

# Persistent Chemicals: Information on EPA's Analysis of Costs for its PFAS Drinking Water Regulation

GAO-25-107897 [Accessible Version]

Q&A Report to Congressional Committees

July 30, 2025

## Why This Matters

Under the Safe Drinking Water Act (SDWA), the Environmental Protection Agency (EPA) is authorized to set National Primary Drinking Water Regulations. These regulations establish legally enforceable standards and treatment techniques that apply to public water systems. Such regulations are meant to protect public health by limiting levels of contaminants in drinking water.

When EPA proposes a drinking water regulation that includes a maximum contaminant level, SDWA requires EPA to also conduct an analysis that includes estimates of both quantifiable and nonquantifiable costs and benefits. In March 2023, EPA proposed a drinking water regulation for six types of per- and polyfluoroalkyl substances (PFAS). Accompanying the regulation, it published an economic analysis, including the initial quantifiable and nonquantifiable cost and benefit estimates of compliance with the regulation, as required by SDWA. In April 2024, EPA published both the final PFAS drinking water regulation and its accompanying revised economic analysis. PFAS have been found in drinking water, and certain PFAS have been associated with a variety of negative health effects, including cancer.

Representatives of public water systems have expressed concerns about the cost of implementing treatment to comply with the regulation and the likelihood of passing along those costs to consumers. Further, some of these stakeholders have asserted that EPA's economic analysis for the PFAS drinking water regulation does not adequately represent the costs that public water systems will incur to comply with the regulation. In June 2024, three lawsuits were filed challenging the regulation. Among other issues, the quality of EPA's analysis of the costs of the regulation is being challenged. Then, in May 2025, EPA announced its intention to rescind parts of the regulation. As of July 23, 2025, the litigation is ongoing.

The joint explanatory statement accompanying the Consolidated Appropriations Act, 2024 (170 CONG. REC. S1105, S1682 (daily ed. March 5, 2024)) includes a provision for us to review the cost estimates supporting EPA's PFAS drinking water regulation. As discussed with your staff, because this issue is the subject of ongoing litigation, our work focused on whether EPA sought and published public comment on various elements of the analysis of costs, as required by SDWA. We did not evaluate the quality of the estimates.

## Key Takeaways

- EPA sought and published public comment on the cost estimate the agency prepared for its PFAS drinking water regulation, as required by SDWA.

- EPA's initial estimate of quantifiable costs for the proposed regulation was lower than the revised estimate for the final regulation. The revised estimate was higher, in part, due to changes EPA made in response to public comments and newly available data.
- EPA also published descriptions of nonquantifiable costs and sources of uncertainty, as required by SDWA.

## Background

### Requirements to analyze and seek public comment on the quantifiable and nonquantifiable costs and benefits of a drinking water regulation

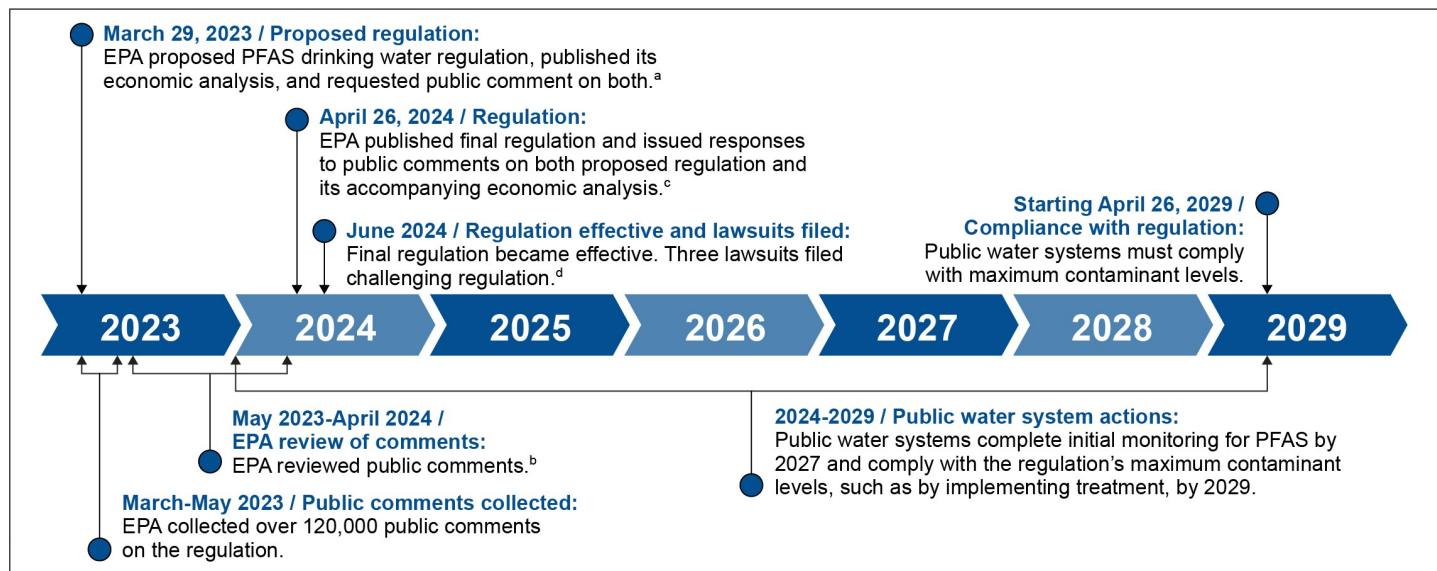
When EPA proposes a drinking water regulation that includes a maximum contaminant level, EPA must determine whether the benefits of the rule justify the costs based on all costs and benefits—both quantifiable and nonquantifiable. Specifically, SDWA requires that EPA prepare analyses of expected quantifiable and nonquantifiable benefits from health risk reductions. It also requires EPA to estimate quantifiable and nonquantifiable costs that will be incurred in complying with the regulation and the costs and benefits of each alternative option considered.<sup>1</sup> These analyses are part of SDWA's requirement that EPA conduct a "Health Risk Reduction and Cost Analysis."<sup>2</sup> SDWA further directs EPA to publish and seek public comment on its analyses.<sup>3</sup>

