Identifying Impacted Communities: Methods & Updates

Phil Martien, Ph.D.
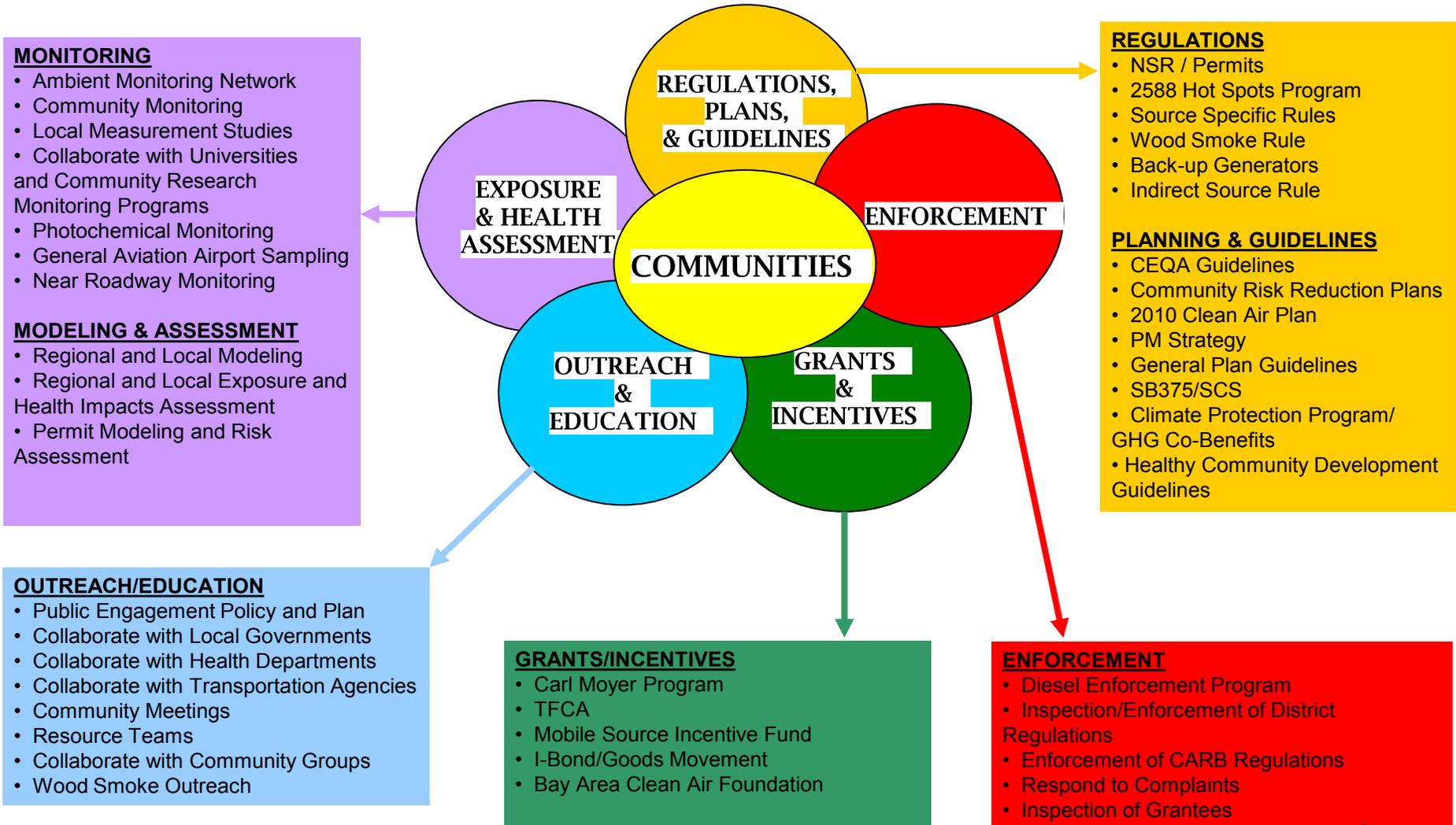**Bay Area Air Quality Management District**
CARE Task Force Meeting
June 5, 2012

Overview

- Review Air District's current method for developing impacted communities map

- Why update current maps?
  - Updated data available
  - New datasets to consider
  - New methods to consider

