**County-level Summer Day Emissions during Attainment Year 2014 and Maintenance Year 2030 in the 15 Atlanta Ozone Nonattainment Counties**

The Georgia Environmental Protection Division (GA EPD) has prepared the 2014 and 2030 summer day emissions inventory of Nitrogen Oxides (NOX) and Volatile Organic Compounds (VOCs) for the following 15 Atlanta ozone nonattainment counties: Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, and Rockdale. These emissions are summarized by county and major source categories in Tables 1-4. Table 5 shows emission summary for both annual and summer day emissions by source categories. These data are also illustrated in Figures 1-2.

Emissions from mobile onroad sources provided by Atlanta Regional Commission (ARC) are total emissions by two county groups (13-county group and 2-county group) as mentioned in the narrative. To get emissions by county, MOVES was run using the “Custom Domain” option with the same inputs as used in ARC MOVES modeling. Detailed calculations are located in Appendix folder A11. The details are described below:

1. Two MOVES runs per year analyzed
2. One of 2 MOVES runs for a 13 county domain in County Scale, Custom Domain Region, 13 county domain defined as “13 zones”
3. Generic county (“99001”) to represent this region, it is just a “name”, no automatic access to the MOVES default database by going this.
4. One of 2 MOVES runs for a 2 county domain (“2 zones”) in County Scale, Custom Domain.
5. Same assignment of Generic county as in item 3.
6. Sum of activity placed in these two domains
   1. Sourcetype population
   2. VMT (total annual and total by roadtype to produce roadtype distribution)
   3. Starts (starts per day, totaled)
   4. Hoteling (MOVES defaults, based on total VMT provided in item b)
7. Other inputs are same throughout each region, defines why there are two domains, not one
   1. I/M Programs (13 county zone has a program, 2 county zone does not)
   2. Average Speed Distribution
   3. Ramp Fraction
   4. Fuel characteristics (in 2014 they don’t differ by region, but in future they do)
   5. Meteorology (can be varied if large differences within domain)
8. Additional tables or expanded tables:
   1. Zone looks at “off network” activity like parking, starts, and combination truck extended idling “hoteling”
      1. Since off network, VMT not important, allocation based on relative vehicle population between zones
      2. For idling, best to just look at long haul combination truck population
      3. If have local startsperday data can allocate based on this data instead of sourcetype population.
   2. Zoneroadtype looks at just activity on the road, so VMT important
      1. Based on analysis of total VMT in each zone and how it is split up in each zone by roadtype
      2. Then determine (multiply the two values above for each zone) total VMT in each zone by roadtype
   3. ZoneMonthHour: Meteorology does not vary by zone in domain, but still have to repeat same meteorology for each zone as in Atlanta
   4. Startsperday: Also part of the regular county input tables, instead of allocation can provide specific starts by zone/county if data available
      1. If no startsperday, allocates in zone table from MOVES defaults
      2. In this case, had local starts data, still completed zone table

