



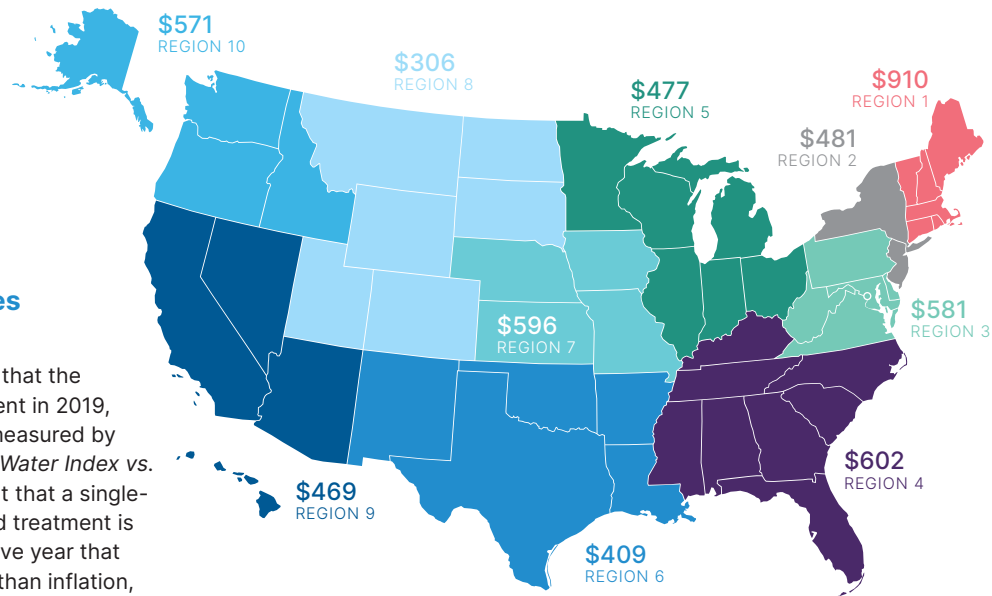
## COST OF CLEAN WATER INDEX

### Average Charge for Wastewater Services Increased 3.8% in 2019

NACWA's 2019 *Cost of Clean Water Index* indicates that the average cost of wastewater services rose 3.8 percent in 2019, higher than the increase in the rate of inflation as measured by the Consumer Price Index (CPI) (see *Cost of Clean Water Index vs. Inflation* chart below). The national average amount that a single-family residence pays for wastewater collection and treatment is now \$512 per year. While this is the 18th consecutive year that wastewater service charges have increased faster than inflation, average annual increases have moderated to less than four percent over each of the past five years. These more measured increases could reflect continuing efforts by clean water utilities to increase efficiency in the face of pressures to improve service levels and address water quality and aging infrastructure, while also remaining sensitive to growing affordability challenges.

The national average charge of \$512 provides an overall perspective of trends, however, wastewater service charges vary widely among EPA regions and states, and are affected by demographics, geography, and a range of other issues. As an example of these variations, the *Regional Average Annual Charge* map (right) shows a breakdown of average charges by EPA region. The average service charge by Region varies from a low of \$306 in EPA Region 8 to a high of \$910 in EPA Region 1.

The *Cost of Clean Water Index vs. Inflation* chart (below) presents a national snapshot of the increase in service charges, as compared to inflation, since 2000. Table A-1 (see *Cost of Clean Water Index Annex*) provides a breakdown of NACWA Index values and service charges back to 1985, the base year for the *Index*. The values for 2019 are based on the responses from 176 NACWA members serving nearly 110 million people.



**Regional Average Annual Charges - 2019**  
(All Respondents)

**110 Million**

Population Served

**3.8%**

Increase in Wastewater Service Charges From 2018-2019

**176**

Utility Respondents

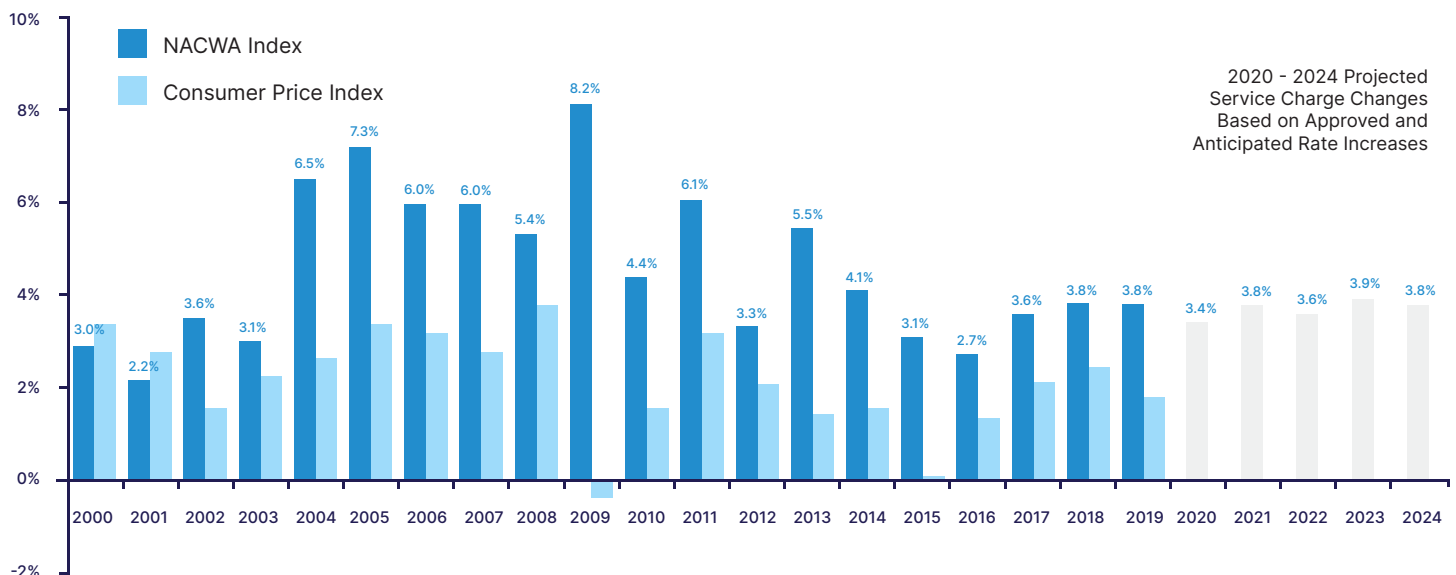
**1.8%**

Increase in Consumer Price Index 2018-2019

**\$512**

Average National Annual Wastewater Collection And Treatment Service Charge

### Annual Change in Cost of Clean Water Index vs. Inflation



2020 - 2024 Projected Service Charge Changes Based on Approved and Anticipated Rate Increases

In 2019, a majority of clean water utilities implemented rate structures that resulted in increases in the average annual household service charge. However, in some communities volume-based rates increased, but average service charges dropped due to reductions in actual or estimated residential water use. Additional national and regional data are included in Tables A-1 and A-3 (see *Cost of Clean Water Index Annex*).

### Projected Charges Expected to Increase 3.4 to 3.8% per Year

Customers pay for sewer services in a variety of ways. Charges may be based on property values, gallons of water used, on a flat rate, or include some combination of these values. Because of this variability, the *NACWA Index* uses what the average single-family residence pays annually because it is a more consistent measure to track the cost of services over time.

