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

Ryan Eberle, P.E.
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)
Air Quality Concerns

• NAAQS
  – NO2, Ozone, PM2.5, PM10, Pb, CO, SO2

• Diesel Emissions
  – NOx, CO, PM2.5, HC (VOC)
DESIGNATIONS IN US EPA REGION 9 FOR THE 2008 8-HOUR OZONE (O₃) NATIONAL AMBIENT AIR QUALITY STANDARDS

- Nonattainment/Extremely
- 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.


AIR1500028_1.md (March 12, 2015)
2011-2013 COUNTY-LEVEL 8-HOUR OZONE DESIGN VALUES COMPARED TO PROJECTED 65 PPB AND 70 PPB PRIMARY 8-HOUR OZONE STANDARDS

Legend:
- County above 70 parts per billion (ppb)
- County between 66 and 70 ppb
- County between 61 and 65 ppb
- County at/below 60 ppb
- No monitoring data available
- 2008 8-hour ozone NAAQS nonattainment area

Note: All regionally occurred exceptional event data have been excluded. Alaska not to scale.
Carbon Monoxide
Relevant Clean Diesel Finding
Mobile HD Diesel = 42% of Arizona NOx Emissions

Note - Waste Disposal + Solvents + Miscellaneous < 1%

Source: US EPA, NEI (2011)
**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)*
Relevant Clean Diesel Finding
Mobile HD Diesel = 51% of Pinal County NOx Emissions

Note - Miscellaneous < 1%

Source: US EPA, NEI (2011)
Relevant Clean Diesel Finding
Mobile HD Diesel = 36% of Pima County NOx Emissions

Note - Miscellaneous < 1%

Source: US EPA, NEI (2011)
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)
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 (%)

- Mobile - On-Road Diesel Heavy Duty Vehicles: 0%
- Mobile - Non-Road Equipment - Diesel: 1%
- Mobile - Locomotives: 0.0%
- Mobile - Gasoline, LD Diesel, Aircraft, Other Non-Road: 13%
- Stationary Sources: 13%
- Biogenics: 73%

**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)
Relevant Clean Diesel Finding
Mobile HD Diesel = 3.5% of GRIC VOC Emissions

Source: 2007 GRIC EI
Relevant Clean Diesel Finding
Mobile HD Diesel = 1.3% of Arizona CO Emissions

Source: US EPA, NEI (2011)
Relevant Clean Diesel Finding
Mobile HD Diesel = 4.1% of Maricopa County CO Emissions

Source: US EPA, NEI (2011)
Relevant Clean Diesel Finding
Mobile HD Diesel = 3.3% of Pinal County CO Emissions

Source: US EPA, NEI (2011)
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

Secondary Particulate (Precursors)

$\text{PM}_{2.5}$

$\text{NO}_x$ Nitrogen Oxides
$\text{SO}_x$ Sulfer Oxides
$\text{VOC}$ Volatile Organic Compounds
$\text{NH}_3$ Ammonia

$\text{PM}_{2.5} = \text{Area Sources} + \text{Mobile Sources} + \text{Point Sources}$
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)
Relevant Clean Diesel Finding
Mobile HD Diesel = 5% of Pinal County Primary PM2.5 Emissions

Note – Miscellaneous < 1%

Source: US EPA, NEI (2011)
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 (%)

- Mobile - On-Road Diesel Heavy Duty Vehicles: 0.4%
- Mobile - Non-Road Equipment - Diesel: 0.4%
- Mobile - Locomotives: 0.04%
- Dust - Roads, Construction: 1%
- Fuel Combustion - Stationary: 1%
- Fires - Wild, Prescribed: 1%
- Mobile - Gasoline, LD Diesel, Aircraft, Other Non-Road: 8%
- Waste Disposal: 1%

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

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

Source: US EPA, NEI (2011)
Relevant Clean Diesel Finding
Mobile HD Diesel = 1% of GRIC PM10 Emissions

Source: 2007 GRIC EI
Summary

- Contributions from HDDV

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<th>Pollutant</th>
<th>Min (%)</th>
<th>Max (%)</th>
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Questions?

Ryan Eberle, P.E.
Air Quality Program Manager
Gila River Indian Community
520-796-3781
ryan.eberle@gric.nsn.us
www.gricdeq.org