**Table 1. Annual 2014 and 2030 NOX emissions by county and source category (tons)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **County** | **FIPS** | **Point-EGU** | | **Point-nonEGU** | | **Nonpoint** | | **Onroad** | | **Nonroad** | | **Fires** | | **Total** | |
|  |  | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** |
| **Bartow** | 13015 | 7,062 | 7,240 | 196 | 196 | 124 | 125 | 3,774 | 995 | 908 | 441 | 29 | 29 | 12,092 | 9,025 |
| **Cherokee** | 13057 | 0 | 0 | 101 | 101 | 266 | 268 | 1,421 | 343 | 823 | 429 | 14 | 14 | 2,624 | 1,155 |
| **Clayton** | 13063 | 0 | 0 | 104 | 104 | 279 | 283 | 2,869 | 610 | 5,842 | 6,748 | 1 | 1 | 9,095 | 7,746 |
| **Cobb** | 13067 | 506 | 598 | 273 | 273 | 1,073 | 1,089 | 8,972 | 1,877 | 2,838 | 1,575 | 0 | 0 | 13,663 | 5,412 |
| **Coweta** | 13077 | 1,243 | 1,182 | 29 | 29 | 157 | 158 | 757 | 187 | 600 | 294 | 45 | 45 | 2,831 | 1,895 |
| **DeKalb** | 13089 | 0 | 0 | 125 | 125 | 954 | 968 | 8,837 | 1,804 | 2,175 | 1,258 | 3 | 3 | 12,095 | 4,158 |
| **Douglas** | 13097 | 0 | 0 | 0 | 0 | 148 | 150 | 1,627 | 343 | 370 | 178 | 0 | 0 | 2,144 | 671 |
| **Fayette** | 13113 | 0 | 0 | 8 | 8 | 149 | 151 | 827 | 169 | 477 | 238 | 4 | 4 | 1,465 | 569 |
| **Forsyth** | 13117 | 0 | 0 | 52 | 52 | 206 | 208 | 975 | 251 | 703 | 395 | 0 | 0 | 1,937 | 907 |
| **Fulton** | 13121 | 0 | 0 | 491 | 491 | 1,571 | 1,610 | 14,649 | 3,034 | 4,543 | 2,353 | 5 | 5 | 21,258 | 7,494 |
| **Gwinnett** | 13135 | 0 | 0 | 0 | 0 | 1,027 | 1,043 | 8,270 | 1,888 | 3,378 | 1,871 | 0 | 0 | 12,675 | 4,803 |
| **Henry** | 13151 | 0 | 0 | 1,628 | 1,628 | 204 | 207 | 1,488 | 361 | 992 | 452 | 4 | 4 | 4,317 | 2,651 |
| **Newton** | 13217 | 0 | 0 | 31 | 31 | 97 | 98 | 2,317 | 646 | 407 | 193 | 17 | 17 | 2,871 | 985 |
| **Paulding** | 13223 | 0 | 0 | 0 | 0 | 137 | 138 | 549 | 132 | 555 | 254 | 9 | 9 | 1,250 | 533 |
| **Rockdale** | 13247 | 0 | 0 | 56 | 56 | 106 | 107 | 850 | 198 | 290 | 150 | 0 | 0 | 1,301 | 511 |
|  | **Total** | 8,812 | 9,020 | 3,093 | 3,093 | 6,498 | 6,603 | 58,182 | 12,837 | 24,901 | 16,829 | 132 | 132 | 101,618 | 48,514 |

**Table 2. Annual 2014 and 2030 VOC emissions by county and source category (tons)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **County** | **FIPS** | **Point-EGU** | | **Point-nonEGU** | | **Nonpoint** | | **Onroad** | | **Nonroad** | | **Fires** | | **Total** | |
|  |  | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** |
| **Bartow** | 13015 | 195 | 199 | 151 | 151 | 1,341 | 1,197 | 1,360 | 520 | 456 | 303 | 59 | 59 | 3,561 | 2,428 |
| **Cherokee** | 13057 | 0 | 0 | 38 | 38 | 1,778 | 1,722 | 884 | 423 | 884 | 721 | 29 | 29 | 3,612 | 2,932 |
| **Clayton** | 13063 | 0 | 0 | 213 | 213 | 2,413 | 2,346 | 1,307 | 487 | 1,097 | 1,283 | 2 | 2 | 5,032 | 4,331 |
| **Cobb** | 13067 | 125 | 147 | 367 | 367 | 6,532 | 6,272 | 4,267 | 1,578 | 2,772 | 2,682 | 0 | 0 | 14,063 | 11,045 |
| **Coweta** | 13077 | 10 | 6 | 80 | 80 | 1,263 | 1,220 | 501 | 243 | 320 | 312 | 91 | 91 | 2,266 | 1,953 |
| **DeKalb** | 13089 | 0 | 0 | 1,277 | 1,277 | 6,679 | 6,331 | 3,778 | 1,361 | 2,389 | 2,354 | 7 | 7 | 14,129 | 11,330 |
| **Douglas** | 13097 | 0 | 0 | 0 | 0 | 1,459 | 1,424 | 722 | 287 | 167 | 158 | 1 | 1 | 2,349 | 1,870 |
| **Fayette** | 13113 | 0 | 0 | 70 | 70 | 974 | 945 | 515 | 197 | 260 | 252 | 7 | 7 | 1,826 | 1,472 |
| **Forsyth** | 13117 | 0 | 0 | 205 | 205 | 1,491 | 1,445 | 707 | 396 | 726 | 622 | 0 | 0 | 3,129 | 2,668 |
| **Fulton** | 13121 | 0 | 0 | 268 | 268 | 9,231 | 8,767 | 7,012 | 2,703 | 2,893 | 2,477 | 10 | 10 | 19,415 | 14,225 |
| **Gwinnett** | 13135 | 0 | 0 | 80 | 80 | 7,457 | 7,185 | 4,136 | 1,756 | 3,125 | 3,333 | 1 | 1 | 14,799 | 12,354 |
| **Henry** | 13151 | 0 | 0 | 439 | 439 | 1,613 | 1,560 | 853 | 398 | 470 | 383 | 8 | 8 | 3,382 | 2,788 |
| **Newton** | 13217 | 0 | 0 | 401 | 401 | 1,022 | 941 | 1,025 | 412 | 176 | 150 | 35 | 35 | 2,658 | 1,938 |
| **Paulding** | 13223 | 0 | 0 | 0 | 0 | 1,072 | 1,043 | 440 | 215 | 196 | 181 | 20 | 20 | 1,728 | 1,458 |
| **Rockdale** | 13247 | 0 | 0 | 174 | 174 | 790 | 766 | 437 | 180 | 182 | 176 | 0 | 0 | 1,583 | 1,296 |
|  | **Total** | 329 | 353 | 3,762 | 3,762 | 45,115 | 43,165 | 27,945 | 11,154 | 16,112 | 15,387 | 269 | 269 | 93,532 | 74,089 |

