

Air Quality & Sources of Diesel Exposure in the Gila River Indian Community

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Introduction

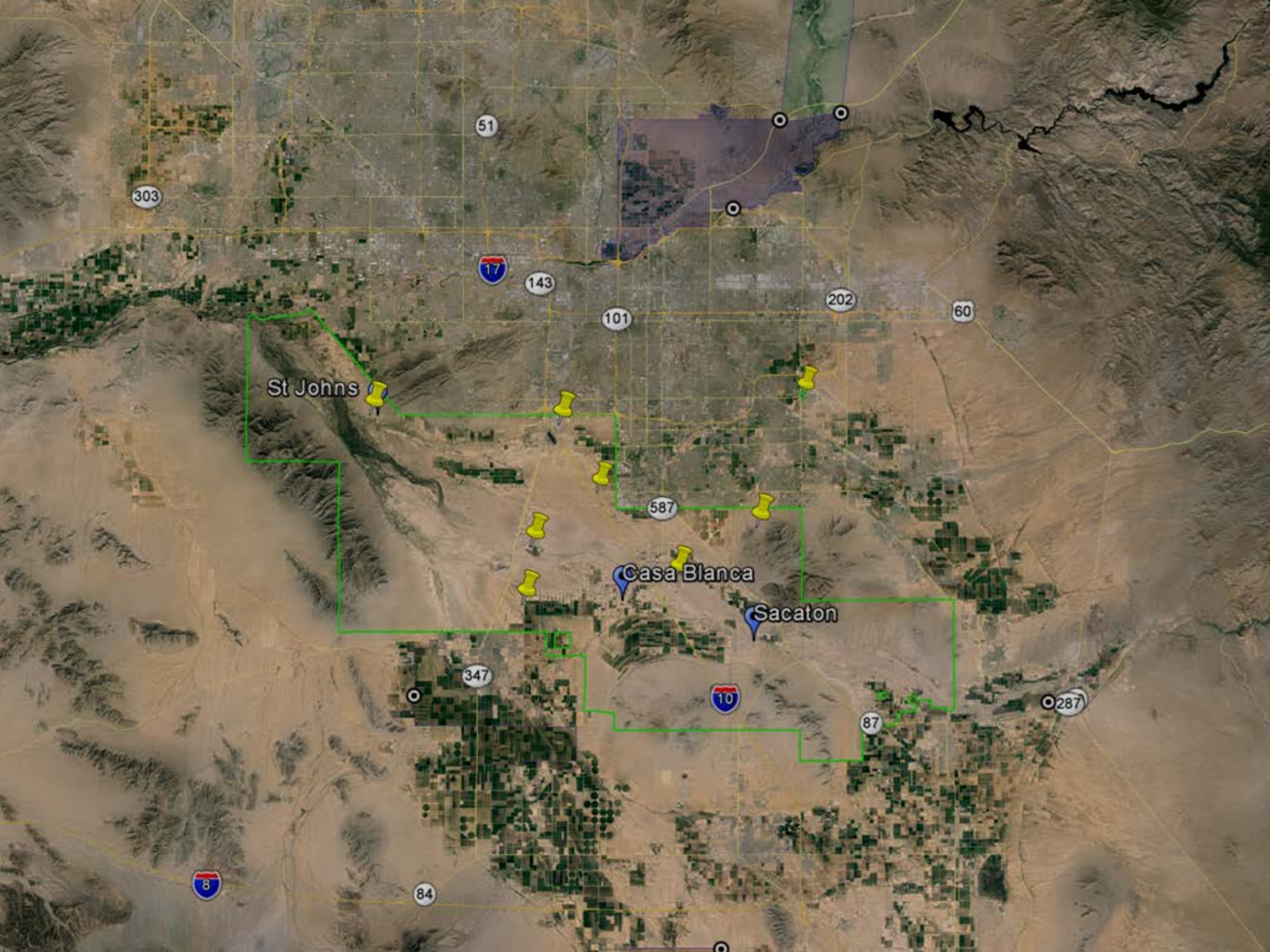
- GRIC
- NAAQS – Non-Attainment Areas
- Ozone Precursor Sources
- PM2.5 Sources



Gila River Indian Community

- Adjacent to Phoenix Metro Area
- ~374,000 Acres
 - ~35,000 Agricultural
- 3 Industrial Parks
 - ~40 Facilities
- 2 Counties (Maricopa and Pinal)

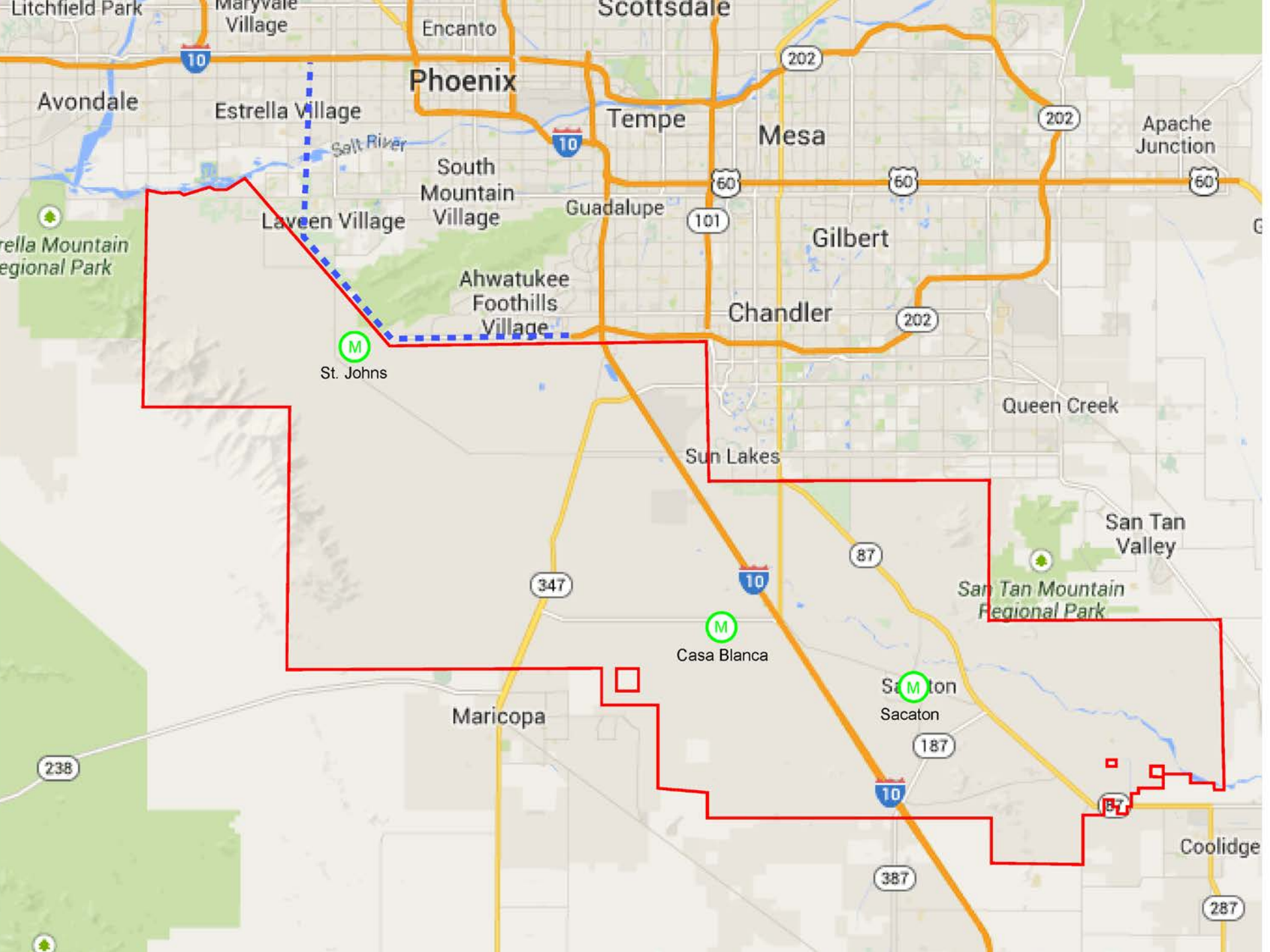




St Johns

Casa Blanca

Sacaton



Phoenix

Tempe

Mesa

Gilbert

Chandler

Queen Creek

San Tan Valley

Maricopa

Coolidge

Avondale

Estrella Village

South Mountain Village

Laveen Village

Ahwatukee Foothills Village

Guadalupe

Sun Lakes

Casa Blanca

San Tan Sacaton

San Tan Mountain Regional Park

St. Johns

Estrella Mountain Regional Park

San Tan Mountain Regional Park

238

10

10

202

202

101

60

60

60

202

347

10

87

187

387

187

287

M

M

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Air Quality Concerns

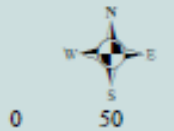
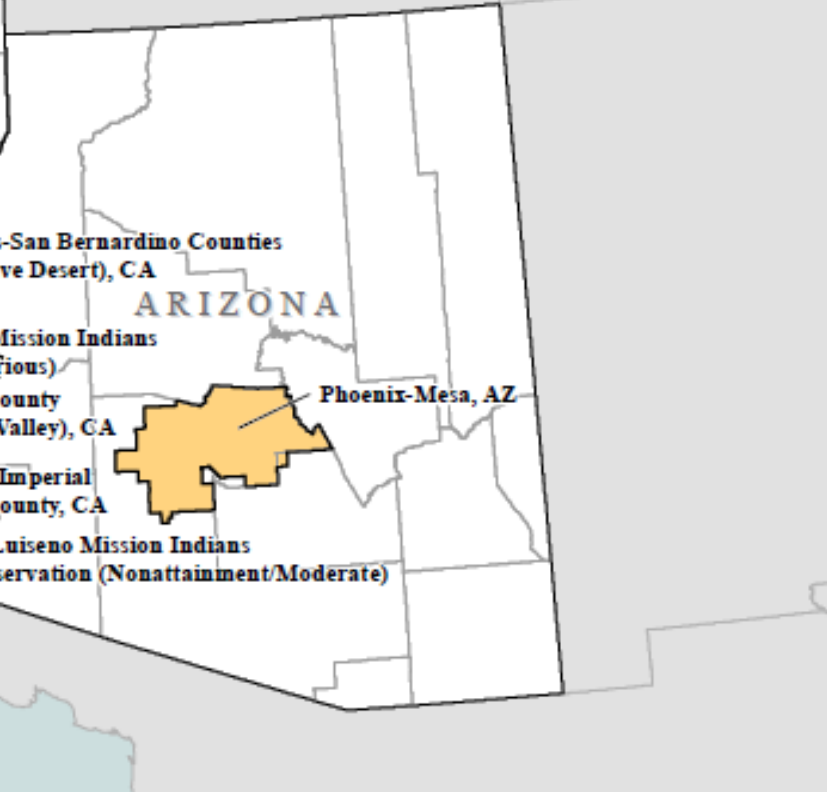
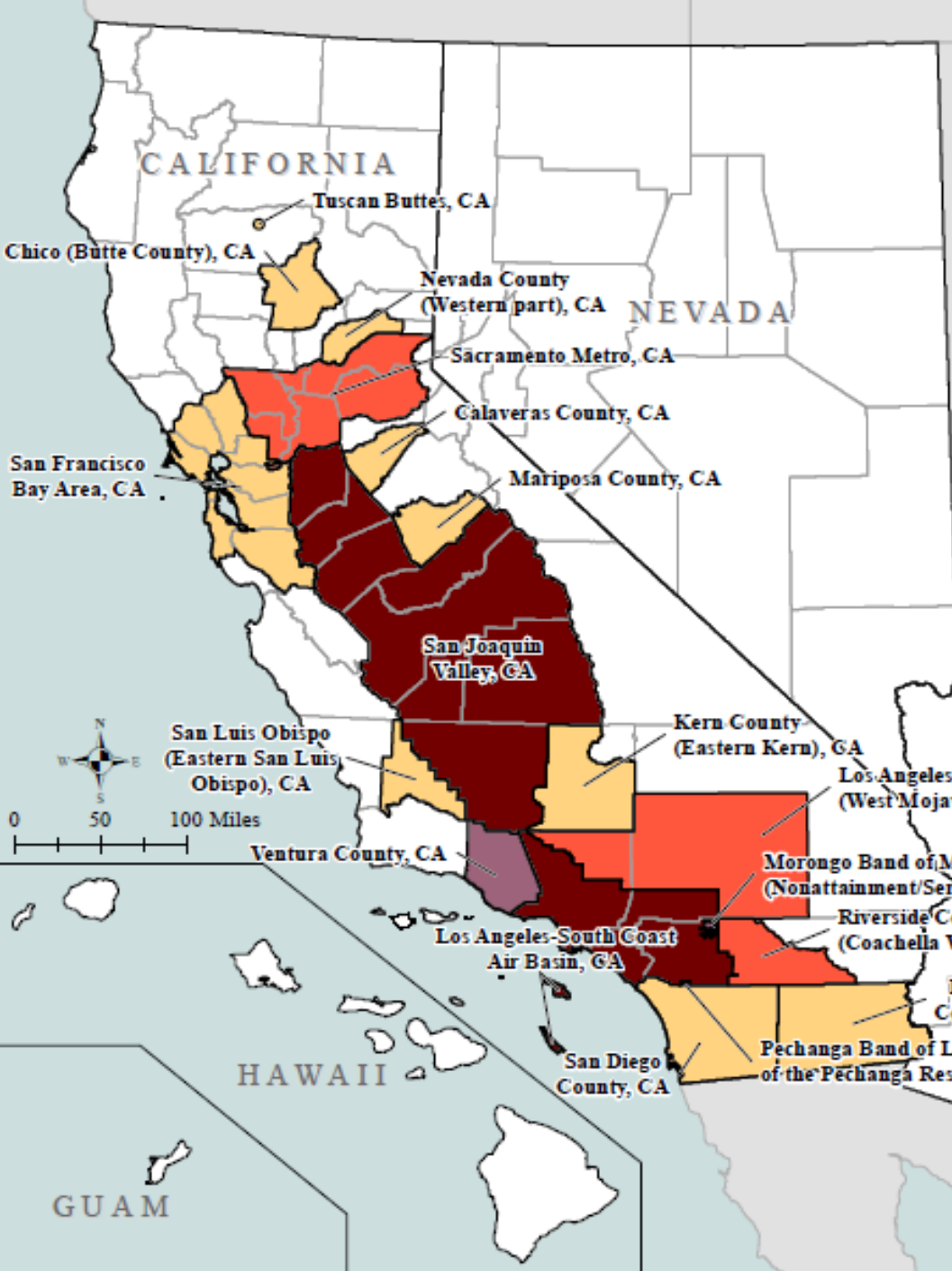
- NAAQS
 - NO₂, Ozone, PM_{2.5}, PM₁₀, Pb, CO, SO₂
- Diesel Emissions
 - NO_x, CO, PM_{2.5}, HC (VOC)