- Next steps

Clean Air Communities Initiative

MONITORING
- Ambient Monitoring Network
- Community Monitoring
- Local Measurement Studies
- Collaborate with Universities and Community Research Monitoring Programs
- Photochemical Monitoring
- General Aviation Airport Sampling
- Near Roadway Monitoring

MODELING & ASSESSMENT
- Regional and Local Modeling
- Regional and Local Exposure and Health Impacts Assessment
- Permit Modeling and Risk Assessment

EXPOSURE & HEALTH ASSESSMENT

REGULATIONS, PLANS, & GUIDELINES

COMMUNITIES

ENFORCEMENT

OUTREACH & EDUCATION

GRANTS & INCENTIVES

REGULATIONS
- NSR / Permits
- 2588 Hot Spots Program
- Source Specific Rules
- Wood Smoke Rule
- Back-up Generators
- Indirect Source Rule

PLANNING & GUIDELINES
- CEQA Guidelines
- Community Risk Reduction Plans
- 2010 Clean Air Plan
- PM Strategy
- General Plan Guidelines
- SB375/SCS
- Climate Protection Program/ GHG Co-Benefits
- Healthy Community Development Guidelines

OUTREACH/EDUCATION
- Public Engagement Policy and Plan
- Collaborate with Local Governments
- Collaborate with Health Departments
- Collaborate with Transportation Agencies
- Community Meetings
- Resource Teams
- Collaborate with Community Groups
- Wood Smoke Outreach

GRANTS/INCENTIVES
- Carl Moyer Program
- TFCA
- Mobile Source Incentive Fund
- I-Bond/Goods Movement
- Bay Area Clean Air Foundation

