

# Western Regional Emissions for Regional Haze analysis and planning efforts

Tom Moore

EGU Emissions Analysis project meeting

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Salt Lake City, UT



## Emissions sources – western U.S. air quality planning

	Source	Controllability	Trend	Variability
Anthropogenic	US Anthropogenic	Some emissions are controllable	Downward as sources are controlled	Relatively stable
		Some emissions will remain after all reasonable controls implemented	Could rise because of population increases	Relatively stable
	International Anthropogenic	Not controllable by state or federal regulations	Likely increasing due to increased development worldwide and rising population	Relatively stable
Natural	Fire, Dust, Sea Salt	Natural, not controllable	Increases due to <u>climate change</u>	Highly variable
	Volcanic	Natural, not controllable	Unpredictable	Highly variable
	Other Natural Sources	Not controllable	Potentially affected by climate change, e.g., changes in temperature	Relatively stable

Table Note: Shaded areas represent emissions that states cannot control.

# State Emissions Inventory Categories for Regional Haze Planning

Agriculture - Crops & Livestock Dust

Biogenics - Vegetation and Soil

Commercial Cooking

Fires - Agricultural Field Burning

Fires - Prescribed Fires

Fires - Wildfires

Fuel Comb - Comm/Institutional - Biomass

Fuel Comb - Comm/Institutional - Coal

Fuel Comb - Comm/Institutional - Natural Gas

Fuel Comb - Comm/Institutional - Oil

Fuel Comb - Comm/Institutional - Other

Fuel Comb - Electric Generation - Biomass

Fuel Comb - Electric Generation - Coal

Fuel Comb - Electric Generation - Natural Gas

Fuel Comb - Electric Generation - Oil

Fuel Comb - Electric Generation - Other

Fuel Comb - Industrial Boilers, ICEs - Biomass

Fuel Comb - Industrial Boilers, ICEs - Coal

Fuel Comb - Industrial Boilers, ICEs - Natural Gas

Fuel Comb - Industrial Boilers, ICEs - Oil

Fuel Comb - Industrial Boilers, ICEs - Other

Fuel Comb - Residential - Natural Gas

Fuel Comb - Residential - Oil

Fuel Comb - Residential - Other

Fuel Comb - Residential - Wood

Industrial Processes - Cement Manuf

Industrial Processes - Chemical Manuf

Industrial Processes - Ferrous Metals

Industrial Processes - Mining

Industrial Processes - NEC

Industrial Processes - Non-ferrous Metals

Industrial Processes - Oil & Gas Production

Industrial Processes - Petroleum Refineries

Industrial Processes - Pulp & Paper

Industrial Processes - Storage and Transfer

Miscellaneous Non-Industrial NEC

Mobile - Aircraft

Mobile - Commercial Marine Vessels

Mobile - Locomotives

Mobile - Non-Road Equipment - Diesel

Mobile - Non-Road Equipment - Gasoline

Mobile - Non-Road Equipment - Other

Mobile - On-Road Diesel Heavy Duty Vehicles

Mobile - On-Road Diesel Light Duty Vehicles

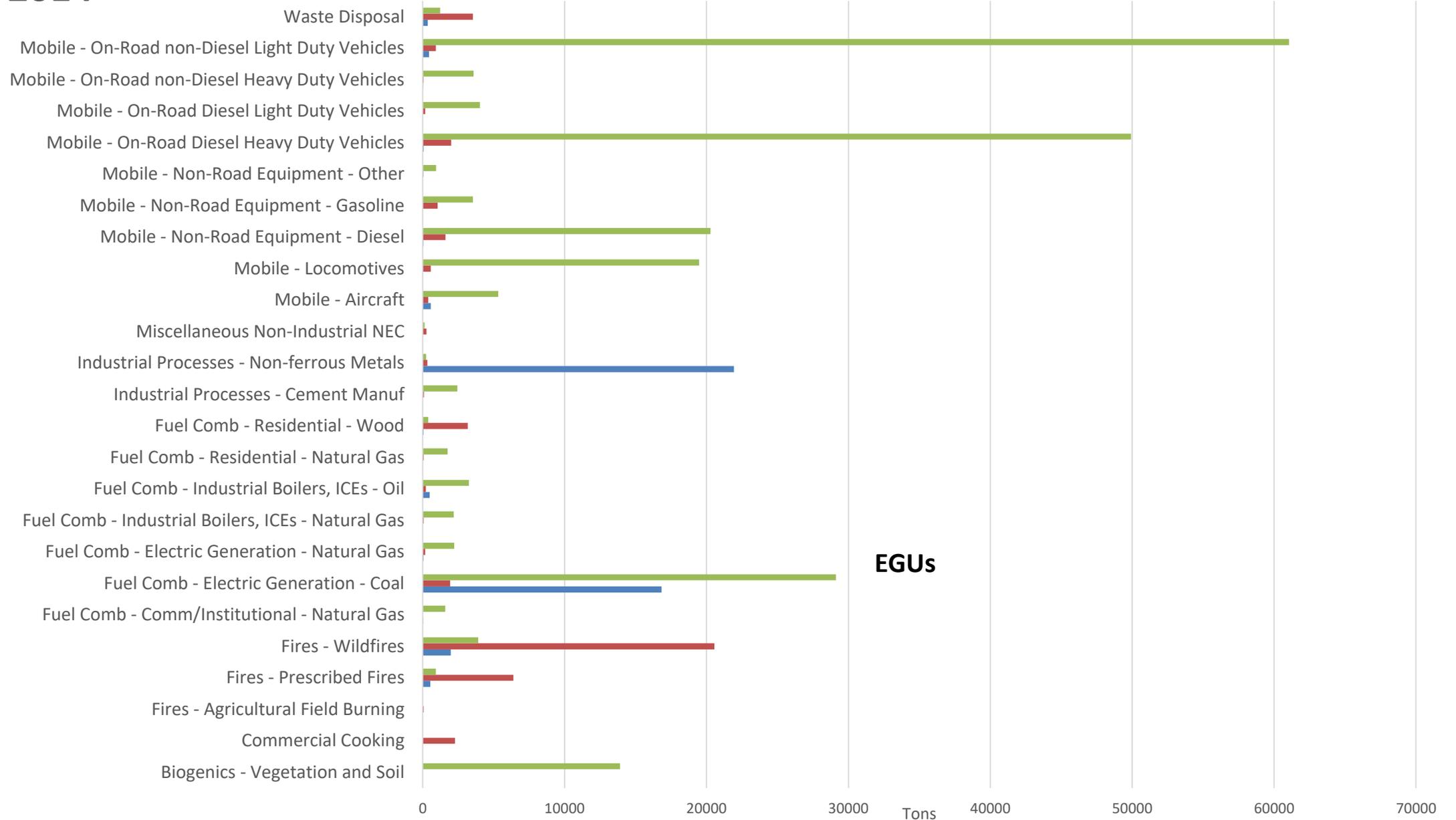
Mobile - On-Road non-Diesel Heavy Duty Vehicles

