDUCATION

**PE 1. Educate the Public to Promote Behavior Changes**

Incentive programs are promoted via developers, realtors, title companies and planning departments, community access television, and other marketing to the public. 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 Contra Costa County. Logo, news articles, and messages are all available on the BAAQMD Spare the Air website below. 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:** Residents & Visitors

**Additional Organizations Involved:** City & County Government, 511 Contra Costa and others

**Potential Funding Sources:** TFCA, Measure C, CMAQ

**References:**

[www.sparetheair.org](http://www.sparetheair.org);

[www.epa.gov/epahome/educational.htm](http://www.epa.gov/epahome/educational.htm);

[www.arb.ca.gov/html/cando.htm](http://www.arb.ca.gov/html/cando.htm)

**PE 2: Science Fairs**

Holding Science Fairs from the grade school to high school levels help students focus on air quality challenges, and allow them an opportunity to be a part of the solution. As an example, Mt. Diablo USD has a Science Fair for elementary school students.

**Applies to:** K-12 schools

**Additional Organizations Involved:** Mt. Diablo Unified School District

**Potential Funding Sources:** Private-Sector contributions

**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 7th - 10th grades, and some teachers also use this curriculum for 11<sup>th</sup> - 12<sup>th</sup> graders. Curriculum aligns with CA school teaching standards, and is available now through Communications West.

**Pollutant:** NOx/PM

**Applies to:** 7-12<sup>th</sup> grade schools

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

**Potential Funding Sources:** Measure C

**References:**

[www.epa.gov/epahome/educational.htm](http://www.epa.gov/epahome/educational.htm);

[www.511contracosta.org](http://www.511contracosta.org)

**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. 511 Contra Costa is responsible for the internal implementation of their programs and could also be tasked with training their private sector counterparts. The BAAQMD is also proposing to make TFCA funds available for such efforts of private-sector employers

**Pollutant:** VOC/NOx/PM

**Applies to:** Central/East Contra Costa County Employers

**Additional Organizations Involved:**

TRANSPAC/TRANSPLAN TDM Program; Regional Rideshare Agency (511); Air Quality Agencies; City & County Government, and others

**Potential Funding Sources:** TFCA, Measure C, CMAQ

**References:**

[www.sparetheair.org](http://www.sparetheair.org); [www.rides.org/main/index.htm](http://www.rides.org/main/index.htm);

[www.511contracosta.org](http://www.511contracosta.org)

## 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 ZEVs<sup>1</sup> (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:** 511 Contra Costa's Countywide Clean Fuel Vehicle Program; City & County Government, and many others

**Potential Funding Sources:** TFCA

**References:**

[www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf](http://www.ci.austin.tx.us/airquality/downloads/ozonereduction.pdf);

[www.airquality.org/modelord/index.shtml](http://www.airquality.org/modelord/index.shtml)

**TECH 2. 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. The BAAQMD is considering making TFCA funds available to the private sector for this purpose.

**Pollutant:** VOC/NOx/PM

**Applies to:** Private companies or large non-profits

**Additional Organizations Involved:** 511 Contra Costa; City of San Francisco

**Potential Funding Sources:** TFCA

**References:**

[www.ci.sf.ca.us/sfenvironment/facts/clean\\_air.htm](http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm)

**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 homework site. CNG, LNG and LPG<sup>2</sup> can all 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:** Countywide Clean Fuel Vehicle Program (administered by 511 Contra Costa); City & County Government, and many others

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

**References:**

[www.511contracosta.org](http://www.511contracosta.org)

[www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Oviw.shtml);

[www.the-partnership.org/about\\_us.htm](http://www.the-partnership.org/about_us.htm);

**TECH 4. Woodstove/Fireplace Replacement**

Local jurisdictions may adopt ordinances to reduce woodsmoke particulate emissions by requiring the use of clean woodburning appliances in renovations and new construction. Incentives/rebates are available to replace non-EPA certified stoves with natural gas stoves. Retrofitting woodburning fireplaces to burn natural gas is also an option.