ENFORCEMENT
- Diesel Enforcement Program
- Inspection/Enforcement of District Regulations
- Enforcement of CARB Regulations
- Respond to Complaints
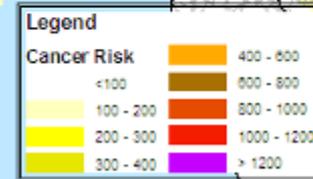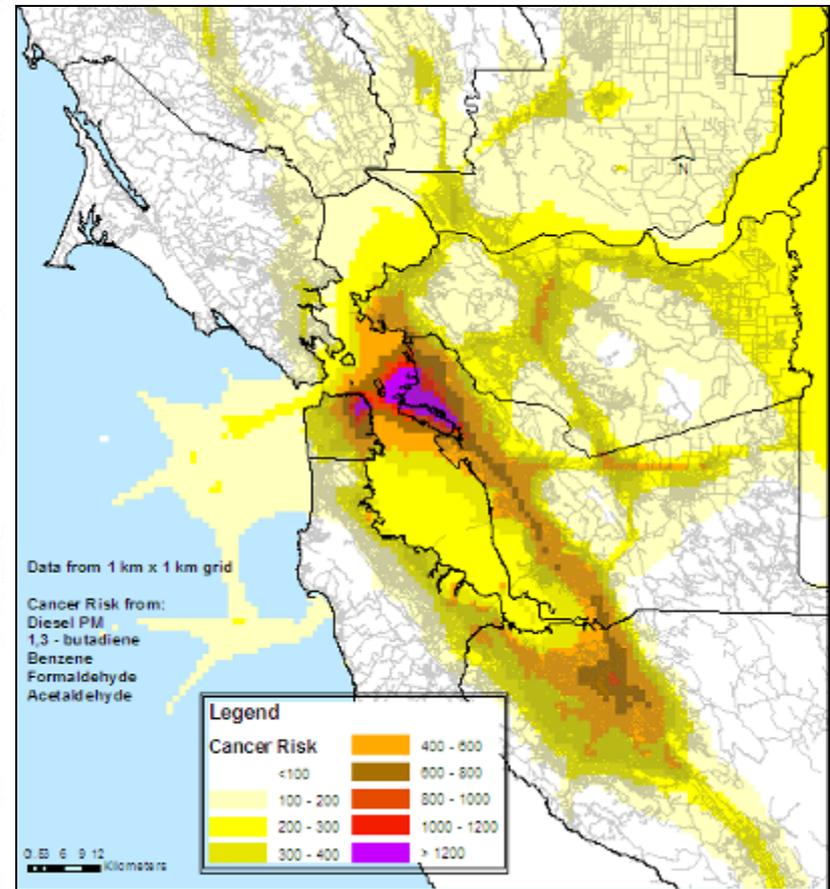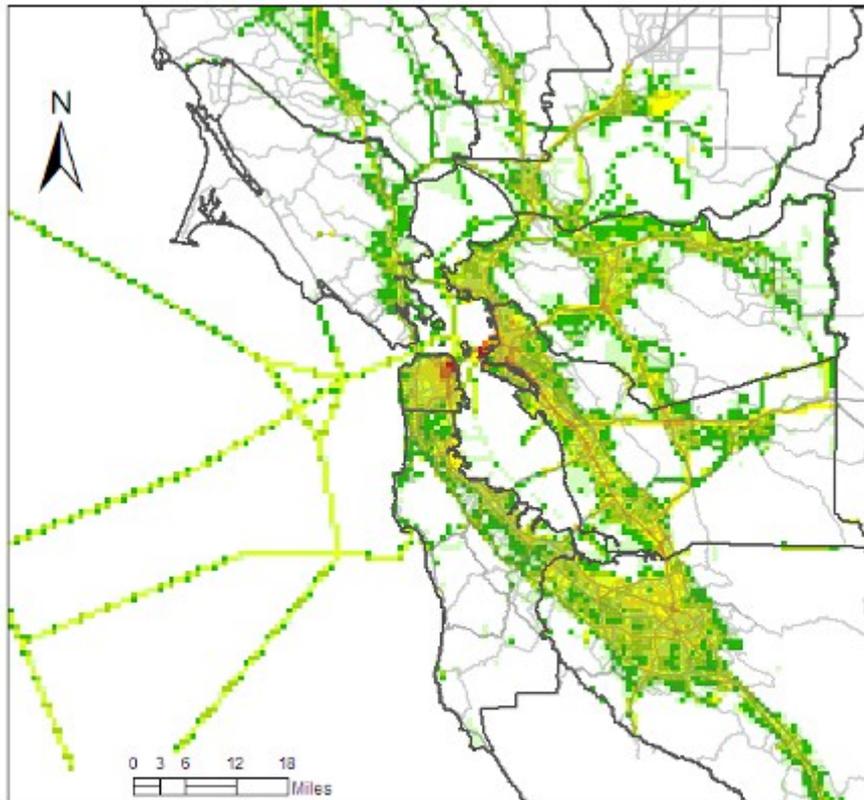- Inspection of Grantees