DESIGNATIONS IN US EPA REGION 9 FOR THE 2008 8-HOUR OZONE (O₃) NATIONAL AMBIENT AIR QUALITY STANDARDS

- Nonattainment/Extreme
- Nonattainment/Severe-15
- Nonattainment/Serious
- Nonattainment/Moderate
- Nonattainment/Marginal
- Unclassifiable/Attainment

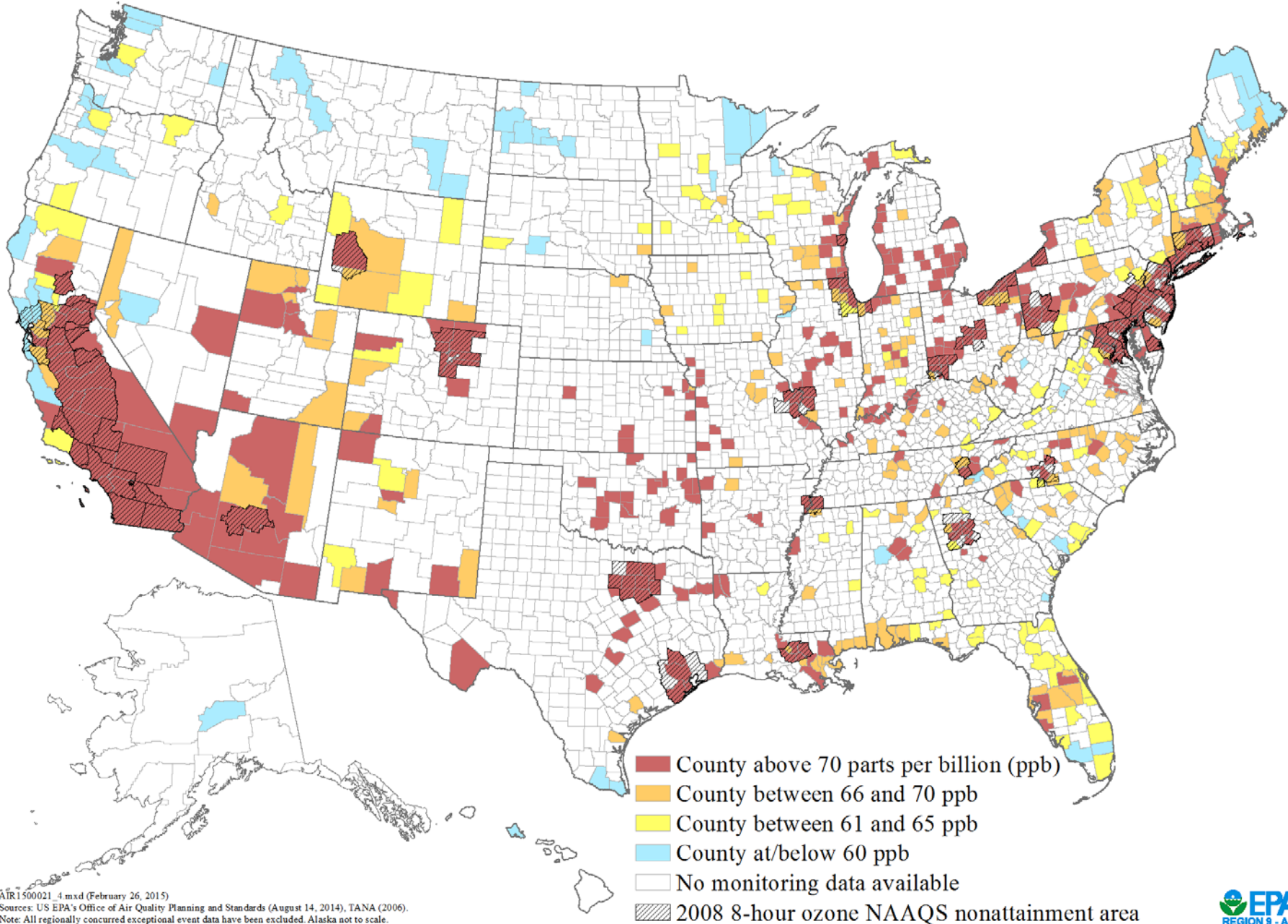
The 2008 primary and secondary 8-hour ozone (O₃) national ambient air quality standard (NAAQS) is 0.075 parts per million (ppm) or 75 parts per billion (ppb). Areas violating the NAAQS are designated "Nonattainment", and are classified according to the area's severity of ozone pollution levels. Other Pacific territories under EPA Region 9 jurisdiction (not shown on map) are designated "Unclassifiable/Attainment." The *Tuscan Buttes, CA* nonattainment area boundary is representational and not drawn to scale on this map.
 Sources: Title 40 CFR Part 81, §303, 305, 312, 329, 352, 353, 354 (2014), ESRI (2006), TANA (2006).
 AIR1500028_1.mxd (March 12, 2015)



0 50 100 Miles



2011-2013 COUNTY-LEVEL 8-HOUR OZONE DESIGN VALUES COMPARED TO PROJECTED 65 PPB AND 70 PPB PRIMARY 8-HOUR OZONE STANDARDS



AIR1500021_4.mxd (February 26, 2015)

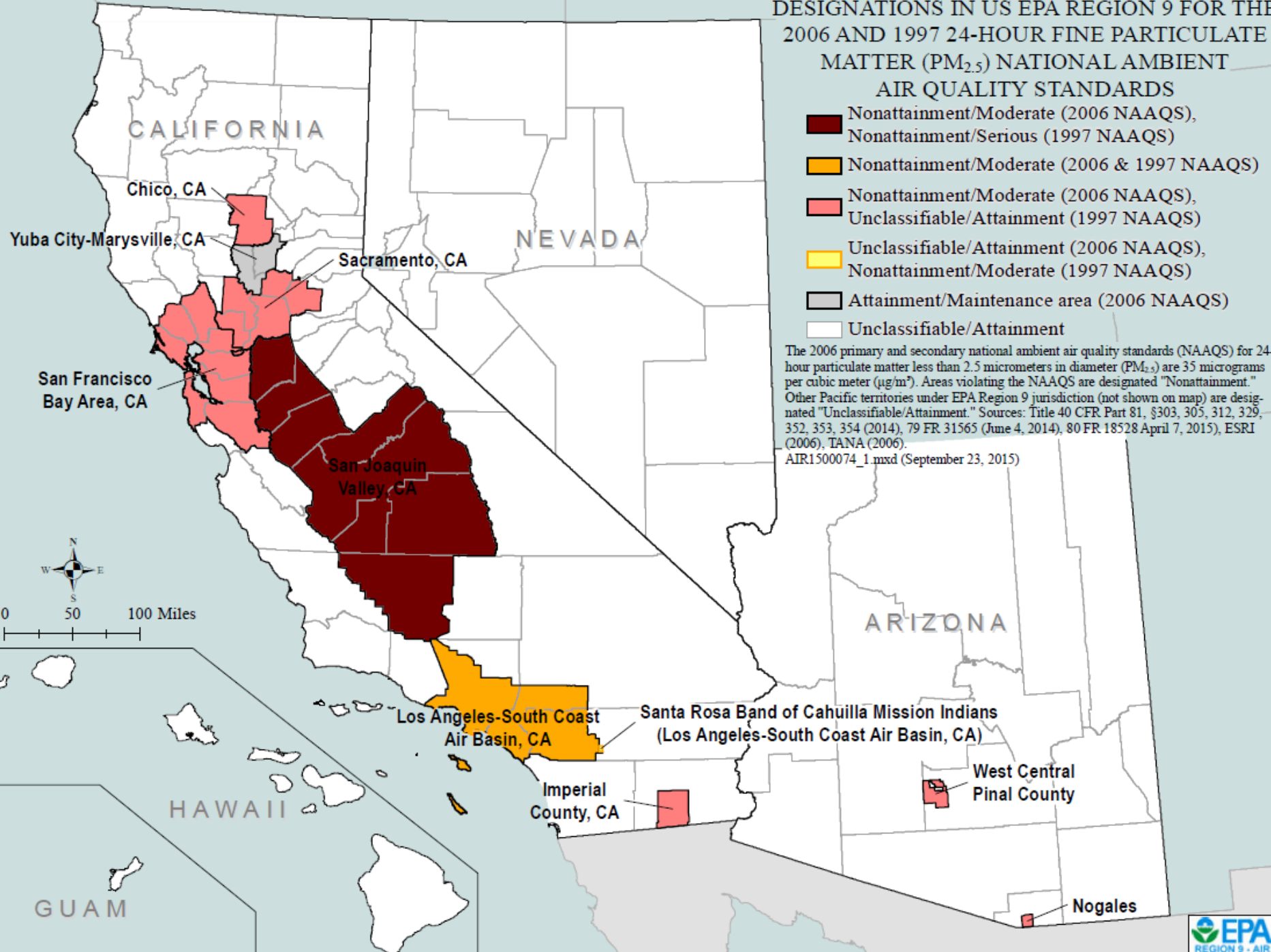
Sources: US EPA's Office of Air Quality Planning and Standards (August 14, 2014), TANA (2006).

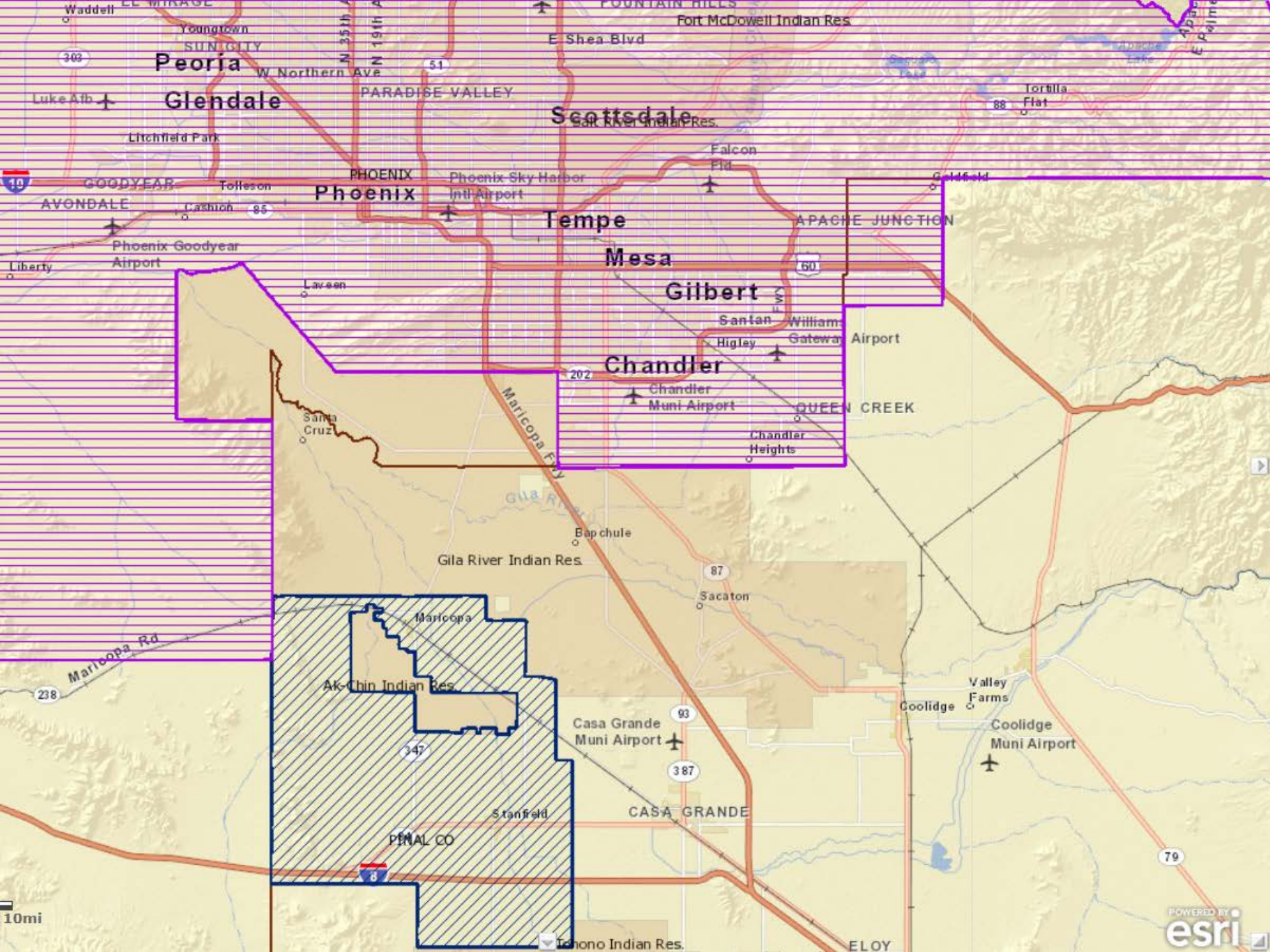
Note: All regionally concurred exceptional event data have been excluded. Alaska not to scale.