**Pollutant:** PM

**Applies to:** Residents

**Additional Organizations Involved:** City & County Government; BAAQMD

**Potential Funding Sources:**

**References:**

[www.sparetheair.org](http://www.sparetheair.org);

[www.511contracosta.org](http://www.511contracosta.org)

<sup>1</sup> SULEV: Super Ultra Low Emission Vehicle; PZEV: Partial Zero Emission Vehicle; ZEV: Zero Emission Vehicle

<sup>2</sup> CNG: Compressed Natural Gas; LNG: Liquid Natural Gas; LPG: Liquid Propane Gas

## TECHNOLOGY

### **TECH 5. 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:** Cities of Richmond

**Potential Funding Sources:**

**References:**

[www.cityofla.org/EAD/EADWeb-AQD/bikepatrols.htm](http://www.cityofla.org/EAD/EADWeb-AQD/bikepatrols.htm);  
[www.ci.sf.ca.us/sfenvironment/facts/clean\\_air.htm](http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm)  
[www.511contracosta.org](http://www.511contracosta.org)

### **TECH 6. 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. 511 Contra Costa can assist in promoting this.

**Pollutant:** VOC

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

**Additional Organizations Involved:** Air Quality Agencies, 511 Contra Costa, and many others

**Potential Funding Sources:**

**References:**

[www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml)

### **TECH 7. 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:**

[www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml);  
[www.epa.gov/otaq/retrofit/overview.htm](http://www.epa.gov/otaq/retrofit/overview.htm);

## TRANSPORTATION

## TRANSPORTATION

**TRAN 1. Telecommuting**

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 telecommute only once or twice per week. On the other hand, some employees telecommute full time and only go to the office on an occasional basis. Even part-time telecommuting reduces auto use and emissions. Work with BAAQMD to reinstate TFCA funding to support promotion of telecommuting.

**Pollutant:** VOC/NOx/PM

**Applies to:** Employers and Employees

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

**Potential Funding Sources:** Measure C

**References:**

[www.the-partnership.org/about\\_us.htm](http://www.the-partnership.org/about_us.htm);  
[www.511contracosta.org](http://www.511contracosta.org)

**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:**

[www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml);  
[www.511contracosta.org](http://www.511contracosta.org)

**TRAN 3. All 511 Contra Costa Incentive Programs**

Employers can aggressively recruit participants for vanpools and carpools by establishing in-house coordinators or utilizing the Regional Rideshare program. 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. Joint cost effectiveness reporting of the Regional Rideshare Program and 511 Contra Costa to the BAAQMD to maximize resources is currently being discussed with BAAQMD and MTC.

**Pollutant:** VOC/NOx/PM

**Applies to:** Employers and Employees, 511 Contra Costa

**Additional Organizations Involved:** 511 Contra Costa; Regional Rideshare Program; City & County Employers, Private Employers, and many others

**Potential Funding Sources:**

**References:**

<http://www.rides.org/main/index.htm>;  
[www.511contracosta.org](http://www.511contracosta.org)

**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.

**Pollutant:** VOC/NOx/PM

**Applies to:** Employers and Employees

**Additional Organizations Involved:** Commuter Check; 511 Contra Costa Transit Incentive Program; City & County Employers, Private Employers, and many other areas

**Potential Funding Sources:** CMA

**References:**

[www.commutercheck.com/home.html](http://www.commutercheck.com/home.html);  
[www.ci.sf.ca.us/sfenvironment/facts/clean\\_air.htm](http://www.ci.sf.ca.us/sfenvironment/facts/clean_air.htm)

## TRANSPORTATION

### **TRAN 5. Bicycle & Pedestrian Infrastructure Improvements**

By providing improved bike and 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. North-Central Contra Costa County jurisdictions implement Bicycle and Pedestrian projects as funding permits or as requirements on development projects. All jurisdictions participated in the development of the Contra Costa Transportation Authority Countywide Bicycle/Pedestrian Plan.

**Pollutant:** VOC/NOx/PM

**Applies to:** Cities, Residents, Employees & Visitors

**Additional Organizations Involved:** 511 Contra Costa, City & County Employers, and many others

**Potential Funding Sources:** TFCA, TLC, Measure C, Developers

**References:**

[www.511ContraCosta.org](http://www.511ContraCosta.org);

[www.baaqmd.gov/pln/grants\\_and\\_incentives/tfca/index.asp](http://www.baaqmd.gov/pln/grants_and_incentives/tfca/index.asp)

### **TRAN 6. 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 the cities in North-Central Contra Costa County. This measure may be used in combination with local jurisdiction customer service policies.

