



# **Upstate SC Air Quality Improvement Committee**

## **2010 Emissions Inventory**

**By  
Sandra E. Yúdice  
Assistant to the County Administrator  
County of Greenville, South Carolina**

**June 20, 2011  
Rev. August 1, 2011**

This page left blank intentionally

## Table of Contents

Background.....	1
Upstate SC Air Quality Monitors.....	2
What are the Next Steps?.....	3
Summary of Upstate SC Emissions Inventory.....	4
Conclusion .....	10
Appendices .....	12
Upstate SC Air Quality Improvement Committee.....	53
References.....	56

This page left blank intentionally

## Background

In December 2002 and with a pending designation of non-attainment with the 1997 ground level ozone standard of 0.08 parts per million (ppm), the counties of Anderson, Greenville, and Spartanburg entered into an Early Action Compact (EAC) with the S.C. Department of Health and Environmental Control (DHEC) and the U.S. Environmental Protection Agency (EPA). The goal was to develop and implement a series of strategies aiming to obtain cleaner air sooner than federally mandated and attain the 8-hour ozone standard by December 31, 2007. The other pollutant that was a concern was particle matter 2.5 (PM<sub>2.5</sub>). In December 2008, the EPA issued its final designation for the entire state as an attainment area with the 2006 24-hour PM<sub>2.5</sub> standards.

With the assistance of private sector's environmental engineers and experts, the 2002 EAC allowed the counties to conceive, evaluate, and implement several strategies to reach attainment by the pre-determined date. Many of the strategies were and continue to be successfully implemented by both the public and private sectors. For example, voluntarily, Duke Energy installed additional nitrogen oxide (NOx) emission controls at the Lee Steam Plant located on the Saluda River in Anderson County in support of the EAC to reduce emissions contributing to the formation of ground level ozone (Duke, 2011). With DHEC approving a permit in April 2004, Transcontinental Gas Pipeline Co. Station 140 in Moore, SC, (Spartanburg County) also installed NOx controls and replaced outdated "uncontrolled" compressors located in Duncan, SC, (EPA, 2006). Additionally, Greenville County's clean air public awareness campaign proved to be successful as more people became aware of these issues and began changing personal habits and advocating for clean air initiatives. The Breathe Better (b<sup>2</sup>) program, an anti-idling campaign, is another success story with more schools requesting information or becoming *b<sup>2</sup> Schools*.

In early 2008, EPA designated 13 areas in the country (Greenville-Spartanburg-Anderson included) as attaining the 1997 8-hour ground level ozone standard under the EAC. EPA proposed "this action because each of the areas has demonstrated that they attained the standard by Dec. 31, 2007."

In March 2008, the Administrator announced that EPA strengthened the 8-hour ozone standard from 0.08 ppm to 0.075 ppm for both the primary and secondary standards. In January 2010, EPA announced a proposal, "Reconsideration of the National Ambient Air Quality Standard for Ozone," to further strengthen the 8-hour ozone standard beyond the 0.075 ppm level established in 2008. EPA is proposing to set the new ozone standard within

the 0.060 and 0.070 ppm range. EPA intended to make a final announcement by the end of July 2011; however, the announcement has been delayed with no date established yet to make it.

The true test for the Upstate SC will be when EPA designates our region as an “attainment” or “nonattainment” area for ground level ozone. When EPA announces the new standard, it will also determine when the new designations will become in effect.

### Upstate SC Air Quality Monitors

Since 1959, DHEC or its predecessors have monitored air quality through a network of monitors in the state. In its 2012 Network Description and Ambient Air Network Monitoring Draft Plan, DHEC included a description of the network which includes “the State and Local Air Monitoring Station (SLAMS), special purpose monitoring (SPM) and the National Core Monitoring Network (NCORE). The SLAMS air monitoring network is specific for the criteria pollutants, those pollutants for which the National Ambient Air Quality Standards (NAAQS)

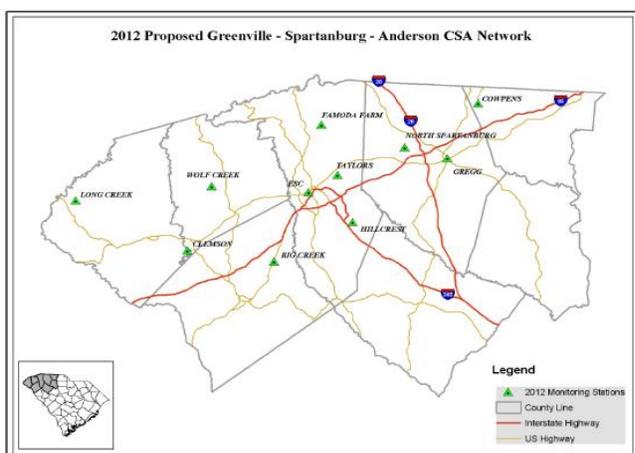


Figure 1. Proposed 2012 Greenville – Spartanburg – Anderson CSA Air Monitoring Network

have been established. In addition to SLAMS network, the air monitoring network includes SPM for air toxics, particulate, mercury, criteria pollutants, precipitation and meteorology” (DHEC, 2011). The criteria pollutants include ozone, particulate matter, carbon monoxide, nitrogen oxide, sulfur dioxide, and lead.

In August 2010, DHEC increased the number of monitoring sites in Upstate SC to 11 when it established the Wolf Creek site in Pickens County to monitor ground level ozone. The network now includes Long Creek (Oconee); Clemson and Big Creek (Anderson); Wolf Creek (Pickens); ESC, Famoda Farm, Taylors, and Hillcrest (Greenville); North Spartanburg and T. K. Gregg (Spartanburg), and Cowpens (Cherokee). Figure 1 shows the locations of each monitoring site. Table 1 provides a list of the sites and their respective location, identification number, and date established.

**Upstate SC Air Quality Improvement Committee ❖ Emissions Inventory Summary**

Table 1. Upstate South Carolina Ambient Air Monitoring Network

County	Name	CSA/MSA	AQS Site ID	Location	Date Established
Anderson	Big Creek	GSA CSA/Anderson MSA	45-007-0005	215 McAlister Road	6/6/2008
Cherokee	Cowpens	GSA CSA	45-021-0002	McGinnis Road (Old SC 110)	3/25/1988
Greenville	Taylor's	GSA CSA/Greenville-Mauldin-Easley MSA	45-045-0009	405 Brushy Creek Road	5/1/1999
Greenville	ESC	GSA CSA/Greenville-Mauldin-Easley MSA	45-045-0015	101 Perry Avenue	4/11/2008
Greenville	Hillcrest	GSA CSA/Greenville-Mauldin-Easley MSA	45-045-0016	510 Garrison Road	2/17/2009
Greenville	Famoda Farm	GSA CSA/Greenville-Mauldin-Easley MSA	45-045-1003	7560 Mountain View Road	8/7/2008
Oconee	Long Creek	GSA CSA	45-073-0001	Round Mt. Fire Tower	8/1/1983
Pickens	Clemson	GSA CSA/Greenville-Mauldin-Easley MSA	45-077-0002	106 Hope Well Road	7/14/1979
Pickens	Wolf Creek	GSA CSA/Greenville-Mauldin-Easley MSA	45-077-0003	901 Allgood Bridge Road	8/10/2010
Spartanburg	North Spartanburg	GSA CSA/Spartanburg MSA	45-083-0009	1556 John Dodd Road	4/4/1990
Spartanburg	T. K. Gregg	GSA CSA/Spartanburg MSA	45-083-0011	267 Northview Street	12/29/2008

**What are the Next Steps?**

EPA was supposed to announce its final decision on the revised 2008 ground level ozone standard by the end of July 2011; however, once again, the announcement has been delayed with no further explanation or date to make it. Anticipating a new ozone standard, public and private organizations, non-profit, businesses, and

industries in the Upstate decided to renew discussions to keep the region in attainment status for this air pollutant. The committee received the emissions inventory (tons per year) from DHEC to evaluate the information. This will assist the group to determine what else may be done to reduce ground level ozone precursors.

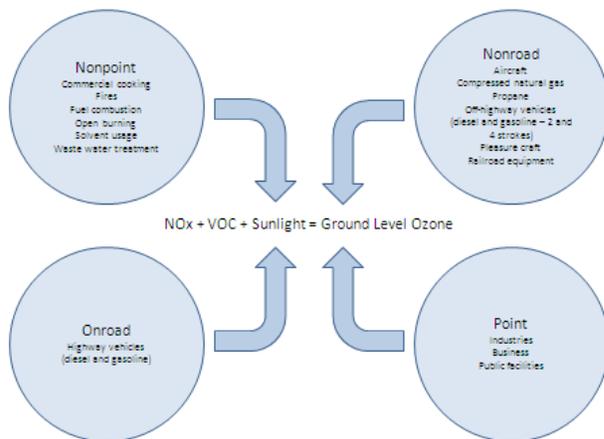


Figure 2. Sources of Upstate SC NOx and VOC Emissions

The emissions inventory discussed in this summary includes NOx and volatile organic

compounds (VOC) emissions only (ground level ozone precursors) from nonpoint, nonroad, onroad, and point

sources. Nonpoint emissions contributors include commercial cooking, fires (agricultural field burning, prescribed fires, wildfires), fuel combustion (commercial/institutions, industrial, residential), petroleum products (all activities), residential/municipal open burning, solvent usage (miscellaneous activities), waste water treatment/disposal. Nonroad emissions contributors include aircraft, compressed natural gas, LPG (propane), off-highway vehicle diesel, off-highway vehicle gasoline (2-Stroke and 4-Stroke such as mopeds, recreational vehicles, dirt bikes, jet skis, small outboard motors, small spark hand held engines on gardening equipment including blowers, chain saws, trimmers, augers, etc.), pleasure craft, and railroad equipment. Contributors to onroad emissions include highway vehicles (diesel and gasoline). Point emissions contributors include industries, business, and public facilities.

According to DHEC, emissions included in the nonpoint, nonroad, and onroad sources are based on models. Emissions included in the point source are based on permits issued by DHEC for each facility and are more accurate. What follows is an analysis of the emissions inventory for six Upstate SC counties, Anderson, Cherokee, Greenville, Oconee, Pickens, and Spartanburg. Several charts are included as appendices showing detailed NOx and VOC emissions by county, source, industries, etc. These charts will assist each county in determining the best way to address its emissions. A list of the Upstate SC Air Quality Improvement Committee members is also included as an appendix.

Summary of Upstate SC Emissions Inventory

According to the emissions inventory, the total NOx and VOC emissions in Upstate SC are 83,732 tpy. VOC emissions account for 59% of total NOx and VOC emissions while 41% comes from NOx sources. This VOC to NOx ratio (higher VOC than NOx) makes the Upstate SC a NOx limited area. In a NOx limited area, NOx availability controls ozone formation. Hence,

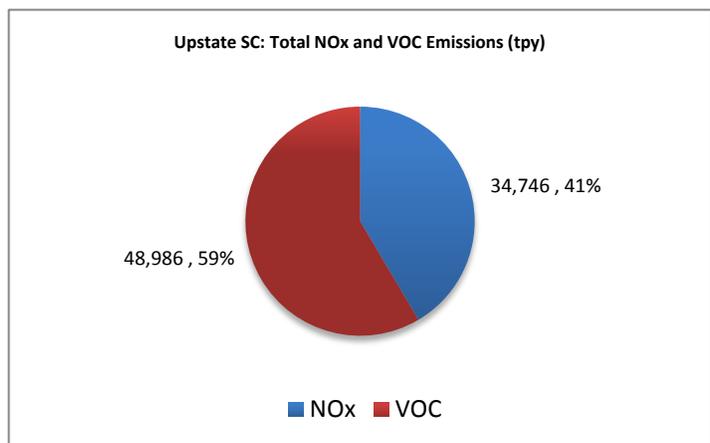


Figure 3. Upstate SC: Total NOx and VOC Emissions

reducing NOx emissions would lower ozone and reducing VOC would be ineffective in lowering ozone (Scwartz, 2006). Figure 3 shows a graphic distribution of total VOC and NOx emissions. The largest contributor of VOC emissions is nonpoint sources with 47%, followed by onroad with 29%, nonroad with 16%, and point with 8%. The largest source of NOx emissions in the Upstate is onroad vehicles with 58%, followed by nonroad with 22%, point with 11%, and nonpoint sources with 9%.

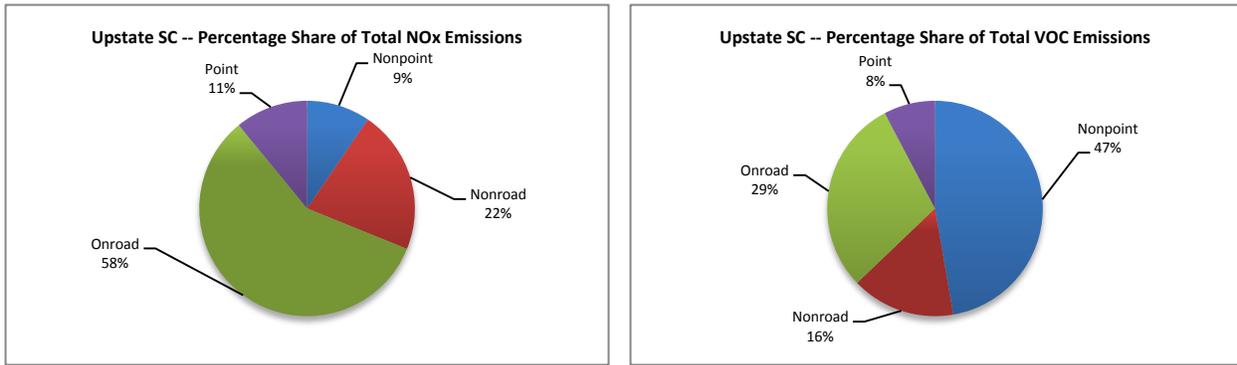


Figure 4. Upstate SC: Percentage Share of NOx and VOC Emissions

The highest source of total emission is onroad with 41%, followed by nonpoint with 32%. NOx emissions are the highest contributor of onroad emissions and VOC emissions are the highest contributor of nonpoint. Again, being the Upstate a NOx limited area, it makes sense to invest efforts in reducing onroad NOx emissions, which is one of the two precursor ingredients to the formation of ground level ozone. Figure 5 provides a summary of NOx and VOCs emissions in the Upstate SC by source.

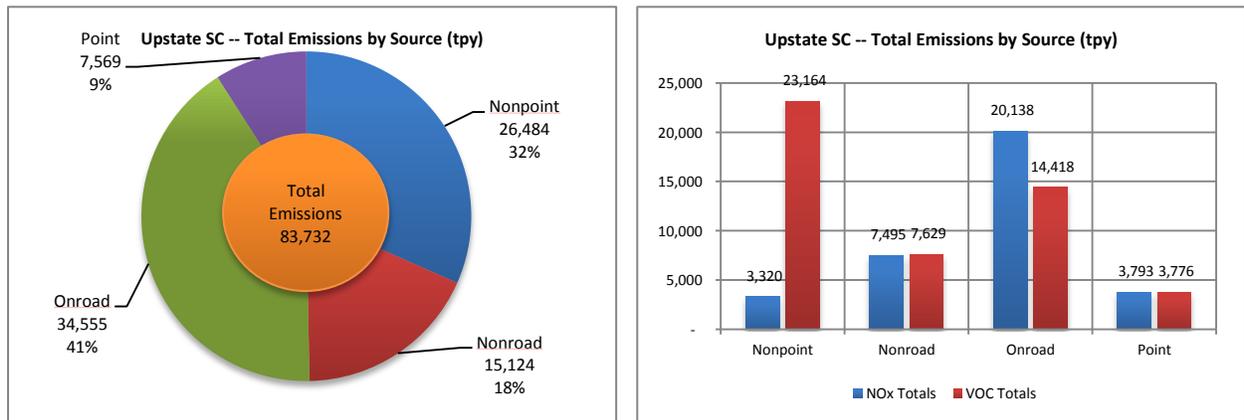


Figure 5. Upstate SC: Total Emissions by Source

Upstate SC Air Quality Improvement Committee ❖ Emissions Inventory Summary

Of the six counties, Greenville is the highest producer of both NOx and VOC emissions with 10,972 tpy of NOx and 16,670 tpy of VOC, followed by Spartanburg with 10,494 tpy of NOx and 12,637 tpy of VOC, and Anderson with 5,910 tpy of NOx and 8,536 tpy of VOC. The next highest contributors of NOx emissions are Pickens, Cherokee, and Oconee; and of VOCs are Pickens, Oconee, and Cherokee.

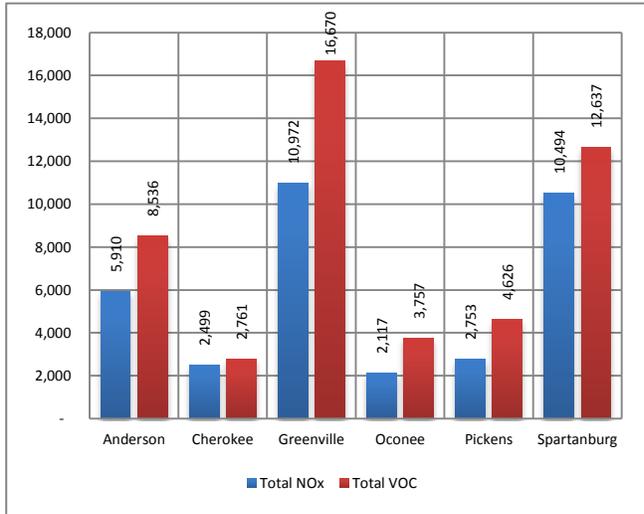


Figure 6. Upstate SC: Total NOx and VOC Emissions by County

Figure 6 provides a summary of the total NOx and VOC emissions by county.

Nonpoint Emissions

Fuel combustion from industrial (1,720 tpy), residential (648 tpy), and commercial/institutions (391 tpy) with a combined total 2,741 tpy and open burning with a total of 494 tpy are the highest contributors of nonpoint NOx emissions. For nonpoint VOC emissions, the highest contributors are solvent use from miscellaneous activities with 13,635 tpy and petroleum products with 7,824 tpy. The three highest contributors of Nonpoint NOx and VOC emissions are Greenville, Spartanburg, and Anderson counties. Figure 7 provides a summary of NOx and VOC nonpoint emissions by county and source.

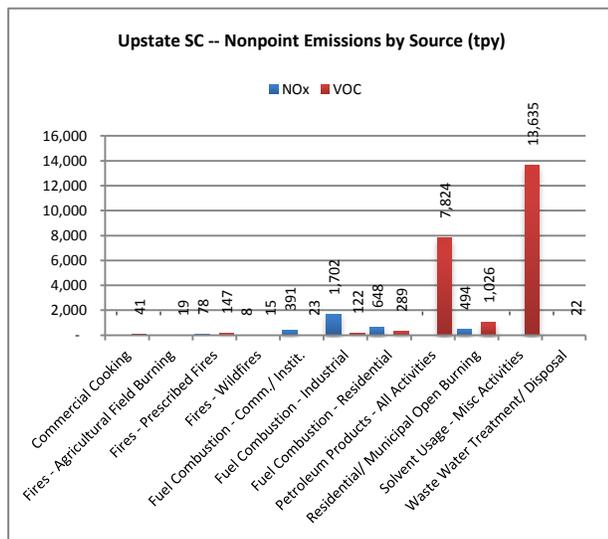
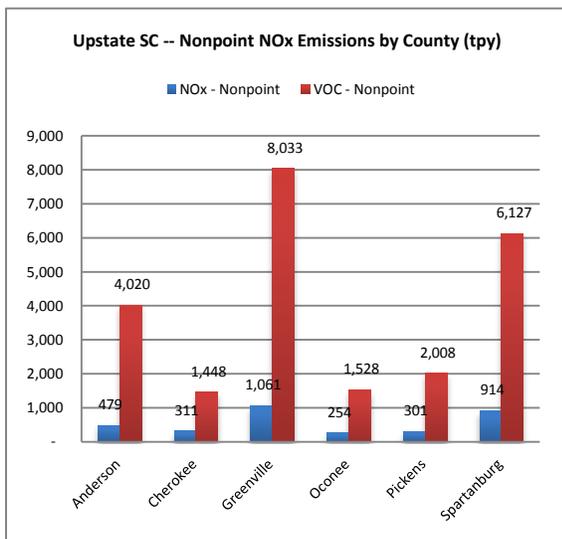


Figure 7. Upstate SC: 2010 Nonpoint NOx and VOC Emissions

*Nonroad Emissions*

The three major contributors of nonroad NOx emissions are Greenville, Spartanburg, and Anderson counties. The three highest contributors of nonroad VOC emissions are Greenville, Pickens, and Oconee counties. The three major sources of nonroad NOx emissions include off-highway diesel vehicles (4,242 tpy), railroad equipment (1,287 tpy), and LPG (propane) (1,108 tpy). Off-highway gasoline vehicles (4 and 2 stroke with 2,711 tpy and 2,189 tpy, respectively), and pleasure craft (1,852 tpy) are the major contributors of nonroad VOC emissions. Figure 8 summarizes nonroad emissions by county and source.

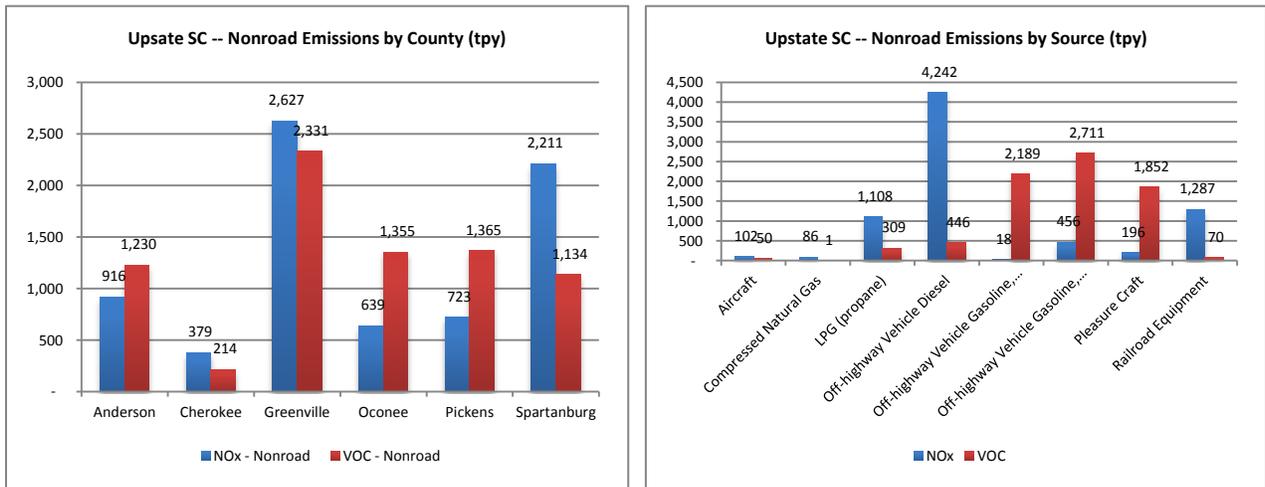


Figure 8. Upstate SC: Nonroad Emissions

*Onroad Emissions*

The three highest contributors of onroad NOx and VOC emissions are Greenville (NOx: 6,912 tpy and VOC: 5,026 tpy) and Spartanburg (NOx: 5,538 tpy and VOC: 3,924 tpy).

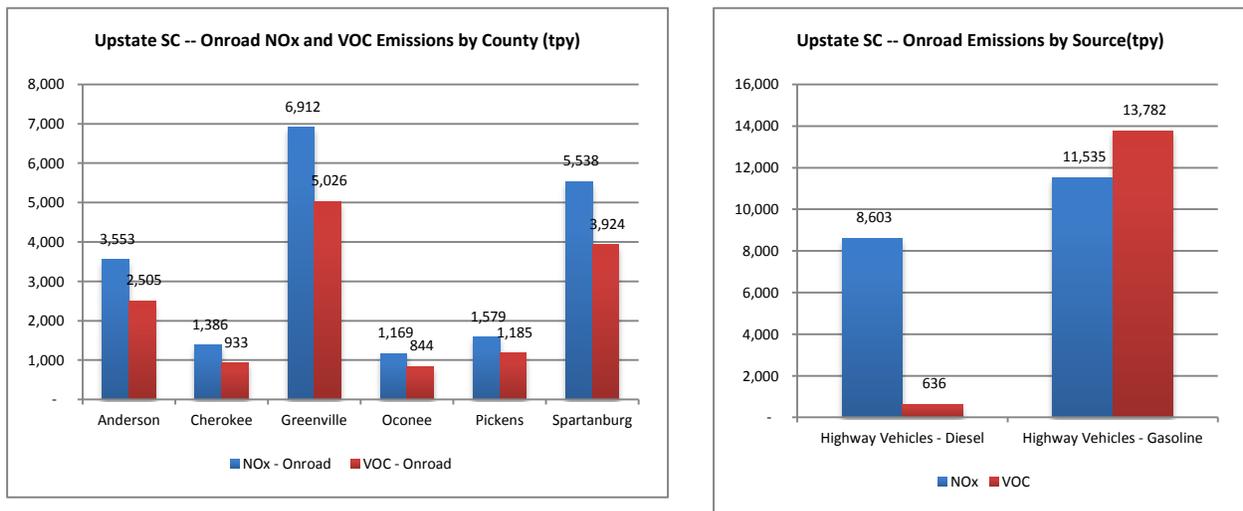


Figure 9. Upstate SC: Onroad Emissions by County and Source

5,026 tpy), Spartanburg (NOx: 5,538 tpy and VOC: 3,924 tpy), and Anderson (NOx: 3,553 tpy and VOC 2,505 tpy) counties. The highest sources of both NOx and VOC onroad emissions are gasoline vehicles (NOx: 11,535 tpy and VOC: 13,782 tpy) followed by diesel (NOx: 8,603 tpy and VOC: 636 tpy). Figure 9 provides a summary of onroad NOx and VOC emissions by county and source.