### EPA's PFAS drinking water regulation economic analyses

In March 2023, EPA proposed its PFAS drinking water regulation establishing maximum contaminant levels for six types of PFAS in drinking water.<sup>4</sup> EPA finalized the regulation in April 2024.<sup>5</sup> Accompanying the proposed regulation, EPA published an economic analysis,<sup>6</sup> which described the estimated costs and benefits of compliance with the regulation.<sup>7</sup> As required, EPA collected public comments on the economic analysis and the proposed regulation before issuing the final regulation. EPA then published those comments, its responses to the comments, and a revised economic analysis to accompany the final regulation in April 2024.<sup>8</sup> Under the regulation, as issued in April 2024, public water systems must comply with the maximum contaminant levels by April 2029.<sup>9</sup> In June 2024, three lawsuits were filed challenging the regulation.<sup>10</sup> As of July 23, 2025, the litigation is ongoing.<sup>11</sup>

See figure 1 for a summary of these events in EPA's regulatory process for its PFAS drinking water regulation.

**Figure 1: Timeline of Certain Events in the Environmental Protection Agency’s (EPA) Regulatory Process for the Per- and Polyfluoroalkyl Substances (PFAS) National Primary Drinking Water Regulation as of July 2025**



Source: GAO analysis of EPA documents related to its PFAS National Primary Drinking Water Regulation. | GAO-25-107897

Note: On May 14, 2025, EPA announced its intent to rescind and reconsider parts of the regulation.

<sup>a</sup>PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18,638 (Mar. 29, 2023).

<sup>b</sup>In addition to the Safe Drinking Water Act requirement that EPA seek public comment on its Health Risk Reduction and Cost Analysis, the Administrative Procedure Act requires agencies to consider all relevant and timely submitted comments and respond to all significant comments received during the public comment period. 42 U.S.C. § 300g-1(b)(3)(C); 5 U.S.C. § 553(c).

<sup>c</sup>PFAS National Primary Drinking Water Regulation, 89 Fed. Reg. 32,532 (Apr. 26, 2024).

<sup>d</sup>American Water Works Ass’n. v. U.S. Env’tl. Prot. Agency, No. 24-1188 (D.C. Cir., filed June 7, 2024).

Of note, on May 14, 2025, EPA announced its intent to make a number of changes to the PFAS drinking water regulation, including rescinding the maximum contaminant levels for three individual PFAS and for a mixture of those three PFAS plus one additional PFAS.<sup>12</sup> EPA subsequently repeated this intention as part of a filing in the litigation over the regulation.

## Estimated benefits of the regulation

According to EPA, **quantifiable benefits** of the PFAS drinking water regulation, which EPA estimated in financial terms, include avoided cases of illness and deaths associated with exposure to PFAS contaminants, anticipated reductions in cardiovascular disease and renal cell carcinoma, and improvements to birthweights. EPA also noted that treating PFAS would remove disinfection by-products, thereby resulting in quantified reductions in bladder cancer.

**Nonquantifiable benefits** include additional adverse human health effects (e.g., immunosuppression) expected to be avoided as a result of the regulation that cannot be quantified and valued in financial terms.<sup>13</sup>

EPA initially estimated that compliance with the proposed regulation would yield about \$1.2 billion in quantifiable expected annualized benefits over the 82-year analysis period.<sup>14</sup> In its economic analysis accompanying the final regulation, EPA revised its estimate and stated that compliance with the regulation would yield about \$1.5 billion in expected annualized benefits.<sup>15</sup> We did not evaluate the quality of EPA’s estimates of the regulation’s benefits.