**Pollutant:** VOC/NOx/PM

**Applies to:** City/County Residents & Clients

**Additional Organizations Involved:** Many cities in Contra Costa County

**Potential Funding Sources:**

**References:** [www.511contracosta.org](http://www.511contracosta.org)

### **TRAN 7. Parking Incentives**

511 Contra Costa promotes preferential parking and works with employers to develop programs and parking management programs. 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.

**Pollutant:** VOC/NOx/PM

**Applies to:** Employers and Employees

**Additional Organizations Involved:** City & County Employers; Private Employers

**Potential Funding Sources:**

**References:**

[www.arb.ca.gov/planning/tsaq/cashout/cashout.htm](http://www.arb.ca.gov/planning/tsaq/cashout/cashout.htm);

[www.511contracosta.org](http://www.511contracosta.org)

### **TRAN 8. 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 as funding permits. They also should continue to implement their joint project for regional signal timing to improve traffic flow throughout North-Central Contra Costa County. Decreased stop-and-go and idling reduces emissions. When providing such improvements, safety for pedestrians and cyclists must be assured.

**Pollutant:** VOC/NOx/PM

**Applies to:** City & County Government

**Additional Organizations Involved:** MTC, BAAQMD, CMA

**Potential Funding Sources:** CMAQ; TFCA

**References:**

[www.the-partnership.org/about\\_us.htm](http://www.the-partnership.org/about_us.htm);

## TRANSPORTATION

**TRAN 9. Expand Mass Transit**

Identify and obtain funds to improve transit service and ridership by enhancing the CCCTA and shuttle programs. 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, although transit investments of this magnitude are subject to federal, state and regional funding allocations. Local jurisdictions can, and do, actively monitor and support transit investment by these agencies. For example, investment in the Capitol Corridor has had a significant beneficial impact on traffic and congestion in the I-80, I-680, and SR 4 corridors. CCCTA works with TRANSPAC and its jurisdictions on establishing productive service levels within financial constraints. Express bus service will soon be expanded in Central County using Regional Measure 2 funding from the Metropolitan Transportation Commission.

**Pollutant:** VOC/NOx/PM

**Applies to:** City & County Government & Transit Agencies

**Additional Organizations Involved:** Large Employers, 511 Contra Costa

**Potential Funding Sources:** MTC, TFCA

**References:**

[http://www.baaqmd.gov/pln/plans/ozone/2004Strategy/TCM\\_descriptions.pdf](http://www.baaqmd.gov/pln/plans/ozone/2004Strategy/TCM_descriptions.pdf);  
[www.511contracosta.org](http://www.511contracosta.org)

**TRAN 10. Carpool Occupancy Requirement on Benicia-Martinez Bridge**

The Metropolitan Transportation Commission should consider establishing a consistent 2+ carpool occupancy requirement for the entire length of the I-680 corridor after completion of the new span of the Benicia-Martinez Bridge.

**Pollutant:** NOx/PM

**Applies to:** MTC

**Additional Organizations Involved:**

**Potential Funding Sources:**

**References:**

**TRAN 11. 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. North-Central Contra Costa County jurisdictions implement such projects as funding permits or as a requirement on development projects. Some jurisdictions are also considering revising their design standards to incorporate traffic calming features in residential street construction.

**Pollutant:** VOC/NOx/PM

**Applies to:** Cities; Counties; Residents & Visitors

**Additional Organizations Involved:** 511 Contra Costa, CCTA

**Potential Funding Sources:** TFCA, TLC, Measure C, Developers

**References:**

[www.vtpi.org/calming.pdf](http://www.vtpi.org/calming.pdf);  
[www.trafficcalming.org](http://www.trafficcalming.org);  
[www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie w.shtml);

## TRANSPORTATION

### **TRAN 12. 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. CCCTA and local jurisdictions work together to address the interaction of transit operators and signal operation. Implementation of signal preemption mechanisms to maximize bus schedules is generally affordable, although the relatively high cost-effectiveness of this type of program generally precludes receipt of incentive funding.