As mentioned before, 58% of total NOx emissions and 29% of total VOC emissions come from onroad sources (see Figure 4). Gasoline vehicles account for 57% of onroad NOx emissions and 96% of onroad VOC emissions while diesel vehicles account for 43% of NOx and 4% of VOC emissions. Figure 10 shows the onroad emissions and the percentage share by type of vehicle.

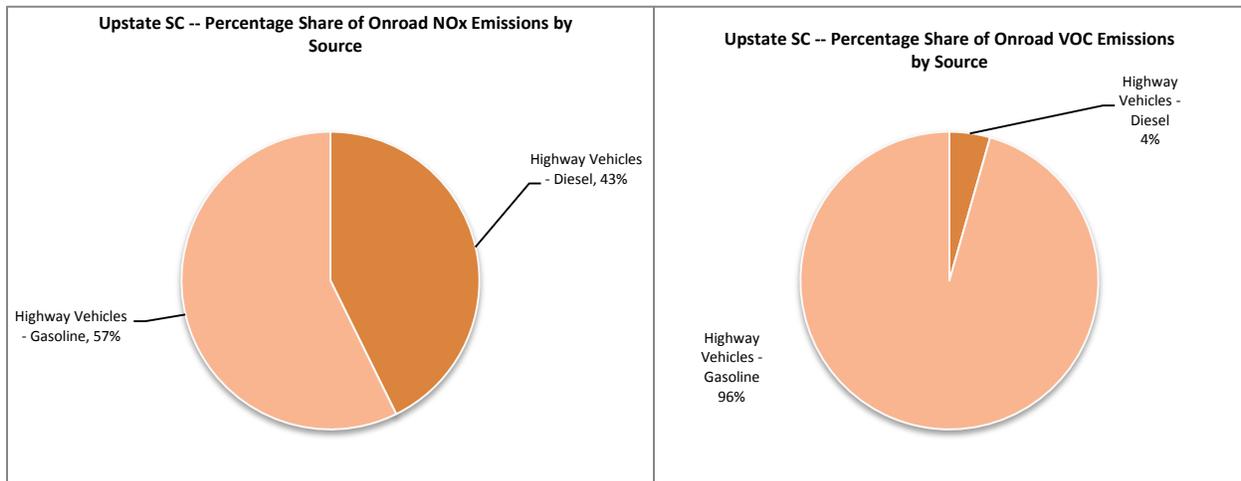


Figure 10. Upstate SC: 2010 Onroad NOx and VOC Emissions

*Point Emissions*

NOx point emissions from Spartanburg County (1,831 tpy) are the highest in the Upstate, followed by Anderson (963 tpy) and Greenville (372 tpy) counties. VOC point emissions from Spartanburg County (1,451 tpy) are also the highest, followed by Greenville (1,280 tpy) and Anderson (781 tpy) counties. Figure 11 provides a summary of

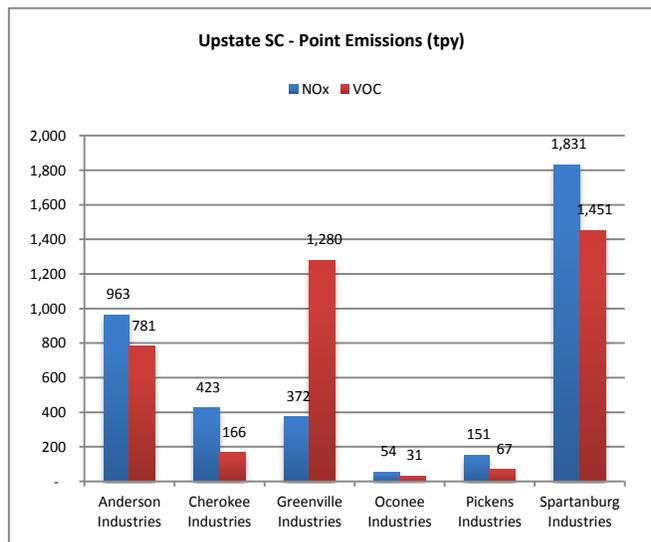


Figure 11. Upstate SC: Point Emissions

industries point emissions by county.

More often than not, industries carry the label that they are the ones contributing the most to air pollution. This is not the case in the Upstate SC as it has been noted that onroad emissions (NOx and VOC) are the highest contributors with 58% of the share of total NOx and 29% share of total VOC emissions. Point emissions from industries in the Upstate account for only 11% of total NOx and 8% of total VOC compared to onroad emissions (see Figure 4). Table 2 provides a list of facilities producing point emissions in the Upstate. The Appendices section includes detail graphics of each county’s point emissions and a summary of NOx and VOC point emissions separately.

Table 2. Upstate SC: Point Emissions

Name	NOx	VOC	Total
3M Film/Tape Plants	19	338	357
Anderson Landfill	4	6	11
Auriga Polymers	201	109	310
BASF Corporation	54	31	85
BMW Manufacturing	63	217	281
Bob Jones University	79	17	96
Broad River Energy	122	7	129
Caraustar Mill Group Carotel Paperboard	49	1	50
Celanese Emulsions	13	137	150
CGTC Grover Compressor	16	0	16
Cherokee Co. Cogeneration	16	0	16
Clemson University	84	1	84
Core Molding Tech	2	5	7
Cryovac Sealed Air	15	328	343
Cytec	79	40	119
Donnelley RR & Sons	9	154	163
Duke Energy Lee Steam/Mill Creek	579	7	586
Exopack	6	154	160
Fibertech Columns	0	14	14
Flexiwall	0	6	6
Flint Ink	-	2	2
GE Gas Turbines	16	12	27
Greenville Gas Producers	8	6	14
Henkel Corp.	1	2	3
Hydro Aluminum NA	3	19	22
Johns Manville	1	10	11
Kohler (all plants)	22	95	118
Lockheed Martin Aircraft	6	14	21
Magellan Terminals	3	46	49

**Upstate SC Air Quality Improvement Committee ❖ Emissions Inventory Summary**

Table 2. Upstate SC: Point Emissions

Name	NOx	VOC	Total
Medline Industries	1	19	19
Michelin (all plants)	76	1,090	1,166
Milliken (all plants)	306	144	449
Mitsubishi Polyester Film	28	76	104
Nutra Manufacturing	5	20	25
One World Technologies	1	17	18
Owens	187	71	258
Palmetto Landfill & Recycling	13	28	41
Pickens County Solid Waste	10	15	24
Plastic Omnium Auto Exterior	5	193	198
Reynolds Chemical	2	38	41
Sage Automotive Interiors	29	5	34
Santee Cooper (Anderson/Rainey)	120	26	145
Shaw Industries Group	56	29	86
Tegant Alloyd Brands	0	10	10
Transcontinental Gas Pipeline	1,469	89	1,558
Trelleborg Coated Systems	5	23	28
Twin Chimneys Landfill	2	9	11
US Corrugated	7	83	90
Wellford Landfill	1	14	15
Totals	3,793	3,776	7,569

**Conclusion**

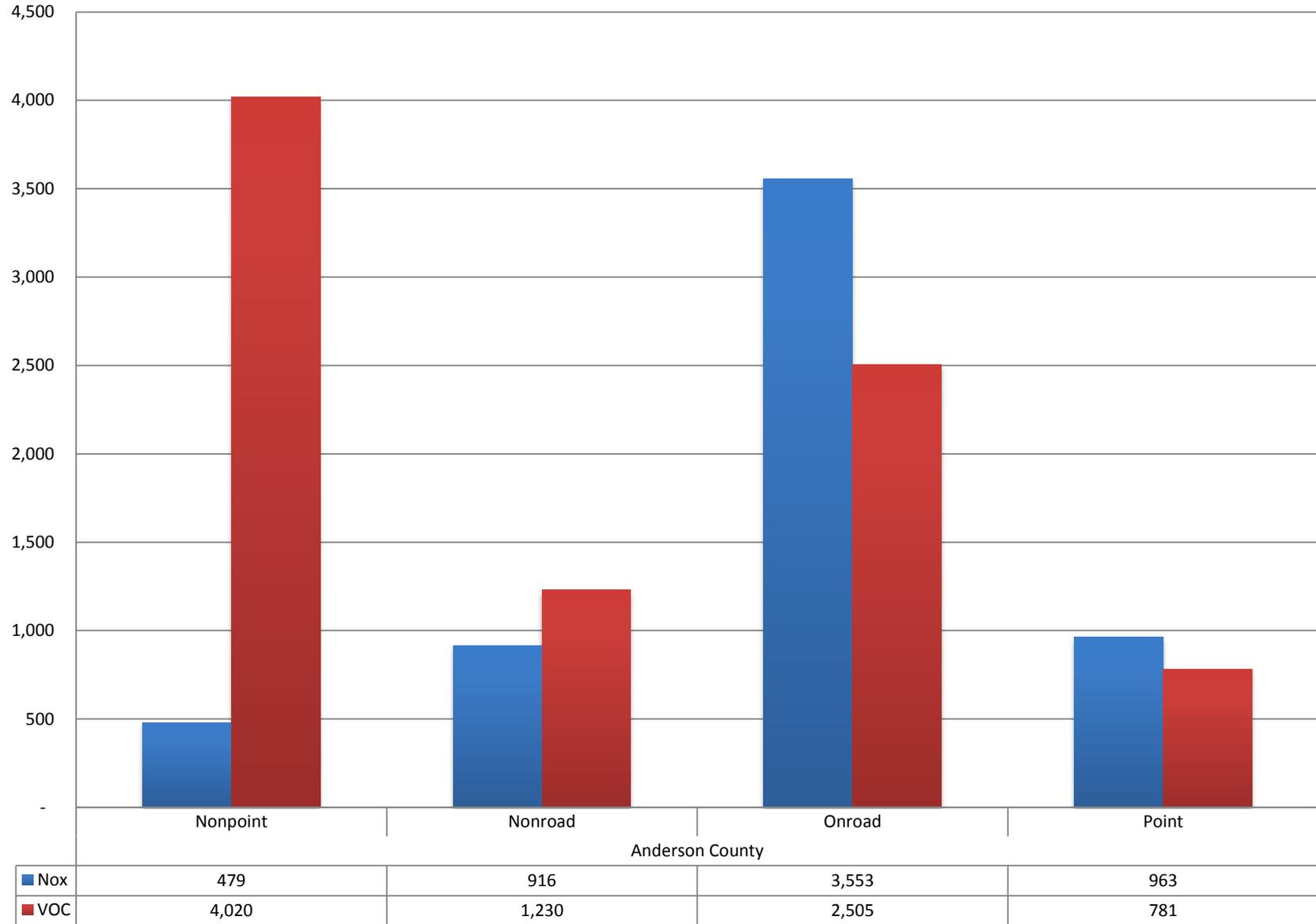
What the numbers are saying is that VOC emissions are higher than NOx emissions making the Upstate SC a NOx limited area. Onroad emissions from highway gasoline vehicles are the highest contributor of total emissions, followed by nonpoint (solvent use), nonroad (off-highway diesel vehicles), and point (Transcontinental Gas pipeline) in that order. The two highest contributors to NOx emissions include onroad (highway gasoline vehicles) and nonroad (off-highway diesel vehicles). Point and nonpoint emissions follow with Transcontinental Pipeline and fuel combustion from industries as their producers, respectively. The two highest contributors of VOC emissions include nonpoint (solvent use) and onroad (highway gasoline vehicles). Nonroad and point follow with off-highway gasoline vehicles and Michelin (all plants) as their producers, respectively.

Without disregarding what industries can do to reduce man-made emissions, as collectively everything helps to improve air quality, the Upstate SC has the big task of keeping the region in attainment with respect to ground level ozone. Collaborative efforts such as the Upstate SC Air Quality Improvement Committee's discussions

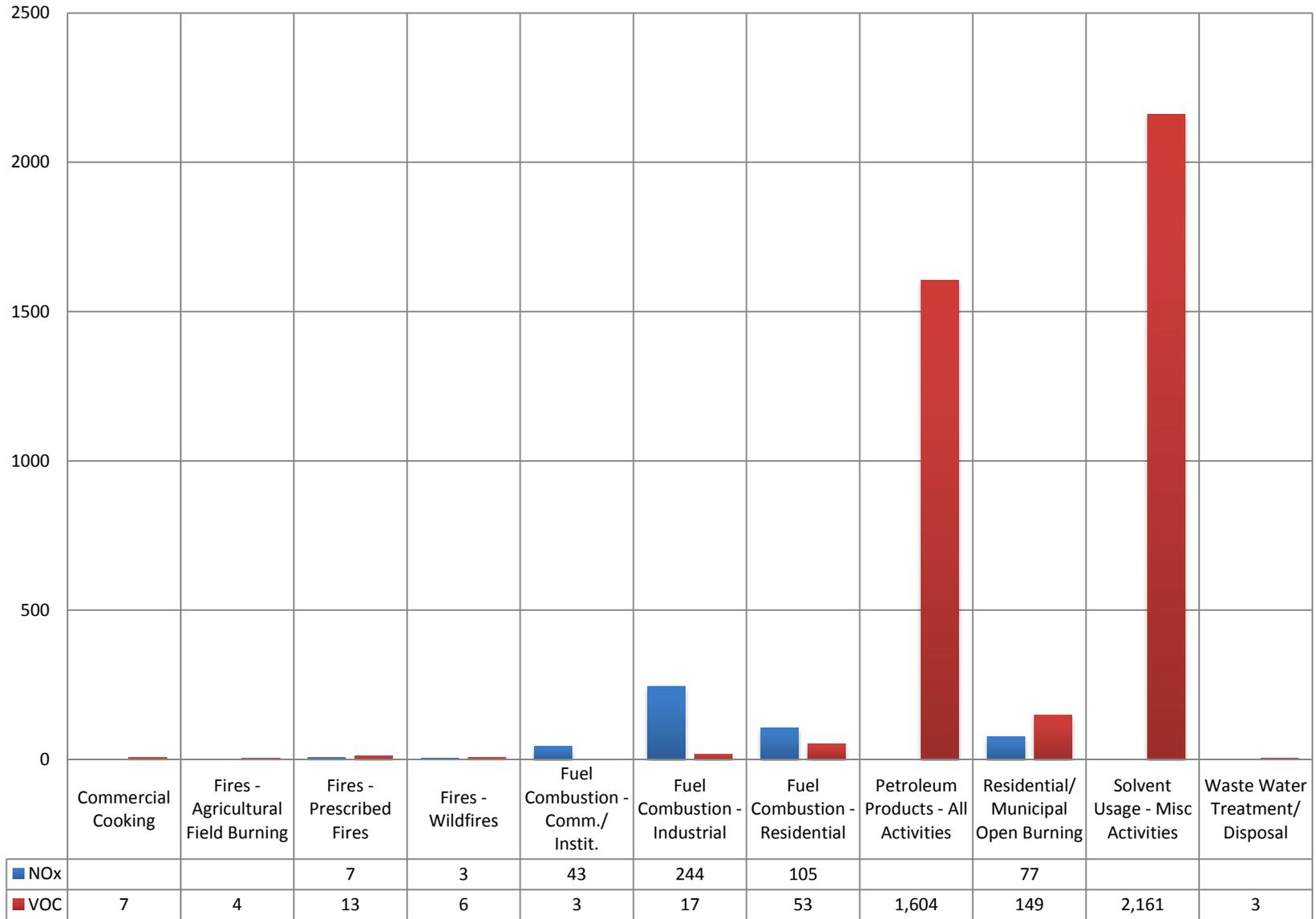
and a comprehensive multi-media public education campaign are underway. In a NO<sub>x</sub> limited area such as the Upstate, these efforts should concentrate on ways to reduce emissions from mobile sources (NO<sub>x</sub> from onroad vehicles) and continuing educating Upstate SC residents with a consistent message on how their individual behavior affects—positively or negatively—the air we breathe.

# Appendices

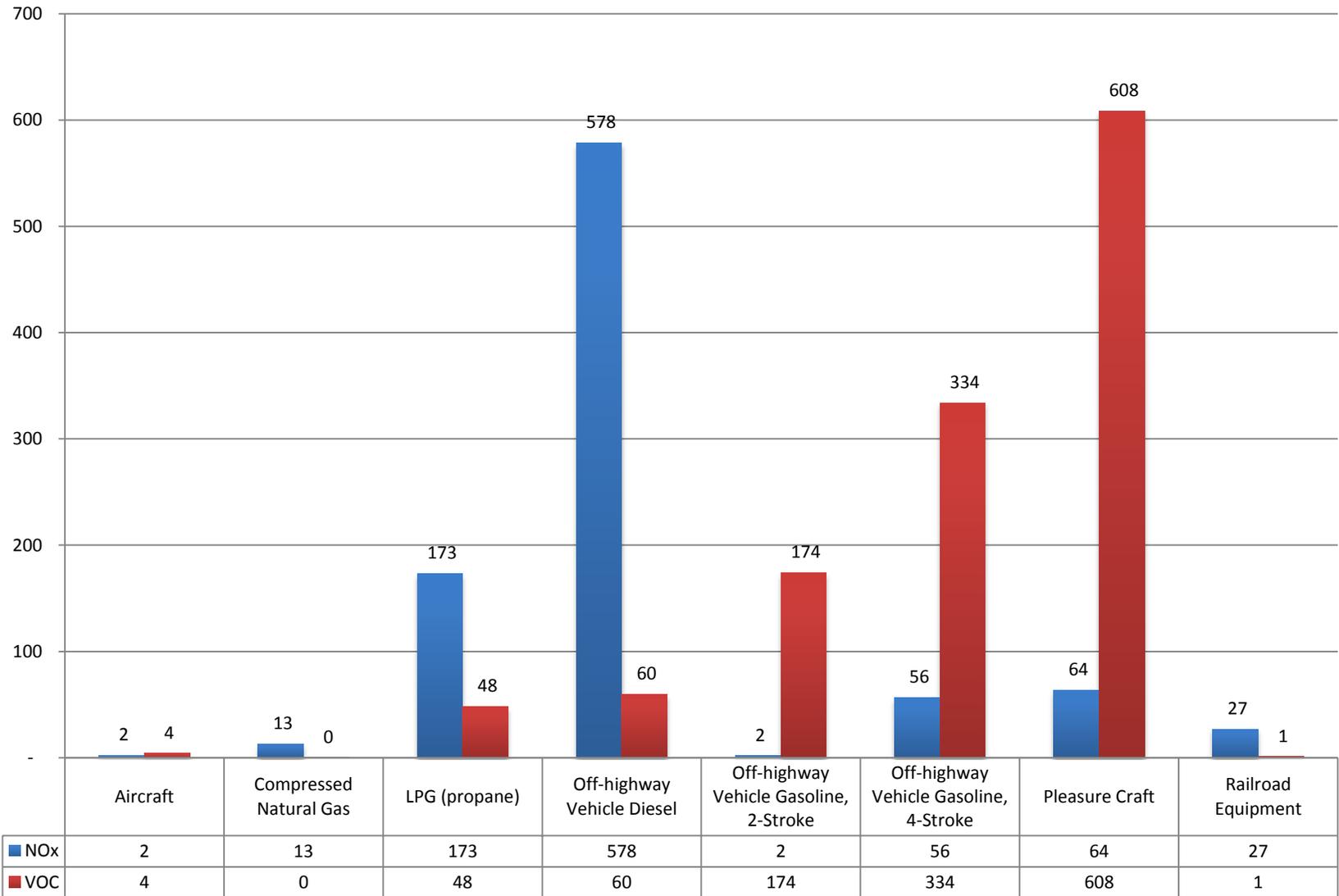
Anderson County, SC -- 2010 NOx and VOC Emissions (tpy)

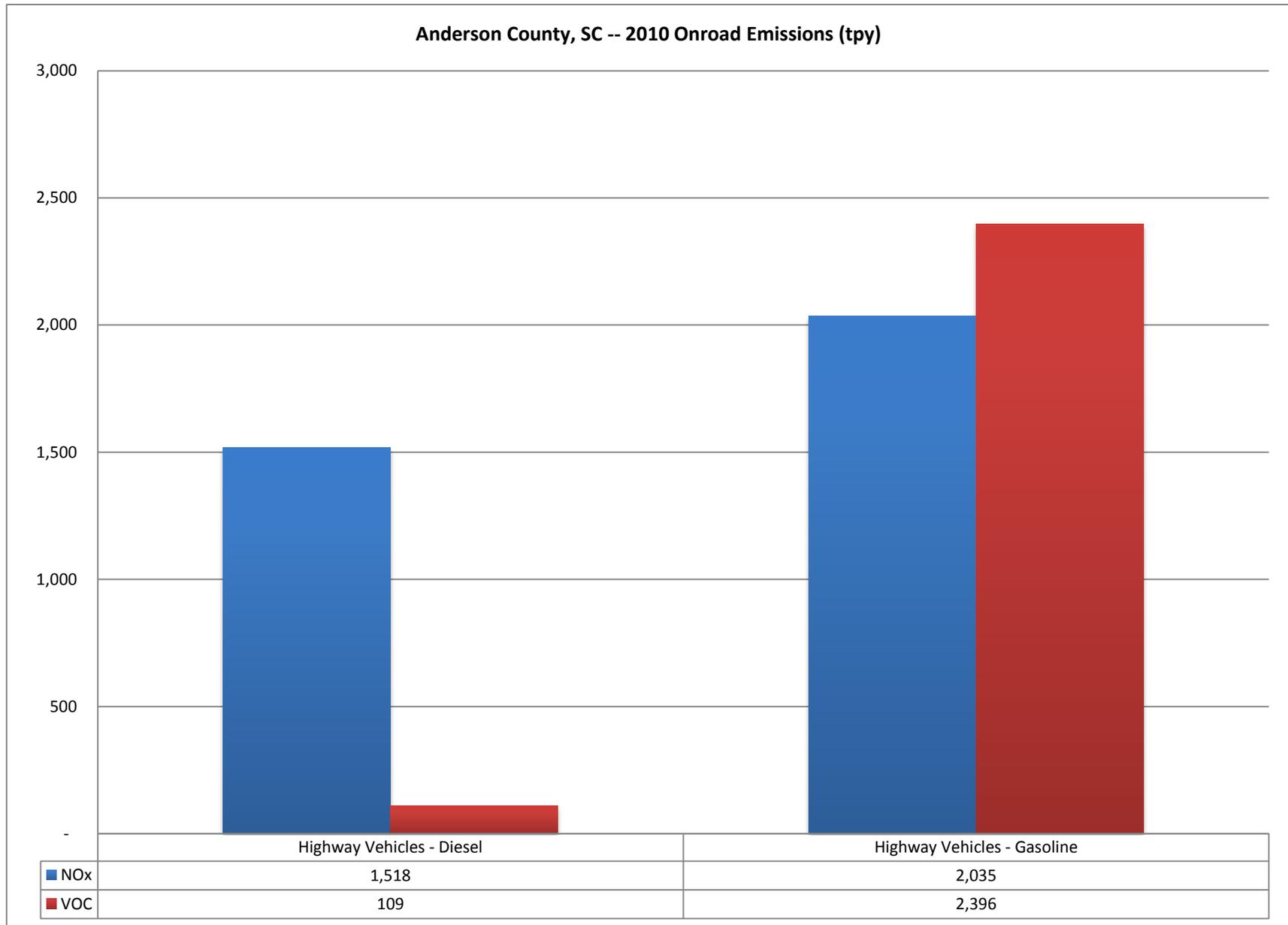


Anderson County, SC -- 2010 Nonpoint Emissions (tpy)