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Current Mapping Criteria

- Areas with high exposures to toxic air contaminants
  - Youth
  - Seniors

- Areas with high emissions of toxic air contaminants

- Areas with low family Income

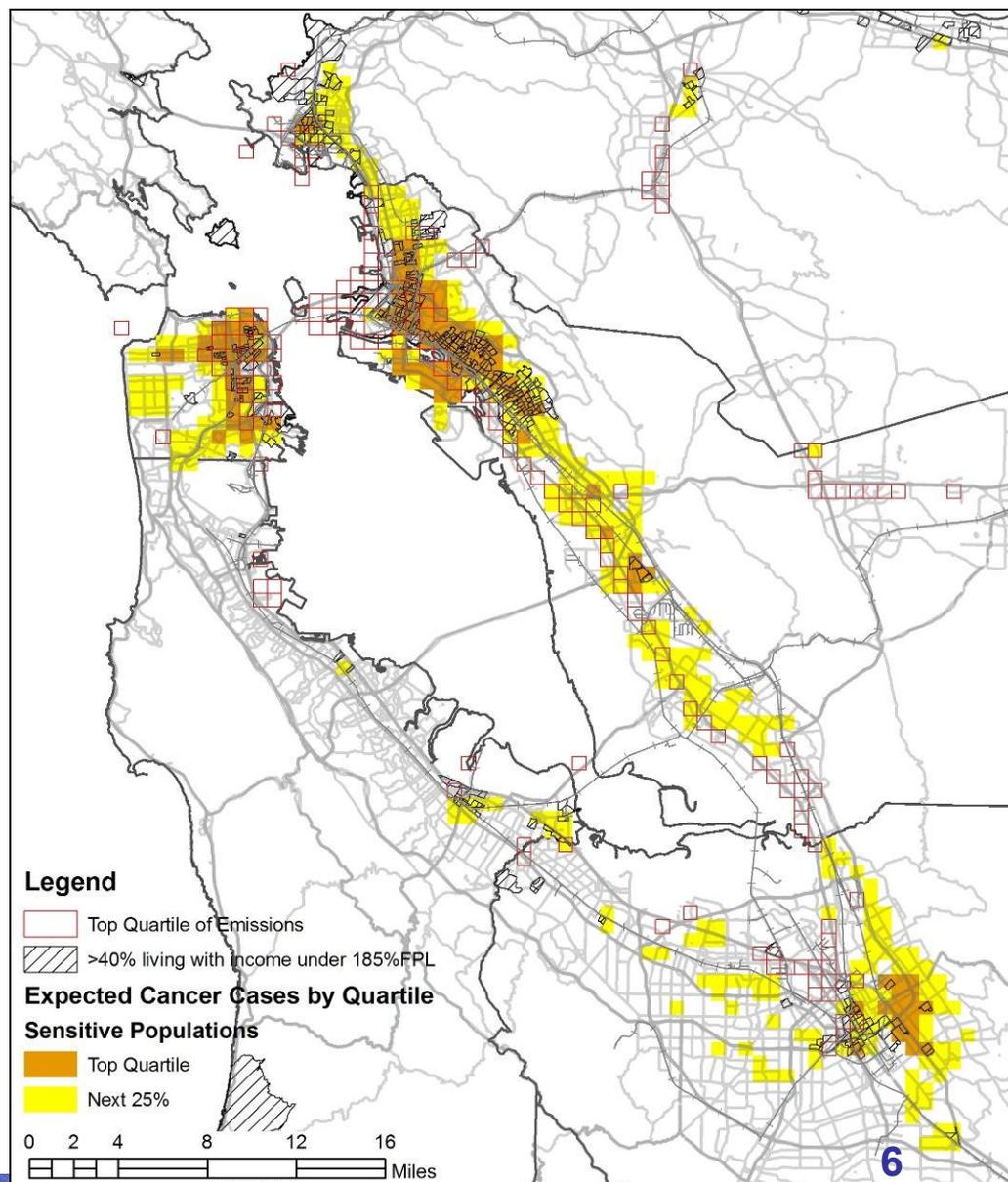# Emissions and Modeled Air Toxics (2005)

Risk-weighted Emissions

Modeled Air Toxics Risk

Cancer risk-weighted emissions (lbs/day * unit risk factor)

> 0.02	0.005 - 0.01	0.001 - 0.002	0.0002 - 0.0005	< 0.0001	
0.01 - 0.02	0.002 - 0.005	0.0005 - 0.001	0.0001 - 0.0002		

