

The Health and Related Economic Benefits of Attaining Healthful Air in the San Joaquin Valley

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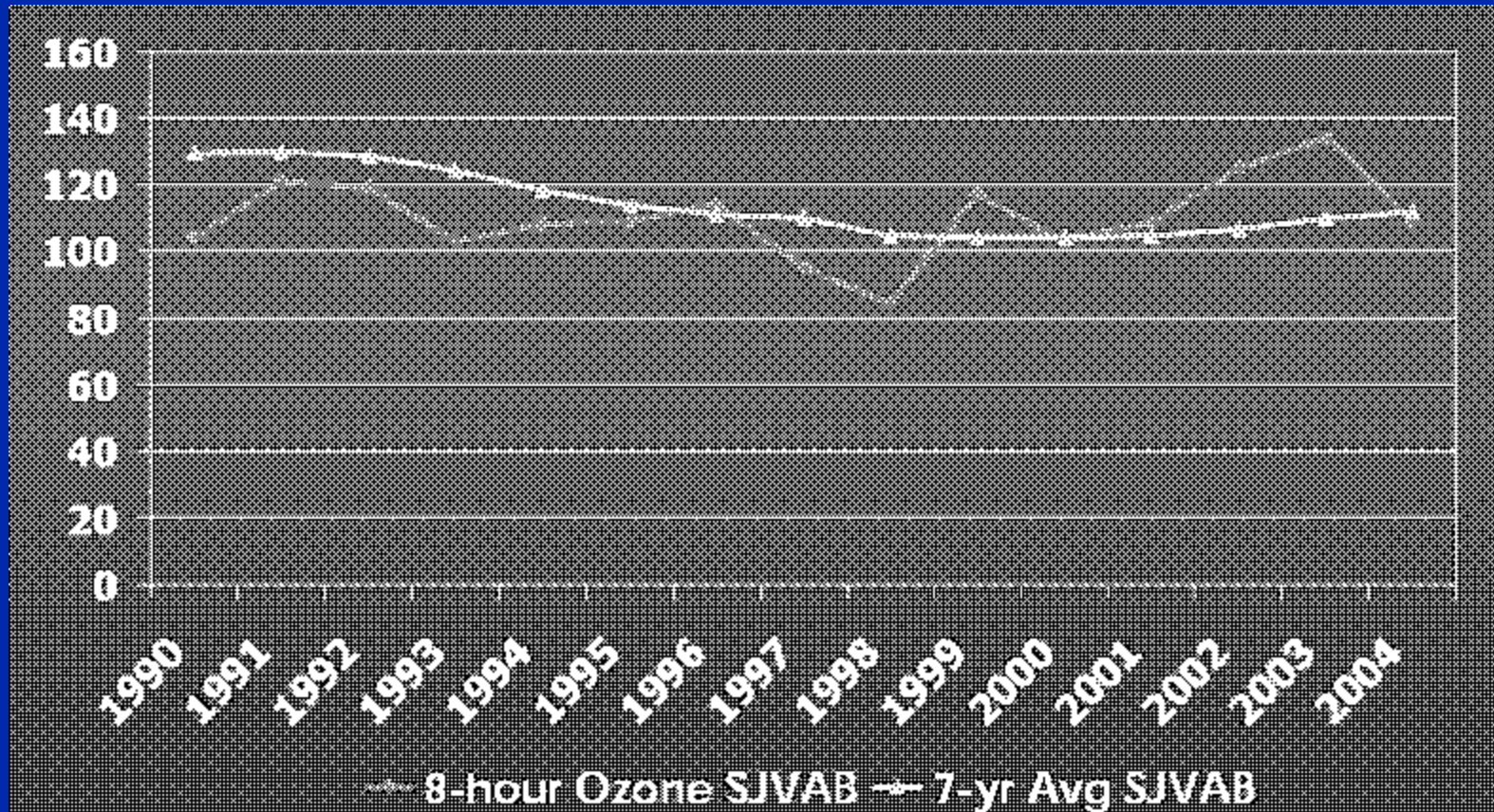
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SJV Air Quality Status

- Ozone
 - Ozone NAAQS Exceedances are frequent
 - SJV is classified as a “Serious” Nonattainment Area for 8-hr NAAQS
 - New Air Quality Management Plan, due in 2007, will try to achieve compliance by 2013
 - Major Issue – No downward trend in recent years

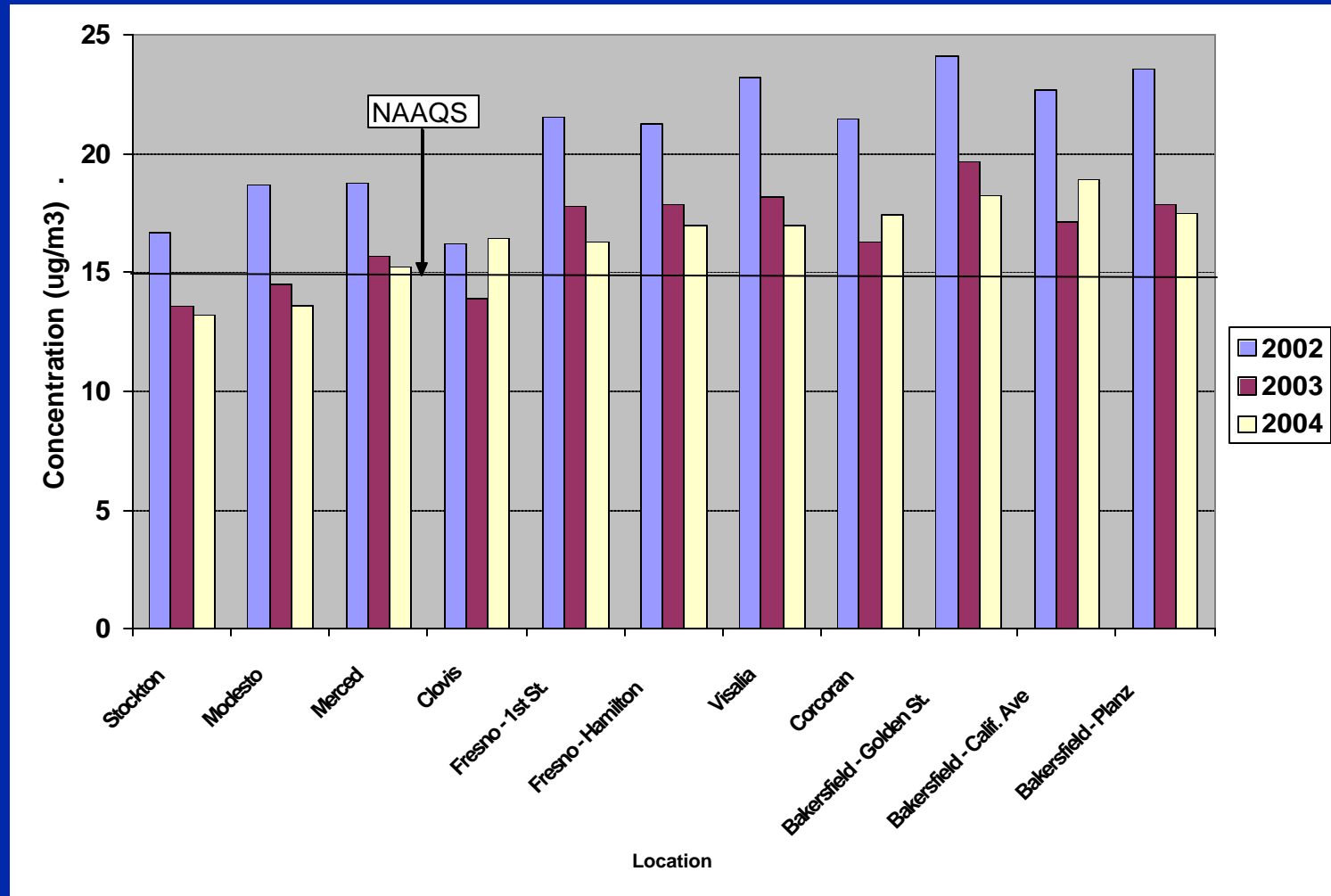
Days Above the Federal 8-hr Ozone Standard in the San Joaquin Valley Air Basin