**Table 3. Summer day 2014 and 2030 NOX emissions by county and source category (tons)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **County** | **FIPS** | **Point-EGU** | | **Point-nonEGU** | | **Nonpoint** | | **Onroad** | | **Nonroad** | | **Fires** | | **Total** | |
|  |  | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** |
| **Bartow** | 13015 | 16.75 | 17.17 | 0.51 | 0.51 | 0.16 | 0.17 | 11.03 | 2.91 | 2.67 | 1.28 | 0.00 | 0.00 | 31.13 | 22.03 |
| **Cherokee** | 13057 | 0.00 | 0.00 | 0.27 | 0.27 | 0.14 | 0.14 | 4.15 | 1.00 | 2.72 | 1.39 | 0.00 | 0.00 | 7.28 | 2.81 |
| **Clayton** | 13063 | 0.00 | 0.00 | 0.28 | 0.28 | 0.19 | 0.20 | 8.39 | 1.78 | 15.73 | 17.78 | 0.00 | 0.00 | 24.59 | 20.04 |
| **Cobb** | 13067 | 1.41 | 1.66 | 0.73 | 0.73 | 0.73 | 0.75 | 26.23 | 5.49 | 9.05 | 5.05 | 0.00 | 0.00 | 38.16 | 13.69 |
| **Coweta** | 13077 | 4.93 | 3.24 | 0.08 | 0.08 | 0.13 | 0.13 | 2.21 | 0.55 | 1.88 | 0.92 | 0.01 | 0.01 | 9.24 | 4.93 |
| **DeKalb** | 13089 | 0.00 | 0.00 | 0.33 | 0.33 | 0.67 | 0.69 | 25.84 | 5.27 | 7.08 | 4.10 | 0.00 | 0.00 | 33.93 | 10.39 |
| **Douglas** | 13097 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.09 | 4.76 | 1.00 | 1.17 | 0.56 | 0.00 | 0.00 | 6.02 | 1.66 |
| **Fayette** | 13113 | 0.00 | 0.00 | 0.02 | 0.02 | 0.10 | 0.10 | 2.42 | 0.50 | 1.53 | 0.75 | 0.00 | 0.00 | 4.07 | 1.37 |
| **Forsyth** | 13117 | 0.00 | 0.00 | 0.14 | 0.14 | 0.12 | 0.13 | 2.85 | 0.73 | 2.30 | 1.27 | 0.00 | 0.00 | 5.41 | 2.27 |
| **Fulton** | 13121 | 0.00 | 0.00 | 1.30 | 1.30 | 1.41 | 1.47 | 42.83 | 8.87 | 14.18 | 7.23 | 0.00 | 0.00 | 59.73 | 18.88 |
| **Gwinnett** | 13135 | 0.00 | 0.00 | 0.00 | 0.00 | 0.72 | 0.74 | 24.18 | 5.52 | 11.25 | 6.27 | 0.00 | 0.00 | 36.16 | 12.53 |
| **Henry** | 13151 | 0.00 | 0.00 | 4.37 | 4.37 | 0.13 | 0.13 | 4.35 | 1.05 | 3.14 | 1.42 | 0.00 | 0.00 | 12.00 | 6.98 |
| **Newton** | 13217 | 0.00 | 0.00 | 0.08 | 0.08 | 0.10 | 0.10 | 6.78 | 1.89 | 1.33 | 0.61 | 0.00 | 0.00 | 8.28 | 2.69 |
| **Paulding** | 13223 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.08 | 1.60 | 0.39 | 1.70 | 0.77 | 0.00 | 0.00 | 3.39 | 1.24 |
| **Rockdale** | 13247 | 0.00 | 0.00 | 0.15 | 0.15 | 0.10 | 0.10 | 2.49 | 0.58 | 0.94 | 0.48 | 0.00 | 0.00 | 3.67 | 1.31 |
|  | **Total** | 23.09 | 22.07 | 8.27 | 8.27 | 4.87 | 5.05 | 170.12 | 37.54 | 76.69 | 49.89 | 0.01 | 0.01 | 283.06 | 122.83 |