## Estimated costs of the regulation

SDWA requires that EPA address a number of elements related to cost. Specifically, EPA must analyze quantifiable costs, analyze incremental costs of each maximum contaminant level option considered, exclude the costs of compliance with other proposed or promulgated regulations in its cost estimate, analyze nonquantifiable costs, and examine uncertainties in the cost estimate. In regulatory documents, EPA explains these elements as follows:

- **Quantifiable costs** include expenditures to be made by public water systems and primacy agencies to comply with the rule.
- **The incremental costs of other maximum contaminant level options considered** shows the difference between costs that will be incurred if the proposed regulation, or any other maximum contaminant level option being considered, is promulgated over and above baseline conditions.
- **The costs of compliance with other proposed or promulgated regulations are to be excluded from EPA's cost estimates.** EPA's estimate must include only those costs likely to occur solely as a result of compliance with the maximum contaminant level.
- **Nonquantifiable costs** are those costs that EPA believes are likely to be incurred, but for which the agency cannot assign a specific dollar amount.
- **Uncertainties in the cost estimate** can include data limitations that result in either under- or over-estimates of actual costs.

According to EPA regulatory documents, the quantifiable costs of the PFAS drinking water regulation include (1) expenditures to install and operate contaminant treatment technologies; (2) costs of PFAS monitoring, including collecting and analyzing water samples; and (3) management and oversight costs. EPA uses estimated costs to assess the likely financial impact of reducing the contaminant on states, public water systems, and water customers (such as through increases to household water bills).

EPA initially estimated annualized costs of \$771.8 million for compliance with the proposed regulation.<sup>16</sup> In its economic analysis accompanying the final regulation, EPA's annualized revised cost estimate was about \$1.5 billion.<sup>17</sup> Consistent with Office of Management and Budget Circular A-4, to account for the time value of money and to better compare estimated costs and benefits that occur at different times in the future, EPA annualized the cost estimates to spread the total expected costs equally over each year in the 82-year analysis period while accounting for the discount rate. We did not evaluate the quality of EPA's estimates of the regulation's costs. See appendix I for more details about EPA's estimates.

### **What did EPA publish about quantifiable costs, including in response to public comments?**

In March 2023, EPA published an initial estimate of the total quantifiable costs of compliance with the proposed maximum contaminant levels for the PFAS drinking water regulation.<sup>18</sup> In April 2024, EPA published its response to public comments, and, using new data and information, revised its estimate of quantifiable costs.<sup>19</sup>

#### **Initial cost estimate**

EPA published initial cost estimates of complying with the maximum contaminant levels in the proposed regulation, as well as three regulatory alternatives. (See app. I for more details.) The estimates included the following types of costs, as required by SDWA: monitoring, treatment, and other costs.

- **Monitoring costs:** To estimate monitoring costs, EPA considered the costs of public water systems' sample collection activities and laboratory costs for analyzing water samples.
- **Treatment costs:** To estimate treatment costs, EPA followed two steps. First, EPA used a model to predict which compliance method public water systems were likely to select based on individual system characteristics.<sup>20</sup> These included both treatment and non-treatment methods, such as a public water system interconnecting water with a neighboring system. Second, EPA estimated the cost of implementing the predicted methods, using a separate engineering cost model for each method.<sup>21</sup> EPA modeled the following treatment methods: (1) granular activated carbon, (2) PFAS-selective ion exchange, and (3) centralized reverse osmosis/nanofiltration.<sup>22</sup>
- **Other costs:**
  - *Implementation and treatment administration costs for public water systems:* To estimate these costs, EPA calculated labor costs for activities such as reading the regulation, attending related training, and requesting any permits required to implement treatment methods.
  - *Costs for primacy agencies:* EPA also estimated costs for primacy agencies, i.e., state, territorial, or tribal entities with primary responsibility for implementing SDWA. EPA calculated the labor costs for activities such as adopting the rule requirements into state codes, providing technical assistance to public water systems, reviewing water sample results during the initial monitoring period, and reviewing and consulting with the systems on the installation of treatment technology or alternative methods, including source water change.<sup>23</sup>

### Response to public comments

EPA solicited and collected public comments on the proposed regulation. In its April 2024 response to public comments, EPA considered the comments it received, including comments on the methodology it used to estimate quantifiable costs.<sup>24</sup> For example, commenters stated that EPA incorrectly omitted the costs associated with performance monitoring—sampling done to assess treatment performance, e.g., how often a public water system will need to replace its treatment media. In response to these public comments, EPA increased the estimated length of the pilot study, increased the frequency of sampling during the pilot study, and added a year of confirmation sampling after full-scale installation to the estimated pilot study costs. Taken together, these changes increased the pilot study costs that were included in EPA's revised cost estimate.

### Revised cost estimate

In April 2024, EPA published the final PFAS drinking water regulation with a revised cost estimate of \$1.5 billion, which was higher than the initial cost estimate of \$771.8 million. See appendix I for more details. As noted above, we did not evaluate the quality of EPA's cost estimates.