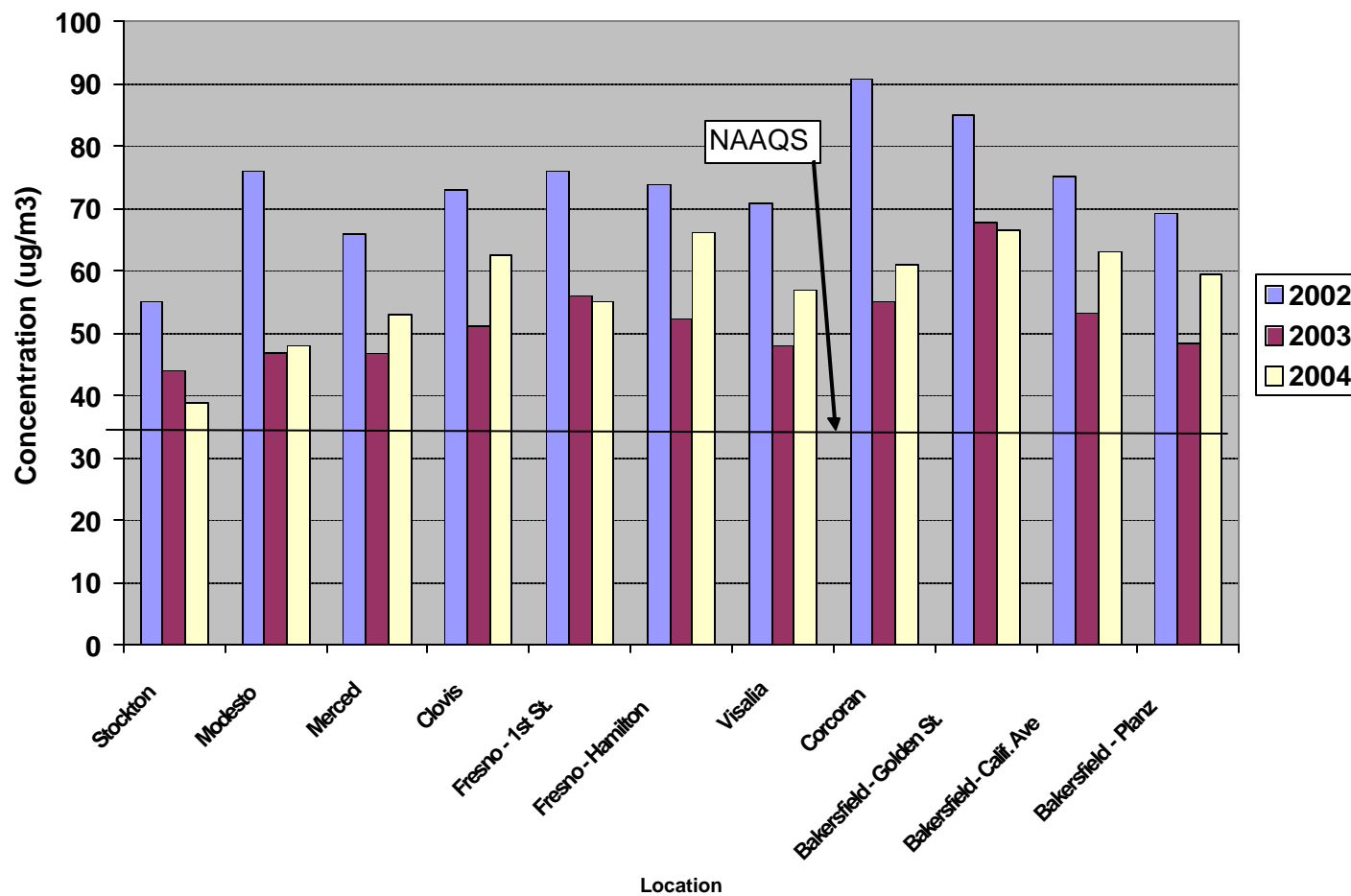
SJV Air Quality Status

- PM
 - Daily and Annual PM2.5 NAAQS are exceeded in the SJV
 - Area is classified as “Serious” Nonattainment for PM2.5
 - New Air Quality Management Plan, due in 2008, will try to achieve compliance by 2013
 - Compliance with the PM2.5 NAAQS will be more difficult than with the PM10 standards

Annual Average PM2.5 in SJV



98th Percentile 24-hour average PM_{2.5} Concentrations



Exposure Approach

Baseline Air Quality

- 2002-2004 Measurement Data in and Around SJV Air Basin
- Create Spatial Maps of Ambient Air Quality Data
 - Hourly Ozone Maps
 - Daily and annual PM_{2.5} Maps

Exposure Approach

Future Air Quality

- Determine Design Values (3 yr averages)
- Project future year concentrations that comply with standards using Rollback

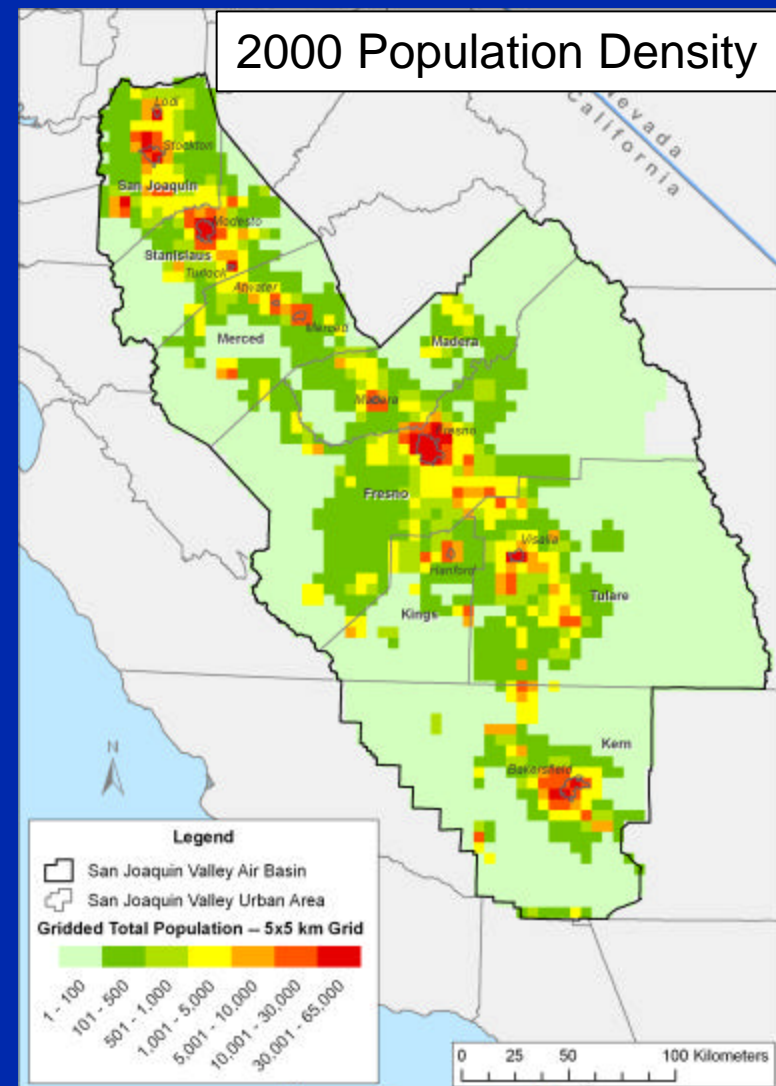
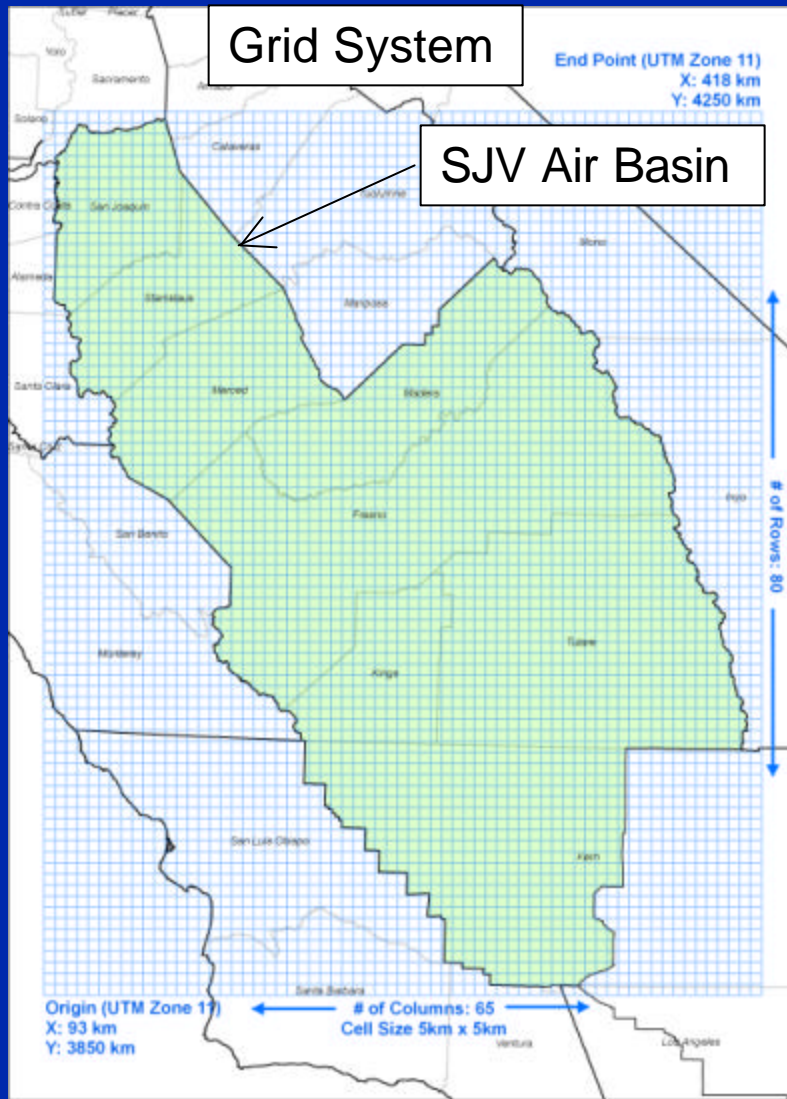
Population