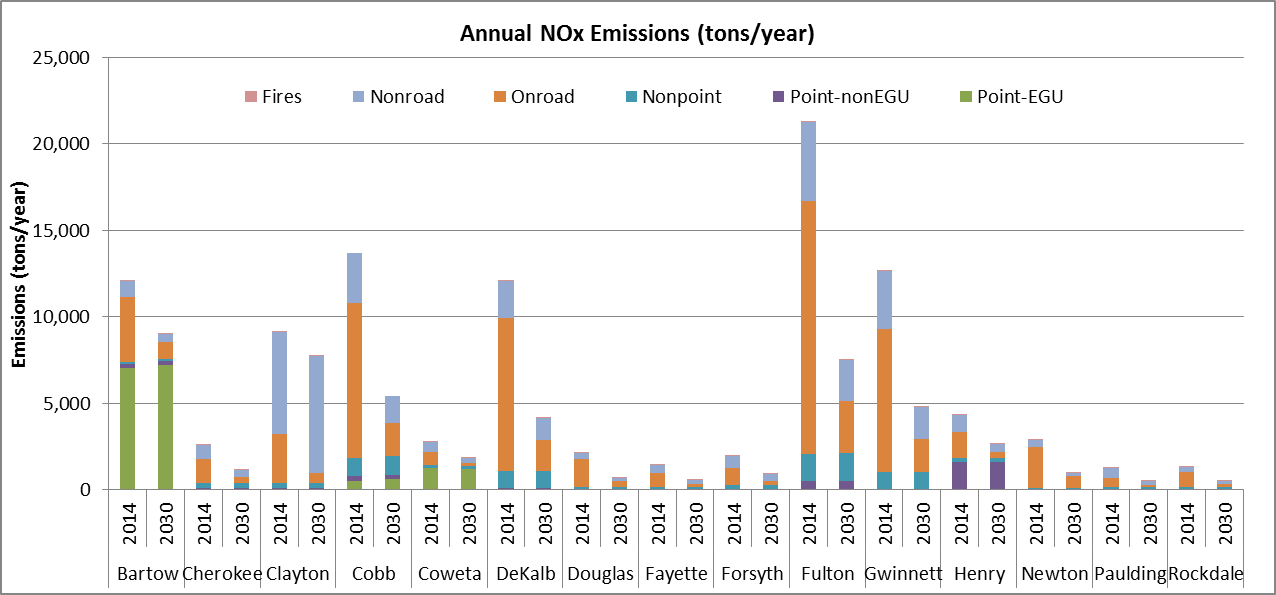
**Table 4. Summer day 2014 and 2030 VOC emissions by county and source category (tons)**