For the revised cost estimate, EPA used newly available PFAS occurrence data that increased the number of public water systems that were projected to exceed the maximum contaminant levels and that would therefore need to implement treatment.

Further, according to EPA's preamble to the final regulation, the agency made other changes in response to public comments that increased the revised cost



estimate. For example, EPA collected new vendor price quotes for certain equipment components such as pressure vessels and treatment media. EPA said that the new quotes, in combination with other changes EPA made to certain assumptions in the revised cost estimate, increased EPA's estimate of public water system capital costs by approximately 10 to 110 percent, depending on system size and selected treatment technology.

### What did EPA publish about the incremental costs of other maximum contaminant level options?

EPA published initial and revised estimates of the incremental costs of three other maximum contaminant level options, in addition to the levels proposed in the regulation. EPA referred to its estimates as the proposed option (i.e., the option being proposed in the regulation), option 1a, option 1b, and option 1c. See table 1 for information about the options EPA considered.

**Table 1: Options Considered by Environmental Protection Agency (EPA) in Proposed and Final Per- and Polyfluoroalkyl Substances (PFAS) Drinking Water Regulation Economic Analyses**

**Option with its associated maximum contaminant level (MCL) in parts per trillion (ppt)**

Chemical	Proposed regulation	Final regulation	Option 1a	Option 1b	Option 1c
Perfluorooctanoic acid (PFOA)	4.0 ppt	4.0 ppt	4.0 ppt	5.0 ppt	10 ppt
Perfluorooctane sulfonate (PFOS)	4.0 ppt	4.0 ppt	4.0 ppt	5.0 ppt	10 ppt
Perfluorononanoic acid (PFNA)	Included in hazard index <sup>a</sup>	10 ppt individual MCL and also included in hazard index <sup>a</sup>	na	na	na
Perfluorohexane sulfonic acid (PFHxS)	Included in hazard index <sup>a</sup>	10 ppt individual MCL and also included in hazard index <sup>a</sup>	na	na	na
Hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (also known as GenX chemicals)	Included in hazard index <sup>a</sup>	10 ppt individual MCL and also included in hazard index <sup>a</sup>	na	na	na
Perfluorobutane sulfonic acid (PFBS)	Included in hazard index <sup>a</sup>	Included in hazard index <sup>a</sup>	na	na	na

Legend:

— = not applicable

Source: EPA economic analyses accompanying the proposed and final PFAS National Primary Drinking Water Regulations. | GAO-25-107897

<sup>a</sup>The hazard index is an established tool that EPA uses to understand health risk from chemical mixtures. For the PFAS drinking water regulation, public water systems will use a hazard index calculation to determine if the combined levels of certain PFAS pose a potential risk and therefore require action, even if the levels of individual PFAS were below any individual MCLs. The hazard index is made up of a sum of fractions. Each fraction compares the level of each PFAS measured in the water to the highest level determined not to have risk of health effects. The regulation requires systems to implement treatment when the average hazard index for the summed PFAS across four quarters exceeds 1.

Both EPA's initial and revised cost estimates showed that quantifiable costs would be highest for the regulation being proposed and lowest for option 1c. (See table 2 in app. I for more details.)

### What did EPA publish about how it addressed the costs of compliance with other regulations?

In EPA's preamble to its published proposed regulation, EPA stated that in accordance with SDWA requirements, the agency included only those costs likely to occur solely as a result of compliance with the proposed regulation. Additionally, in its preamble to its final regulation, EPA reiterated that, in accordance with SDWA, it excluded the costs of other proposed or promulgated regulations from its revised analysis of costs. Therefore, EPA stated that its analysis of costs focused on the compliance costs directly subject to the PFAS drinking water regulation. Our review of EPA's documentation did not find any evidence that EPA included costs unrelated to compliance with the regulation.

## What did EPA publish about nonquantifiable costs?

In its economic analyses, EPA published descriptions of potential nonquantifiable costs related to compliance with the regulation. For example, EPA stated that the co-occurrence of certain PFAS or other non-PFAS contaminants in drinking water could entail additional nonquantifiable costs for public water systems to the extent that the presence of the co-occurring contaminants requires systems to replace certain treatment media—such as granular activated carbon—more frequently.

Additionally, in its response to public comments, which EPA published in April 2024 accompanying the final regulation, the agency considered comments about potential nonquantifiable costs. For example, our review of EPA’s response to public comments document found that at least three commenters said that EPA had insufficient data on which to base its conclusion that the regulated PFAS are likely to co-occur in drinking water. In response, EPA stated that its analysis of state monitoring data from 11 states for the proposed regulation established a strong likelihood that the regulated PFAS do co-occur in drinking water. Specifically, EPA’s co-occurrence analysis showed statistically significant relationships between nearly all pairs of regulated PFAS at the 95 percent confidence level.<sup>25</sup>

In EPA’s response to public comments document, the agency said that it used newly available state monitoring data in its co-occurrence analysis for the final regulation based on public comments that requested EPA to include the new data. EPA said that its analysis of the newly available data confirmed its previous conclusion that the regulated PFAS are likely to co-occur.