Data from 1 km x 1 km grid

Cancer Risk from:
Diesel PM
1,3 - butadiene
Benzene
Formaldehyde
Acetaldehyde

Legend

Cancer Risk

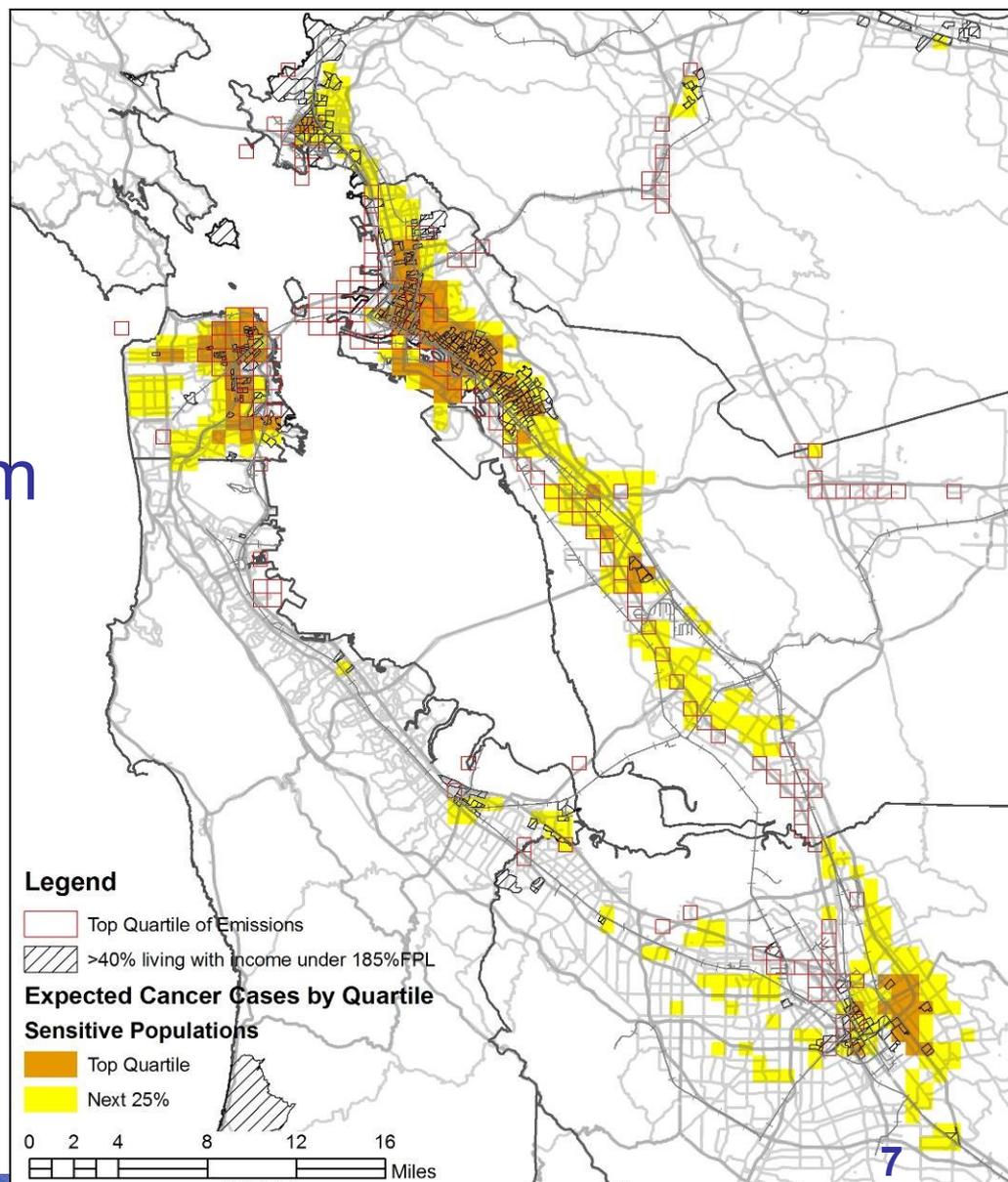|	
<100	400 - 600
100 - 200	600 - 800
200 - 300	800 - 1000
300 - 400	1000 - 1200
400 - 600	> 1200

Mapping Inputs

- Modeled exposure of sensitive populations (youth & senior) to major cancer-causing compounds (top 50%)

- Cancer-risk-weighted emissions (top 25%)

- Family income (more than 40% of population under 185% federal poverty level)

Legend

- Top Quartile of Emissions
- >40% living with income under 185%FPL

Expected Cancer Cases by Quartile
Sensitive Populations

- Top Quartile
- Next 25%

0   2   4   8   12   16
Miles

Apply Mapping Inputs

- Identify top 50% exposures of youth & seniors (yellow or orange cells)

- Within one grid cell from a top 25% emissions (red outline cell) AND

- Intersect low-income areas

- How to draw lines on a map?