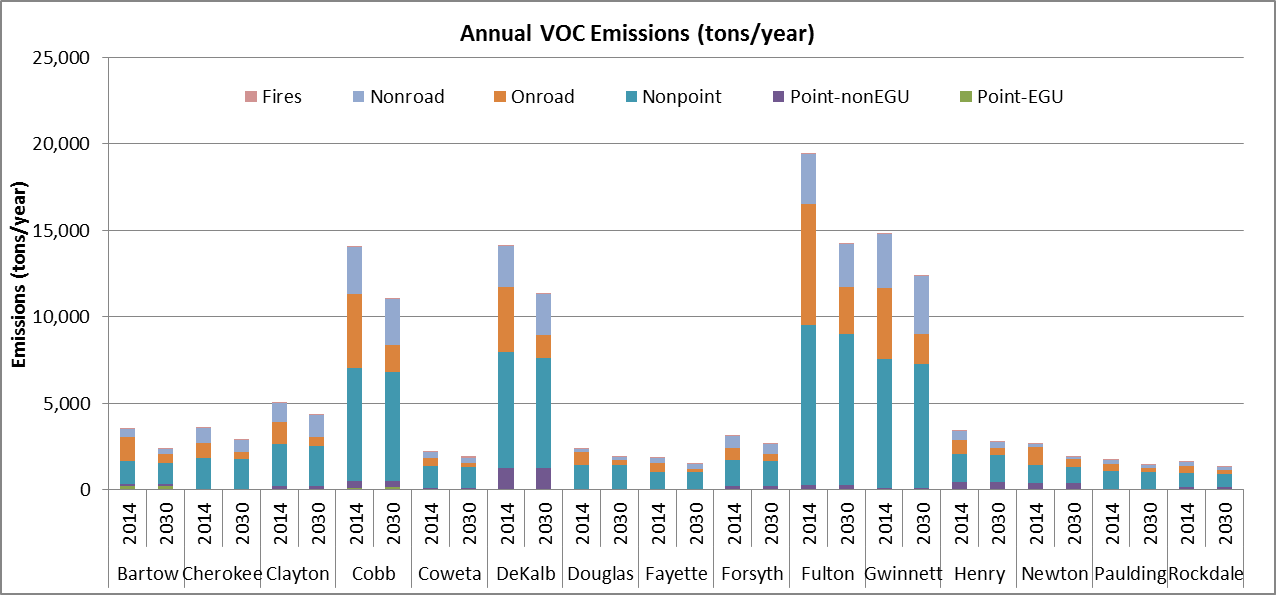
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **County** | **FIPS** | **Point-EGU** | | **Point-nonEGU** | | **Nonpoint** | | **Onroad** | | **Nonroad** | | **Fires** | | **Total** | |
|  |  | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** | **2014** | **2030** |
| **Bartow** | 13015 | 0.69 | 0.70 | 0.41 | 0.41 | 3.53 | 3.15 | 3.98 | 1.52 | 1.37 | 0.95 | 0.00 | 0.00 | 9.97 | 6.73 |
| **Cherokee** | 13057 | 0.00 | 0.00 | 0.10 | 0.10 | 4.69 | 4.53 | 2.58 | 1.24 | 2.84 | 2.43 | 0.00 | 0.00 | 10.21 | 8.29 |
| **Clayton** | 13063 | 0.00 | 0.00 | 0.59 | 0.59 | 6.42 | 6.24 | 3.82 | 1.42 | 3.12 | 3.60 | 0.00 | 0.00 | 13.95 | 11.86 |
| **Cobb** | 13067 | 0.37 | 0.43 | 0.99 | 0.99 | 17.42 | 16.66 | 12.48 | 4.61 | 9.40 | 9.34 | 0.00 | 0.00 | 40.64 | 32.03 |
| **Coweta** | 13077 | 0.05 | 0.02 | 0.22 | 0.22 | 3.31 | 3.19 | 1.47 | 0.71 | 1.09 | 1.11 | 0.02 | 0.02 | 6.15 | 5.26 |
| **DeKalb** | 13089 | 0.00 | 0.00 | 3.43 | 3.43 | 17.79 | 16.81 | 11.05 | 3.98 | 8.13 | 8.21 | 0.00 | 0.00 | 40.40 | 32.43 |
| **Douglas** | 13097 | 0.00 | 0.00 | 0.00 | 0.00 | 3.89 | 3.79 | 2.11 | 0.84 | 0.55 | 0.53 | 0.00 | 0.00 | 6.55 | 5.16 |
| **Fayette** | 13113 | 0.00 | 0.00 | 0.19 | 0.19 | 2.59 | 2.51 | 1.51 | 0.57 | 0.87 | 0.87 | 0.00 | 0.00 | 5.15 | 4.14 |
| **Forsyth** | 13117 | 0.00 | 0.00 | 0.55 | 0.55 | 3.98 | 3.84 | 2.07 | 1.16 | 2.36 | 2.18 | 0.00 | 0.00 | 8.96 | 7.73 |
| **Fulton** | 13121 | 0.00 | 0.00 | 0.72 | 0.72 | 24.41 | 23.16 | 20.50 | 7.90 | 9.24 | 8.09 | 0.00 | 0.00 | 54.87 | 39.87 |
| **Gwinnett** | 13135 | 0.00 | 0.00 | 0.21 | 0.21 | 19.97 | 19.16 | 12.09 | 5.13 | 11.07 | 11.99 | 0.00 | 0.00 | 43.35 | 36.50 |
| **Henry** | 13151 | 0.00 | 0.00 | 1.18 | 1.18 | 4.28 | 4.14 | 2.49 | 1.17 | 1.51 | 1.26 | 0.00 | 0.00 | 9.46 | 7.75 |
| **Newton** | 13217 | 0.00 | 0.00 | 1.08 | 1.08 | 2.68 | 2.46 | 3.00 | 1.20 | 0.57 | 0.50 | 0.00 | 0.00 | 7.33 | 5.26 |
| **Paulding** | 13223 | 0.00 | 0.00 | 0.00 | 0.00 | 2.81 | 2.73 | 1.29 | 0.63 | 0.65 | 0.61 | 0.00 | 0.00 | 4.74 | 3.97 |
| **Rockdale** | 13247 | 0.00 | 0.00 | 0.47 | 0.47 | 2.10 | 2.03 | 1.28 | 0.53 | 0.61 | 0.61 | 0.00 | 0.00 | 4.46 | 3.64 |
|  | **Total** | 1.10 | 1.16 | 10.13 | 10.13 | 119.86 | 114.39 | 81.71 | 32.62 | 53.38 | 52.28 | 0.02 | 0.02 | 266.20 | 210.59 |