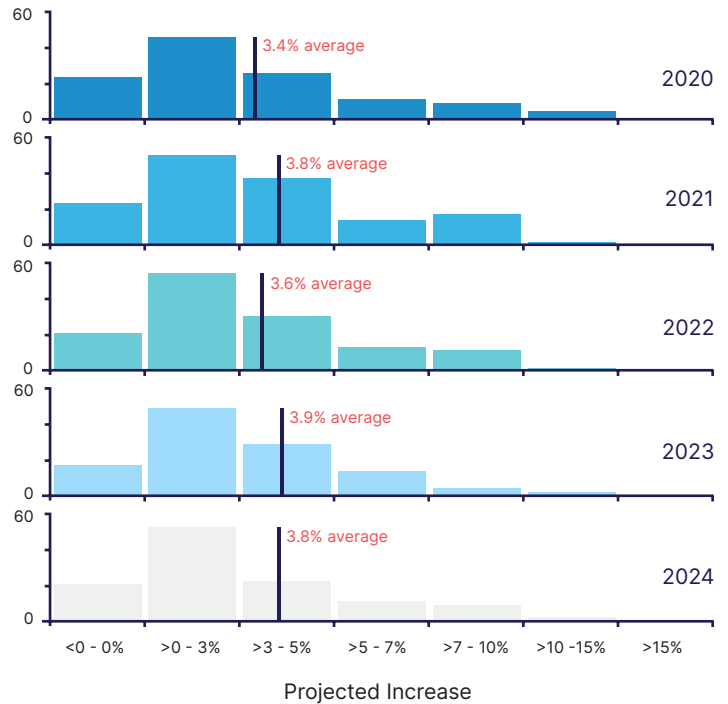
This year, *NACWA's Index* indicates that clean water utilities are expecting average charges to continue to increase from 3.4 to 3.8% per year for the next five years. Capital repair and replacement and associated costs of debt-financing were the top reasons cited by respondents for projected rate increases greater than 15 percent (over 5 years). Other related drivers for large rate increases include consent decree compliance, regulatory requirements, nutrient requirements, and increases in operation and maintenance (O&M) costs.

The *Projected Increases in Charges, 2020-2024* chart (right) shows the distribution of projected percentage increases in charges among agency respondents. Of those utilities responding, 33 percent of agencies project cumulative three- to five-year rate increases above 15 percent

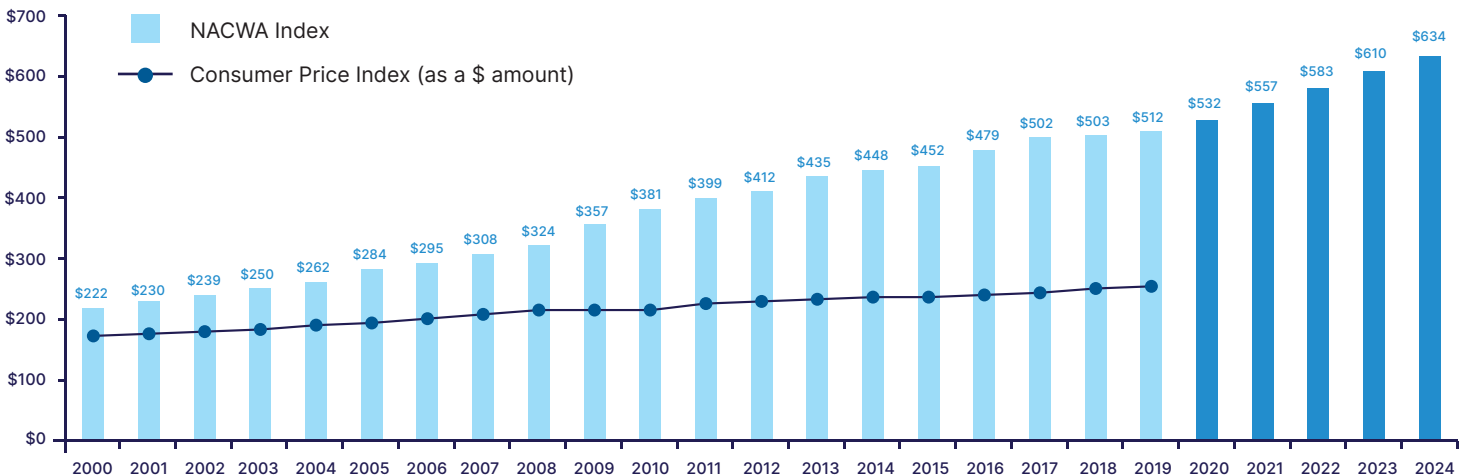
The *Average Annual Service Charge* chart (below) presents a national snapshot of wastewater service charges since 2000 and provides a projection of average charges through 2024. In comparison to the Consumer Price Index (CPI), the annual sewer service charge has increased at double the rate of the CPI since 2000.

The average annual sewer charge of \$512 represents 2.0 percent of the 2018 Federal poverty income threshold (\$25,750) for a family of four. This proportion has risen from 1.3 percent in 2000. Projected increases in rates show the average charge exceeding \$600 by 2023.

### Projected Increases in Charges, 2020-2024



### Average Annual Service Charge 2000 – 2019 & Projected



Disclaimers: The NACWA Index strives to use the best available data each year when determining current and historical household charges and trends. These data are intended for comparison purposes only, and are subject to change from one year to the next. While this document presents the most up-to-date data available, if better data become available in the future, the data presented here may be modified.

Additional data and information on the NACWA Index, past years' surveys, and regional summaries of the data from the 2019 NACWA Index are available on NACWA's website at [www.nacwa.org/utilitymanagement](http://www.nacwa.org/utilitymanagement)