- 2000 census data gridded and adjusted to reflect the 2004 population
- Grid, county, age and race/ethnicity breakdown

NAAQS Reduction Requirements

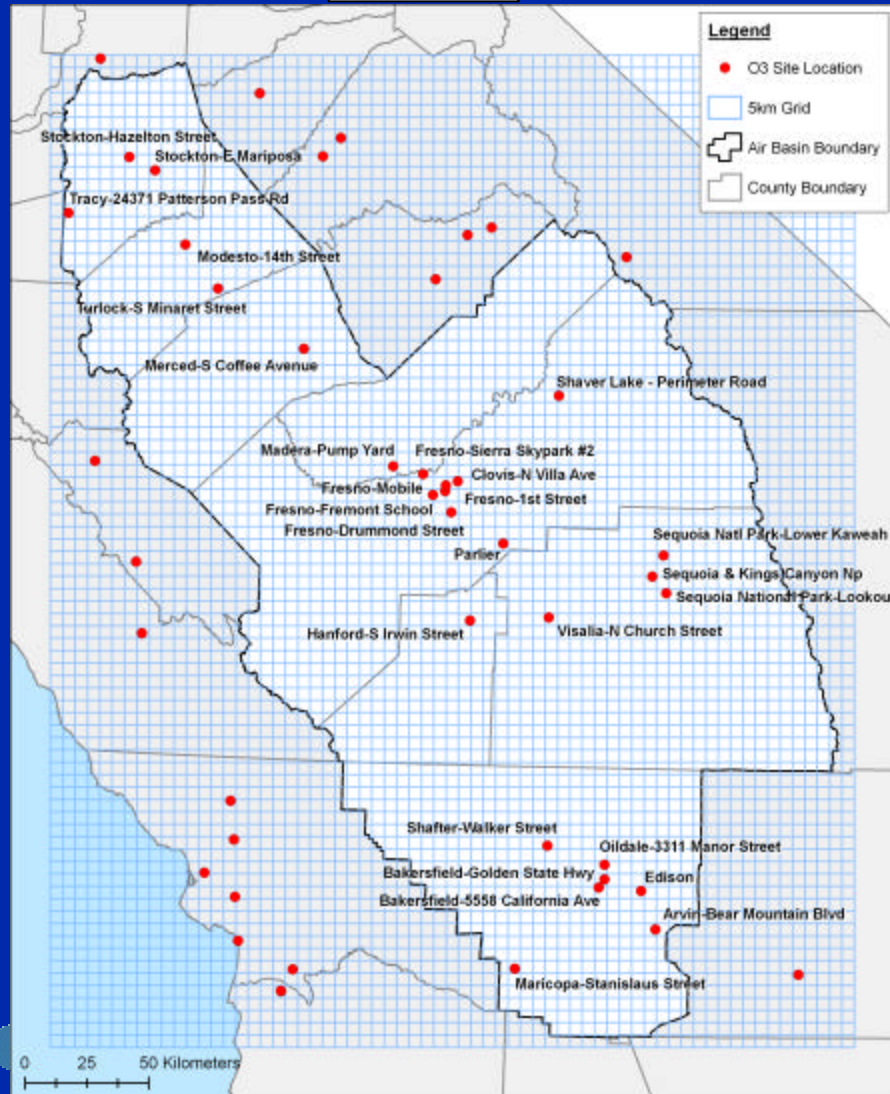
NAAQS	Background	Design Value	Future Value
Ozone 8-hr (ppb)	40	116.7	85
PM _{2.5} Annual (µg/m ³)	6	20.6	15.5
PM _{2.5} 24-hr (µg/m ³)	6	73.2	35.5
PM _{2.5} 24-hr –Previous	6	73.2	65.5