**Pollutant:** VOC/NOx/PM

**Applies to:** City & County Government & Transit Agencies

**Additional Organizations Involved:** Residents & Visitors, and many others

**Potential Funding Sources:** Local funds

**References:**

[http://www.baaqmd.gov/pln/plans/ozone/2004Strategy/TCM\\_descriptions.pdf](http://www.baaqmd.gov/pln/plans/ozone/2004Strategy/TCM_descriptions.pdf)

### **TRAN 13. Provide School Buses to Reduce School Congestion**

Purchasing new school buses would decrease the congestion caused by parental drop-off and pick-up. Promoting public bus system use will also reduce congestion. Lamorinda has a successful School Bus program. Other jurisdictions are interested in a similar program and are exploring financial options that will help make this a reality.

**Pollutant:** VOC/NOx/PM

**Applies to:** Contra Costa County Schools

**Additional Organizations Involved:** Other California School Districts

**Potential Funding Sources:** EPA's Low Emission School Bus Program

**References:**

[www.arb.ca.gov/msprog/schoolbus/final\\_draft\\_school\\_bus\\_guidelines.pdf](http://www.arb.ca.gov/msprog/schoolbus/final_draft_school_bus_guidelines.pdf);  
[www.epa.gov/cleanschoolbus](http://www.epa.gov/cleanschoolbus)

### **TRAN 14. School Transit**

Publicize and promote all of the transit options available for parents to get their children to school. Examples of this include the free one-month pass offered by CCCTA, and the "Safe Routes to School" 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. 511 Contra Costa's SchoolPool provides customized schedules per district for each school.

**Pollutant:** VOC/NOx/PM

**Applies to:** Central County Residents

**Additional Organizations Involved:** CCCTA; California School Districts; Caltrans; 511 Contra Costa

**Potential Funding Sources:** TFCA, Measure C

**References:**

[www.511contracosta.org](http://www.511contracosta.org)

### **TRAN 15. 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. Cities 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 and Employees; School District and Employer-Owned Fleets

**Additional Organizations Involved:** Cities, 511 Contra Costa

**Potential Funding Sources:** TFCA, Measure C

**References:**

[www.bwc.gov/campaign/sanfran.htm](http://www.bwc.gov/campaign/sanfran.htm)

## TRANSPORTATION

**TRAN 16. "Smart Drive" Policy**

Employers could establish standard procedures for staff trips such as reducing idling, linking trips, and accelerating more slowly. This would 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. 511 Contra Costa provides free BART tickets for employees in Central County for business meetings during the day.

**Pollutant:** VOC/NOx/PM

**Applies to:** Employers and Employees

**Additional Organizations Involved:**

**Potential Funding Sources:**

**References:**

[www.511contracosta.org](http://www.511contracosta.org)

**TRAN 17. Casual Carpooling**

Individuals can form three-person carpools at established sites usually near transit centers (mainly BART stations), Park & Ride lots, and at locations along transit corridors. Visit [www.511contracosta.org](http://www.511contracosta.org) for locations and more information. 511 Contra Costa offers financial incentives to people who carpool and will work with local jurisdictions to identify locations for potential casual carpool signage and promotion.

**Pollutant:** VOC/NOx/PM

**Applies to:** Residents

**Additional Organizations Involved:** MTC;

511 Contra Costa; City & County Government

**Potential Funding Sources:**

**References:**

[www.ccta.net](http://www.ccta.net);

[www.511contracosta.org](http://www.511contracosta.org)

**TRAN 18. Arterial Bus Lanes/High Occupancy Vehicle Lanes**

On major arterials, CCCTA buses are often mixed with other types of vehicles (passenger and commercial). By creating bus-only, dedicated, exclusive lanes on the major arterials, CCCTA buses can be more competitive in congestion. CCCTA buses using these lanes will reduce travel time for bus passengers, and will provide more incentives for people to stop driving and take mass transit. Funding for arterial and transit operations is limited, and right of way issues relating to widening arterials can also be a challenge.

**Pollutant:** NOx/PM

**Applies to:** Residents, commuters, and visitors

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

**Potential Funding Sources:** CMAQ; TFCA

**References:**

[www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Ovie.w.shtml)

**TRAN 19. No-Cost Transit Service**

Identify and obtain funds to offer no cost transit service to residents and visitors. Walnut Creek offers free downtown shuttle service. BAAQMD and MTC offered free BART rides on Spare the Air days in 2004. CCCTA is considering offering free transit service on Spare the Air Days in 2005. The cost implications of implementing no-cost transit service need to be addressed by local jurisdictions prior to moving forward.