**Table A-1: NACWA Service Charge Index, 1985 to 2019**

| Year | NACWA Index <sup>(1)</sup> | Change from Previous Year <sup>(2)</sup> | Average Service Charge | Change from Previous Year <sup>(2)</sup> | Change to Consumer Price Index | Total Responses | Population represented (in millions) | Total Responses: Previous and Current Year |
|------|----------------------------|--|------------------------|--|--------------------------------|-----------------|--------------------------------------|--|
| 1985 | 100.0                      | —  | \$102.75               | —  | —                              | 155             | 88.6                                 | —  |
| 1986 | 106.8                      | 6.8%                                     | \$109.69               | \$6.95                                   | 1.9%                           | 158             | 88.8                                 | 155  |
| 1987 | 112.4                      | 5.3%                                     | \$115.51               | \$5.82                                   | 3.6%                           | 157             | 88.8                                 | 157  |
| 1988 | 119.9                      | 6.9%                                     | \$123.17               | \$7.99                                   | 4.1%                           | 163             | 91.3                                 | 157  |
| 1989 | 130.1                      | 8.4%                                     | \$133.65               | \$10.35                                  | 4.8%                           | 166             | 92.0                                 | 163  |
| 1990 | 141.0                      | 8.4%                                     | \$144.84               | \$11.25                                  | 5.4%                           | 169             | 92.3                                 | 166  |
| 1991 | 153.7                      | 8.9%                                     | \$157.88               | \$12.84                                  | 4.2%                           | 171             | 92.5                                 | 169  |
| 1992 | 166.7                      | 8.5%                                     | \$171.33               | \$13.84                                  | 3.0%                           | 175             | 94.7                                 | 171  |
| 1993 | 183.1                      | 8.3%                                     | \$188.12               | \$13.78                                  | 3.0%                           | 184             | 100.5                                | 170  |
| 1994 | 193.4                      | 5.1%                                     | \$198.68               | \$10.32                                  | 2.6%                           | 194             | 102.4                                | 182  |
| 1995 | 197.8                      | 2.2%                                     | \$203.22               | \$4.23                                   | 2.8%                           | 199             | 99.6                                 | 189  |
| 1996 | 201.7                      | 3.6%                                     | \$207.28               | \$6.44                                   | 3.0%                           | 205             | 105.8                                | 195  |
| 1997 | 203.9                      | 1.3%                                     | \$209.49               | \$2.88                                   | 2.3%                           | 208             | 107.9                                | 202  |
| 1998 | 207.8                      | 2.4%                                     | \$213.52               | \$4.89                                   | 1.6%                           | 214             | 106.6                                | 204  |
| 1999 | 209.8                      | 0.7%                                     | \$215.61               | \$1.90                                   | 2.2%                           | 224             | 109.4                                | 210  |
| 2000 | 216.4                      | 3.0%                                     | \$222.31               | \$6.41                                   | 3.4%                           | 234             | 113.7                                | 218  |
| 2001 | 223.5                      | 2.2%                                     | \$229.63               | \$4.47                                   | 2.8%                           | 238             | 113.5                                | 227  |
| 2002 | 232.6                      | 3.6%                                     | \$238.99               | \$8.45                                   | 1.6%                           | 220             | 107.8                                | 215  |
| 2003 | 243.0                      | 3.1%                                     | \$249.71               | \$7.69                                   | 2.3%                           | 232             | 108.4                                | 198  |
| 2004 | 254.8                      | 6.5%                                     | \$261.79               | \$16.10                                  | 2.7%                           | 222             | 109.0                                | 200  |
| 2005 | 276.3                      | 7.3%                                     | \$283.91               | \$18.79                                  | 3.4%                           | 213             | 108.7                                | 188  |
| 2006 | 287.1                      | 6.0%                                     | \$295.03               | \$17.23                                  | 3.2%                           | 203             | 107.0                                | 177  |
| 2007 | 299.4                      | 6.0%                                     | \$307.60               | \$16.47                                  | 2.8%                           | 196             | 104.6                                | 173  |
| 2008 | 315.4                      | 5.4%                                     | \$324.11               | \$18.00                                  | 3.8%                           | 191             | 107.6                                | 165  |
| 2009 | 347.3                      | 8.2%                                     | \$356.90               | \$26.41                                  | -0.4%                          | 171             | 103.4                                | 161  |
| 2010 | 371.2                      | 4.4%                                     | \$381.45               | \$16.82                                  | 1.6%                           | 181             | 100.7                                | 143  |
| 2011 | 387.7                      | 6.1%                                     | \$398.57               | \$23.78                                  | 3.2%                           | 176             | 104.0                                | 158  |
| 2012 | 401.6                      | 3.3%                                     | \$412.17               | \$13.97                                  | 2.1%                           | 179             | 108.1                                | 148  |
| 2013 | 424.3                      | 5.5%                                     | \$435.26               | \$22.53                                  | 1.5%                           | 183             | 107.8                                | 155  |
| 2014 | 436.0                      | 4.1%                                     | \$447.99               | \$17.45                                  | 1.6%                           | 184             | 112.8                                | 164  |
| 2015 | 439.8                      | 3.1%                                     | \$451.92               | \$13.53                                  | 0.1%                           | 175             | 110.6                                | 160  |
| 2016 | 466.3                      | 2.7%                                     | \$479.07               | \$11.85                                  | 1.3%                           | 172             | 104.4                                | 151  |
| 2017 | 488.3                      | 3.6%                                     | \$501.72               | \$11.49                                  | 2.1%                           | 179             | 105.4                                | 143  |
| 2018 | 489.6                      | 3.8%                                     | \$503.01               | \$19.77                                  | 2.4%                           | 177             | 109.6                                | 153  |
| 2019 | 498.6                      | 3.8%                                     | \$512.32               | \$6.30                                   | 1.8%                           | 176             | 109.9                                | 149  |

Note 1: The Index value is based on all responses received. The base year, 1985 has been indexed to a value of 100 at the national level.

Note 2: The percent change in the Index and dollar value change in average service charge from the previous year are based only on the responses of those agencies that responded in both the previous year and current year using the same calculation method.

**Table A-2: Projected Annual Service Charge Increases, 2020-2024**

|  | 2020     | 2021     | 2022     | 2023     | 2024     |
|--|----------|----------|----------|----------|----------|
| Average Annual Increase (%)                | 3.4%     | 3.8%     | 3.6%     | 3.9%     | 3.8%     |
| Average Service Charge (Projected \$)      | \$532.26 | \$557.43 | \$582.78 | \$610.19 | \$634.05 |
| Change from Previous Year (\$)             | \$19.94  | \$25.17  | \$25.35  | \$27.41  | \$23.86  |
| Number of Total Responses                  | 167      | 164      | 162      | 159      | 157      |
| Number of Responses with Numeric Estimates | 108      | 88       | 77       | 69       | 65       |
| Approved                                   | 52%      | 24%      | 17%      | 13%      | 12%      |
| Planned                                    | 28%      | 51%      | 52%      | 53%      | 50%      |
| No Change                                  | 14%      | 7%       | 7%       | 7%       | 8%       |
| Uncertain                                  | 6%       | 18%      | 24%      | 26%      | 30%      |

**Table A-3: Regional Annual Average Sewer Service Charges, 2019 Summary**

|                               | Region 1   | Region 2 | Region 3 | Region 4   | Region 5 | Region 6 | Region 7 | Region 8 | Region 9   | Region 10 | National   |
|-------------------------------|------------|----------|----------|------------|----------|----------|----------|----------|------------|-----------|------------|
| Number of agencies            | 10         | 13       | 17       | 28         | 24       | 14       | 13       | 13       | 29         | 15        | 176        |
| Population                    | 3.3        | 14.6     | 11.9     | 13.5       | 18.3     | 9.8      | 4.7      | 3.5      | 26.6       | 3.7       | 109.9      |
| Average                       | \$910.06   | \$481.10 | \$581.64 | \$602.92   | \$477.72 | \$409.05 | \$596.24 | \$305.52 | \$468.63   | \$571.56  | \$512.32   |
| Median                        | \$539.01   | \$411.00 | \$476.36 | \$516.68   | \$476.20 | \$439.03 | \$399.36 | \$295.20 | \$475.08   | \$528.96  | \$457.00   |
| Minimum                       | \$360.00   | \$192.37 | \$344.25 | \$222.96   | \$168.60 | \$263.64 | \$55.86  | \$241.68 | \$227.16   | \$358.80  | \$55.86    |
| Maximum                       | \$1,048.81 | \$640.80 | \$883.53 | \$1,171.44 | \$767.32 | \$926.40 | \$777.11 | \$478.44 | \$1,325.04 | \$747.17  | \$1,325.04 |
| Percent Change <sup>(3)</sup> |            |          |          |            |          |          |          |          |            |           |            |
| 1-year (2018-19)              | 2.7%       | 1.3%     | 4.6%     | 4.3%       | 2.5%     | 0.7%     | 5.4%     | 5.4%     | 2.5%       | 5.6%      | 3.8%       |
| 3-year (2016-19)              | 8.9%       | 9.9%     | 8.7%     | 29.5%      | 14.2%    | 7.6%     | 19.5%    | 14.1%    | 9.1%       | 13.5%     | 13.5%      |
| 5-year (2014-19)              | 21.5%      | 17.6%    | 17.6%    | 14.2%      | 27.6%    | 13.5%    | 42.5%    | 27.5%    | 10.5%      | 16.8%     | 17.7%      |

Note 3: The percent change values in Table A-3 are based on the responses of those agencies that responded in both the previous year and current year using the same calculation method.