DESIGNATIONS IN US EPA REGION 9 FOR THE 2006 AND 1997 24-HOUR FINE PARTICULATE MATTER (PM_{2.5}) NATIONAL AMBIENT AIR QUALITY STANDARDS

- Nonattainment/Moderate (2006 NAAQS), Nonattainment/Serious (1997 NAAQS)
- Nonattainment/Moderate (2006 & 1997 NAAQS)
- Nonattainment/Moderate (2006 NAAQS), Unclassifiable/Attainment (1997 NAAQS)
- Unclassifiable/Attainment (2006 NAAQS), Nonattainment/Moderate (1997 NAAQS)
- Attainment/Maintenance area (2006 NAAQS)
- Unclassifiable/Attainment

The 2006 primary and secondary national ambient air quality standards (NAAQS) for 24-hour particulate matter less than 2.5 micrometers in diameter (PM_{2.5}) are 35 micrograms per cubic meter (µg/m³). Areas violating the NAAQS are designated "Nonattainment." Other Pacific territories under EPA Region 9 jurisdiction (not shown on map) are designated "Unclassifiable/Attainment." Sources: Title 40 CFR Part 81, §303, 305, 312, 329, 352, 353, 354 (2014), 79 FR 31565 (June 4, 2014), 80 FR 18528 April 7, 2015), ESRI (2006), TANA (2006). AIR1500074_1.mxd (September 23, 2015)





Peoria

Glendale

Scottsdale

Phoenix

Tempe

Mesa

Gilbert

Chandler

Gila River Indian Res.

CASA GRANDE

Atmospheric oxygen

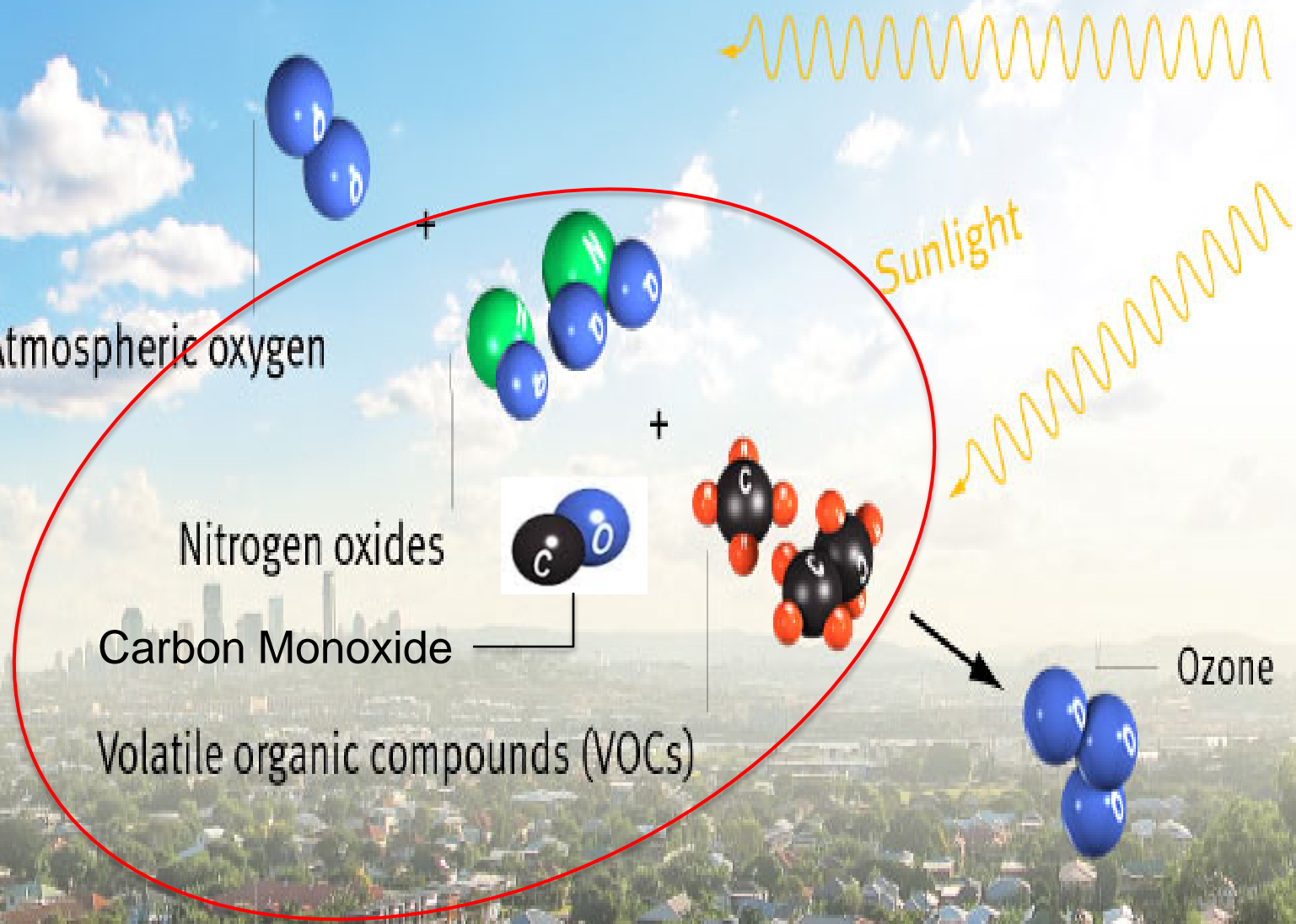
Nitrogen oxides

Carbon Monoxide

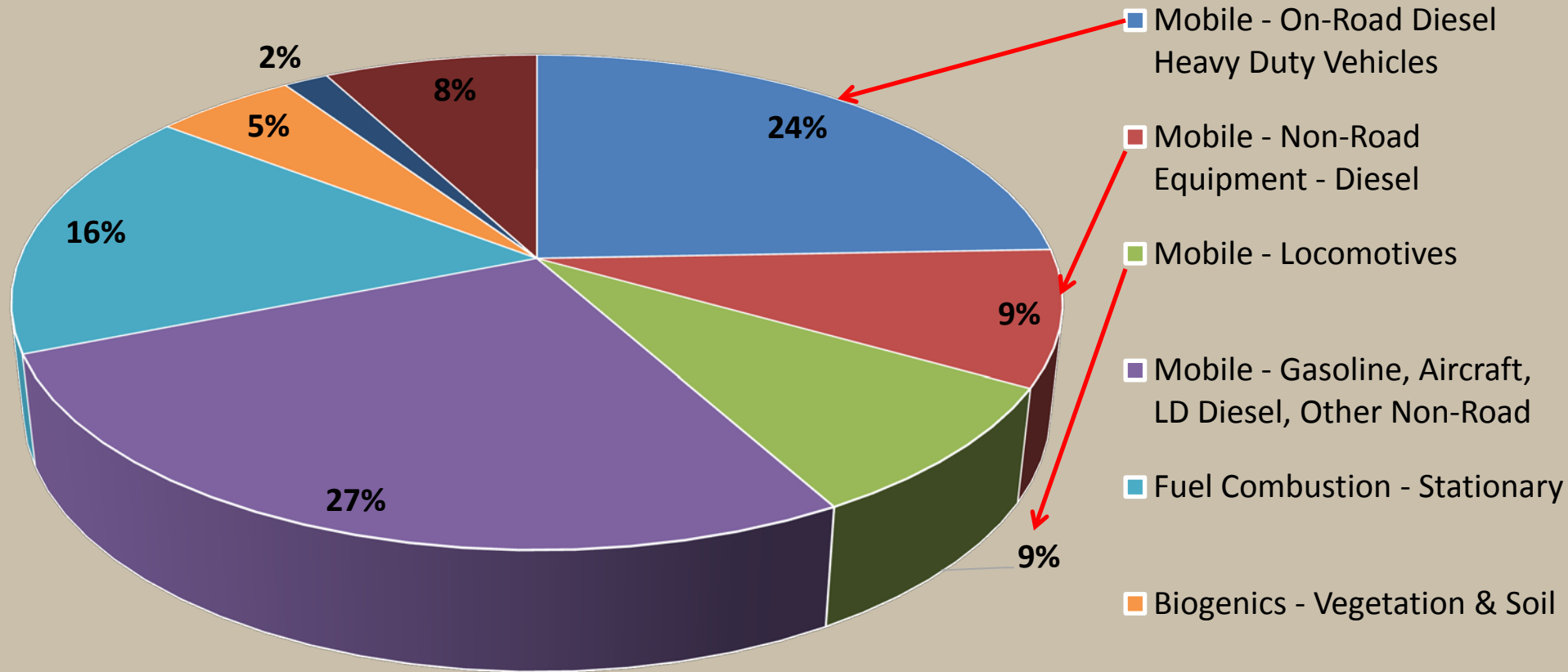
Volatile organic compounds (VOCs)

Sunlight

Ozone



Arizona - NOx (%)



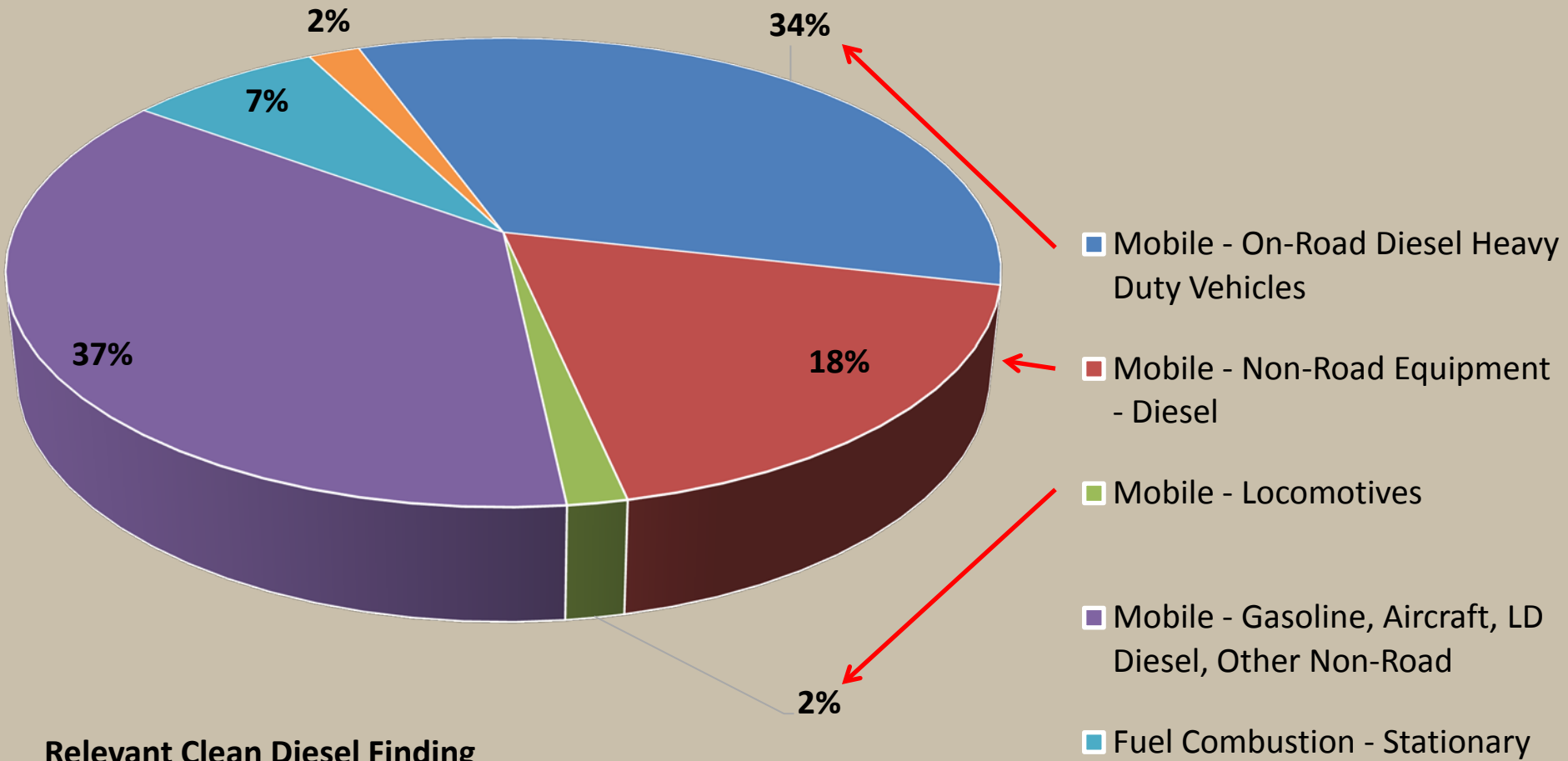
Relevant Clean Diesel Finding

Mobile HD Diesel = 42% of Arizona NOx Emissions

Note - Waste Disposal + Solvents + Miscellaneous < 1%

Source: US EPA, NEI (2011)

Maricopa County - NOx (%)