Gridded Population

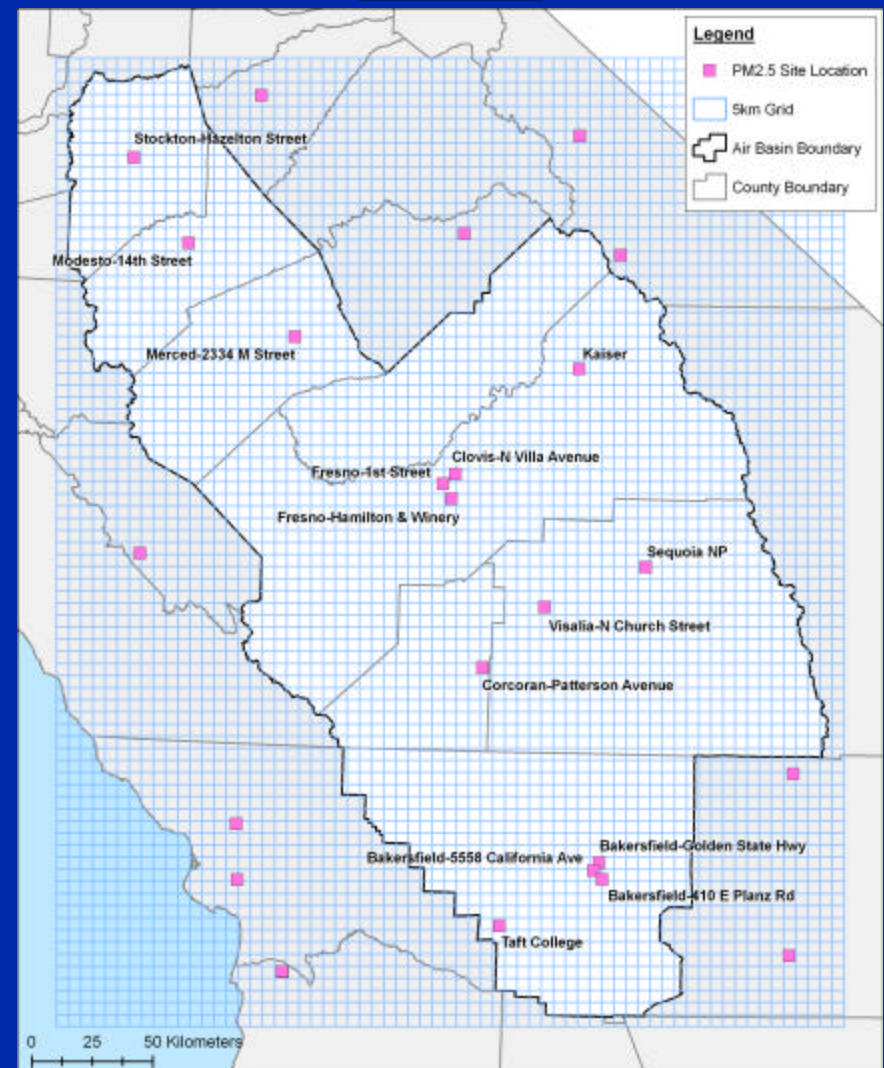


Ambient Air Quality Monitor Locations

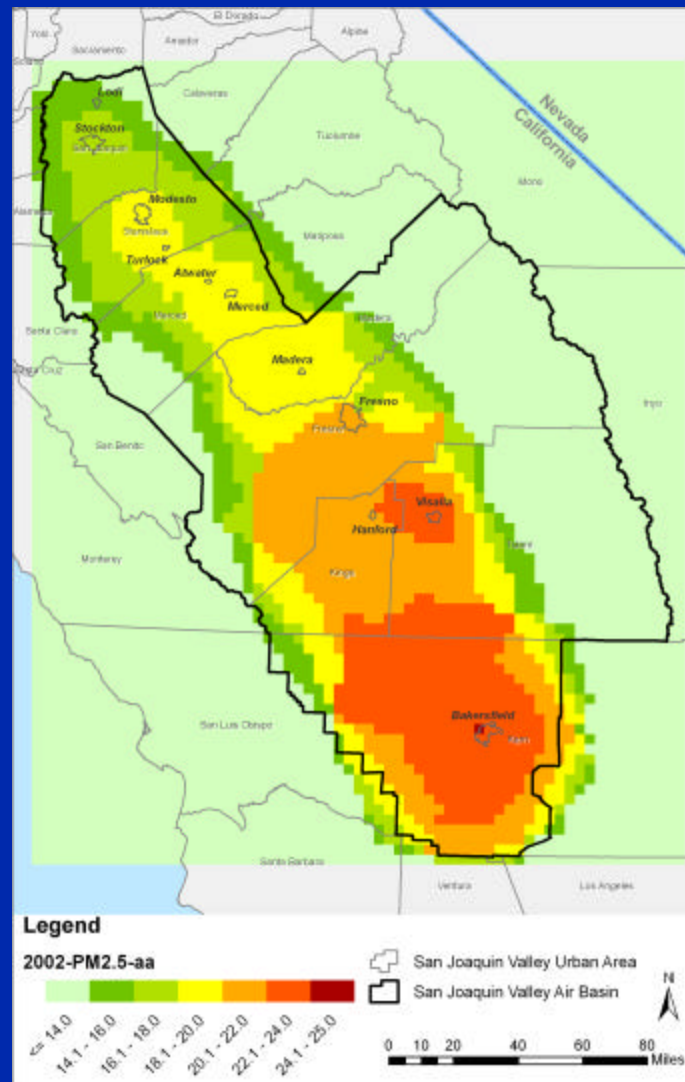
Ozone



PM2.5



Spatially Mapped Annual Average PM_{2.5} Concentrations for 2002

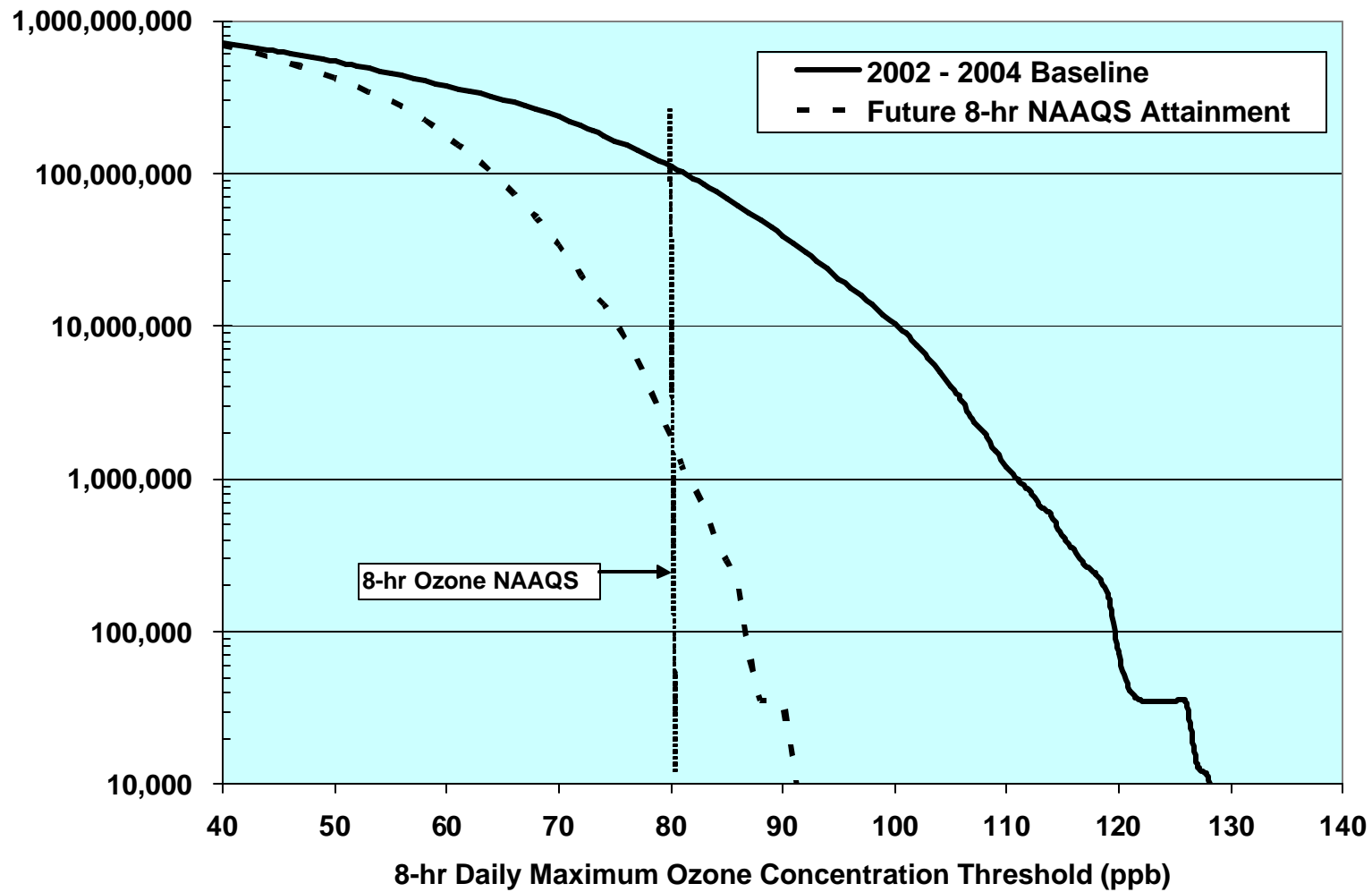


Exposure Approach

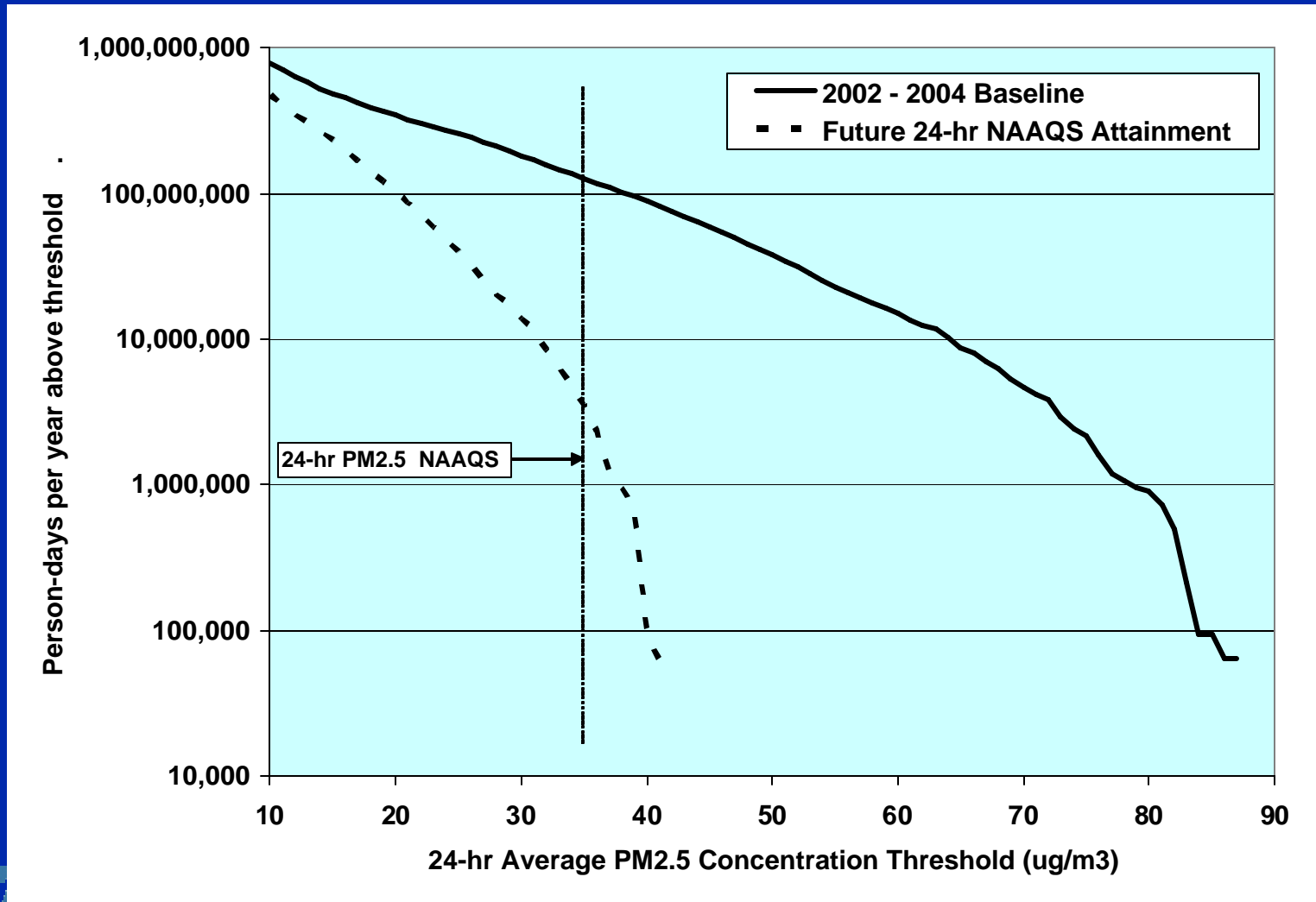
Regional Human Exposure (REHEX) Model

- Computes frequencies of population exposures on a spatial grid
- These REHEX simulation are for ambient exposures. They do not account for the modifying