Legend

| | Top Quartile of Emissions |
| | >40% living with income under 185%FPL |

Expected Cancer Cases by Quartile
Sensitive Populations

| | Top Quartile |
| | Next 25% |

0 2 4   8   12   16
Miles

Mapping Methods

- Construct boundaries along major roads or highways that encompass areas identified

- Use knowledge of local areas to make adjustments

- Refine boundaries with community input and feedback, or when new data are available

Legend

- ✈ Major Airports
- >40% living with income under 185%FPL
- Top Quantile Emission Sources
- Top 25% Quartile of TAC Exposure
- Next 25% Quartile of TAC Exposure

Revised Impacted Community Boundary
- Concord
- Eastern San Francisco
- Western Alameda County
- Redwood City/East Palo Alto
- Richmond/San Pablo
- San Jose

0 1.5 3   6   9   12
Miles

Impacted Communities

- Concord
- Richmond/San Pablo
- Western Alameda County
- San Jose
- Redwood City/East Palo Alto
- Eastern San Francisco
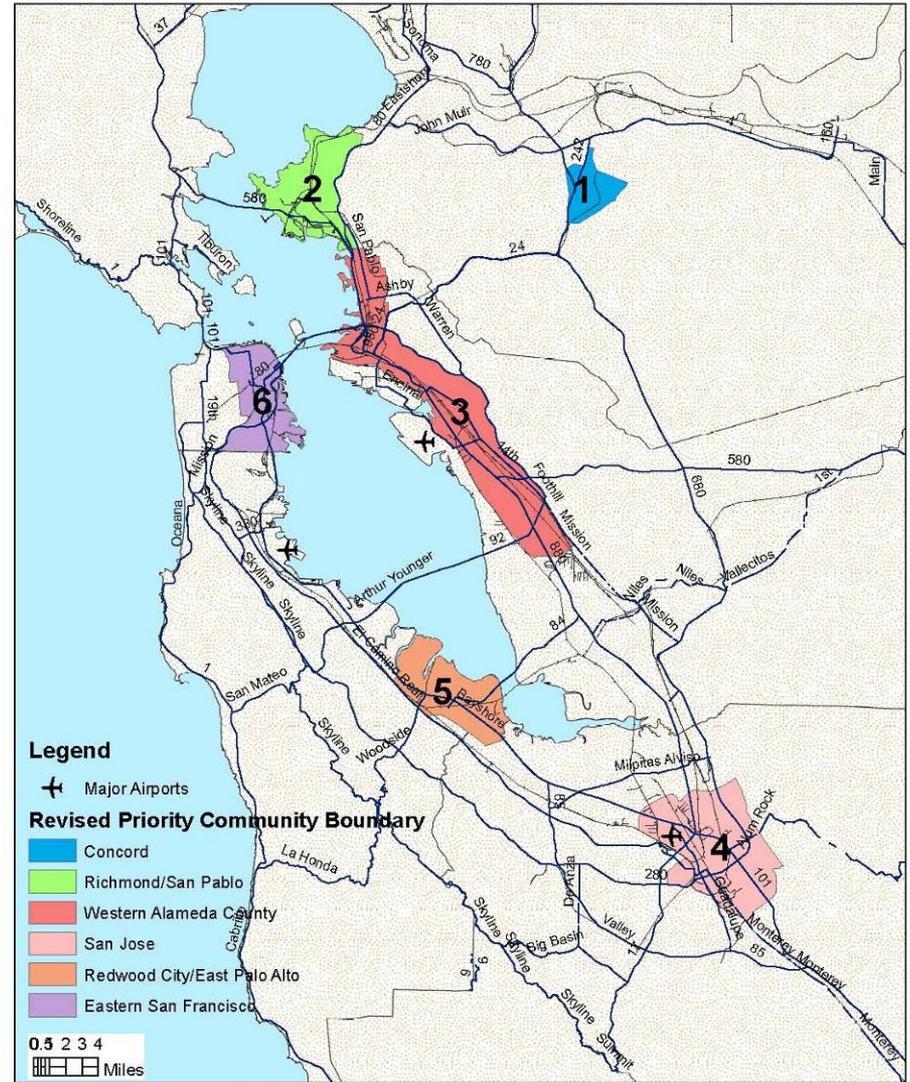
Why Update Current Maps?

- Updated data are available
  - 2010 US Census
  - 2015 toxic emissions and modeling

- Consider using additional data
  - Exposures to pollutants in addition to toxic compounds: fine particles, ozone—using Air District regional modeling
  - Socio-economic and health outcome data

- Consider using new methods

Next Steps

- Develop draft revised mapping method
  - Consider presentations and input from today's meeting and ensuing discussions

- Share revised draft mapping method; seek input (Sep 2012)

- Share revised draft maps using updated method; seek input (Oct/Nov 2012)

- Complete late 2012