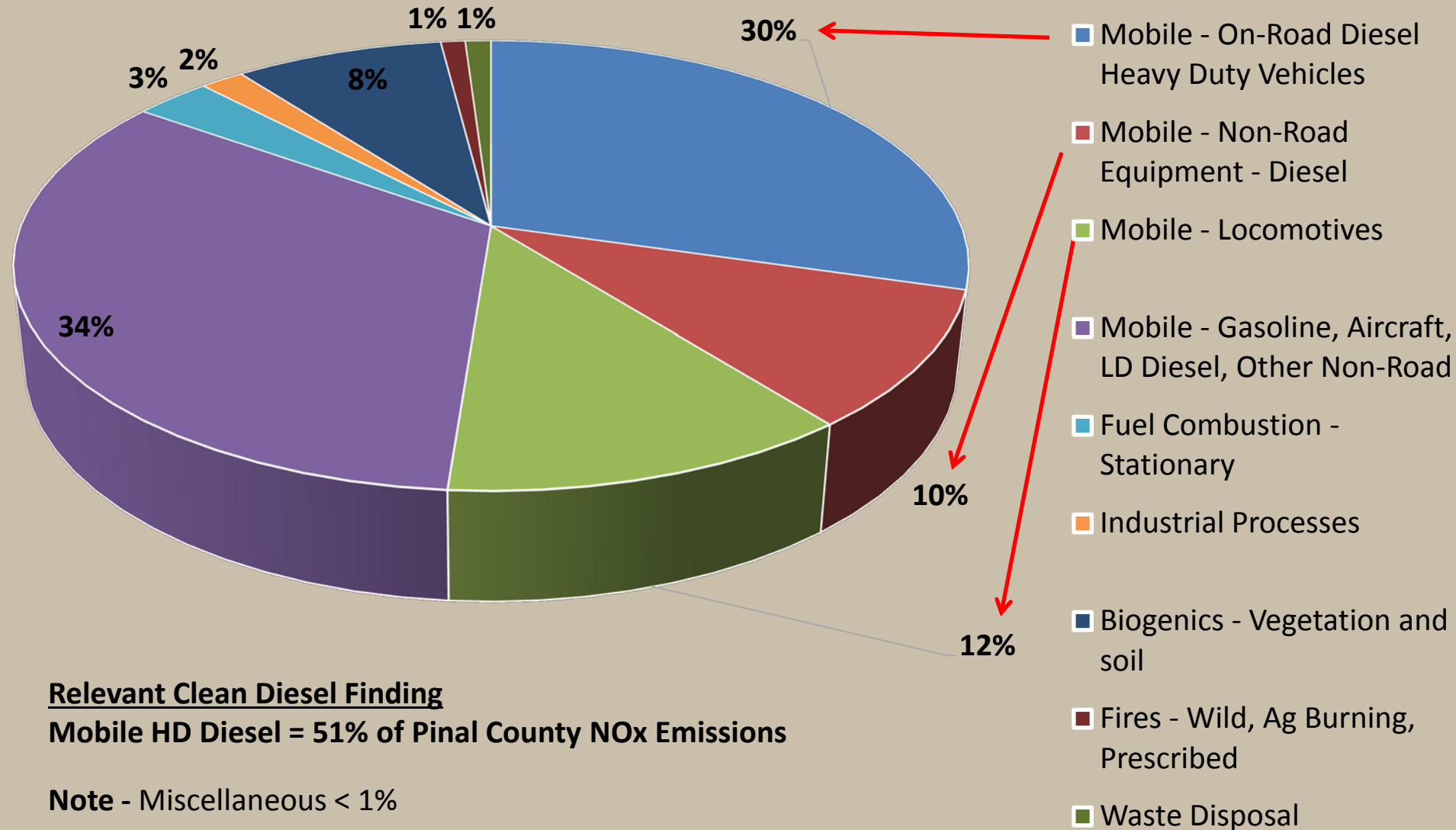
Relevant Clean Diesel Finding

Mobile HD Diesel = 54% of Maricopa County NOx Emissions

Note - Industrial Processes+Fires+Waste Disposal+Miscellaneous < 1%

Source: US EPA, NEI (2011)

Pinal County - NOx (%)

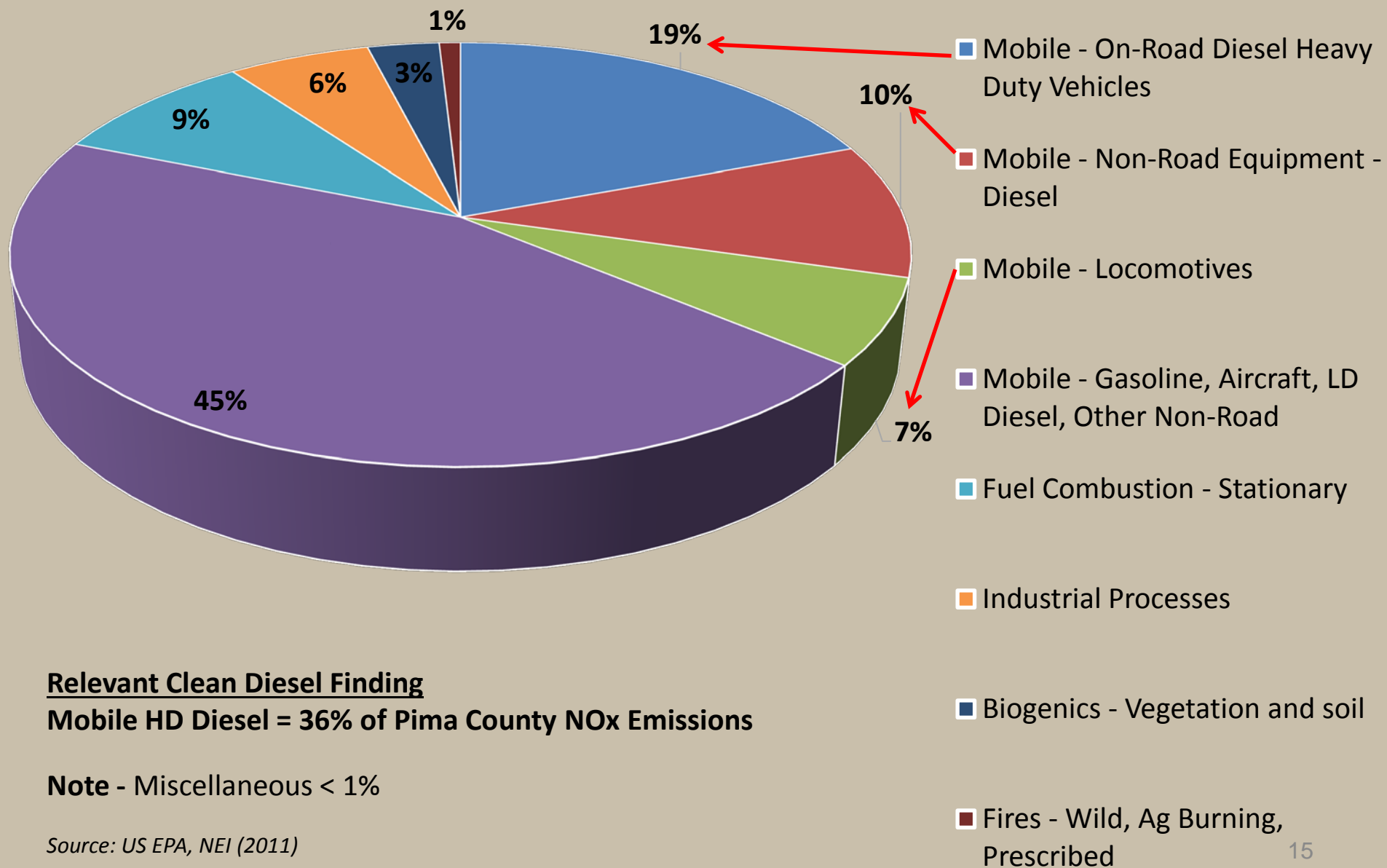


Relevant Clean Diesel Finding

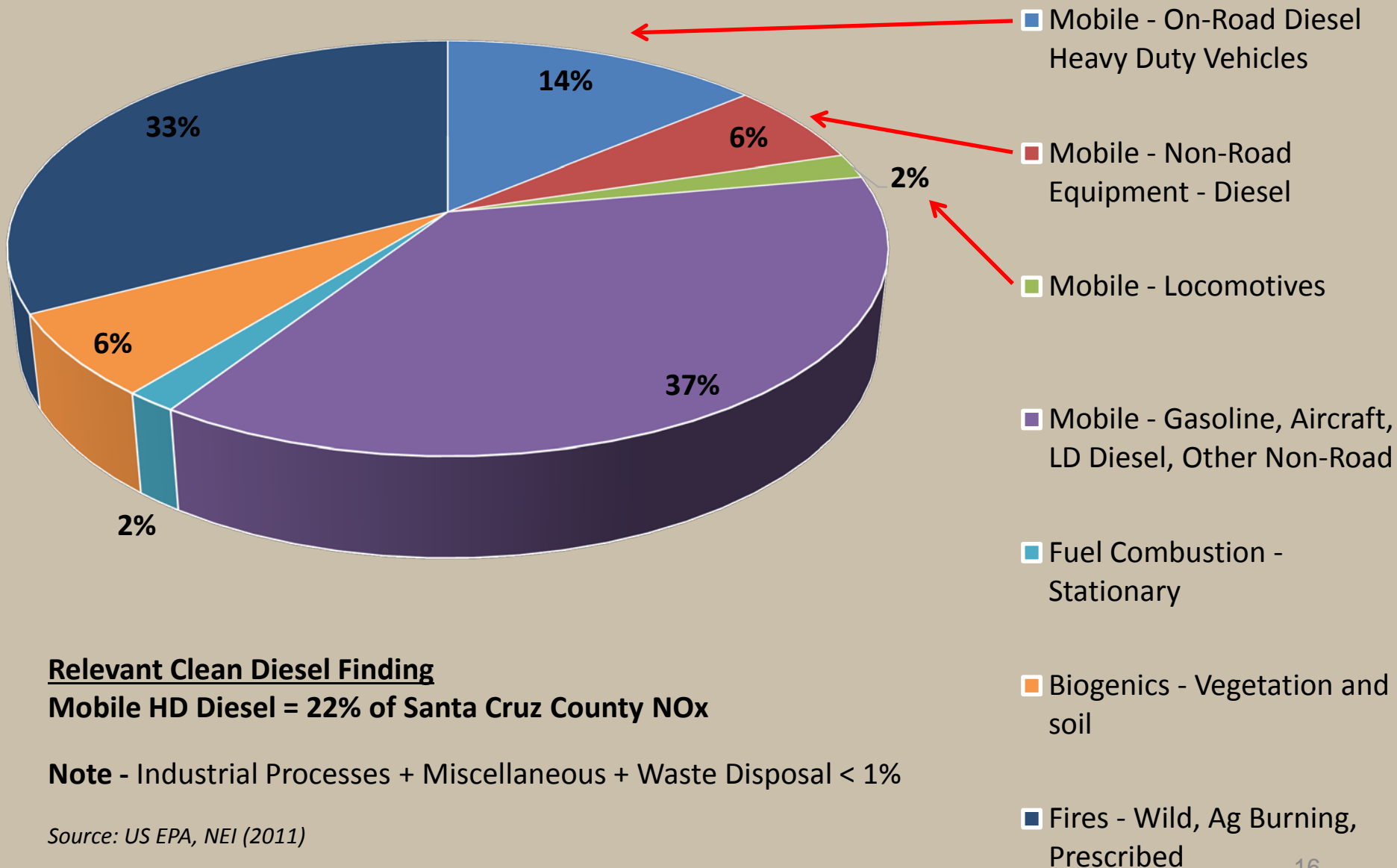
Mobile HD Diesel = 51% of Pinal County NOx Emissions

Note - Miscellaneous < 1%

Pima County - NOx (%)



Santa Cruz County - NOx (%)



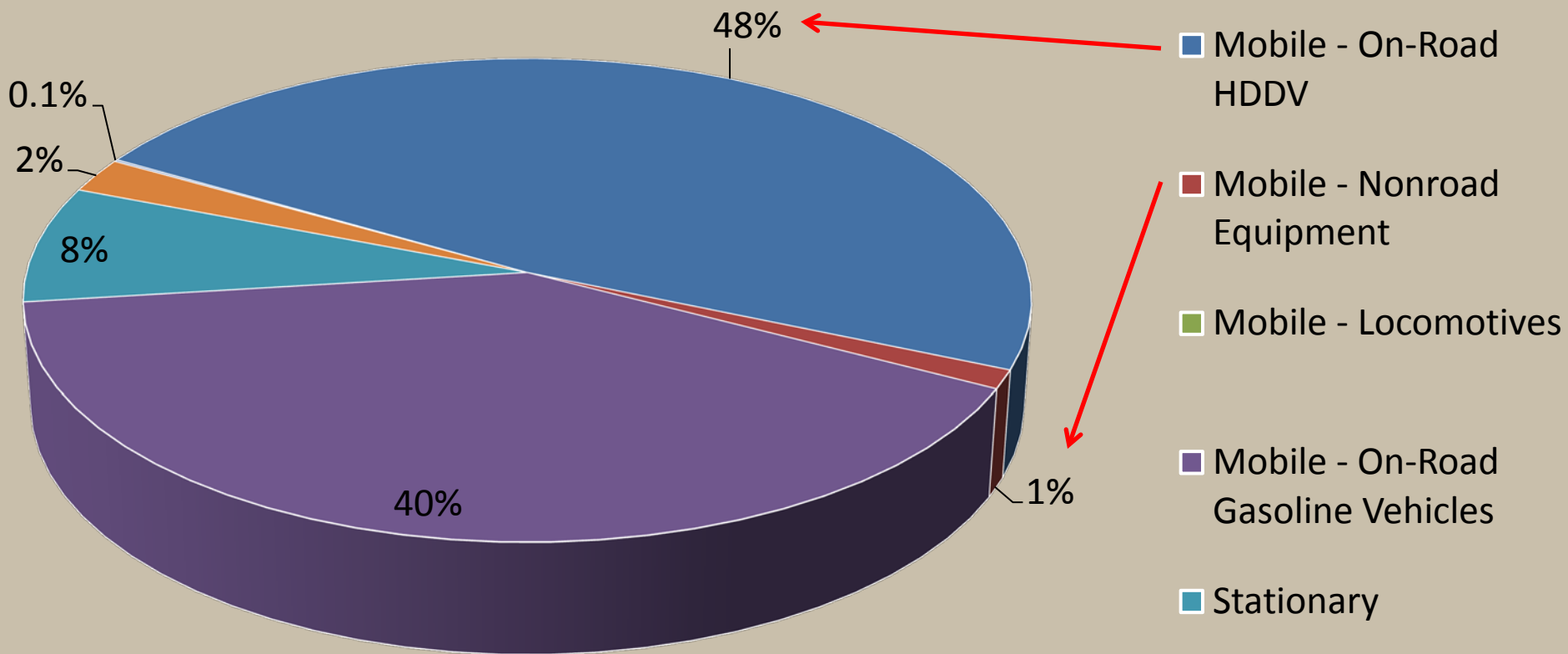
Relevant Clean Diesel Finding

Mobile HD Diesel = 22% of Santa Cruz County NOx

Note - Industrial Processes + Miscellaneous + Waste Disposal < 1%

Source: US EPA, NEI (2011)

