



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

# **Draft Report Improving Air Quality and Health in Bay Area Communities: CARE Program Retrospective and Path Forward**

**Phil Martien, Ph.D.**

**CARE Task Force Meeting**

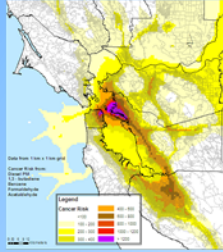
**Bay Area Air Quality Management District**

**March 25, 2014**


# Overview

- Introduction
- Regional-Scale Air Pollution Assessments
- Local-Scale Air Pollution Monitoring and Assessments
- Air District Actions to Support Healthy Communities
- Key Findings, Lessons Learned, and Next Steps
- Comments & Discussion

**IMPROVING AIR QUALITY & HEALTH  
IN BAY AREA COMMUNITIES:  
COMMUNITY AIR RISK EVALUATION  
PROGRAM RETROSPECTIVE &  
PATH FORWARD  
(2004 – 2013)**




**Healthy Neighborhoods** **Exposure Assessments** **Scientific Studies**



**Collaborations with the Public, Researchers, and Health & Planning Departments**

**March 2014**

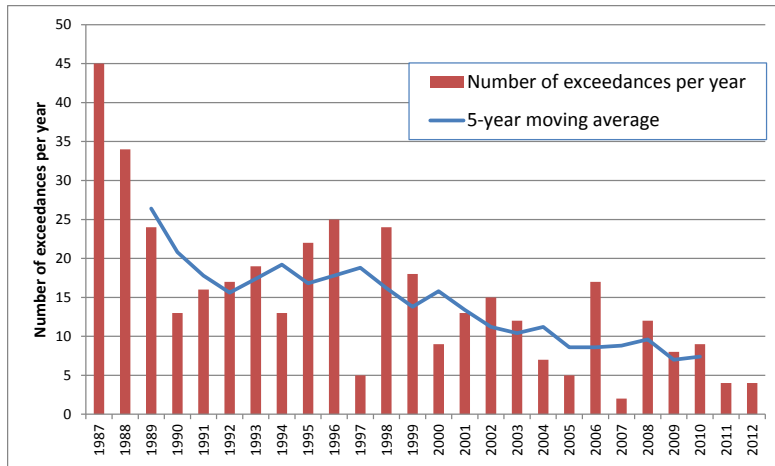
 **BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT**

# Introduction

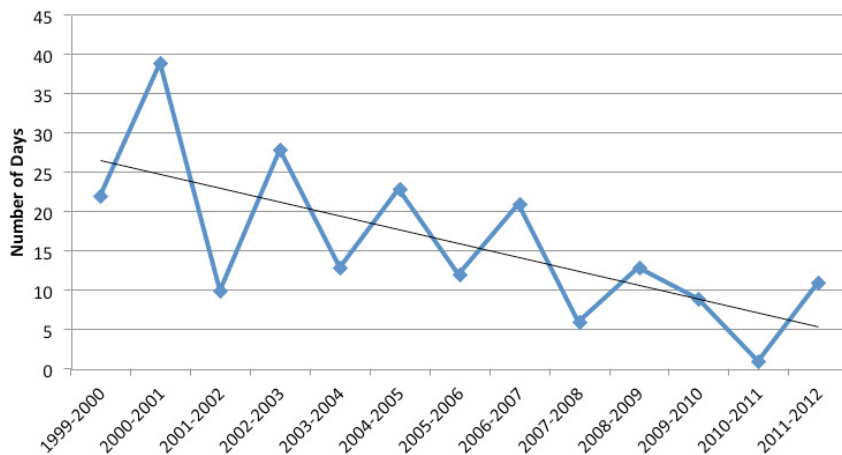
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- Trends in Bay Area Air Pollution
- Goals of the CARE Program
- Program Approach