Mobile - On-Road non-Diesel Light Duty Vehicles

Waste Disposal

# Arizona - 2014

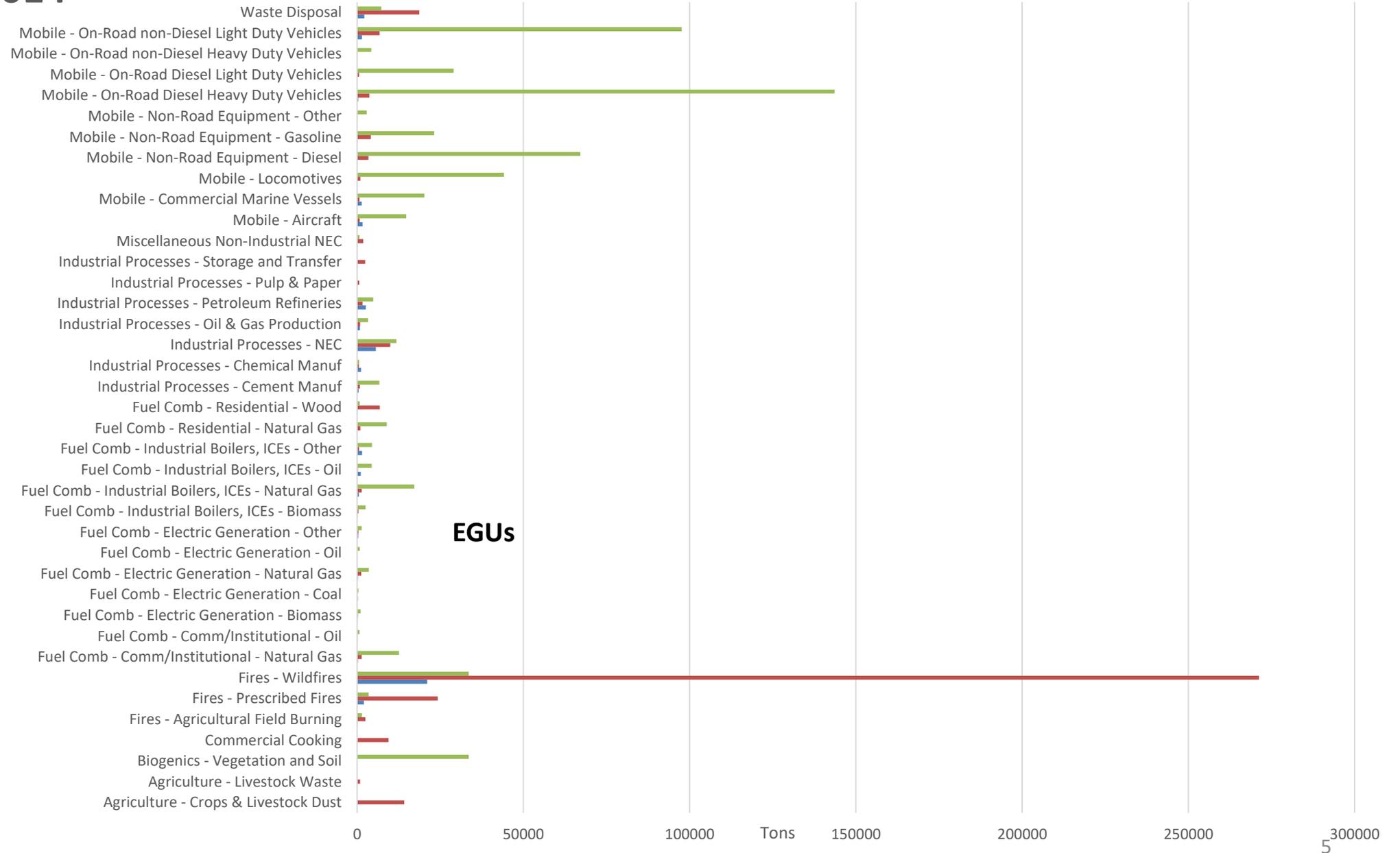
Sum of NOX Sum of PM2.5 Sum of SO2



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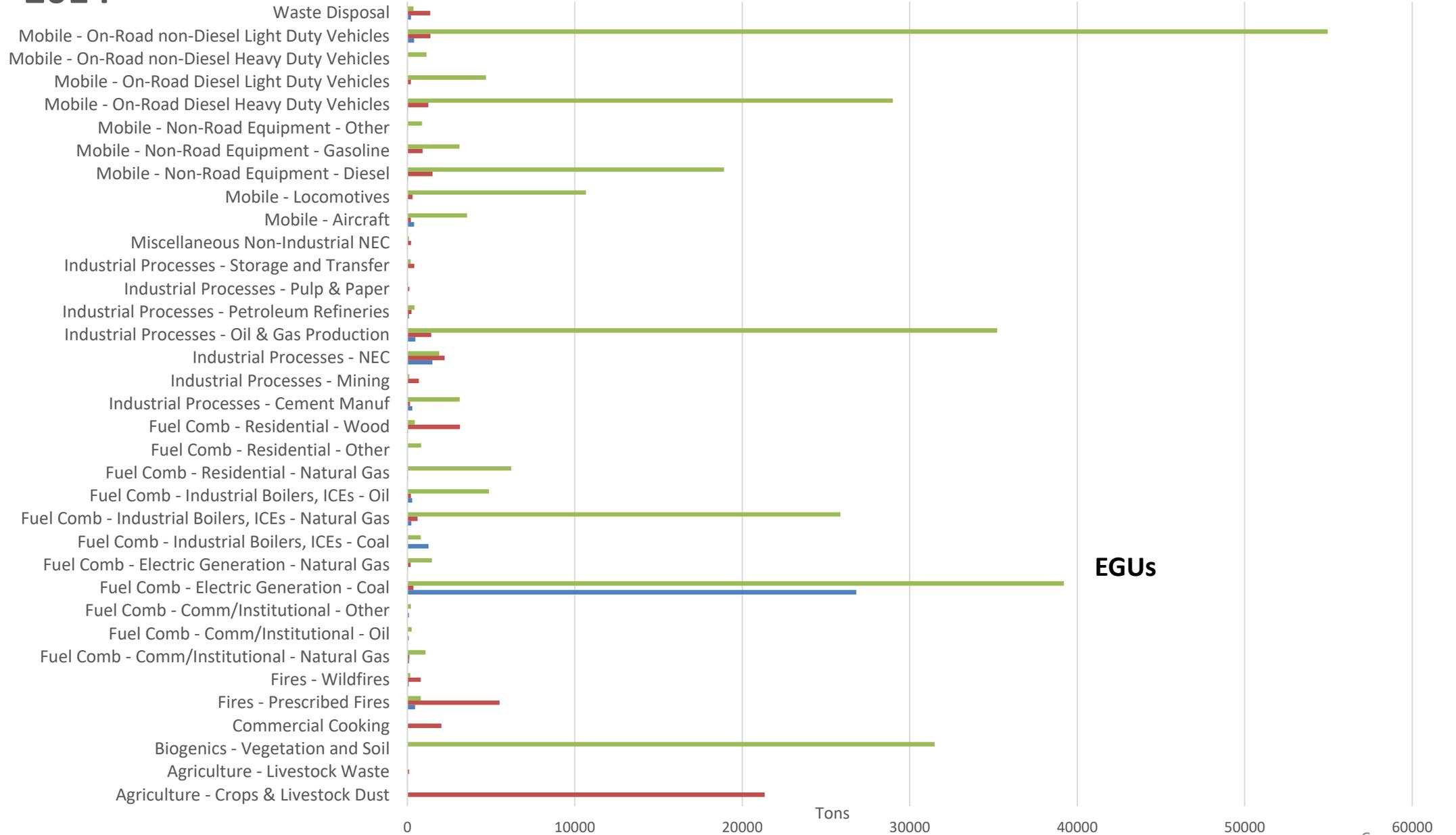
# California - 2014

