

Suggestions for Querying the Appendix C Excel Data File

Data are provided in a flat-file format for all states for each year from 2000 through 2022 and by well-size class (Figure 1). The *Filter* tool in Excel is one of the fastest methods for viewing a subset of the data. For example, the filters in Figure 2 are set to select only Alaska (AK) and the year 2000. In Figure 3, the filters are set to select Alaska totals for all years and to sort chronologically.

Figure 1. Example of data provided in flat-file format with filter tool added

| State | Year | Production rate bracket (barrel of oil equivalent per day) | Class num | Oil wells | | | | | | | Natural gas wells | | | |
|-------|------|--|-----------|---------------------|---|--|---|--|---|--|-----------------------------|---|---|---|
| | | | | Number of oil wells | Oil wells: percentage of oil production | Oil wells: annual oil production (million barrels) | Oil wells: percentage of oil production | Oil wells: oil rate per Well (barrels per day) | Oil wells: annual gas production (billion cubic feet) | Oil wells: natural gas rate per well (thousand cubic feet per day) | Number of natural gas wells | Natural gas wells: percentage of natural gas production | Natural gas wells: annual gas production (billion cubic feet) | Natural gas wells: percentage of natural gas production |
| AK | 2022 | A_ 0-1 | 1 | 24 | 1.35 | 0.003 | 0 | 0.464 | 0.002 | 0.322 | 27 | 4.86 | 0.006 | 0 |
| AK | 2022 | B_ 1-2 | 2 | 7 | 0.39 | 0.001 | 0 | 1.134 | 0.002 | 1.893 | 14 | 2.52 | 0.029 | 0.01 |
| AK | 2022 | C_ 2-4 | 3 | 14 | 0.79 | 0.01 | 0.01 | 2.551 | 0.009 | 2.279 | 16 | 2.88 | 0.059 | 0.03 |
| AK | 2022 | D_ 4-6 | 4 | 12 | 0.67 | 0.014 | 0.01 | 4.172 | 0.017 | 5.228 | 7 | 1.26 | 0.041 | 0.02 |
| AK | 2022 | E_ 6-8 | 5 | 21 | 1.18 | 0.035 | 0.02 | 5.288 | 0.061 | 9.34 | 7 | 1.26 | 0.042 | 0.02 |