**Table R-1: Service Charge Index by EPA Region (1985-2019)<sup>1</sup>**

| Year                  | Region 1 | Region 2 | Region 3 | Region 4 | Region 5 | Region 6 | Region 7 | Region 8 | Region 9 | Region 10 | National |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| 1985                  | 69.8     | 85.4     | 121.1    | 139.0    | 137.5    | 106.0    | 63.4     | 101.8    | 63.1     | 115.4     | 100.0    |
| 1986                  | 80.0     | 89.6     | 137.2    | 144.0    | 141.3    | 121.4    | 68.2     | 101.9    | 68.0     | 124.8     | 106.8    |
| 1987                  | 98.0     | 100.3    | 139.1    | 152.7    | 136.5    | 142.4    | 70.7     | 102.1    | 73.4     | 129.4     | 112.4    |
| 1988                  | 106.2    | 110.1    | 142.8    | 148.1    | 139.5    | 155.2    | 72.2     | 108.8    | 85.2     | 139.0     | 119.9    |
| 1989                  | 143.0    | 127.2    | 151.5    | 155.6    | 140.3    | 163.6    | 74.2     | 105.6    | 100.4    | 150.5     | 130.1    |
| 1990                  | 166.7    | 147.0    | 154.3    | 163.4    | 145.3    | 176.0    | 73.6     | 115.3    | 114.8    | 158.6     | 141.0    |
| 1991                  | 194.4    | 166.8    | 185.5    | 171.1    | 149.9    | 168.7    | 82.3     | 120.4    | 131.8    | 173.7     | 153.7    |
| 1992                  | 218.5    | 195.3    | 187.1    | 178.4    | 158.0    | 171.0    | 92.8     | 125.8    | 147.6    | 193.0     | 166.7    |
| 1993                  | 304.2    | 196.7    | 208.7    | 189.6    | 166.6    | 187.4    | 132.1    | 137.9    | 162.4    | 200.7     | 183.1    |
| 1994                  | 306.0    | 222.5    | 213.5    | 203.8    | 173.3    | 191.7    | 141.6    | 136.2    | 173.2    | 224.9     | 193.4    |
| 1995                  | 303.3    | 215.2    | 213.3    | 215.5    | 178.9    | 206.9    | 142.3    | 145.9    | 175.9    | 245.6     | 197.8    |
| 1996                  | 320.6    | 206.4    | 222.6    | 224.2    | 180.4    | 212.1    | 144.9    | 143.9    | 183.2    | 258.7     | 201.7    |
| 1997                  | 310.2    | 208.1    | 222.9    | 235.3    | 176.8    | 211.0    | 153.5    | 143.6    | 187.2    | 265.2     | 203.9    |
| 1998                  | 314.7    | 214.6    | 228.7    | 234.1    | 177.8    | 208.6    | 160.5    | 145.3    | 196.6    | 272.7     | 207.8    |
| 1999                  | 316.1    | 222.4    | 230.1    | 241.1    | 182.9    | 207.0    | 163.1    | 150.6    | 191.5    | 277.5     | 209.8    |
| 2000                  | 312.6    | 222.1    | 237.2    | 251.5    | 186.7    | 212.3    | 163.9    | 151.2    | 202.0    | 297.5     | 216.4    |
| 2001                  | 310.2    | 249.0    | 243.5    | 257.2    | 190.0    | 212.8    | 170.3    | 155.4    | 206.7    | 305.9     | 223.5    |
| 2002                  | 316.9    | 268.7    | 242.9    | 261.6    | 201.8    | 219.6    | 175.3    | 154.2    | 215.1    | 338.9     | 232.6    |
| 2003                  | 337.6    | 279.0    | 237.6    | 303.0    | 214.2    | 222.5    | 166.9    | 148.4    | 214.1    | 365.1     | 242.8    |
| 2004                  | 364.5    | 280.9    | 275.4    | 292.0    | 212.7    | 257.9    | 179.7    | 171.2    | 230.3    | 376.7     | 254.8    |
| 2005                  | 423.1    | 313.1    | 299.2    | 323.4    | 227.8    | 259.0    | 199.7    | 167.4    | 242.3    | 413.1     | 276.3    |
| 2006                  | 438.3    | 328.7    | 319.8    | 308.8    | 250.5    | 278.8    | 231.0    | 169.5    | 260.6    | 352.9     | 287.1    |
| 2007                  | 507.6    | 341.8    | 343.0    | 337.0    | 254.4    | 251.8    | 229.3    | 175.1    | 271.9    | 371.6     | 299.4    |
| 2008                  | 558.8    | 365.1    | 357.3    | 317.6    | 270.5    | 265.3    | 240.7    | 175.5    | 304.5    | 396.5     | 315.5    |
| 2009                  | 593.5    | 380.6    | 389.8    | 342.3    | 329.5    | 283.4    | 271.9    | 185.1    | 338.7    | 403.7     | 347.3    |
| 2010                  | 587.2    | 386.5    | 398.8    | 386.7    | 353.4    | 281.6    | 268.3    | 194.0    | 411.8    | 403.1     | 371.2    |
| 2011                  | 676.2    | 425.7    | 422.4    | 425.0    | 369.0    | 307.4    | 312.8    | 212.9    | 377.1    | 435.0     | 387.7    |
| 2012                  | 680.2    | 424.3    | 450.2    | 469.4    | 376.7    | 325.4    | 347.7    | 213.4    | 377.1    | 459.3     | 401.6    |
| 2013                  | 681.1    | 447.9    | 480.5    | 477.6    | 396.6    | 357.1    | 384.5    | 219.0    | 389.9    | 488.8     | 424.3    |
| 2014                  | 703.0    | 468.9    | 474.1    | 454.8    | 425.6    | 361.7    | 427.6    | 226.1    | 408.1    | 497.7     | 436.0    |
| 2015                  | 791.0    | 482.8    | 483.6    | 460.0    | 416.9    | 361.7    | 463.3    | 244.0    | 404.3    | 519.1     | 439.8    |
| 2016                  | 837.1    | 496.7    | 532.6    | 568.7    | 390.1    | 366.7    | 488.5    | 251.5    | 423.9    | 538.8     | 466.3    |
| 2017                  | 860.8    | 498.5    | 556.5    | 581.9    | 446.2    | 407.7    | 527.7    | 254.0    | 432.3    | 578.1     | 488.3    |
| 2018                  | 891.3    | 515.1    | 538.7    | 566.3    | 421.9    | 449.0    | 533.0    | 281.1    | 433.3    | 602.9     | 489.6    |
| 2019                  | 885.7    | 468.2    | 566.1    | 586.8    | 464.9    | 398.1    | 580.3    | 297.3    | 456.1    | 556.3     | 498.6    |
| # of Responses (2019) | 10       | 13       | 17       | 28       | 24       | 14       | 13       | 13       | 29       | 15        | 176      |
| Population (millions) | 3.3      | 14.6     | 11.9     | 13.5     | 18.3     | 9.8      | 4.7      | 3.5      | 26.6     | 3.7       | 109.9    |