**Table 5. Emissions summary for the Atlanta 15 county area**

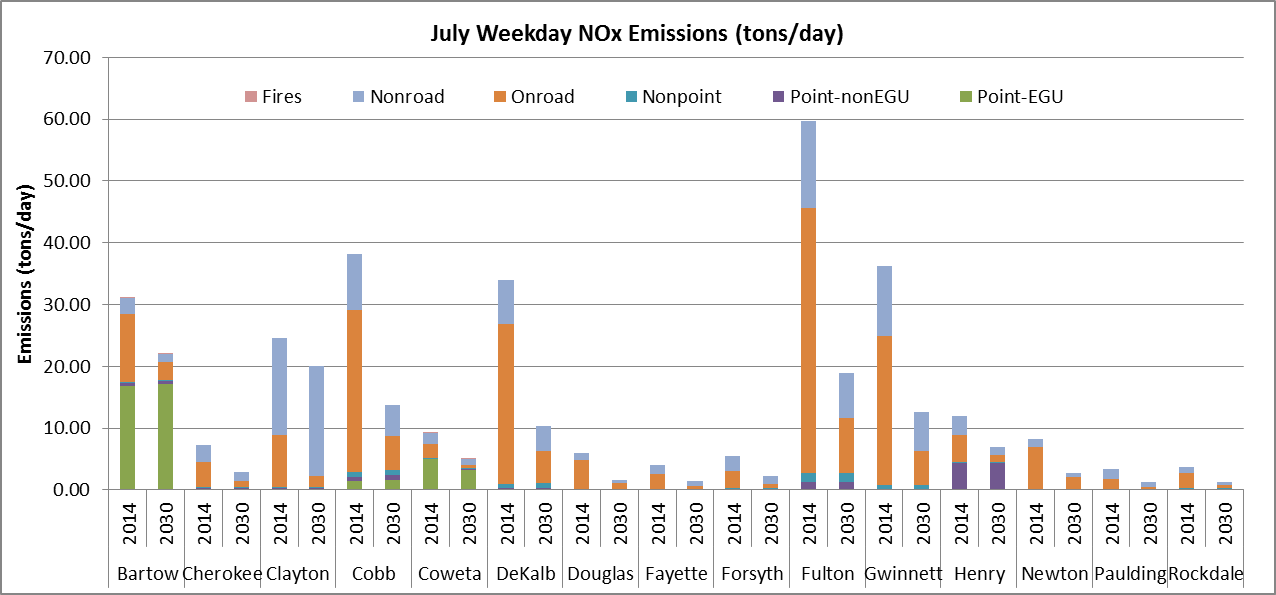
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Annual (tons/year)** | | | | **Summary day (tons/day)** | | | |
|  | **2014** | | **2030** | | **2014** | | **2030** | |
| **Source** | **NOx** | **VOC** | **NOx** | **VOC** | **NOx** | **VOC** | **NOx** | **VOC** |
| Point - EGU | 8,812 | 329 | 9,020 | 353 | 23.09 | 1.11 | 22.07 | 1.15 |
| Point - non-EGU | 3,093 | 3,762 | 3,093 | 3,762 | 8.27 | 10.13 | 8.27 | 10.13 |
| Nonpoint | 6,498 | 45,115 | 6,603 | 43,165 | 4.87 | 119.86 | 5.05 | 114.39 |
| Onroad\* | 58,182 | 27,945 | 12,837 | 11,154 | 170.15 | 81.76 | 37.57 | 32.67 |
| Nonroad | 24,901 | 16,112 | 16,829 | 15,387 | 76.69 | 53.38 | 49.89 | 52.28 |
| Fires | 132 | 269 | 132 | 269 | 0.01 | 0.02 | 0.01 | 0.02 |
| Total | 101,618 | 93,532 | 48,514 | 74,089 | 283.09 | 266.25 | 122.86 | 210.64 |
| Total w/o onroad | 43,436 | 65,587 | 35,677 | 62,936 | 112.93 | 184.49 | 85.29 | 177.97 |