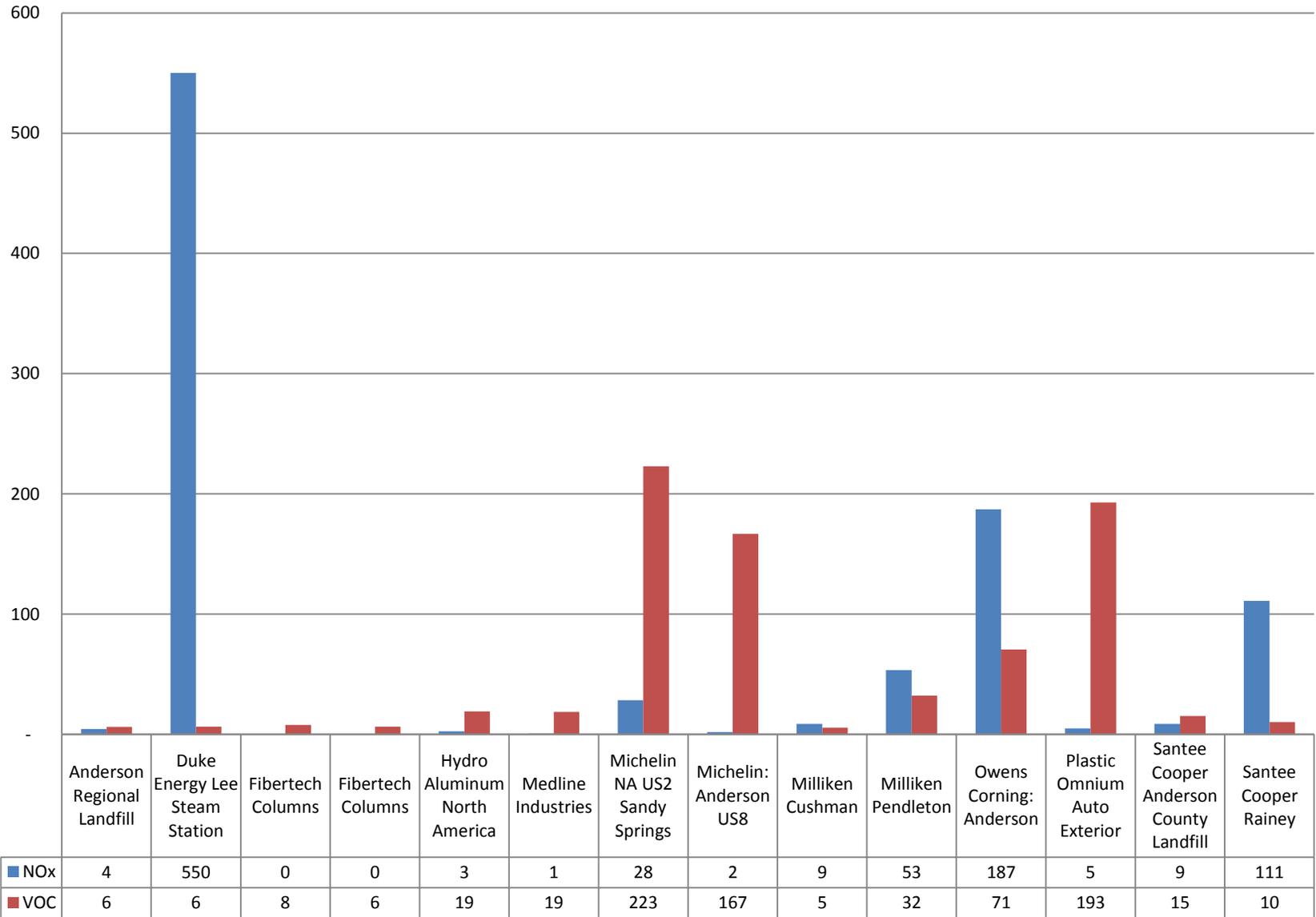


Anderson County, SC -- 2010 Nonroad Emissions (tpy)

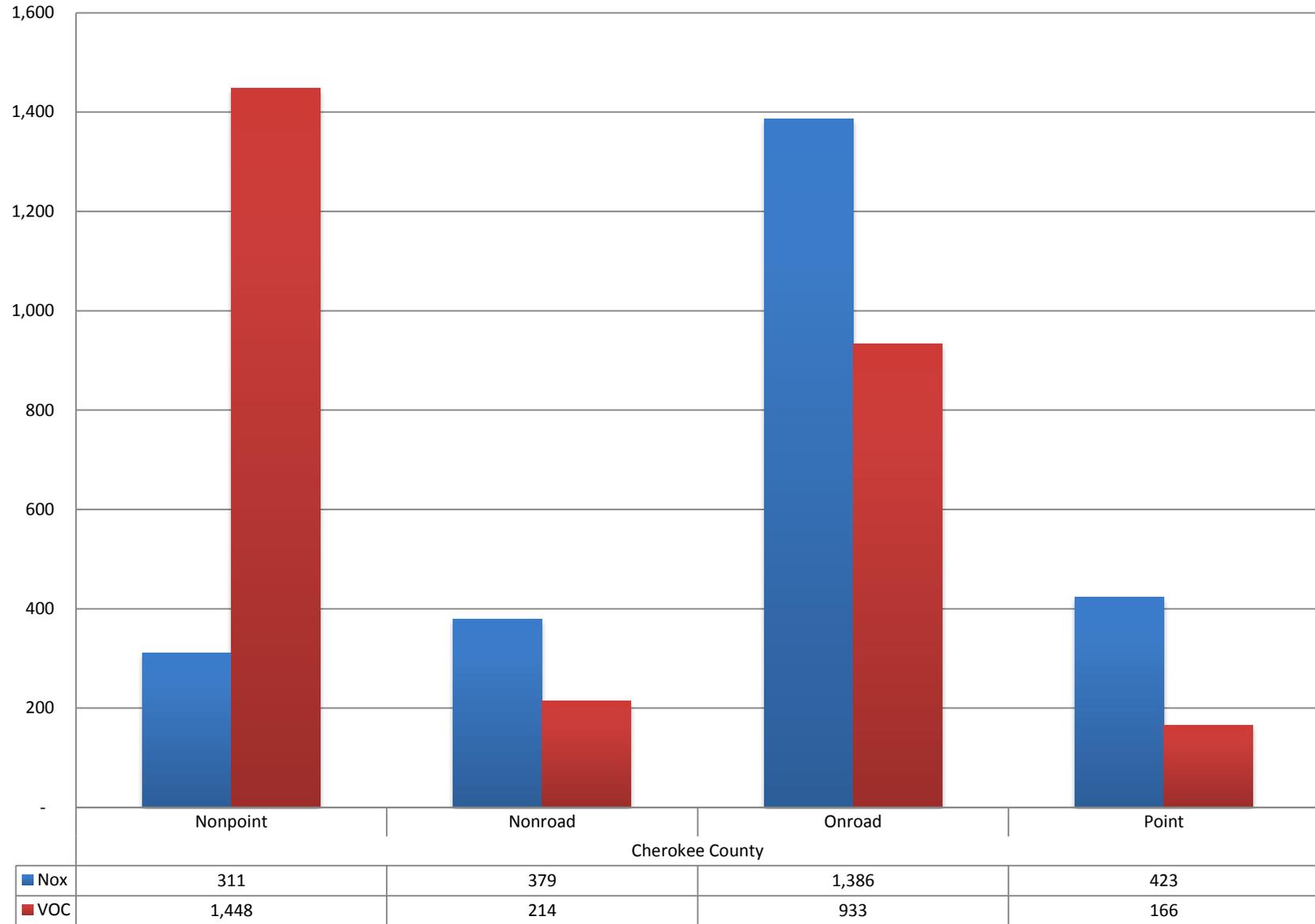




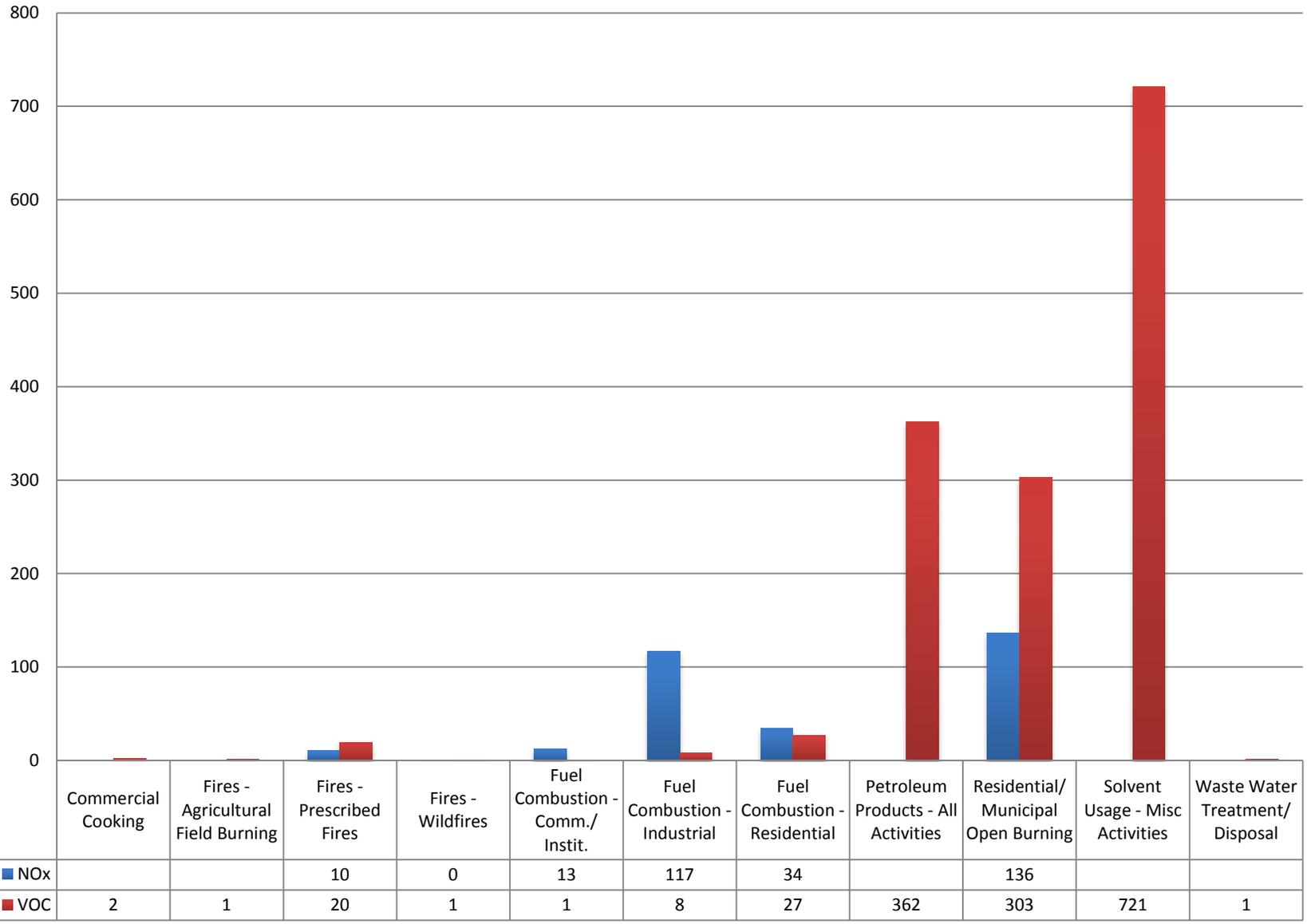
Anderson County, SC -- 2010 Point Emissions (tpy)



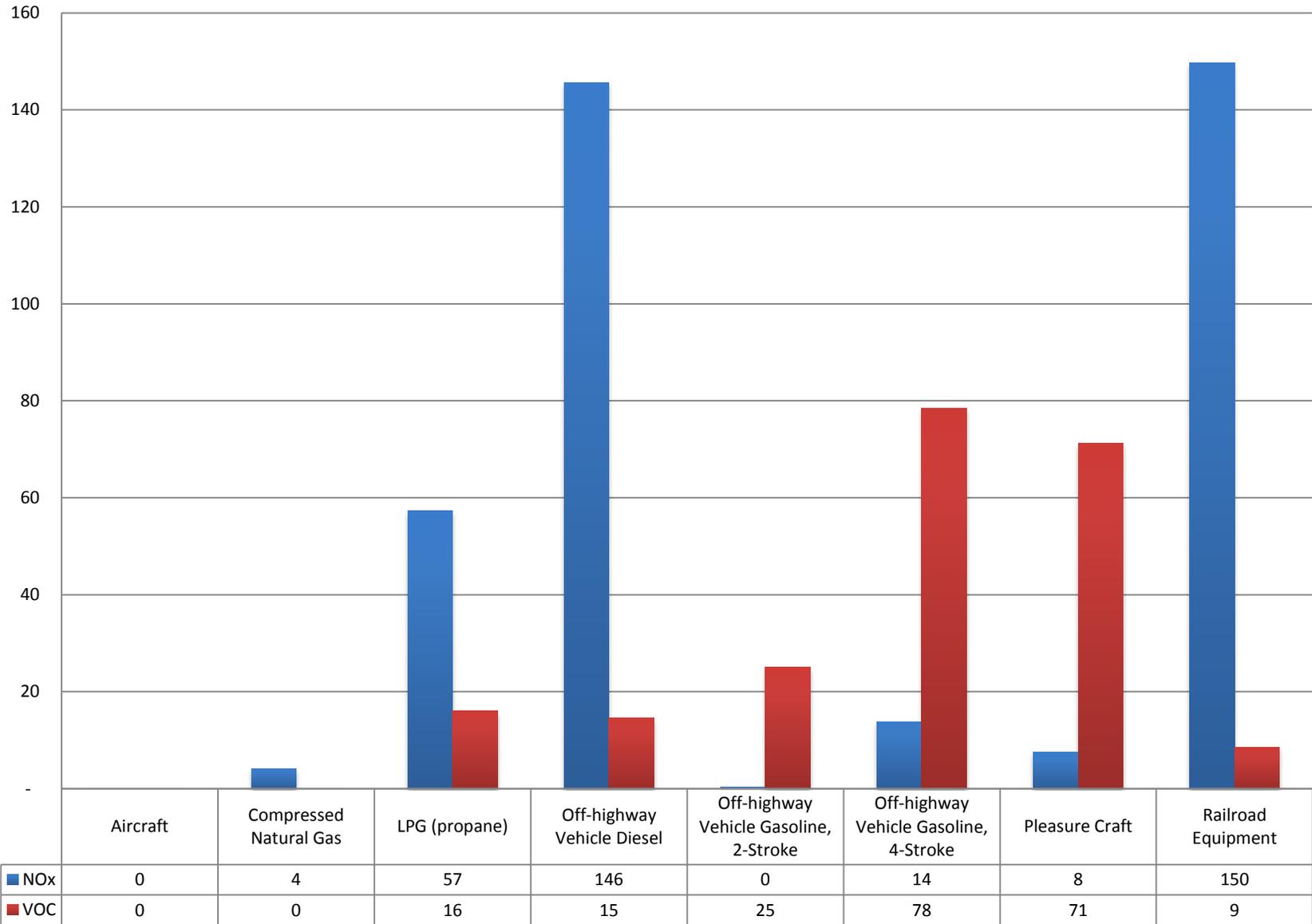
Cherokee County, SC -- 2010 NOx and VOC Emissions (tpy)

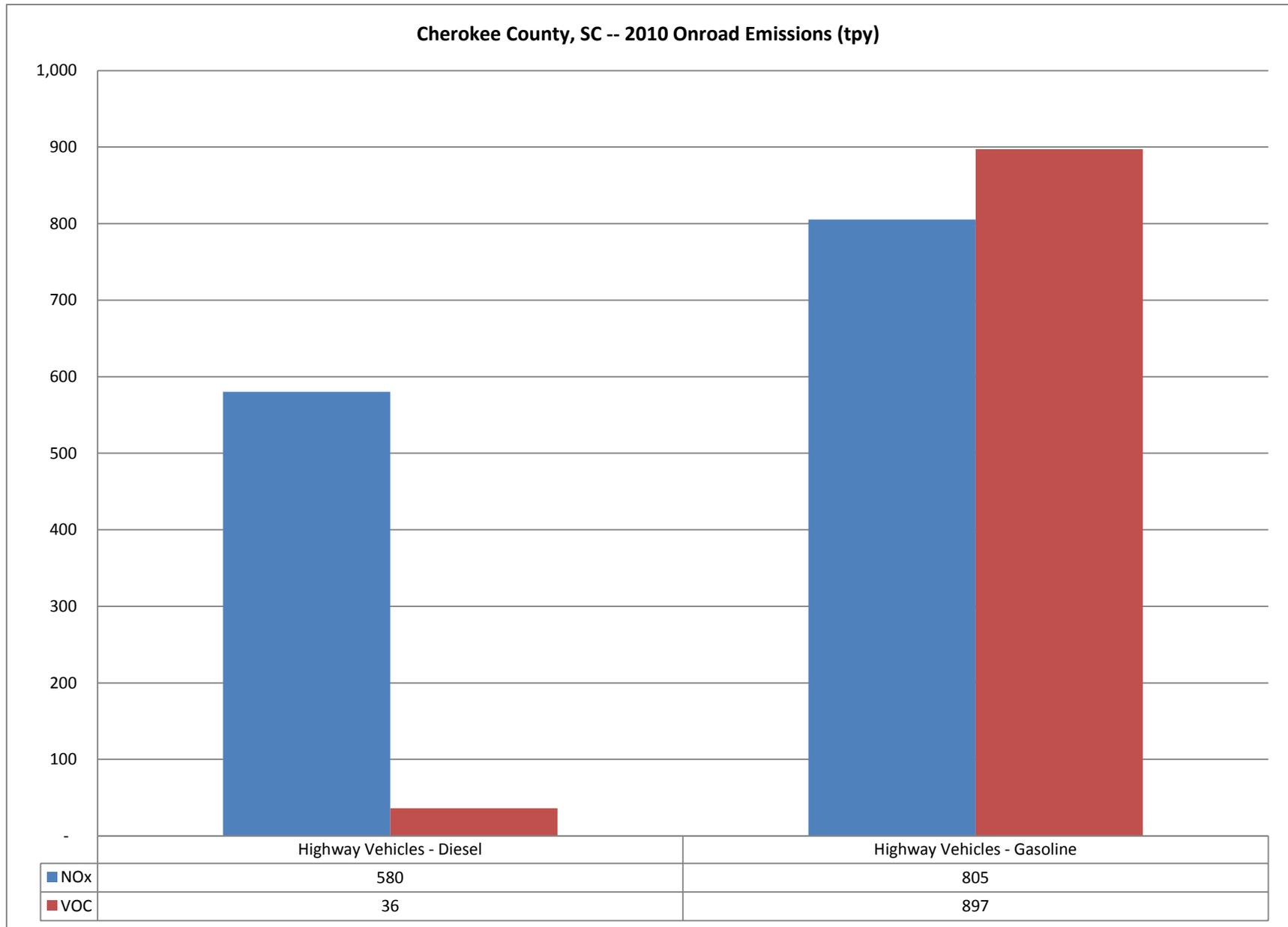


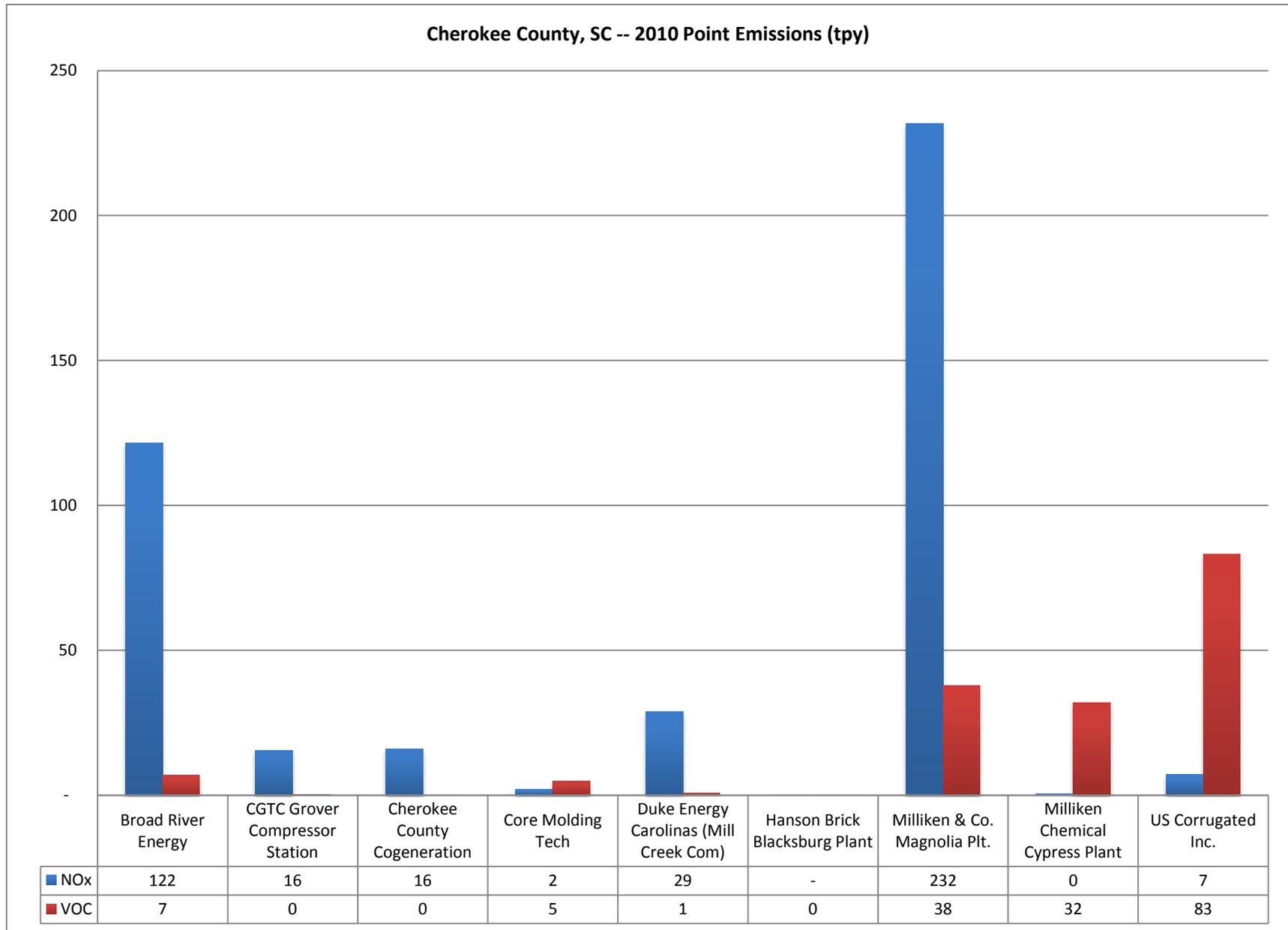
Cherokee County, SC -- 2010 Nonpoint Emissions (tpy)



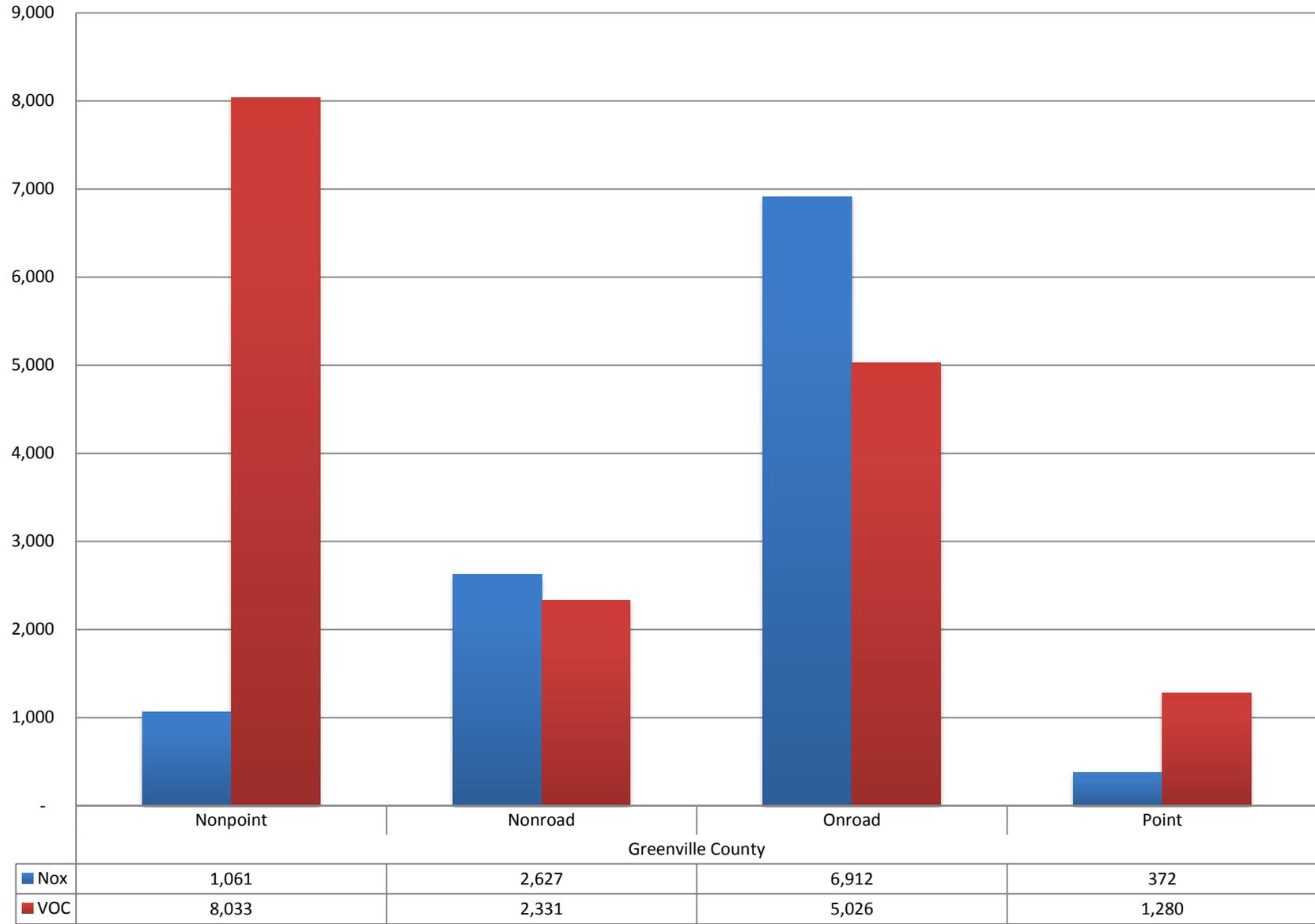
Cherokee County, SC -- 2010 Nonroad Emissions (tpy)