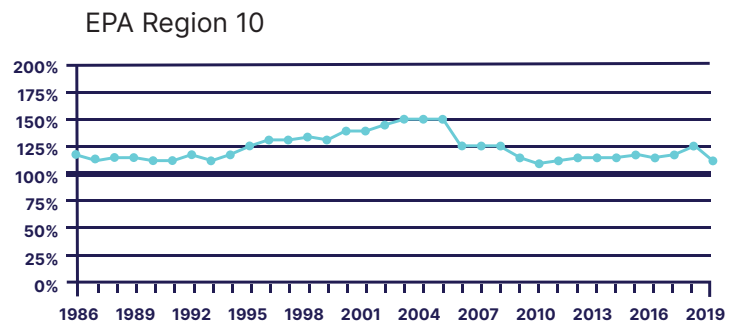
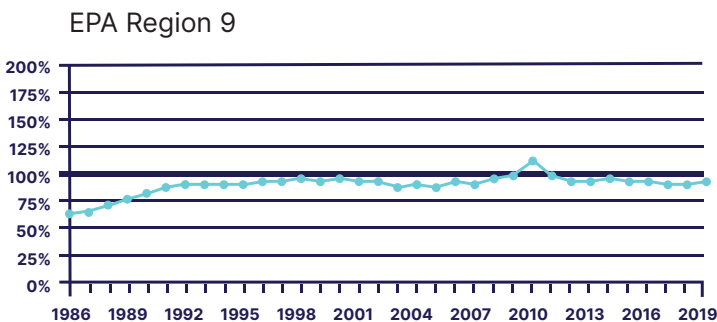
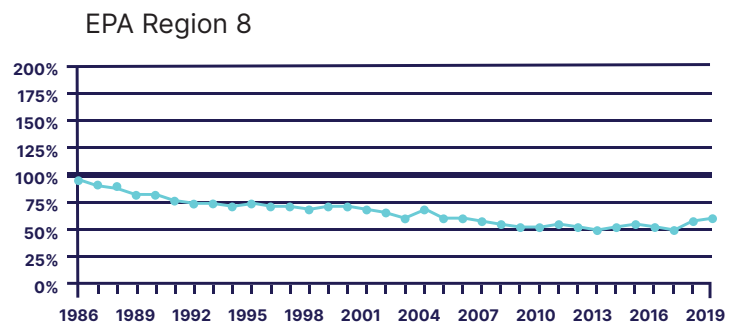
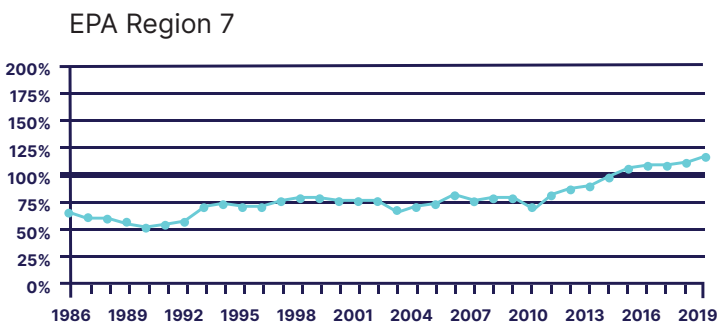
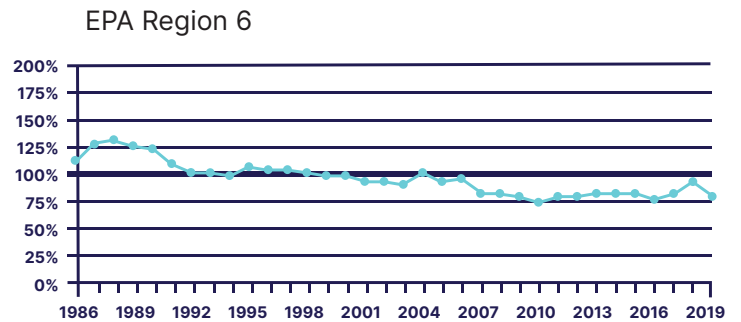
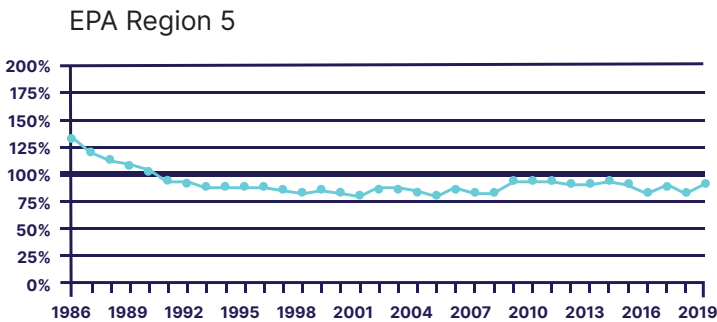
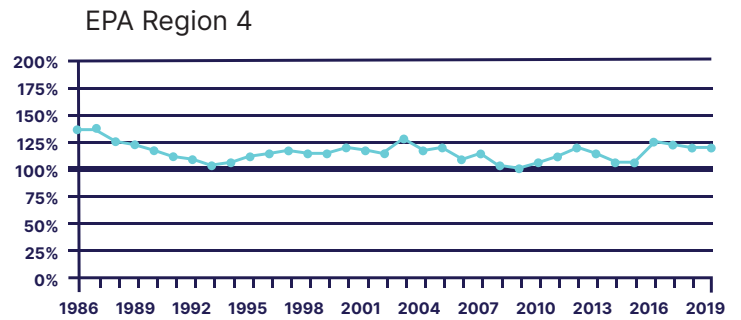
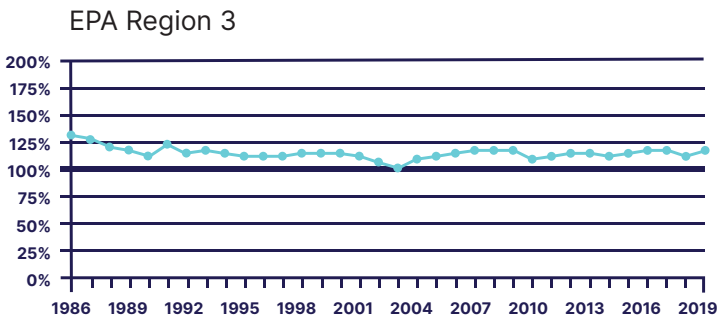
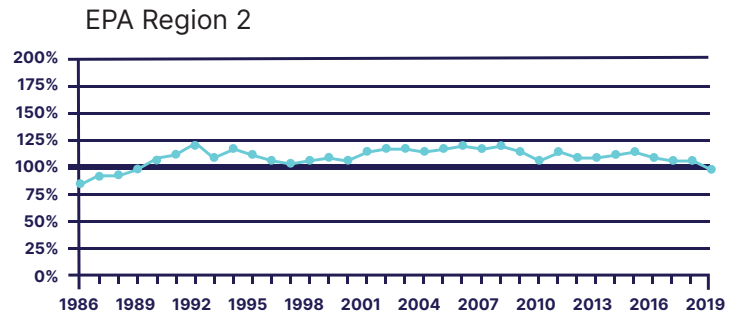
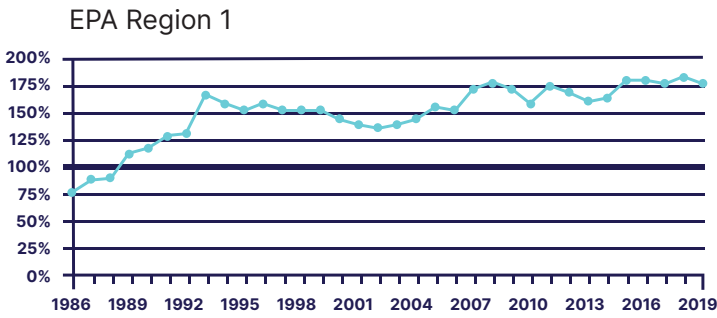
Note 1: The value of the Service Charge Index is based on all responses received. The base year, 1985 has been indexed to a value of 100 at the national level.