## What did EPA publish about uncertainties in its cost estimate?

SDWA requires EPA to discuss the quality and extent of the information used and uncertainties in its estimate of costs. In EPA’s economic analysis, published to accompany the proposed regulation, EPA stated that many of the input values used to estimate the costs of the regulation are not known with certainty. EPA also provided a range of estimates (known as confidence intervals) and described several sources of uncertainty, including data limitations that could increase or decrease actual costs. For example:

- **Uncertainty that could increase costs:** EPA stated that when it developed its cost estimate, there was insufficient nationally representative data to precisely characterize occurrence for three PFAS: perfluorobutane sulfonic acid (PFBS), perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (also known as GenX chemicals). If these PFAS were to occur at levels requiring treatment, EPA stated that actual costs may increase relative to its cost estimate.
- **Uncertainty that could decrease costs:** EPA stated that it excluded point-of-use devices—such as filters designed to treat only a portion of the water distributed to consumers (e.g., water for drinking and cooking)—as a viable treatment option for public water systems. EPA did so because the devices had not yet been certified to achieve reductions in the concentration of certain PFAS that would be required by the final regulation. According to EPA documentation, if point-of-use devices become certified as a viable treatment, some small systems may be able to reduce their treatment costs by using them, which could lower actual costs relative to EPA’s cost estimate.

## Agency Comments

We provided a draft of this report to EPA for review and comment. In its comments, reproduced in appendix II, EPA agreed with our summary of the

agency's actions. EPA also provided technical comments, which we incorporated as appropriate.

## How GAO Did This Study

The joint explanatory statement accompanying the Consolidated Appropriations Act, 2024 includes a provision for us to review the cost estimates supporting EPA's PFAS National Primary Drinking Water Regulation. Since this issue is the subject of ongoing litigation, our work focused on whether EPA sought and published public comment on various elements of the analysis of costs, as required by SDWA.

This report (1) identifies the SDWA requirements related to estimating costs that EPA must follow in support of proposed National Primary Drinking Water Regulations containing maximum contaminant levels and (2) describes the cost estimates EPA published in its economic analyses in response to SDWA requirements.

To conduct this work, we reviewed SDWA to identify relevant requirements for EPA to publish a "Health Risk Reduction and Cost Analysis" in support of a proposed drinking water regulation. We also reviewed publicly available documents related to EPA's proposed PFAS drinking water regulation to describe the cost estimates and related analysis that EPA published. We interviewed EPA officials to verify our understanding of the public documents EPA published to address relevant SDWA requirements. In addition, we reviewed EPA's document summarizing public comments and identified instances where EPA modified the initial cost estimate in response.

We conducted this performance audit from November 2024 to July 2025 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## List of Addressees

The Honorable Lisa Murkowski  
Chair  
The Honorable Jeff Merkley  
Ranking Member  
Subcommittee on Interior, Environment, and Related Agencies  
Committee on Appropriations  
United States Senate

The Honorable Mike Simpson  
Chairman  
The Honorable Chellie Pingree  
Ranking Member  
Subcommittee on Interior, Environment, and Related Agencies  
Committee on Appropriations  
House of Representatives

We are sending copies of this report to the appropriate congressional committees and the Administrator of the Environmental Protection Agency. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

## GAO Contact Information



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## **Appendix I: Cost Estimates for the Per- and Polyfluoroalkyl Substances (PFAS) Drinking Water Regulation**

In March 2023, the Environmental Protection Agency (EPA) published its PFAS National Primary Drinking Water Regulation proposing maximum contaminant levels for six types of PFAS in drinking water.<sup>26</sup> EPA finalized the regulation in April 2024.<sup>27</sup> With both the proposed and final regulation, EPA published economic analyses describing the estimated costs of the regulation and alternative options the agency considered.

In its March 2023 economic analysis, EPA estimated the quantifiable costs of the proposed maximum contaminant levels as well as three options with varying maximum contaminant levels. EPA called these alternatives options 1a, 1b, and 1c.

EPA revised its estimates of the quantifiable costs when it published the final regulation. The April 2024 revised cost estimates were higher than the initial cost estimates.<sup>28</sup> Table 2 provides EPA's initial and revised cost estimates, as well as EPA's projections of how many public water systems and people served by those systems would be impacted by each of the options EPA considered.

In June 2024, three lawsuits were filed challenging the regulation.<sup>29</sup> Since the PFAS drinking water regulation is the subject of ongoing litigation, we did not review the quality of the cost estimates reported in table 2.