effects of buildings and vehicles, indoor sources, or human time-activity patterns on personal exposures.
- Results computed for averaging times associated with exposure-response functions
 - 1-hr daily maximum
 - 5-hr daily maximum
 - 8-hr daily maximum
 - 10 AM – 6 PM
 - 24-hr average
 - Annual average

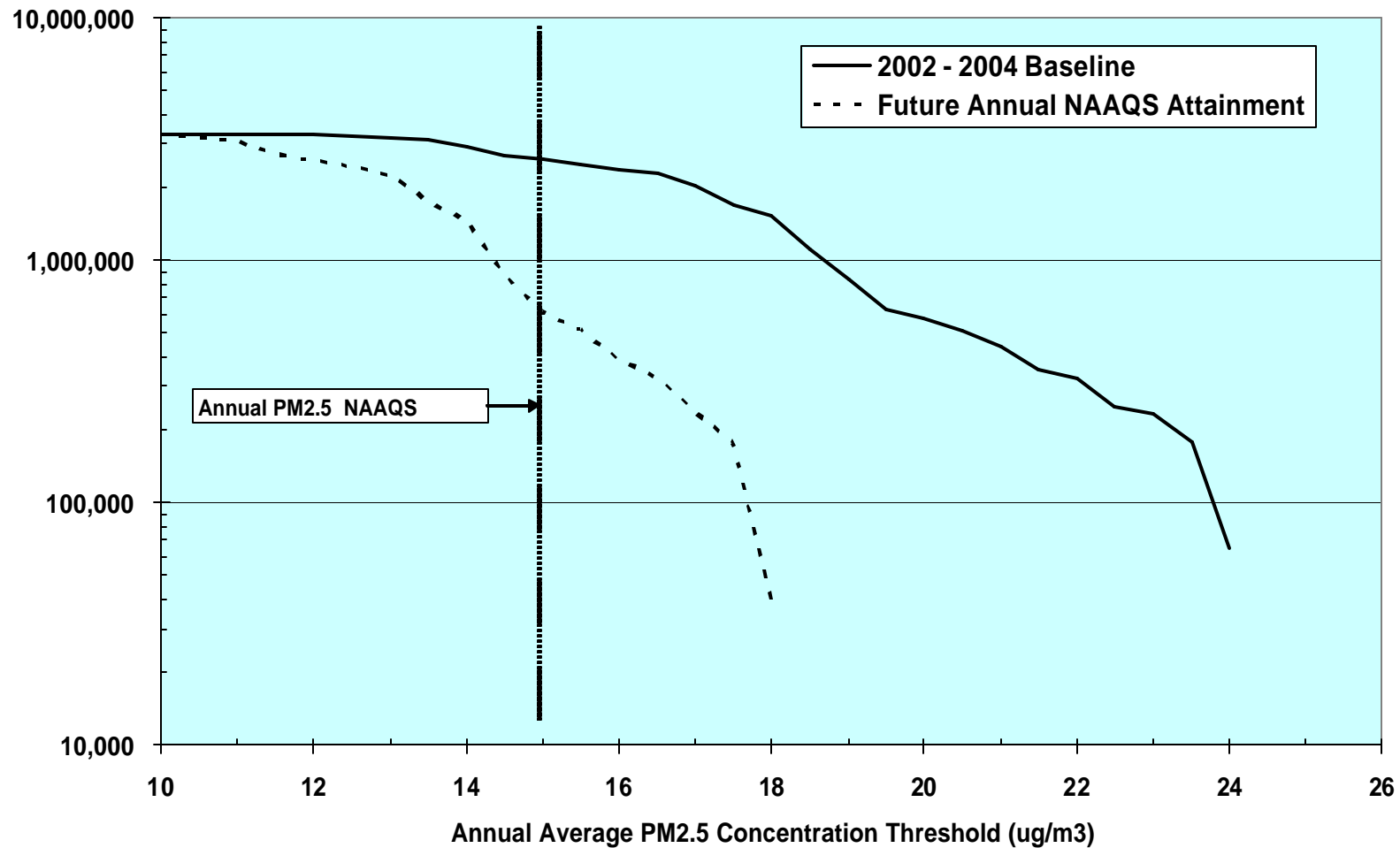
Persons-days per Year of Exposure to 8-hr Ozone Above Various Concentration Thresholds



Persons-days per Year of Exposure to 24-hr PM2.5 Above Various Concentration Thresholds