■ Sum of NOX
 ■ Sum of PM2.5
 ■ Sum of SO2



# Colorado - 2014

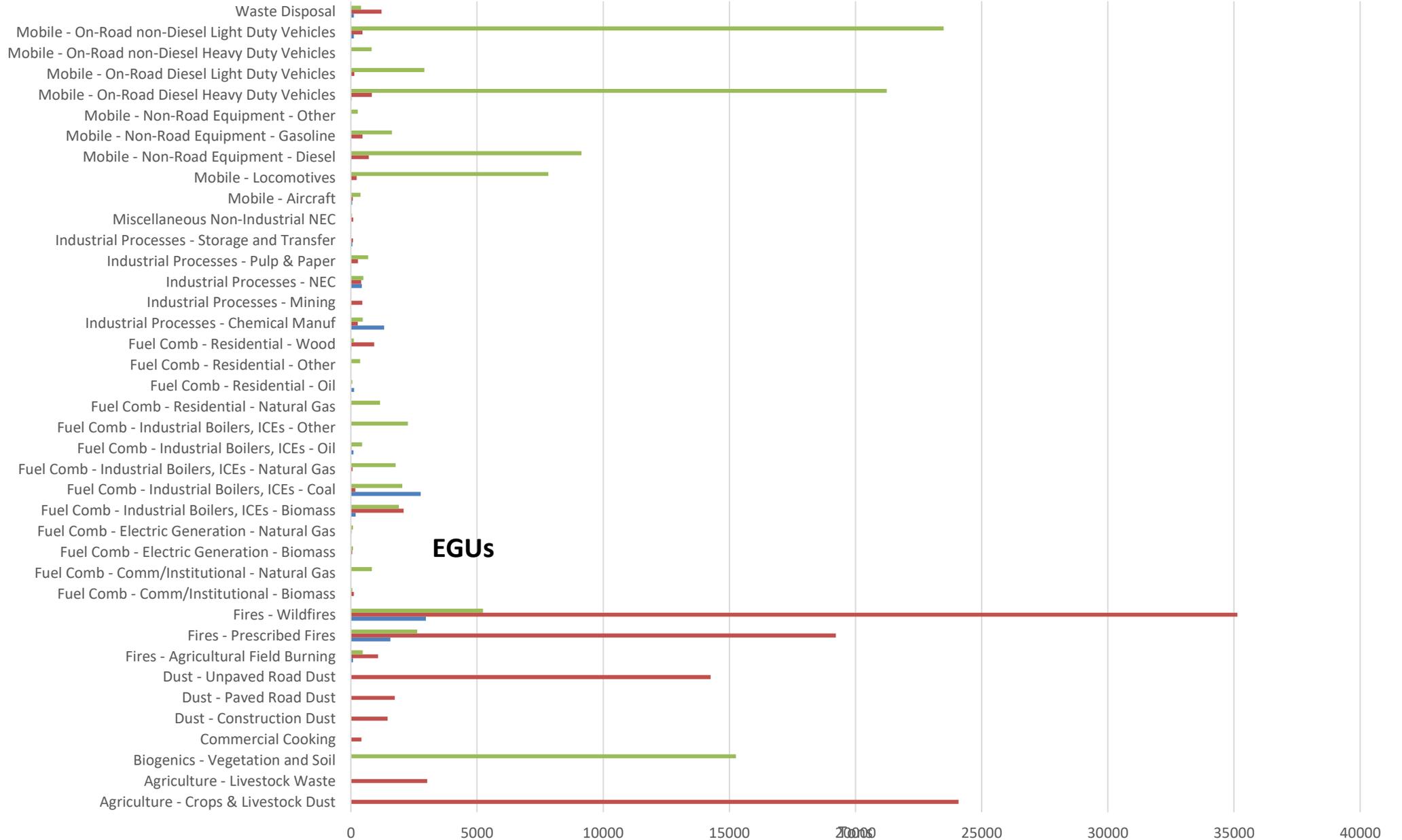
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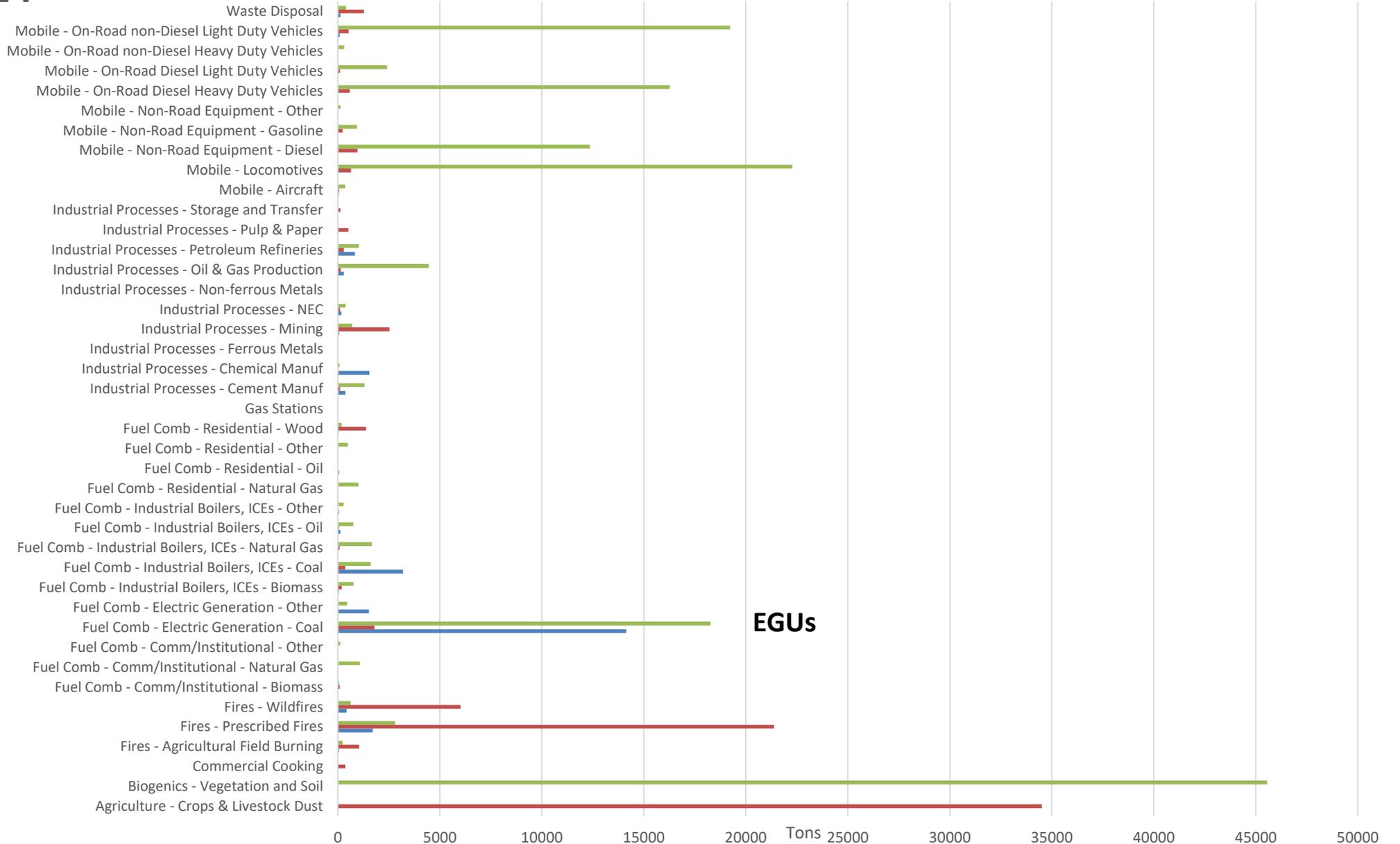
# Idaho - 2014