# Air Quality Trends

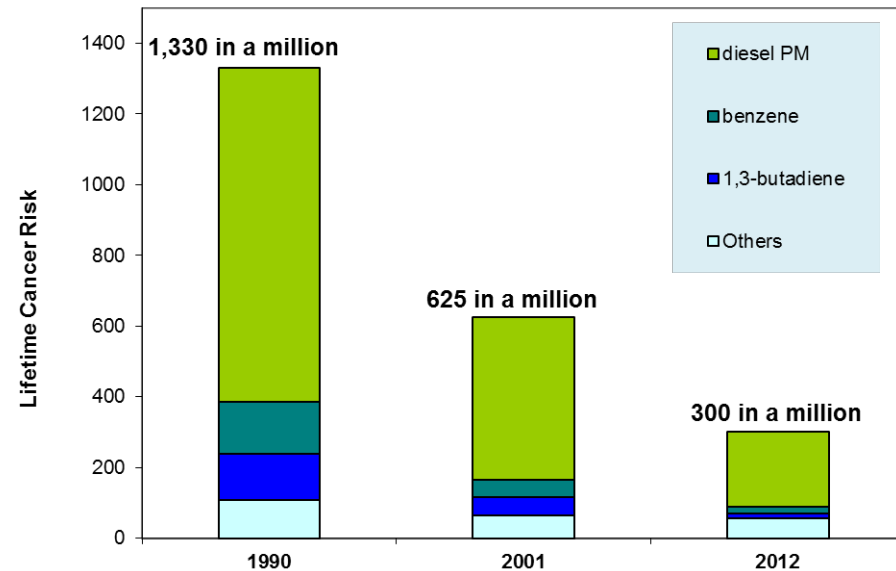


Days/year over national 8-hour ozone standard



Winter days over national 24-hour PM<sub>2.5</sub> standard

**Air quality is improving in the Bay Area**



Lifetime cancer risk from air pollutants

# But Air Quality Challenges Remain

- Some communities have higher air pollution exposures and health impacts
- Near-source exposures, especially particles and toxic air contaminants
- Episodes with higher levels of fine particles and ozone



# Policy Goals of CARE

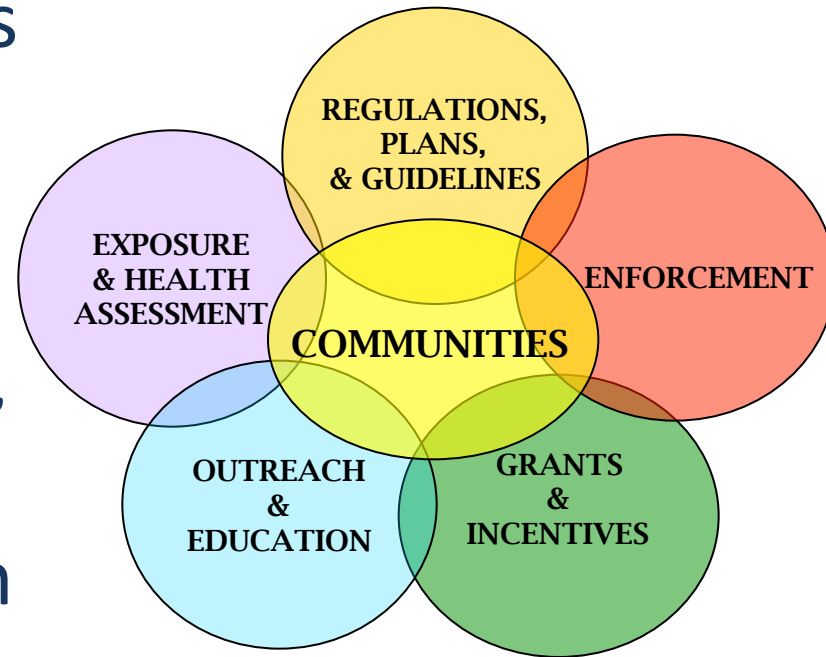
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- Goal 1:** Identify areas in the Bay Area where vulnerable populations are impacted by air pollution
- Goal 2:** Apply science and research to design effective mitigations in the areas with the highest impacts
- Goal 3:** Engage and foster relationships with communities, other stakeholders, and local agencies to create comprehensive mitigation strategies