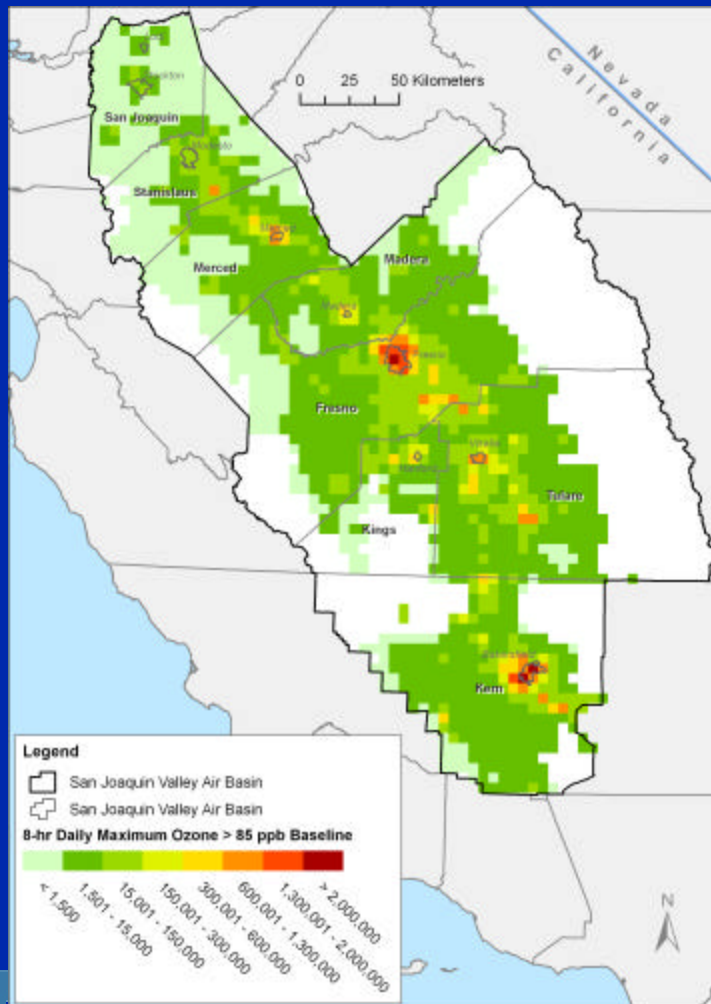


Persons Exposed to Annual Average PM2.5 above Various Concentration Thresholds

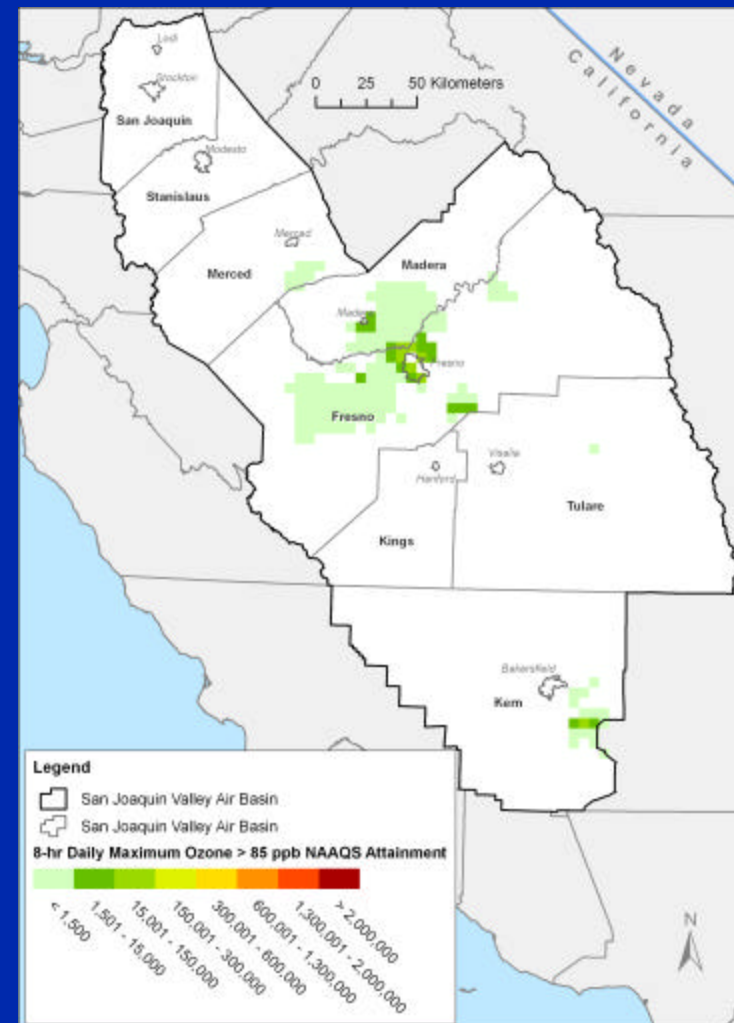


Person-days per Year of Population Exposure to 8-hour Daily Maximum Ozone Concentrations above 85 ppb