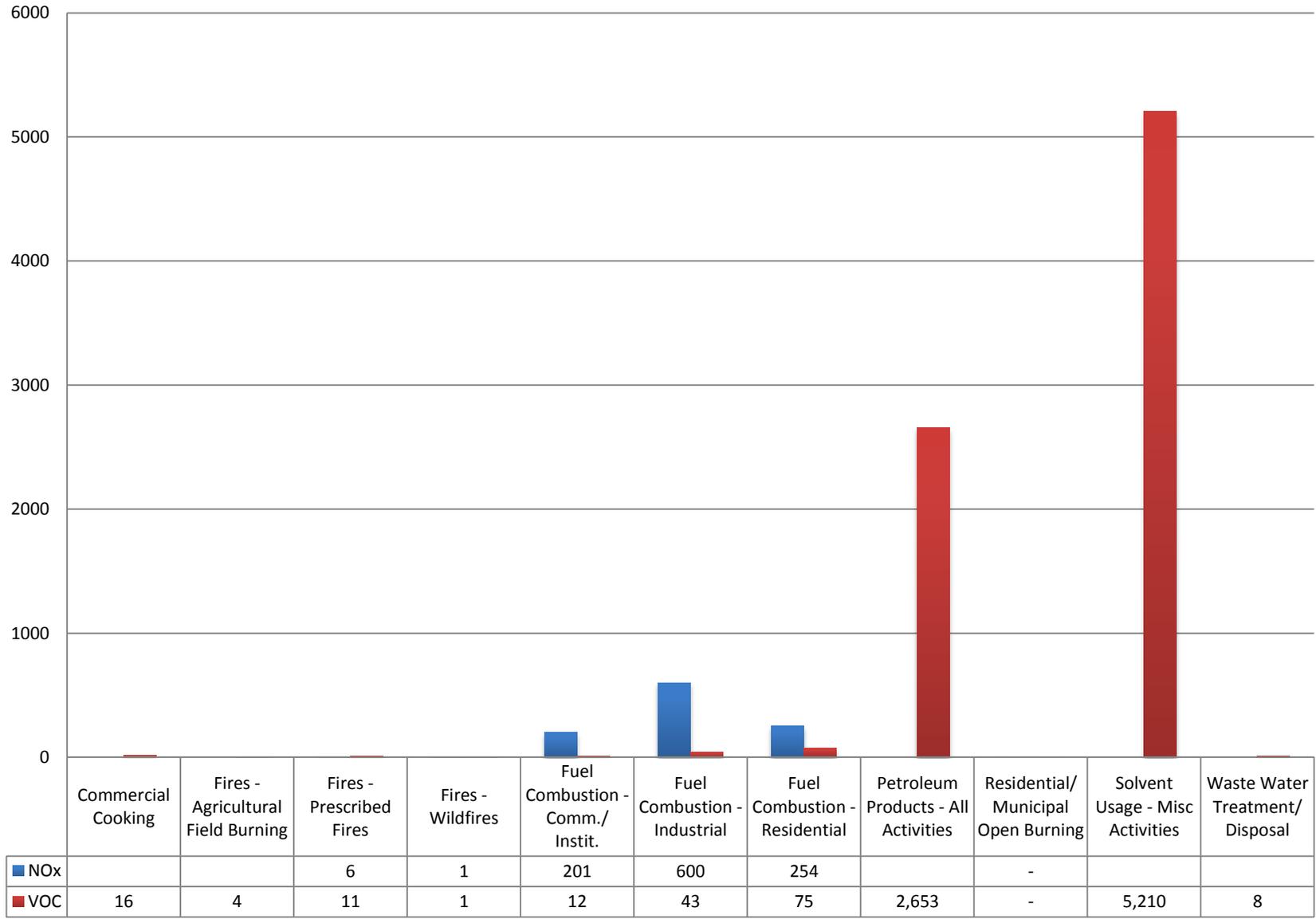




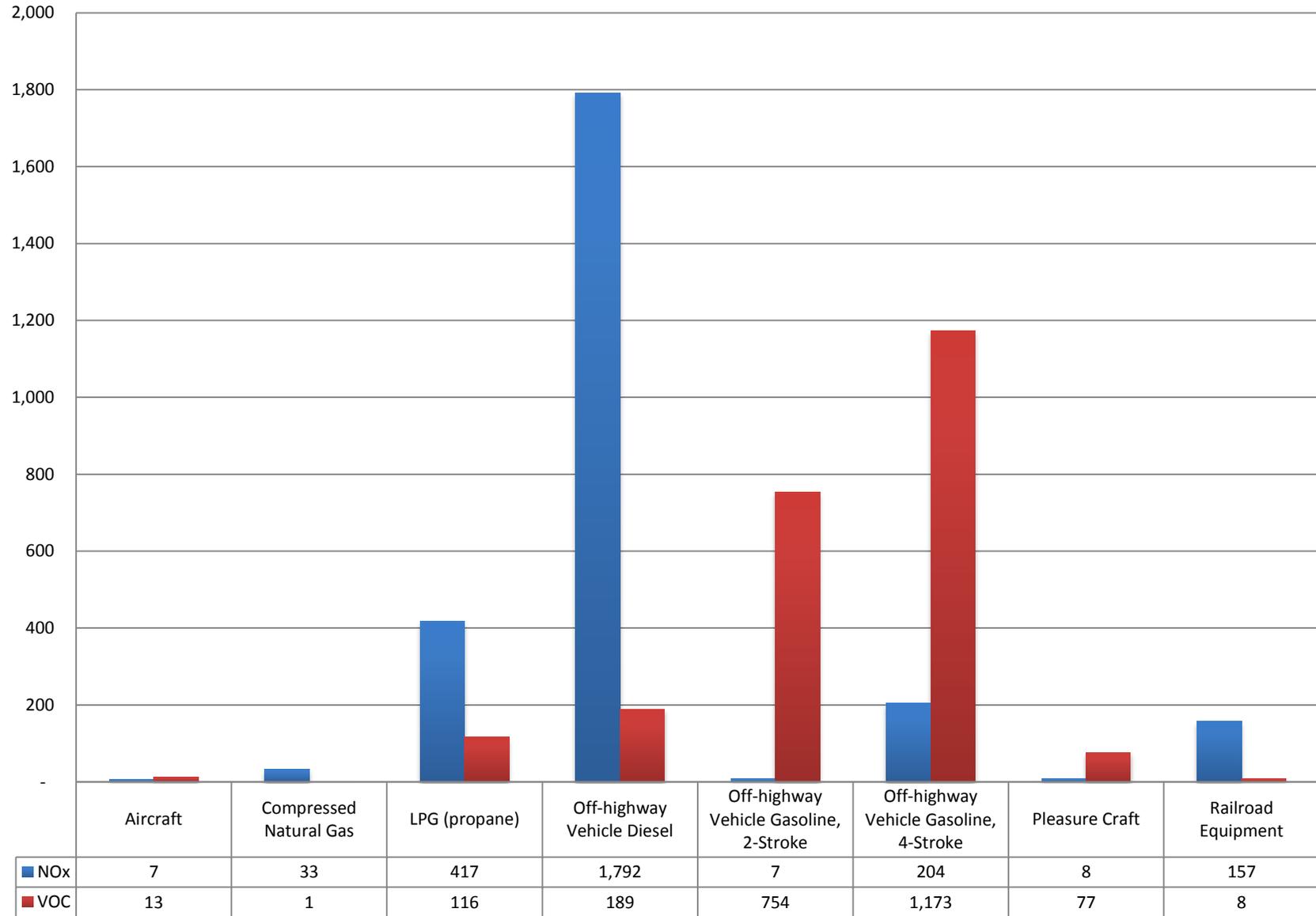
Greenville County, SC -- 2010 NOx and VOC Emissions (tpy)

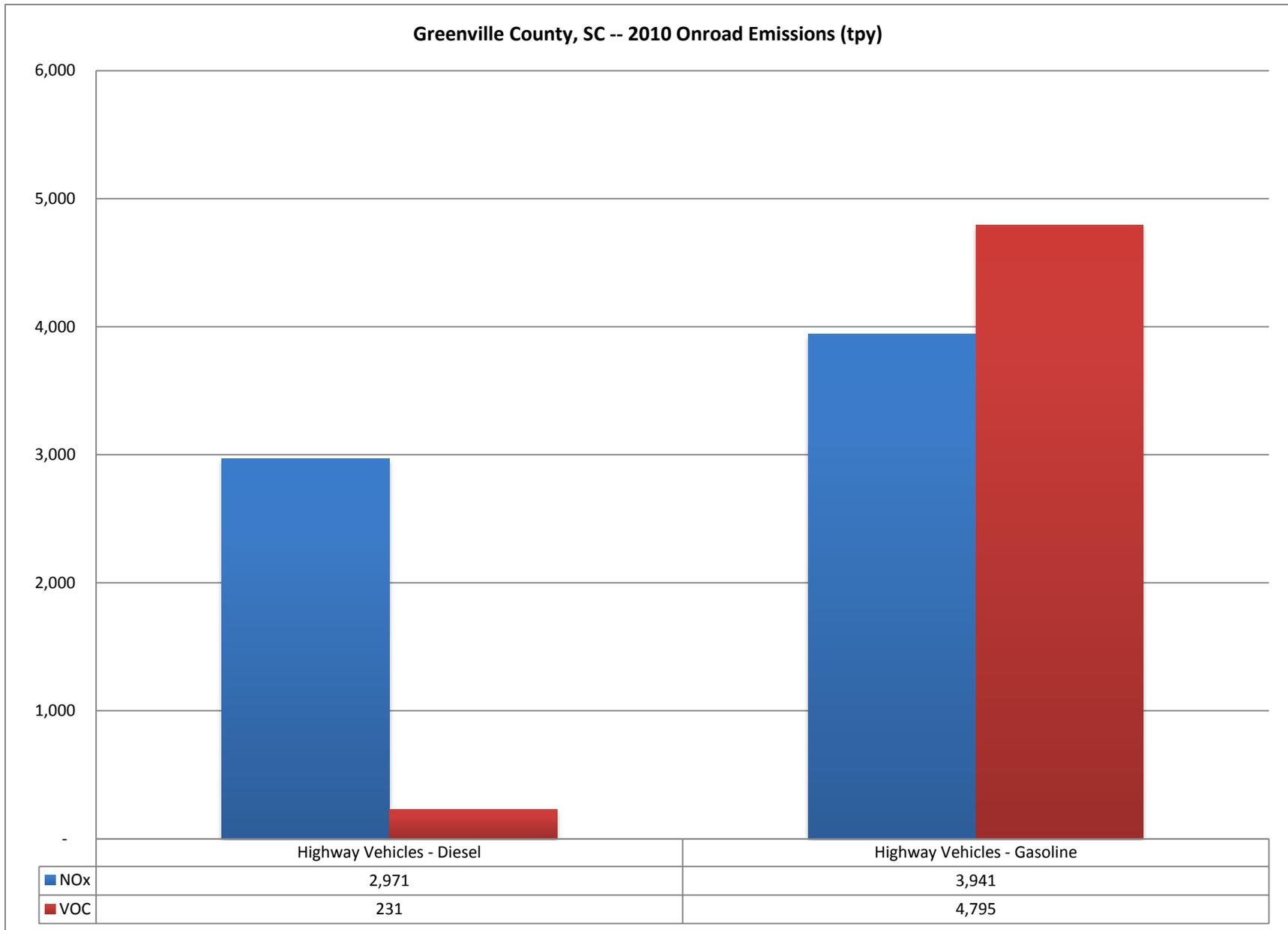


Greenville County, SC -- 2010 Nonpoint Emissions (tpy)

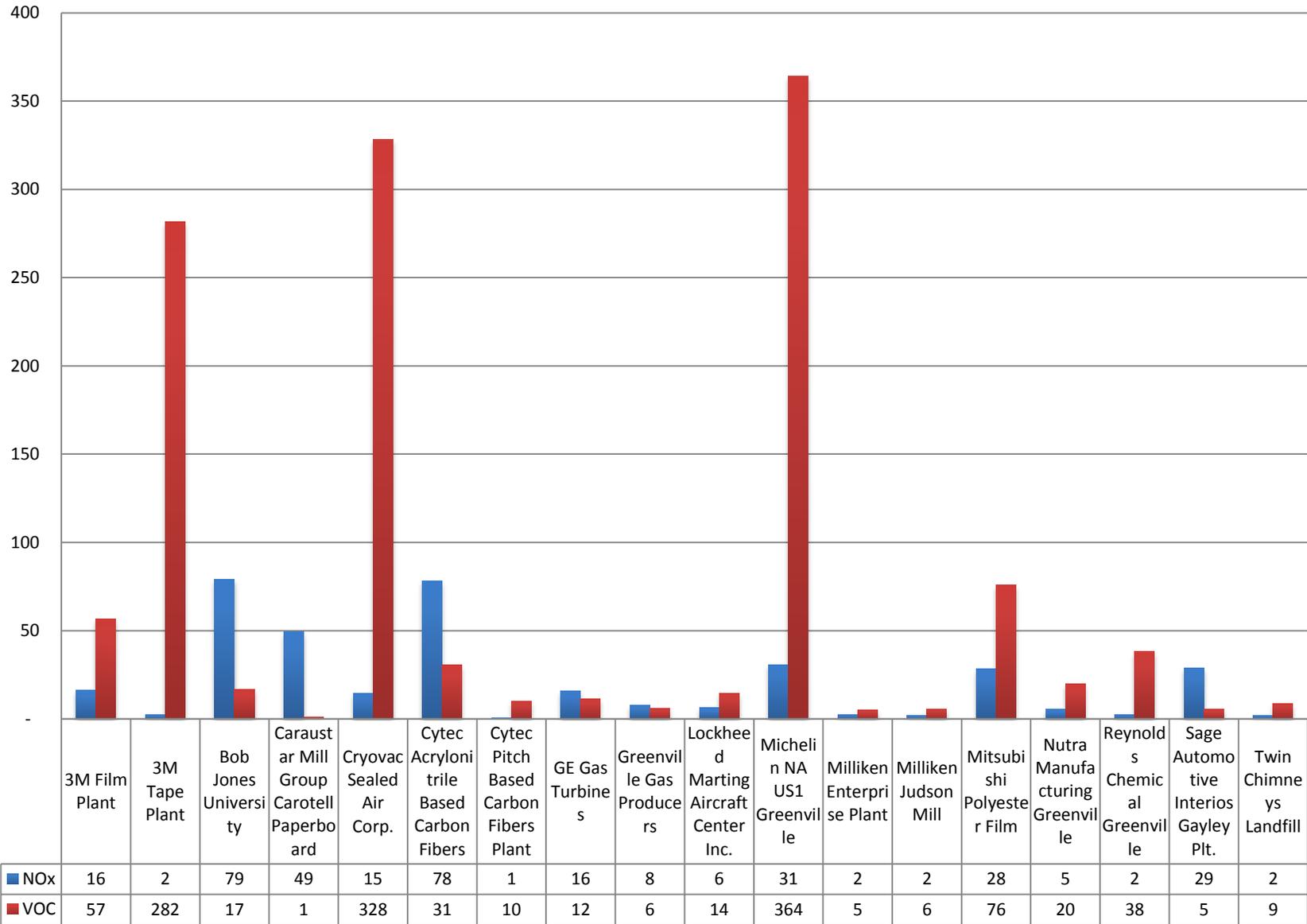


Greenville County, SC -- 2010 Nonroad Emissions (tpy)

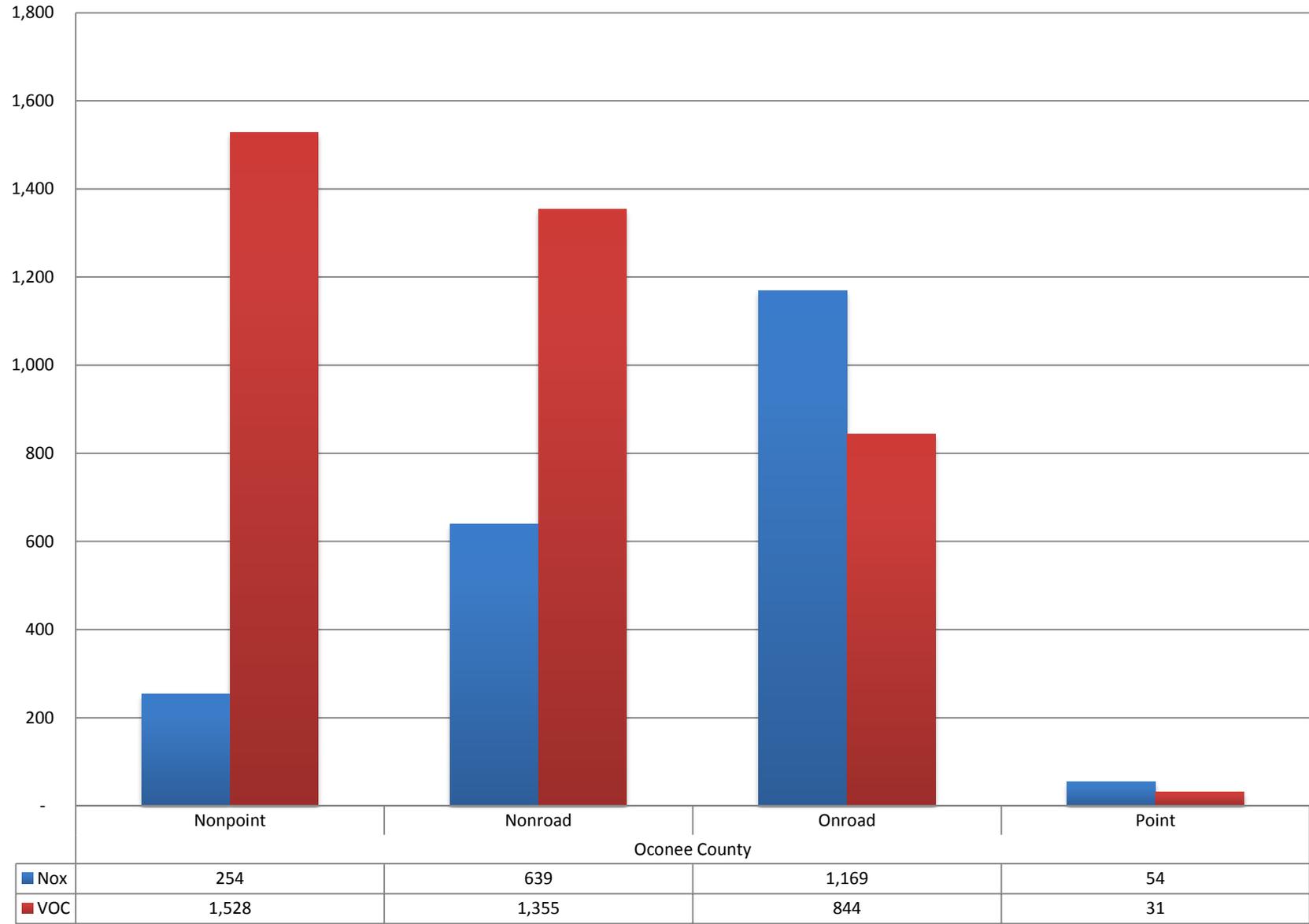




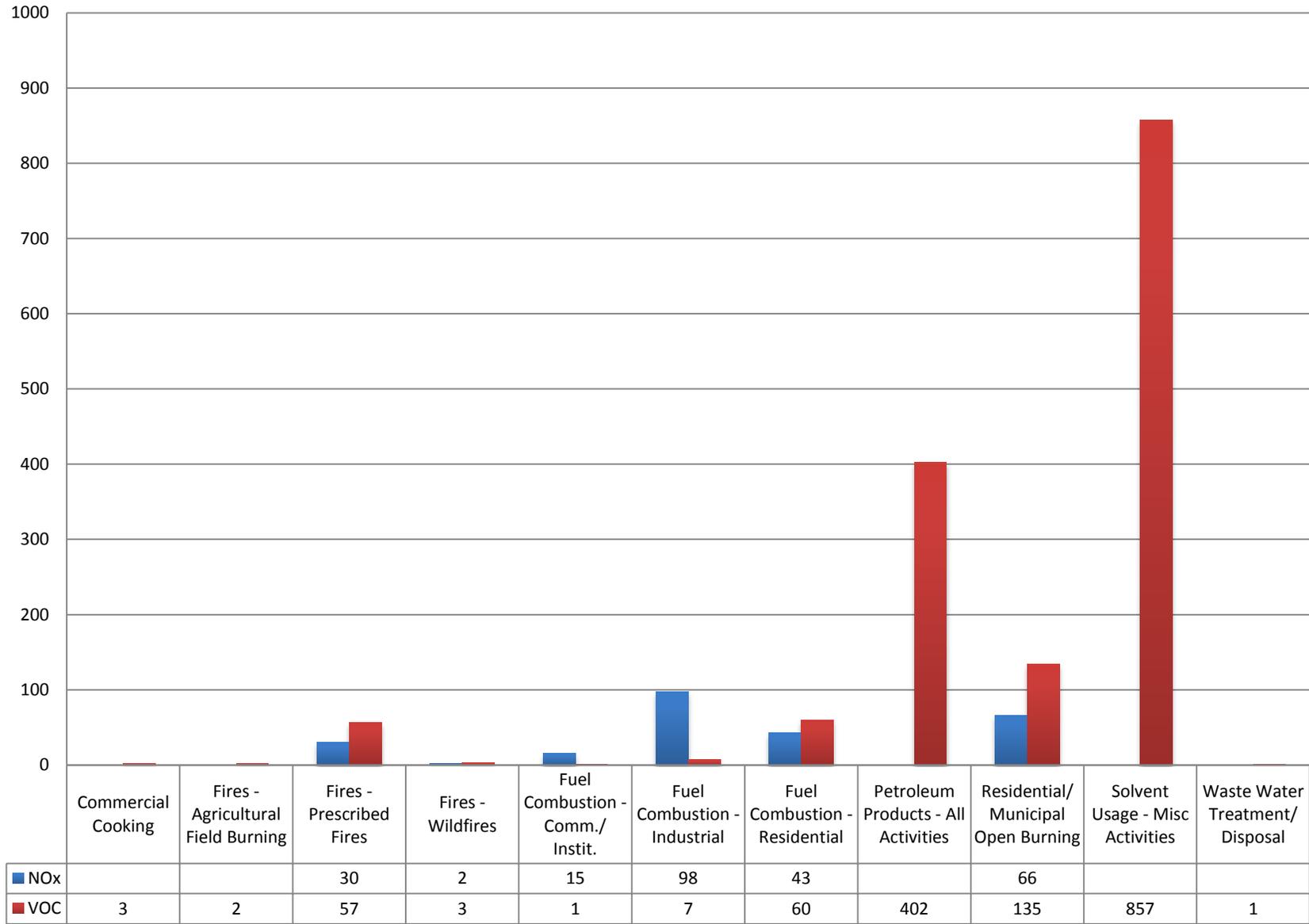
Greenville County, SC -- 2010 Point Emissions (tpy)