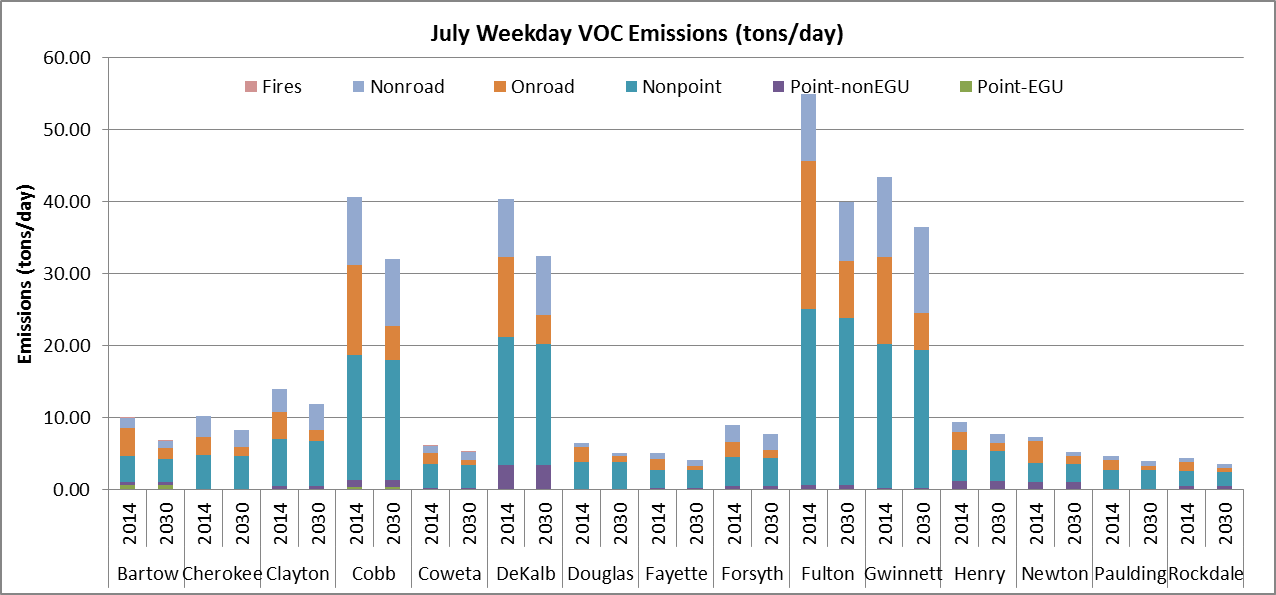
\* Includes 0.03 tons/day NOx and 0.05 tons/day VOC emissions in addition to the original summer day emission estimates to account for Senior I/M exemption for on-road sources (off model calculation)





**Figure 1. Annual 2014 and 2030 NOX (top) and VOC (bottom) emissions by county and source category**





**Figure 2. July Weekday 2014 and 2030 NOX (top) and VOC (bottom) emissions by county and source category**

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