**Table 2: Environmental Protection Agency’s (EPA) Economic Analysis of its Per- and Polyfluoroalkyl Substances (PFAS) Drinking Water Regulation: Expected Cost, Number of Impacted Public Water Systems, and Population Served for Considered Options**

<b>Economic analysis</b>	<b>Option and associated PFAS maximum contaminant level (MCL) in parts per trillion (ppt)</b>	<b>Expected cost (annualized)<sup>a</sup> (dollars in millions)</b>	<b>Expected number of impacted public water systems</b>	<b>Expected population served by impacted public water systems (in millions)</b>
<b>Initial<sup>b</sup></b>	Proposed regulation <sup>c</sup> <i>PFOA or PFOS at 4.0 ppt and hazard index</i>	\$771.77	4,321	64.4
<b>Initial<sup>b</sup></b>	Option 1a <i>PFOA or PFOS at 4.0 ppt</i>	\$755.82	4,310	64.2
<b>Initial<sup>b</sup></b>	Option 1b <i>PFOA or PFOS at 5.0 ppt</i>	\$611.01	3,300	53.8
<b>Initial<sup>b</sup></b>	Option 1c <i>PFOA or PFOS at 10 ppt</i>	\$292.57	1,274	27.8
<b>Revised<sup>d</sup></b>	Final regulation <sup>e</sup> <i>PFOA or PFOS at 4.0 ppt and hazard index plus new individual MCLs for three of the hazard index PFAS</i>	\$1,548.64	5,139	76.3
<b>Revised<sup>d</sup></b>	Option 1a <i>PFOA or PFOS at 4.0 ppt</i>	\$1,537.07	5,136	76.2
<b>Revised<sup>d</sup></b>	Option 1b <i>PFOA or PFOS at 5.0 ppt</i>	\$1,192.13	3,801	62.8
<b>Revised<sup>d</sup></b>	Option 1c <i>PFOA or PFOS at 10 ppt</i>	\$499.29	1,279	30.3

Legend:

PFOA = perfluorooctanoic acid

PFOS = perfluorooctane sulfonate

Source: EPA’s economic analyses accompanying the proposed and final PFAS National Primary Drinking Water Regulation. | GAO-25-107897

Note: As shown above, EPA’s estimate of expected costs increased from the initial to the revised economic analysis. In its preamble for the final regulation, EPA identified a number of factors that contributed to the agency increasing the expected cost of the regulation. For example, in response to public comments, EPA used updated vendor price quotes for certain equipment components, such as pressure vessels and treatment media, and adjusted certain assumptions related to contingency costs for public water systems. Additionally, using newly available PFAS occurrence data, EPA increased its projection of the number of public water systems that would need to implement treatment.

<sup>a</sup>Annualization spreads the total present value of expected cost equally over each year in the 82-year analysis period while accounting for the discount rate. EPA reported expected cost (mean value across iterations), lower bound, and upper bound of the annualized costs.

<sup>b</sup>The initial expected cost estimates were calculated by EPA in 2021 dollars using a 3 percent discount rate. EPA also reported initial cost estimates calculated using a 7 percent discount rate in its economic analysis accompanying the proposed regulation.

<sup>c</sup>In its initial economic analysis, in addition to estimating the cost of compliance with the proposed MCLs of 4 ppt for PFOA and PFOS, EPA also estimated the cost of compliance with its proposed hazard index. The hazard index covers perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (also known as GenX chemicals), perfluorohexane sulfonic acid (PFHxS), and perfluorobutane sulfonic acid (PFBS). The hazard index is an established tool that EPA uses to understand health risk from chemical mixtures. For the PFAS drinking water regulation, public water systems will use a hazard index calculation to determine if the combined levels of certain PFAS pose a potential risk and therefore require action, even if the levels of individual PFAS were below any individual MCLs. The hazard index is made up of a sum of fractions. Each fraction compares the level of each PFAS measured in the water to the highest level determined not to have risk of health effects. The regulation requires systems to implement treatment when the average hazard index for the summed PFAS across four quarters exceeds 1.

<sup>d</sup>The revised expected cost estimates were calculated by EPA in 2022 dollars using a 2 percent discount rate.

<sup>e</sup>EPA’s revised economic analysis also included estimates for the cost of compliance with 10 ppt MCLs for HFPO-DA, PFHxS, and PFNA. See table 1.

## Appendix II: Comments from the Environmental Protection Agency



OFFICE OF WATER  
WASHINGTON, D.C. 20460

July 11, 2025

Mr. Alfredo Gomez  
Director  
Natural Resources and Environment  
U.S. Government Accountability Office  
Washington, D.C. 20548

Dear Mr. Gomez:

Thank you for the opportunity to review and comment on the U.S. Government Accountability Office's draft report, *Persistent Chemicals: Information on EPA's Analysis of Costs for its PFAS Drinking Water Regulations*, GAO-25-107897, received on June 5, 2025. The purpose of this letter is to provide U.S. Environmental Protection Agency's response to the draft report.