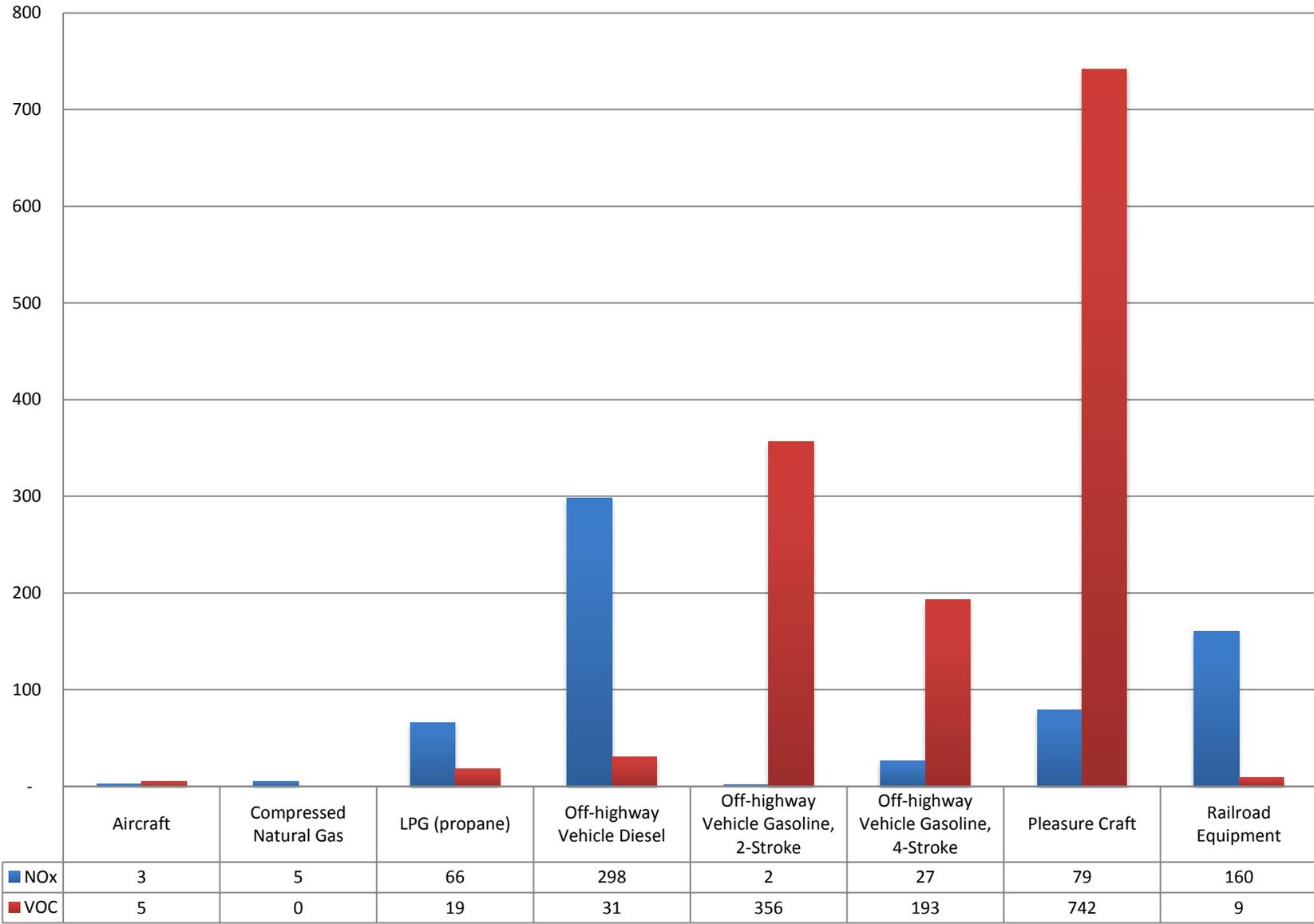
Oconee County, SC -- 2010 NOx and VOC Emissions (tpy)

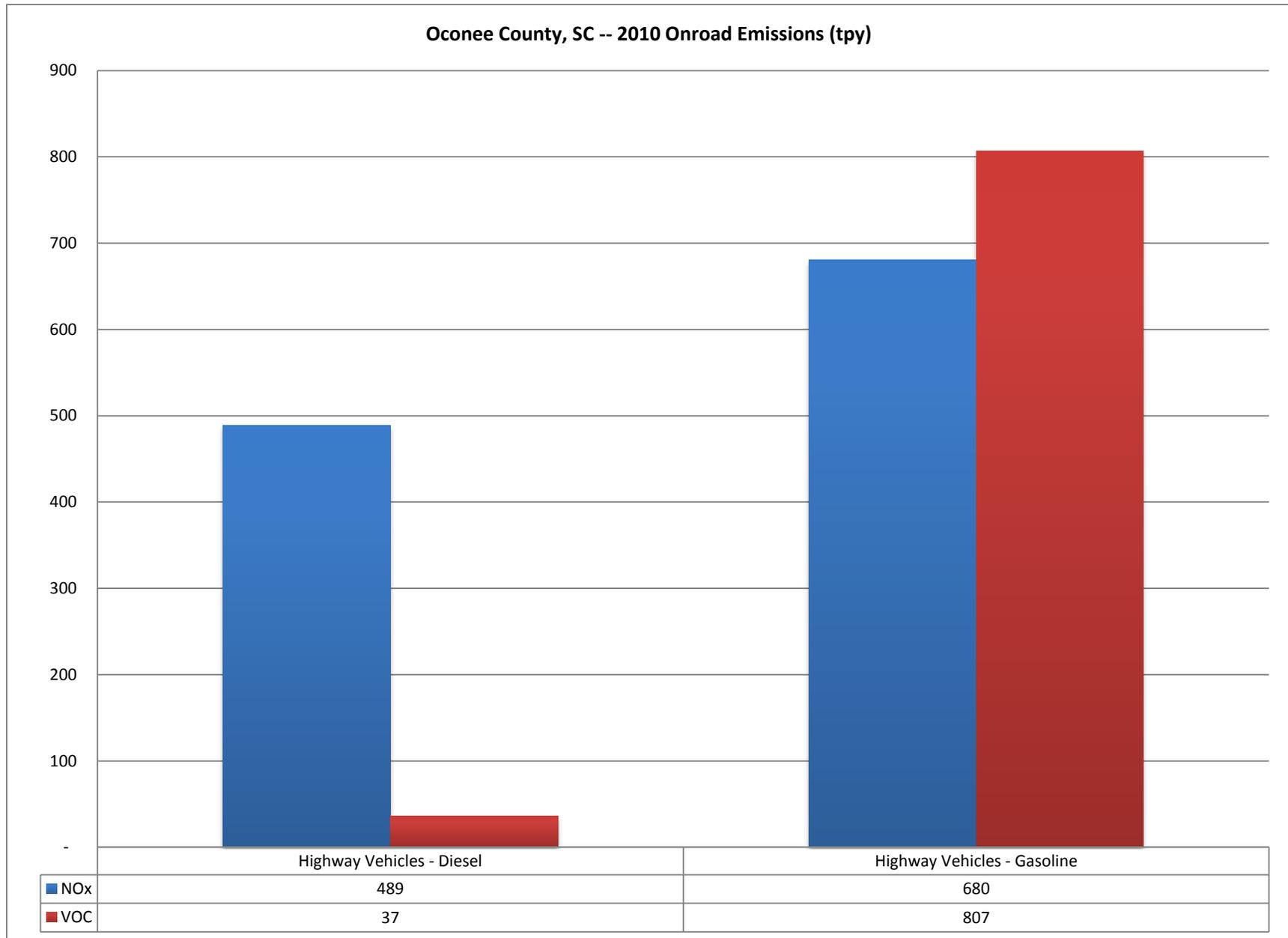


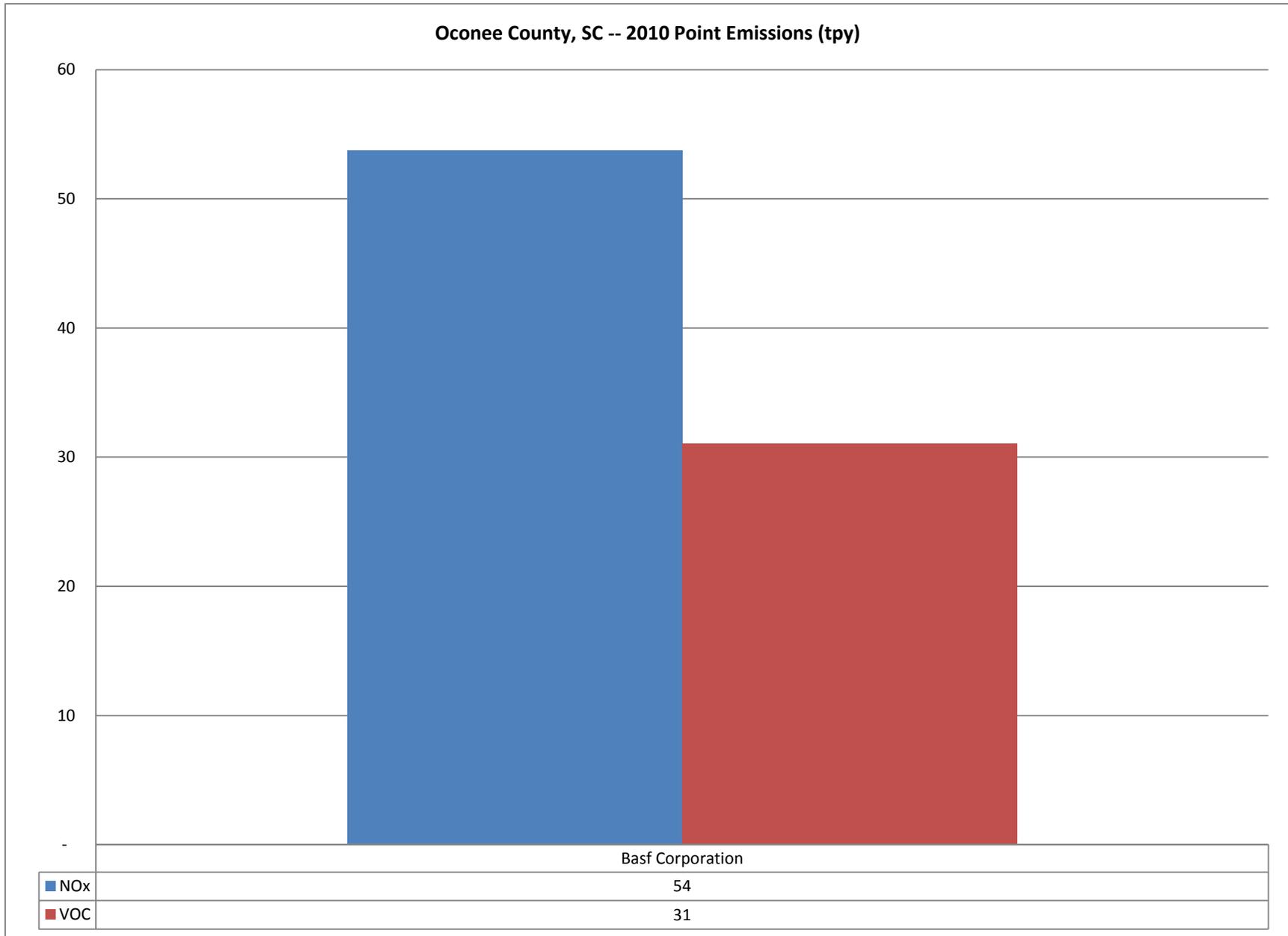
Oconee County, SC -- 2010 Nonpoint Emissions (tpy)



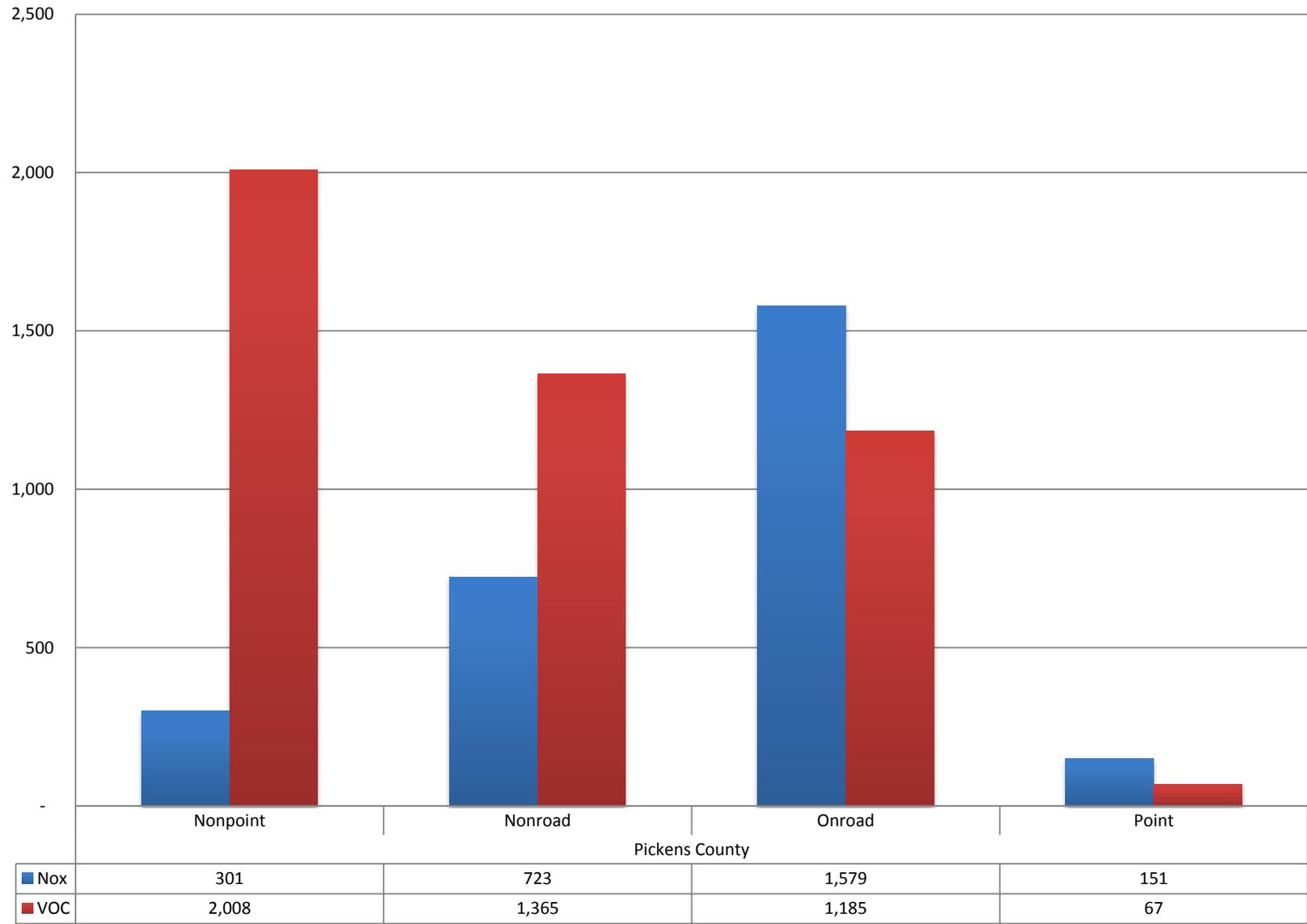
Oconee County, SC -- 2010 Nonroad Emissions (tpy)



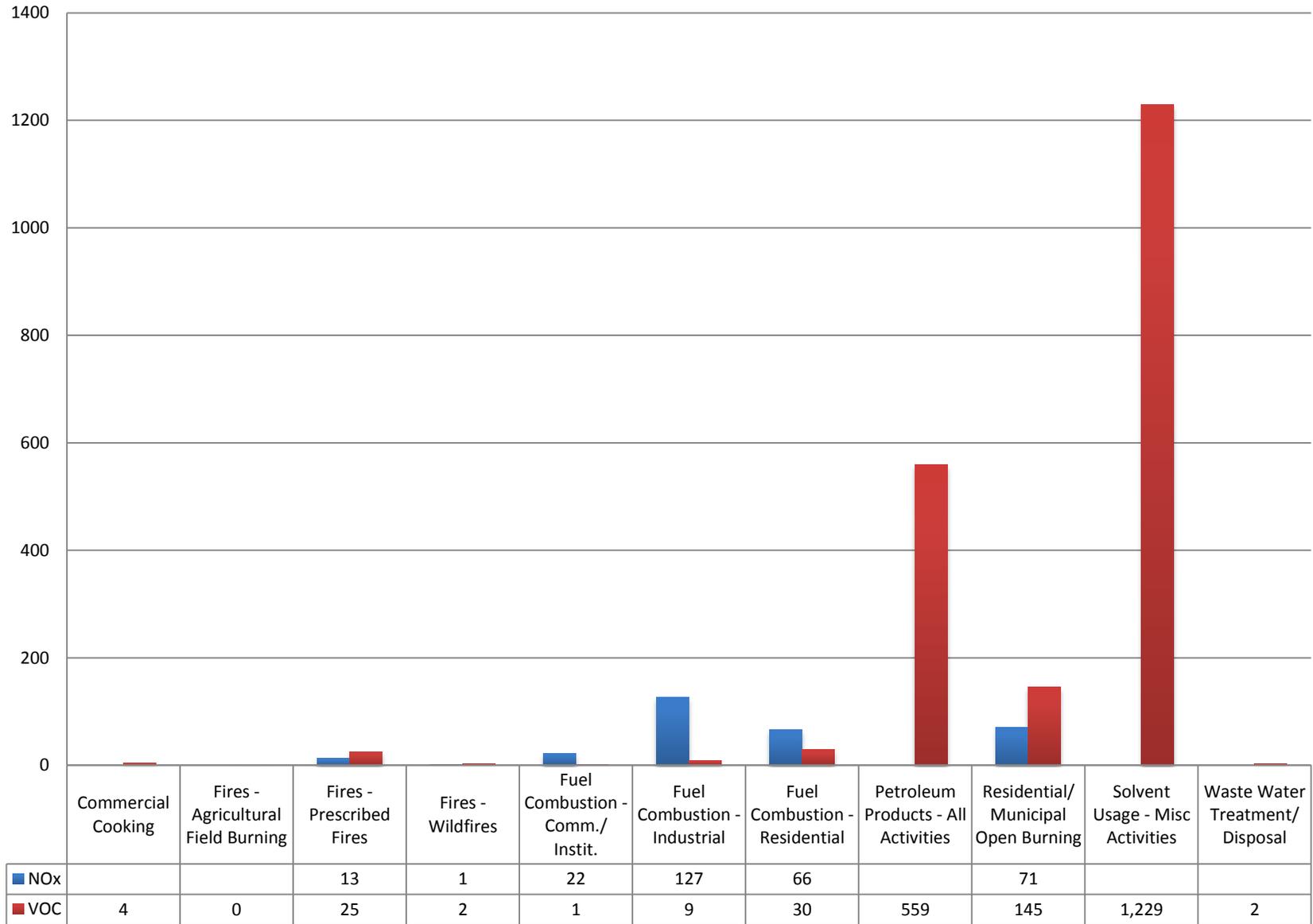




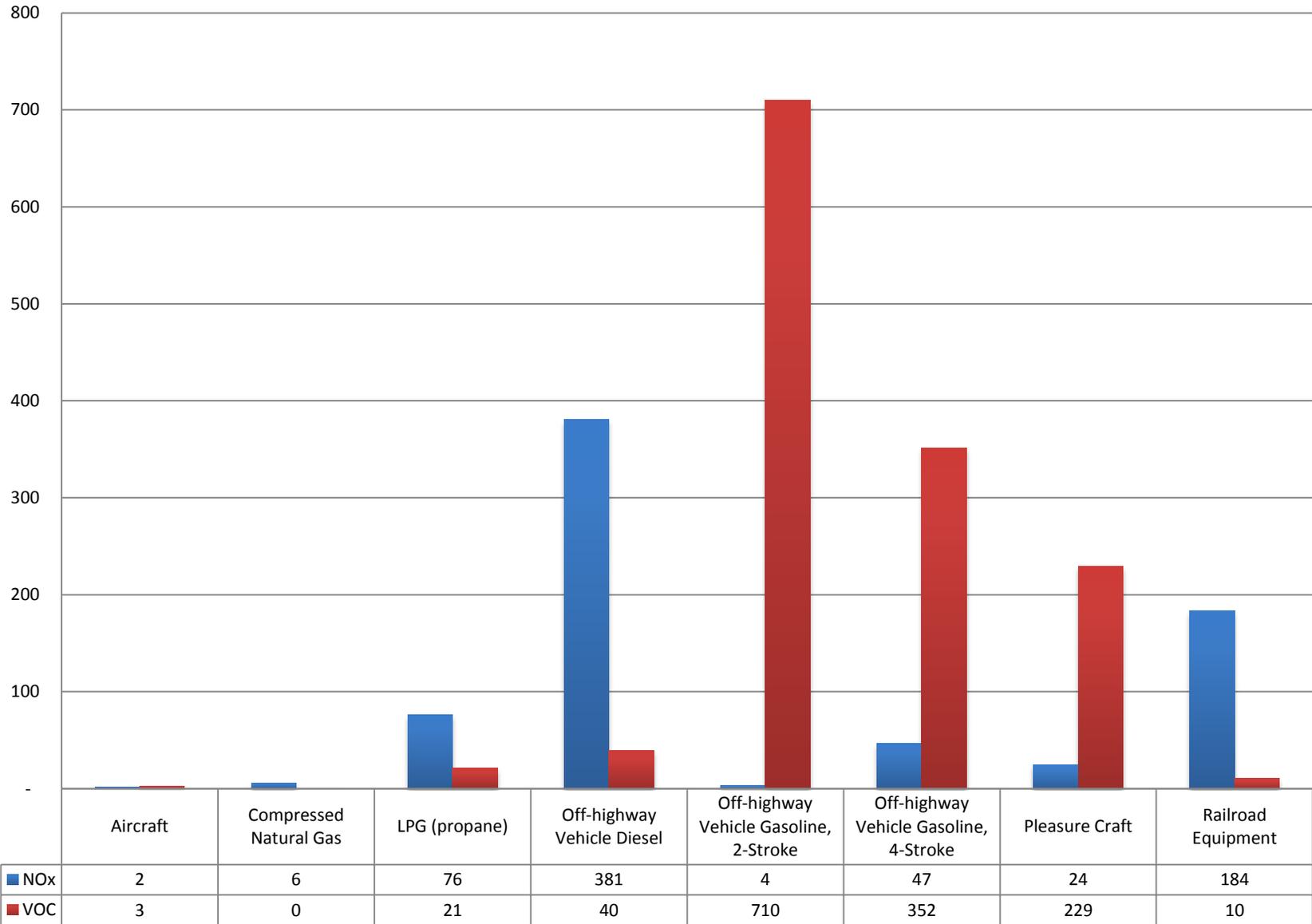
Pickens County, SC -- 2010 NOx and VOC Emissions (tpy)

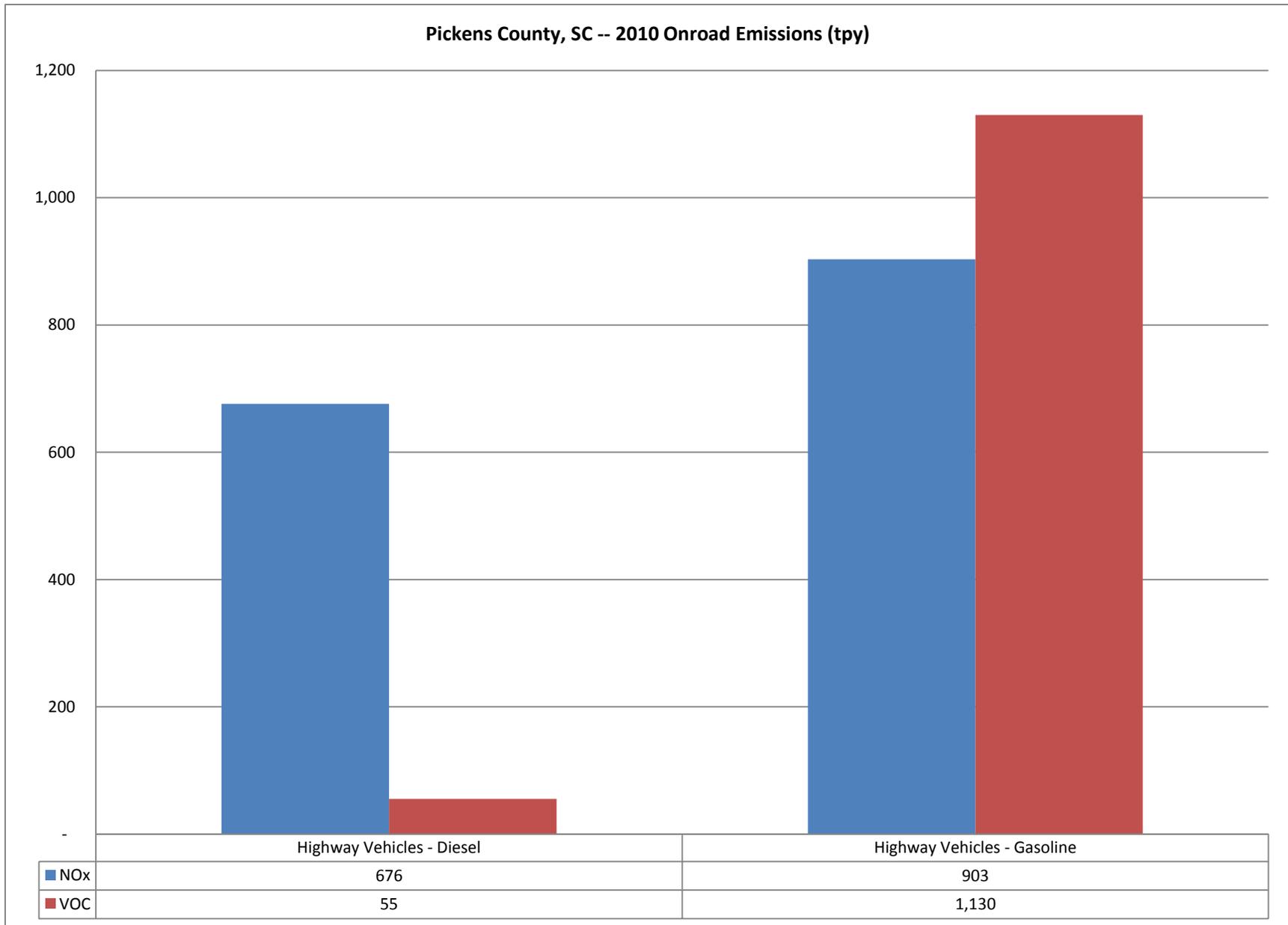


Pickens County, SC -- 2010 Nonpoint Emissions (tpy)