2002 – 2004 Baseline

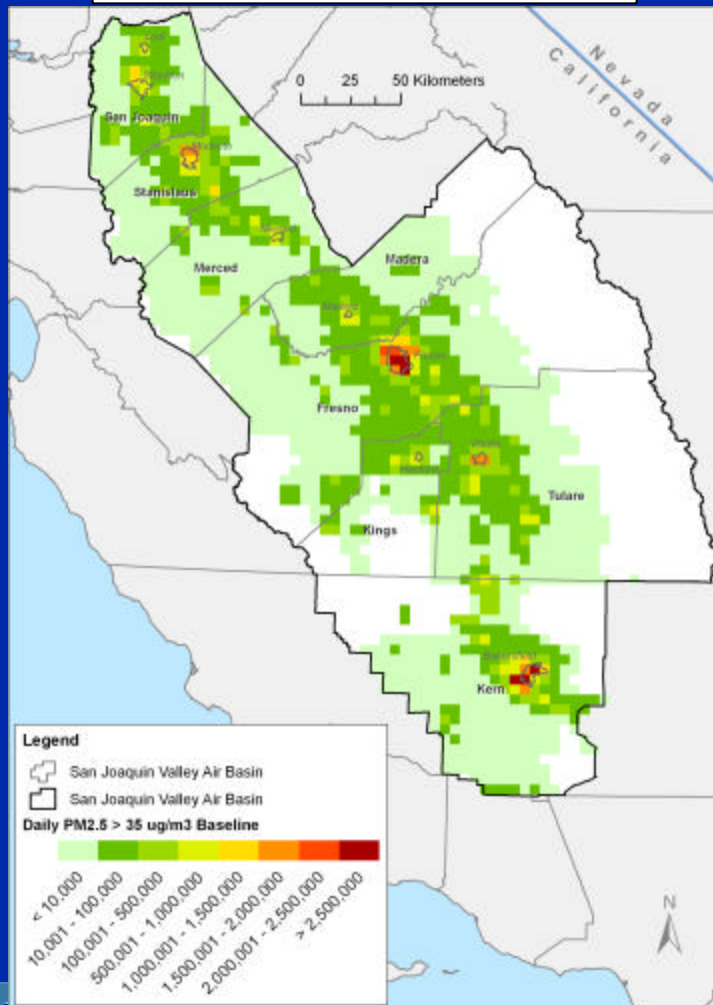


Future NAAQS Attainment

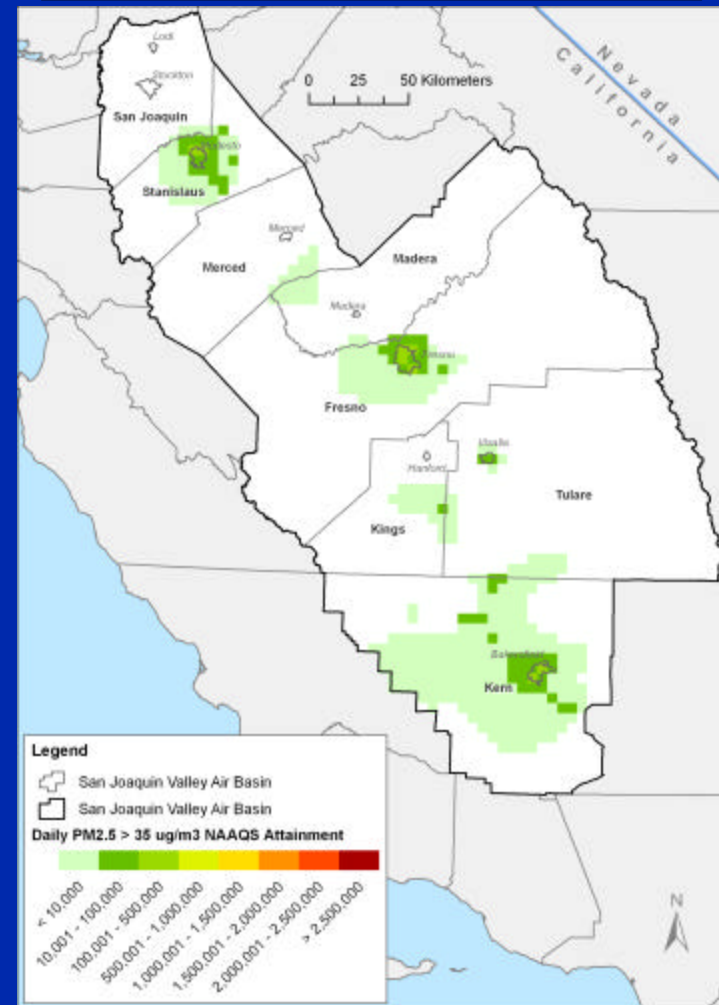


Person-days per Year of Population Exposure to 24-hour PM_{2.5} concentrations above 35 µg/m³

2002 – 2004 Baseline

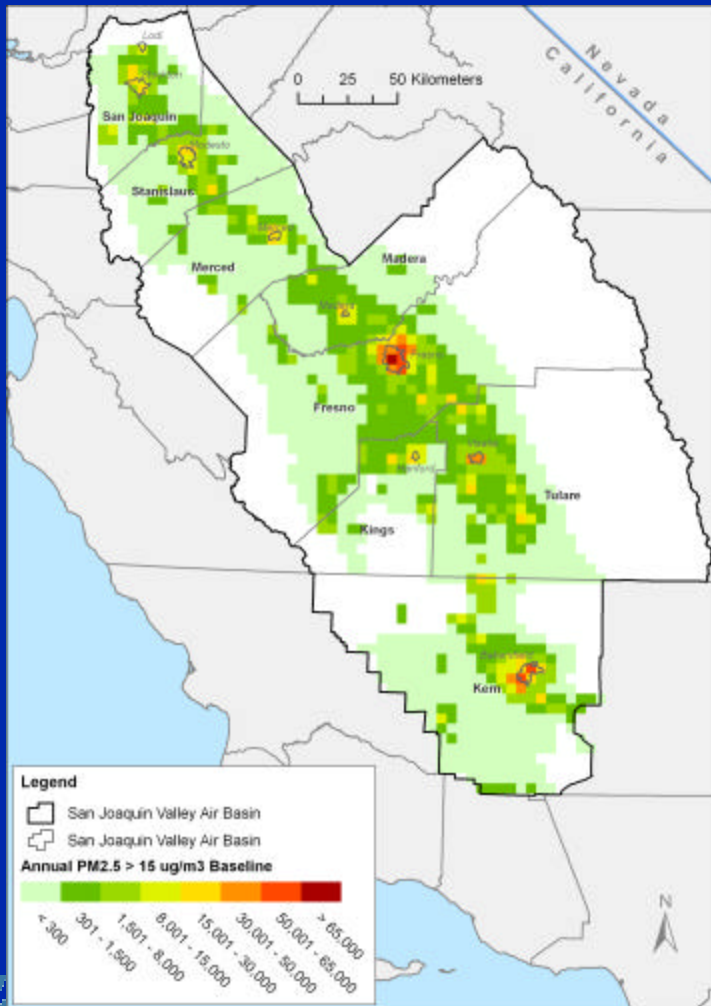


Future NAAQS Attainment

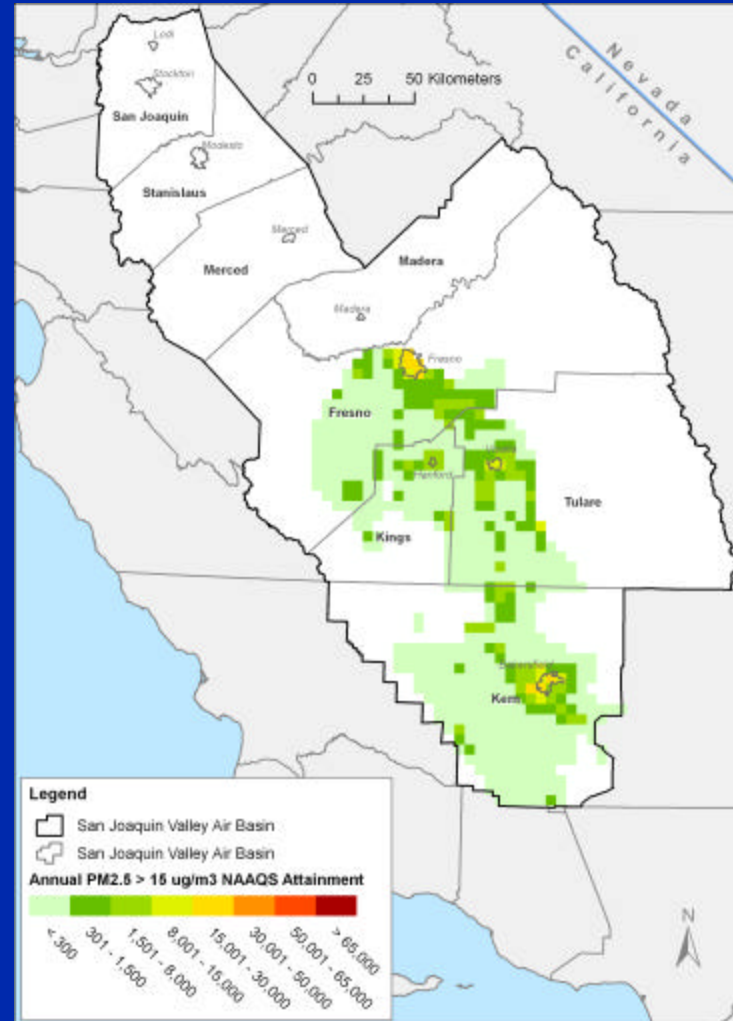


Persons Exposed To Annual Average PM2.5 Concentrations Above 15 $\mu\text{g}/\text{m}^3$

2002 – 2004 Baseline



Future NAAQS Attainment



Person-days of Exposure to 8-hr Ozone above 85 ppb (in millions per year)

Region	2002 – 2004 Baseline	With NAAQS Attainment
SJV Air Basin	69	0.29
Fresno County	25.5	0.21
Kern County	19.7	0.04
Tulare County	10.8	0
Merced County	4.6	0
Madera County	3.4	0.04
Kings County	2.6	0
Stanislaus County	2.1	0
San Joaquin County	0.3	0