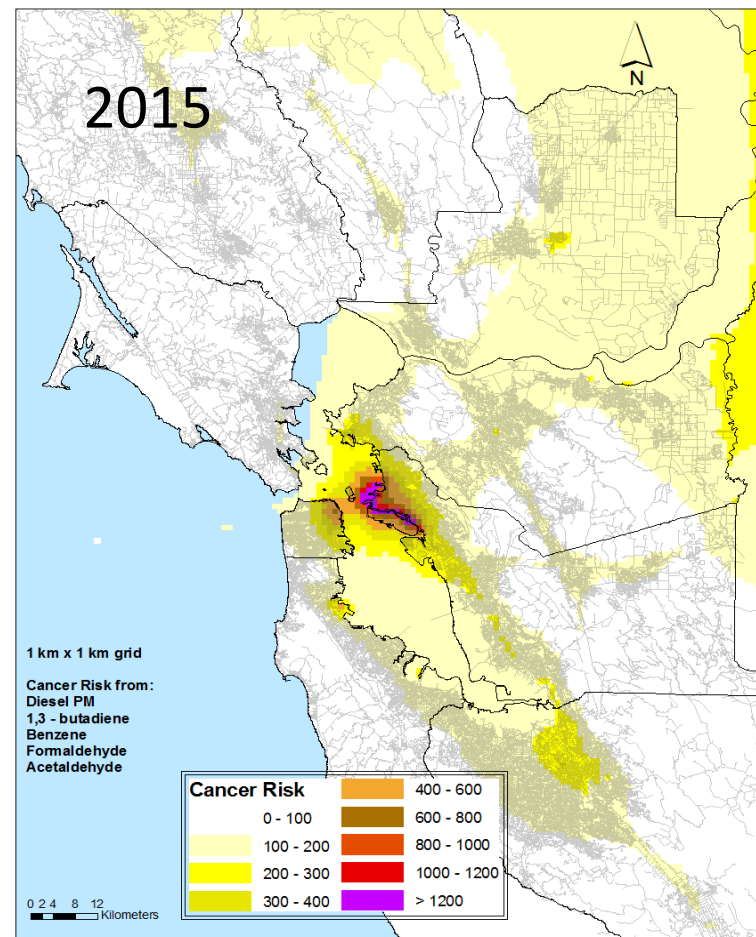
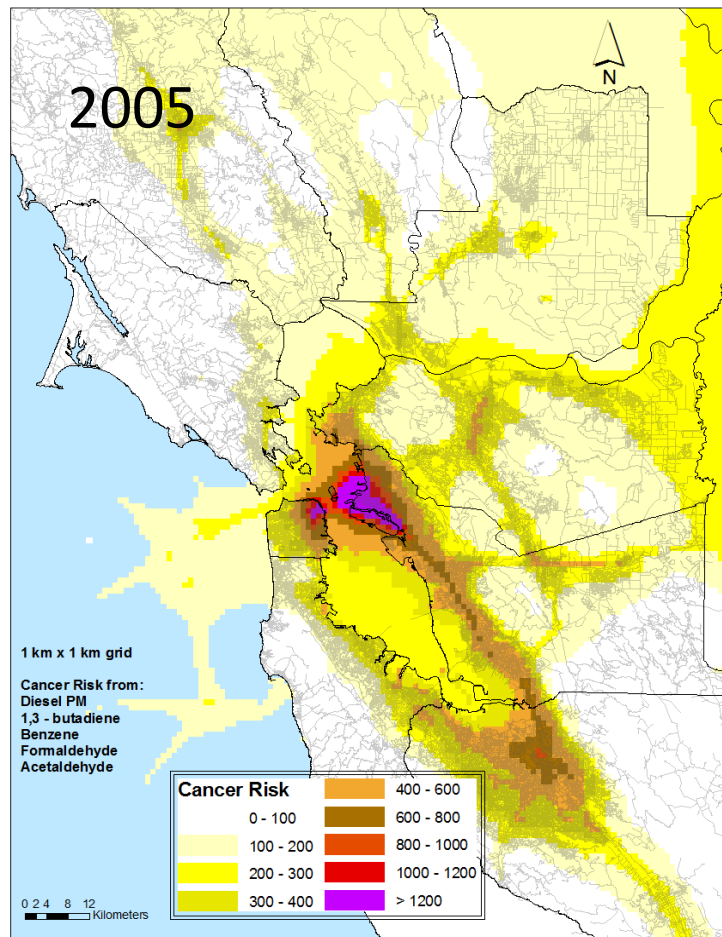
# Program Approach