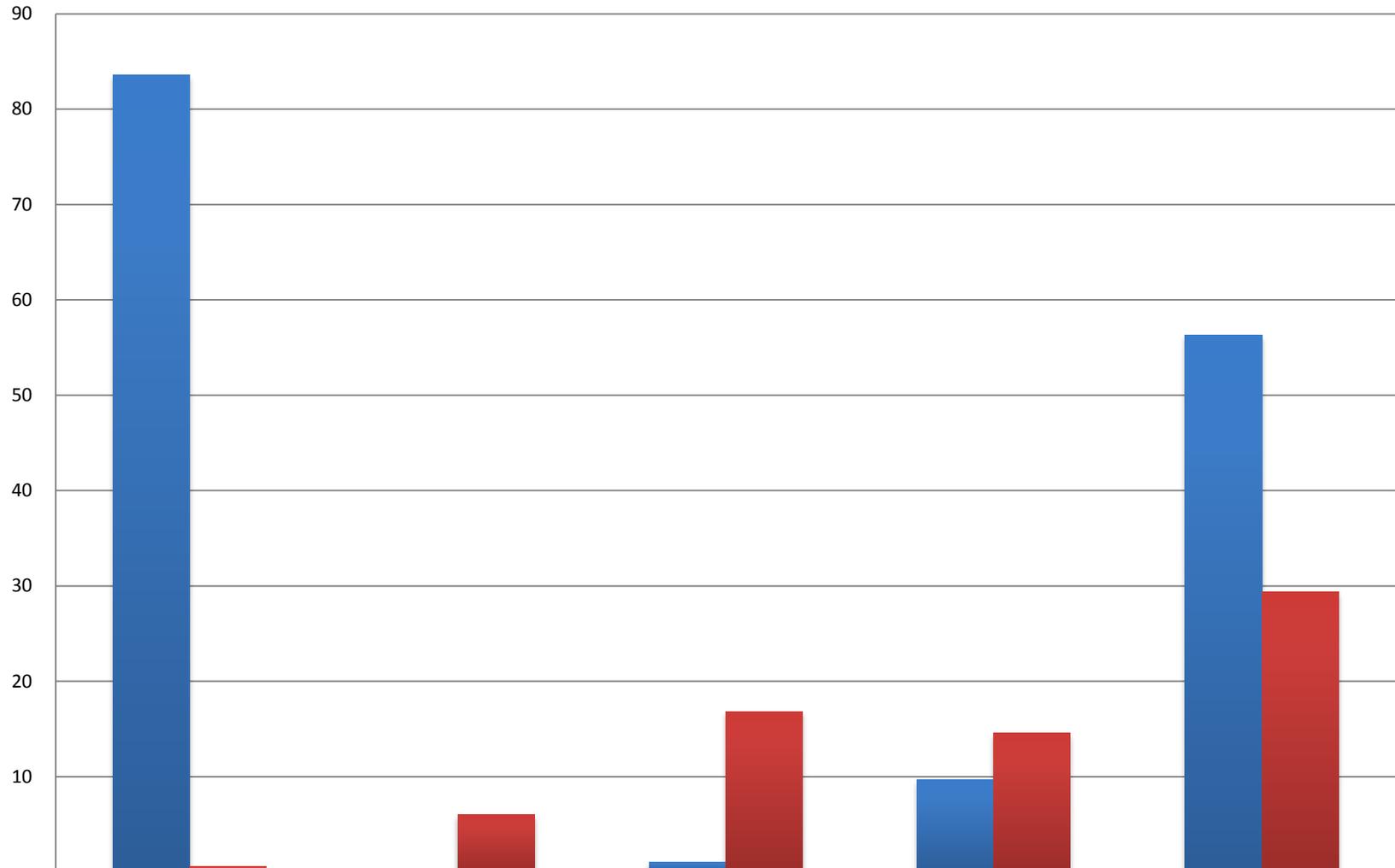


Pickens County, SC -- 2010 Nonroad Emissions (tpy)



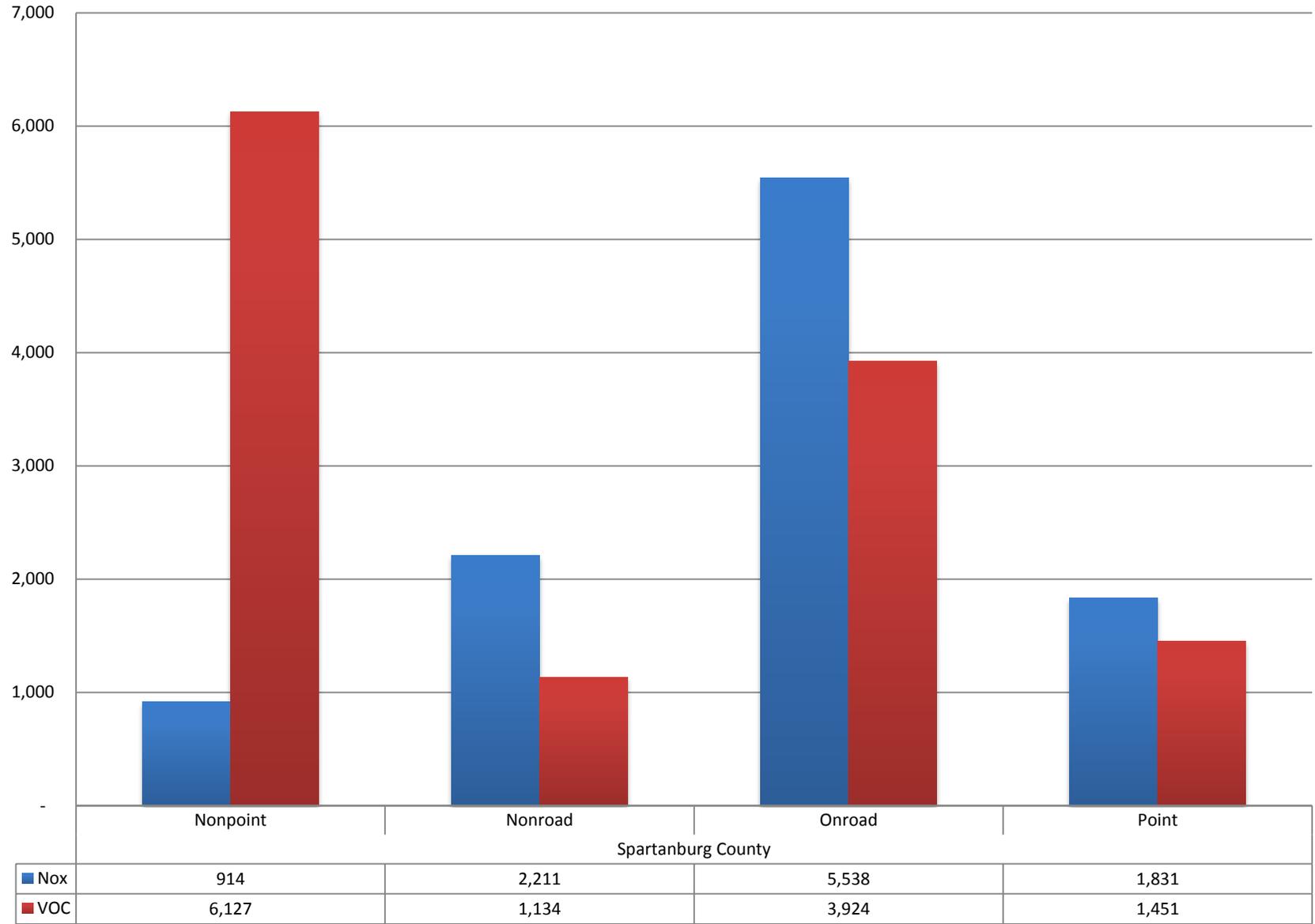


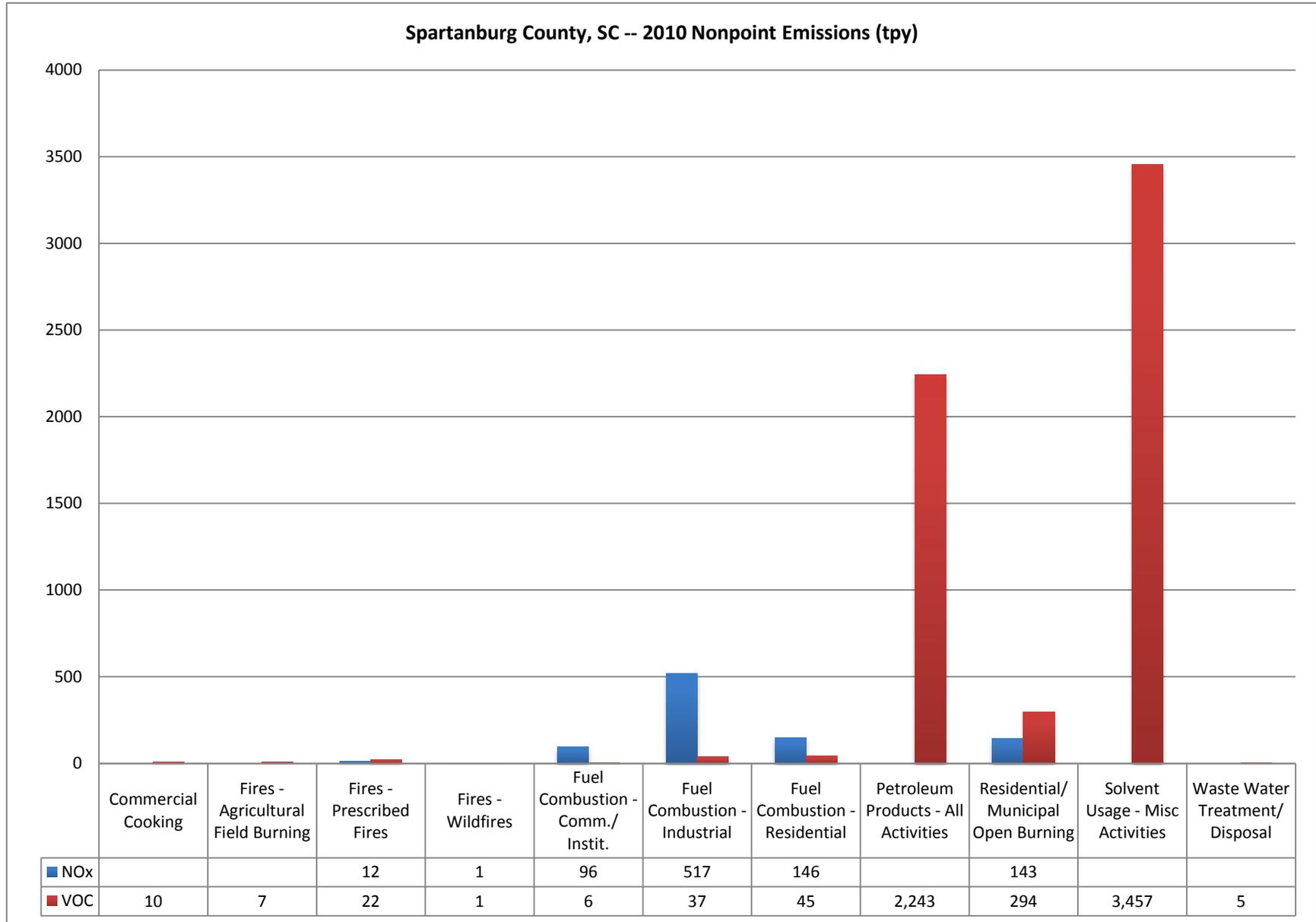
Pickens County, SC -- 2010 Point Emissions (tpy)

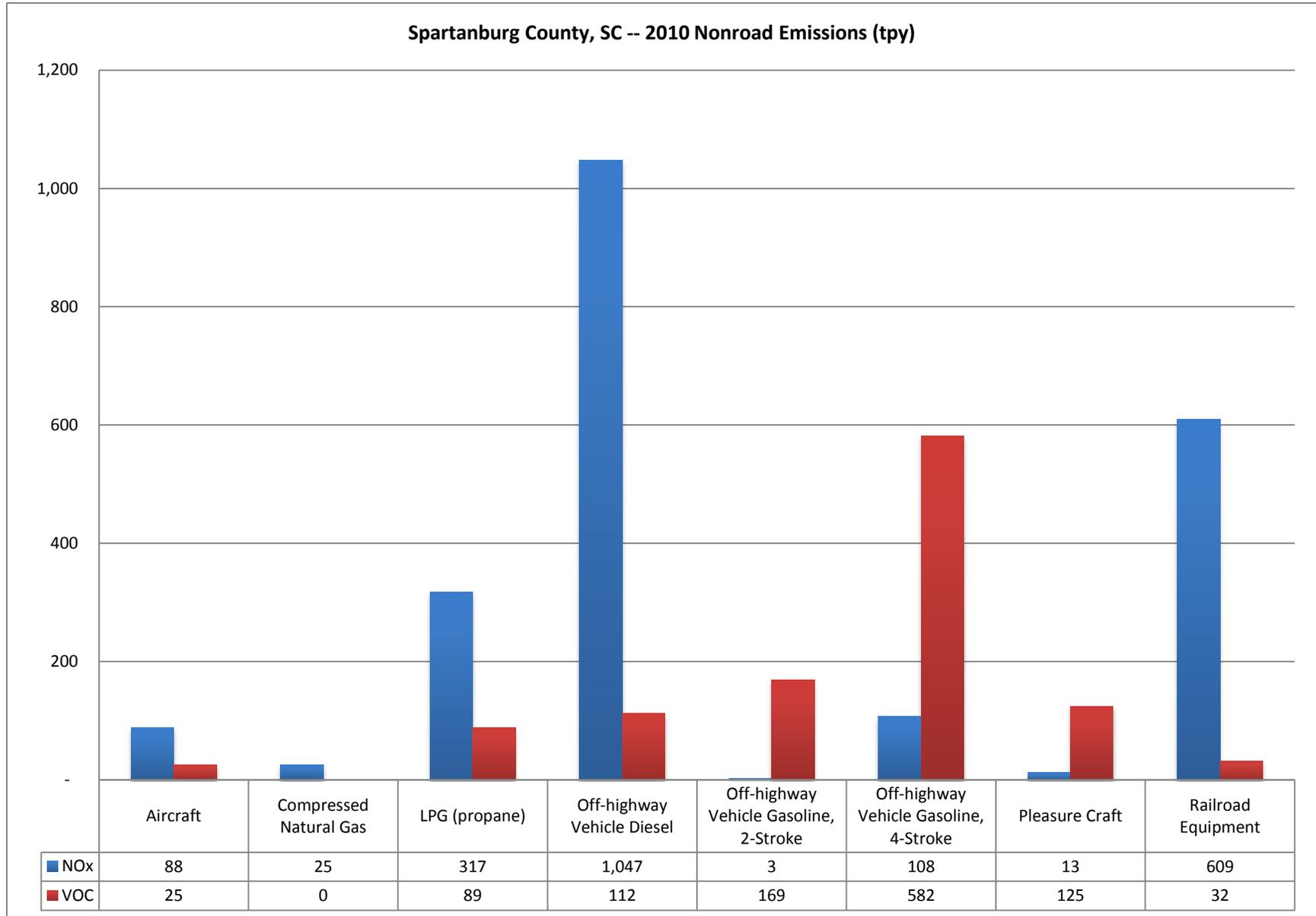


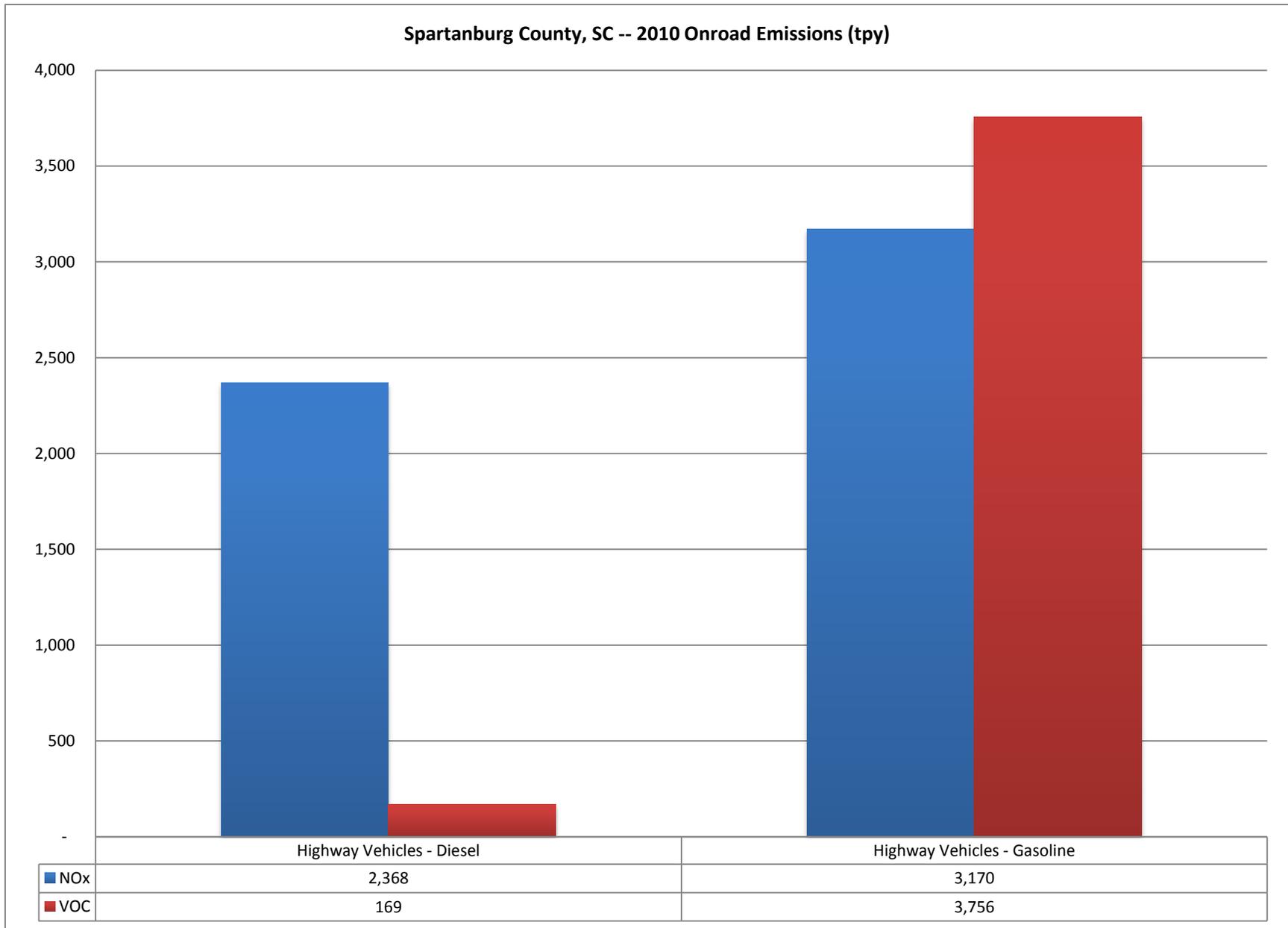
	Clemson University	Flexiwall: 208 Carolina Drive	One World Technologies	Pickens County Solid Waste Department	Shaw Industries Group Plant 8T
■ NOx	84	0	1	10	56
■ VOC	1	6	17	15	29

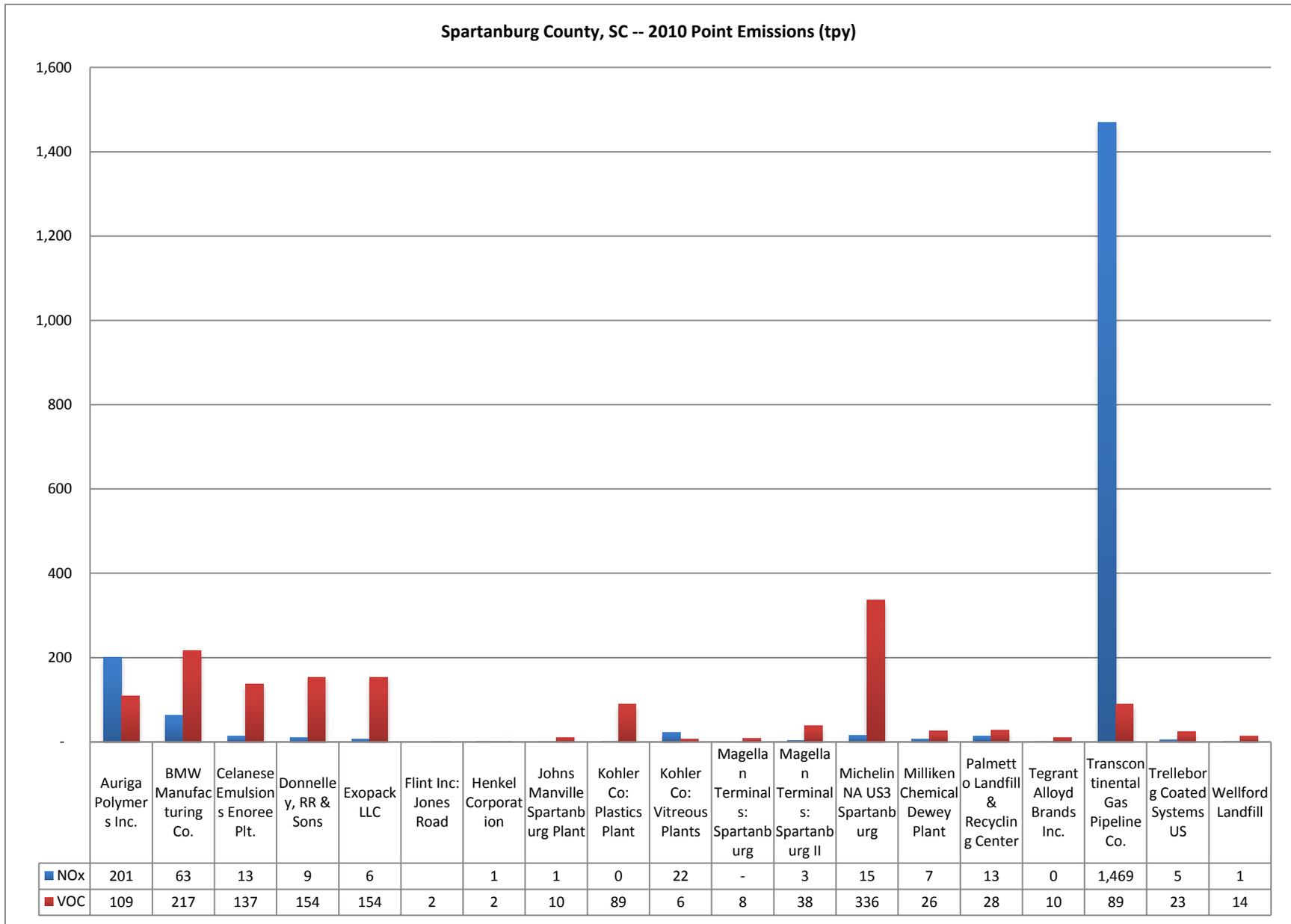
Spartanburg County, SC -- 2010 NOx and VOC Emissions (tpy)