**Table R-2: Service Charge Index Change vs. Inflation Rate by EPA Region (1986-2019)<sup>2</sup>**

| Year | Region 1 | Region 2 | Region 3 | Region 4 | Region 5 | Region 6 | Region 7 | Region 8 | Region 9 | Region 10 | National | CPI   |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|-------|
| 1986 | 14.6%    | 4.9%     | 13.3%    | 4.1%     | 2.7%     | 14.6%    | 7.7%     | 0.1%     | 7.7%     | 8.2%      | 6.8%     | 1.9%  |
| 1987 | 22.4%    | 11.9%    | 1.4%     | 6.0%     | -3.4%    | 17.3%    | 3.6%     | 0.2%     | 7.9%     | 3.7%      | 5.3%     | 3.6%  |
| 1988 | 8.9%     | 9.8%     | 2.8%     | 3.3%     | 2.2%     | 8.8%     | 2.1%     | 6.5%     | 15.7%    | 7.4%      | 6.9%     | 4.1%  |
| 1989 | 34.7%    | 15.6%    | 6.1%     | 5.1%     | 0.6%     | 5.4%     | 2.7%     | -3.0%    | 17.1%    | 8.2%      | 8.4%     | 4.8%  |
| 1990 | 20.0%    | 15.6%    | 1.9%     | 5.0%     | 3.5%     | 7.6%     | -0.8%    | 9.3%     | 14.1%    | 5.4%      | 8.4%     | 5.4%  |
| 1991 | 16.6%    | 13.4%    | 20.3%    | 3.7%     | 3.2%     | -4.2%    | 11.8%    | 4.4%     | 14.8%    | 9.5%      | 8.9%     | 4.2%  |
| 1992 | 12.4%    | 16.9%    | 2.0%     | 4.3%     | 5.4%     | 1.0%     | 12.8%    | 4.4%     | 11.9%    | 11.1%     | 8.5%     | 3.0%  |
| 1993 | 34.9%    | 1.4%     | 1.4%     | 6.9%     | 6.1%     | 9.9%     | 42.3%    | 6.9%     | 10.1%    | 3.3%      | 8.3%     | 3.0%  |
| 1994 | 4.0%     | 5.0%     | 2.2%     | 8.8%     | 4.0%     | 2.3%     | 10.3%    | 2.8%     | 6.6%     | 12.4%     | 5.1%     | 2.6%  |
| 1995 | 0.6%     | 0.9%     | -1.3%    | 4.6%     | 1.1%     | 7.9%     | -2.8%    | 6.1%     | 1.4%     | 9.2%      | 2.2%     | 2.8%  |
| 1996 | 1.8%     | 4.4%     | 4.4%     | 4.0%     | 2.1%     | 2.0%     | 1.8%     | 0.1%     | 4.2%     | 5.3%      | 3.6%     | 3.0%  |
| 1997 | 0.4%     | 1.2%     | 0.1%     | 6.0%     | -1.8%    | -0.6%    | 6.0%     | -0.3%    | 2.2%     | 2.5%      | 1.3%     | 2.3%  |
| 1998 | 1.6%     | 3.0%     | 1.7%     | 1.6%     | 0.8%     | -1.1%    | 4.6%     | 0.5%     | 5.0%     | 2.9%      | 2.4%     | 1.6%  |
| 1999 | 0.4%     | 1.5%     | 0.7%     | 2.8%     | 2.4%     | -0.6%    | 2.5%     | 3.6%     | -2.3%    | 1.9%      | 0.7%     | 2.2%  |
| 2000 | 0.1%     | 1.8%     | -0.1%    | 3.4%     | 2.3%     | 2.6%     | -2.9%    | 0.4%     | 6.0%     | 7.2%      | 3.0%     | 3.4%  |
| 2001 | 1.5%     | 2.3%     | 2.6%     | 3.2%     | 1.4%     | 0.5%     | 3.9%     | 2.1%     | 2.1%     | 2.8%      | 2.2%     | 2.8%  |
| 2002 | 1.9%     | 5.1%     | -0.2%    | 1.9%     | 6.3%     | 1.6%     | 3.2%     | -0.8%    | 3.9%     | 10.2%     | 3.6%     | 1.6%  |
| 2003 | 7.3%     | 5.3%     | -0.7%    | 5.6%     | 6.2%     | 1.1%     | 1.7%     | -3.7%    | 0.1%     | 4.7%      | 3.1%     | 2.3%  |
| 2004 | 11.8%    | 2.7%     | 16.6%    | 7.0%     | -0.5%    | 14.5%    | 11.4%    | 2.9%     | 5.8%     | 5.8%      | 6.5%     | 2.7%  |
| 2005 | 17.4%    | 4.6%     | 6.3%     | 9.0%     | 10.6%    | 4.4%     | 11.3%    | 0.2%     | 4.6%     | 9.0%      | 7.3%     | 3.4%  |
| 2006 | 6.3%     | 8.0%     | 6.6%     | 3.3%     | 8.9%     | 7.2%     | 3.7%     | 1.3%     | 4.3%     | 4.6%      | 6.0%     | 3.2%  |
| 2007 | 10.9%    | 4.3%     | 6.7%     | 5.5%     | 3.0%     | -7.5%    | 0.9%     | 3.6%     | 10.0%    | 5.6%      | 6.0%     | 2.8%  |
| 2008 | 5.5%     | 11.1%    | 1.7%     | 1.8%     | 3.5%     | 3.6%     | 11.3%    | 1.7%     | 6.4%     | 2.8%      | 5.4%     | 3.8%  |
| 2009 | 6.0%     | 6.1%     | 8.5%     | 5.5%     | 12.7%    | 7.2%     | 5.9%     | 4.0%     | 9.9%     | 3.9%      | 8.2%     | -0.4% |
| 2010 | 4.4%     | 2.2%     | 3.8%     | 10.7%    | 6.9%     | 0.7%     | 9.0%     | -3.4%    | 4.5%     | -2.4%     | 4.4%     | 1.6%  |
| 2011 | 5.2%     | 8.0%     | 6.3%     | 4.6%     | 5.3%     | 6.8%     | 9.8%     | 12.5%    | 4.0%     | 9.6%      | 6.0%     | 3.2%  |
| 2012 | 4.7%     | 1.8%     | 3.3%     | 2.6%     | 1.2%     | 4.3%     | 8.4%     | 0.1%     | 5.3%     | 4.8%      | 3.4%     | 2.1%  |
| 2013 | 4.8%     | 6.6%     | 8.7%     | 2.1%     | 5.0%     | 8.6%     | 10.0%    | 2.1%     | 3.8%     | 5.6%      | 5.5%     | 1.5%  |
| 2014 | 2.7%     | 5.0%     | 1.6%     | 5.0%     | 7.4%     | -0.4%    | 7.1%     | 3.7%     | 3.8%     | 3.3%      | 4.1%     | 1.6%  |
| 2015 | 4.2%     | 2.2%     | 7.0%     | 0.7%     | 7.9%     | 3.0%     | 8.5%     | 8.4%     | -0.8%    | 2.3%      | 3.1%     | 0.1%  |
| 2016 | 5.8%     | 1.2%     | 2.7%     | 3.3%     | 1.0%     | 2.4%     | 8.9%     | 3.1%     | 2.4%     | 3.9%      | 2.7%     | 1.3%  |
| 2017 | 2.4%     | 0.5%     | 4.1%     | 4.4%     | 3.9%     | 4.5%     | 8.8%     | 3.7%     | 3.5%     | 5.3%      | 3.6%     | 2.1%  |
| 2018 | 4.4%     | 3.0%     | 4.3%     | 2.1%     | 5.0%     | 9.5%     | 4.6%     | 4.3%     | 3.0%     | 3.3%      | 3.8%     | 2.4%  |
| 2019 | 2.7%     | 1.3%     | 4.6%     | 4.3%     | 2.5%     | 0.7%     | 5.4%     | 5.4%     | 2.5%     | 5.6%      | 3.8%     | 1.8%  |

Note 2: The annual percent change in the Index (national and regional) is based on the responses of those agencies that responded in both the previous year and current year using the same calculation method.