| AK | 2022 | F_ 8-10 | 6 | 9 | 0.51 | 0.018 | 0.01 | 7.407 | 0.019 | 7.938 | 7 | 1.26 | 0.048 | 0.02 |
| AK | 2022 | G_ Subtotal <=10 | 6.5 | 87 | 4.88 | 0.08 | 0.06 | 3.442 | 0.111 | 4.742 | 78 | 14.03 | 0.225 | 0.1 |
| AK | 2022 | H_ 10-12 | 7 | 17 | 0.95 | 0.056 | 0.04 | 9.632 | 0.045 | 7.747 | 4 | 0.72 | 0.073 | 0.03 |
| AK | 2022 | I_ 12-15 | 8 | 20 | 1.12 | 0.068 | 0.05 | 10.947 | 0.096 | 15.622 | 4 | 0.72 | 0.049 | 0.02 |
| AK | 2022 | J_ Subtotal <=15 | 8.5 | 124 | 6.96 | 0.204 | 0.14 | 5.769 | 0.252 | 7.138 | 86 | 15.47 | 0.347 | 0.15 |
| AK | 2022 | K_ 15-20 | 9 | 25 | 1.4 | 0.121 | 0.09 | 14.901 | 0.135 | 16.538 | 11 | 1.98 | 0.276 | 0.12 |
| AK | 2022 | L_ 20-25 | 10 | 16 | 0.9 | 0.098 | 0.07 | 20.1 | 0.073 | 15.007 | 12 | 2.16 | 0.509 | 0.23 |
| AK | 2022 | M_ 25-30 | 11 | 31 | 1.74 | 0.231 | 0.16 | 23.129 | 0.232 | 23.227 | 5 | 0.9 | 0.158 | 0.07 |
| AK | 2022 | N_ 30-40 | 12 | 49 | 2.75 | 0.519 | 0.36 | 31.007 | 0.384 | 22.978 | 7 | 1.26 | 0.275 | 0.12 |
| AK | 2022 | O_ 40-50 | 13 | 48 | 2.7 | 0.612 | 0.43 | 39.942 | 0.404 | 26.379 | 11 | 1.98 | 0.852 | 0.38 |
| AK | 2022 | P_ 50-100 | 14 | 300 | 16.84 | 7.043 | 4.95 | 69.794 | 4.227 | 41.885 | 57 | 10.25 | 6.927 | 3.09 |
| AK | 2022 | Q_ Subtotal <=100 | 14.5 | 593 | 33.3 | 8.827 | 6.21 | 46.158 | 5.707 | 29.841 | 189 | 33.99 | 9.345 | 4.17 |
| AK | 2022 | R_ 100-200 | 15 | 466 | 26.17 | 21.516 | 15.13 | 131.97 | 12 | 73.605 | 97 | 17.45 | 21.314 | 9.52 |
| AK | 2022 | S_ 200-400 | 16 | 359 | 20.16 | 30.337 | 21.33 | 240.494 | 32.552 | 258.05 | 131 | 23.56 | 56.103 | 25.05 |
| AK | 2022 | T_ 400-800 | 17 | 252 | 14.15 | 39.249 | 27.59 | 445.102 | 63.539 | 720.555 | 90 | 16.19 | 64.087 | 28.62 |
| AK | 2022 | U_ 800-1,600 | 18 | 88 | 4.94 | 24.257 | 17.05 | 806.171 | 39.816 | 1323.273 | 46 | 8.27 | 63.998 | 28.58 |
| AK | 2022 | V_ 1,600-3,200 | 19 | 16 | 0.9 | 9.139 | 6.43 | 1735.552 | 6.027 | 1144.549 | 2 | 0.36 | 7.332 | 3.27 |