- Focus on toxic air contaminants and particles for local exposure assessments
- Phases of CARE Program: Emissions, Concentrations, Exposures
- Focus Air District actions in impacted communities—Clean Air Communities Initiative



# Regional-Scale Assessments

Developed regional toxics modeling: emissions, concentrations, risk



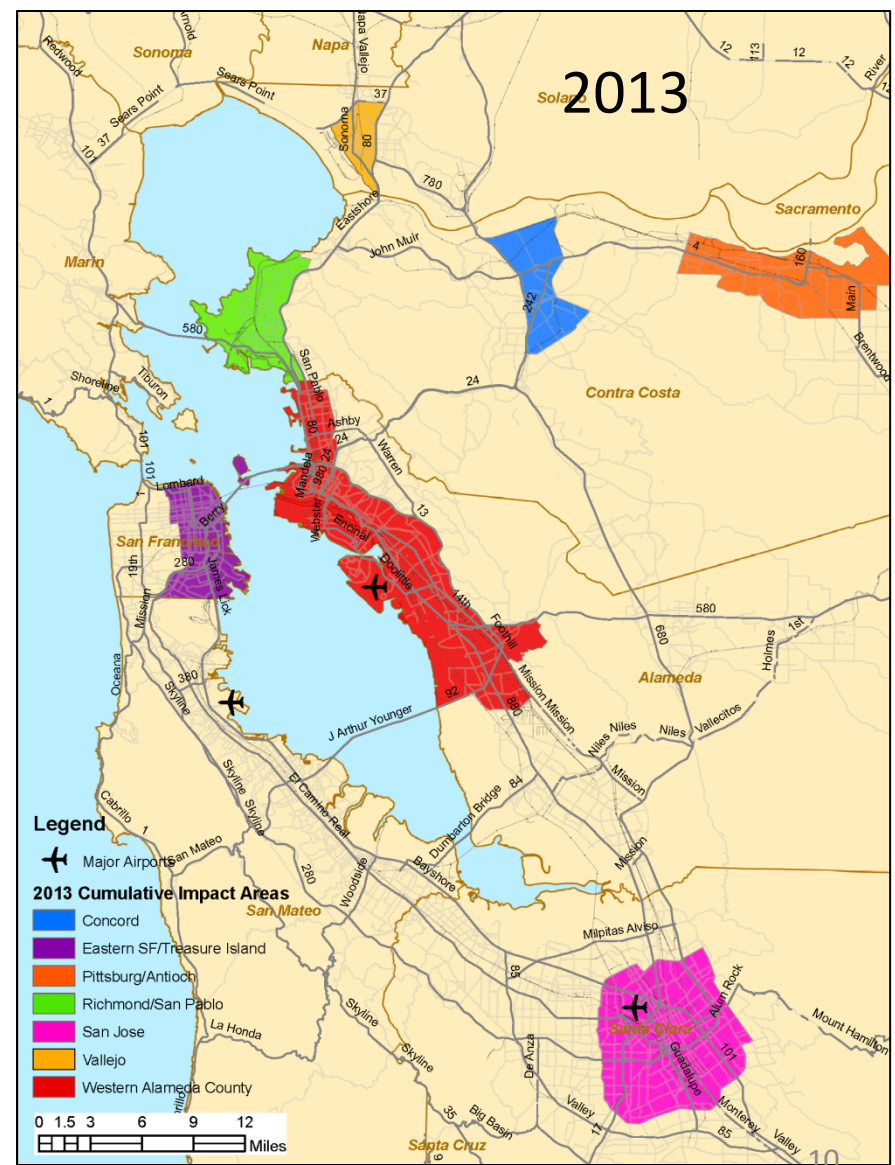
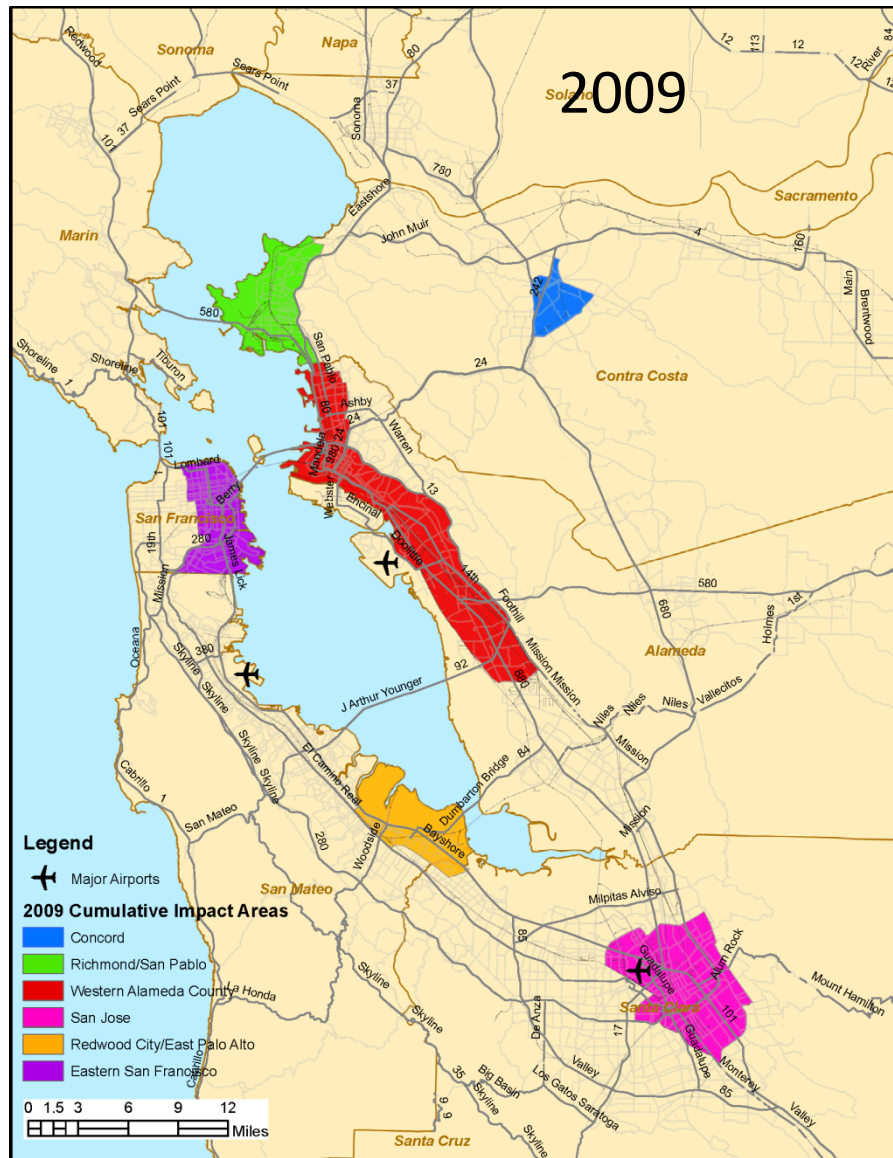