# Regional Service Charge Index as a Percent of the National Average (1986-2019)

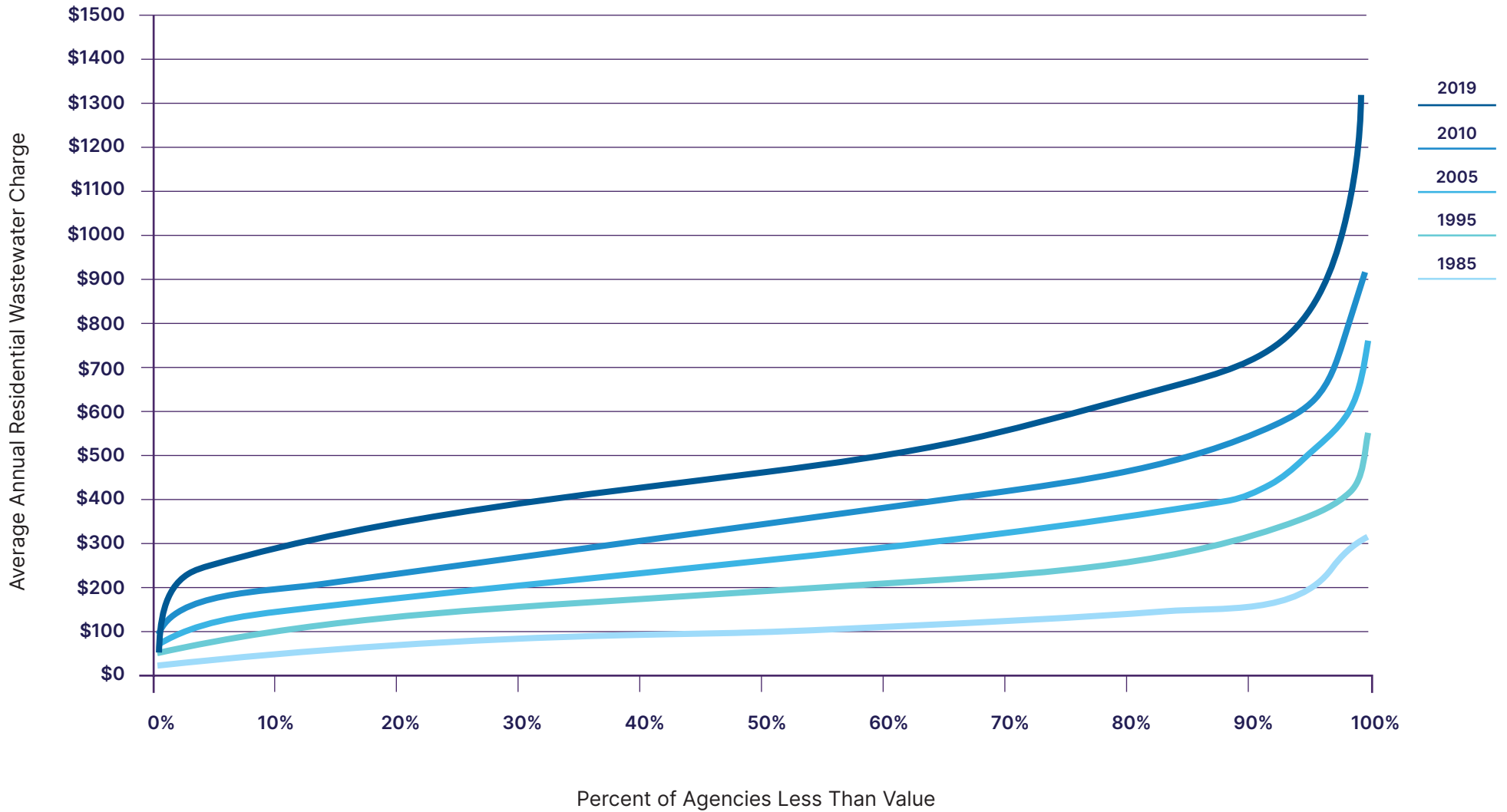


**Table R-3: Average Annual Wastewater Service Charge by EPA Region (1985-2019)**

| Year                  | Region 1 | Region 2 | Region 3 | Region 4 | Region 5 | Region 6 | Region 7 | Region 8 | Region 9 | Region 10 | National |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| 1985                  | \$71.74  | \$87.74  | \$124.46 | \$142.85 | \$141.32 | \$108.90 | \$65.12  | \$104.57 | \$64.87  | \$118.54  | \$102.75 |
| 1986                  | \$82.23  | \$92.07  | \$140.97 | \$147.95 | \$145.19 | \$124.77 | \$70.12  | \$104.70 | \$69.87  | \$128.23  | \$109.69 |
| 1987                  | \$100.65 | \$103.02 | \$142.94 | \$156.86 | \$140.29 | \$146.30 | \$72.68  | \$104.95 | \$75.39  | \$132.98  | \$115.51 |
| 1988                  | \$109.09 | \$113.10 | \$146.69 | \$152.13 | \$143.33 | \$159.47 | \$74.20  | \$111.79 | \$87.50  | \$142.84  | \$123.17 |
| 1989                  | \$146.94 | \$130.73 | \$155.64 | \$159.89 | \$144.18 | \$168.07 | \$76.20  | \$108.46 | \$103.14 | \$154.60  | \$133.65 |
| 1990                  | \$171.31 | \$151.08 | \$158.54 | \$167.91 | \$149.25 | \$180.86 | \$75.60  | \$118.51 | \$117.91 | \$162.91  | \$144.84 |
| 1991                  | \$199.77 | \$171.40 | \$190.65 | \$175.78 | \$154.06 | \$173.30 | \$84.55  | \$123.73 | \$135.38 | \$178.43  | \$157.88 |
| 1992                  | \$224.52 | \$200.66 | \$192.20 | \$183.28 | \$162.39 | \$175.65 | \$95.38  | \$129.22 | \$151.63 | \$198.31  | \$171.33 |
| 1993                  | \$312.62 | \$202.08 | \$214.43 | \$194.79 | \$171.21 | \$192.52 | \$135.78 | \$141.67 | \$166.91 | \$206.26  | \$188.12 |
| 1994                  | \$314.46 | \$228.65 | \$219.33 | \$209.38 | \$178.02 | \$196.97 | \$145.44 | \$139.99 | \$177.98 | \$231.06  | \$198.68 |
| 1995                  | \$311.61 | \$221.16 | \$219.13 | \$221.46 | \$183.78 | \$212.54 | \$146.26 | \$149.95 | \$180.75 | \$252.36  | \$203.22 |
| 1996                  | \$329.39 | \$212.09 | \$228.72 | \$230.37 | \$185.35 | \$217.93 | \$148.84 | \$147.90 | \$188.26 | \$265.79  | \$207.28 |
| 1997                  | \$318.71 | \$213.84 | \$229.04 | \$241.79 | \$181.65 | \$216.85 | \$157.71 | \$147.52 | \$192.36 | \$272.46  | \$209.49 |
| 1998                  | \$323.37 | \$220.48 | \$234.95 | \$240.56 | \$182.65 | \$214.37 | \$164.92 | \$149.30 | \$202.00 | \$280.25  | \$213.52 |
| 1999                  | \$324.77 | \$228.57 | \$236.39 | \$247.73 | \$187.89 | \$212.70 | \$167.56 | \$154.73 | \$196.78 | \$285.14  | \$215.61 |
| 2000                  | \$321.19 | \$228.20 | \$243.75 | \$258.41 | \$191.88 | \$218.11 | \$168.41 | \$155.33 | \$207.56 | \$305.72  | \$222.31 |
| 2001                  | \$318.72 | \$255.85 | \$250.23 | \$264.27 | \$195.22 | \$218.68 | \$174.99 | \$159.72 | \$212.39 | \$314.30  | \$229.63 |
| 2002                  | \$325.60 | \$276.08 | \$249.55 | \$268.74 | \$207.32 | \$225.66 | \$180.12 | \$158.41 | \$220.99 | \$348.21  | \$238.95 |
| 2003                  | \$346.87 | \$286.70 | \$244.16 | \$311.31 | \$220.11 | \$228.64 | \$171.49 | \$152.46 | \$220.01 | \$375.13  | \$249.44 |
| 2004                  | \$374.54 | \$288.61 | \$282.95 | \$300.02 | \$218.75 | \$264.95 | \$184.68 | \$175.91 | \$235.86 | \$387.05  | \$261.48 |
| 2005                  | \$434.72 | \$321.74 | \$307.43 | \$332.32 | \$234.03 | \$266.10 | \$205.16 | \$172.02 | \$248.99 | \$424.45  | \$283.91 |
| 2006                  | \$450.31 | \$337.77 | \$328.61 | \$317.28 | \$257.38 | \$286.47 | \$237.39 | \$174.16 | \$267.69 | \$362.64  | \$294.98 |
| 2007                  | \$521.61 | \$351.17 | \$352.44 | \$346.23 | \$261.41 | \$258.73 | \$235.62 | \$179.91 | \$279.37 | \$381.80  | \$307.60 |
| 2008                  | \$574.21 | \$375.19 | \$367.16 | \$326.15 | \$277.94 | \$272.61 | \$247.33 | \$180.30 | \$312.89 | \$407.39  | \$324.11 |
| 2009                  | \$609.85 | \$391.05 | \$400.52 | \$351.74 | \$338.53 | \$291.17 | \$279.35 | \$190.15 | \$347.99 | \$414.82  | \$356.90 |
| 2010                  | \$603.38 | \$397.14 | \$409.75 | \$397.34 | \$363.08 | \$289.33 | \$275.64 | \$199.36 | \$423.15 | \$414.22  | \$381.45 |
| 2011                  | \$694.75 | \$437.43 | \$433.97 | \$436.66 | \$379.11 | \$315.88 | \$321.44 | \$218.77 | \$387.45 | \$447.01  | \$398.54 |
| 2012                  | \$698.93 | \$435.98 | \$462.55 | \$482.27 | \$386.52 | \$334.36 | \$357.31 | \$219.23 | \$387.48 | \$471.93  | \$412.17 |
| 2013                  | \$699.85 | \$460.26 | \$493.67 | \$490.74 | \$407.50 | \$366.93 | \$395.11 | \$225.02 | \$400.58 | \$502.29  | \$435.26 |
| 2014                  | \$722.31 | \$481.80 | \$487.14 | \$467.33 | \$437.33 | \$371.67 | \$439.35 | \$232.31 | \$419.37 | \$511.42  | \$447.99 |
| 2015                  | \$812.79 | \$496.06 | \$496.90 | \$472.65 | \$428.34 | \$371.67 | \$476.01 | \$250.67 | \$415.45 | \$533.32  | \$451.92 |
| 2016                  | \$860.09 | \$510.38 | \$547.29 | \$584.29 | \$400.82 | \$376.82 | \$501.97 | \$258.41 | \$435.60 | \$553.62  | \$479.07 |
| 2017                  | \$884.44 | \$512.25 | \$571.14 | \$535.72 | \$455.45 | \$418.89 | \$542.18 | \$260.94 | \$444.23 | \$594.02  | \$501.72 |
| 2018                  | \$915.86 | \$529.22 | \$553.50 | \$581.85 | \$433.48 | \$461.38 | \$547.66 | \$288.83 | \$445.18 | \$619.53  | \$503.01 |
| 2019                  | \$910.06 | \$481.10 | \$581.64 | \$602.92 | \$477.72 | \$409.05 | \$596.24 | \$305.52 | \$468.63 | \$571.56  | \$512.32 |
| # of Responses (2019) | 10       | 13       | 17       | 28       | 24       | 14       | 13       | 13       | 29       | 15        | 176      |
| Population (millions) | 3.3      | 14.6     | 11.9     | 13.5     | 18.3     | 9.8      | 4.7      | 3.5      | 26.6     | 3.7       | 109.9    |