Data source: U.S. Energy Information Administration

Figure 2. Example of data with filters set to select Alaska (AK) and the year 2000

| State | Year | Production rate bracket (barrel of oil equivalent per day) | Class num | Oil wells | | | | | | | Natural gas wells | | | |
|-------|------|--|-----------|---------------------|---|--|---|--|---|--|-----------------------------|---|---|---|
| | | | | Number of oil wells | Oil wells: percentage of oil production | Oil wells: annual oil production (million barrels) | Oil wells: percentage of oil production | Oil wells: oil rate per Well (barrels per day) | Oil wells: annual gas production (billion cubic feet) | Oil wells: natural gas rate per well (thousand cubic feet per day) | Number of natural gas wells | Natural gas wells: percentage of natural gas production | Natural gas wells: annual gas production (billion cubic feet) | Natural gas wells: percentage of natural gas production |
| AK | 2000 | A_ 0-1 | 1 | 13 | 0.64 | 0.001 | 0 | 0.318 | 0.001 | 0.193 | 9 | 5.66 | 0.002 | 0 |
| AK | 2000 | B_ 1-2 | 2 | 6 | 0.29 | 0.003 | 0 | 1.381 | 0.001 | 0.615 | 0 | 0 | 0 | 0 |
| AK | 2000 | C_ 2-4 | 3 | 9 | 0.44 | 0.007 | 0 | 2.496 | 0.007 | 2.371 | 3 | 1.89 | 0.021 | 0.01 |
| AK | 2000 | D_ 4-6 | 4 | 11 | 0.54 | 0.013 | 0 | 4.027 | 0.02 | 6.115 | 2 | 1.26 | 0.006 | 0 |
| AK | 2000 | E_ 6-8 | 5 | 8 | 0.39 | 0.011 | 0 | 6.091 | 0.011 | 6.015 | 1 | 0.63 | 0.014 | 0.01 |
| AK | 2000 | F_ 8-10 | 6 | 6 | 0.29 | 0.019 | 0.01 | 8.575 | 0.008 | 3.504 | 0 | 0 | 0 | 0 |
| AK | 2000 | G_ Subtotal <=10 | 6.5 | 53 | 2.6 | 0.054 | 0.02 | 3.315 | 0.047 | 2.884 | 15 | 9.43 | 0.043 | 0.02 |
| AK | 2000 | H_ 10-12 | 7 | 4 | 0.2 | 0.015 | 0 | 10.228 | 0.009 | 6.478 | 1 | 0.63 | 0.017 | 0.01 |
| AK | 2000 | I_ 12-15 | 8 | 6 | 0.29 | 0.019 | 0.01 | 11.515 | 0.018 | 11.093 | 3 | 1.89 | 0.066 | 0.03 |
| AK | 2000 | J_ Subtotal <=15 | 8.5 | 63 | 3.09 | 0.088 | 0.02 | 4.514 | 0.075 | 3.834 | 19 | 11.95 | 0.126 | 0.06 |
| AK | 2000 | K_ 15-20 | 9 | 13 | 0.64 | 0.071 | 0.02 | 15.521 | 0.051 | 11.168 | 2 | 1.26 | 0.041 | 0.02 |
| AK | 2000 | L_ 20-25 | 10 | 9 | 0.44 | 0.066 | 0.02 | 20.364 | 0.047 | 14.371 | 1 | 0.63 | 0.044 | 0.02 |
| AK | 2000 | M_ 25-30 | 11 | 8 | 0.39 | 0.063 | 0.02 | 23.662 | 0.057 | 21.076 | 1 | 0.63 | 0.059 | 0.03 |
| AK | 2000 | N_ 30-40 | 12 | 15 | 0.74 | 0.141 | 0.04 | 28.546 | 0.151 | 30.532 | 1 | 0.63 | 0.041 | 0.02 |
| AK | 2000 | O_ 40-50 | 13 | 24 | 1.18 | 0.329 | 0.09 | 39.184 | 0.315 | 37.587 | 4 | 2.52 | 0.334 | 0.15 |
| AK | 2000 | P_ 50-100 | 14 | 123 | 6.04 | 2.786 | 0.79 | 66.207 | 1.945 | 46.211 | 20 | 12.58 | 2.822 | 1.26 |
| AK | 2000 | Q_ Subtotal <=100 | 14.5 | 255 | 12.52 | 3.545 | 1 | 41.511 | 2.64 | 30.916 | 48 | 30.19 | 3.468 | 1.55 |
| AK | 2000 | R_ 100-200 | 15 | 264 | 12.96 | 13.114 | 3.72 | 140.506 | 6.059 | 64.915 | 19 | 11.95 | 6.166 | 2.76 |
| AK | 2000 | S_ 200-400 | 16 | 518 | 25.43 | 49.956 | 14.16 | 269.974 | 22.416 | 121.143 | 23 | 14.47 | 13.121 | 5.86 |
| AK | 2000 | T_ 400-800 | 17 | 541 | 26.56 | 97.956 | 27.76 | 511.729 | 63.027 | 329.256 | 25 | 15.72 | 27.193 | 12.15 |
| AK | 2000 | U_ 800-1,600 | 18 | 342 | 16.79 | 115.748 | 32.8 | 977.725 | 96.663 | 816.513 | 22 | 13.84 | 53.166 | 23.76 |