Sum of NOX Sum of PM2.5 Sum of SO2



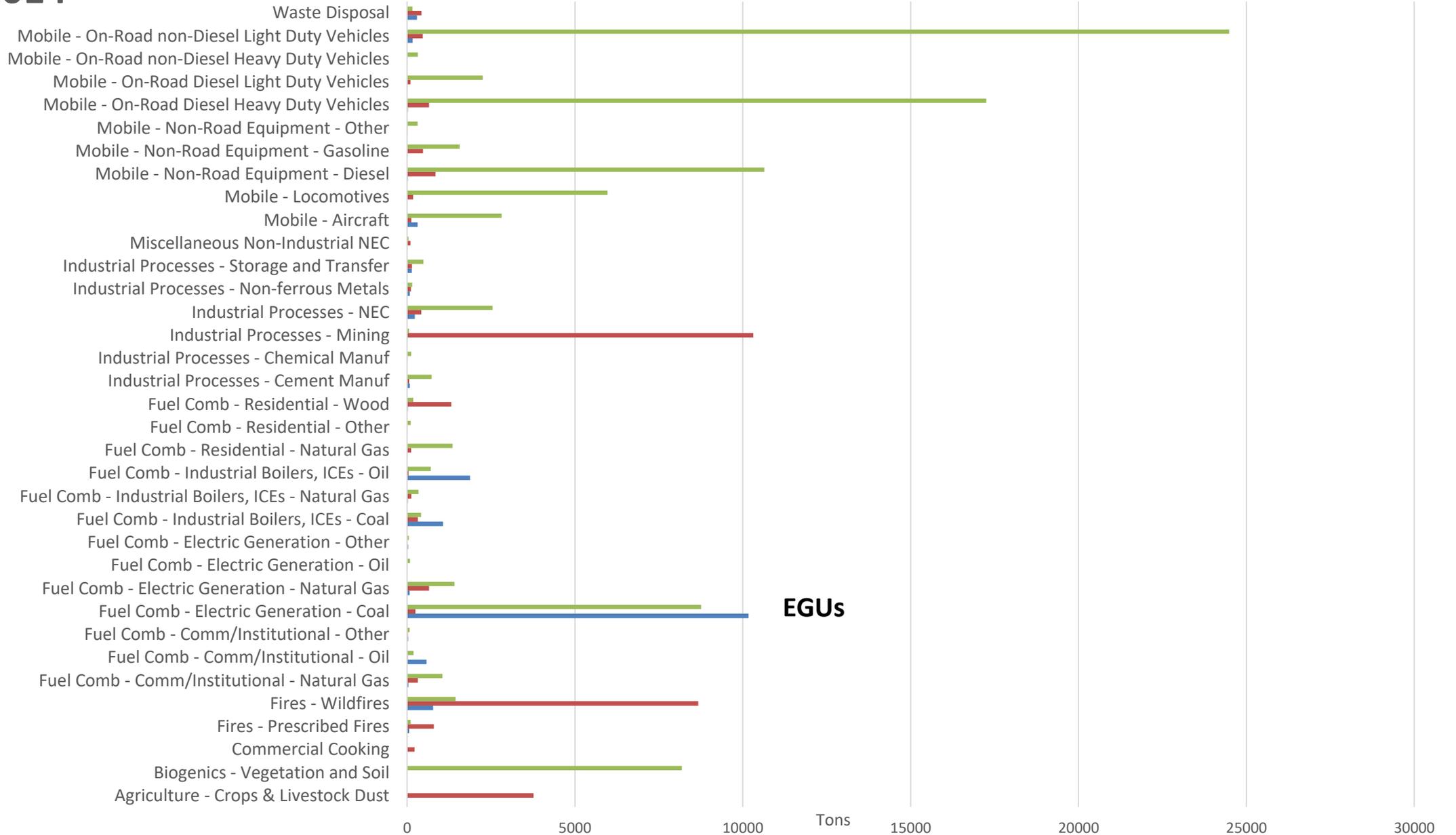
# Montana - 2014

■ Sum of NOX ■ Sum of PM2.5 ■ Sum of SO2



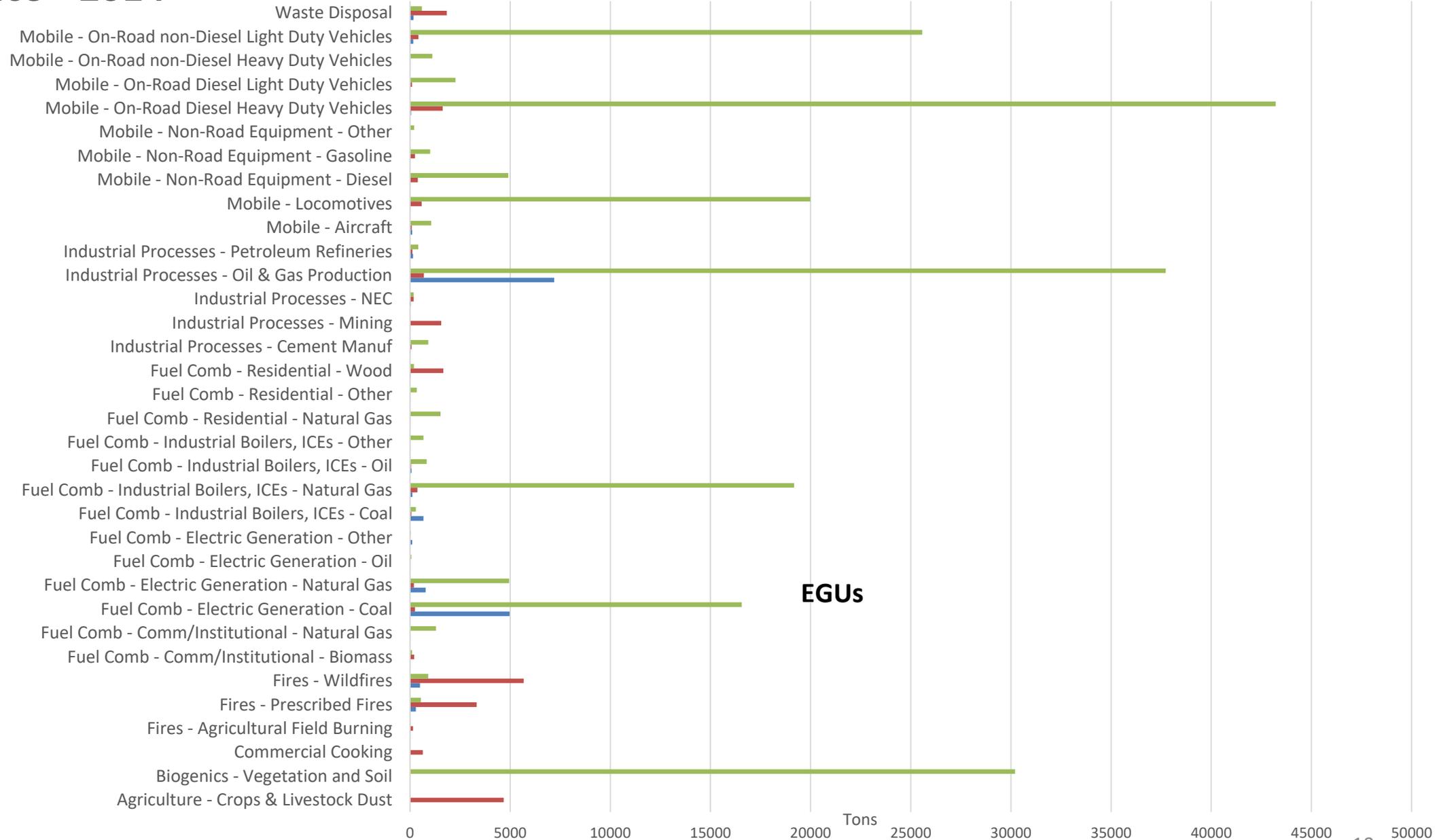
# Nevada - 2014

Sum of NOX Sum of PM2.5 Sum of SO2