**Pollutant:** VOC/NOx/PM

**Applies to:** City & County Government & Transit Agencies; ACE Shuttle, 511 Contra Costa

**Additional Organizations Involved:** BAAQMD, MTC

**Potential Funding Sources:** TFCA, Business Associations

**References:**

## TRANSPORTATION

### **TRAN 20. 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 & County Employers; Private Employers

**Potential Funding Sources:**

**References:**

<http://www.ci.austin.tx.us/airquality/o3red.htm>

### **TRAN 21. 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:** Special Districts and those cities with Water Agency functions

**Additional Organizations Involved:** EBMUD, CCWD, Martinez

**Potential Funding Sources:**

**References:**

## LAND USE

## LAND USE

**LU 1. Smart Growth**

Smart Growth is development that serves the economy, the community, and the environment, as addressed in the Shaping Our Future efforts conducted by all jurisdictions within Contra Costa County. 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. Both Contra Costa's Measure C (1988) and Measure J (2004) include Growth Management Programs which support this Measure. Measure J also includes funding for a Contra Costa TLC Program.

**Pollutant:** VOC/NOx/PM

**Applies to:** City & County Government; Developers

**Additional Organizations Involved:** Residents & Employees; CCTA

**Potential Funding Sources:** TLC, TFCA

**References:**

[www.abag.ca.gov/planning/smartgrowth/](http://www.abag.ca.gov/planning/smartgrowth/);  
[www.mtc.ca.gov/projects/livable\\_communities/lcindex.htm](http://www.mtc.ca.gov/projects/livable_communities/lcindex.htm);  
[www.baaqmd.gov/pln/smart\\_growth.asp](http://www.baaqmd.gov/pln/smart_growth.asp)

**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 evaporation/transpiration (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:**

[www.airquality.org/cleanairplan/ws0306/ws0306Oview.shtml](http://www.airquality.org/cleanairplan/ws0306/ws0306Oview.shtml);  
[www.tnrcc.state.tx.us/oprd/rule\\_lib/hga-appk.pdf](http://www.tnrcc.state.tx.us/oprd/rule_lib/hga-appk.pdf)

**LU 3. 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 North Central Contra Costa Clean Air Plan could be advanced by adopting relevant policies in the local general plan and pursuing implementation programs. The cost of the preparation of the element will need to be addressed prior to proceeding.

**Pollutant:** VOC/NOx/PM

**Applies to:** City & County Government

**Additional Organizations Involved:**

**Potential Funding Sources:**

**References:**

[www.cityofpaloalto.org/compplan/Natural4WEB.pdf](http://www.cityofpaloalto.org/compplan/Natural4WEB.pdf);  
[www.ci.pleasanton.ca.us/genplanupdate.html](http://www.ci.pleasanton.ca.us/genplanupdate.html)

## LAND USE

### **LU 4. "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:**

[www.cccrecycle.org](http://www.cccrecycle.org);  
[www.ci.berkeley.ca.us/sustainabledevelopment/greenbuilding](http://www.ci.berkeley.ca.us/sustainabledevelopment/greenbuilding);  
[www.oaklandpw.com/greenbuilding/index.htm](http://www.oaklandpw.com/greenbuilding/index.htm);  
[www.ci.san-jose.ca.us/esd/GB-HOME.HTM](http://www.ci.san-jose.ca.us/esd/GB-HOME.HTM)

### **LU 5. Jobs and Housing**

Local government can adopt policies, general plans and zoning ordinances to create opportunities for the development 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:** ABAG

**Potential Funding Sources:**

**References:**

[www.abag.ca.gov/planning/smartgrowth](http://www.abag.ca.gov/planning/smartgrowth);  
[www.atlreg.com/qualitygrowth/Planning/Toolkits/JOB\\_S\\_HOUSING\\_BALANCE\\_TOOL.PDF](http://www.atlreg.com/qualitygrowth/Planning/Toolkits/JOB_S_HOUSING_BALANCE_TOOL.PDF)