Data source: U.S. Energy Information Administration

Figure 3. Example of filters set to select Alaska (AK) totals for all years and to sort chronologically

| State | Year | Production rate bracket (barrel of oil equivalent per day) | Class num | Oil wells | | | | | | Natural gas wells | | | | | |
|-------|------|--|-----------|---------------------|---|--|---|--|---|--|-----------------------------|---|---|---|--|
| | | | | Number of oil wells | Oil wells: percentage of oil production | Oil wells: annual oil production (million barrels) | Oil wells: percentage of oil production | Oil wells: oil rate per Well (barrels per day) | Oil wells: annual gas production (billion cubic feet) | Oil wells: natural gas rate per well (thousand cubic feet per day) | Number of natural gas wells | Natural gas wells: percentage of production | Natural gas wells: annual gas production (billion cubic feet) | Natural gas wells: percentage of production | |
| AK | 2000 | Z_Total | 23 | 2037 | 100 | 352.913 | 100 | 497.816 | 257.305 | 362.952 | 159 | 100 | 223.775 | 100 | |
| AK | 2001 | Z_Total | 23 | 2120 | 100 | 353.218 | 100 | 482.139 | 249.414 | 340.448 | 167 | 100 | 224.171 | 100 | |
| AK | 2002 | Z_Total | 23 | 2132 | 100 | 357.891 | 100 | 484.149 | 276.276 | 373.742 | 160 | 100 | 211.828 | 100 | |
| AK | 2003 | Z_Total | 23 | 2111 | 100 | 354.442 | 100 | 481.124 | 308.392 | 418.614 | 192 | 100 | 205.537 | 100 | |
| AK | 2004 | Z_Total | 23 | 2111 | 100 | 332.159 | 100 | 449.91 | 312.884 | 423.802 | 178 | 100 | 204.822 | 100 | |
| AK | 2005 | Z_Total | 23 | 2092 | 100 | 313.743 | 100 | 424.479 | 304.044 | 411.355 | 216 | 100 | 217.303 | 100 | |
| AK | 2006 | Z_Total | 23 | 2032 | 100 | 267.8 | 100 | 372.892 | 279.559 | 389.265 | 236 | 100 | 218.746 | 100 | |
| AK | 2007 | Z_Total | 23 | 1943 | 100 | 256.92 | 100 | 374.91 | 317.211 | 462.889 | 294 | 100 | 217.971 | 100 | |
| AK | 2008 | Z_Total | 23 | 2047 | 100 | 247.946 | 100 | 341.835 | 275.319 | 379.575 | 244 | 100 | 161.242 | 100 | |
| AK | 2009 | Z_Total | 23 | 2064 | 100 | 233.693 | 100 | 320.376 | 280.25 | 384.202 | 253 | 100 | 147.972 | 100 | |
| AK | 2010 | Z_Total | 23 | 2055 | 100 | 217.653 | 100 | 300.4 | 262.99 | 362.972 | 236 | 100 | 131.308 | 100 | |
| AK | 2011 | Z_Total | 23 | 2042 | 100 | 203.227 | 100 | 281.843 | 244.649 | 339.289 | 247 | 100 | 124.448 | 100 | |
| AK | 2012 | Z_Total | 23 | 1985 | 100 | 190.723 | 100 | 272.126 | 245.876 | 350.82 | 257 | 100 | 120.84 | 100 | |
| AK | 2013 | Z_Total | 23 | 1996 | 100 | 184.439 | 100 | 264.965 | 235.138 | 337.799 | 293 | 100 | 118.683 | 100 | |
| AK | 2014 | Z_Total | 23 | 2066 | 100 | 178.648 | 100 | 246.035 | 243.981 | 336.012 | 300 | 100 | 124.671 | 100 | |
| AK | 2015 | Z_Total | 23 | 2112 | 100 | 173.09 | 100 | 233.999 | 240.5 | 325.13 | 311 | 100 | 121.619 | 100 | |
| AK | 2016 | Z_Total | 23 | 2104 | 100 | 174.929 | 100 | 235.498 | 234.425 | 315.595 | 325 | 100 | 122.416 | 100 | |
| AK | 2017 | Z_Total | 23 | 2071 | 100 | 174.202 | 100 | 239.162 | 229.456 | 315.02 | 351 | 100 | 139.696 | 100 | |