# Key Findings

- Diesel PM contributed more than 85% of the total inventoried cancer risk
- Predicted cancer risk is highest near major diesel PM sources
- Cancer risk is dropping – cancer risks are projected to drop by 50% between 2005 and 2015 due to state diesel regulations and other controls
- Measurement-based assessments of cancer risk from air pollution show similar reductions

Initiated development of cumulative impact maps to support & focus Air District mitigation activities

# Update to Cumulative Impact Areas



# Episodic Air Pollution Impacts

Identify areas that exceed  $PM_{2.5}$  or ozone standards three or more times in three years



# Uses of Map



- Cumulative impact maps support and focus localized mitigation activities
  - Clean Air Communities Initiative
- Exceedance maps support and focus regional mitigation activities
  - Clean Air Plan policies and programs
  - Identify and reduce upwind sources of precursor emissions
  - Public outreach

# Local-Scale Studies

- The goal is to develop information and tools to understand and reduce exposures to local sources of air pollution and reduce associated health impacts
  - West Oakland Case Studies
  - Measurement studies Near Industrial Facilities
  - Near Roadway Measurements
  - Modeling & Screening Tools to Support Infill Development





# West Oakland Case Studies

- Diesel PM Health Risk Assessment
- West Oakland Truck Survey
- Drayage Truck Plume Measurement Study
- West Oakland Monitoring Study





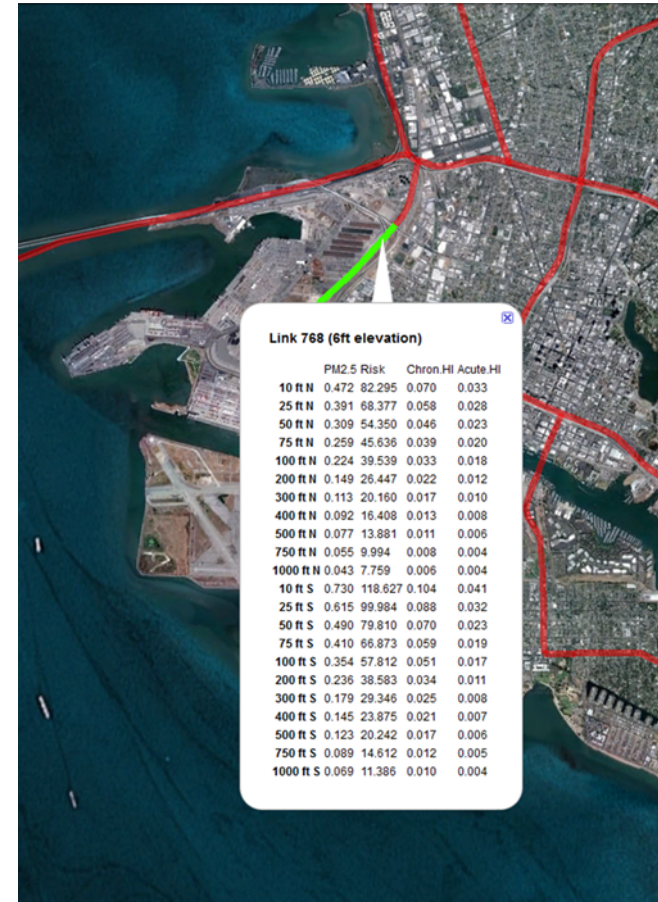
# Measurement Studies Near Industrial Facilities

- Metal foundry in West Berkeley
- Aluminum melting/recycling operation in West Oakland
- Portland cement manufacturer in Cupertino
- More data, improved understanding
- Data informs new regulations:
  - Metal recycling and shredding operations—Regulation 6, Rule 4 (2013)
  - Foundry and forging operations—Regulation 12, Rule 13 (2013)
  - Portland cement manufacturing – Regulation 9, Rule 13 (2012)



# Modeling & Screening Tools

- Assist local staff in reducing exposures and health impacts
- Stationary source screening tool
  - Locates permitted sources
  - Cancer risk, PM<sub>2.5</sub> concentrations, hazard
- Roadway screening for highways and surface streets
  - Link specific cancer risk, PM<sub>2.5</sub> concentrations, hazard
- Technical guidance
- Community Risk Reduction Plans