## VOLUNTARY MEASURES SUMMARY LISTING

### Stakeholder Acronyms:

**ABAG**, Association of Bay Area Governments; **Council/BOS**, City Council/Board of Supervisors; **BAAQMD**, Bay Area Air Quality Management District; **CCTA**, Contra Costa Transportation Authority; **CDD**, Community Development/Planning Department; **CCCTA**: Central Contra Costa Transit Authority; **CCWD**: Contra Costa Water District; **GSD**, General Services Department; **MTC**, Metropolitan Transportation Commission; **PWD**, Public Works Department; **SD**, School District; 511 Contra Costa

<i>Measure</i>	<i>Description</i>	<i>Stakeholder Group</i>	<i>Implementation Status and Study Area Stakeholder Group</i>
			√ Implemented ● Considering ▲ Warrants Consideration
	<b>PUBLIC EDUCATION</b>		
PE 1	Educate the Public to Promote Behavior Changes	CDD, Council/BOS, SD	√ - Contra Costa County, 511 Contra Costa ▲ - Other Stakeholder Groups
PE 2	Science Fairs	Private, SD	√ - Mt. Diablo Unified School District ▲ Other School Districts
PE 3	Public Education in Schools	BAAQMD, Council/BOS, SD	▲ (Materials are available from BAAQMD & 511 Contra Costa)
PE 4	Education of Employers	Council/BOS, BAAQMD	● Could be implemented by 511 Contra Costa on behalf of Stakeholder groups to private sector
	<b>TECHNOLOGY</b>		
Tech 1	Purchase Low Emission Vehicles	GSD, SD	√ - Contra Costa County, 511 Contra Costa ▲ - Other Stakeholder Groups
Tech 2	Encourage Private Sector Fleets to Purchase Alternative Fuel Vehicles	CCTA/Private	▲ (Materials are available from 511 Contra Costa)
Tech 3	Purchase Alternative Fuel or Electric Vehicles	GSD	√ - Contra Costa County, 511 Contra Costa ▲ - Other Stakeholder Groups
Tech 4	Woodstove/Fireplace Replacement	CDD, Private	√ - City of Clayton ▲ - Other Stakeholder Groups
Tech 5	Establish Police Bicycle Patrols	Police and Sheriff Departments	▲ Stakeholder Groups (Jurisdictions outside the study area have implemented this measure)
Tech 6	Good Fueling Practices	GSD, Private	▲ (511 Contra Costa could promote this)

VOLUNTARY MEASURES SUMMARY LISTING

<i>Measure</i>	<i>Description</i>	<i>Stakeholder Group</i>	<i>Implementation Status and Study Area Stakeholder Group</i>
			√ Implemented ● Considering ▲ Warrants Consideration
Tech 7	Clean Construction Equipment	BAAQMD	▲ (Contra Costa County will consider for larger development projects if they have significant impacts on air quality)
	<b>TRANSPORTATION</b>		
Tran 1	Telecommuting	Council/BOS	√ - Contra Costa County, 511 Contra Costa ▲ - Other Stakeholder Groups
Tran 2	Compressed Work Week	Council/BOS	√ - Contra Costa County, 511 Contra Costa ▲ - Other Stakeholder Groups
Tran 3	511 Contra Costa Incentive Programs	Council/BOS	√ - Implemented by 511 Contra Costa on behalf of Stakeholder groups
Tran 4	Transit Financial Incentives Programs	CCTA	√ - Contra Costa County, City of Walnut Creek ▲ - Other Stakeholder Groups
Tran 5	Bicycle & Pedestrian Infrastructure Improvements	Council/BOS/CCTA, Private	√ Cities, County, 511 Contra Costa
Tran 6	Increase Number of City Services Available by Phone or E-Media	Various	√
Tran 7	Parking Incentives	Council/BOS/Private	√ - Contra Costa County, 511 Contra Costa (511 Contra Costa has programs that relate to parking incentives) ▲ - Other Stakeholder Groups
Tran 8	Congestion Relief Improvement Projects	Council/BOS/PWD	√
Tran 9	Expand and Enhance Mass Transit	CCTA, Council/BOS	▲ (Contingent on State and Federal Transportation Funding)
Tran 10	Carpool Occupancy Requirement on Benicia-Martinez Bridge	MTC	▲
Tran 11	Traffic Calming	Council/BOS, PWD, Private	√ (Contingent on Funding)
Tran 12	Bus Priority Program	CCTA, Council/BOS	▲
Tran 13	Provide School Buses to Reduce School Congestion	Council/BOS, S D	√ - LMSBP ▲ - Other Stakeholder Groups
Tran 14	School Transit	Council/BOS, S D, various	√ - 511 Contra Costa implements programs on behalf of local jurisdictions
Tran 15	Best Workplaces for Commuters Program	Private, various	√ - City of Walnut Creek, City of Lafayette ▲ (511 Contra Costa can assist Public & Private employers in qualifying)
Tran 16	"Smart Drive" Policy	Private, various	▲ (511 Contra Costa provide free BART tickets to the public)
Tran 17	Casual Carpooling	CDD, private, various	√