The EPA agrees that the draft report provides an accurate high-level summary of (1) the steps the agency took to publish an analysis of costs of the proposed National Primary Drinking Water Regulation for PFAS, (2) the agency's consideration of public comments on the cost analysis, and (3) the agency's revised analysis for the final PFAS National Primary Drinking Water Regulation. As noted in the report, the GAO has not evaluated the quality of the cost estimates.

The EPA has enclosed a small number of technical comments for the GAO's consideration. Additionally, the EPA has no substantive disagreements with the information presented by the GAO in this report.

Again, the EPA appreciates the opportunity to review your draft report. If you have any questions or need further information, please contact Colin Jones, OW's GAO Audit Follow-up Coordinator, at [jones.colin@epa.gov](mailto:jones.colin@epa.gov).

Sincerely,

Browne,  
Peggy

Peggy S. Browne  
Acting Assistant Administrator

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Browne, Peggy  
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ENCLOSURE

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## Accessible Text for Appendix II: Comments from the Environmental Protection Agency

July 11, 2025

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Director  
Natural Resources and Environment  
U.S. Government Accountability Office  
Washington, D.C. 20548

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Sincerely,

Browne, Peggy

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ENCLOSURE

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## Endnotes

1Safe Drinking Water Act, Pub. L. No. 93-522, 88 Stat. 1660 (1974) (codified as amended at 42 U.S.C. §§ 300f-300j-27).

242 U.S.C. § 300g-1(b)(3)(C). For the remainder of this report, we will use the phrase “economic analysis” to refer to the economic analyses published by EPA to accompany the proposed and final PFAS drinking water regulation. EPA stated the analyses address SDWA’s requirement for EPA to publish a “Health Risk Reduction and Cost Analysis” when proposing a drinking water regulation with a maximum contaminant level.

3EPA must also determine whether benefits of the rule justify the costs based on all statutorily prescribed costs and benefits. 42 U.S.C. §§ 300g-1(b)(3)(C)(i), (b)(4)(C).

4PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18,638 (Mar. 29, 2023).

5PFAS National Primary Drinking Water Regulation, 89 Fed. Reg. 32,532 (Apr. 26, 2024).

6Environmental Protection Agency, Economic Analysis for the Proposed Per- and Polyfluoroalkyl Substances National Primary Drinking Water Regulation (Washington, D.C.: March 2023).

7In addition to the requirements of SDWA, an executive order requires agencies to prepare an economic analysis of anticipated costs and benefits for each planned significant regulatory action and submit the economic analyses to the Office of Management and Budget for review. Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Oct. 4, 1993), as amended. The PFAS final National Primary Drinking Water Regulation is considered a significant regulatory action. EPA submitted the final PFAS regulation to the Office of Management and Budget for review on December 15, 2023.

8Environmental Protection Agency, Responses to Public Comments on Per- and Polyfluoroalkyl Substances (PFAS) National Primary Drinking Water Regulation Rulemaking (Washington, D.C.: April 2024). Environmental Protection Agency, Economic Analysis for the Final Per- and Polyfluoroalkyl Substances National Primary Drinking Water Regulation (Washington, D.C.: April 2024).

9On May 14, 2025, EPA announced that it plans to extend the compliance date for the PFOA and PFOS MCLs to 2031.

10American Water Works Ass’n v. U.S. Env’tl. Prot. Agency, No. 24-1188 (D.C. Cir., filed June 7, 2024); Nat’l Ass’n of Mfrs. v. U.S. Env’tl. Prot. Agency, No. 24-1191 (D.C. Cir., filed June 10, 2024); The Chemours Co. FC, LLC v. U.S. Env’tl. Prot. Agency, No. 24-1192 (D.C. Cir., filed June 10, 2024). The cases have been consolidated with the American Water Works Association case as the lead.

11On July 21, 2025, EPA, which had previously requested and been granted a series of four stays dating from February 2025, filed an unopposed motion asking the court to lift the current stay and direct the parties to submit, by August 1, 2025, their proposals for completing briefing in the case. In its motion, EPA repeated points from its May 14 announcement, stating that it plans to rescind and reconsider the regulatory determinations for the parts of the regulation relating to PFHxS, PFNA, HFPO-DA, and mixtures containing two or more of those compounds and/or PFBS. The motion was granted on July 22.

12Environmental Protection Agency, “EPA Announces It Will Keep Maximum Contaminant Levels for PFOA, PFOS,” (May 14, 2025), <https://www.epa.gov/newsreleases/epa-announces-it-will-keep-maximum-contaminant-levels-pfoa-pfos>.

13Immunosuppression is the suppression of the body’s immune system and its ability to fight infections and other diseases.

14The unrounded figure for EPA’s annualized benefits estimate accompanying the proposed regulation was \$1.23298 billion and was calculated in 2021 dollars using a 3 percent discount rate. EPA reported an expected value for estimated benefits and a range of plausible benefits estimates—\$659.91 million to \$1.99151 billion—with a 95 percent confidence level. EPA also reported a benefits estimate that was calculated using a 7 percent discount rate. EPA based the analysis period of 82 years on an assumed median human lifespan of 80 years and an assumption that actions to comply with the regulation would begin 2 years after the regulation was promulgated.