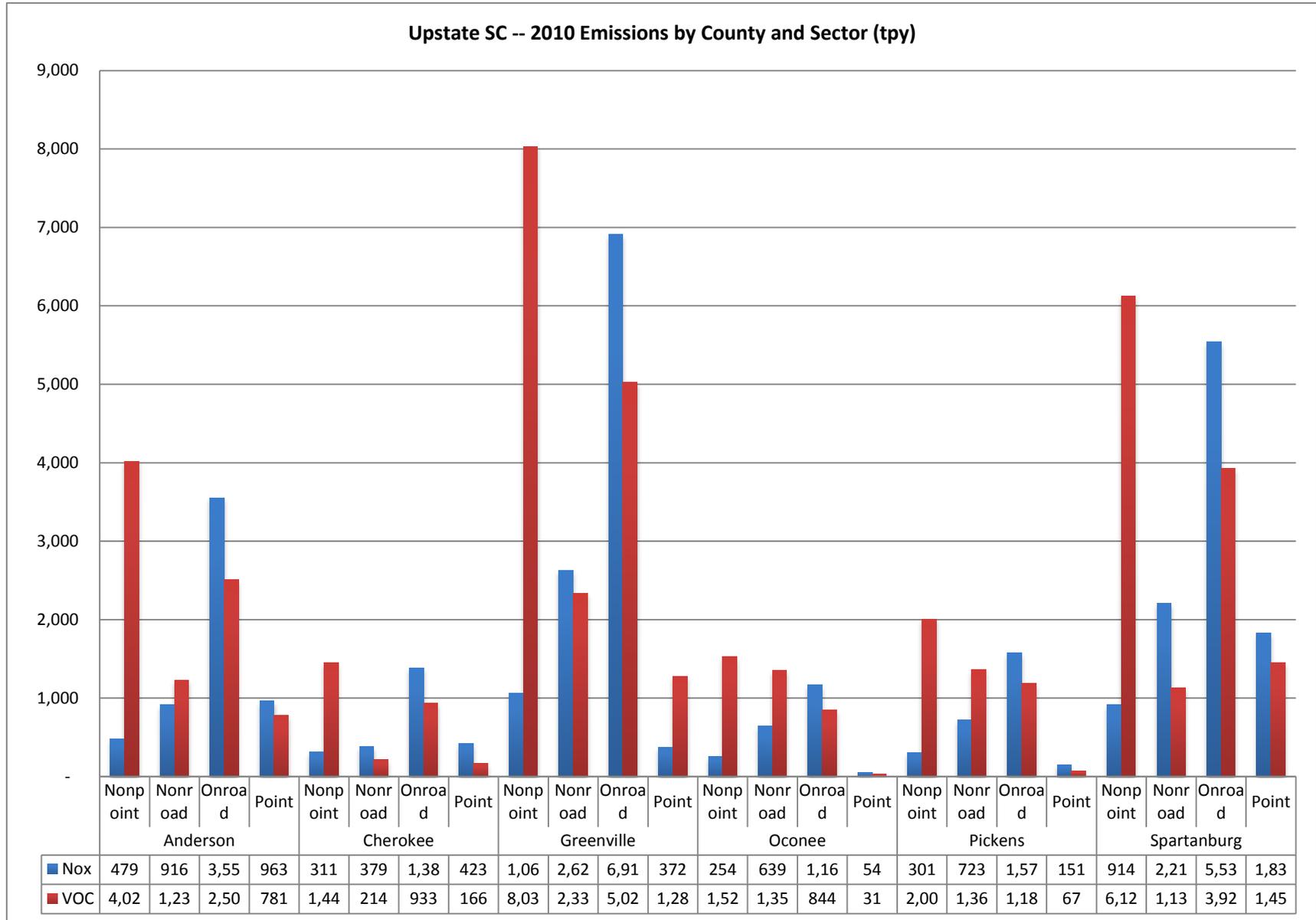




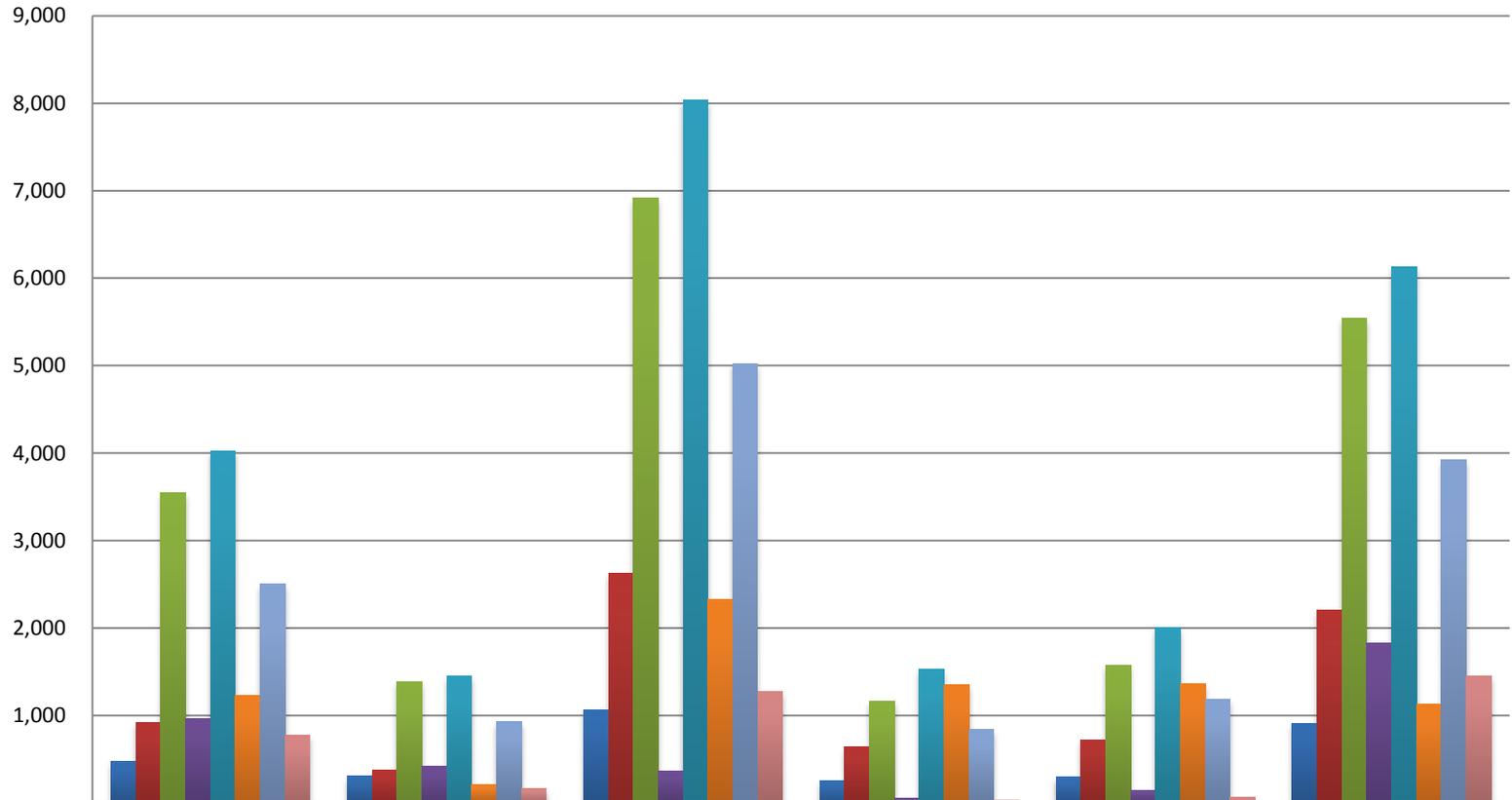






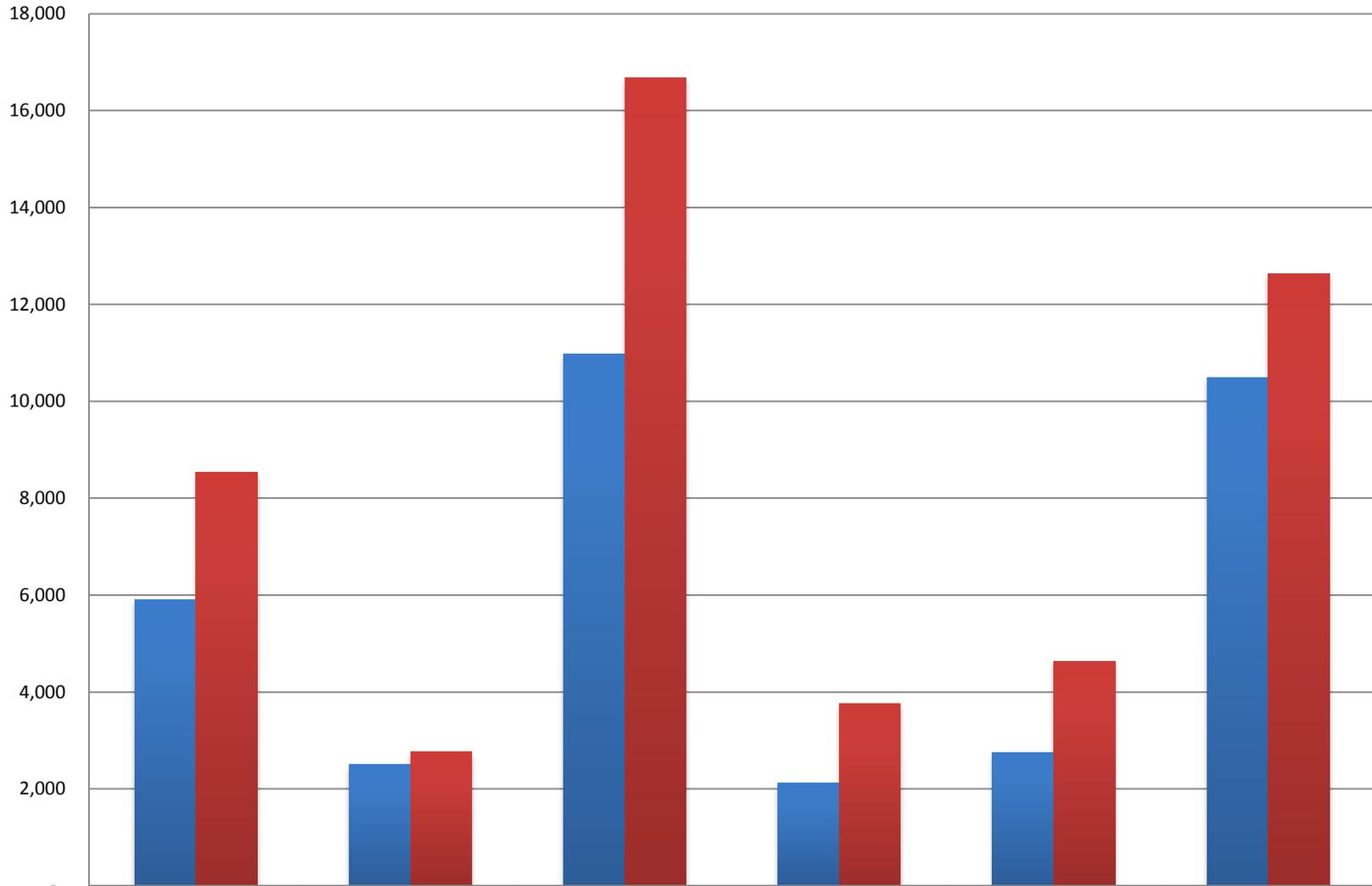


Upstate SC - 2010 Emissions by Pollutant, County and Source (tpy)



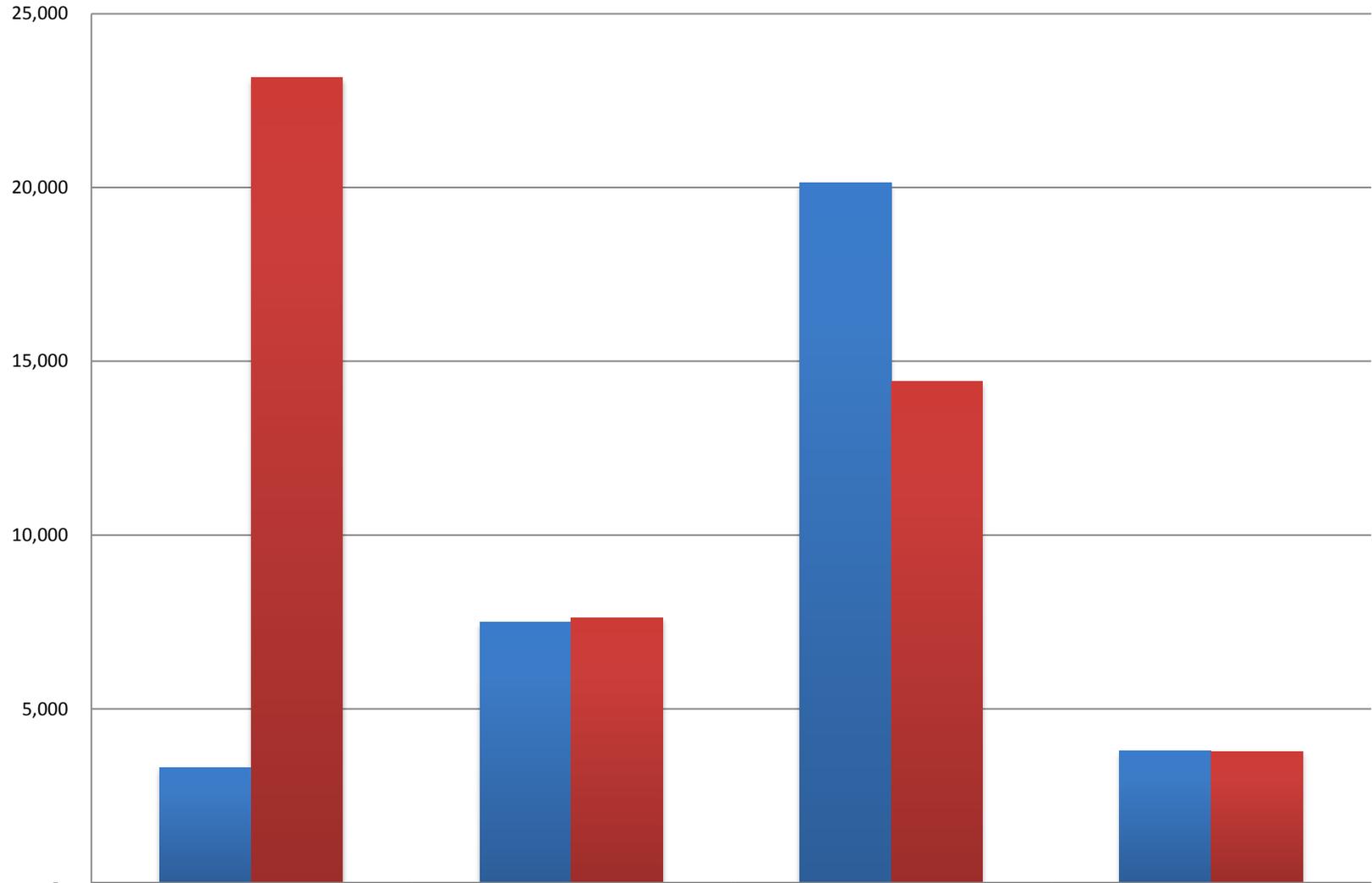
	Anderson	Cherokee	Greenville	Oconee	Pickens	Spartanburg
NOx - Nonpoint	479	311	1,061	254	301	914
NOx - Nonroad	916	379	2,627	639	723	2,211
NOx - Onroad	3,553	1,386	6,912	1,169	1,579	5,538
NOx - Point	963	423	372	54	151	1,831
VOC - Nonpoint	4,020	1,448	8,033	1,528	2,008	6,127
VOC - Nonroad	1,230	214	2,331	1,355	1,365	1,134
VOC - Onroad	2,505	933	5,026	844	1,185	3,924
VOC - Point	781	166	1,280	31	67	1,451

Upstate SC -- 2010 Total NOx and VOC Emissions by County (tpy)



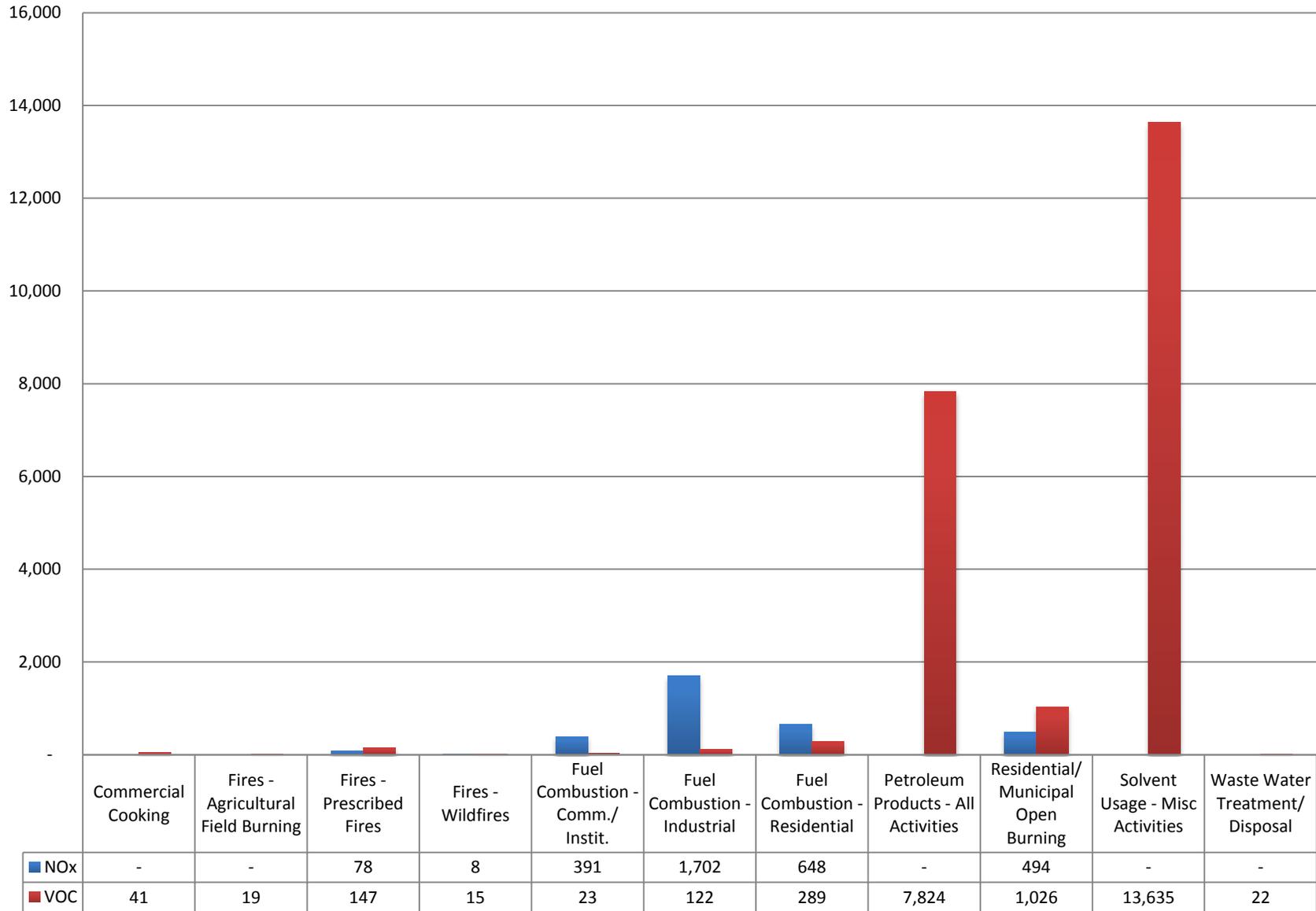
Total NOx	5,910	2,499	10,972	2,117	2,753	10,494
Total VOC	8,536	2,761	16,670	3,757	4,626	12,637

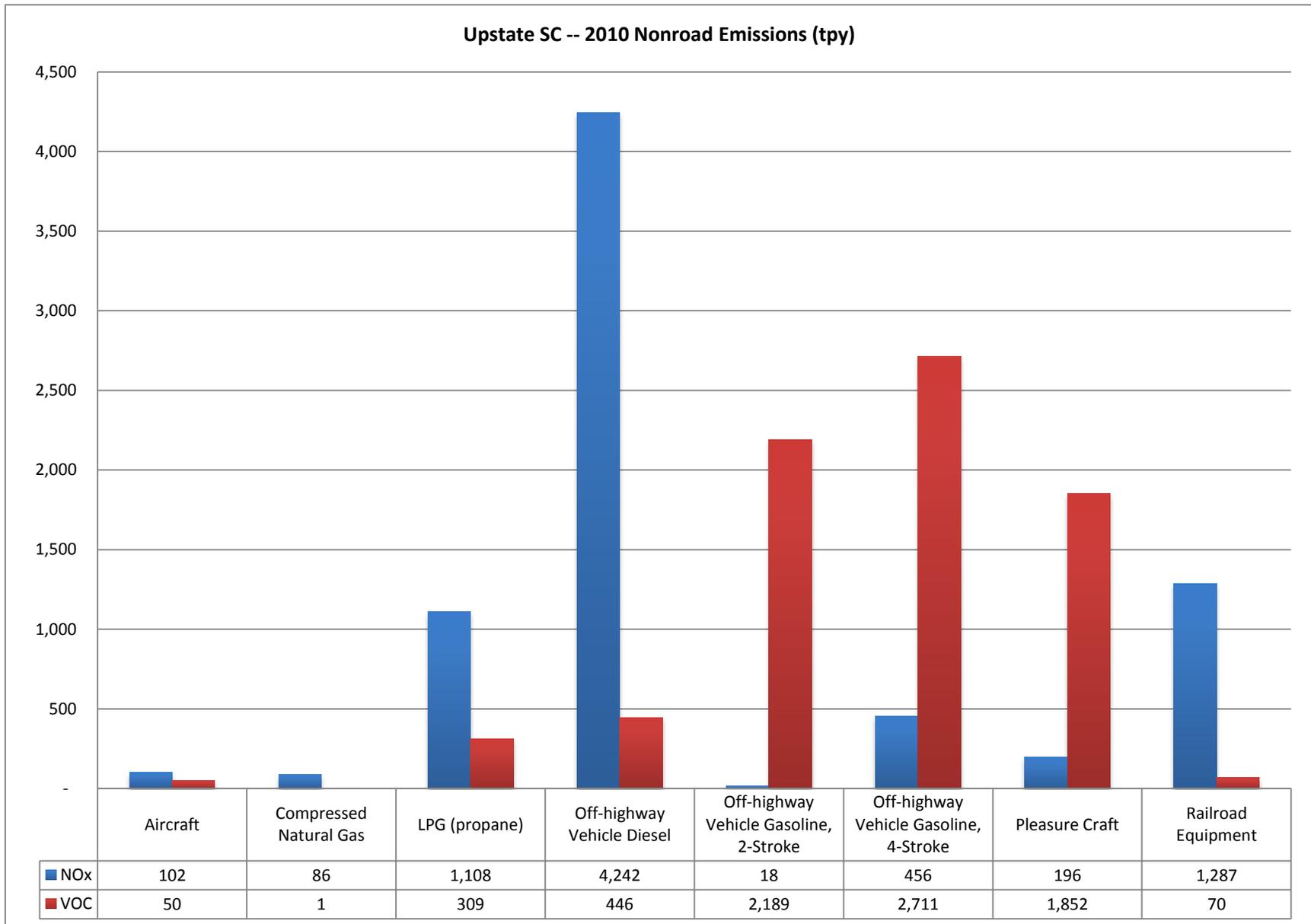
Upstate SC -- 2010 Total Emissions by Source (tpy)