GRIC - NOx (%)

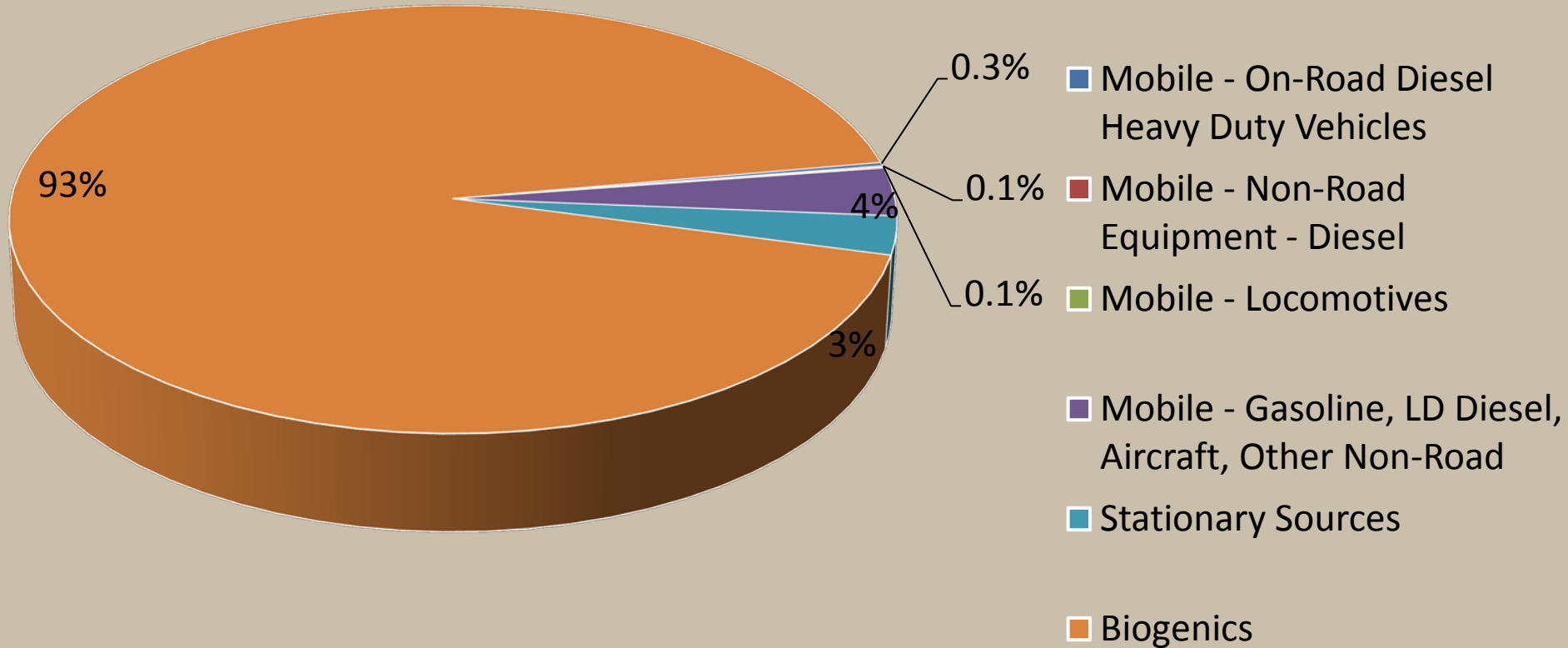


Relevant Clean Diesel Finding

Mobile HD Diesel = 49% of GRIC NOx Emissions

Source: 2007 GRIC EI

Arizona - VOC (%)

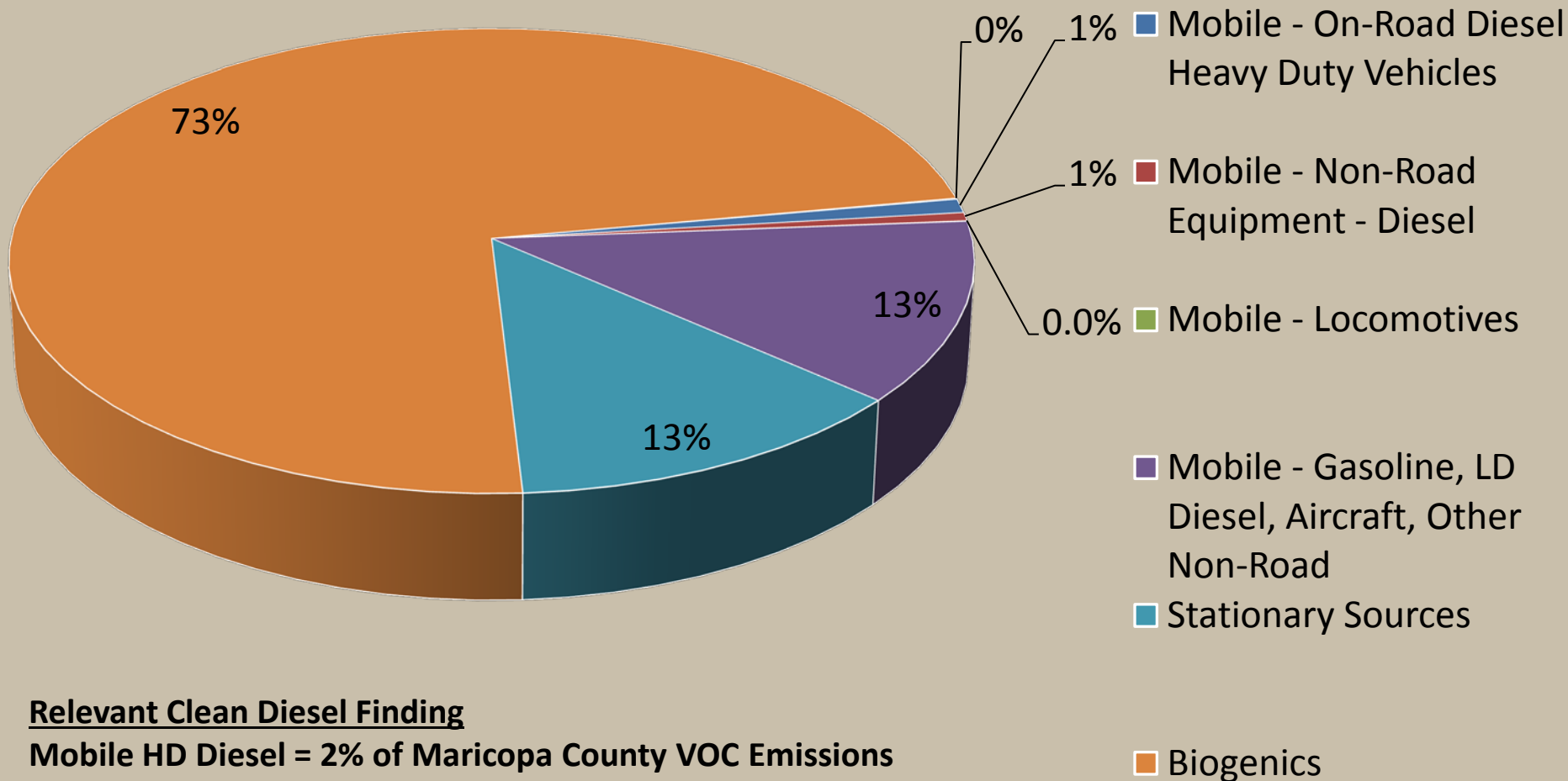


Relevant Clean Diesel Finding

Mobile HD Diesel = 0.5% of Arizona VOC Emissions

Source: US EPA, NEI (2011)

Maricopa County - VOC (%)

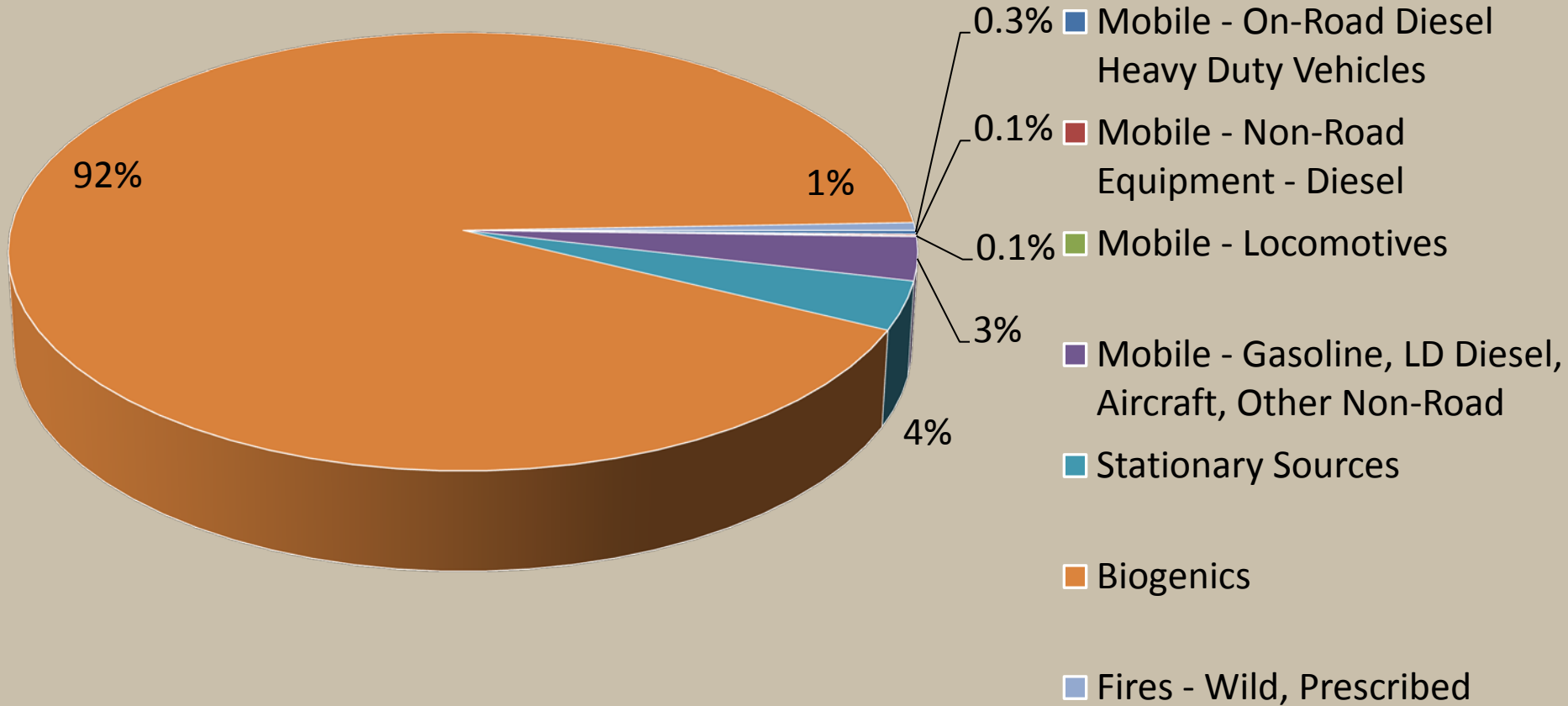


Relevant Clean Diesel Finding

Mobile HD Diesel = 2% of Maricopa County VOC Emissions

Source: US EPA, NEI (2011)

Pinal County - VOC (%)