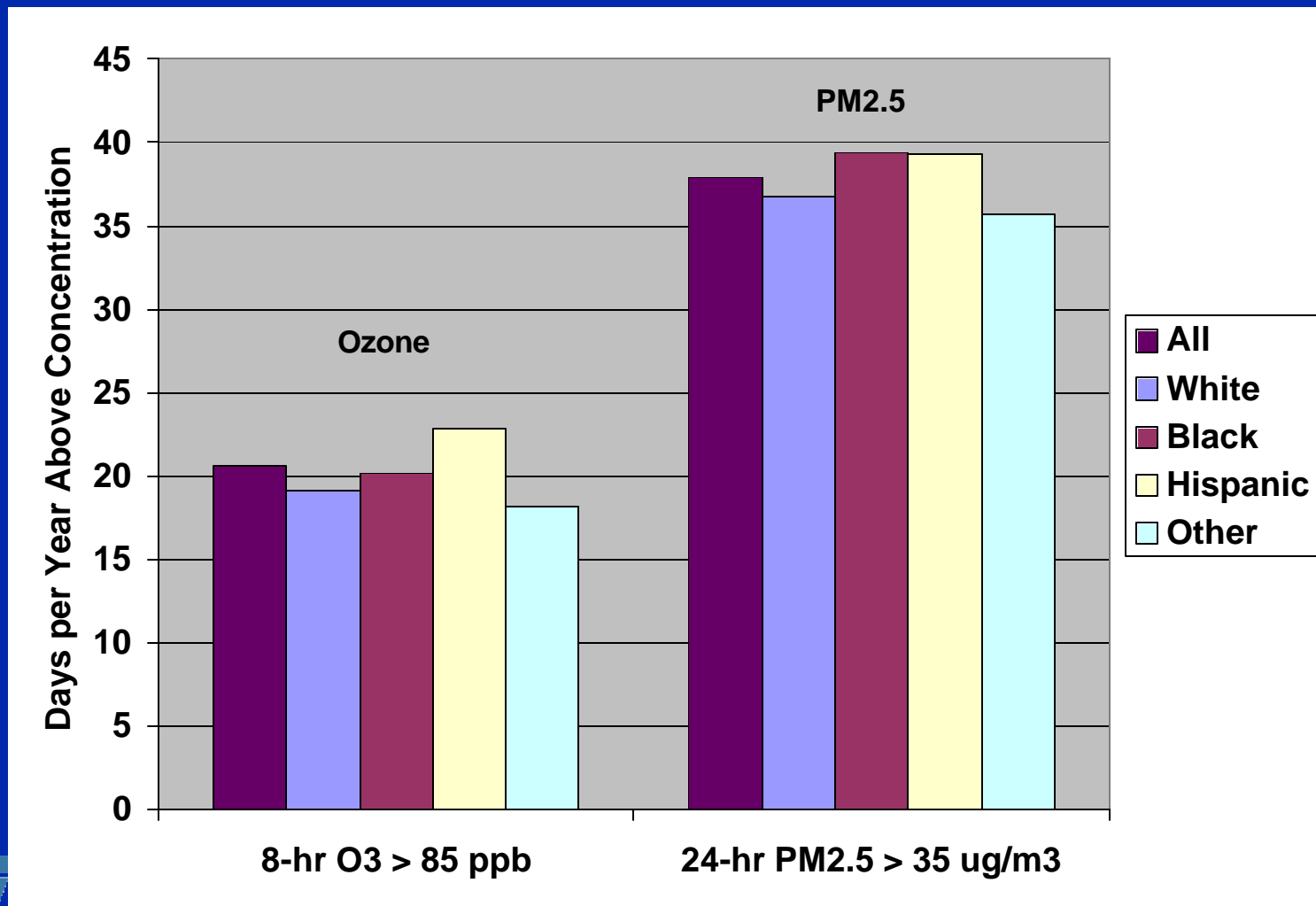
Person-days of Exposure to 24-hr PM_{2.5} above 35 µg/m³ (in millions per year)

Region	2002 – 2004 Baseline	With NAAQS Attainment
SJV Air Basin	126.6	3.59
Fresno County	36.3	1.23
Kern County	31.4	1.37
Tulare County	14.8	0.10
Merced County	6.6	0
Madera County	5.9	0.02
Kings County	5.6	0.03
Stanislaus County	15.3	0.83
San Joaquin County	10.7	0.01

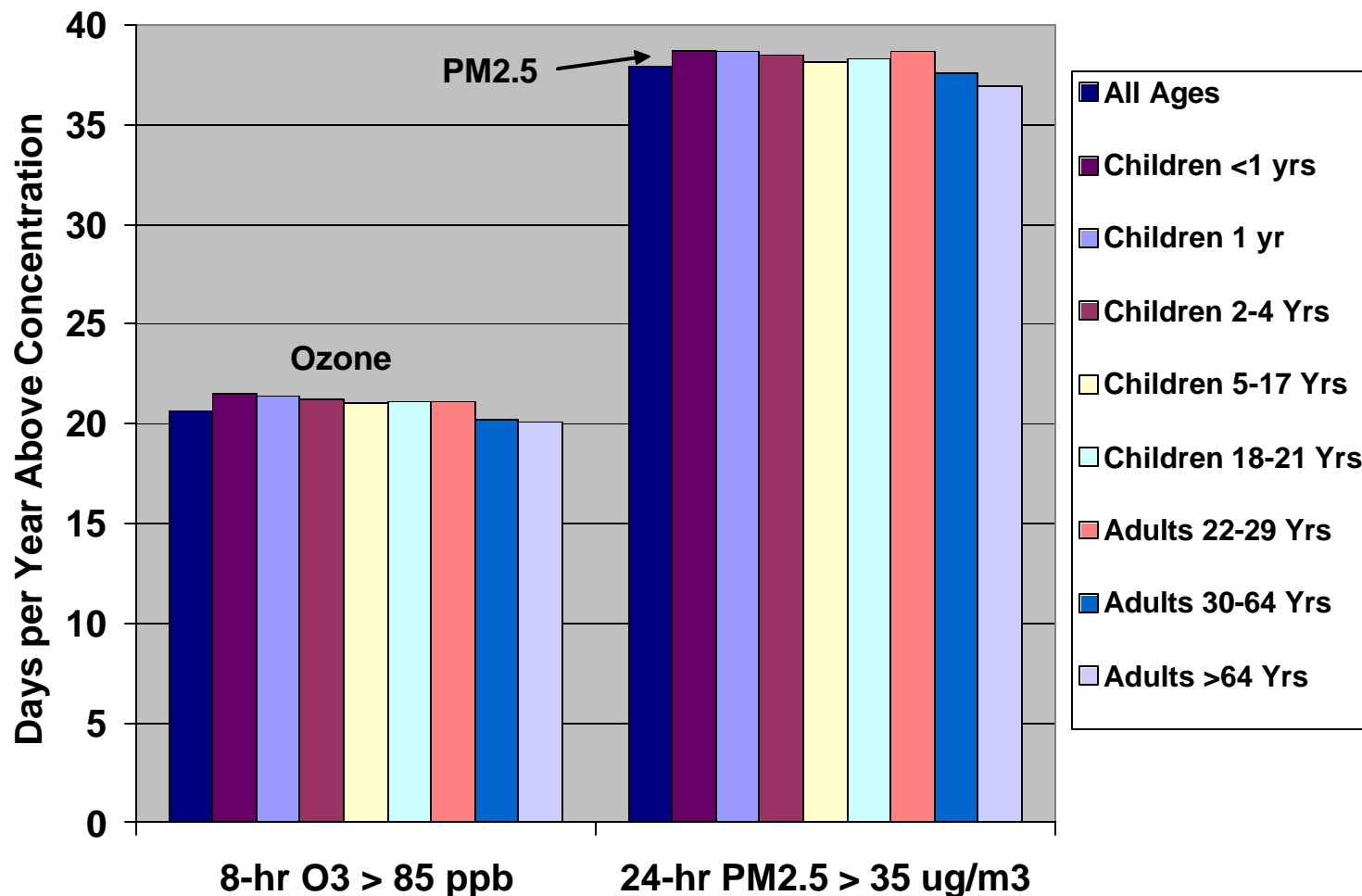
Persons Exposed to Annual Average PM2.5 above 15 $\mu\text{g}/\text{m}^3$ (in thousands)

Region	2002 – 2004 Baseline	With NAAQS Attainment
SJV Air Basin	2,486	521
Fresno County	785	183
Kern County	584	194
Tulare County	364	102
Merced County	148	0
Madera County	135	0
Kings County	134	41
Stanislaus County	155	0
San Joaquin County	180	0

Days per year Above Concentration in 2002-2004 by Racial/Ethnic Group



Days per year Above Concentration in 2002-2004 by Age Group



Days per year Above Concentration in 2002-2004 by County