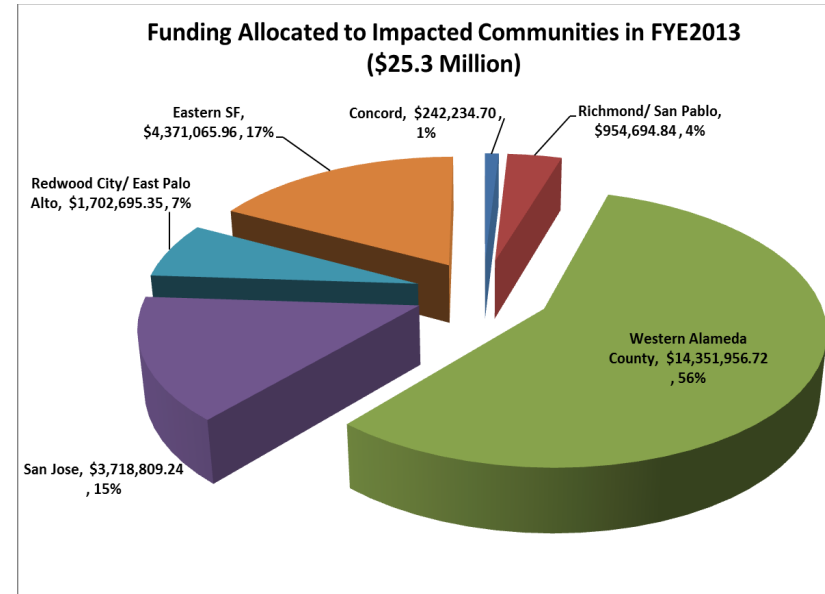
# Clean Air Communities Initiative

- Grants

# Prioritize grant funding to reduce emissions in impacted areas

- Enforcement

# Focus enforcement of CARB's diesel rules for sources in impacted areas



# Clean Air Communities Initiative

- **Regulations**

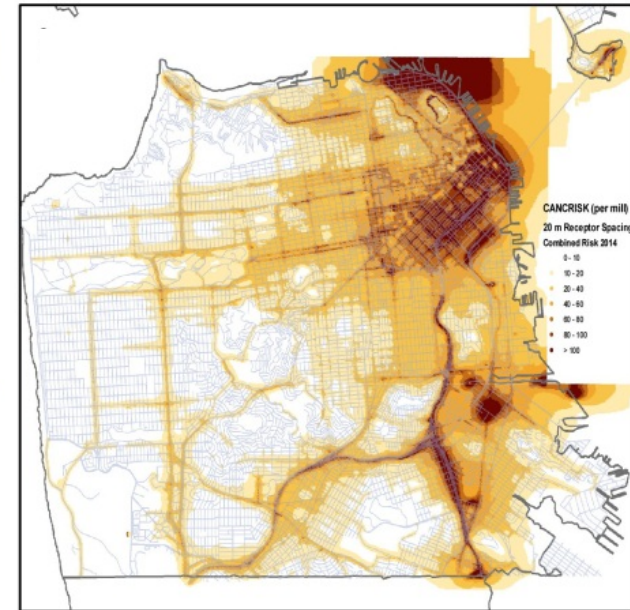
Develop regulations targeting pollutants and sources of concern in impacted areas

- New Source Review, Title V permits, Source-specific regulations

- **Planning**

Support infill development and minimize exposure to air pollution

- CEQA guidelines
- Screening tools
- Community Risk Reduction Plans



# Key Accomplishments

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- Developed productive working relationship with stakeholders, local agencies, and community groups
- Integrated maps of cumulative impact areas into District programs and policies
- Outfitted mobile sampling van that was used for several key studies
- Supported development of screening tools and modeling guidance for environmental review documents
- Supported pilot Community Risk Reduction Plans
- Provided documents on methods and findings

# Key Findings

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- Diesel PM is significant contributor to cancer risk
- Particulate matter of all types is linked to poor health outcomes and mortality
- Clear correlation between areas of impact and socio-economic factors: income, race, and education
- Regulatory programs to reduce emissions are having significant health benefits
- Infill development can safely proceed in areas identified as impacted, if locations adjacent to high pollution sources are avoided or effective mitigations are in place



# Lessons Learned

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- Collaboration extends what the District can accomplish
- Studies that assess the effectiveness of mitigation measures provide valuable assurance that the mitigations are on track
- Maps of air pollution levels and risk from multiple sources are valuable planning tools
- Cumulative impact maps are useful for prioritizing certain actions and mitigations

# Comments from CARE Task Force

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- The CARE Task Force provided community members a place to meet as equal partners with the Air District staff
- It was valuable to have broad representation within the Task Force in order to make methodologies stronger
- The Air District's efforts to identify hot spots or disproportionately impacted communities should help identify the major polluting sources and help develop measures to reduce health impacts
- Discussion needs to shift from identifying most impacted communities to reducing pollution beyond what has already been done

# Next Steps

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- Continue to integrate impacted communities into District programs
  - Reduce air pollution emissions, exposure, health impacts
- Engage other agencies, build cooperative relations to support communities
- Prioritize the development of improved datasets, tools, and guidance to support healthy infill development

# Comments & Discussion

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- Discussion
- Provide comments on draft report by April 4, 2014
- CARE Task Force Members to be acknowledged by Board of Directors on April 16
- Next and final CARE Task Force meeting in April/May 2014