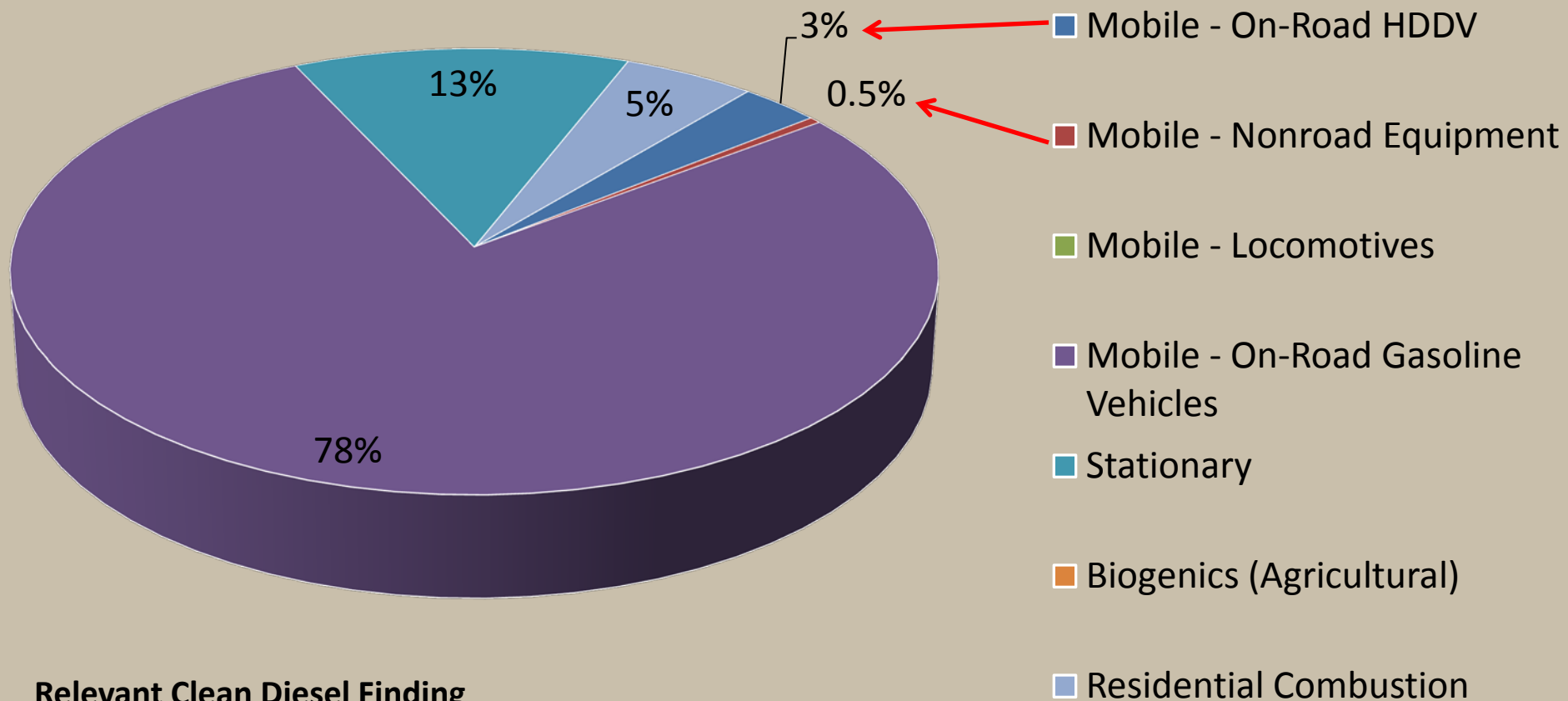


Relevant Clean Diesel Finding

Mobile HD Diesel = 0.5% of Pinal County VOC Emissions

Source: US EPA, NEI (2011)

GRIC - VOC (%)

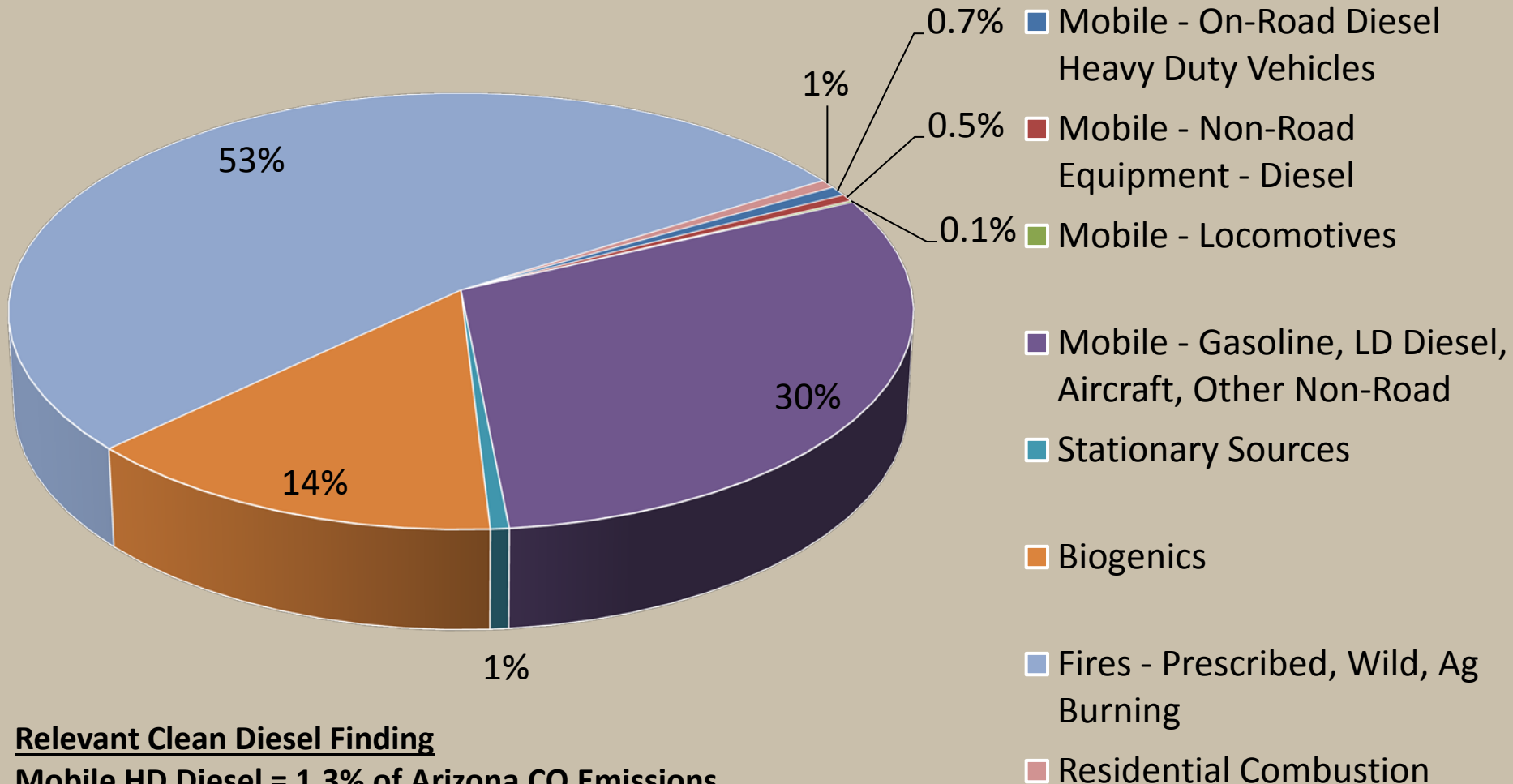


Relevant Clean Diesel Finding

Mobile HD Diesel = 3.5% of GRIC VOC Emissions

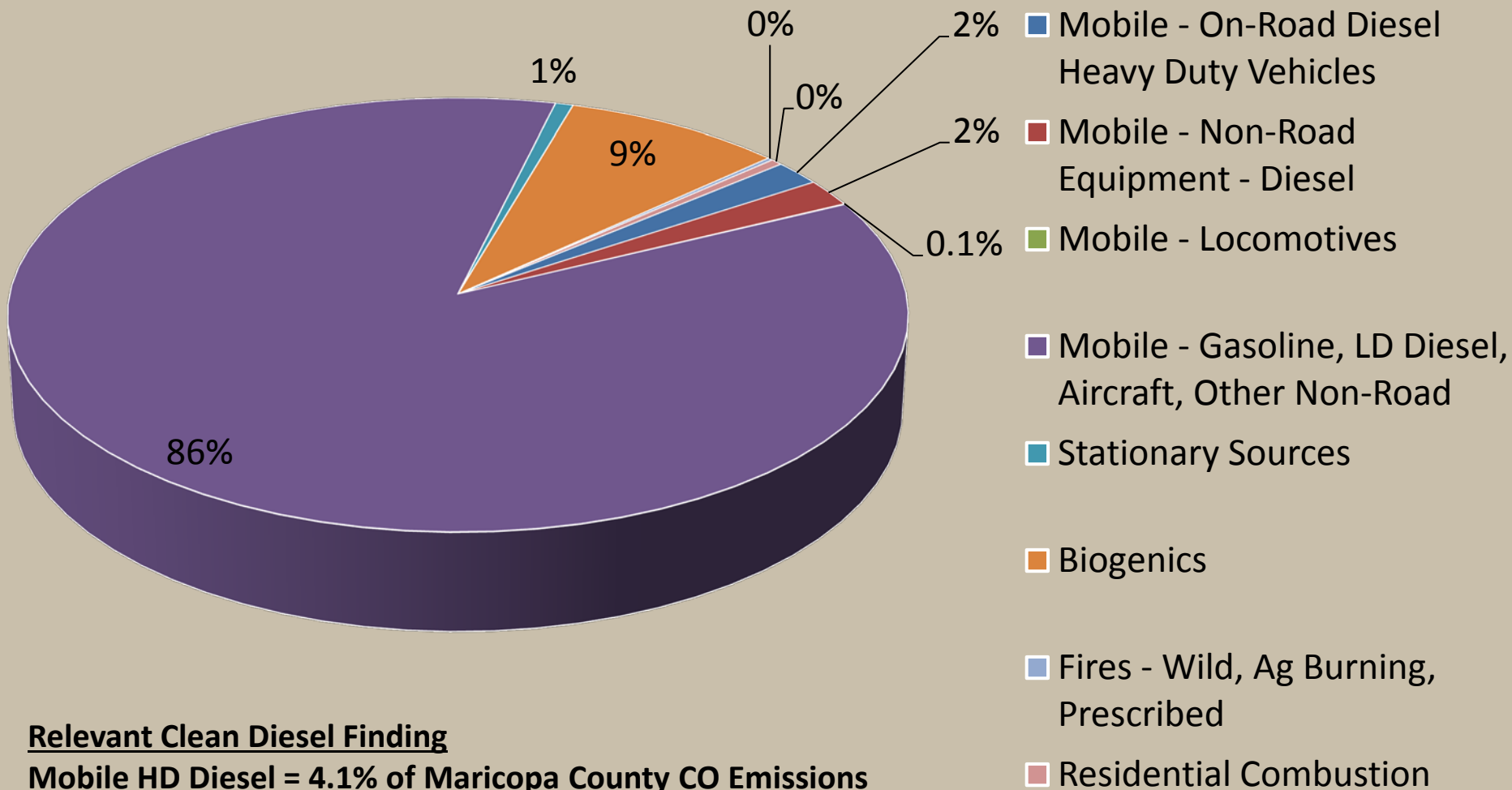
Source: 2007 GRIC EI

Arizona - CO (%)



Source: US EPA, NEI (2011)

Maricopa County - CO (%)

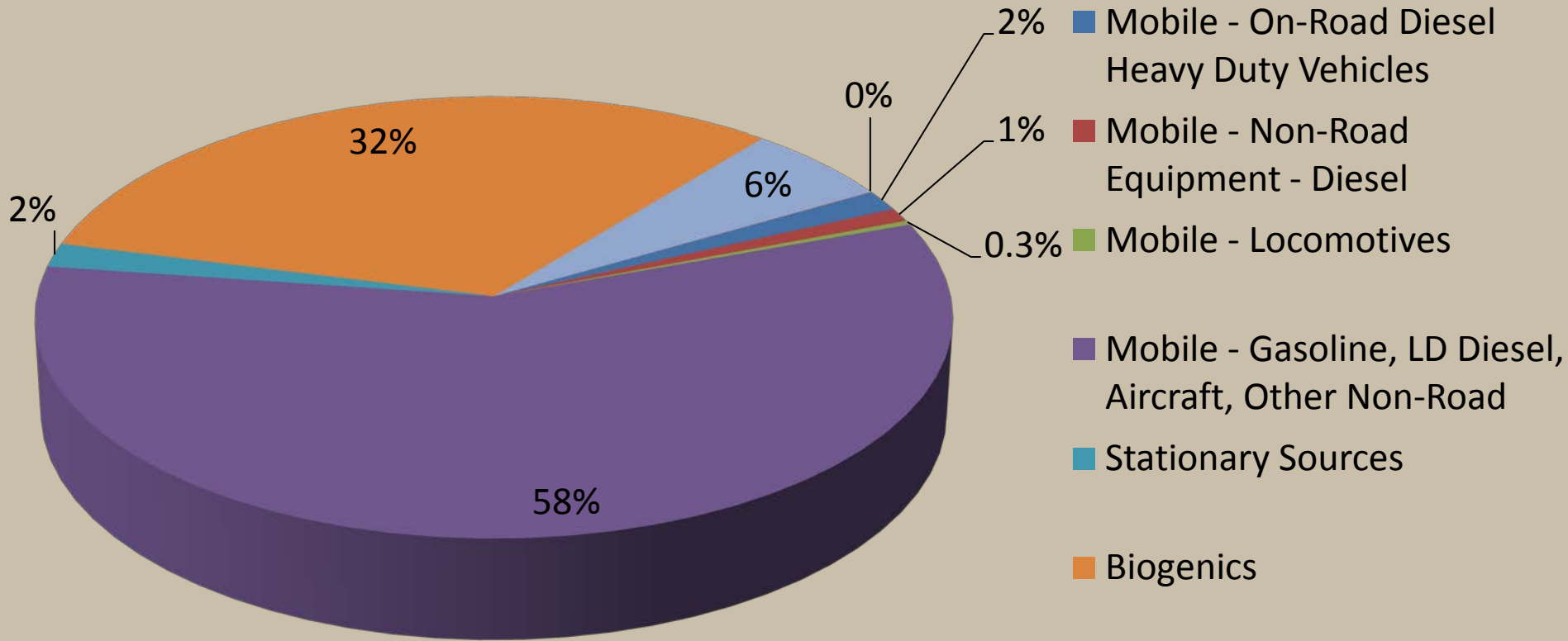


Relevant Clean Diesel Finding

Mobile HD Diesel = 4.1% of Maricopa County CO Emissions

Source: US EPA, NEI (2011)

Pinal County - CO (%)