VOLUNTARY MEASURES SUMMARY LISTING

<i>Measure</i>	<i>Description</i>	<i>Stakeholder Group</i>	<i>Implementation Status and Study Area Stakeholder Group</i>
			√ Implemented ● Considering ▲ Warrants Consideration
Tran 18	Arterial Bus Lane/HOV Lanes	Council/BOS/ PWD	▲ (Contingent on State and Federal Transportation Funding)
Tran 19	No-Cost Transit Service	CCTA, Council/BOS	√ - City of Walnut Creek ▲ - Other Stakeholder Groups
Tran 20	Trip-Appropriate Vehicles ("Right-Sizing")	GSD	√ - Contra Costa County ▲ - Other Stakeholder Groups
Tran 21	Water Meter Reading Via Transponders	PWD, Water Districts	√ - Contra Costa Water District
	<b>LAND USE</b>		
LU 1	Smart Growth	Council/BOS	▲
LU 2	Urban Heat Island Mitigation	Council/BOS, PWD	√ - Contra Costa County (Tree Preservation Ordinance) ▲ - Other Stakeholder
LU3	Air Quality Element in General Plans	Council/BOS	▲ - Other Stakeholder Groups (Walnut Creek is considering)
LU 4	"Green Buildings"	Council/BOS, PWD	√ - Contra Costa County ● - City of Orinda ▲ - Other Stakeholder Groups
LU 5	Jobs Housing Balance	ABAG/Council/BOS	√ - Contra Costa County ▲ - Other Stakeholder Groups

**Stakeholders in the Voluntary Clean Air Plan for North Central Contra Costa County include:**

- Contra Costa County Board of Supervisors
- Contra Costa County Board of Education
- School Districts of Mt. Diablo Unified, Acalanes Union High, Walnut Creek, Orinda, Lafayette, Moraga, Martinez Unified and Canyon
- Cities of Concord, Clayton, Pleasant Hill, Martinez, Lafayette, Walnut Creek, Orinda, and the town of Moraga
- Transportation organizations of Transpac, CCTA, CCCTA, LPMC, LSBP and 511 Contra Costa
- City and County Staff: Planning Directors, General Services Department, Planning Staff, and Public Information Officers and Government Access TV Producers
- Additional stakeholders: City and County staff implementing NPDES, City and County staff managing recycling programs, and Contra Costa Mosquito and Vector Control District

## GLOSSARY

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

<b><u>ACRONYM or TERM</u></b>	<b><u>FULL NAME OR PHRASE and DEFINITION</u></b>
<b>ABAG</b>	<b>Association of Bay Area Governments</b>
<b>ARB</b>	<b>Air Resources Board of California</b> State agency charged with regulatory authority over mobile sources in California and oversight of local air quality agencies.
<b>BAAQMD</b>	<b>Bay Area Air Quality Management District</b> Regional agency charged with planning, regulatory authority and enforcement to achieve air quality standards in the nine-county Bay Area.
<b>CC Connection</b>	<b>Contra Costa Connection</b> Contra Costa County Connection service provides public transportation for Contra Costa County.
<b>CCCTA</b>	<b>Central Contra Costa Transit Authority</b> Also known as the "The County Connection", the CCCTA provides transit service within Central Contra Costa County.
<b>CCTA</b>	<b>Contra Costa County Transportation Authority</b> The Congestion Management Agency for Contra Costa County.
<b>CMA</b>	<b>Congestion Management Agency</b> A Contra Costa County agency whose primary responsibility is to coordinate transportation planning, funding and other activities in a congestion management program.
<b>CMAQ</b>	<b>Congestion Mitigation and Air Quality Improvement Program</b> Provides funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion.
<b>CMP</b>	<b>Carl Moyer Program</b> Provides state funds on an incentive-basis for the incremental cost of cleaner than required engines and equipment.
<b>DOE</b>	<b>Department of Energy</b> Federal agency charged with protecting our national and economic security by promoting a diverse supply of reliable, affordable, and environmentally sound energy.
<b>DMU</b>	<b>Diesel Multiple Unit</b>