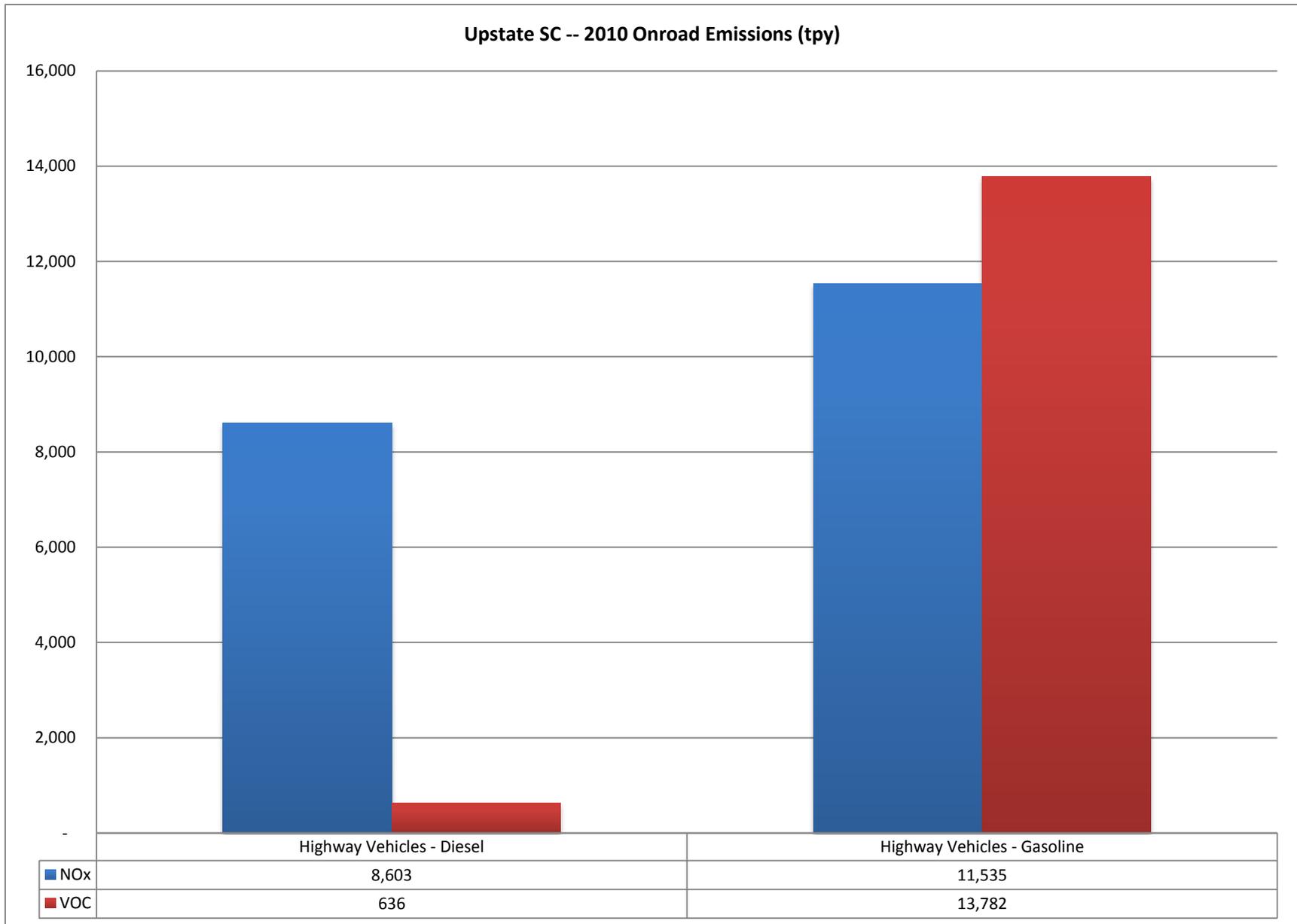


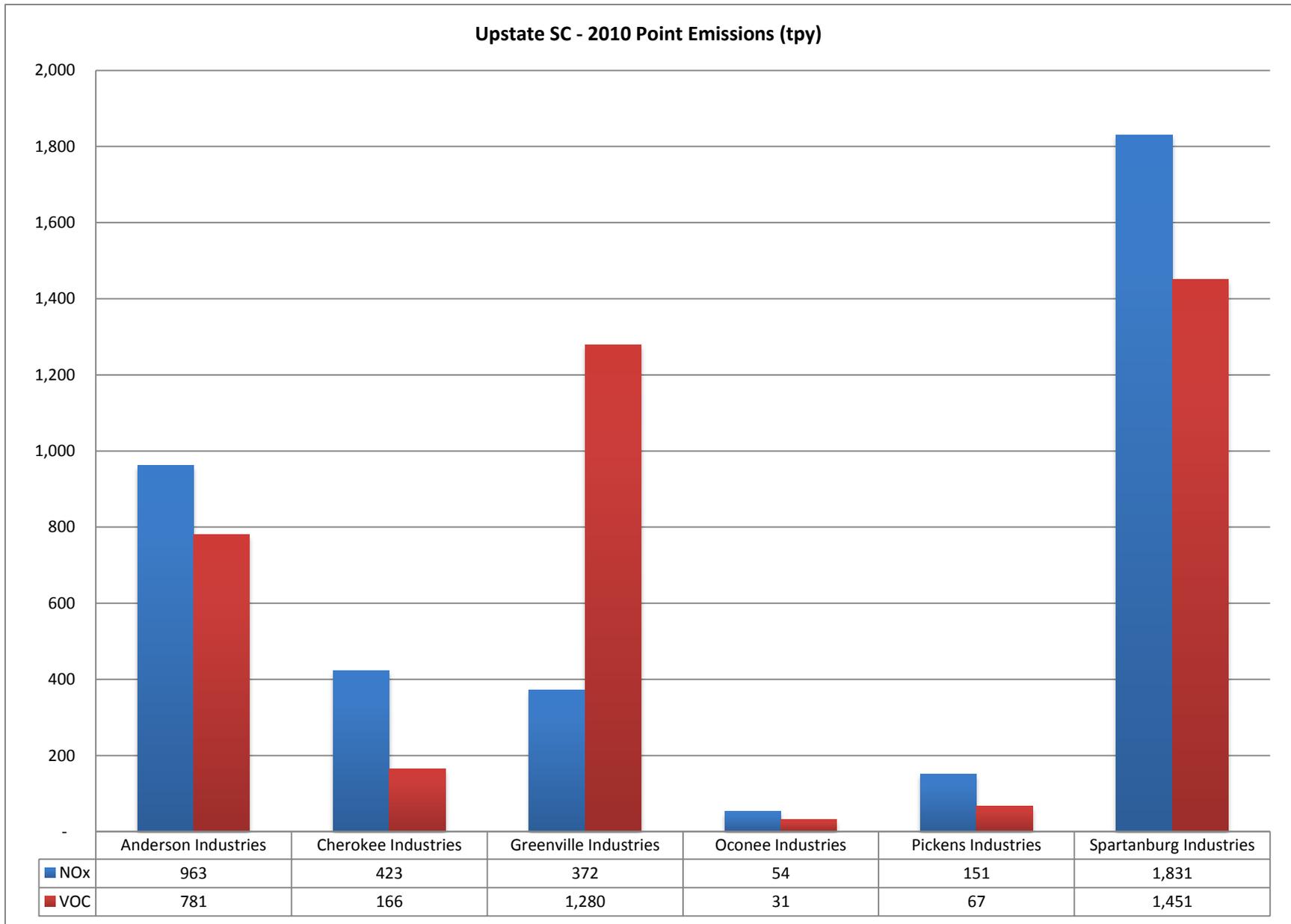
	Nonpoint	Nonroad	Onroad	Point
NOx Totals	3,320	7,495	20,138	3,793
VOC Totals	23,164	7,629	14,418	3,776

Upstate SC -- 2010 Nonpoint Emissions (tpy)

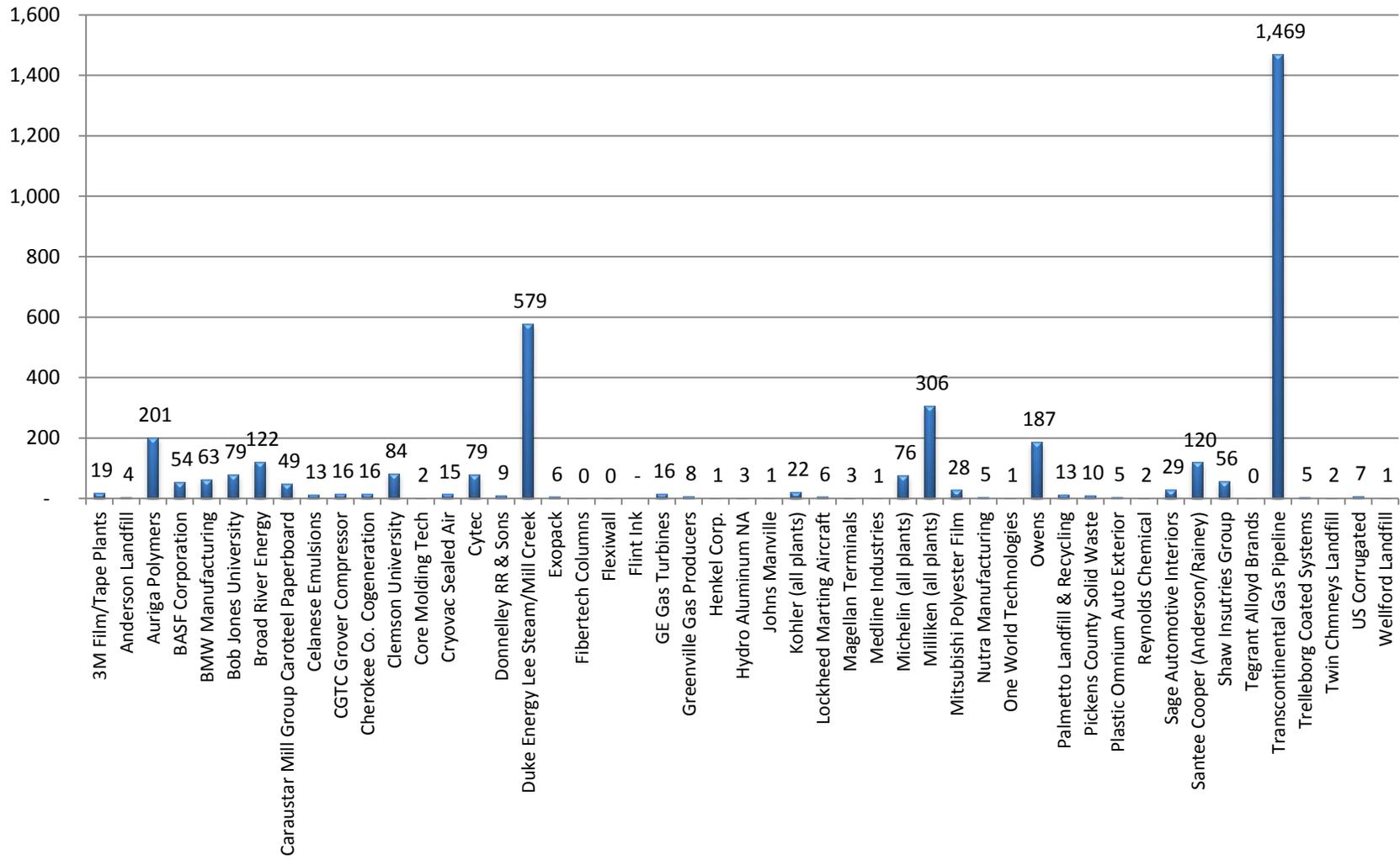




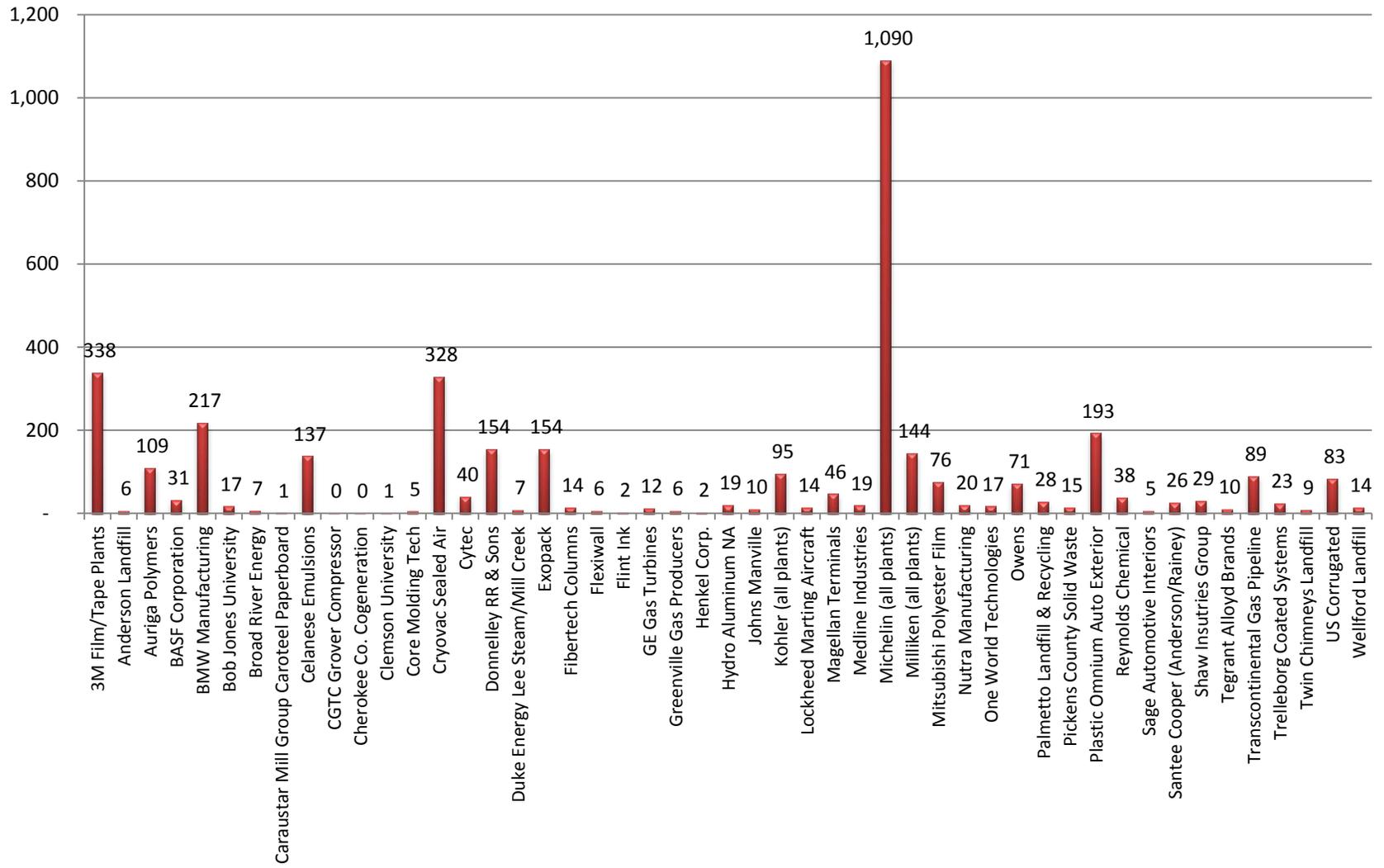




### Total Point NOx Emissions by Source



### Total Point VOC Emissions by Source



**Upstate SC Air Quality Improvement Committee ❖ 2010 Emissions Inventory**

<b>Upstate SC Air Quality Improvement Committee</b>			
<b>NAME</b>	<b>EMAIL ADDRESS/PHONE</b>	<b>ORGANIZATION</b>	<b>TRANSPORTATION COMMITTEE</b>
Ruth Albright	<a href="mailto:RALbright@synterracorp.com">RALbright@synterracorp.com</a> (864) 527-4625	SynTerra	
Winston Anderson	<a href="mailto:wanderson@spartanburgcounty.org">wanderson@spartanburgcounty.org</a> 864-562-4361	Spartanburg County	
Gregory Baney	<a href="mailto:gbaney@greenville.gov">gbaney@greenville.gov</a> (864) 467-2700	City of Greenville	
Jonathan Batson	<a href="mailto:ibatson@andersoncountysc.org">ibatson@andersoncountysc.org</a>	Anderson County	
Wendy Bell	<a href="mailto:wbell@catawbacog.org">wbell@catawbacog.org</a> (803) 327-9041	Catawba Council of Government	
Chip Bentley	<a href="mailto:bentley@scacog.org">bentley@scacog.org</a> (864) 242-9733	Appalachian COG	
Lee Blair	<a href="mailto:lblair@spartanburgchamber.com">lblair@spartanburgchamber.com</a> (864) 594-5030	Spartanburg Chamber	
Lisa Bollinger	<a href="mailto:lbollinger@spatsmpo.org">lbollinger@spatsmpo.org</a>	SPATS	✓
Chris Brink	<a href="mailto:chrisb@co.pickens.sc.us">chrisb@co.pickens.sc.us</a>	Pickens County	
Keith Brockington	<a href="mailto:kbrockington@greenvillecounty.org">kbrockington@greenvillecounty.org</a> (864) 467-7270	Greenville County, Planning (GPATS)	✓
Myra Carpenter	<a href="mailto:myra.carpenter@us.michelin.com">myra.carpenter@us.michelin.com</a> (864) 458-1582	Michelin	
Eddie Case	<a href="mailto:Eddie.case@fountaininn.org">Eddie.case@fountaininn.org</a>	City of Fountain Inn	
Phil Conner	<a href="mailto:Philconner@cardwellconner.com">Philconner@cardwellconner.com</a> (864) 250-0000	Greenville Chamber, Cardwell Conner	
Jean Crowther	<a href="mailto:jcrow@clemson.edu">jcrow@clemson.edu</a>	Spartanburg	
Frank Curti	<a href="mailto:frank_curti@urscorp.com">frank_curti@urscorp.com</a> (864) 527-4751	URS Corporation	
Jim D'Amato	<a href="mailto:jdamoto@spatsmpo.org">jdamoto@spatsmpo.org</a> (864) 596-3460	Spartanburg County/SPATS	✓
Ed Driggers	<a href="mailto:edriggers@cityofgreer.org">edriggers@cityofgreer.org</a>	City of Greer	
Aaron Gadsby	<a href="mailto:agadsby@oconeesc.com">agadsby@oconeesc.com</a>	Oconee County, Planner	
John Gardner	<a href="mailto:jgardner@mauldincitysc.com">jgardner@mauldincitysc.com</a> (864) 289-8979	City of Mauldin	
Dianna Gracely	<a href="mailto:dianna@travelersrestsc.com">dianna@travelersrestsc.com</a>	City of Travelers Rest	
Rick Green	<a href="mailto:rgreen@uppersavannah.com">rgreen@uppersavannah.com</a>	Upper Savannah Council of Governments	
Trey Eubanks	<a href="mailto:teubanks@mauldincitysc.com">teubanks@mauldincitysc.com</a>	City of Mauldin	
Russell Hawes	<a href="mailto:rhawes@simpsonvillesc.com">rhawes@simpsonvillesc.com</a>	City of Simpsonville	

**Upstate SC Air Quality Improvement Committee ❖ 2010 Emissions Inventory**

<b>Upstate SC Air Quality Improvement Committee</b>			
<b>NAME</b>	<b>EMAIL ADDRESS/PHONE</b>	<b>ORGANIZATION</b>	<b>TRANSPORTATION COMMITTEE</b>
Jessica Hekter	<a href="mailto:jdfhekte@dot.gov">jdfhekte@dot.gov</a>		
Jim Hill	<a href="mailto:jihill@greenvillecounty.org">jihill@greenvillecounty.org</a> (864) 235-2008	GADC	
Jim Hipp	<a href="mailto:jhipp@spartanburgcounty.org">jhipp@spartanburgcounty.org</a> (864) 596-2526	Spartanburg County	✓
Art Holbrooks	<a href="mailto:aholbrooks@oconeesc.com">aholbrooks@oconeesc.com</a>	Oconee County, Planner	
Joan Holliday	<a href="mailto:jholliday@spartanburgcounty.org">jholliday@spartanburgcounty.org</a> (864) 596-3469	Spartanburg County	
Mark Hollis	mehollis@duke-energy.com <a href="mailto:mark.hollis1@duke-energy.com">mark.hollis1@duke-energy.com</a> (704) 373-3726	Duke Energy	
Dean Hybl	<a href="mailto:dehybl@gmail.com">dehybl@gmail.com</a> (864) 283-2315 office (864) 270-2289 cell	Ten at the Top	
Carl Jackson	<a href="mailto:cjackson@greenvilleesc.gov">cjackson@greenvilleesc.gov</a>	City of Greenville/GreenLink	
Bill Jordan	<a href="mailto:jordanwe@scdot.org">jordanwe@scdot.org</a> (803) 737-1679	SCDOT	
Kris Knudsen	<a href="mailto:Kris.knudsen@duke-energy.com">Kris.knudsen@duke-energy.com</a> (980) 373-3225	Duke Energy	
Chris Lambka	<a href="mailto:clambka@spatsmpo.org">clambka@spatsmpo.org</a>	SPATS	✓
Kenny Larimore	<a href="mailto:larimorekw@scdot.org">larimorekw@scdot.org</a> (803) 737-4660	SCDOT, Planning	
Phil Lindler	<a href="mailto:plindler@greenwoodsc.gov">plindler@greenwoodsc.gov</a>	Greenwood County	
Melinda Mathias	<a href="mailto:mathiamc@dhec.sc.gov">mathiamc@dhec.sc.gov</a> (803) 898-3269	SCDHEC	✓
Dan McGee	<a href="mailto:dmcgee@greenvillecounty.org">dmcgee@greenvillecounty.org</a> (864) 467-7373	GPATS/Greenville County	✓
Bob Mihalic	<a href="mailto:bmihalic@greenvillecounty.org">bmihalic@greenvillecounty.org</a> (864) 467-7055	Greenville County	
Steve Moore	<a href="mailto:steven_moore@urscorp.com">steven_moore@urscorp.com</a> (864) 609-9111 ext 26	URS Corporation	
Burriss Nelson	<a href="mailto:bnelson@andersoncountysc.org">bnelson@andersoncountysc.org</a> (864) 260-4231	Anderson County	
John Owings	<a href="mailto:Jowings@greenvillecounty.org">Jowings@greenvillecounty.org</a> (864) 467-7270	Greenville County	✓
Holly Peterson	<a href="mailto:Holly.Peterson@dot.gov">Holly.Peterson@dot.gov</a> (404) 865-5637	USDOT, Federal Transit Authority	✓
Henry Phillips	<a href="mailto:phillipsmh@scdot.org">phillipsmh@scdot.org</a> (803) 737-1872	SCDOT	✓
Dan Powell	<a href="mailto:dpowell@greenvillecounty.org">dpowell@greenvillecounty.org</a> (864) 467-7287	Greenville County, Planning	✓

**Upstate SC Air Quality Improvement Committee ❖ 2010 Emissions Inventory**

<b>Upstate SC Air Quality Improvement Committee</b>			
<b>NAME</b>	<b>EMAIL ADDRESS/PHONE</b>	<b>ORGANIZATION</b>	<b>TRANSPORTATION COMMITTEE</b>
Myra Reece	<a href="mailto:reecemc@dhec.sc.gov">reecemc@dhec.sc.gov</a> (803) 898-4102	SCDHEC, Bureau of Air Quality	
Alissa Ritzo	<a href="mailto:aritzo@spatsmpo.org">aritzo@spatsmpo.org</a> (864) 596-3457	Spartanburg County	✓
Shelley Robbins	<a href="mailto:srobbins@upstateforever.org">srobbins@upstateforever.org</a> 864-327-0090	Upstate Forever-Spartanburg	
Nelson Roberts	<a href="mailto:ROBERTLN@dhec.sc.gov">ROBERTLN@dhec.sc.gov</a> (803) 898-4122	SCDHEC, Bureau of Air Quality	
Nathalie Schmidt	<a href="mailto:nathalies@co.pickens.sc.us">nathalies@co.pickens.sc.us</a> (864) 898-5953	Pickens County	✓
Renee Shealy	<a href="mailto:Shealyrg@dhec.sc.gov">Shealyrg@dhec.sc.gov</a> (803) 898-4299	SCDHEC, Bureau of Air Quality	
Greg Smith	<a href="mailto:gdsmith@andersoncountysc.org">gdsmith@andersoncountysc.org</a> (864) 260-1001	Anderson County	
Mike Sullivan	<a href="mailto:sullivanjm@scdot.org">sullivanjm@scdot.org</a>	SCDOT	
Eric Thompson	<a href="mailto:Ericarol66@yahoo.com">Ericarol66@yahoo.com</a> (864) 454-0855	Sierra Club	
Angela Viney	<a href="mailto:aviney@upstateforever.org">aviney@upstateforever.org</a> (864) 327.0090 ext 105	Upstate Forever-Spartanburg	
Tiffany Wedmore	<a href="mailto:twedmore@greenvillecounty.org">twedmore@greenvillecounty.org</a> (864) 467-7273	GPATS/ Greenville County	✓
Bill West	<a href="mailto:bwest@andersoncountysc.org">bwest@andersoncountysc.org</a> (864) 260-4043	Anderson County, Planning	
Ben Williams	<a href="mailto:Ben.Williams@Milliken.com">Ben.Williams@Milliken.com</a> (864) 503-1757	Milliken	
Sandra Yudice	<a href="mailto:Syudice@greenvillecounty.org">Syudice@greenvillecounty.org</a> (864) 467-7409	Greenville County	✓

#### References

- Duke Energy. (2011). Lee Steam Station. Retrieve June 20, 2011, from <http://www.duke-energy.com/power-plants/coal-fired/lee.asp>
- Schwartz, J. (2006). EPA Rule is Making Ozone Smog Worse. *Environment & Climate News*, 9(4), 12-13. Retrieved August 9, 2011, from [http://www.aei.org/docLib/20060504\\_EC�May06.pdf](http://www.aei.org/docLib/20060504_EC�May06.pdf)
- South Carolina Department of Health and Environmental Control, Bureau of Air Quality. (2010). Emissions Upstate All Sectors NOx SOx VOC.
- South Carolina Department of Health and Environmental Control, Bureau of Air Quality. (2011). State of South Carolina: Network Description and Ambient Air Network Monitoring Plan, Calendar Year 2012 (DRAFT Plan).
- U.S. Environmental Protection Agency. (2006). December 2006 Early Action Progress Report. Retrieved June 20, 2011, from [http://www.epa.gov/ttnnaaqs/ozone/eac/pr061231\\_eac\\_sc\\_appalachian.pdf](http://www.epa.gov/ttnnaaqs/ozone/eac/pr061231_eac_sc_appalachian.pdf)