# New Mexico - 2014

Sum of NOX Sum of PM2.5 Sum of SO2



# North Dakota - 2014

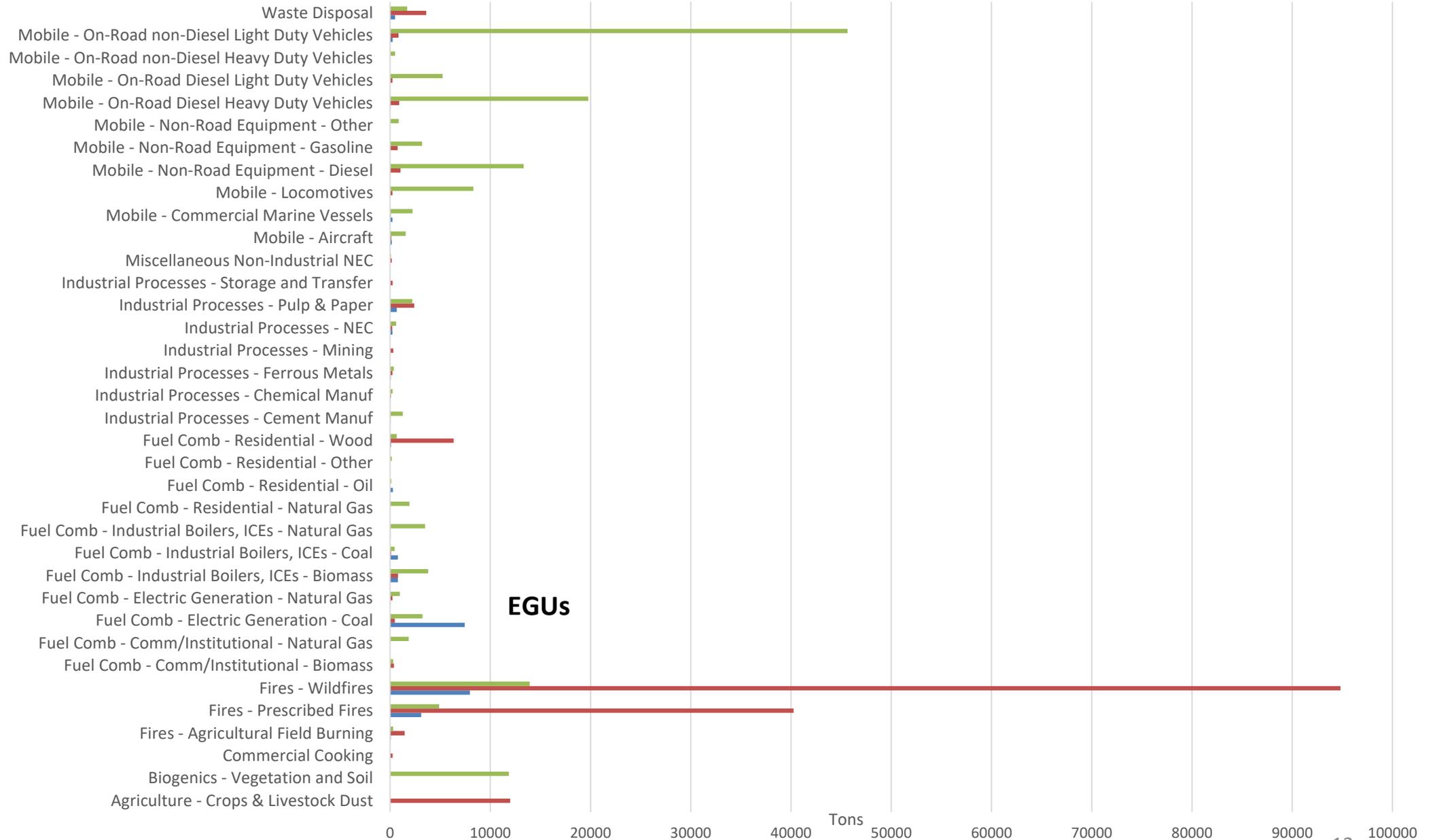
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# Oregon - 2014