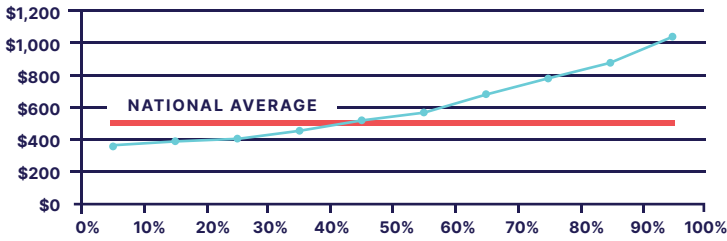
## Distribution Trend of Average Annual Residential Wastewater Charge (National)



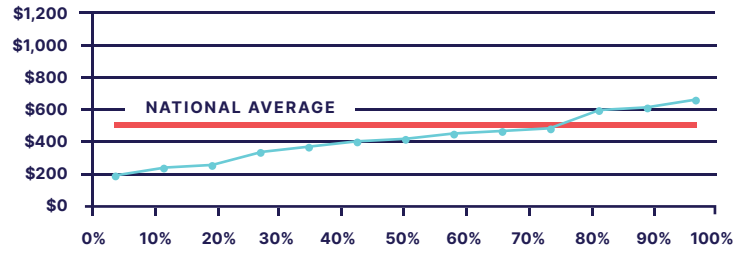
# Regional Distribution of Service Charges (2019)

(Charge vs. Percent of Charges Less Than Value)

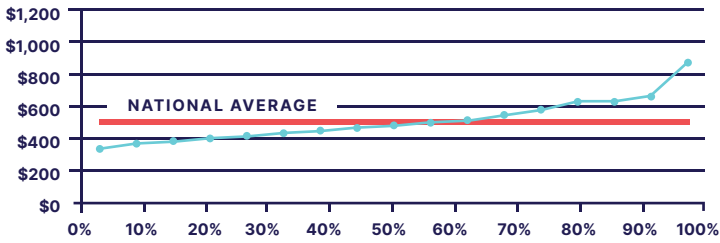
EPA Region 1



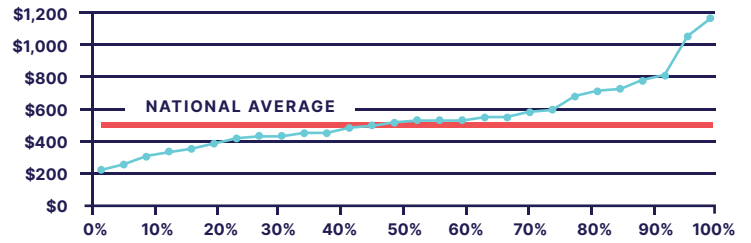
EPA Region 2



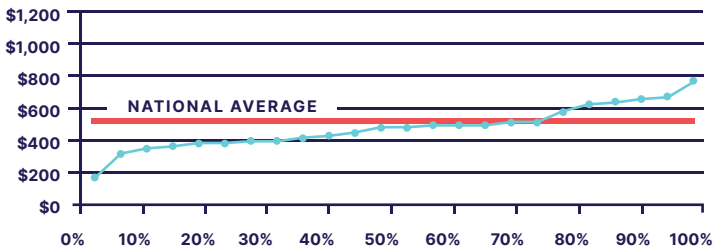
EPA Region 3



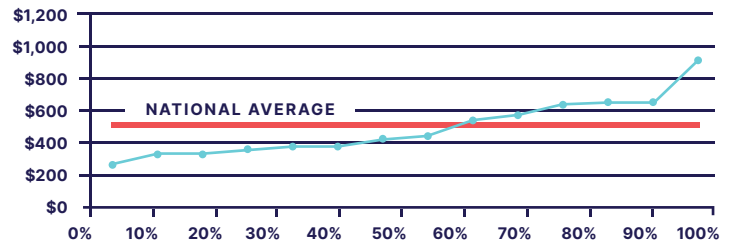
EPA Region 4



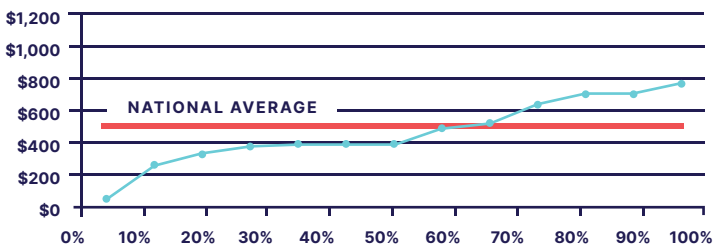
EPA Region 5



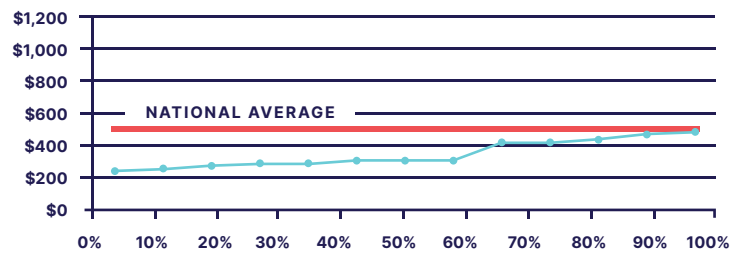
EPA Region 6



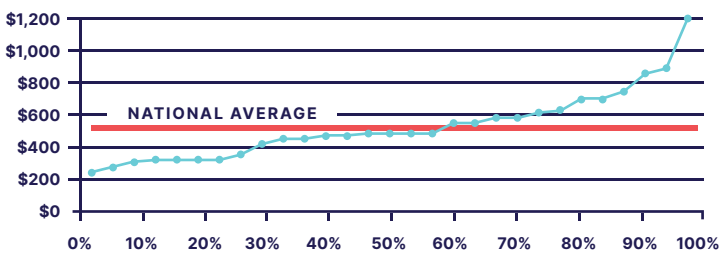
EPA Region 7



EPA Region 8



EPA Region 9



EPA Region 10