Data source: U.S. Energy Information Administration

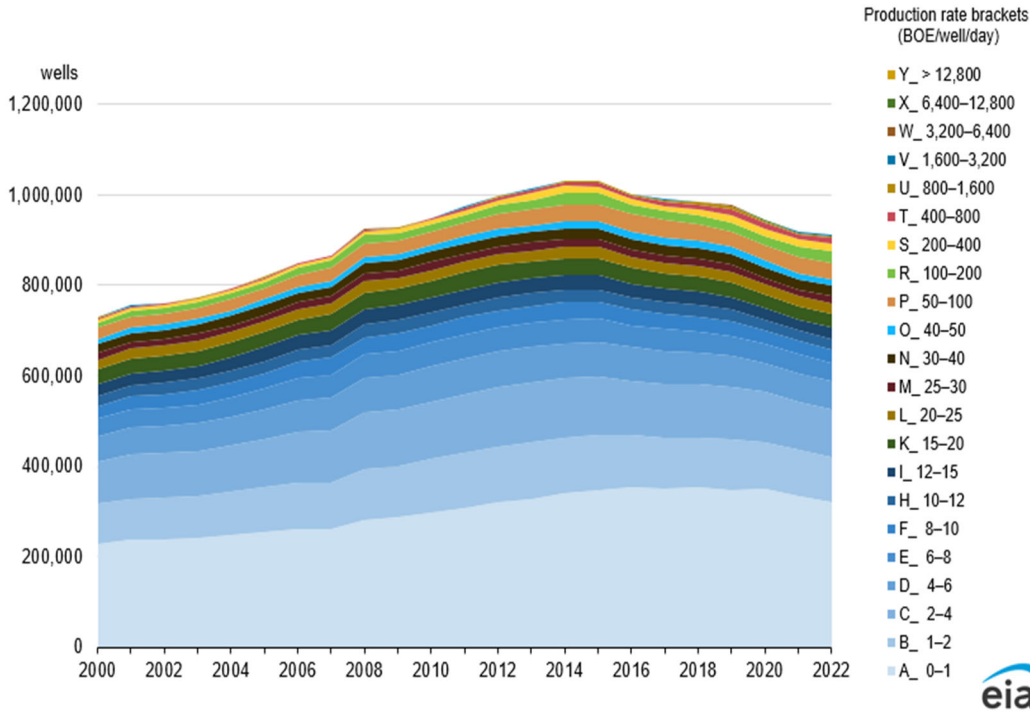
We also set up a pivot table to help organize the data to make charts. In [Figure 4](#), the United States is selected in cell B1, and the subtotal rows have been deselected in cell A4, and *Total number of wells* is selected in the *PivotTable Fields* pane. [Figure 5](#) shows a chart of the data in [Figure 4](#).