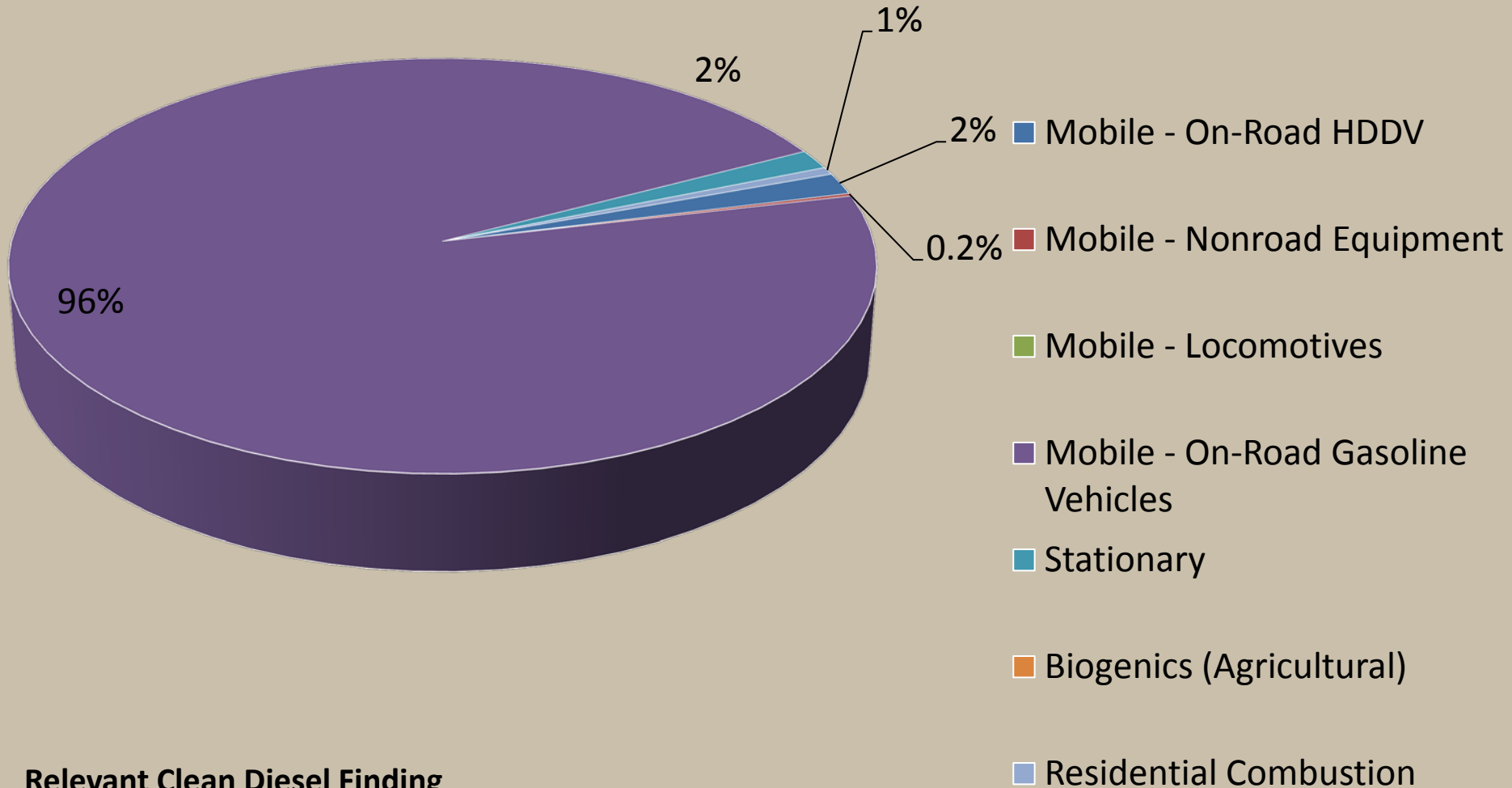


Relevant Clean Diesel Finding

Mobile HD Diesel = 3.3% of Pinal County CO Emissions

Source: US EPA, NEI (2011)

GRIC - CO (%)



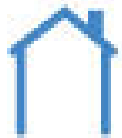
Relevant Clean Diesel Finding

Mobile HD Diesel = 2.2% of GRIC CO Emissions

Source: 2007 GRIC EI

Particulate Matter 2.5 Formation

Primary Particulate



Area Sources



Mobile Sources



Point Sources



Particulate Matter 2.5

Secondary Particulate (Precursors)

 Nitrogen Oxides

+

 Sulfur Oxides

+

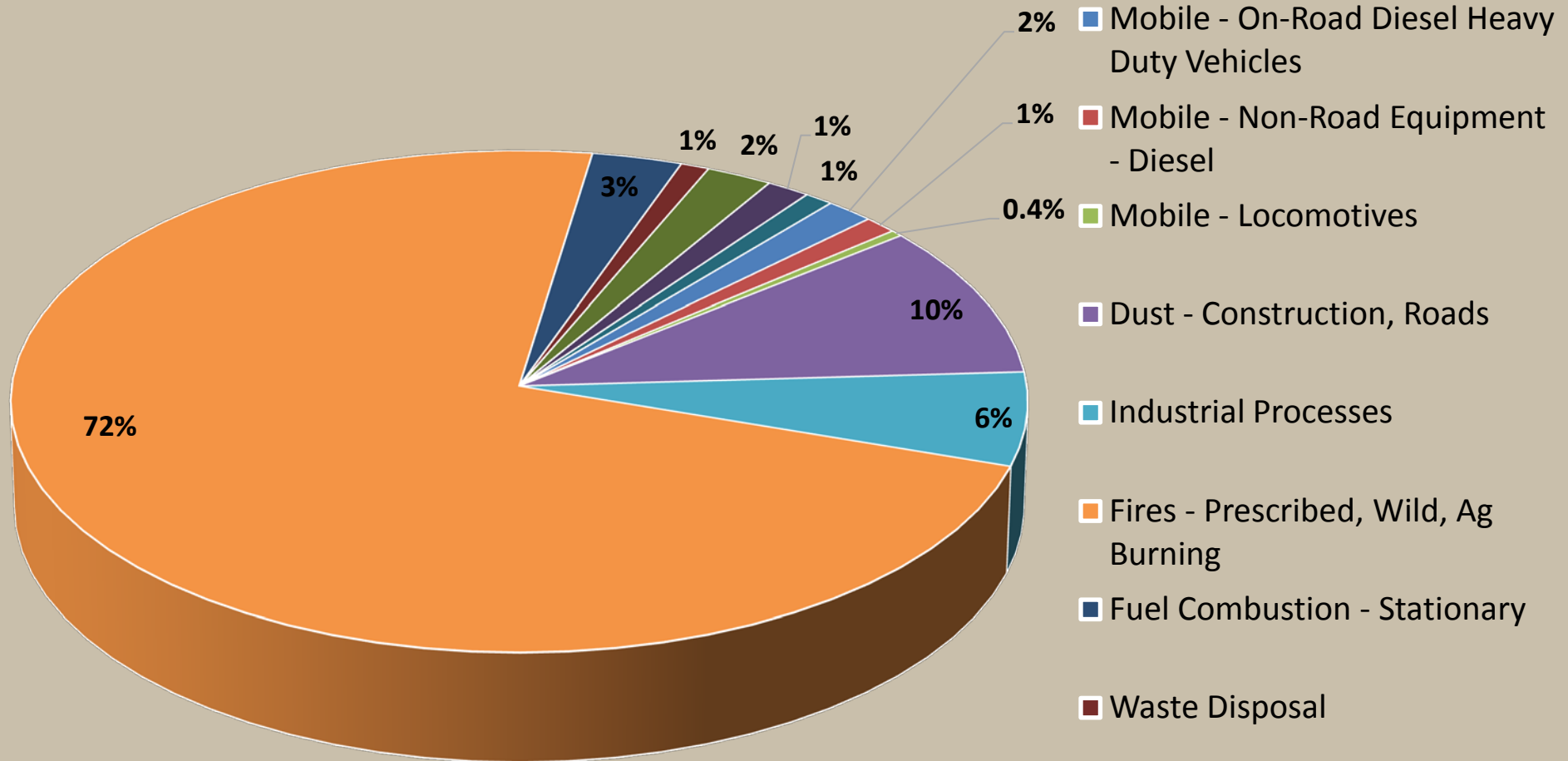
 Volatile Organic Compounds

+

 Ammonia



Arizona - Primary PM2.5 (%)



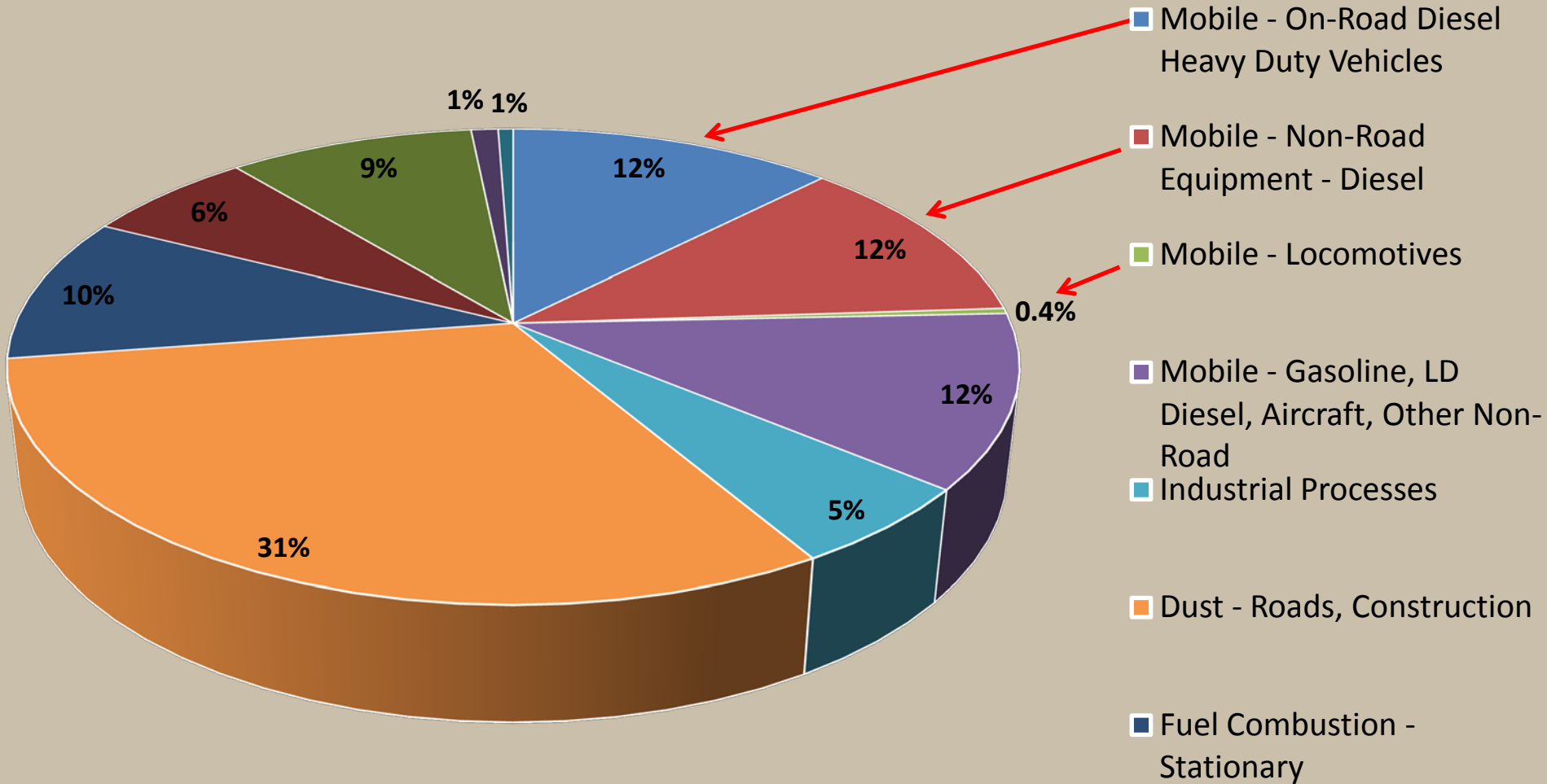
Relevant Clean Diesel Finding

Mobile HD Diesel = 3.4% of Arizona Primary PM2.5 Emissions

Note – Solvents + Miscellaneous < 1%

Source: US EPA, NEI (2011)

Maricopa County - Primary PM2.5 (%)