<b>EBMUD</b>	<b>East Bay Municipal Utility District</b>
<b>EPA</b>	<b>United States Environmental Protection Agency</b> Federal agency responsible for oversight of air quality management agencies in all states and adoption of certain minimum standards applicable in all areas.
<b>511 Contra Costa</b>	A comprehensive Transportation Demand Management program which promotes the use of alternative commute methods to solo drivers. These efforts reduce traffic congestion and improve air quality by maximizing the use of the existing roadway system. Examples of the commute alternative incentive programs, which are implemented by 511 Contra Costa, include: Carpool, Vanpool, Transit, Carpool to BART, Bike, Telecommuting, Walking and Guaranteed Ride Home from the work place. For more information about 511 Contra Costa go on-line to <a href="http://www.511contracosta.org">www.511contracosta.org</a> or call 1.888.833.4499.
<b>LPMC</b>	<b>Lamorinda Project Management Committee</b>
<b>LSBP</b>	<b>Lamorinda School Bus Program</b>
<b>Measure C</b>	Measure C is Contra Costa County's transportation sales tax measure passed in 1988. It provided for a half-cent on the dollar sales tax to pay for an ambitious list of transportation projects and programs. On November 2, 2004 a majority of Contra Costa voters approved the continuation of the county's half-cent transportation sales tax for 25 more years, now referred to as Measure J.
<b>MTC</b>	<b>Metropolitan Transportation Commission</b> MTC is the transportation planning, coordinating and financing agency for the nine-county San Francisco Bay Area.
<b>NCCCC</b>	<b>North-Central Contra Costa County</b> The cities of Clayton, Concord, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill and Walnut Creek comprise North-Central Contra Costa County.
<b>NOx</b>	<b>Nitrogen Oxides</b> Gaseous pollutant emitted from the combustion of fossil fuel. Key component in the formation of ozone (smog).
<b>NPDES</b>	<b>Non-point Pollution Discharge Elimination System</b>
<b>PM</b>	<b>Particulate Matter</b> 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.
<b>Rides</b>	"Rides" is a non-profit organization that provides transportation information and assistance to Bay Area commuters.

<b>ROG</b>	<p><b>Reactive Organic Gases</b> Hydrocarbon compounds that react with NOx 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.</p>
<b>SECAT</b>	<p><b>Sacramento Emergency Clean Air and Transportation Program</b> 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.</p>
<b>TFCA</b>	<p><b>Transportation Fund for Clean Air</b> 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.</p>
<b>TLC</b>	<p><b>Transportation for Livable Communities</b> Grant program administered by MTC to promote community vitality and provide transit, pedestrian and bicycling amenities. Includes planning and capital grants.</p>
<b>TRANSPAC</b>	<p><b>Transportation Partnership and Cooperation</b> TRANSPAC is the Regional Transportation Planning Committee for Central Contra Costa composed of elected representatives, planning commissioners and technical staff from the six Central Contra Costa jurisdictions. Jurisdictions include cities of Clayton, Concord, Martinez, Pleasant Hill, Walnut Creek and the unincorporated area of Central Contra Costa County.</p>
<b>UHIMM</b>	<p><b>Urban Heat Island Mitigation Measures</b> Planting trees (or saving existing trees from removal) and using light colored materials for roofs, streets, and parking lots.</p>
<b>VMT</b>	<p><b>Vehicle Miles Traveled</b> Number of miles traveled by automobiles, trucks and buses.</p>
<b>VOC</b>	<p><b>Volatile Organic Compounds</b> Hydrocarbon compounds that react with NOx 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.</p>

## **Acknowledgements**

### **About the author:**

#### **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.

#### **Special acknowledgement:**

Contra Costa County would like to acknowledge the contribution of the Alameda County Board of Supervisors in preparing this Clean Air Plan, especially Supervisor Scott Haggerty. The Board of Supervisors provided the funding for much of the work done for the "Voluntary Measures" section of the Plan. Supervisor Haggerty is also the immediate past Chair of the Bay Area Air Quality Management District.