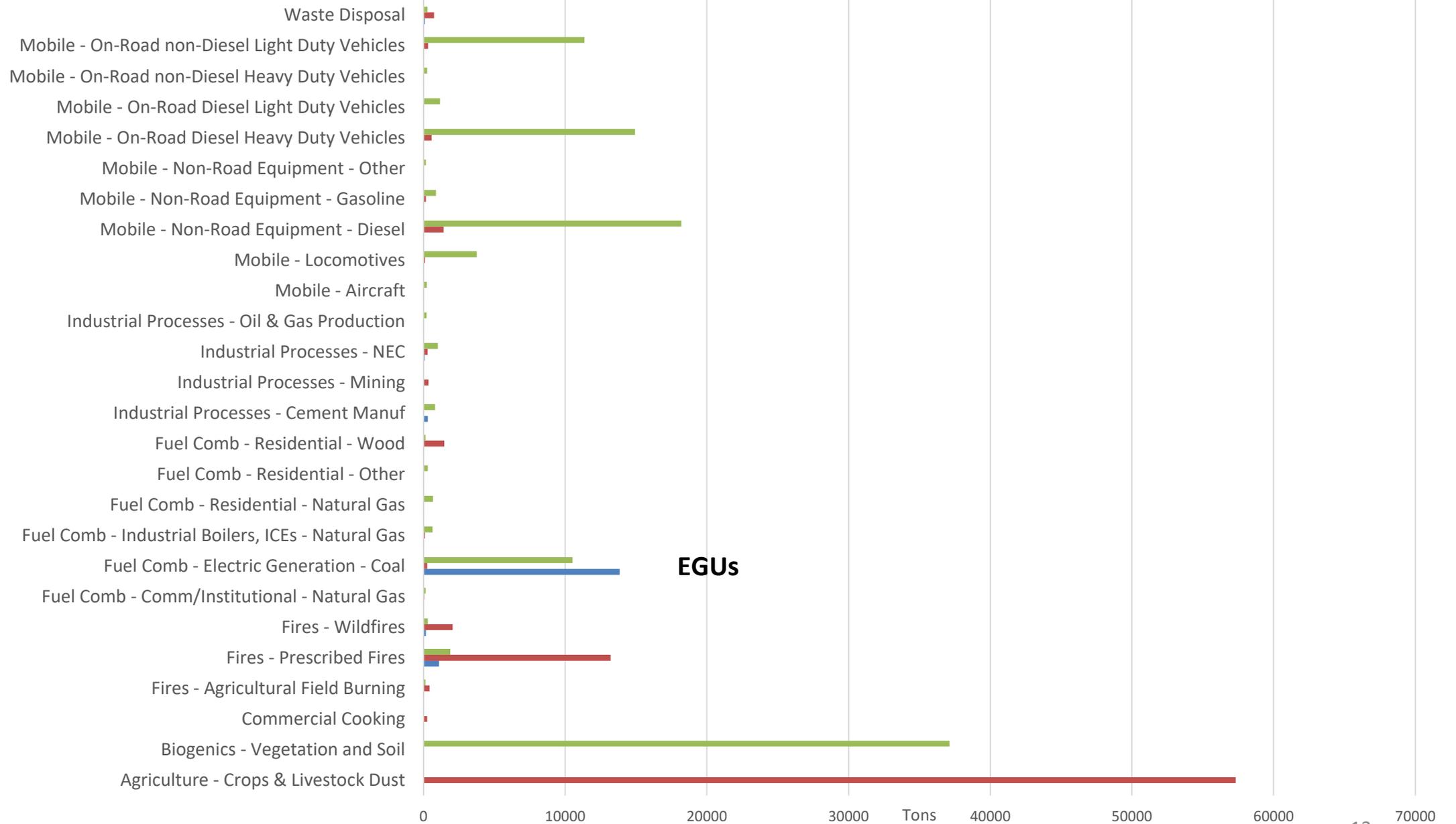
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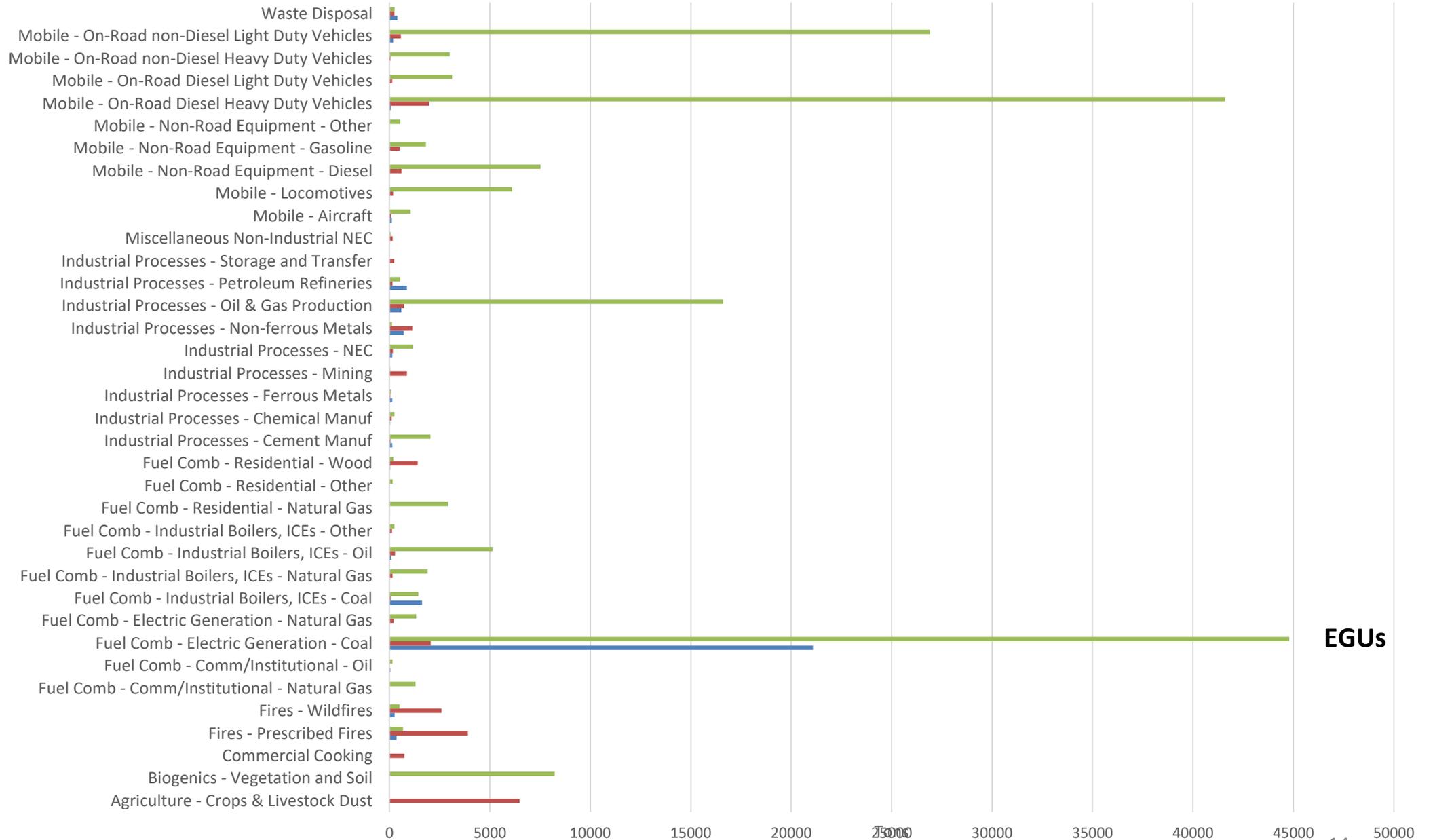
# South Dakota - 2014