15The unrounded figure for EPA’s annualized benefits estimate accompanying the final regulation was \$1.5494 billion and was calculated in 2022 dollars using a 2 percent discount rate. EPA reported an expected value for estimated benefits and a range of plausible benefits estimates—\$920.91 million to \$2.2938 billion—with a 95 percent confidence level. Consistent with Office of Management and Budget Circular A-4 guidance—which was revised between the time of the proposed and final regulations—and in light of public input received on the discount rates considered by EPA in the proposed regulation, EPA estimated costs and benefits at the 2 percent discount rate but also presented a 3 and 7 percent discount rate in Appendix P of the final Economic Analysis.

16EPA’s initial cost estimate was calculated in 2021 dollars using a 3 percent discount rate. EPA reported an expected value for estimated costs and a range of plausible cost estimates—\$704.53 million to \$850.4 million—at the 95 percent confidence level based on variability in (1) underlying models and (2) quantified sources of uncertainty. EPA also described unquantified sources of uncertainty that are not reflected in the cost estimate range (e.g., insufficient national data on the occurrence of certain PFAS). EPA also reported a cost estimate calculated using a 7 percent discount rate.

17The unrounded figure for EPA’s revised cost estimate was \$1.54864 billion and was calculated in 2022 dollars using a 2 percent discount rate. EPA reported an expected value for estimated costs and a range of plausible cost estimates—\$1.4357 billion to \$1.6721 billion—at the 95 percent confidence level based on variability in (1) underlying models and (2) quantified sources of uncertainty. EPA also described unquantified sources of uncertainty that are not reflected in the cost estimate range (e.g., insufficient national data on the occurrence of certain PFAS).

18For the remainder of this report, we will use the phrase “initial cost estimate” or “initial estimate” to refer to the estimate of quantifiable costs that EPA published in March 2023 in its economic analysis accompanying the proposed regulation. EPA quantified total expected annualized costs from national simulations.

19For the remainder of this report, we will use the phrase “revised cost estimate” or “revised estimate” to refer to the estimate of quantifiable costs that EPA published in April 2024 in its economic analysis accompanying the final regulation.

20The compliance method selected by water systems impacts, in part, the administrative costs incurred by the primacy agencies and public water systems.

21According to EPA, each engineering model contains the work breakdown for a particular treatment process and estimates equipment requirements for system size, influent water quality, and other design requirements. Each model also provides unit and total cost information by component, and also estimates permits and other costs to produce a complete compliance cost estimate.

22During granular activated carbon filtration, filters with a large, porous surface area attract and bind a wide range of contaminants, including PFAS. Ion exchange resin uses the charges of PFAS ions to attract them to oppositely charged sites. High-pressure membranes—such as reverse osmosis and nanofiltration—force water through very small openings in the membrane, which prevents PFAS from passing through.

23EPA delegates primary enforcement responsibility for drinking water regulations under SDWA to states, territories, and Tribes (primacy agencies) that meet certain requirements. For example, primacy agencies must maintain an inventory of public water systems in their jurisdiction and have the authority to sue systems to compel their compliance with drinking water regulations. Primacy agencies must also update their own drinking water regulations to be at least as stringent as EPA’s within 2 years of EPA finalizing a new drinking water regulation. According to EPA, as of December 2024, all states and territories had primacy, aside from Wyoming and the District of Columbia. The Navajo Nation was the only Tribe with primacy. EPA exercises primary enforcement responsibility for drinking water regulations for any states, territories, or Tribes without primacy.

24Environmental Protection Agency, Responses to Public Comments on Per- and Polyfluoroalkyl Substances (PFAS) National Primary Drinking Water Regulation Rulemaking.

25EPA found that, in the state monitoring data, the occurrence of one regulated PFAS in drinking water was almost always associated with greater likelihood of another regulated PFAS also occurring. For example, EPA’s pairwise analysis of the six types of PFAS in its proposed regulation found that PFBS was about 50 times more likely to occur in drinking water where PFOS was present. The relationships EPA found between the regulated PFAS were statistically significant at the 95 percent confidence level for all of the 15 pairings besides HFPO-DA and PFHxS.

26PFAS National Primary Drinking Water Regulation Rulemaking, 88 Fed. Reg. 18,638 (Mar. 29, 2023).

27PFAS National Primary Drinking Water Regulation, 89 Fed. Reg. 32,532 (Apr. 26, 2024).

28EPA used different discount rates for its initial and revised cost estimates and adjusted the estimates for different price levels. See table 2 for more information.

29American Water Works Ass’n v. U.S. Env’tl. Prot. Agency, No. 24-1188 (D.C. Cir., filed June 7, 2024).