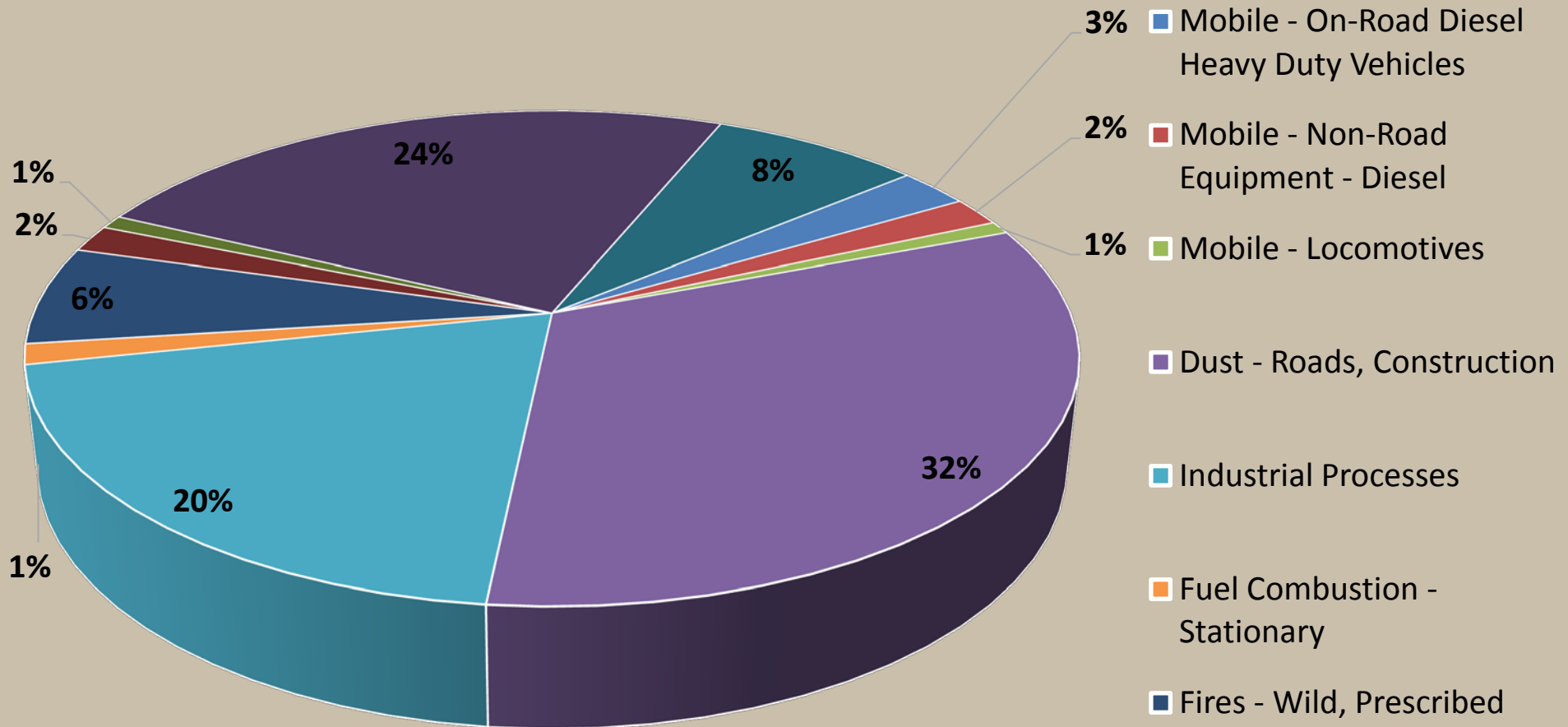
Relevant Clean Diesel Finding

Mobile HD Diesel = 24.4% of Maricopa County Primary PM2.5 Emissions

Note – Miscellaneous < 1%

Source: US EPA, NEI (2011)

Pinal County - Primary PM2.5 (%)

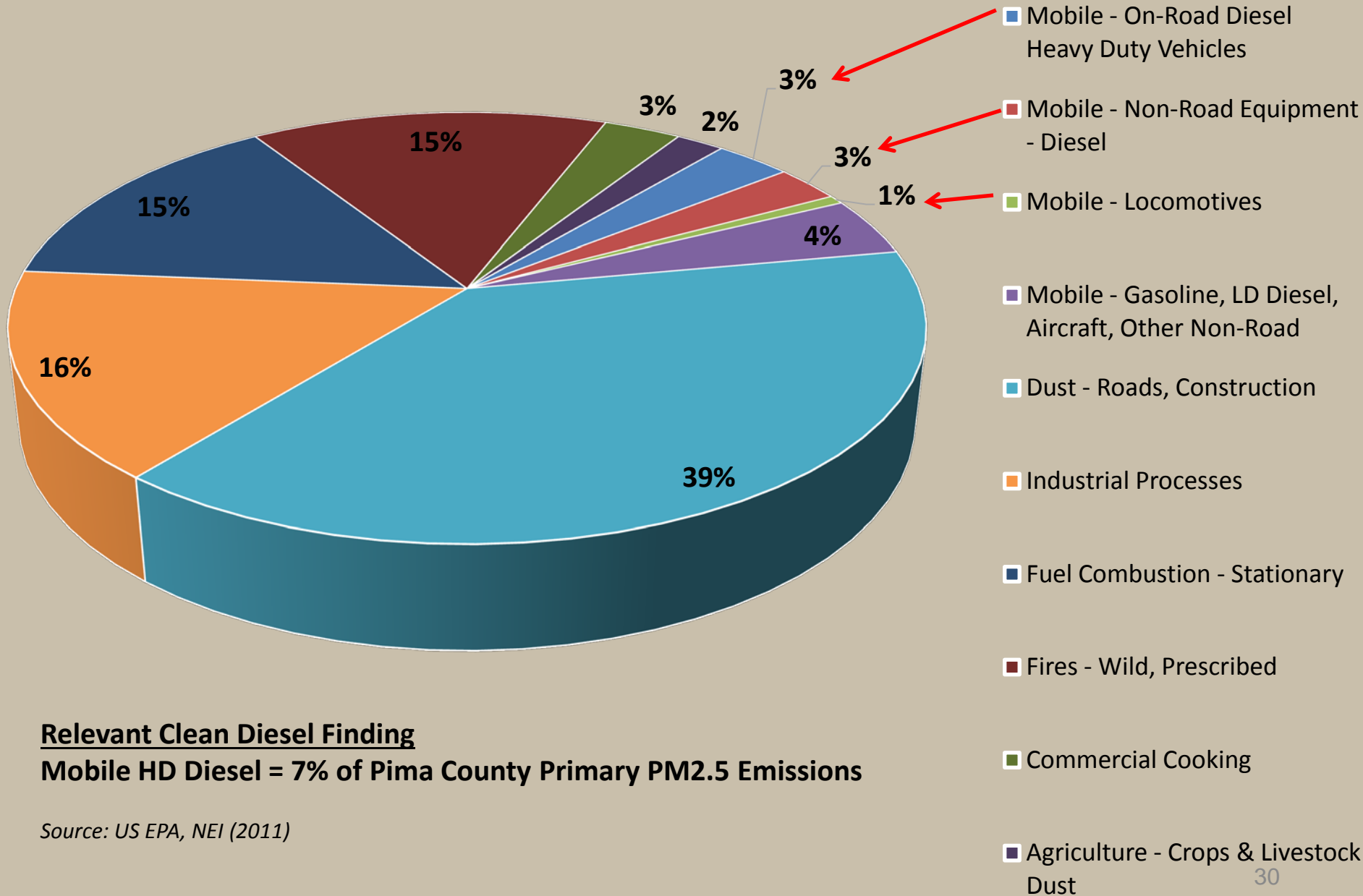


Relevant Clean Diesel Finding

Mobile HD Diesel = 5% of Pinal County Primary PM2.5 Emissions

Note – Miscellaneous < 1%

Pima County - Primary PM2.5 (%)

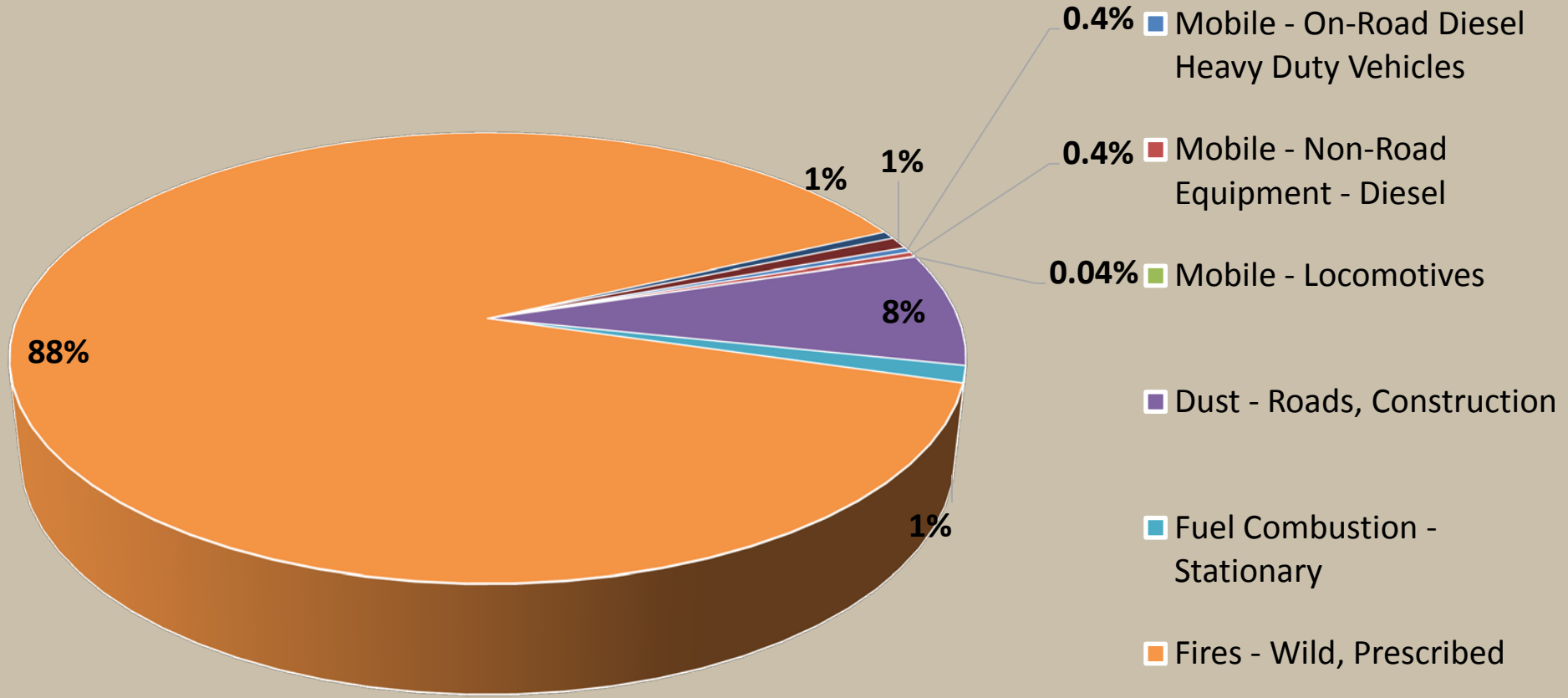


Relevant Clean Diesel Finding

Mobile HD Diesel = 7% of Pima County Primary PM2.5 Emissions

Source: US EPA, NEI (2011)

Santa Cruz County - Primary PM2.5 (%)

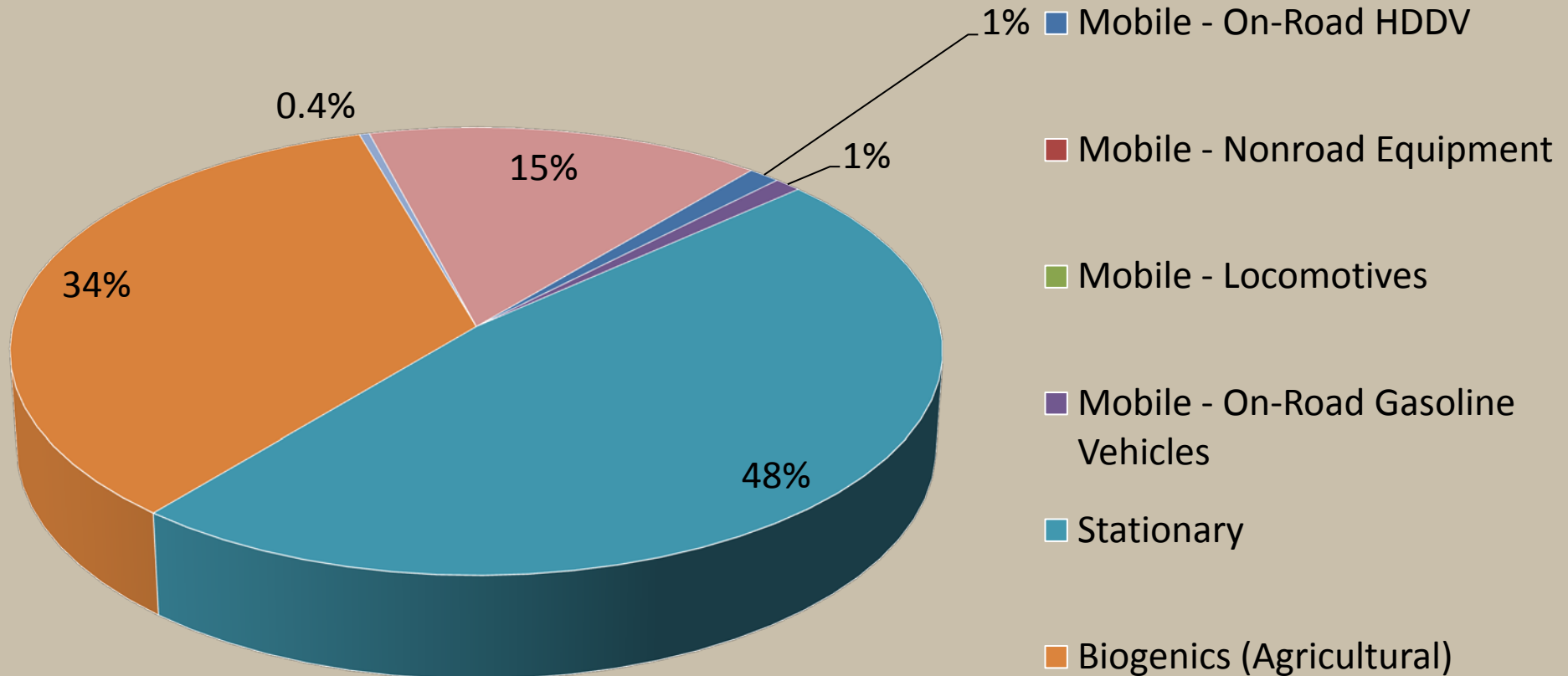


Relevant Clean Diesel Finding

Mobile HD Diesel = 0.84% of Santa Cruz County Primary PM2.5

Note – Industrial Processes+Cooking+Agriculture+Miscellaneous < 1%

GRIC - PM10 (%)



Relevant Clean Diesel Finding

Mobile HD Diesel = 1% of GRIC PM10 Emissions

Source: 2007 GRIC EI

Summary

- Contributions from HDDDV

Pollutant	Min (%)	Max (%)	GRIC (%)
NOx	22	54	51
VOC	<1	2	4*
CO	<1	4	2
PM2.5	<1	24	1-13*



Questions?

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