■ Sum of NOX
 ■ Sum of PM2.5
 ■ Sum of SO2



# Utah - 2014

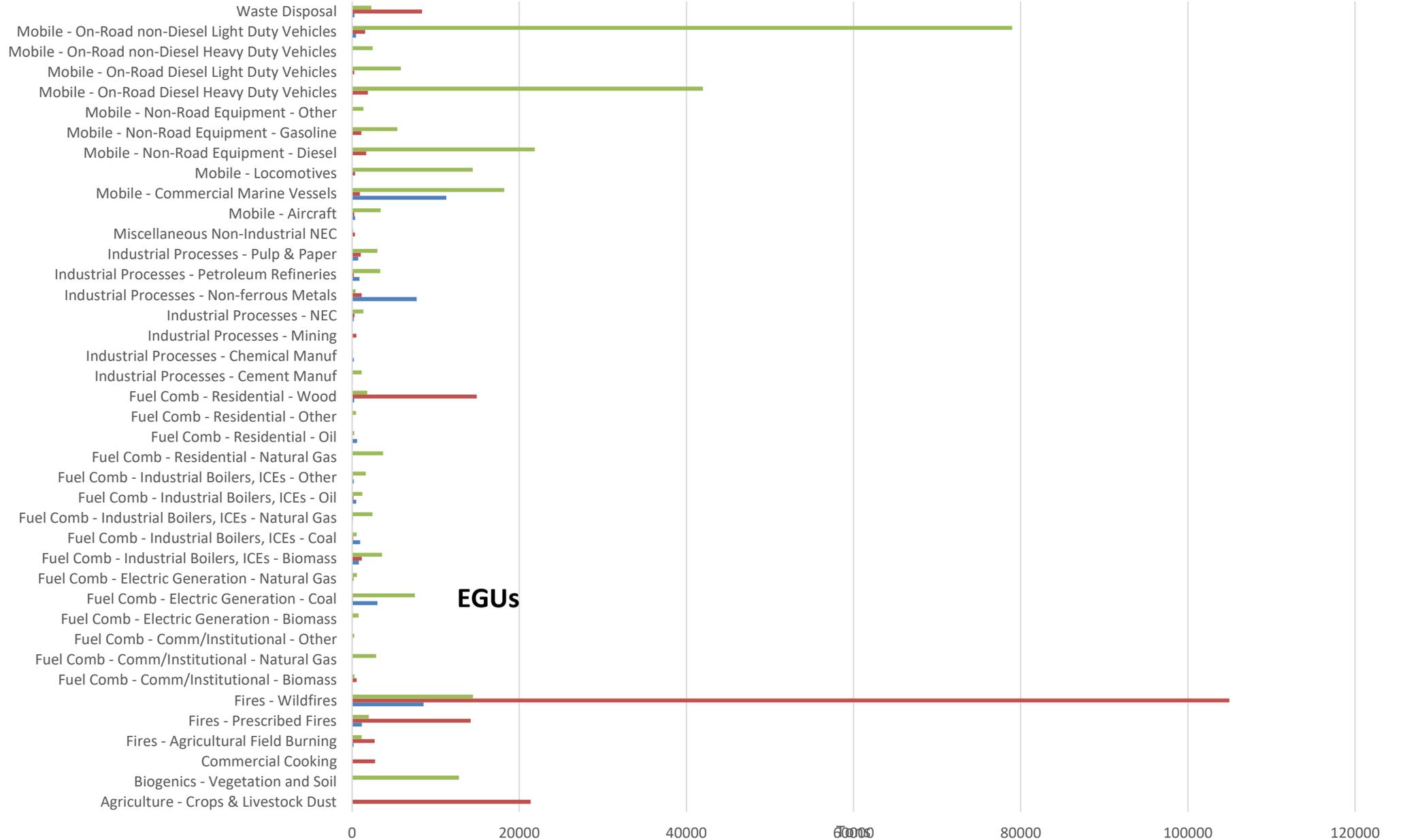
Sum of NOX Sum of PM2.5 Sum of SO2



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# Washington - 2014

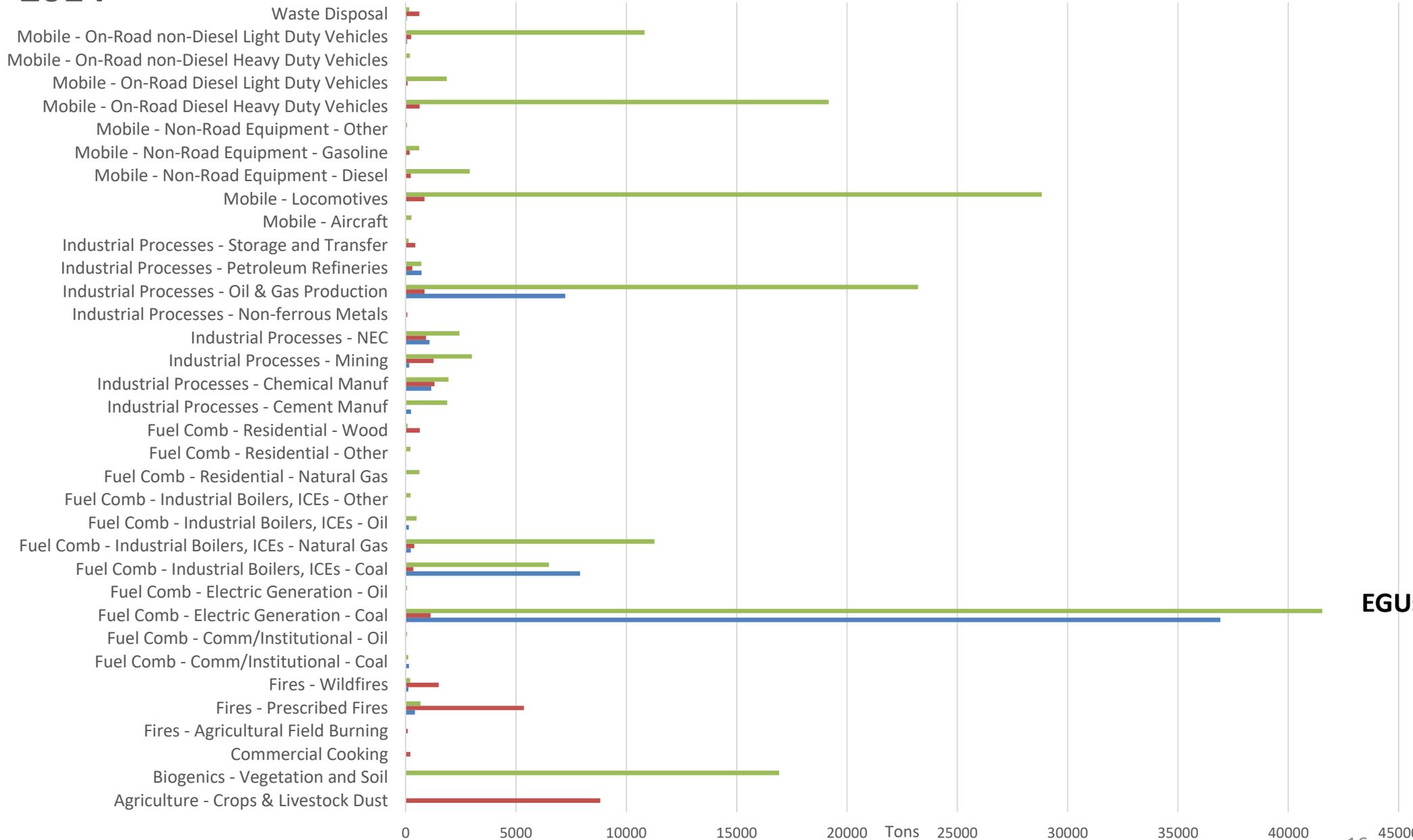
■ Sum of NOX
 ■ Sum of PM2.5
 ■ Sum of SO2



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# Wyoming - 2014

Sum of NOX Sum of PM2.5 Sum of SO2



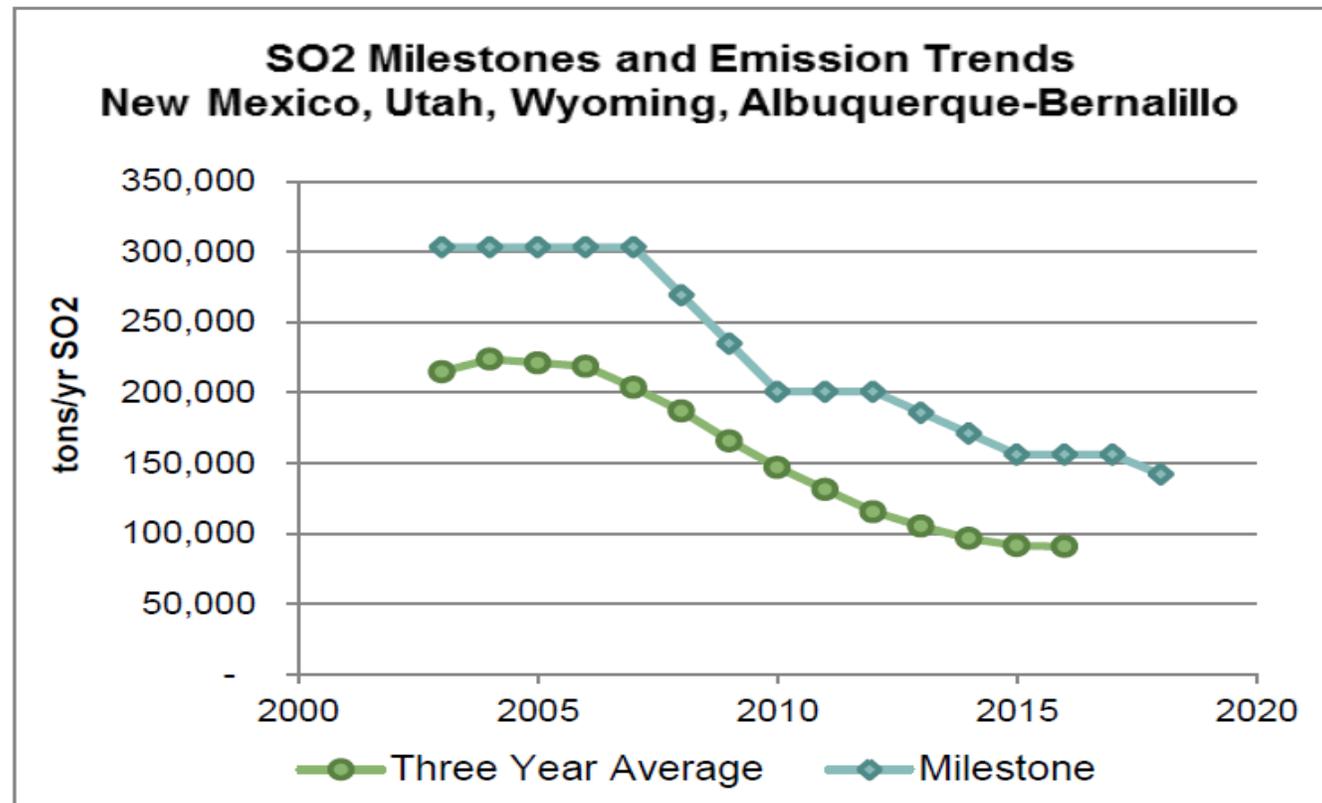
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# §309 SO<sub>2</sub> Regional Emissions Milestone Program

2016 §309 Regional SO<sub>2</sub> Emissions and Milestone Report (March 2018, [https://www.wrapair2.org/pdf/2016%20Section%20309%20SO2%20Milestone%20Report\\_Final.pdf](https://www.wrapair2.org/pdf/2016%20Section%20309%20SO2%20Milestone%20Report_Final.pdf))

## Reported 2016 SO<sub>2</sub> Emissions by State (tons/year)

State	Reported SO <sub>2</sub> Emissions
New Mexico	11,675
Utah	12,960
Wyoming	64,157
<b>Total</b>	<b>88,792</b>





unplanned natural?! wildfire

planned prescribed fire



Thank you.

Tom Moore  
WRAP Air Quality Program Manager, WESTAR