Figure 4. Example of a pivot table to help organize data to make charts

| State | US | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|
| Sum of Total number of wells | Column Labels | | | | | | | | | | | | | | | | | | | | | | | |
| Row Labels | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Grand Total |
| A_0-1 | 229455 | 239116 | 238901 | 241355 | 248094 | 254926 | 262276 | 260956 | 281907 | 287597 | 299529 | 309368 | 320918 | 328655 | 341549 | 349128 | 354898 | 349845 | 352825 | 348714 | 349822 | 335610 | 321799 | 6907243 |
| B_1-2 | 86988 | 90137 | 91413 | 92349 | 94559 | 97776 | 101422 | 103419 | 112113 | 112770 | 116627 | 119676 | 122275 | 123586 | 122007 | 120659 | 113816 | 113032 | 110858 | 110698 | 104812 | 101388 | 99161 | 2461541 |
| C_2-4 | 94507 | 98360 | 99441 | 101177 | 103379 | 107230 | 112605 | 115628 | 123869 | 125568 | 126558 | 130161 | 132209 | 132540 | 130569 | 129022 | 121377 | 120646 | 118524 | 117085 | 110135 | 106881 | 105576 | 2663047 |
| D_4-6 | 55609 | 57723 | 58911 | 60206 | 62510 | 65671 | 69351 | 72172 | 76189 | 76806 | 77495 | 78662 | 78813 | 78902 | 77911 | 75900 | 73004 | 71891 | 69177 | 67724 | 63040 | 61953 | 61592 | 1591212 |
| E_6-8 | 38151 | 39814 | 40652 | 42224 | 43837 | 45296 | 48273 | 50694 | 53262 | 53146 | 53099 | 53164 | 53057 | 52678 | 52110 | 51605 | 48995 | 47493 | 46204 | 44956 | 42312 | 41033 | 40380 | 1082435 |
| F_8-10 | 29297 | 29675 | 30565 | 31783 | 32590 | 34596 | 36231 | 37717 | 38384 | 38557 | 38634 | 38906 | 38164 | 37786 | 37855 | 36938 | 35231 | 33982 | 33305 | 32325 | 30589 | 29960 | 29792 | 792562 |
| H_10-12 | 22564 | 23139 | 24228 | 25158 | 25782 | 26999 | 27873 | 28556 | 29387 | 28960 | 28908 | 29035 | 29381 | 29089 | 28581 | 28172 | 26686 | 26733 | 25768 | 25161 | 23263 | 22644 | 22990 | 690957 |
| I_12-15 | 25913 | 27709 | 27599 | 28548 | 29777 | 30509 | 31594 | 31869 | 32616 | 32381 | 32443 | 32516 | 32553 | 32410 | 32015 | 32047 | 30710 | 29753 | 29253 | 28448 | 26527 | 25901 | 25670 | 688961 |
| K_15-20 | 31626 | 32342 | 32944 | 33302 | 33909 | 34282 | 35001 | 35310 | 36475 | 36127 | 36555 | 37012 | 37189 | 36983 | 36759 | 36443 | 34961 | 33842 | 33528 | 32242 | 30670 | 29676 | 31213 | 788391 |
| L_20-25 | 21415 | 21920 | 21902 | 22142 | 22358 | 22517 | 22926 | 23117 | 24285 | 24014 | 24216 | 24840 | 24905 | 24287 | 24834 | 24444 | 23298 | 22787 | 22352 | 22027 | 20980 | 20818 | 21728 | 528112 |
| M_25-30 | 15234 | 15287 | 15447 | 15314 | 15603 | 15686 | 16219 | 16302 | 17140 | 17021 | 17418 | 17583 | 17723 | 17475 | 17827 | 17284 | 16722 | 16517 | 16466 | 16359 | 15719 | 15480 | 16411 | 378237 |
| N_30-40 | 19859 | 19869 | 19853 | 20203 | 20370 | 20617 | 21039 | 21677 | 22796 | 22894 | 22999 | 23120 | 23358 | 23467 | 23780 | 23237 | 22874 | 23077 | 23425 | 23063 | 21987 | 21890 | 22872 | 508276 |
| O_40-50 | 11925 | 12105 | 12035 | 12329 | 12375 | 12652 | 13059 | 13494 | 14328 | 14128 | 14381 | 14351 | 14588 | 14866 | 15724 | 15619 | 15638 | 15907 | 15952 | 15514 | 14700 | 14675 | 15210 | 325555 |
| P_50-100 | 23648 | 24422 | 23974 | 24298 | 24784 | 25392 | 26759 | 28590 | 30776 | 30066 | 30262 | 30780 | 32208 | 34284 | 37587 | 39165 | 39260 | 38622 | 36579 | 34945 | 33575 | 33713 | 33550 | 719239 |
| R_100-200 | 11527 | 11927 | 11577 | 12017 | 12757 | 13563 | 14544 | 16039 | 17861 | 16577 | 16619 | 17330 | 19808 | 22452 | 25035 | 24794 | 22202 | 20097 | 19790 | 20957 | 22042 | 23762 | 25194 | 418671 |

Data source: U.S. Energy Information Administration

Figure 5. Example of a chart made with a pivot table



Data source: U.S. Energy Information Administration and Enverus
 Note: BOE=barrels of oil equivalent

